

The Journal

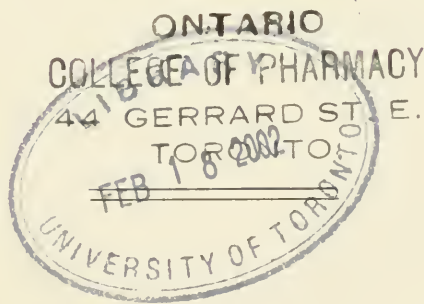
of the

American Pharmaceutical Association

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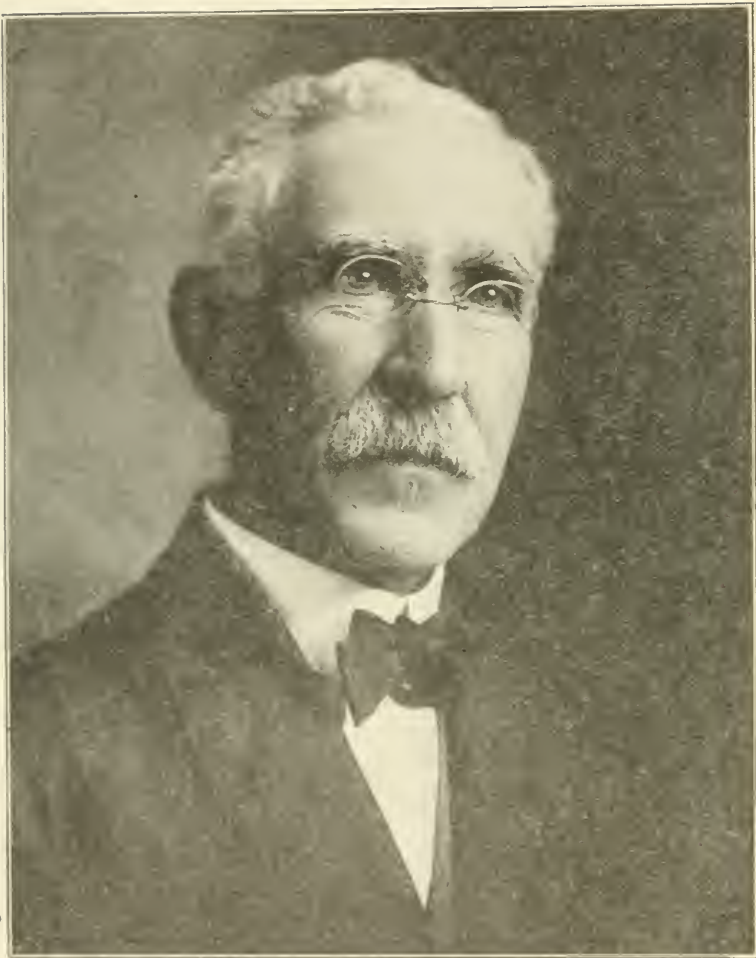
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LUCIUS E. SAYRE
LAWRENCE, KANS.

President-Elect American Pharmaceutical Association



L. E. SAYRE

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LUCIUS ELMER SAYRE.

L. E. Sayre, president-elect of the American Pharmaceutical Association, was born at Bridgeton, N. J., seventy-one years ago. Here he received his early education and also served for a time in the drug store of Robeson & Whitaker. In an article contributed to the Section on Historical Pharmacy, A. Ph. A., Professor Sayre interestingly related the experiences of an apprentice of the early Sixties in New Jersey.¹ Ambitious to learn more of the many things he had become acquainted with and to acquire a scientific knowledge of pharmacy, he decided to attend the Philadelphia College of Pharmacy, and like most pharmacy students of that period engaged as clerk in a drug store,—that of Dr. L. Updyche, at 12th and Fairmount Ave. After graduation from the College in 1866 he was employed in the laboratory of Frederick Brown, at 5th and Chestnut Streets. Succeeding this period he was engaged by Henry C. Blair's Sons as chief clerk, and served in this capacity for ten years, when he enlisted in the drug business for himself at 18th and Market Streets, forming a partnership with his friend and classmate, the late Prof. Joseph P. Remington. During these years he also was lecturer in Pharmacy at the Women's Medical College and quiz-master in *Materia Medica* at the Philadelphia College of Pharmacy.

In 1885 the Kansas Legislature passed an Act creating the School of Pharmacy, thereafter located at the State University; the Board of Regents elected the subject of this incomplete sketch dean of the School and professor of *Materia Medica* and of Pharmacy. At present Professor Sayre devotes his time to the former subject and administrative work, as dean. The School of Pharmacy was given a home in the Chemistry and Pharmacy building in 1899. Since the school was founded over two thousand students have matriculated and about five hundred have been graduated as pharmacists. In 1907 Professor Sayre was elected director of drug analysis for the Kansas State Board of Health and he is also member of the botanical staff of the Kansas State Board of Agriculture. As an author he is best known by his contributions to pharmaceutical publications, proceedings

¹ JOURNAL A. Ph. A., 6, 454.

of State and National associations and his text-book on Organic Materia Medica and Pharmacognosy. He has been a member of the last three Revision Committees of the U. S. Pharmacopoeia. He received the degree of Master in Pharmacy from the Philadelphia College of Pharmacy, and the University of Michigan honored him with the degree of Bachelor of Science in 1896.

The president-elect joined the American Pharmaceutical Association in 1883, and has served on important committees, among these that on Drug Reform. He was chairman of the Scientific Section in 1893, secretary of the Section on Historical Pharmacy in 1917, and its chairman at the recent Chicago meeting.

The Proceedings of the American Pharmaceutical Association and the pages of the JOURNAL of the A. Ph. A. have reported the contributions of this enthusiastic worker in pharmacy. The subjects are various and relate to teaching in its various phases, historical, theoretical and practical pharmacy, organic chemistry, botany and pharmacognosy. All of these contributions evidence the earnestness of a careful and thorough student and, as the subjects have relative value, it may not be presumption on the part of the writer to make special reference to his work on Gelsemium which was presented in papers to the Scientific Section from 1905 to 1915.

As heretofore indicated, no attempt is made in this writing to present a complete sketch, realizing that the members are well acquainted with the labors of the man whom they have been pleased to honor with the presidency of the American Pharmaceutical Association for 1920-1921.

Professor and Mrs. Sayre, nee Miss Ellen Platt, were married in 1874; the former has missed but very few of the annual conventions since his affiliation, and the latter is a frequent visitor. They have two sons and two daughters, all of whom have their own family circles. A number of years ago the Sayres selected a summer residence in Douglas, Mich., and very soon after the annual school term is completed this is home for them.

E. G. E.

AN ACKNOWLEDGMENT OF THE HONOR CONFERRED BY THE A. PH. A., FROM THE PRESIDENT-ELECT.

To the Members of the American Pharmaceutical Association:

I was surprised and gratified to receive the notice of my election to the presidency of the American Pharmaceutical Association. I wish to assure the members of the Association that it gives me much pleasure to receive this high honor, and welcome it not only as an expression of their confidence but also as an added responsibility; not without misgivings, however.

During the present year President Charles H. LaWall has the care of the Association, and never before has this body been so much in the public eye. A consciousness of this fact and that there will be many post-war problems to face, brings the realization to me that I will need not only the present incumbent's aid but that of all the members of this Association, when I assume the duties of office.

(Signed)

L. E. SAYRE.

EDITORIAL

E. G. EBERLE, Editor

253 Bourse Bldg., PHILADELPHIA

A MESSAGE FROM THE PRESIDENT OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

To the Members of the American Pharmaceutical Association, Greetings:

AFTER four years of stress and turmoil, the peace for which the world has been longing is in sight at last and our eyes are filled with tears of rejoicing and our hearts with gladness of thanksgiving as a realization of our hopes seems imminent.

This is a time, not only for rejoicing and thanksgiving but a time for us all to pause and reflect and with new and heightened resolution, to press on toward the future. Whether our definitions and interpretations of Pharmacy are the same or not; whether orientation is necessary for some of us or whether we have our faces turned toward the highest goal, we should all be imbued with the spirit of broadmindedness and tolerance exemplified by the immortal phrase "In proportion as we love truth more and victory less, we should endeavor to place ourselves in such a position as will enable us to understand why our opponents think as they do."

All jealousy, pique and petty feelings of revenge should be relegated to the *Capharnaum* or lumber room of time and all should join in renewed endeavor to aid pharmacy in this period of evolutionary change through which it is now passing. When we look back over the roll of presidents of our Association who have passed on, some stand out with more distinctiveness than others. Like Abou ben Adhem, some have been distinguished by their love for their fellow men and the welfare of their chosen profession. Among these are the names of Procter, Parrish, Ebert, Diehl, Remington, Dohme, Prescott, Eliel, Searby, Oldberg and Holzhauer, quoting them in the chronological order in which they served. There are others, too, while never attaining to the presidency, left their impress upon their profession for all time to come—Maisch, Hallberg, Squibb, Rice and Caspari. Let us take counsel of the records and examples of these, our great predecessors.

The war has been won, but not without the aid of pharmacists, whose unrewarded services will constitute a mark of distinction in the future for those who gave so freely of their skill and knowledge to make the army fit and capable "to make the world safe for democracy."

Pharmacy, which has given generously both men and materials, will have fewer problems to solve in the reconstruction period than some of the other professions, for there is a place waiting for each one who returns, and though we have

failed in our efforts to obtain proper recognition of Pharmacy at this time, we have made progress, and the glory to pharmacists is all the greater for having served so nobly without recognition in rank.

Now the time has come to face the problems of the future. Let us do so with optimism, and faith in each other's motives. Let us encourage and approve movements leading toward coördination and coöperation and discourage the fortissimo rendition of the anvil chorus. Criticism is easy and is a tempting highway to fame. Pessimism is a potential poison to the "body pharmaceutic." Let us all strive during the coming year to make such noteworthy progress that eventually, instead of having to go out into the highways and byways to seek members, we can pick and choose from a waiting list.

We must not wait, however, for this condition to come to pass by some miraculous means. We each have our obligations to ourselves and our profession. To ourselves first, that we may develop worthy ideals and then be true to them; to our profession, that we may strive unselfishly and sincerely to so promote its progress that we shall attract to its ranks all those worthy of membership. Pharmacy is not decadent. Membership in the American Pharmaceutical Association is an honor which should be sought for. Let us "dream and not make dreams our master;" let us "think and not make thoughts our aim."

A new and glorious day is dawning for pharmacy, in which recognition of the worthy plans for federation, accomplishment of research, and many other dreams of the present will be translated into action and fruition. May our Association during the coming year go onward and upward to a realization of achievements worthy and lasting!

CHARLES H. LAWALL, *President.*

NINETEEN THOUGHTS FOR NINETEEN NINETEEN.

NATIONS and industries are being brought together. The votaries of pharmacy, medicine and chemistry should work together: their interests are largely common interests, they are related—often the work of one branch is incomplete without the other—the fullest measure of prosperity is possible for each when all recognize their common interests for the welfare of those they serve.

The people have a right to demand a service from the united endeavor of pharmacy, medicine and chemistry. Professions and industries are useful to the world in proportion to the attainments of the votaries.

Diseases are man-made and the public should be impressed with this important fact. The purpose of industries and professions related to medicine is to advance social as well as material well-being; therefore, the community is entitled to consideration from this service, which is best promoted by coöperation.

Individuals are entitled to a safeguard of their health as much as of their property. Diseases are man-made, but they cannot always be avoided because of the ignorance or indifference of the disease germ producers and carriers. The community should have the counsel of those who lay claims to a knowledge of these subjects. Medicine, chemistry and pharmacy have joint responsibilities in this connection; coöperative work in research is incumbent upon the votaries.

"The war has demonstrated that through industrial coöperation great economies may be achieved, waste eliminated and efficiency increased." Professions should capitalize on these lessons by adopting similar practices whereby related professions encourage reasonable coöperation. It is in the public interest, and special privileges are granted because of the valuable service rendered by the professions. An attitude which hinders in giving the best service is not just to the public.

"Men of business may not be regarded competent advisers in matters of diplomacy and statecraft as affecting reconstruction, but, as a corollary to this assumption, the diplomat or statesman may not be regarded as a wholly competent adviser in matters of economic reconstruction." The deduction is that men of different professions may work together, but each class is best qualified to render service in the department for which the individuals have been trained by experience and education. It constitutes the best service for the public and therein is the duty.

The discoveries of Scheele not only made possible the chemical industries but also the successful treatment of the sick, diseased and wounded. Labarraque conveyed a suggestion to Carrel and Dakin. The horrible fate of the abandoned and helpless and wounded in No Man's Land would have been the lot of all the injured if it had not been for the foundations of the germ theory laid by Pasteur. There is opportunity and glory enough for all; the greatest service is given humanity by the working together of related industries and professions.

Underlying professional attainments there must be adequate education. The individual needs not only experience but a knowledge which enables him to understand what he sees and does. There is military rank and there are degrees of education and learning, and in both there are specialists; qualifications along certain lines do not essentially qualify individuals in those with which they are not familiar. Some of the medical and perhaps also some pharmacy schools have come to the conclusion that military training and professional education are not compatible.

There should be morale in professions and among professions. A definition given for the word is "belief in one another." In that sense it means that the votaries of the same profession believe in each other, and to carry the thought further: those who are engaged in related professions believe that coöperatively

they can and will do better work. It was the force that put our boys over the top; they not only believed but they made good their belief. It carries the spirit of sacrifice and altruism; it evidences the willingness to give a lift; it means the gladness to be of service, rejoicing in the success and advancement of others. It is applied serviceable friendship of those coöperating, and for those served,—the public.

“Common danger, common toil and common suffering have developed the spirit of brotherhood as nothing else could do.” This engendered spirit presents the hope for the future development of our industries. It means also that the value of human life and health is above class distinction and material gain; it is the application of the Golden Rule in genuine service.

Every profession, industry and business has become established because the public has need for it; the votaries, if they render valuable service, are entitled to the opportunities for earning their living and under conditions which will not only make them desirable citizens but enable them to render service that warrants compensation and develops in them a higher appreciation of their vocation and of its greater possibilities.

Industry, efficiency and initiative should be encouraged and rewarded; indifference and hindrance to best service should be discountenanced. Individual and coöperative research is essential to development, and to withhold support or otherwise hinder with selfish motives or for selfish reasons is little less than disloyalty.

The public has a right to expect and investigate the coöperation of industries and professions, and to determine whether they are giving it the best service and protection possible. There is a widening field of medical science before us in which medicine, chemistry and the departments of special and direct concern to pharmacists should find much to do. Research and development are partners. The public is the beneficiary.

The most potent measure in bringing about an understanding of the mission of professions is reasonable, rational discussion, with the purpose of devising the best means for being of service to the public. The mote and the beam too often interfere with vision. The relation between the American Pharmaceutical Association and the American Medical Association should be such that members of the latter place utmost confidence in those of the former, and reversely. This creates public confidence in the individuals, in the practice of medicine and of pharmacy—it benefits the public.

The Government should assist the industries and business by counsel and co-operation; very commendable work has already been done and more is contemplated. There is also a duty to the professions, and pharmacy has not received deserved recognition. If pharmacy is an “essential service,” then the individuals should be placed in position to render the best possible service.

The application of right principles is essential to effect right relations: "the letter killeth and the spirit maketh alive." The attitude and spirit are all-important. Ruskin said: "In the world's affairs there is no design so great or good but it will take twenty wise men to help it forward a few inches; and a single fool can stop it."

The individual or the profession renders the greatest service that coöperates to give the largest number the greatest opportunity for development, contributing the best service to humanity and thereby adding to the wealth and health of civilization.

The American Pharmaceutical Association should be so generally and favorably known that it gives the members a standing in the community as peers of their profession. The same applies relatively to State associations. We judge others from our own viewpoints. Membership in an association should mark the member as one who is associated with the best men in his profession, engaged in efforts to raise the standard of his calling and make it more deserving of public confidence.

Association membership gives pharmacists a higher appreciation of their profession and also of those likewise engaged, and of those in related work—an inspiration to promote pharmacy and contend for its rightful recognition. We have both individual and collective responsibilities,—now as never before should the spirit of the Golden Rule be generally applied.

E. G. E.

MEETING OF THE NATIONAL DRUG TRADE CONFERENCE.

The National Drug Trade Conference met in Baltimore, January 7. Among the actions taken by the Conference was the adoption of an amendment to such alcohol legislation as may be introduced into the various State Legislatures:

"Provided that nothing in this act shall prevent the manufacture and sale of such preparations as flavoring extracts, essences, tinctures, perfumes, or remedies containing drugs or medicines which do not contain more alcohol than is necessary for legitimate purposes of extraction, solution, or preservation, and which contain drugs in sufficient quantity to medicate such compounds and which are sold for legitimate and lawful purposes and not as beverages."

The aim of this amendment is to relieve the Drug Trade of the annoyances occasioned by the varying construction under prohibition laws with respect to alcoholic medicinal preparations by the addition of a uniform definition of intoxicating liquors.

The officers for the ensuing year are as follows: President, Dr. James H. Beal, Urbana, Ill.; vice-president, Samuel C. Henry, Philadelphia; secretary-treasurer, Charles M. Woodruff, Detroit, Mich. Executive committee: George W. Lattimer, Columbus, O.; James F. Finneran, Boston, Mass.; Dr. W. C. Abbott, Chicago; Harry E. Thompson, Washington; and H. Lionel Meredith, Hagerstown, Md.; the president and secretary-treasurer are *ex-officio* members.

NOTE ON U. S. P. ASSAY FOR OIL OF PEPPERMINT.

BY A. B. LYONS.

The requirement of the U. S. P. for Oil of Peppermint is that it shall contain "not less than 5 percent of esters calculated as menthyl acetate and not less than 50 percent of total menthol, free and as esters." The assay for esters is sound, being made by the saponification process. The effect of saponification upon the oil is to increase its weight by 26 percent of the weight of menthyl acetate present. It is not a matter of serious consequence that the ester actually present does not consist wholly of menthyl acetate. For the purposes of such an assay the difference is quite negligible.

For the second determination an indefinite quantity (10 mls) of the oil is acetylated in the usual manner, washed and dried. Of this oil, containing the whole of the menthol in the form of menthyl acetate, a weighed portion is taken for saponification. The result of titration shows how much half-normal alkali is required to neutralize the acetic acid which exists in combination with menthyl, each mil of the standard alkali corresponding with 0.07808 Gm. of menthol or 0.09909 Gm. of menthyl acetate. The difference between these represents the difference in weight due to acetylation, *viz.*, 0.02101 Gm.

The formula given in the U. S. P. for calculating the result of this assay introduces this factor (0.021), but applies it to the whole of the menthol, making the weight of the oil taken = $B - (A \times 0.021)$, B being the weight of the acetylated oil taken and A the number of mls of volumetric (half-normal) alkali consumed in neutralizing the acid of acetylation, including that of the esters originally present. This formula will give the percentage of the oil after saponification of the esters naturally present—not that of the original sample. To find the true percent we must refer to the first step in the assay, which determines the percent of esters originally present in the oil—or by substituting for 9.909 the factor 7.808, the percent of menthol corresponding to those esters. We must therefore deduct from the $(A \times 0.021)$ of the formula a compensating correction, which in case of an oil containing about 50 percent of total menthol will make the expression $(A - C \div 2.5) \times 0.021$. The compensating quantity will, however, vary with the percent of total menthol, so that this would serve only as an empirical formula, by which, however, we could determine with certainty whether or not a given sample contained "not less than 50 percent of total menthol." The amended formula would read:

$$\text{Percentage of total menthol} = \frac{A \times 7.808}{B - (A - C \div 2.5) \times 0.021}$$

If the percent of menthol differs materially from that of the pharmacopoeial standard the formula may be amended by substituting for the divisor 2.5 the expression $2 + M$, in which M stands for the percent of total menthol in the sample by U. S. P. formula. The result reached is a trifle less than the correct figure, but the difference is negligible.

The following is a general formula which will seem simpler, and will give a

close approximation to the truth in samples containing a proportion of menthol not varying greatly from the pharmacopoeial standard:

Determine total menthol by the percent U. S. P. formula, then multiply the percent thus determined by $\frac{100 - (P \times 0.212)}{100}$, the symbol P standing for the percent of menthol present in the oil as ester. The full expression will read:

$$\text{Percentage of total menthol} = \frac{A \times 7.808}{B - (A \times 0.021)} \times \frac{100 - (P \times 0.212)}{100}$$

Example: Ten Gm. of a given sample of oil consume in saponification 7 mls of half-normal alcoholic alkali, while 5 Gm. of the acetylated oil consume 30 mls. By the U. S. P. formula, the sample contains 53.48 percent total menthol. By either of the modified formulas here proposed the percentage is reduced to a little less than 52.9 percent.

All that has been said in criticism of the U. S. P. assay for oil of peppermint applies, *mutatis mutandis*, to that for oil of rosemary. The second of the two modified formulas given above requires only the change in the numerator from 7.808 to 7.707 when borneol instead of menthol is to be determined.

SOME VARIATIONS IN CINCHONA BARK AND ITS PREPARATIONS.*

BY HUGO H. SCHAEFER.

Ever since the outbreak of this great war much has been said of the low grade cinchona barks on the market. Numerous samples have been brought to the author's attention which failed to pass the U. S. P. requirements. This, of course, is largely due to the fact that owing to the derangement of shipping facilities the regular supply of Java Cinchona has been interfered with, thereby resulting in a shortage of this high grade bark. The result is that the price of bark has increased considerably and new sources of cinchona are being sought all over the world. Many of these barks have not been investigated and upon analysis are found to be very low in alkaloidal content. This, of course, is supposed to be taken care of in the U. S. P. IX by its requirement of 5% total alkaloids. Quinine, however, as we know is the most important alkaloid in cinchona bark. The U. S. P. VIII required 5% total alkaloids, and 4% ether-soluble, the latter representing an approximation of the quinine content. In the latest revision, however, this ether-soluble requirement was omitted, possibly due to the fact that in the usual cinchona barks the proportions of the various alkaloids do not vary greatly. In the last few years, however, the author has had occasion to assay a number of samples of cinchona bark and its preparations containing 5% or more of total alkaloids but comparatively little quinine or ether-soluble alkaloids. These barks, after being reduced to a No. 60 powder, were assayed according to the U. S. P. IX for total alkaloids using, however, double quantity of bark solvents, etc. The bark was extracted with the ether-chloroform mixture, the latter made alkaline with ammonia, the water added to cause the drug to settle and the aliquot portion of the solvent decanted. This was completely shaken out with weak sulphuric acid and the volume of this acid extract made up to exactly 100 mls with water. This then contained the alkaloids of 8 Gm. of drug. One-

* Read before Scientific Section, A. Ph. A., Chicago meeting, 1918.

half, or exactly 50 mls of it, representing 4 Gm. of drug was used for determining the total alkaloids by extracting with chloroform, evaporating the solvent, drying, and weighing the residue, the other half was extracted with ether in accordance with U. S. P. VIII to determine ether-soluble alkaloids. Following are the results of five samples found to contain more than 5% total alkaloids but less than 4% ether-soluble:

U. S. P. IX = Not less than 5 percent total alkaloid.

U. S. P. VIII = At least 5 percent total and 4 percent ether-soluble alkaloids.

	Total alkaloids.	Ether-soluble alkaloids.
1.....	5.32	3.42
2.....	5.83	2.92
3.....	6.01	3.01
4.....	5.52	2.98
5.....	5.08	2.67

The question at once arose as to whether any of such barks had been used in making preparations and with this in view a number of tinctures obtained on the open market were analyzed in accordance with U. S. P. IX for total alkaloids by evaporating 25 mls of the sample, incorporating with sawdust, drying and proceeding as directed under Cinchona. The residue of total alkaloids so obtained was then redissolved in dilute sulphuric acid and assayed for ether-soluble alkaloids in accordance with directions given under Fluid Extract of Cinchona of the U. S. P. VIII, which was also the method used for assaying the tincture.

By far the greater number of samples passed both the requirements of the old as well as of the new Pharmacopoeia, but the following results were obtained from three of the tinctures:

U. S. P. IX = not less than 0.8 Gm. nor more than 1 Gm. total alkaloids in 100 mls.

U. S. P. VIII = 0.75 Gm. ether-soluble alkaloids in 100 mls.

	Total alkaloids. Gm. in each 100 mls.	Ether-soluble alkaloids. Gm. in each 100 mls.
A.....	0.912	0.64
B.....	0.954	0.59
C.....	0.983	0.49

It is interesting to note in U. S. P. VIII the directions for making Tincture of Cinchona called for the use of Cinchona yielding not less than 4% of anhydrous ether-soluble alkaloids and in the finished product the requirement was 0.75 Gm. anhydrous ether-soluble alkaloids in each 100 mls. Nothing at all is said of total alkaloids, but the ether-soluble requirement was the one considered of prime importance. In the U. S. P. IX, however, only the total alkaloidal percentage is considered irrespective of the kind of alkaloid present.

A number of samples of fluidextracts of cinchona were assayed in similar manner for both total and ether-soluble alkaloids, with the following results obtained from three of the samples:

U. S. P. IX = Not less than 4 nor more than 5 Gm. total alkaloids of cinchona in each 100 mls.

U. S. P. VIII = 4 Gm. ether-soluble anhydrous alkaloids in each 100 mls.

	Total alkaloid. Gm. in each 100 mls.	Ether-soluble alkaloids. Gm. in each 100 mls.
A.....	4.61	3.20
B.....	4.23	3.01
C.....	4.01	2.92

Here also the U. S. P. VIII simply considered ether-soluble alkaloids and the U. S. P. IX only total alkaloids. All these facts seem to show that the requirements of the new Pharmacopoeia are lower than those of the old. For example, a fluidextract of cinchona according to U. S. P. IX may pass with 4 Gm. total alkaloids in 100 mils while the U. S. P. VIII required at least 4% ether-soluble alkaloids.

In the opinion of the author it would be much better to have requirements for both total and ether-soluble alkaloids for Cinchona and its preparations. Quinine is, of course, the most important and active alkaloid present and the ether-soluble alkaloidal factor is a fairly good check on the percentage of quinine present. Especially, at present, when such a large variety of cinchona barks are being placed on the market, a close check on the quality should be kept.

RESEARCH AND THE UNITED STATES PHARMACOPOEIA.*

BY A. H. CLARK.

The question of Pharmacopoeial Revision is now a very live one. Much has been published within the past year regarding the present plan of revision. Many suggestions have also been made as to changes which might lead to an improvement in the present arrangements. In this paper only one phase of this important subject is discussed—research in connection with the scientific problems involved. Only by thorough and accurate research can any of the objectionable features of the present scientific work of the Pharmacopoeia be overcome.

When I became a member of the present Committee I was a stranger to revision methods, and also somewhat younger and much less experienced. Both of these factors operated to give me abundant enthusiasm. I immediately set out to demonstrate by a thorough investigation of the literature the correctness of all statements made in the Book and, if necessary, confirm them by experiments conducted by myself or under my directions. Alas! Before proceeding very far along this path I was hopelessly lost in the wilderness. Some of the statements made did not seem to have any source in the literature. Effort was then made to demonstrate by actual experiment whether or not these statements were true. Again, disappointment! In some cases the experiments led so far into the maze of scientific thought that I was completely lost. Other statements, while involving apparently simple question of theory, were found to be so complicated in fact that experiments undertaken to decide them seemed to involve work without end. Finally nearly all of my dreams vanished in the mists of reality, for it was found to be physically impossible to accomplish even a small portion of the things I had hoped to do. It is not unlikely that others have had the same dreams and disappointments.

The instructions for the last revision were to change only those things that had been criticized or about which something new had been published. In other words, to base all revision upon published criticisms and to attempt no extended investigations. This has been the policy to a greater or less extent from the very beginning. It has resulted, I am sure, in some statements being handed down

* Read before Scientific Section, A. Ph. A., Chicago meeting, 1918. According to notes of the reporter there was no discussion of the paper.—Editor.

from year to year without proper verification and also in the too hasty adoption of others. Some statements seem to me to be quite useless or unimportant. No doubt some very important things have been omitted for various reasons. Finally some of the inclusions could no doubt be improved by careful study. Research should be the final judge of these questions. A few examples, that will serve as illustrations, follow:

The Pharmacopoeia states that "glycerin when of a strength between seventy and one hundred percent rapidly volatilizes at 100° C." This statement was submitted to a student of our Pharmaceutical Chemist Course and he reported that he could not trace its origin. After a number of experiments he also concluded that it was not a fact. He spent some hours on this little problem and I am not sure that he threw much light on it.

The Pharmacopoeia states that boric acid "is converted into metaboric acid when heated to 100° C. and then slowly volatilizes at that temperature." Several hours were spent trying to verify this, but finally the experiments were abandoned because so many factors were involved which complicated the work.

These two statements seem to me to be of little or no importance, yet if they are to be included they should be true to fact. If carefully conducted research throws any doubt upon them they surely should be omitted.

As examples of those things which are important and seem to need revision attention might be called to the directions for the titration of nitric acid with methyl orange; the test for chlorination products in benzaldehyde; the titration of phosphoric acid, and the test for methyl alcohol in ethyl alcohol. Some of our students have been working on these problems, and although we have spent many hours on them I am yet far from satisfied with the result of our labors.

Instances of pharmacopoeial descriptions that lack completeness may be matters of opinion, but I have had some students working on a few such problems for many hours with relatively insignificant results.

All of this indicates the necessity for more research in connection with pharmacopoeial revision problems, and gives an idea of the immense amount of time and labor involved in its support. It brings us to the question of how these things can be done. First of all, what agencies shall be selected to conduct such searches?

THE AGENCIES TO BE EMPLOYED.

As to this question there will no doubt be a wide diversity of opinion. Some of the following seem to be available:

- The United States Pharmacopoeial Convention.
- The United States Government.
- The American Pharmaceutical Association.
- The American Medical Association.
- The American Chemical Society.
- The Association of Official Agricultural Chemists.
- The Universities.
- The Colleges of Pharmacy.
- The Medical Colleges.
- Research Laboratories of Manufacturers.
- Privately Owned Research Laboratories.

These are mentioned, and more could be added. The very important question is, the means to be employed for carrying on such researches.

THE MEANS OF CONDUCTING RESEARCHES FOR PHARMACOPOEIAL REVISION.

The very first thing to consider in this connection is funds. To my mind this work can never be carried on successfully without the liberal expenditure of money in the form of compensation to those who do the work, for the necessary supplies, equipment and other expenses. No one will deny that the best talent of the country has contributed to the present revision. The men doing the work have given freely of their time, and even money, and have accomplished much. I am sure, however, that they are all similarly situated in that their income for the present, and the future as well, depends entirely upon their activities in other fields. Under such conditions no one can expect these men to give their time to such investigations, as heretofore indicated, without proper compensation. The honorariums distributed, or the salaries that have been paid, are no incentive to diligent work when they are given to men whose time is worth ten or a hundred times such amount. These men will, and with perfect justification, give their time to the work which brings them the fixed income; what little remains will be devoted to revision problems. The only way, then, is to pay a small number of men salaries which will justify their devoting all of their time to work on the Pharmacopoeia. We can then look for thorough and competent research when the funds and men are provided, and there is some competent authority to furnish these.

REVISION AUTHORITIES.

There are few sources from which this authority for conduct of the Revision might come. In fact, of the agencies mentioned, only two seem to be available. These are the United States Pharmacopoeial Convention and the Government of the United States. The present Convention might assume this authority and elect a properly paid chairman, who would devote all of his time to the work and be the executive head of the Committee on Revision. The Convention might empower him to engage experts and appropriate sufficient funds for salaries that will secure their entire time. To these men, working together at some central point, all questions of a scientific nature could be submitted. They could test the accuracy of all statements made, determine their usefulness, test methods of assay, and the like. This would require considerable money, but this can be derived from the sale of the Pharmacopoeia, increasing the price if necessary. Legal and political questions, scope, editing, and the like, could all be handled by the General Committee.

Then there is the Government. It certainly has the money needed for such work. It also has abundant laboratory and library facilities. It would undoubtedly organize the work more quickly than any other force that could be employed for the purpose and, no doubt, do this with less expense than any other. It has the advantage of being a permanent organization and its efforts would thus be continuous. Its findings would also have the weight of authority and would, no doubt, remove some of the objections to the present connection between the Pharmacopoeia and the Food and Drugs Act. It would have the authority to secure from other sources much information which no other body of men has. It could

also secure more coöperation from universities, colleges, scientific societies, manufacturers, and all Government departments, than any other organization. Authority to make final decisions and to promulgate them is much needed in cases such as this and the Government certainly has this authority.

I am quite sure that none of the other organizations mentioned would care to shoulder the financial obligations without adequate returns. The American Medical Association has a well equipped laboratory and for a number of years has been doing just the kind of work that should be done in connection with pharmacopoeial revision. The American Pharmaceutical Association is just entering the field. Its available fund for research is insignificant, however, and it remains to be seen what position it will occupy in this domain.

None of the other agencies mentioned could be expected to shoulder the burden. There are then really only two available agencies for the work, namely, the Government and the United States Pharmacopoeial Convention. Might not these two agencies, working together, be utilized to good advantage? I have always held that the purely scientific portions of the Pharmacopoeia: the technical descriptions of the drugs and chemicals, assay methods and the like, should be published in one volume; the information required by pharmacists and physicians in their daily work in another. The former could be made far more useful to the chemist, manufacturer, Government administrator and the like than the present book. The latter, containing such information as doses, solubilities, formulas for pharmaceutical preparations, etc., could also be made more satisfactory to the physician and pharmacist, I am sure. Might not the Committee of Revision prepare the one, and the Government the other? One could be made the physicians' and pharmacists' guide, the other a book of standards for those requiring it. I believe that all scientific questions, involved in preparing the Pharmacopoeia, would be solved by adopting this or a related plan. Then declare in 1920 the present Pharmacopoeia, with any changes that may be suggested by experience up to that time, as the tenth revision; proceed at once to prepare the eleventh revision, spending the entire ten years, if necessary, but have it ready for adoption promptly in 1930. Any serious defects discovered in the meantime could be corrected by authoritative bulletins. By following this plan, in a few decades a book would be evolved that would be so nearly perfect that the periodical discussion of ways and means for Pharmacopoeial Revision would find no place in print.

UNIVERSITY OF ILLINOIS
SCHOOL OF PHARMACY.

BOTANICALS OF THE BLUE RIDGE.*

BY CLARE OLIN EWING AND ERNEST ELWOOD STANFORD.

The Bureau of Chemistry, in its activities in connection with the enforcement of the Food and Drugs Act, exercises supervision over crude drug products in general. While heretofore the greater volume and variety of foreign drug supplies has necessitated a more intensive study of these products, American medicinals have not been neglected. Owing to war conditions, American drug produc-

* A Contribution from the Pharmacognosy Laboratory, Bureau of Chemistry, Department of Agriculture, Washington, D. C.

tion has attained an added importance. For several decades the Southern Appalachian region has been the chief source of American botanical drug supplies. These materials have come chiefly from the Blue Ridge in North Carolina and its continuation into Virginia. Lesser supplies come also from Tennessee, Kentucky, and other states of the region. The increasing relative importance of the American industry rendered advisable a brief survey of the Blue Ridge region and its products. Some of the information acquired during this survey is believed to be of general interest.

North Carolina and Southern Virginia, whence come the larger proportion of botanical drugs, possess an extremely varied flora. Three physiographic zones may briefly be distinguished. The coastal plain of North Carolina, and its prolongation, tide-water Virginia, are low, frequently swampy in character, with sandy soil. The drier portions of the plain possess few plant species; a larger number are found in the swamps and along the streams. From the standpoint of drug production, the zone is of minor interest. It ends at the so-called fall-line, a generally abrupt height of land which in North Carolina runs in a devious line about 150 miles from the coast. Here begins the Piedmont. In topography the Piedmont is a rolling plain; its soil is predominantly of a clayey character, Indian-red in color, poor in humus, and much subject to erosion. Its flora is somewhat more varied than that of the plain; the greatest number of species is found in the alluvial soil of the river bottoms. In the western Piedmont considerable drug collection takes place, the chief centers being Statesville and North Wilkesboro, N. C., which also draw large supplies from the mountain region.

This mountain region, which, after its principal chain, may be called the Blue Ridge region, rises abruptly in western North Carolina and Virginia. It is an area of precipitous hillsides, of sharp and narrow valleys. Close to the eastern foot of the ridge in North Carolina, and somewhat more distant in Virginia, runs the thousand-foot level, which may be said to be the limit of the Piedmont. The average elevation of the mountain region of North Carolina is 2700 feet;¹ Mount Mitchell, the highest point east of the Rockies, reaches 6711 feet, and a number of other peaks pass 6000 feet. The soils of this zone vary somewhat in character. Clay soils and loams predominate. Wheat, corn, rye, and other cereals are important crops, and cattle feeding and cheese-making are considerable industries. The steepness of the hillsides, the comparative lack of railroad facilities, and the general lack of good roads have prevented the Blue Ridge region from attaining any great agricultural importance. Most promising, perhaps, from the farmer's viewpoint, is the extreme northwestern portion of North Carolina. Grass and clover, which take but a precarious hold on the eastern slope and Piedmont, thrive on the more loamy soil of the western slope. The greater portion of the region, however, is covered by dense forests.

In the mountain zone the plant growth exhibits wonderful variety. In the valleys and lower slopes chestnuts, oaks, and hickories predominate. Higher up, white pine, spruce, hemlock, and balsam are found. The higher peaks extend above the timber-line. The shrubs and herbaceous plants of the higher altitudes are characteristic; alpine, but hardly northern, consisting chiefly of Ericaceous

¹ Joseph Hyde Pratt, North Carolina Geological and Economic Survey Bulletin 17, 13 (1908).



Gathering "Yarcs"



Telling them by
the rattle.



Washing roots in
a Mountain Stream.



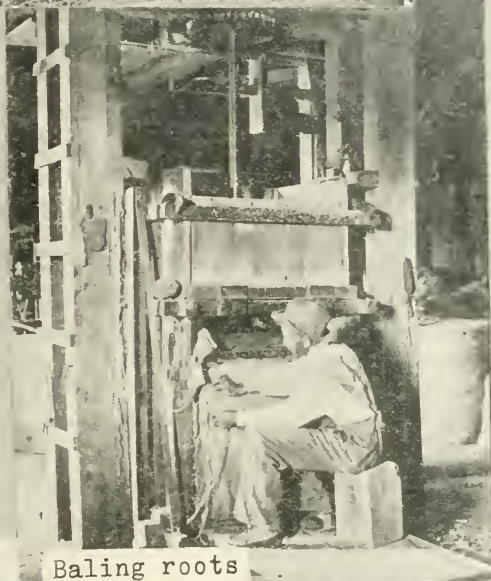
A "Yarb" gatherers
home.



Country Store and
Warehouse



A Veteran of the
trade



Baling roots



Bringing in the
Yarbs.

species—Rhododendron, Kalmia, Azalea, and their relatives. The undergrowth of the mountainsides is both varied and luxuriant. Here, beneath characteristically northern chestnuts, birches, white pines, and elms, are found shrubs as characteristically southern—the ever-present rhododendron, wahoo, black haw, honey-suckle, trumpet-creeper, hydrangea, and hosts of others. Even more numerous are the herbaceous plants.

This mountain zone, the region of the Blue Ridge, is America's chief source of native botanic drugs. It furnishes, perhaps, 75 percent of such supplies. The chief commercial centers of the drug production of this region, besides those already mentioned, are Asheville, North Carolina, and Marion, Virginia.

In the luxuriant flora of the Blue Ridge are found perhaps six hundred or more species which, at some time, have had medicinal application. Some—the majority, indeed, are obsolete, cast off and forgotten by the wayside of experience or of medical science. Others, lightly held by the medical profession, survive, commercially at least. A few—a very few—rank high in the materia medica of to-day. It may be that science, stimulated by war, will yet winnow trophies of value from the discards of yesterday, perhaps too hastily cast aside on scanty trial.

The early history of the crude drug industry of this region is rather obscure. A considerable number of the drugs bear, locally, Indian names, and tradition states that the settlers learned their use from the red men. Undoubtedly this is true in part, but a survey of the early literature indicates that the Indian medical lore was rather more scanty than is popularly supposed. Peter Smith, "of the Miami Country," whose *Indian Doctor's Dispensatory*² treats of a number of botanics of this region and of the plains northward, remarks:

"I call myself an *Indian Doctor*, because I have incidentally obtained a knowledge of many of the simples used by the Indians; but chiefly because I have obtained my knowledge generally in the like manner that the Indians do."

Quite likely we have to thank other pale faces of inquiring or commercial mind for many of our "Indian simples," as we certainly do for most of the "Indian" panaceas and cure-alls which adorn our drug-store shelves.

While a considerable number of the botanics of the Blue Ridge were known to Cutler,³ Schoepf,⁴ and Barton,⁵ these early investigators got their knowledge for the most part from plants grown elsewhere. It was not until considerably later that the products of this thinly settled and comparatively inaccessible region became of commercial importance. Previous to the Civil War, Cincinnati, Ohio, was the principal American drug market, and such supplies as came from the Blue Ridge region probably traveled thence from the western slope. About fifty years ago, according to statements of various dealers, the drug-shipping industry began to be of commercial importance in North Carolina. Statesville, N. C., was the early center of this industry. In later years, buying firms of considerable size

² Peter Smith, "The Indian Doctor's Dispensatory," Cincinnati, Reprint, Bul. Lloyd Library 2, 1901 (1813).

³ Manassah Cutler, "An Account of Some of the Vegetable Productions Naturally Growing in This Part of America, Philadelphia, 1785," Reprint Bul. Lloyd Library No. 7, 1903.

⁴ J. D. Schoepf, "Materia Medica Americana potissimum regnii vegetabilis, Erlanger, 1787," Reprint, Bul. Lloyd Library No. 6, 1903.

⁵ B. S. Barton, "Collections for an Essay toward a Materia Medica of the United States, Philadelphia, 1798-1804," Reprint, Bul. Lloyd Library No. 1, 1900.

have developed also at Asheville and North Wilkesboro, N. C., and Marion, Va. Lesser centers are found at West Jefferson, N. C., Elizabethtown, Tenn., Bristol, Tenn., Pikeville, Ky., and other places, but in general they are tributary to the larger centers mentioned.

Crude drugs are collected in small amounts by a large proportion of the people of the mountains. Few, or none, gather drugs as a chief occupation. The mountaineers, in general, make their principal living on tiny hillside clearings. Because of the rugged character of the land, which unfits it for machine farming, large plantations are rarely found. Marketing of farm crops in large amounts is also difficult, owing to the steep grades and poor repair of the mountain roads, which in many places are little more than bridle paths. Work away from the farms is normally scarce and wages extremely low. Drug collection is carried on largely when no other work offers, chiefly by the women and children, and is a rather haphazard process. The men, in general, consider such occupations beneath them, and collect, ostensibly, only heavy and bulky products, such as barks of the larger trees, and bring in the other products with an apologetic "Here's some yarbs the women got." The principal collecting seasons are spring, when most barks and some roots are gathered, and late summer, when the crops no longer need cultivating, and herbs, leaves, and flowers abound, and roots may be distinguished by the herbage. Some products, of course, are necessarily collected at other times, but convenience rather than the Pharmacopoeia governs the season.

The collectors usually barter their wares in small quantities for necessities from the local store. The country storekeeper, in his turn, generally has a contract arrangement with the wholesale dealer in crude drugs, and turns over his receipts in exchange for stocks of dry-goods or groceries. Some wholesalers, however, buy for cash. Those dealers who conduct both a cash and exchange business give slightly higher rates in goods.

After inspection of the drugs, the wholesalers condition such as they deem advisable, by garbling, drying, or otherwise. For storage they are usually placed in gunny sacks, but may also be baled. Baling presses are usually run by hand, but mechanical presses of a simple type are used in some establishments. As a rule, the drugs are shipped in bales, varying greatly in weight according to the commodity.

While a call for *Sanguinaria*, *Veratrum*, or *Podophyllum* would mean little to the mountaineer or his wife, they collect bloodroot, hellebore, mayapple, etc., with considerable precision. Occasional instances of substitution, usually, it appears, unintentional, take place. *Cimicifuga*,—black cohosh or black snake-root—is frequently admixed with red cohosh (*Actaea rubra*), whose foliage and roots are very similar to those of the official drug. The same is true of American angelica (*Angelica atropurpurea*) and spikenard (*Aralia racemosa*). Star grass root (*Aletris farinosa*) and false unicorn root (*Chamaelirium luteum*) are still occasionally confused. Beth root (*Trillium erectum*) is also mixed with Helonias, although there is no similarity in the above-ground parts. Prickly-ash bark (*Xanthoxylum carolinianum*) may be mixed with that of prickly elder (*Aralia spinosa*). The mints, spearmint (*Mentha spicata*) and peppermint (*Mentha piperita*) are also frequently confused. Hoarhound (*Marrubium vulgare*) and catnip (*Nepeta cataria*) are sometimes confused. The rootbark of dogwood

(*Cornus florida*) is said to be mixed with that of black haw (*Viburnum prunifolium*). Gross adulteration or substitution is said to be rare, though a good sized rock or other material of more weight than value occasionally turns up. Such things, however, are easily traced to their origin, which tends to discourage the practice.

Not many grades are made of these products. Herbs, including stems, usually bring considerably less than the leaves alone. This is in line with official specifications of most standardized drugs, which usually discriminate against stems. Many roots are quoted "with fibers" and "without fibers," the fibers being the smaller rootlets. The fibers are said to be difficult to grind, and roots without them usually bring a higher price, though the difference is, one would think, hardly sufficient to pay for the tedious task of getting them off. Small roots and root-hairs, moreover, would probably have a tendency to raise the ash content. Color of root alone is not necessarily indicative of quality, as it is influenced greatly by the type of soil in which the plant has grown. Particularly noticeable, oftentimes, is the red color due to the tenacious, finely divided clay to which reference has previously been made. Barks of roots usually cost more than barks of trees or shrubs; this, also, is usually due to official specifications or to supposedly superior therapeutic value as well as to the greater expense of digging. Barks of the larger sorts are usually rossed, *i. e.*, deprived of their outer rough layers with a draw-knife before peeling. They are graded in some instances according to age of tree. Wild cherry, which is in particular demand at present, runs through five grades, which, at the time of our survey, were quoted and priced as follows: Young, thin, free from wood and green skin, 7 c.; medium, 6 c.; young, thin, unrossed, 5 c.; thick rossed, 5 c.; thick unrossed, 3 c.

On the whole, curing is said to be rather carefully carried out. Leaves and herbs are usually dried as rapidly as possible, preferably in the shade. Strong sunlight tends to destroy the chlorophyll, and buyers prefer bright green products. Different flowers require different treatment; elder flowers are dried in a day in the sun, while red clover requires shade, and a curing period of a month or more. This is usually completed in the wholesale warehouse, as heating may follow premature baling. Berries—poke, horse-nettle and the like—cure with difficulty, and may heat or ferment in the warehouse. Roots are usually split to facilitate drying. Ginseng is an exception. Split ginseng does not appeal to the psychology of the Chinaman, who takes the entire output. Roots, perhaps, are more subject to improper curing than any other product of the region. Many, especially of the fleshy roots, are quite hygroscopic, and fall an easy prey to molds. Others, as bamboo briar and skunk cabbage roots, are quite liable to insect attack in storage. Podophyllum, on the contrary, has the reputation of never becoming wormy. Barks receive no specially careful curing. Some of these, too, are very liable to insect attack; white pine bark is not usually kept over a year on this account.

Many dealers issue instructions for drug collection and drying on their regular buying lists. Most firms claim to refuse improperly prepared or low grade material, or to cut its buying price severely. Some deduct 10 percent from the price for undried or improperly dried commodities.

These buying lists are issued at short intervals by the wholesale buyers, and usually quote prices on 100 to 200 different articles. Of these, perhaps, fifty may be considered as staples, and include three-fourths or more of the annual trade.

Among these may be mentioned the barks of wild cherry, white pine, wahoo, cotton-root, sassafras root, and several viburnum species, the roots of angelica, black cohosh, bloodroot, burdock, calamus, goldenseal, hellebore, senega, poke, may-apple, lady's slipper, spikenard, American sarsaparilla, aletris, helonias, and yellow dock; the leaves of herbs of boneset, catnip, hoarhound, stramonium, lobelia, liverwort, pennyroyal, peppermint, spearmint, and squaw vine; flowers of red clover and elder; buds of balm of gilead or balsam-poplar; seeds of lobelia and chenopodium; cornsilk.

Among products more or less commonly listed, which have at least occasional sale for medicinal purposes, but which receive scanty consideration or no mention at all from the regular dispensaries and modern therapeutic authorities, mention may be made of arbor vitae leaves (*Chamaecyparis thyoides*), burdock leaves and seed (*Arctium lappa*), comfrey root (*Symphytum officinale*), elder berries (*Sambucus canadensis*), hive vine or squaw vine (*Mitchella repens*), ground ivy vine (*Nepeta hederacea*), Indian turnip or jack-in-the-pulpit root (*Arisaema triphyllum*), milkweed or silkweed root (*Asclepias syriaca*), poison oak leaves (*Rhus toxicodendron*), Queen of the Meadow root, and leaves (*Eupatorium purpureum*), tag-alder bark (*Alnus incana*), Turkey corn (*Dicentra canadensis*), white clover flowers (*Trifolium repens*), wild potato root (*Ipomoea pandurata*), yellow root (*Xanthorrhiza apiifolia*), wild and garden lettuce leaves (*Lactuca* spp.), strawberry leaves (*Fragaria* spp.), balmony leaves (*Chelone glabra*), cleavers herb (*Galium* spp.), gravel plant (*Epigaea repens*), dogwood flowers and leaves (*Cornus florida*), dittany bark (*Cunila origanoides*), green osier bark (*Cornus circinata*), ox-eye daisy flowers (*Chrysanthemum leucanthemum*), raspberry leaves (*Rubus idaeus*), skunk cabbage root (*Symplocarpus foetidus*), bamboo briar root (*Smilax* spp.), mould bean leaves (*Rhynchos communis*), and others far beyond space to mention. These products, as well as large quantities of the better-known products of the region, presumably are used chiefly in the manufacture of patent medicines.

Prices, of course, vary widely. They run, usually, from 30 to 60 percent of the New York wholesale price. Wild ginseng may reach \$11.00 and the cultivated root \$4.00, but this commodity is very unstable. Goldenseal is priced at from \$4.25 to \$4.50. Other roots bring from 2 c. to 65 c., being as a class the highest priced commodity, with the exception of flowers, of which, however, very few species are quoted. Herbs and leaves do not usually exceed twelve cents, and are the lowest priced of any class. Barks run from 3 c. in low, unrossed grades, to 25 c. for some root barks. A general average of several lists, excluding ginseng and goldenseal, gave a mean of about 8 c. per pound. While it is difficult to say what an average day's work would yield a drug collector, it may readily be seen that poor roads are not the only reason why the mountaineer markets his product by mule-wagon or ox-cart rather than by automobile. Probably a dollar or two per day would approximate the average receipts, although much more, with good luck, may be cleared on certain products. Products in large demand, of course, bear prices calculated to stimulate collection, and in addition are generally noted in large type. In case of continued shortage, dealers seek supplies from their own number more frequently than they order specially from collectors. Exceptions to this rule sometimes occur, especially in the case of fresh, uncured drugs, which are not quoted in regular lists. Relatively small quantities

of these are bought; they are shipped by express or else packed in an alcoholic menstruum in specially constructed barrels, and sent by freight. Commonly collected fresh drugs are passion-flower, horse-nettle, yarrow herbs, and elder flowers. Fresh corn silk (N. F. IV) is generally a by-product of canning factories, and is not obtained in the Blue Ridge. Considerable quantities of dry corn silk, however, originate there. Pollen, too, is occasionally collected on order, and brings a price commensurate with the difficulties of its collection. Pollens most in demand are those of ragweed and goldenrod, for use in the preparation of hay-fever serums.

The firms of the Blue Ridge region, with one exception, grind no drugs.

Incoming stocks are, in some cases, inspected by the dealer in person. A number of firms employ comparatively young men as inspectors; in other cases, veterans grown old in the trade pass on the drugs. These inspectors, apparently without exception, are without scholastic training in science and in some cases are quite illiterate. Scientific names of drugs are almost unknown. Microscopic and chemical tests are not resorted to. Even a hand-lens is rarely or never used. Appearance, odor, taste and "feel" are the chief criteria. With long experience, these inspectors attain a remarkable proficiency. Some even claim sound as definitive. One veteran, in search of certain material, went through a pile of unmarked bags, announcing the contents of each after a thrust or shake. Interrogation brought forth the modest response "I reckon I tell 'em by the rattle."

Colored help is frequently employed in the warehouses, but the inspectors are almost invariably white. One colored veteran, however, boasted an experience of forty-two years; while unable to read or write, he has a wide reputation as a "doctor" among his own race, and even claims to "send medicines North." The knowledge of these inspectors as to the various properties of the products they handle, and of other locally used "medicinals," is an interesting blend of hearsay, superstition, tradition, and folk-lore, some of which, indeed, is hardly peculiar to this region alone. Beech-drops (*Epiphegus virginiana*) "drop from the beech limbs and take root." "Mould" bean is so called in the erratic local orthography because it "keeps moles out of the gardens." As castor bean, this plant has attained rather a wider celebrity. Spice wood leaves, dittany tea, and a tea made from the excrement of sheep, are sovereign remedies to "bust out measles." Buck-eyes are carried in the pocket as a cure for piles. Black willow buds and bark are "a great friend to man" for their anaphrodisiac qualities. Pennyroyal leaves and cotton-root bark are said to be in common use as domestic ecbolics, although observations in the region would lead one to doubt their universal efficacy.

In character the wholesale warehouses are quite variable. Few appear to have been especially constructed for the purpose. Wooden buildings predominate, and are claimed to facilitate drying. Brick warehouses are occasionally seen. Special devices for ventilation are not often seen, and, in case of the older wooden buildings, are hardly required. No special precautions to render the warehouses rat-proof appear to be taken, and occasional evidence of the depredations of rodents were seen. Cats are sometimes kept, but appear to prefer to sleep on the bales of catnip rather than pursue the elusive rat. Worms may be guarded against by keeping very small, rapidly moving warehouse stocks of specially susceptible items. Fumigation, apparently, is never resorted to. In general, the

stocks of drugs appeared to be in good condition, moldiness being seen only in a few instances. Stocks of the principal staples move quite rapidly, but small quantities of the less-known medicinals are apt to be more than in one sense, drugs on the market. The presence of worms appears to be the main criterion of deterioration.

Stocks sometimes are sold by sample. More frequently, however, material is sold on the dealers' guarantee, but the larger manufacturing firms employ experts whose province it is to pass on identity and quality of crude drug purchases. Manufacturers' buyers also occasionally visit the warehouses, and rather rarely the dealer makes a selling trip to the chief manufacturing centers.

The drug trade of the Blue Ridge has, of course, been profoundly affected by war conditions. In the earlier years of the war only a few items were affected, as competition with foreign products was indirect rather than direct. About 1917, however, buying prices, which had been quite staple for a number of years, were generally increased. Collections increased likewise; the output in 1917, in most localities, is said to have been unprecedented. This year prices have again been increased but results have been widely different. The young men have been drafted. The remaining men, who formerly found it difficult to obtain work away from home, and when work did offer could collect a daily wage of but a dollar or two, now find ready employment in the cities, sometimes nearer home, at three to five dollars a day. This is particularly true around Asheville, near which city several training camps and army hospitals are located. The younger women, in many instances, find positions in the stores and factories of the larger towns and cities. Wheat, corn, beef, and other agricultural products have risen in price, and women and children who formerly collected drug products have taken the place of the men in the fields. In spite of the increased prices of botanicals, dealers generally estimate that collections have fallen off from 25 to 50 percent, with few exceptions. Red clover blooms, formerly supplied by Germany, have quadrupled in price, and are largely collected. One dealer stated that they were "picked by an apparatus with fingers." Probably this referred to something of the berry-stripper type. No other reports of anything of this nature were heard; pickers were frequently observed collecting the flowers by hand. White pine and wild cherry barks and balm of gilead buds are largely collected, owing, no doubt, to their extensive use in preparations for pulmonary and bronchial complaints. Cotton-root bark is in large demand, owing, quite likely, to the shortage of ergot. American sarsaparilla (*Aralia nudicaulis*) is in considerable request as a substitute for the imported *Smilax* species. The trade in corn silk (dried), and elder flowers, has increased since the virtual cessation of foreign supplies. American angelica is in great demand for chewing tobacco manufacture. Deertongue leaves, used in smoking tobacco as a source of coumarin, are not being largely collected at present, in spite of the shortage of tonka beans. One prominent tobacco manufacturer stated that they are unsatisfactory on account of their comparatively large bulk and low coumarin content.

Dealers of the Blue Ridge region carry on but a relatively small export trade, and have, apparently, not been seriously inconvenienced by export regulations save in case of ginseng and in some exports to Canada. Domestic shipping difficulties have contributed, however, to the uncertainty of the situation. On ac-

count of labor supply, and shipping troubles, dealers at present are somewhat reluctant to accept large contracts, or orders for future delivery.

The future of the Blue Ridge drug industry is therefore somewhat uncertain. It is quite true that many of the products of this region could well be spared, but others would be sadly missed. Apparently no marked increase in output is to be looked for, at anything like present prices. The recent widespread interest in drug cultivation will hardly affect most of these products. The very few which are produced by cultivation, like red clover flowers and corn silk, are only incidental by-products of commercially more important crops. Natural supplies of the majority of important items are, no doubt, sufficient for many years to come. It is not unreasonable to suppose that increasing prices will result in sufficient collections of indispensables, while many of the useless species which have heretofore competed with them for the herb-gatherer's attention will, it is to be hoped, fall by the wayside.

COUCH GRASS *versus* BERMUDA GRASS.*

BY E. N. GATHERCOAL.

The drug couch grass, *Triticum* U. S. P., has been recently reported as adulterated or substituted with the dry rhizome of Bermuda grass.¹ *Triticum* is defined in the U. S. Pharmacopoeia as the dried rhizome and roots of *Agropyron repens* (Fam. Gramineae) gathered in the spring. Other English synonyms for *Triticum* are quack grass, dog grass, twitch grass, quickens, quitch, etc. Bermuda grass is the dried rhizome and roots of *Capriola dactylon*. It is also called Scotch grass, dog-tooth grass, wire grass, cane grass, Bahama grass, etc.

Bermuda grass is native to the Mediterranean basin and couch grass is common a little further north and throughout Europe. Both grasses are also found in North America, South America and Asia, the couch grass extending the further north and the Bermuda grass more into the tropics.

In the days of Dioscorides, 2000 years ago, perhaps the discussion as to the relative medicinal value of these two grass roots was a live issue. At least we know from the writings of this great teacher that the underground part of one or more grasses was used in his time as a diuretic and for vesical calculus.

The early writers on medicine generally include mention of grass root under the Greek name *Agrostis* and the Latin name *Gramen*.

Galen² speaks of the grass-root native to Parnassus as of greater power than that growing elsewhere and ascribes to it not only refrigerent and demulcent properties but also diuretic and lithontriptic powers. He refers also to the more slender form of the Parnassus kind of grass root and of its sweet yet very slightly sharp and bitter taste. Perhaps Galen and his disciples recognized a distinction between the grass roots we now name couch grass and Bermuda grass.

The German, French and English herbals of the 15th to 17th centuries usually

* Read before Scientific Section, A. Ph. A., Chicago meeting, 1918.

¹ U. S. Department of Agriculture.

² Galen, *De simplicium medicamentorum facultatibus*, lib. VI. *Agrostis—sed interdum tamen lapides frangere assolet, siquis eam decoctam ebibat. At semen alterius quidem imbecillum estieius vero quae in Parnaso nascitur, urinam ciet—tenuium partium et subacerva.*

mention and describe the drug *Gramen* (Dodonaeus, Gerarde). During this time an attempt at the classification of plants was being made and an increased knowledge of their characteristics acquired.



FIG. 1.—Couch Grass $\times \frac{1}{4}$.



FIG. 2.—Bermuda Grass $\times \frac{1}{4}$.

J. Dalecamps (1587) describes three common grasses under the title *Gramen vulgare*. Of these, *Gramen vulgare, Dodonaei*, in description and illustration much resembles couch grass, while *Gramen vulgare, Dalecampii* is undoubtedly our Bermuda grass. He says, describing the grass of Dodonaeus (our couch grass):

"The grass of Dodonaeus, the French *Dent de chien*, is in leaves, stalks and crest not unlike the small reed-grass. Its leaves are narrow, tapering and much smaller than the leaves of the reed-grass, but tougher and larger than those of the meadow grass. The stalks are round, one and a half feet or a little more in height with four or five small nodes, and it bears a crest rather than a spike as does millet or the reed-grass but smaller and less dense. It creeps with long, white, jointed, knotty roots with a not unpleasant sweet taste, intertwining with one another, which send forth buds in many places, producing leaves and stems. It grows especially in productive fields and open lands and is destructive of the crops and a pest obnoxious to farmers, for in plowed land they must rake out the roots, gather them together and burn them. The roots are so tenacious of life that if covered with earth again, even after being dried, they revive or come to life. This grass blooms and fruits in the summer. In the autumn the roots are gathered together."

Writing of the grass of Dalecamps (our Bermuda grass), he says:

"It creeps along the ground with graceful, long, jointed, vine-like shoots, thrusting forward from its joints little roots which cling to the earth. It has long, narrow, herbaceous foliage, many stems, three-quarters as high as the grass of Dodoneus, distinct internodes and the flower spike-like, round, consisting of four or five protruding little spikes." Dalecamps refers to this elsewhere as "five-fingered grass."

Couch grass is still named in France *Petit Chiedent* and the Bermuda grass as *Gros Chiedent*.

Linne in his *Flora of Sweden* (1745) mentions couch grass under the title *Triticum radice repente*, as native to Sweden and the source of the medicinal grass root. Among its synonyms he mentions *Gramen caninum arvense* and states that while swine like it and grow fat upon it, dogs will vomit if they eat its leaves. Swedish names mentioned by Linne are quick-hwete, quicka- and quick-rot.

Couch grass is recognized in the early English dispensatories (Edinburgh) under the name *Gramen Caninum* and in later editions aperient and nutritive properties are ascribed to it. In the early French Codex, it is recognized under the name *Chiedent*. In the early editions of the U. S. Dispensatory it is described as a European drug extensively used in Paris hospitals. Not until the thirteenth edition is reference made to its value therapeutically as a diuretic.

Couch grass is included in the U. S. Pharmacopoeia first in the 1880 revision. It has retained its place in the U. S. P even in the latest revision and is also recognized in the British, French, Swiss, Belgian, Austrian and Hungarian pharmacopoeias.



FIG. 1.—Couch Grass, rhizome and roots. FIG. 2.—Bermuda Grass, rhizome and roots $\times 1/4$.

Bermuda grass has not generally been mentioned as a drug by authors from the central and northern parts of Europe, but has been given a place in the works of Italy, Spain and Portugal. It is official in the latest pharmacopoeias of Portugal and Spain as also in that of Mexico.

Botanically both plants are perennial grasses, the couch grass being 1 to 4 feet high and the Bermuda grass from 6 inches to 1 foot tall. The leaves of couch grass are the larger, being up to 12 inches long while those of Bermuda grass seldom exceed 2 or 3 inches in length. The flower-head on couch-grass is a spike, 2 to 8 inches long and somewhat resembles that of wheat. The flower-head of Bermuda grass is much shorter and consists of 4 or 5 small spikes which separate from one another somewhat like the fingers of the hand.

In external appearance the two drugs are quite similar. Couch grass itself varies quite markedly in size and color in various lots. Especially is the German drug thinner and darker colored than the French. Quoting from the latest revision of the U. S. Pharmacopoeia, *Triticum* is well described as follows:

"Usually in pieces from 4 to 12 mm. in length and from 1 to 2.5 mm. in diameter; externally light yellow or yellowish brown, longitudinally furrowed, smooth, lustrous, nodes with circular leaf-scars, a few root-scars and occasional slender roots; fracture tough, fibrous; internally lemon-yellow and with a large, hollow pith; odor slight, aromatic taste sweetish. Roots filiform, irregularly branching, attaining a length of about 5 cm. and not more than 0.5 mm. in thickness, light brown or yellowish brown, frequently covered with long root hairs."

However, the French *Triticum* frequently exceeds 2.5 mm. in thickness and in one lot at least was cut into pieces much longer than 12 mm.

The pieces of Bermuda grass rhizome are decidedly thicker, from 1 to 4.5 mm. thick, the average about 2.5 mm. The furrows are rather delicate and frequently appear as flutings. The internal color is inclined to be white and the cut surface mealy and the hollow pith is usually much smaller than in couch grass. The taste is mildly sweet and closely resembles that of couch grass.

Histologically—The excellent description of the structure of *Triticum* as given in the U. S. P is as follows:

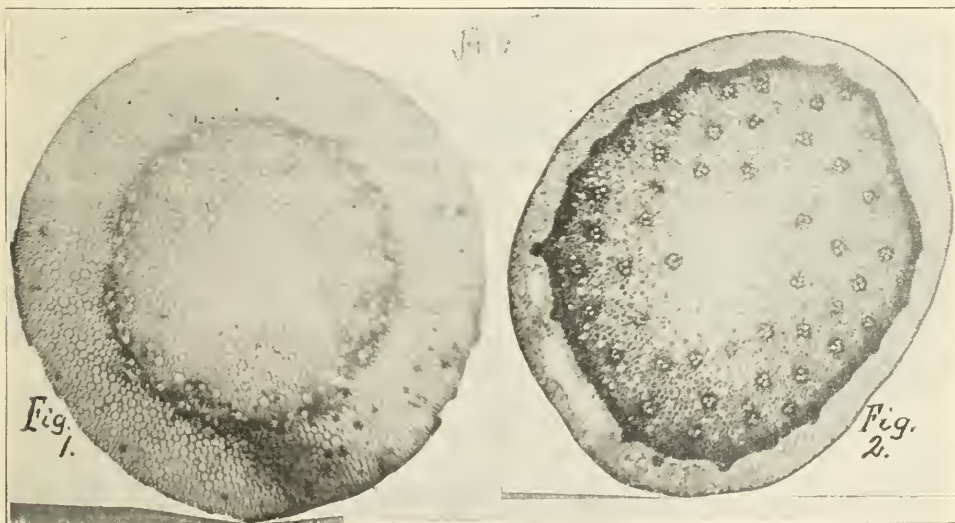


FIG. 1.—Couch Grass, transverse section of rhizome x 40. FIG. 2.—Bermuda Grass, section of rhizome X 30.

"Under the microscope, transverse sections of *Triticum* show a single layer of strongly lignified epidermal cells; a hypodermis of from 3 to 6 rows of more or less polygonal cells with strongly lignified walls; a cortex of from 10 to 16 rows of thin-walled parenchyma cells, occasionally with nearly spherical starch grains about 0.005 mm. in diameter, or with irregular masses of a more or less soluble carbohydrate; among the parenchyma cells and near the hypodermis occur small, widely separated fibro-vascular bundles, each with a closed sheath of sclerenchymatous fibers; an endodermis, the lateral and inner walls of the cells moderately thickened, strongly lignified and somewhat porous; several layers of sclerenchymatous fibers immediately inside the endodermal ring, in which are imbedded an interrupted circle of collateral fibro vascular bundles having large tracheae; adjoining these are usually 8 to 10 rows of parenchyma cells with a few fibro-vascular bundles and a pith in which the parenchyma cells are more or less broken or absent."

The structure of Bermuda grass presents three striking points of difference; *viz.*, the parenchyma cells of cortex and pith are filled with starch; the endodermal layer is very inconspicuous or absent and many bundles are found inside the bast ring instead of a very few as is the case with couch grass.

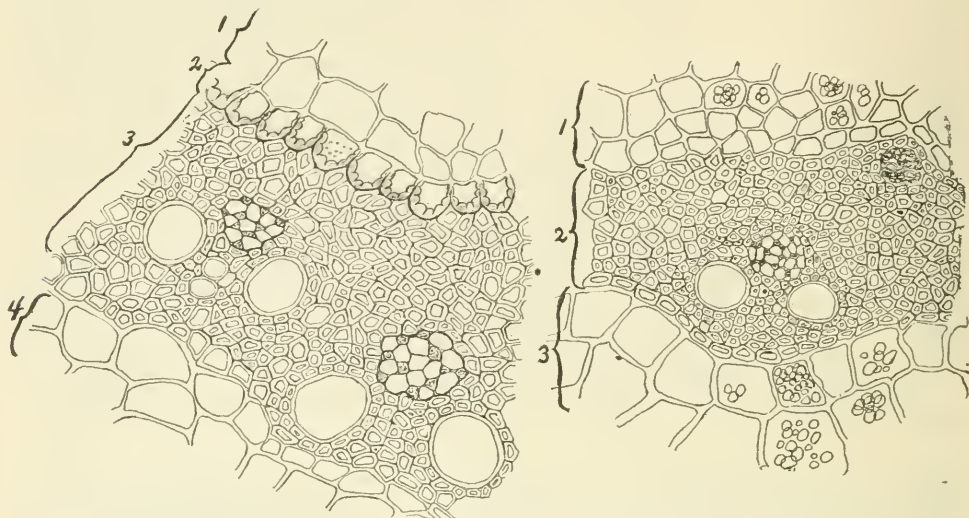


FIGURE ON LEFT.—Couch Grass, transverse section of rhizome x 230 (about); 1, parenchyma of cortex, 2, endodermis, heavily lignified; 3, woody ring with two bundles; 4, parenchyma of pith, without starch. FIGURE ON RIGHT.—Bermuda Grass, transverse section of rhizome x 210 (about); 1, parenchyma of cortex, containing starch; 2, woody ring with one wood bundle and traces of another; 3, parenchyma of pith, containing starch.

Regarding the chemistry of these rhizomes, a number of investigations have been made especially of couch grass. Ludwig and Mueller (1872) review very fully the early literature on the chemistry of couch grass and present a very carefully prepared and extensive report on the constituents of this drug.

Marggraf (1767), in discussing sources of sugar, mentions the grass-root as found in the apothecary's shops as yielding a sweet juice, but no solid sugar.

Apothecary Graff (1800) found that 20 pounds of grass-root yielded 7 pounds of "Loth" sugar, which compared favorably with the yield from certain sugar canes.

C. H. Pfaff (1808) mentions that from a pound of crushed and expressed fresh grass-root, 5 ounces of sweet juice could be obtained and this evaporated to the consistency of honey gave *Mellago* with a pleasant peculiar sweet taste. Out of 40 pounds of cut root he obtained 7 pounds *Mellago*. In 1821 Pfaff obtained a crystallized sugar from *Mellago*.

Berzelius (1837) says that Pfaff's sugar from grass-root closely resembles mannite.

Stenhouse (1844) obtains two sugars from grass-root and neither are mannite.

Ludwig and Mueller quote many other references. They summarize their own investigations as follows: Grass-root contains (1) a strongly laevogyrate (fruit) sugar; (2) a dextrogyrate sugar (not cane sugar); (3) a peculiar, nitrogenous gummy substance, easily split to a laevogyrate sugar; (4) a sweet-tasting, nitrogenous, easily split substance between the gum and fruit sugar.

Mueller further investigated the sugars of couch grass-root and triticin and concluded that neither dextrose nor cane sugar were present, but only fruit sugar to the extent of 2.5 to 3.33 percent. Triticin, present to the extent of 6 to 8 percent, is obtained by extraction with diluted alcohol and repeated purification with lead acetate which precipitates the other gummy substances. Mueller later gives the molecular formula as $C_{12}H_{22}O_{11}$ —an isomer of cane sugar. By hydrolysis it forms $C_6H_{12}O_6$ (Laevolose.) Triticin is an amorphous, tasteless and odorless, white powder, very deliquescent.

Bermuda grass was investigated chemically by Semmola (1841), who separated cynodin, which according to Flückiger and Hanbury is probably asparagin.

Undoubtedly with the onset of the present war and the cutting off of exports from Central Europe, our supply of *Triticum* has come largely from France and Southern Europe. As Bermuda grass rhizome is generally recognized there as equivalent to, if not better than couch grass rhizome, it is not to be wondered at that quantities of the former were sent to our markets as a substitute for the latter, especially in view of the fact that couch grass rhizome had, meantime, increased enormously in value.

With the detection of this substitution by our Government authorities and the warning issued to exporters and importers, we will probably not be troubled again with this substitution.

SUMMARY.

Historically—Probably the rhizomes of both of these grasses have been employed medicinally since the times of Dioscorides and Galen. To-day, couch grass is recognized in the pharmacopoeias of the United States, Great Britain, Belgium, France, Austria Hungary and Switzerland, while Bermuda grass is official in the pharmacopoeias of Mexico, Spain and Portugal.

Botanically—The plants yielding couch grass and Bermuda grass differ quite widely, not only in size and the size of the leaves and flower cluster but also in the shape of the flower cluster and in other more minute botanical features.

Pharmacognostically—Bermuda grass is rather stouter, though the actual average diameter of the rhizomes is but slightly greater than that of the coarser lots of couch grass. Because of the starch present in Bermuda grass the cut surfaces are whiter and more solid in appearance and the pieces not so straw-like as are those of couch grass. However, nearly all the pieces of Bermuda grass do contain a hollow pith.

Histologically—The differences between the two rhizomes are pronounced. The Bermuda grass contains in its parenchyma cells much starch which is absent in couch grass. The Bermuda grass contains a larger number and rather coarser bundles than in couch grass. On the other hand, couch grass contains a characteristic endodermis which is not present in Bermuda grass.

Chemically—Couch grass contains triticin about 8 percent, and sugar totaling about 4 percent. Triticin is hydrolyzed to a sugar by heating in aqueous solution to 100°. Bermuda grass contains asparagin.

Therapeutically—Neither of these grass rhizomes possesses pronounced activity. Perhaps as a nutritive demulcent, the decoction of either is of value as a drink in fevers. Probably both possess slight diuretic powers. Couch grass has

come into favor in recent years particularly as of value in irritated and inflamed conditions of the bladder.

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THE APPEARANCE OF A PACKAGE AND ITS CONTENTS AS A FACTOR IN MERCHANDIZING.*

BY F. W. NITARDY.

When a stranger is introduced to us, we usually form an opinion of his or her general qualities, as a result of impressions made by the individual and recorded by our various senses. As the impressions made through our sense of sight are the easiest recorded and remembered, it is quite logical that first impression is based largely on appearance, hence the saying "clothes make the man." While such first impressions are not always correct, the value of making them favorable is generally recognized.

Similarly should we cause the first impression of merchandise to be favorable, for it is daily introduced, so to speak, to many customers and people coming into or passing the store. They make its acquaintance through the medium of windows, show-cases, or the personal introduction by the salesmen. On making the proper first impression depends to a large degree the volume of new business that can result from the display or showing of goods and when such goods are your own this impression frequently forms the basis by which you and your store are judged. In few lines of business is appearance of more importance than in ours, for quality is not always a visible attribute, especially not in the various medicinal preparations, drugs and chemicals usually packaged by the retailer and daily sold on demand over the counter. It is in these preparations that the character of the Pharmacy

* Read before Section on Commercial Interests, A. Ph. A., Chicago meeting, 1918.

dispensing them is most evident. Yes, reputations have been both made by the careful attention to, and unmade by the neglect of this point.

It is much more difficult than would appear to most of us, to notice any imperfections in our own products. We are not placed in the position of drug store customers enough to get the right viewpoint, and it is especially difficult to enter our own stores and see things as they are seen by the public. We are too familiar with it; we are so used to seeing that we don't see. What other people notice without effort requires our close attention, and a critical eye.

For the purpose of illustrating the principal thought of this paper, let me describe three articles recently purchased in a drug store; they were a 2-oz. bottle of Spirit of Camphor, $\frac{1}{2}$ oz. Tincture of Iodine, and a dozen 2-grain Quinine capsules. The Spirit of Camphor had a slight sediment in it, just a bit of dust and such foreign particles as are normally carried into it by the camphor. The bottle was the usual prescription oval stoppered with an ordinary regular length cork; the latter, however, was difficult to remove, for it had been driven in too far, only about $\frac{1}{4}$ inch protruding from the neck and this at a decided angle to one side. The label read "*Spts. Camphor*;" it squared better with angle of the cork than with the bottle, and had evidently been slid over the bottle in moist condition, as a streak of paste was visible below the label. The dust of several days' standing had accumulated on the lip of the bottle and the whole appearance was further marred by a price mark in large blue-pencil figures across the label.

The Tincture of Iodine bottle was fitted with too small a cork, permitting the Iodine to come between the neck and cork to within about one-eighth inch of the lip. The label was a regular shop label but a trifle too large for such a small bottle, the upper portion of it being creased somewhat to make it lay down on the shoulder of the bottle. Finger marks of bluish tint indicated that the person applying it had had Iodine on his fingers.

The Quinine capsules were dispensed in a square telescope box with rather loose fitting lid, just loose enough to make the body of the box fall out after the package had been raised about six inches. The capsules themselves seemed to be a home-made product on which the errand boy or apprentice had put in his spare time without requisite supervision. They showed considerable irregularity in filling and a good detective would have found no difficulty in identifying the individual who had handled them, by the finger prints which perspiring hands had left. The box was labeled with the usual stock label having a large white space at the top and a small imprint giving the name of the store at the bottom, and on this white space appeared "2 gr. Quinine Caps." in lead pencil writing.

I doubt if you will have to draw on your imagination to visualize the trio just described; your memory will probably recall drug store packages fitting the description given.

How much more would the customer think of its quality had the Spirit of Camphor been filtered, and how much better would be the first impression if the cork was of proper length, straight, and not driven too far into the bottle? How valuable would be the evidence of care shown by a straight and correct label and clean bottle? The paste or mucilage could have been removed with a wet

cloth before the bottle was put in stock and the lip could have been protected by a paper cap so that dust could not have lodged at this particular point.

We all know how Iodine will corrode a cork. If you have ever had a cork stoppered bottle of Iodine that had been in the house for some time, tip over on a nicely white enameled shelf in your bathroom, you will realize how much damage can be done by a corroded cork. Would it not be better to use a rubber stopper and prevent such annoying accidents for your customers?

The cheapest help can fill Quinine capsules providing it is carefully instructed. Capsules unevenly filled, bearing finger marks, or traces of Quinine on the outside are not a particularly good advertisement.

A box with a properly fitted cover or lid is no more expensive than one with a poorly fitting lid; it is just a question of proper attention at the time of purchase. The label, too, could be improved by having it typewritten or printed, and adding directions as to how often and how many may be taken.

The Spirit of Camphor label previously referred to is a relic of the time when printing houses knowing nothing about Pharmacy constructed the labels for the druggist. Unnecessary abbreviations on labels should be avoided, incorrect titles are inexcusable, and bad English in their reading matter will hardly serve to prove our being professional men.

When you get back to your stores, just look over your stock of shop labels. I am sure most of you can find on them some statements that you never knew existed. Some years ago I found a quantity of Tincture of Nux Vomica labels in use which gave an antidote that would properly have fitted for a Tincture Opium label, a rather serious error.

In dispensing liquids generally, it is a good policy to filter them, even such things as Olive Oil, Turpentine, and certain liquids which are intended for technical purposes should be filtered before being bottled. While in many cases, it may not make the product any better, it will improve its appearance and thereby leave a better impression with your customer. A little care and judgment exercised in corking bottles will work wonders as will also the use of a moist cloth on the finished package and labels placed straight and at uniform height. If any price marks are necessary, they should not mar the label. Price stickers are inexpensive and make a package look much better and if paced at the bottom of the bottle, do not remind the customer continuously of the money spent. Let him forget the price and remember the quality. The convenience of the customer should be considered in designing or selecting the package for any article. A viscid liquid in a narrow mouthed bottle or a hygroscopic salt in a paper container will only serve to vex your customer and make him try another store.

One could go on indefinitely with descriptions of improper packages and enumerate many little points that should be observed, but what has been said is sufficient to convey the idea that you may find some food for thought by carefully scrutinizing packages from your own and other stores. Make the appearance of both package and contents an ad and asset for your store by studying their qualities and faults from every angle and then make the changes you deem necessary. I am not advocating extravagance. One can often create a great improvement in the appearance of both package and product without expense.

REPETITION MAKES REPUTATION.*

BY W. W. FIGGIS.

I submit that the constant *repetition* of any fixed course of procedure establishes a *reputation* which is calculated either to inspire confidence or create suspicion.

The continued repetition of a short-sighted policy earns a reputation which is inimical to business building, until the very atmosphere of one's store is permeated with that indefinable something, which repels rather than draws trade.

The man of broad vision, who works on the basis that "A pound of taffy is worth a ton of epitaph(y)," and meets his customers, also trains his clerks to approach prospective buyers, with that genial smile which betokens an honest, good-natured disposition, always wins and holds trade.

I stated last year in a "paper" before this Association, that "satisfied customers are a permanent asset," and now I would add, that they also constitute a continuous advertisement, and this constant repetition has a reflex influence constructively, in relation to the reputation of any store.

The reverse is also true, that dissatisfied customers are a permanent liability with a steadily increasing penalty, which works destructively, because people will talk of the treatment they receive, and it is impossible to nullify the cumulative effect of one's words when once spoken.

It is generally conceded that our mental attitude has everything to do with what we expect to accomplish, and when we consider the psychological fact, "As a man thinketh, so is he,"—and this being purely a mental operation, it must necessarily be a process of transformation rather than one of reformation.

Let us apply this principle to a changed policy which is obviously essential in the conduct of some store, to improve conditions, and increase sales and profits. The stereotyped custom in such a case, is usually the adoption of some new system of sales adjustment, which is a process of reformation, whereas the correct starting point, I claim, should be psychological, and the procedure one of transformation: in other words, from the "ego" of the individual, which is the source of his personality, and the origin of his thoughts, volitions and actions, and the seat of character.

To be more specific—we might as well be perfectly frank regarding this very important phase of the subject, because there is no gain in "patting one's self on the back," and placing the blame for a shrinkage in sales where it does not belong, when, as a matter of fact, the trouble may originate in the Proprietor himself, because his reputation is being impaired by the repetition of certain acts, due to some deterrent peculiarity of his disposition, of which he may not be aware, therefore over which he cannot exercise control.

This unfortunate trait may be perfectly apparent to others, and, under these circumstances, if he should criticise some clerk in his employ, such might justly reply, "What you are speaks so loud I cannot hear what you say."

It is axiomatic that we become like those with whom we are closely associated, and clerks therefore, even unconsciously, take the cue from their employers, because where the engine goes the cars usually follow; therefore we are confronted

* Read before Section on Commercial Interests, A. Ph. A., Chicago meeting, 1918.

with a double reason, why the necessary remedy to improve conditions should be promptly applied.

I submit that the mode of procedure is, that the Proprietor should begin with himself, and by introspection, and a systematic process of self-examination, discover, that possibly an altered mental attitude, and a readjustment of his disposition is necessary to remove the hindering cause, to the perfect harmonizing of his personality with the individual peculiarities of his customers.

It is worthy of note in this connection that "Bradstreet's" recent report states, that "Four-fifths of all business failures result from tendencies present within the individual himself, and the remaining one-fifth is due to extraneous conditions, over which he has little or no control."

For this reason, it is very important to be fully convinced, that all reconstructive business policies should begin with a transformation of "self" as the starting point; secondly—with the clerks in our employ; and lastly, with whatever reformation may be thought necessary for the further successful conduct of the store.

Let us again approach this subject from another angle. It can be logically proven, that habit is the automatic working of memory—in other words, remembering to do something so often, that unconsciously the process lapses into a habit, and it follows as a reasonable conclusion, that if you are inclined to be a pessimist, and see only the "hole in the doughnut" to the exclusion of the complete article, this unfortunate mental attitude can be overcome, if you will continuously remember to cultivate a cheerful and contented disposition, which, by reason of repetition, unconsciously becomes a habit; and establishes a new reputation, because it has become part of the warp and woof of your personality.

We all know that a good-natured disposition, if sincere, is infectious as well as contagious—who of us has not felt the exhilarating uplift of such a personality, and endeavored to reproduce the type, and made a dismal failure of it, because we neglected to grasp the fact, that its Genesis was from within, as an active principle, and not a veneer, nor an assumed mannerism, but the spontaneous out-working of the inner self.

The rose and the onion both grow side by side in the same soil, and both draw from the same source of supply, but how different is the finished product, and we all have it within our power to extract from life's environment what constitutes the fundamental basis of our dispositions.

The repetition of a determination, to expect a silver lining to every cloud, establishes a reputation which enables us, the better to achieve life's objectives—as the song has it "What's the use of worrying, it never was worth while, so pack up your troubles in your kit-bag and smile, smile, smile." But we should not lose sight of the fact that excessive frivolity is to be deprecated as puerile and unbecoming in any man.

We are surrounded by innumerable illustrations of the fact that all true progress is a process of transformation. Is not evolution calling in clarion tones—"I work from within." Does not the surgeon, when necessary, insert a seton in a wound, in order to keep it open, and give nature time to begin her work of healing from the inside. Are not our physical bodies sustained by the building up of tissue on the inside, to compensate for the "sluffing off" process, which we are

told takes place on the outside; but I will not weary you with further illustrations, because the fact is self-evident.

Accepting what I have endeavored to prove as true that repetition makes reputation—transformation should precede reformation and that all true growth and progress should begin from the center and extend to the utmost periphery of one's sphere of influence. The next logical step is into the realm of "efficiency," with all that it suggests for scholarly attainment, and business acumen.

This word "Efficiency" has a magic charm for the red-blooded man who is fully alive to the possibilities of achieving larger successes than those already accomplished; and is a tonic for further effort along definite lines for larger attainment, realizing, that the "Mill will never grind with the waters that are passed," he is always on the alert for anything, and everything of practical value, which tends toward a healthy material growth, and enlarges his scope of possible endeavor.

Self complacency is the foe of progress, and a garrulous disposition the enemy of efficiency. We should learn to think twice before we speak once, because it has been well said that "A glib tongue often betokens a cracked brain," just as a smell of gas reveals a leak in the pipe.

To interject a little mirth into this paper, I am reminded of a story regarding "Efficiency." A youthful hopeful of some ten summers looked up into his father's face from a book he was reading and inquired,—“Papa, what is Efficiency?” “Why, my son, that word-means ‘doing or saying precisely the right thing at precisely the right time.’” “O!” exclaimed the young hopeful, “Then I was efficient last night when I rolled Johnny over into my place in the bed, just before Ma came in with the castor oil, and back again before she came to the other side of the bed.”

The spirit back of all effort reflects the results obtained. To such a man yesterday's best does not suffice for to-day, because anyone who rests on past achievements, sooner or later reaches the "Angle of repose," and becomes mentally inert and atrophied.

A wishbone can never be substituted for a backbone, and the man who can only cut prices in a last spasm to make sales, had better sell out and give another fellow a chance to demonstrate that the secret of success is having the correct viewpoint, and therefore he eliminates all fossil habits and puts into action aggressiveness mixed with caution, and optimism combined with horse-sense, plus that telescopic vision, which is measured by knowing an opportunity when it presents itself, and his ability to seize it before it is gone.

In conclusion, let me suggest that there never was a time when the opportunities for enlarged spheres of activity were more advantageous than now, the changing times, and the enforced differences of tastes, coupled with the consequent varying needs of the general public makes it opportune to put more "pep" into your business, and interject more individuality and originality into the conduct of your store, remembering the trite saying that "Wherever McGregor sits is the head of the table."

SECTION ON HISTORICAL PHARMACY, AMERICAN PHARMACEUTICAL ASSOCIATION.*

ABSTRACT OF THE MINUTES OF THE SESSION HELD IN CHICAGO, ILL., AUGUST 15, 1918.

The session of the Section on Historical Pharmacy of the Sixty-sixth Annual Convention of the American Pharmaceutical Association was convened by Chairman L. E. Sayre in Congress Hotel, Chicago, August 15, at 9.30 A.M. The Chairman read the following address:

ADDRESS OF CHAIRMAN L. E. SAYRE.

EARLY HISTORY OF BIOLOGICAL PRODUCTS.¹

SMALLPOX VACCINE.

The oldest form of biologic treatment is prophylactic immunization to smallpox. Reports of smallpox epidemics are found in the Chinese literature as early as the fourth century, and the idea of protective inoculation seems to have developed in China during the fifteenth century but not to have spread beyond its boundaries until some time in the eighteenth century, when it found its way into Japan and other eastern countries. It was introduced into England from Turkey by the wife of the British Ambassador to the latter country late in the eighteenth century.

The relationship between cowpox and smallpox and the protection against smallpox resulting from accidental inoculation with cowpox, appears to have been recognized as early as 1753. The first deliberate application of cowpox virus recorded was by a farmer, Benjamin Jesley, in 1774. Other sporadic experiments of this nature were made but no one seems to have attached any real significance to the observation or to have recognized its possibilities prior to the investigations of Jenner.

Dairy workers directed to Jenner's attention the fact that milkers who contracted cowpox inoculations from the udders of infected cows, were subsequently immune to smallpox. He collected data on 16 cases with histories of accidental cowpox inoculations in whom subsequent inoculations with smallpox virus were negative. Supported by the advice of John Hunter, probably the greatest medical student of the eighteenth century, Jenner determined to try this method of immunization. He accordingly vaccinated an eight-year old boy from a cowpox vesicle on the hand of a dairy maid. The inoculation ran the characteristic course, and six weeks later Jenner attempted unsuccessfully to inoculate the boy with smallpox. Jenner published the report of this case, along with the data previously collected, and brought upon his head a storm of criticism, abuse and ridicule. He persisted in his experiments, however, and in the course of a few years convinced some of the broader minded medical men and scientists of the truth of his theory.

Vaccination with cowpox virus now spread rapidly, not only throughout England, but to the continent, and was introduced into the United States in the very beginning of the nineteenth century. The first vaccination in America was done by Dr. Benjamin Waterhouse, of Boston, on his own son in July 1800.

It is difficult for us at this time to appreciate what vaccination has meant to the world. It is necessary to bear in mind that up to the beginning of the nineteenth century smallpox was the most widely disseminated and dreaded disease to which the human race was heir. Practically everyone had it sooner or later, and from a thirteenth to a fourteenth of each generation died of smallpox.

Aside from this appalling toll of lives the disease left in its wake a population with scarred faces, blind eyes and numerous other serious afflictions. In the early work on vaccination it was customary to use very largely "humanized lymph." Patients were inoculated with cowpox material and from these original inoculations "arm to arm" vaccination was carried out. This procedure is still used in certain countries, notably, Mexico, but is objectionable because

* Papers with discussions thereon will be printed apart from the Minutes.

¹ Assistance in preparation of this article was rendered by the biologist of the laboratory of Parke, Davis & Co., to whom the author expresses hearty thanks.—L. E. S.

of the possibility of transmitting disease, especially syphilis. Most countries used exclusively virus from animal sources, and "arm to arm" vaccination is illegal in many countries, as it should be.

ANTITOXIN.

The scientific treatment of a disease must be preceded by the study of its pathology. This is very well exemplified by the discovery of antitoxin which followed a series of investigations, each of which formed a necessary link in the chain. Only brief references need be made to the fundamental work of Louis Pasteur on the relationship of microorganisms to the cause of disease, and the extension of this work by Koch and his pupils. These early investigations constituted the foundations of bacteriology and immunology.

Two general ideas or explanations developed early in the study of immunity, the one dominated by the idea that body fluids are chiefly concerned, and the other attributing the most important action to the cells, especially leucocytes. The latter view, or "cellular hypothesis," had for its chief supporter, Metchnikof. On the work of Metchnikof, and his school, is based the theory of phagocytosis. According to this view, immunity depends on the activity of the phagocytic leucocytes which have the ability to engulf the microorganisms and destroy them.

Another group of workers devoted their attention mainly to body fluids, including the blood serum and in the course of these investigations it was ascertained that blood serum has certain bactericidal properties of a specific character. It was further observed that serum of naturally immune animals had in most cases a higher bactericidal action than the serum of susceptible animals.

The next important step was the observation of Nissen and Behring (1888-89) that serum of artificially immunized animals possessed this bactericidal property in a very marked degree. In studying cases of acquired immunity it was further noted that in certain of them no bactericidal substances were demonstrable in the body fluids, and this observation ultimately resulted in the discovery of antitoxic immunity.

The cause of diphtheria (*Bacterium diphtheriae*) had been discovered a few years before by Klebs and Loeffler (1884). Roux and Yersin in 1888 obtained diphtheria toxin by filtering the organisms from broth cultures of the diphtheria bacillus.

These various researches had paved the way for the discovery of antitoxin, and in 1890 Behring and Kitasato announced the discovery that an animal, immunized against tetanus or diphtheria, produces in its blood substances capable of neutralizing the poison (toxin) elaborated by the specific microorganisms, and that the blood serum of such immunized animals, injected into other animals, would protect them against otherwise fatal doses of this toxin.

During the next three years favorable reports on the serum treatment of diphtheria were made by Kossel, Behring and Boer, Schupert and Canon, Katz and Bogenski, Huebner, Ehrlich and Wassermann. It was not, however, until the remarkable work of Roux of the Pasteur Institute, in Paris, that the antitoxin treatment of diphtheria was really established on a stable basis.

In October 1894 the International Congress of Hygiene met at Budapest to consider the various subjects relating to the welfare of the human family. This Congress will always be memorable as there was presented to a doubting World the final proofs of the possibility of immunizing animals against diphtheria by means of the toxic substances formed by these germs when grown in the laboratory. It was a great victory for the science of bacteriology, which had received so severe a set-back four years previously, through the failure of the much vaunted tuberculin brought to the attention of the Medical Public for the treatment of tuberculosis by Koch.

On the second day of the Congress, Roux of France, and Aronstrom of Austria, and on the third day Behring of Germany presented papers on this subject. In many respects the most important paper was the first mentioned, as it gave exhaustive and conclusive data showing that the new remedy could be expected to reduce the death rate from diphtheria to at least one-half of that expected. A good many American workers attended this Congress and brought home with them a little of the antitoxin, but more especially enthusiasm and belief that the key for unlocking the secret of combating the infectious diseases had been found. It was the climax of nearly ten years' work which had been inaugurated by the epoch-making but almost

forgotten work of an American physician, Dr. Henry Sewall, of the University of Michigan, who was able to show the possibilities of immunizing pigeons against rattle snake poison. Unfortunately, on account of poor health, Dr. Sewall was obliged to discontinue his work and seek the health-giving climate of Colorado, where he has since devoted his energies to the practice of medicine.

Roux's observations were based on the serum treatment of 488 children. Among these there were 109 deaths, a mortality rate of a little more than 24 percent, whereas, during the years of 1890-1893, 3971 patients in the same institution suffering from diphtheria and not receiving antitoxin had a mortality of 51 percent. During the same year that Roux had treated these 488 cases with antitoxin 520 other children in another hospital in Paris in which antitoxin was not employed showed a mortality of 61 percent. This remarkable reduction in the fatality of the disease based on such an extensive series of cases, awakened world-wide interest, and for the first time serum treatment of diphtheria was seriously considered.

As soon as those attending the Budapest Congress reached home they discussed the subject of serum therapy with their friends and co-workers, the result being that immediately it was realized that there would be a demand for diphtheria antitoxin for the treatment of the most dreaded infectious disease, which, up to this time, was regarded as the most fatal infection with which physicians were called upon to combat. It was expected that practically one-half the patients treated, no matter by what method, would succumb. Furthermore, it had the reputation of killing more doctors and nurses than any other disease which they were called upon to handle.

Parke, Davis & Company, of Detroit, Michigan, New York City Board of Health, H. K. Mulford & Company, Philadelphia, and the Marine Hospital Service, I believe, in Washington, each immediately commenced organizing a laboratory suitable for developing serum. Within a couple of months horses were being treated for the production of the new serum. By February or March sufficient American serum had been produced for experimental purposes. In the meantime, a very small quantity of the product had been obtained from Germany or France.

The development of antitoxin at that time was a slow procedure as biologists did not understand the intensive methods of toxin immunization now generally employed. The average length of treatment of a horse serum before the antitoxin was utilized was a year, so that a period of two years elapsed before any considerable amount of American produced serum was available.

The serum treatment of diphtheria made slow headway during these early years, being less popular in America than it was in Europe. Reviewing the literature from 1895 to 1900 we find various articles assailing the value of serum treatment, and advocating in preference the so-called "antiseptic treatment" of diphtheria. Accumulated evidence gradually broke down this prejudice and by 1900 the great majority of physicians accepted the value of antitoxin treatment.

Gradually physicians and the general public became convinced that the new agent was indeed all that was claimed for it, and the death rate from diphtheria dropped to one-half, and steadily declined thereafter until probably it does not, or should not exceed 5 percent if the serum is properly and promptly used at the beginning of the disease.

In 1898 Behring, to the astonishment of both the medical profession and serum producers of this country, was granted a patent in the United States on antitoxin. Behring had been endeavoring for three years to obtain such a patent with a spirit entirely foreign to all scientific principles or medical ethics, and in keeping with the type of Prussianism we have become familiar with in recent years. American laboratories had spent several years in developing their facilities for antitoxin production, and were supplying at lower prices, antitoxin of higher potency than the German product.

This patent, if allowed to stand, would have placed the medical profession and suffering humanity of America at the mercy of a single German manufacturer who had already shown unmistakable evidence of cupidity and avarice. A storm of protest arose throughout the country. State and National medical societies passed resolutions against the tolerance of this mercenary gouging, and prominent Medical Journals took up the fight. Parke, Davis & Company, one of the first commercial producers of antitoxin in America, announced their willingness to bear the brunt of any litigation which might develop through the use of their antitoxin, continued to supply the product, and insured protection to its users. The German producers cowed by the evidence

of public sentiment never tried to defend their patent, and the production and distribution of antitoxin in the United States proceeded unhampered.

About 1898 antitetanic serum was brought out as an analogous remedy for the treatment of lockjaw, but it was soon found, not alone by laboratory methods, but at the bedside, that it could not compare with diphtheria antitoxin as a treatment for the disease. As someone has remarked, symptoms of tetanus which come on a week or more after the infection which produces it, are symptoms of death, and the patient receives the antitoxin too late to exhibit its fullest efficiency. It was soon shown, however, that it possessed marvelous value as a prophylactic when given at the time the wounds were made which resulted in the production of tetanus. The recognition of the value of the serum for this purpose has steadily increased until at this time the world is convinced that it is the most successful agent for preventing disastrous results following Fourth of July accidents, and eliminating the fearful disease that has ever attended wars, millions of doses being used during the present conflict, it being the custom to administer it to every wounded man as promptly as possible after the wound has been received.

OTHER SERA.

Successful results obtained from the use of diphtheria and tetanus antitoxin naturally stimulated early attempts to apply the same principle to other types of infection. Antistreptococcic serum was developed in 1903, antimeningococcic serum in 1906, and antigonococcic serum in 1907.

Various attempts have been made to develop serum treatments for pneumonia and tuberculosis, but with only a limited degree of success. The early antipneumococcic serums were worthless, but it has been shown in recent years that there are several types of pneumococcus, and that serum to be of value must be specific for the particular type involved, and that all types are not amenable to serum therapy. The best known antitubercular serums are those developed in 1903 by Marmorek and in 1906 by Maragliano. It is pretty well accepted at present that serum therapy in tuberculosis is of little or no value.

Serum therapy has also been attempted with varying degrees of success in a number of other conditions—such as staphylococcic infections, Asiatic cholera, bubonic plague, blackleg, and several other diseases.

VACCINES.

The possibility of vaccination with bacterial products was discovered by Pasteur in 1870 while working with cultures of chicken cholera. He observed that cultures which had lost their virulence were still capable of immunizing fowls, and was quick to grasp the significance of this fact. Shortly after Pasteur developed a prophylactic vaccine against anthrax, which is still used to a considerable extent, although the "spore vaccine" subsequently developed is somewhat more efficient.

In 1880 Pasteur started his epoch-making work on rabies developing what was subsequently known as the Pasteur treatment for the preventive immunization of individuals who had been bitten by rabid animals. Subsequently he successfully prepared prophylactic vaccines for swine erysipelas, blackleg, and rinderpest.

During the year 1898 and 1899 extensive application of bacterial vaccines was made in the prophylaxis of cholera, bubonic plague, dysentery and typhoid.

Prophylactic vaccination against cholera was introduced by Haffkine in 1899. It was extensively used in Japan in 1902 during a severe epidemic of cholera which prevailed there at that time, and resulted in a marked reduction, both of the case incidence and mortality of the disease. The most successful application of cholera vaccine, however, was made in the Philippine Islands a few years ago by Dr. Richard Strong, of the United States Public Health Service, who used a vaccine prepared according to his own formula. Strong has subsequently used the same type of vaccine in the Red Cross work in Serbia.

The pioneer work on "plague" vaccine was also done by Haffkine, in 1899.

The most extensive and successful application of dysentery vaccine has been in Japan based on the work of Shiga, in 1898.

Prophylactic vaccine against typhoid was introduced by Wright and Leishman in India in 1898. It was later used in the British Army during the Boer War. The wonderful developments of typhoid vaccine during subsequent years, and its importance in the control of typhoid fever in military and civil life are so well known as to require no discussion.

The use of bacterial vaccines on a therapeutic basis dates to the work of Wright and Douglas on opsonins, in 1903. Such vaccines have subsequently been applied with success to a great variety of infectious conditions proving especially efficient in infections of a chronic or sub-acute nature.

TUBERCULINS.

Reference has already been made to the unsuccessful attempts to work out an efficient method of serum treatment for tuberculosis. In 1890 Koch announced the discovery of tuberculin and great hopes were entertained for the success of this therapy. Koch recognized, however, that this agent had only limited possibilities and needed to be used with extreme caution. He did not by any means regard it as a specific in the sense that antitoxin is specific for diphtheria.

Regardless of the caution urged by Koch tuberculin was used in an irrational manner by the great majority of physicians, and the results were not only disappointing but hundreds of tubercular subjects were prematurely sent to their graves. The reaction from this "tuberculin delirium" resulted in wide-spread skepticism from which the medical world is just now emerging. We now know that tuberculin intelligently applied is a valuable diagnostic and therapeutic agent, but that it is not a "cure-all," and that its successful use demands knowledge and caution.

The prominent place attributed to glandular therapeutics during recent years has perhaps given the impression that this line of treatment is of new development. It is true that little was known of certain of these glands, notably, the pituitary and pineal, prior to the research of the last decade. The idea of using animal derivatives, however, is one of the oldest of our therapeutic conceptions.

Medical literature 600 B.C. contained references to the use of testicular extracts. At about the same time such animal derivatives as swine's fat, hair of a virgin goat, and human bone were employed. These agencies were used, however, with the idea that their vile tastes and odors would drive away the offending disease. The modern use of glandular derivatives on the other hand is based on the knowledge that in these tissues chemical substances are elaborated and stored up which profoundly influence the functional activity of the body.

The rational use of glandular derivatives is only about 25 years old. The first serious study of ductless gland action was that of Reverdin and Kocher in 1883 who published the results of their observations upon patients from whom thyroid glands had been removed. This stimulated a series of researches which resulted in the establishing of the relationship between the thyroid gland and certain definite diseases, such as cretinism. The use of thyroid gland in the treatment of these deficiency diseases soon followed, and proved to be one of the most successful applications of glandular treatment that has ever been developed. In fact, conversion of a cretin into a normal individual through thyroid feeding is one of the miracles of medicine.

Clinical reports based on the use of ovarian preparations date back to 1904, although it was only in more recent years that the real possibilities from the use of such preparations were clearly understood. Ovarian treatment is now regarded as the one efficient means of dealing with the disturbances incidental to both artificial and natural menopause.

Oliver and Schäfer made the important discovery that extracts of the medullary portion of the suprarenal gland when injected intravenously produced a marked rise in blood pressure. This led to the discovery by Takamine of adrenalin, the active principle of the suprarenal, a product well known to every pharmacist.

Brown-Sequard, in 1889, carried out clinical experiments with testicular extracts, which, while having only a limited value "per se," stimulated interest in the possibilities of glandular treatment.

Preparations of the thymus have been used therapeutically for quite a number of years, but the developments in therapeutic application of the parathyroid gland, pineal gland and pituitary gland are of more recent development. Of these latter, the pituitary is by far the most important in biologic therapy. The extract of the posterior lobe of the pituitary (pituin) has practically revolutionized the practice of obstetrics. It is by far the most efficient oxytocic agent that has ever been developed, and intelligently employed constitutes a safe method of shortening the duration of labor and decreasing the necessity for instrumental deliveries. The anterior lobe of the pituitary is used in certain growth disturbances.

There are a number of other glands which have been used more or less therapeutically,

but in this fleeting consideration we can do no more than to touch on those which are known to be of definite importance.

Secretary Hugo Kantrowitz read the program for the session. The report of the Historian was presented by E. G. Eberle.

REPORT OF THE HISTORIAN.

FELLOW MEMBERS:

Another year has been added to the records of the American Pharmaceutical Association and pharmacy, notwithstanding that its service has not been recognized by the Government as a profession, the products of pharmacy made possible by pharmacists have an important place in the war, where death, injury and disease are ever present. Without aspiring for undeserved recognition it can be said with no possibility of contradiction that the reliable drug supply for our soldiers has been made possible by the years of persistent and devoted study of the *materia medica* and its preparations by pharmacists and largely under the direction of the American Pharmaceutical Association. The splendid coöperation of pharmacy and pharmacists under conditions that did not offer desired encouragement exhibits their loyalty to the country under any and all conditions. When the history of the war is written medicine will be accredited with all the achievements to which it is justly entitled, and certainly no more heroic or patriotic votaries ever engaged in a country's service—but will the work that pharmacy and pharmacists have contributed be given deserved credit? Will it ever be admitted that the fine medical service was, in part, made possible by pharmaceutical manufacture and, if organized pharmaceutical service had been provided, still better service would have been given our soldiers? I am reminded of a newspaper article in which the bravery of the surgeons was indicated by the headlines and pharmacists not at all mentioned, whereas the whole half column of news items spoke practically only of the brave acts of pharmacists.

To me, among the grandest words I ever read are: "Quentin's mother and I are very glad that he got to the front and had the chance to render some service to his country."

That after all is the thing worth while—to render service to the country, to the world, in this trial of humanity. We are first and above all citizens, and there is our whole duty, but it is not immodest to have pride in our profession, which is engaged for service to humanity, and aspire to its greater service by being accredited with some degree of rank.

History is being recorded at each of our various sessions and Sections, and later it will be written. Space was offered us at the Smithsonian Institution for exhibition of historical matter. There seems to be little in the possession of the Association that would make a creditable display. Since the writer took charge of historical matter all has been made up of photographs, sketches, a few badges, books, programs, etc. These cannot of course be displayed to advantage.

There are in most schools original or first products of many chemicals, apparatus, etc., that in many instances are in the way and which if of historical association could be utilized for such display. Whether there is available material at the Lloyd Library I do not know. I hope to have a meeting here in Chicago with the Committee appointed for securing such material. Last year we had a nice display at Indianapolis, but largely of local interest; still there were a few items that might be acceptable and Mr. E. G. Eberhardt expressed his opinion that some of the articles could be had, either as loan or donation. This year we doubtless will have an interesting display, and I now make the same suggestion as last year, that wherever we may meet an historical exhibit be provided. These displays bring us into contact with those who promoted pharmacy and this Association.

During the year we have received many additional photographs, sketches and clippings, all of which are filed and are recorded on the attached sheets.

As far as my records go we have had 26 deaths since last we met. They are:

Dr. John C. Otis, Cincinnati, Ohio.

John S. Muth, Baltimore, Md.

Dr. Kirkland, Los Angeles, Cal.

Prof. Charles Caspari, Jr., Baltimore, Md.

S. E. R. Hassinger, Philadelphia, Pa.

Hugo L. Boyd, Kosciusko, Miss.

President Charles Holzhauer, Newark, N. J.

Prof. Joseph P. Remington, Philadelphia, Pa.

John F. Fischner, Chicago, Ill.

Charles T. George, Harrisburg, Pa.

E. A. McFadden, Hackensack, N. J.

George Weldon, Paris, Idaho.

Dr. Alfred Birch Huested, Delmar, N. Y.

Ferdinand C. Schapper, Chicago, Ill.

Samuel Mansfield, Baltimore, Md.

Charles J. Shulmyer, Providence, R. I.

E. P. Correll, Eureka, Cal.

Max Morris, Macon, Ga.

Henry Maisch, Baltimore, Md.

Rudolph Fack, Cincinnati, Ohio.

W. F. Jackman, Detroit, Mich.

George Leis, Lawrence, Kansas.

W. L. Dewoody, Pine Bluff, Ark.

Prof. Geo. D. Timmons, Valparaiso, Ind.

Charles F. Dare, Bridgeton, N. J.

Among them an ex-president, a president, an honorary president, a long-time faithful secretary and many devoted active members. Doctor Otis passed away just before our last meeting, Professor Remington lived to the first day of this year, and Professor Timmons entered the unseen temple last month. These twenty-six members represented 574 years of service in the American Pharmaceutical Association, an average of twenty-two years for each. The oldest in years of membership was Professor Remington, 51 years; the oldest in age, Dr. A. B. Husted, born in 1840. Over half of the number had been members for twenty years or more. I suggest that we rise in memory of these faithful members who have ceased their labors here.

Each year some of our members go away from us and we lose the joy of their companionship, the profit of their valuable counsel and comfort of their examples. But such is history, we contemplate upon our loss and, while we reflect, there is growing up another generation who have profited by their experience and who in turn may look upon us as exemplars. So, though we are saddened and sorrowful because of the loss of our friends and associates, let us rejoice that others representing new life and energy are coming among us. The purposes of our organization have been tried and have stood the test of honest endeavor and devotion to the service of humanity. Let us believe in the Association heart and soul, be optimistic relative to its mission and convey assurance of its great purposes to others who are not affiliated.

Thanking you for your confidence in me, and assuring you that I am always glad to be at your service,

Respectfully submitted,

E. G. EBERLE, *Historian*.

The list of photographs, etc., referred to in the *Historian's* report comprise 17 programs of various associations and occasions; 4 badges, 21 photographs and sketches of members; 8 sketches of members, no photographs accompanying; 423 photographs, and a large number of clippings relating to the associations and drug interests. The list is filed in the records of the Historical Section. It should be stated that Treasurer H. M. Whelpley was a large contributor, and many of the photographs came through him from the Ebert home.

F. L. Lewton, Acting Curator, Division of Medicine, U. S. National Museum, then addressed the Section on

A NATIONAL PHARMACEUTICAL COLLECTION.

The question of collecting and preserving in the United States National Museum at Washington, D. C., such historical objects connected with the beginning and early history of pharmacy in the United States as are now obtainable is one which has received a great deal of thought and consideration by the officials of the Institution.

In 1904 Professor Edward Kremers, Chairman of the American Pharmaceutical Association's Committee on Historical Pharmacy, addressed a communication to the Secretary of the Smithsonian Institution inquiring concerning the advisability of establishing a pharmaceutical section in the Museum. The correspondence on the subject was continued by Dr. Murray Galt Motter when he became chairman of the American Pharmaceutical Association Committee on Proposed Collection at Washington. From the very first the National Museum was anxious to acquire such collections of historical material as were controlled by the American Pharmaceutical Association. However, at that time the new Museum building had not been erected and there was not space in the old building to house the material. It was of course necessary for the matter to be held in abeyance until the new building was completed. At about this time Dr. J. M. Flint, who had been Honorary Curator of the Division of Materia Medica (now the Division of Medicine) since 1881, tendered his resignation. This caused a further delay in the negotiations

with a view to obtaining pharmaceutical material, and no further action appears to have been taken in the matter until January, 1917.

On January 31, 1917, at the request of the President of the Washington Branch of the American Pharmaceutical Association, Mr. F. L. Lewton, Acting Curator of the Division of Medicine, addressed the local branch on "The Opportunity for Developing Historical Pharmacy Collections at the National Museum," and asked for the assistance of the Washington Branch. This address resulted in the appointment of a committee which brought the subject before the Association at the Indianapolis meeting. A committee of the Council was appointed to investigate the facilities of the National Museum for caring for such collections as are the property of the American Pharmaceutical Association, and I understand that a favorable report was made.

It might be well to point out in a brief way what the Division of Medicine has accomplished since its establishment and to say something with reference to the contemplated plans for its development. Soon after the division was established efforts were made to procure a full collection of the materia medica of the world. The attempt to obtain a complete collection of the official pharmacopoeias of all nations, met with great success and from these were compiled, for use in the arrangement of the collections, a list of all the articles of the materia medica of the world and the authorized preparations of each. A large amount of drug material had been obtained from the Centennial Exhibition, and great assistance in building up the collections was rendered by Schieffelin & Company, New York City; Parke, Davis & Company, Detroit; McKesson & Robbins, New York; Wallace Brothers, Statesville, North Carolina, *et al.*

For the reason that the general public is not interested in a large series of scientific specimens installed in glass jars it was decided that the greater part of the materia medica collections be installed as a study or reference series, separate from the exhibition material, where it may be consulted by students and others interested in the subject. This separation was made during the present year and at the same time a reclassification of the collections illustrating materia medica according to the best modern classification was begun.

The collections of the Division of Medicine have recently been grouped into four classes: The History of Medicine, Materia Medica, Pharmacy, and Sanitation and Public Hygiene. The classification adopted to illustrate the History of Medicine is intended to show the evolution of the healing arts and includes: Magic Medicine, Psychic Medicine, Physical or External Medicine, Physiological or Internal Medicine, and Preventative Medicine. Objects illustrating the history of Indian, Egyptian, Chinese, Greek and Roman Medicine appear in the order named. The history of medicine in America is presented pictorially in the form of biographical sketches and photographs of prominent medical men since the settlement of Jamestown. This section will be developed by the addition of material illustrating in a simple and brief manner the basic principles of the different schools of medicine.

A number of important accessions to the materia medica collections were obtained during the past fiscal year. Armour and Company of Chicago contributed some fine specimens illustrating the subject of Organotherapy. Fairchild Brothers and Foster of New York City donated material showing the progressive steps in the manufacture of Pepsin. Some exceptionally good specimens of crude vegetable drugs were contributed by Gilpin, Langdon & Company, Inc., of Baltimore Maryland. The museum is indebted to Merck and Company of New York City for specimens of chemicals which were made synthetically, and to the Heyden Chemical Works of New York, New York, for the contribution of specimens of synthetic medicinal chemicals. Frederick Stearns and Company of Detroit, Michigan; Hoffman-LaRoche Chemical Works of New York City, Roessler & Hasslacher Chemical Company of New York City, and the William S. Merrell Chemical Company of Cincinnati, Ohio, also rendered valuable assistance during the past fiscal year by the contribution of material for the materia medica collections. It is proposed to illustrate the development and modern application of serumtherapy, vaccinertherapy, etc., and specimens and charts for this purpose are being prepared for the National Collections. The Section of Sanitation and Public Hygiene has grown slowly and as a beginning there has been illustrated the composition of the human body, with additional exhibits showing the daily income and outgo of foodstuffs and waste products. Cooperation with other Government Departments is already under way in the preparation of exhibit material dealing with subjects already in the public mind, as for example, the prophylaxis against typhoid fever now being practiced by the military forces, etc.

The Section of Pharmacy having been only recently established but very little material has been obtained relative to this subject. The beginning of medicine and pharmacy are so closely co-related that it is nearly impossible to separate one from the other. The classification as given in the beginning of Wooten's *Chronicles of Pharmacy* is practically the same as that of the Museum's collections arranged to illustrate the history of medicine. Specimens of modern medicinal forms have been promised for the Section of Pharmacy.

A great expansion of the pharmaceutical library has been made through the transfer from the Hygienic Laboratory, Department of the Treasury, of a large number of books and periodicals relating to the subject of pharmacy, etc. Two rooms have been assigned for use as a pharmaceutical library. Shelves have been placed in the rooms, upon which the books are placed and arranged so they can be readily consulted. Desks and chairs will be provided for the use of persons visiting the library.

Now that we have pointed out briefly what has been accomplished by the Division of Medicine, and have mentioned some of the plans for its development, it will be clear that its future success will depend to a greater or less extent upon the coöperation of pharmacists, pharmaceutical manufacturers and pharmaceutical societies and associations. The National Museum is the authorized place of deposit for all objects of natural history, mineralogy, geology, archaeology, ethnology, etc., belonging to the United States or collected by the Coast and Interior Survey. The Geological Survey, or by any other parties for the government of the United States, when no longer needed for investigations in progress. There is ample space in the National Museum for the collections of the American Pharmaceutical Association, and for this reason it was deemed advisable to have the matter brought to the attention of this Convention. It will also be appropriate at this time to state the conditions under which the exhibit material can be accepted by the Museum. The National Museum would prefer, wherever possible, that specimens be offered as outright gifts, but where this is not desirable or feasible, it will gladly accept as loans or deposits, valuable material. It is customary for loans to be accepted with the understanding that they will be left undisturbed for a year or more, while deposits are usually made for a longer indefinite period. The Museum cannot bind itself to permanently install any exhibit, or to keep any certain assemblage of specimens always exhibited to public view. It can, however, agree to safeguard them and keep them available for examination and study whenever desired. In order to avoid duplication of material, the Museum would request that all exhibits offered it as gifts, loans or deposits, be first arranged for by correspondence, and the submission of a list or inventory giving an idea of the character and quantity of the material offered.

Washington is the mecca to which come, sooner or later, the people of the United States. About 400,000 persons each year visit the National Museum. Should not the precious relics of the beginnings of Pharmacy in this country be placed where all can see and enjoy them?

DISCUSSION.

F. J. WULLING: It seems to me that here is an opportunity which we ought to accept quickly and without question. I say this in a way, observing the question of details, of course.

It seems to me only great profit can grow out of it, for both the American Pharmaceutical Association and also the Institute.

EDWARD KREMERS: I can only say a word in regard to the text that I adopted for my Report of the Committee on Research of the American Pharmaceutical Association, that all things come to them who wait. After having waited many years, I am more than pleased to have the Representative of the National Museum here to-day. For years it seemed impossible to secure the coöperation of the Institute, and when we would approach them, we were told that we would have to wait until the building was completed.

As Historian ten years, I collected a considerable quantity of material, but naturally we had to restrict ourselves to such material as did not occupy very much space, and as the present Historian has told you, the material that he has collected is mostly all small things, such as photographs, sketches, and things of that sort, rather than objects that are very bulky. Now that the National Museum has provided for exhibits, it seems to me that we ought to begin to collect systematically along other lines.

What pleased me more than anything else is the statement made by Mr. Lewton, that the National Museum of Pharmacy is to be placed on an equal footing with Medicine. What can be done along this line has been demonstrated not only by the Museum in London, but also

the *Materia Medica* collection in Paris and collections elsewhere. So it is about time that the National Museum should fall in line, and it is certainly gratifying that after these many years of waiting we should have a Representative here from the National Museum and we hope they will annually send a representative to the Historical Section meetings of the American Pharmaceutical Association. Possibly some of the officers of the Association may be willing to request that they attend, in order that we may remain in constant touch with them, especially the Historian of the American Pharmaceutical Association.

The following papers were read:

A History of Glassware—Ancient and Modern, by W. W. Figgis.

Reminiscences of the Origin of Laws and Organizations; Origin of Some Pharmaceutical Associations; Recollections of How the First Narcotic Law in Illinois Originated; by Wilhelm Bodemann.

Pharmacologic Assaying, Historical and Descriptive, by Herbert C. Hamilton.

The Chairman appointed the following Nominating Committee: E. G. Eberle, John G. Godding and Edward Kremers.

Next followed an address on Ebert, Hallberg and Oldberg, illustrated by lantern slides, by H. M. Whelpley. The speaker denominated the address "a talk;" it was far more; during many years of association with the subjects he had learned to know them intimately, and he spoke largely from such intimate knowledge of their personal traits and qualities.

The Historian stated that the Historical Section was growing more interesting each year and that the program of this session was replete with interesting papers and addresses. He suggested that hereafter there should be two sessions instead of one.

Chairman Sayre advised that another session of the Section would be held at 2.30 P.M.

SECOND SESSION.

Chairman L. E. Sayre called the second session of the Section on Historical Pharmacy to order at 2.30 P.M.

General Secretary William B. Day reported on the historical exhibit in the Association rooms of the Hotel. The interest of the members was shown by the many visitors. A list of the exhibits follows:

LIST OF THE HISTORICAL EXHIBIT MADE BY THE UNIVERSITY OF ILLINOIS SCHOOL OF PHARMACY.

Publications of the American Pharmaceutical Association:

Proceedings of the A. Ph. A. 1852-1911. (No meeting in 1861); Volumes 1 to 59.

Index to Proceedings of the A. Ph. A., 1851-1902, 1 volume.

Year Book of the A. Ph. A., 1912 to 1916, Volumes 1 to 5.

Bulletin of the A. Ph. A., 1906-1911, Volumes 1 to 6.

Journal of the A. Ph. A., 1912-1917, Volumes 1 to 6.

National Formulary: 1st Edition, 1888; 2nd Edition, 1896; 3rd Edition, 1906; 4th Edition, 1916.

Pharmacopoeia of the United States of America, complete 1820-1910; 1820 (2nd. Ed. 1828), 1830 Philadelphia Ed., 1830 N. Y. Ed., 1840, 1850, 1860, 1870, 1880, 1890, 1900, 1900 Spanish Ed., 1910.

Pharmacopoeia of the Massachusetts Medical Society, Boston, 1808.

The United States Dispensatory, complete Editions 1 to 20, 1833-1918.

Galen's Works, 7 volumes, Venice, 1556.

Sydenham's Opera Medica, Venice, 1762.

Dalecampii Historia Generalis Plantarum, Lugduni, 1587, 2 volumes.

Fauna Suecica, Linnaeus, Stockholm, 1746.

Flora Suecica, Linnaeus, Stockholm, 1745.

Historie Generale des Drouges, Paris, 1735,
2 volumes.

Basilica Chymica, Crollius, Prague, 1608.

The Druggists Manual, compiled by direction of the Philadelphia College of Pharmacy, Philadelphia, 1826.

Medicinal Edict, Prussia, Berlin, 1725.

A Compendious Medical Dictionary, R. Hooper, London, 1799.

Observationum de Aëre et Morleis Epidemici. Joanne Huxham, London, 1752.

The Elaboratory Laid Open, or the Secrets of Modern Chemistry and Pharmacy Revealed, London, 1758.

Pharmacopoeia Edinburgensis, 3rd Edition, London, 1737.

The Universal Medicine, or the Virtues of the Magneticall on Antimoniall Cups, John Evans, London, 1642.

Chicago Pharmaceutical Collection.

Prescription Book, 1849.

Recipe Book.

I. Ph. A. Register.

Mementos of A. Ph. A. Convention at Chicago, 1868—Picture of 1868 Meeting.

Mementos of A. Ph. A. Convention at Chicago, 1893.

World's Fair number of Western Druggist (Oct. 1893).

Registration Book at the College Exhibit.

Biroth Picture, Local Secretary 1893.

Ebert Historical Exhibit: Case, Shelf Jars, The Boar, Leech Jar, Balance, Replica, Bas-relief, Faculty Picture, Alderman Card, Lecture Notes—1863, Ebert Memorial Vol., Account Book, 1873, Ebert Correspondence, Ebert Diplomas, Ebert Picture (Goodman), Brass Mortar, Revision Committee Picture, Ebert Cup (C. V. D. A.), Counter Balance.

C. P. Wimmer delivered an address, illustrated by lantern slides, on Edward R. Squibb's Lecture Course in Pharmacy, 1869-1871.

The following papers were read:

Note on the Early History of Prescription Scheme Idea, by L. F. Kebler.

Biography of George Leis, by his son, E. R. Leis.

Missouri Pharmacy and the American Pharmaceutical Association, by Mitchell Block.

Charles Holzhauer, by Edward A. Sayre.

The History of the New Jersey Pharmaceutical Association, by Edward A. Sayre.—This contribution brings the History of the New Jersey Pharmaceutical Association up to and inclusive of 1917, and contributed by the same author.

The Nominating Committee reported the following nominees for Section officers:

Chairman—Hugo Kantrowitz, of New York.

Secretary—W. O. Richtmann, of Wisconsin.

They were unanimously elected. The Chairman stated that the Historian was a permanent officer of the Association.

The request was made that an historical exhibit be provided for the New York meeting next year.

The Section on Historical Pharmacy then was adjourned.

PHARMACOLOGICAL ASSAYING.*

HISTORICAL AND DESCRIPTIVE.

BY HERBERT C. HAMILTON.

The first discovery of the value of medicinal substances and their later development was based very largely on pharmacologic observations. During more recent times this has been looked upon as almost the sole means for a rational selection of remedies and for the establishing of correct dosage.

It is only of comparatively recent years, however, that pharmacology has been recognized scientifically as a method of ascertaining the value of a medicinal preparation. For the most part if no chemical method existed for standardizing, entire dependence was placed on the standard methods for extraction and on certain physical tests. Later when it was recognized that a worthless sample of a medicinal drug would make an extract not differing in any apparent respect from one from an active sample, it was very evident that an assay process was a necessity.

Pharmacologic assaying cannot be applied to any drug which induces no typical reaction when administered to an animal or applied to living tissue, and it is unnecessary to apply it to those possessing an active constituent with well marked chemical characteristics. In general, the attitude on this subject is that whenever possible pharmacologic assaying is adapted for such drugs as are not amenable to a chemical assay.

On the other hand, there is the extremist, who voices the opinion of not a few when he says that every medicinal preparation amenable to a pharmacologic test should be so standardized. This, however, is scarcely a logical viewpoint.

The objection voiced against the biological standardization is not against the method as a general proposition but largely against the method in its particular application, that it is qualitative only. There is no question anywhere of the fact that only by animal or human experimentation can the properties of a drug be established. The question is whether the test can be made quantitative and the value of the substance be measured to establish the dosage. It is only of recent years that the therapeutic properties can even occasionally be assumed from the chemical composition. We are still to a certain extent dependent on the natives to suggest the importance of a drug, by the use they make of it—a use based on a more or less accidental observation of its effects on themselves or animals.

As illustration of these points it may be noted that hellebore was discovered to have medicinal properties by Melampe, a shepherd who traced the diarrhoea in his sheep to their having eaten of this plant.

Acetanilid was by accident found to have antipyretic properties by being given to one of Prof. Kussmanka's assistances, causing an alarming lowered temperature.

Many drugs, such as quinine and cocaine, were used by the natives medicinally with no record of their first discovery. In some cases human use followed the observation that animals apparently chose certain plants for relief from injury or disease. These records are, however, not very trustworthy.

* Presented before Section on Historical Pharmacy, A. Ph. A., Chicago meeting, 1918.

Confining this historical account to those drugs and medicinal substances now commonly standardized by use of animals eliminates much of interest in the history of the *materia medica* but leaves for consideration some of the most important medicinal substances, *Cannabis Sativa*, Ergot, the heart tonics of the Digitalis series, and the Suprarenal and Pituitary gland extracts.

The writer may be pardoned if he draws somewhat from his own experience, for 19 years of close acquaintance with the actual standardization of the drugs mentioned covers the greatest part of the period during which such standardization in its restricted sense has been practiced.

CANNABIS SATIVA.

Cannabis Sativa, or when grown in India, designated as *Cannabis Indica*, was known and used 1000 years B. C. It may have been the substance referred to under different names, as for example Nepenthe. Its effects are very wonderfully described in Dumas "Count of Monte Christo."

Cannabis Sativa was probably never standardized with any degree of accuracy by use of any other animal than the dog. Fraenkel¹ confirms the experience of most investigators in stating that rabbits are immune to its action. Guinea pigs are also practically without reaction to this drug in any reasonable quantity. Cats are susceptible but are unsatisfactory test animals in many respects.

My personal experience with its physiological assay on dogs began in 1899, but this was merely to continue a practice which had obtained since 1894-5. Houghton,² in 1897, read a paper on Physiological Standardization, in which he referred to its use in establishing the reliability of cannabis preparations, but at that time gave no details of the method applied. Twenty-seven samples were assayed, only thirteen of which proved to be active when administered to animals.

One of the first authors to mention the use of dogs and to describe specifically the effect of the drug is Ponthieu,³ in 1901, who says: "To verify the action of *Cannabis Indica* the dog is used, and the drug is administered in the form of an extract; its physiological action manifests itself later in a vacillating gait, ataxia, depression of temperature, and finally complete insensibility."⁴

While no accurate description of the assay method originated by Houghton and regularly practiced since, appeared until 1908, a paper by Thomas Maben⁵ was read before the Dundee meeting of the British Pharmaceutical Conference in 1902, on the physiological action of *Cannabis Indica*—a paper "based on observations communicated to him in the course of a discussion with H. C. Hamilton," quoted from Proc. A. Ph. A., 1903, page 804.

Famulener and Lyons⁶ have recorded the first accurate description of the physiological assay of *Cannabis Indica* including doses of official preparations, characteristic effects, and the end-point to be observed in establishing the value of the drug.

Fraenkel,¹ in an article published the same year, described the action of the drug on dogs, but gave little data on dosage as the samples tested were cannabinol and its derivatives. The work there recorded was qualitative only.

The details of the method in practice at the time of my first acquaintance with the work were identical with those described by Famulener and Lyons with

the exception that in addition to recording the degree of incoördination, other symptoms, such as degree of preliminary excitement, of drowsiness, and of fall in temperature, were preserved as part of the record. At some time in 1900 record of these by-effects was discontinued as being non-essential and subject to greater individual variation than the degree of incoördination which is typical of cannabis intoxication. In reporting on the pharmacological identity of American and Indian cannabis Houghton and Hamilton⁷ described the method as modified and regularly applied at that time.

While practically all the writers up to this time had selected the dog as the test animal, Goodall⁸ writes, "At present my standard is that a dose of $\frac{1}{4}$ grain should kill or deeply narcotise frogs of 20 Gm."

Haskell⁹ refers to Houghton's as the only assay method known.

This method is again described in concise form in the Report of the A. Ph. A. Committee on Physiological Testing.¹⁰

Pittenger,¹¹ in 1914, published the same assay method but with no dosage specified and no material changes.

Pearson¹² emphasizes the need of and difficulty in selecting susceptible dogs, also noting that continued dosing does not produce any immunity.

Eckler and Miller¹³ seem to be the first to describe the use of a particular breed of dog but not in the sense of specifying the exclusive use of this breed. Hamilton, Lescobier, and Perkins¹⁴ touched on a phase of cannabis standardization not apparently considered by other investigators. In order to corroborate for human therapy the fact established by animal experimentation that cannabis preparations are equally valuable from whatever source the crude drug is derived, and require only the ordinary physiological assay, these investigators carried out several series of tests on themselves, using both Indian and American grown drug. Their conclusion is that no difference in the effects of the two varieties could be detected.

Finally, we come to the U. S. P. Revision Committee's Report now embodied in U. S. P. IX¹⁵ and made official for the assay of *Cannabis Sativa*. This report includes several steps not previously suggested as essential in assaying this drug, namely, 1st, Fox terriers for the test animal but not exclusively; 2nd, Doses of 0.03 mil for F. E. Cannabis, 0.3 mil for the tincture, 0.004 Gm. for the extract, 3rd, Preliminary fast of 24 hours for the dogs used.

Previous to this the only requirement in the test animal was susceptibility. The doses suggested by Houghton and Hamilton, Famulener and Lyons and Eckler and Miller were 0.01 Gm. of extract, 0.1 mil of fluidextract and 1.0 mil of tincture per kilo of dog weight. The period of fasting was suggested at several intervals up to 12 hours. The intention of the official method is to require these preparations to produce an observable reaction with the specified doses while previous authors made use of doses of such size that a weaker preparation would have a measurable reaction, evident but less intense than that required for a standard preparation. This feature shortens the test of a weak preparation in that a clue to its activity is likely to be obtained in the first test, while by the official method only a standard (or better) preparation would show an effect.

It is evident, therefore, that the official method differs only in some of its details from that previously followed but that these complicate the method by including non-essential details and by increasing the difficulties of the test.

ERGOT.

In very early times this drug was used in obstetrics by the Chinese and the Romans. Salerne,¹ in 1754, and Tessier,² in 1778, found that gangrene occurs in young pigs after administration of ergot.

Dietz noted that one to three ounces of ergot would cause gangrene of the combs of birds.

Wiggers³ fed 9 grains of an extract he called "ergotin," obtained by alcoholic extraction, to a cock and caused convulsions and death. This probably occurred too quickly for the typical bluing of the comb to appear since he noted only that the comb became cold.

Bonjean⁴ obtained an aqueous extract purified by precipitation with alcohol to which he also gave the name "ergotine." This caused the typical bluing of comb and wattles and a narcotic condition which demonstrated to him that it contained the therapeutic agent.

Kobert,⁵ in carrying out investigations of ergot bodies in 1884, used all the laboratory animals including cocks, frogs, pigs, rabbits, cats, and dogs. He used also the isolated uterus of the sheep and considered this the most suitable method of testing ergot, but as a second and final test it must produce abortion in pregnant animals with no other untoward effect.

Jacobi's work in 1897⁶ was probably the most important to that date because he carefully checked up his chemical investigations by means of physiological tests. He noted its action on the uterus, on the cock's comb and on blood pressure, the three characteristic effects of this drug.

All the work recorded to this time has been on experimental bodies with no reference to standardization of commercial products. Houghton,⁷ in 1898, proposed, in a paper before this Association, applying the Cock's Comb Method for the routine assay of commercial ergot preparations, the method of administration then followed, being that of feeding the crude drug, and by means of a catheter introducing fluid preparations into the rooster's crop.

About this time the work of Barger, Carr and Dale,⁸ who wrote voluminously at this period, seemed to have cleared up much of the uncertainty regarding the identity and character of the active constituents of ergot. They showed that different constituents were responsible for the different physiological effects noted. Thus they demonstrated that the aqueous extract as well as an alcoholic can contain an active agent. Ergotoxine, an alkaloid, appears to be the agent causing the bluing of the cock's comb, *p*-oxyphenylethylamine or tyramine is the pressor agent although the alkaloid acts in this way too, while *B*-iminazoylethylamine or histamine is the principle which acts on the non-pregnant uterus and in most cases lowers the blood pressure of anesthetized dogs and rabbits. This work shows conclusively why no assay method based on the amount of any one active constituent present is adapted to the standardization of this drug.

Dohme and Crawford,⁹ after considerable experimentation, evolved the method of injecting hypodermatically solutions of the fluidextract and of Keller's Cornutine using 5 Cc. of the former and equivalent amounts of the latter. They concluded that cornutine represents practically all of the therapeutically active substances of ergot and that an assay for Keller's cornutine is the correct means of standardizing this drug for its vaso-constrictor virtues. Dohme¹⁰ later con-

cluded that this was not a correct method because samples of ergot very low in cornutine were quite active when tested by physiological means.

Barger and Dale¹¹ suggested a method known as the vaso-motor reversal. The end-point of this reaction is the complete neutralization of the pressor effect of 0.1 mg. of adrenalin.

The later recognition of the various active agents of ergot easily explained why this method is very inaccurate.

Kehrer¹² found the isolated cat uterus suspended in Ringer's Fluid the most satisfactory method for assay and believed that the manufacturer has in that a means of assuring standardized products. From his work with this and with the cock's comb method he concluded that the same active agent is not concerned in the two effects since one disappeared more rapidly than the other.

Goodall¹³ agreed with Kehrer in the use of cats, but employed as the end-point, the action on blood pressure—20 min. of liquid extract intravenously administered should raise the pressure 20 mm. of mercury in an animal of 1500 Gm. He, however, recognized the presence of both pressor and depressor substances and concludes that "In the present state of knowledge it is hardly possible to adjust the therapeutic dosage of ergot to physiological findings."

Cronyn and Henderson¹⁴ pointed out that failure to obtain satisfactory blood pressure records is largely due to the anesthetic—a volatile anesthetic partially nullifying the pressor action. This has also been observed by others. They reached the same conclusion as that of Goodall that no thoroughly reliable method is known for establishing uniformity in ergot extracts. Their work with the cock's comb method is, however, open to criticism on account of using different breeds of roosters and not more carefully standardizing the technic.

Probably no more extensive experiments have been carried out to select a satisfactory assay method for ergot than were those of Edmunds and Hale,¹⁵ who reviewed the literature critically, examined the various methods which had been suggested, and finally selected as least subject to inaccuracies the cock's comb method, the end-point recommended being that 1 mil of the fluidextract injected deeply into the breast muscles must blacken the comb in one hour. As a standard they suggest that 1 mil of fluidextract blacken the comb to the same extent as 2¹/₂ mg. ergotoxin phosphate.

Pittenger and Vanderkleed,¹⁶ in 1914, suggested as the most logical and accurate method for standardizing ergot, its action on the isolated uterus muscle. This method, in the light of the chemical and pharmacological investigations of Barger and Dale, is not applicable for their standardization. They considered ergotoxin to be the most valuable principle in ergot and also that it has little action on the uterus.

My personal experience with the standardization of ergot suggests the use of White Leghorn cocks not over 1 year old, sufficiently susceptible to the action of ergot so that 1 mil of the fluidextract shall blacken the comb in a typical manner and to a reasonable degree in one hour. The roosters for test purposes have an individual record of the average degree of blackening to be expected and are frequently retested with a standard fluidextract to verify their susceptibilities.

Knowing as we do that different constituents of ergot have different pharmaco-

logic effects it is difficult to select for test purposes a reaction which surely represents the desirable therapeutic action of the drug.

The chemist finds certain constituents to be present; the pharmacologist determines their typical effects but rarely has the physician had full opportunity to conclude as to which is the substance concerned in the therapeutic effects of the drug.

As an oxytocic agent one would naturally believe that only the constituent acting on the uterine muscle is of value, while as a hemostatic the pressor effect seems the logical measure.

But histamine, which has a selective action on the uterine muscle, has not proved to be a valuable oxytocic agent when used alone. Further, it lowers the blood pressure of most anesthetized animals and thus obscures the pressor effect and makes the blood pressure test of the drug an uncertain measure of its value as a hemostatic.

Tyramine, another of the constituents isolated from ergot, is said to act on the uterus and to raise the blood pressure both effects probably due to its action on unstriated muscular tissue.

Ergotoxin has much the same therapeutic effect, and pharmacologically has the typical action of bluing the cock's comb.

The logical conclusion, therefore, from this is that the cock's comb reaction is not obscured by counteracting substances as is the pressor test and with our present knowledge is the most satisfactory of the various tests proposed.

THE DIGITALIS SERIES OF HEART TONICS.

The earliest recorded attempts actually to standardize the members of this series are apparently those of Fagge and Stevenson¹ in 1866. They claimed that the physiological tests of these medicinal substances would be of great medico-legal importance.

They carried out tests on most of the members of the series but particularly on digitalin. The method used was that later called the Focke Method and consisted in exposing the heart of the weighed frog, which was then attached to a cork. The solution was injected subcutaneously into the thighs and the time noted when the heart stopped in systole. The time elapsing between injection and systolic stoppage was selected as the basis for the relative toxicities of the different samples. They considered frogs much more satisfactory than the higher animals because of ease in examining the different organs and the rapidity of their reaction to the drug.

Koppe² carried out similar experiments on the separated constituents of digitalis, using the same technic and end-point as the earlier writers. He used other animals also, dogs, cats and rabbits, to which the drug was administered mostly subcutaneously, noting in the dog and rabbit the changes in the rate and strength of the heart beat, in the cat and dog also the amount necessary to induce vomiting.

In 1881, Bennefeld³ undertook the examination of tinctures of digitalis from different parts of Germany. Chemical and physical methods failing, he applied physiological tests, using the rabbit. His technic was that later adopted by Hatcher for his cat method, namely, to inject the solution slowly into the jugular vein until the animal dies. The solution injected was prepared by evaporating

the tincture to constant weight and digesting the residue with water at a moderate temperature, using a filtered solution for injection.

Fraenkel,⁴ in the same year, examined different preparations of digitalis on the dog. The animal was curarized and injected subcutaneously. He observed three typical effects of digitalis, the increased blood pressure, decreased rate and increased amplitude of the heart beat.

Gley,⁵ in 1888, tested ouabain and strophanthin on the laid-bare frog's heart and observed that with equal doses systolic stoppage was accomplished in half the time with the former. He also determined their toxicity on guinea pigs, dogs, and rabbits.

Reusing⁶ compared the action of strophanthus and digitalis using frogs. He not only studied the effect on the exposed heart, as in previous methods, but applied also a perfusion method.

Bardet⁷ examined the various active constituents of digitalis employing frogs and rabbits in the method known as the M. L. D. method, the first recorded account of the use of frogs in this, the simplest application of the physiological test, the method adapted by Houghton for quantitative assay purposes.

Fouquet⁸ also determined only the M. L. D., using frogs, dogs and rabbits, administering the material subcutaneously with as little alcohol as would dissolve the substance.

Prevost,⁹ examining Swiss Pharmacopoeial digitalis extracts, used frogs and chose for the end-point the minimum systolic dose. He considered the frog by far the best adapted to the work.

Houghton,¹⁰ in 1898, in October took the first step in advance of other pharmacologists of this time by adopting as a routine procedure the physiologic assay of the heart tonics on frogs, using the M. L. D. as the end-point. This method was further elaborated and presented before the Pharmaceutical Section of the 7th International Congress of Applied Chemistry on May 31, 1909, at which time he suggested a Heart Tonic Unit based on the M. L. D. and proposed this as an international standard for the assay of the digitalis series.

Jacquet,¹¹ recognizing the importance and the applicability of the physiological test in arriving at exact dosage of digitalis, described his method and recorded his results in 1897 but did not propose the routine application of the method until December, 1898. His method was the systolic stoppage of the frog's heart, but he used rabbits as well, adopting as an end-point the minimum lethal dose.

Fränkel,¹² taking up the subject again, used the systolic stoppage of the frogs heart as the end-point but made an important forward step in fixing the time at which stoppage in systole must take place at one hour, thus varying the dose instead of the time. This approaches still more closely the method of Focke and Gottlieb, and is almost identical with the present U. S. P. Method.

Famulener and Lyons¹³ adopted the same general method probably about the same time in studying the relative values of different digitalis extracts and the active constituents of digitalis.

Ziegenbein,¹⁴ using a method credited to Hans and Arthur Meyer but really originated by Fagge and Stevenson, examined a number of different species of digitalis and found them to differ greatly in toxicity. He selected a two-hour interval in which the drug should act to induce the systolic stoppage.

With all the imperfections which he had observed in the physiological methods he considered that only by the use of the frog could one obtain a degree of uniformity in the activity of digitalis preparations.

Moschkowitsch,¹⁵ in 1903, on the basis of considerable experimentation, regretted to report that he failed to substantiate the results of Focke, Prevost, and others by use of frogs, but his failure seemed to carry no particular weight against physiological testing.

The reason for this is probably twofold, first, because some of his work is open to criticism and, second, because all who have experimented in pharmacologic assaying recognize the difficulties and discouragements involved, and, further, realize that chemical methods have even less evidence in their favor.

Focke¹⁶ wrote voluminously on the physiological assay of digitalis and a method known by his name was given tangible form in 1902.

He applied the principal first used by Fagge and Stevenson, but modified for quantitative results. He obtains a value $V = p/dt$, in which p is weight of the frog, d the dose, and t the time of systolic standstill.

The objections to this, the second modification of the frog-heart method in its quantitative application, are first, that the short time selected for obtaining results, namely, 7 to 10 minutes, is too short for complete absorption of the drug and is thus inapplicable to extracts containing much inert material; second, the laying bare of the heart of an unanesthetized animal is contrary to the best pharmacologic procedure, and further, is certainly a factor in affecting the results adversely; third, the use of so few frogs does not allow for sufficient elimination of exceptional frogs—those much more or less resistant than the average. It has never found adherents in the U. S.

In addition to applying a quantitative method to digitalis assay, Focke experimented with leaves from different sources, of different ages, wild and cultivated, the effect of moisture on deterioration, and the seasonal and temperature effect on the frog. In all, while not much of his work was purely original, he added considerable to our knowledge of this drug and its standardization.

Santessen¹⁷ used another modification of frog-heart method in that he observed the effect on the heart, but did not expose it until the heart had practically reached systolic standstill. He recognized the difficulties of physiological standardization and the importance of the factor of individual resistance as well as the general factors which affect results in such a method.

Hatcher¹⁸ first adopted the systolic stoppage of the heart in one hour as the method and end-point for assay purposes, but later wrote on his experiments with the cat method, adapting the technic of Bennefield, that of slowly injecting the material into the vein over a period of 90 minutes, death to take place at that time. This is the first suggestion of the practical use of this method for quantitative assay and it may be said that while there seems little to recommend it, the method has appealed to some as of considerable importance. One of the arguments for it, or rather used against the M. L. D. frog-heart method, is that a product may possess toxic principles which are of no therapeutic value but which appear valuable by strictly M. L. D. methods. It should be noted, however, that the cat method is nothing more than an toxicity test with the disad-

vantage that the characteristic systolic stoppage cannot be observed to identify the cause of death.

Hatcher, himself, admitted that he found unaccountable variations of about 50 percent and his tables show even greater variation than he admitted.

Robinson and Wilson,¹⁹ in some experiments to establish the character of the digitalis action on the cat's heart, observed a total variation of 100 percent in the lethal dose.

Reed and Vanderkleed,²⁰ objecting to the use of frogs because of the number of variable factors concerned, proposed the M. L. D. of guinea pigs as a quantitative method. They have, however, failed to prove that guinea pigs have a constant resistance and that death results from a direct action on the heart. It is another M. L. D. method with no technic to confirm the cause of death, such as is available in the frog-heart methods.

The work of Sollmann and others²¹ in showing the influence of temperature on the toxicity of the digitalis series to frogs is well worth noting and is highly important. This variable factor, however, is offset in both the frog-heart methods by the use of the standard for comparison in every assay thus eliminating this as well as other uncontrollable factors, such as, climate and season and the species and weight of the frogs.

Heintz,²² in 1912, recognizing the limitations of the various physiologic tests proposed, suggested applying not one but several tests, including the M. L. D. and M. S. D. on frogs, the M. L. D. on mice, and the pressor action on the circulatory system of rabbits and cats. The toxic dose on mice is by internal administration with food in pill form. His proposition has received little comment.

Krogh²³ used the isolated frog's heart and determined the lowest concentration of the drugs which would arrest the spontaneous rhythm. He considered the method accurate within 10 percent.

One other proposed method remains to be noted, namely, that of Pittenger,²⁴ who suggested the use of gold fish which are particularly susceptible to the influence to poisons in water. It is probably the simplest method heretofore proposed but it appears to have gained insufficient recognition for criticism. It is another M. L. D. method and allows of no means of identifying the poison that causes death.

Of the methods quoted only the M. L. D. and M. S. D. on frogs, and M. L. D. on guinea pigs and cats, are practiced in the U. S. The M. S. D. on frogs is the one suggested in U. S. P. IX as adapted to the standardization of this important series of drugs.

The cat method, as stated before, is purely a toxicity test and can be classed with that on guinea pigs as objectionable because death is almost invariable due to paralysis of the respiratory centers, and, therefore, not directly a measure of the heart tonic value.

As stated by Edmunds and Hale, there is little to choose between the M. L. D. and M. S. D. on frogs. To one who has been accustomed to the former, however, it has three advantages over the M. S. D. method, first, in the use of a larger number of frogs with less work and actual time involved; second, in the elimination of the factor of slow absorption, and third, in the fact that the end-point is not obscured by rough handling such as by the pithing and laying bare of the frog's heart. At the same time it has the only advantage claimed for the M. S. D.

method in that the frog's heart can always be examined to verify the identity of the toxic principle.

THE PITUITARY GLAND.

While the extracts of this gland have widely different effects, such, for example, as the pressor, diuretic, glactagogue, cathartic, and oxytocic actions, no undisputed chemical evidence has been brought forward to demonstrate the presence of more than one active constituent—a substance which acts on plain muscular tissue and is responsible for all the phenomena noted.

As assay methods, only three have been proposed and of these only two are generally used, one being official in the 9th Rev. of the U. S. P.

The first method proposed is that by Dale and Laidlaw,¹ who in 1912 described the method which with some modifications is now official. It consists, in brief, in using the isolated uterine muscle from a young guinea pig of not to exceed 350 Gm. weight. One horn is removed, suspended between a fixed and a movable attachment in artificial blood plasma (Locke's solution), heated to body temperature, and the solution to be tested is thoroughly mixed with the Locke solution to make a homogeneous mixture in contact with the uterine muscle. It is claimed that when all the conditions are rigidly followed the contractions of the uterus will vary according to the amount of active principle present in the solution.

There are many factors affecting the sensitiveness of the muscular tissue used in the test and, therefore, affecting the quantitative accuracy of the method such, for example, as the size, age and condition of the pig, the temperature changes of the solution in contact with the specimen, and the presence of foreign substances in the Locke's Solution or in the pituitary extract.

The method has been later described by a number of authors in each case with some slight variation in technic.

Fühner² applied this method in attempting to prove the separation from the gland of four active constituents with different properties. One of these constituents was considered to be the active principle, but others had similar properties less strongly pronounced.

Heidelberg, Pittenger and Vanderkleed³ consider the oxytocic to be the only method practicable for quantitative assaying, describing in minute detail the apparatus and technic used by them.

Guggenheim⁴ used the rat uterus with approximately the same technic. There was no exceptional contraction observed, but after applying hypophysis extract to the uterus it maintained a steady contraction instead of the normal rhythmic contractions.

Roth⁵ described the Dale method in minute detail with his modifications and concluded, on the basis of considerable experimentation, that it is the most satisfactory assay method, he having also applied tests by the intact uterus and the blood pressure. The intact uterus is so rarely used that it is not regarded as a distinct method.

For a standard in carrying out the uterine contraction assay Roth proposed and used a solution of histamine which acts similarly to pituitary on the uterine muscle but which more often lowers than raises blood pressure. The final dilution of histamine found best suited in most cases is 1 in 20,000,000, which, in comparison with two of the best known commercial preparations, diluted 1-15000

caused equal contractions. No tracings were submitted to substantiate these statements.

For the pressor test, histamine not being applicable, a commercial preparation was selected for comparison with the others. The blood pressure method was proposed by Hamilton⁶ the same year that Dale's method was published.

Disregarding, because of expediency rather than for any other reason, the physiological effects of pituitary extracts other than that on the circulatory system, this author proposed a pressor test by which the activity of the extract could be measured with considerable accuracy.

The dog anesthetized with chloretone was used in the same general way as for standardizing suprarenal gland extracts, comparison being made between the sample and a standard prepared from the dried, defatted, powdered posterior lobe. The standard material was prepared in considerable quantity in order to represent an average product. The amount to be injected at one time was specified as 1 mil of the solution to be obtained by dissolving the soluble part in acidulated water, using 1 Gm. to 1000 Cc.

The method was described in greater detail by Hamilton and Rowe,⁷ who critically analyzed the two methods pointing out the discrepancies in Roth's results and particularly calling attention to the failure of the oxytocic method as a measure of pressor action of pituitary extracts because of the use of histamine as a standard, since the latter is usually not a pressor agent. It also is questionable as a standard since its clinical action is not identical to that of a pituitary extract. The unqualified use of histamine as the standard was also criticised by Pittenger and Vanderkleed⁸ and by Pittenger⁹ who have not found different lots of histamine equally active while solutions have not been proved to be stable.

The U. S. P. 9th Revision Committee gave no details of the test but directed attention to the method as described by the Hygienic Laboratory. The strength of the official solution, however, has been specified as equal to that of histamine 1 to 1000, a value estimated by different authors as being from 10 percent to 40 percent as strong as a good commercial preparation. This has been noted by Pittenger,⁹ Hamilton,¹⁰ and Eckler,¹¹ and the result of the statement is that no official preparation has appeared on the market, since strict adherence to this standard would in some cases lower the activity of the preparations considerably below the present high standard.

The objections to the oxytocic method other than those concerning the character of the standard and the activity of the official product are principally to the fact that the uterine muscle is so sensitive to other stimuli than that specific for pituitary extracts, that uniform quantitatively accurate results are not obtainable, the reaction being rarely proportional to the amount of extract applied.

The principal objection advanced against the pressor test is that the dog, while least subject of all animals to this fault, does not remain sensitive to repeated injections but becomes progressively less responsive after the first two or three. This, however, has not proved a valid objection in the work of the author.^{7,9}

The third method proposed is that of Spaeth,¹² who uses the melanophores of *F. heteroclitus*. "As a result of this work it appears that the melanophores of *Fundulus* and probably of all other teleost fishes must be considered functionally

modified smooth muscle cells." These melanophores or pigment cells of the fish are a part of the scales.

In the assay method these scales are placed in the pituitary solution and the resulting contraction is evidenced by the apparent bleaching out of the pigmented portion of the scales. This effect is also produced by potassium chloride in 0.1 *N* solution and it is proposed that a dilution of this solution shall be used as a standard for comparison.

The standard test solution is a mixture of 0.1 *N* KCl and it is proposed that a dilution of this solution shall be used as a standard for comparison. The standard test solution is a mixture of 1 part 0.1 *N* KCl and 2.5 parts 0.1 *N* NaCl. The solution of pituitary extract is to be mixed with an equal amount of 0.2 *N* NaCl—a dilution which he suggests as "a uniform standard for pituitary extract." As the author has had no experience with the method—this test animal not being available in inland towns—it will not be discussed except from its superficial aspects.

It is not an illogical test in that the same general effect of pituitary extracts as those acting in the other methods is made use of, namely, the constricting action on smooth muscle—an effect which should be fairly transferrable from any one kind of tissue to another. The use of KCl as a standard instead of a standard pituitary product is no more illogical than the use of histamine in the oxytocic test.

It is improbable that the use of a test object not easily obtainable in every locality would ever appeal to the average investigator unless the method were pre-eminently satisfactory. This has not been demonstrated either by the originator of the method or by any other investigator.[†]

The principal points to be considered in comparing the practicability of the first two methods (omitting the third since no data on it are available), are as follows: The pressor test measures the constricting effect of pituitary extract on smooth muscle and has been found free from many of the objectionable features of the oxytocic effect, such as its supersensitiveness and lack of uniformity in results. The dog contrary to Roth's statement (which he failed to prove), does not become progressively less reactive to pituitrin if the proper technic is followed.

The pressor test, therefore, seems equally applicable for assay of pituitary extracts and much more practical for routine analysis.

THE SUPRARENAL GLAND: ADRENALIN.

The physiological standardization of extracts of this gland depends entirely on its constrictor effect, and the assay method now used to the exclusion of all others is the constricting action on the arterioles causing an increased blood pressure. In fact, so completely has this effect taken the place of other reactions that the use of any other test is not considered.

Oliver and Schafer,¹ in 1894 and 1895, noted the marked blood-pressure-raising action of these extracts as did also a number of others about the same time.

Von Fürth, in 1898,² carrying out pharmacologic tests in conjunction with his chemical experiments, observed that when a substance isolated from the gland

[†] Unofficial reports from the Hygienic Laboratory are to the effect that this method was found to be inaccurate and impracticable.

was intravenously administered in a dose of 0.000025 Gm. to a rabbit the blood pressure rose 114 to 116 mm.

Among others who wrote of this reaction is Gottlieb, whose contribution³ is noteworthy because of the tracings showing the action of suprarenal extract on the circulatory system of a dog, the blood pressure of which had been reduced to zero by paralyzing the heart with potassium nitrate.

This combined action on the heart and circulatory system is the effect which forms the basis of the method proposed by Houghton⁴ in a paper read before this Association in 1901.

The method in brief consists in the use of an anesthetized dog, the injections being made intravenously and the results recorded from the carotid artery by means of a kymograph. The injections can most conveniently be made into one of the femoral veins and the record made and preserved on a sheet of blackened paper on the revolving drum of the kymograph. Tracings obtained in this way are shown in which the rise in blood pressure varies directly with the amount of active agent injected.

My personal experience with this method began in 1900 at which time the standard used for comparison was a carefully prepared and preserved extract of the gland so diluted before injection that the rise in blood pressure would not in general be greater than 20 to 30 mm.

In 1902, in a second paper by Houghton,⁴ the method was amplified and the active constituent, adrenalin, was proposed as the standard with the test dose for the average dog 1 mil of solution of adrenalin chloride containing 0.00001 Gm. per mil. This is by no means a minimum active dose but was selected as the dose from which the reaction was most sensitive to minute changes. Thus it is easy to distinguish a difference of 5 percent more or less than this amount when injected into an average dog and, therefore, permits of standardization within those limits of error.

No material change from this technic was proposed by anyone until the Revision Committee of the 9th U. S. P. included the suprarenal gland among the drugs for which a physiological test was proposed. To the casual reader the two methods are identical but to the operator there are several points of difference which have received critical comment by Hamilton,⁵ who pointed out sources of error in the described technic.

Cameron,⁶ in 1906, after trying various other methods, chose the blood pressure method as the most convenient and reliable for the purpose of standardizing suprarenal products.

Hunt⁷ and Sollman and Brown,⁸ using the same general method, assayed and reported on several commercial samples.

Crawford⁹ reviewed the literature and gives minute details used in applying this method, but suggested no additional methods.

Läwen,¹⁰ using the same kind of a reaction, but applied by perfusion through the blood vessels of the frog, demonstrated the constricting effect but found the animals to vary considerably in their response.

He observed the effect of a mixture of cocaine and suprarenin, as Braun had first noted to be a localization of the former and thus to prevent its general action.

Ehrman¹¹ applied the reaction to the pupil of the enucleated frog's eye, the

constricting effect in this case being on the iris, thus causing a measurable dilatation of the pupil. He considered the method equally accurate with other applied methods but his results show that a dilution of adrenalin corresponding to the commonly used test solution, namely, Solution Adrenalin Chloride 1-1000 diluted 1 in 100, *i. e.*, 0.00001 Gm. per Cc. was inactive.

In this historical account of physiological standardization no attempt has been made to have the references exhaustive because many of the workers along these lines have made no attempt to apply the test quantitatively. On the other hand, a number of the authors quoted have not contributed directly to the development of drug standardization but their work has been very helpful in pointing the way and for that reason is too important to be omitted.

In collecting the bibliography I have been greatly assisted by consulting the records of a number of authors who have in some cases had access to more extensive libraries than were available to me.

It is evident from a study of the collected references abstracted that there has been no orderly development of the methods official or unofficial now in use to assay these important drugs. In two cases—*Cannabis Sativa* and Adrenalin solutions—there has been only one method for each adopted for general use and in both cases that method made use of one of the first typical effects observed. In the other three cases Ergot, the digitalis series and pituitary gland extracts—two or more methods are in common use and there seems no way to reconcile conflicting opinions.

The reason for this is that in no case is any opinion wholly right or wholly wrong and no one is inclined to give up a method which in his hands has given fairly satisfactory results for one which does not appeal to him as being either more logical or more accurate.

If it were possible to check up by clinical tests the results obtained by the different methods of pharmacologic assay—if for example, it were possible to determine which is the better of two samples of pituitary extract, alike by one method of assay and different by another—then differences of opinion as to the adaptability of any particular method would vanish. This, while apparently a simple means of eliminating discord has never been worked out in practice and we seem no nearer to a satisfactory solution of the problem than at any time in the past.

How serious these differences of opinion are as to which method of assay is correct the following quotation from a letter which passed between two state universities will serve to illustrate: "Permit me to call your attention to the fact that the studies of Roth and Edmunds and many other workers merely relates to the toxicity (of digitalis). Furthermore, in this connection the U. S. P. suggests a standard based on toxicity which, in the opinion of Hatcher and many other workers, is not the measure of the therapeutic value of the drug. A sample may be toxic and high in vaso-constrictor properties, and at the same time be absolutely contra-indicated in 90 percent of the cases where digitalis is called for."

The above quotation is evidence that the official recognition of a method is not sufficient to obtain its general recognition and shows how valuable some clinical evidence would become if it were practicable to obtain it.

The history of Physiological Standardization to date is a record of wonderful development in the face of many discouragements. The opposition has, however, largely broken down and thus the way is cleared for still greater achievement. With the active coöperation of the clinician much might be accomplished which under present conditions is next to impossible.

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O. HENRY, PHARMACIST.

C. Alphonso Smith, the author of the O. Henry Biography, has recently discovered the origin of O. Henry, the nom de plume of the late William Sydney Porter. He writes that he had long suspected the source of the name, but that his surmise was not confirmed until he received the following letter from Dr. Paul Barringer, president of the Virginia Polytechnic Institute. Doctor Barringer writes:

"At various times in my life I have run upon chemical analyses made by a Continental chemist who signed himself 'O. Henry.' While the substances under analysis were adapted to use in the Materia Medica, I had no idea until recently that the man was a pharmacist. In looking up the preparation of hydrocyanic acid in the United States Dispensatory, I found O. Henry twice referred to, in short search. Seemingly he was of Antwerp, as he wrote a good deal for the *Journal de Pharm. d'Anvers*, and also Paris pharmaceutical papers. In fact, I find his trail from 1833 to 1857, and he touched many of the lines a southern drug clerk would be interested in—quinine, cinchonine, etc. Can be it possible that this short, crisp, unusual name, that hits the eye from the page, ever caught the eye of the young drug clerk, Sydney Porter, and stuck?"

Mr. Smith says that on turning to the United States Dispensatory, which O. Henry used when he was a drug clerk in his uncle's store in Greensboro, N. C., he found frequent references to O. Henry. He comments: "When it is remembered that Will Porter had from early boyhood an unerring feeling for odd and narrative names, as well as faces, and that he was filling prescriptions when he first signed the name O. Henry to a short story, the evidence becomes, it seems to me, practically coercive that here and here alone the pen name took its origin."

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

NEW YORK.

The December 1918 meeting of the New York Branch of the American Pharmaceutical Association was called to order by President J. L. Turner in the Lecture Hall of the New York College of Pharmacy Building on Monday, the 9th, at 8.30 o'clock.

Thirty-five members were present.

The minutes of the previous meeting were read and approved.

REPORT OF THE OFFICERS.

Treasurer Horstmann sent word that he could not be present, but would mail the report.

Member of the Council.—Jeannot Hostmann had no report.

Membership Committee.—An application was received from Max Soskin, 439 Brook Ave., New York City.

Fraternal Relations.—Chairman Leon Lascoff had no report to bring in.

Audit Committee.—Chairman Jacob Diner reported that a number of bills had been passed and paid.

Legislation and Education.—Chairman Robert Lehman brought in a lengthy report, which was ordered accepted with the thanks of the Branch.

Under regular procedure the following nominating committee was appointed: Drs. Mayer, Anderson and Arny.

SCIENTIFIC SECTION.

Dr. Geo. C. Diekman, of the Committee on

Progress of Pharmacy, brought in a lengthy report and abstracts on the following:

Colormetric test of brucine.

Assay of opium.

Examination of Oil of Pennyroyal.

Identity test for guaiacol.

Method for rapid destruction of organic matter.

Power of vegetable decolorizing.

Exp. and action of magnesium salts on growth of wheat.

Valuation of balsam of tolu.

Considerable discussion followed the reading of this report, which was ordered accepted with the thanks of the Branch.

Dr. W. C. Anderson discussed the work of the Kings County Pharmaceutical Association.

Dr. Jacob Diner, Mr. Jacob Weil and Dr. Leon Lascoff reported that they wished to go on record that the Manhattan County Pharmaceutical Association would willingly join the American Pharmaceutical Association.

Dr. Joseph L. Mayer read a memorial in honor of Dr. F. E. Niece. It was moved, seconded and carried that a page in the minutes be set aside for these resolutions and that a copy be sent to the family of the deceased.

Under regular procedure the meeting was declared adjourned.

HUGO H. SCHAEFER,

Secretary.

COMMITTEE REPORTS

SOLDIER AND SAILOR PHARMACISTS.

WORK OF THE A. PH. A. ADVISORY COMMITTEE.*

The A. Ph. A. Advisory Committee for Soldier and Sailor Pharmacists is meeting with a hearty response from the Retail Drug Trade of the country. The reports of the Committee

* The Committee held a meeting in Cincinnati December 27, and for this reason this letter is not printed in full, it being expected that the report of the meeting will more explicitly include the statements omitted.

show that on December 14th there had been listed with it positions for 231 disabled pharmacists, in addition to 404 openings for clerkships to men who are not disabled. Many of the positions offered indicate exceptional opportunities for the returning men. Up to December 14th there were listed 565 drug stores, which are for sale to the returning men, in many cases under very advantageous conditions. Partnership openings are offered by 157 druggists, who have grown old in the business and would be glad to be relieved of a part of their work and responsibilities. In the case of many of these partnership openings, a returning Soldier or Sailor Pharmacist will need only to have ability and good reputation. The offer for positions and openings come from every State in the country, and with very few exceptions, from the smaller cities and towns. In the larger cities of the country, the Committee hopes to arrange for coöperation through Local Associations, and is even now assured that the opportunities in the larger cities will be very great. The work of the Committee has only just commenced, and the early returns prove that it will be able to accomplish a great deal. The data gathered up to this time make plain that good drug clerks are in great demand in every section of the country, and the men who will first return from the Service will have no difficulty in finding positions, but it is also found that many places made vacant by those entering the Service have been satisfactorily filled, and many women have found employment in drug stores who are likely to retain their positions. The real problem of the Committee in rendering effective service will come when the last half of the men return. It is anticipated also, that many drug clerks returning from the Service, who have no strong home ties, will be disposed to look for places in the larger cities, and an effort will be made to induce distribution throughout the country.

The Committee is receiving a great number of requests for assistance in securing the early return of drug clerks for positions which are held open. This is not thought to be a part of the Committee's work; such endeavor would be involved with great difficulty, and would hardly find the approval of the authorities. The present plan of the Army seems to be to discharge men as much as possible in groups, and not to attempt to single out individuals. In the Navy, by far the larger part of the pharmacists seem to have been placed in the Hospital Corps, and the Bureau of Medicine, of the Navy Department, advises that there is at present greater need for these men than there has been at any time during the War, and it will not be practicable to release them for several months.

The Committee confidently looks for the continued hearty coöperation of the druggists at home, and either by direct correspondence or through work of Local Committees means to secure and list every opening in the country. One of its difficult problems will be to reach all of the Pharmacists who are now in the Service and who are more or less distributed over all parts of the globe. It is realized that the greatest success of the Committee's work will depend upon reaching the men while they are still in the Service, so that they can be informed and make their plans very largely before they return to civil life. Unfortunately, neither the Army nor the Navy seem to have made arrangements for conveying information of interest to separate classes, and lack of facilities in this respect is apt to greatly hinder the agencies at home which would be helpful in the readjustment to civil life. The Committee is determined to find a way for reaching directly every Pharmacist who continues in the Service beyond an early time, but it realizes that with proper coöperation from the Authorities this part of its work would be greatly aided. Quite a number of small contributions have reached the Committee, all of which are listed by Treasurer H. M. Whelpley, and duly appreciated. It may be stated, however, at this time, that the successful work of the Committee will very greatly, if not entirely, depend upon having ample funds. The work cannot be done properly without having sufficient clerical and office help. It must be in mind that correspondence with possibly twenty thousand persons will have to be systematically handled, and many publications will need to be made. The Drug Trade of the country, which has so readily responded to the Red Cross, Y. M. C. A., K. of C., and War Chest Appeals, now has an opportunity to show its willing generosity to those in whom it is more directly concerned. Without ample funds the work of the Committee cannot be successful. Remittances should be made payable to H. M. Whelpley, Treasurer, and can be mailed to him at No. 2342 Albion Place, St. Louis, Missouri, or to the Chairman, Frank H. Freericks, at No. 1005 Mercantile Library Bldg., Cincinnati, Ohio.

COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 7.

PHILADELPHIA, December 3, 1918.
TO THE MEMBERS OF THE COUNCIL:

The following letter addressed to the Secretary of the Council has been received from Frank H. Freericks, Chairman of the Advisory Committee for Soldier and Sailor Pharmacists:

"Am returning to you herewith the letter from Prof. Wulling, which has been read with great interest. Of course, it is now too late to speak of the enormous task which our Committee has undertaken, as a possible reason for not undertaking it, because our work is under way. We are having the hearty coöperation of all the pharmaceutical journals, and through the wholesale houses of the country are about to distribute fifty thousand circular letters and return questionnaire cards. We have been fairly swamped with demands for circular letters, such demands even now being for more than one hundred and fifty thousand. We are hopeful, however, that with the distribution of the fifty thousand, and with the publication of the questionnaire in all of the drug journals, that we will be able to reach every retail druggist in the country.

The enthusiastic responses and coöperation which we are already having from all sides convince me that our work will be of very great help, and that ultimately it can be of very great credit to the A. Ph. A. What our Committee now needs, is, the most hearty goodwill and coöperation on the part of everyone who has the welfare of the A. Ph. A. at heart. We thoroughly appreciate that we have undertaken no small task, but we want to demonstrate that the A. Ph. A. through its Committees is able to successfully carry through a very big task. I fear that Dr. Wulling has not become fully informed regarding the scope of our work. The finding of positions for the returning men is only one feature. Of course, we know that there is great demand for drug clerks in every community, but the tendency of those returning will be to stay in the larger cities, so that there may be three applicants for every position in the larger cities, while there is a continued scarcity in the smaller towns, unless this situation can be handled in some systematic manner for the entire country. There are possibly over a thousand men now in the Army who had their own stores, and who have sold them. Are these men to come back

and start new stores, or is it not better to try to induce them to buy now existing stores from men who are willing to retire? Of the approximately ten thousand pharmacists and assistants, who are now in the Service, fully one-half will not have had advantage of Pharmacy college training. Will it not be for the good of Pharmacy if some of these men can be induced to take up college studies, and would it not be a wonderful thing for American Pharmacy, if two or three thousand of these men could be induced to spend even a year only at College of Pharmacy? The possibilities for American Pharmacy in this work are almost beyond appreciation at this time. My greatest fear rests in that we may fail to have complete coöperation and understanding on the part of some whose assistance will be almost essential. With a really heartfelt and unselfish assistance on all sides, we are bound to do a wonderful lot of good."

The letter of Frederick J. Wulling, referred to by Chairman Freericks, was as follows:

"I wonder whether the Soldier and Sailor Pharmacists' Advisory Committee realizes what a stupendous program of work it proposes to attempt?

So far as northwestern pharmacists now in service are concerned, I feel quite certain that when they return home every one will either be taken back to his former employment or will have no difficulty in finding suitable openings. In fact, I am confident that there will be competition for the services of these men.

I am heartily in sympathy with the establishment of a fund to be used in helping partly or totally disabled pharmacists.

As far as the other proposed undertakings of the committee are concerned they seem to me, at least as far as the Northwest is concerned, to be unnecessary."

The following budget of appropriations for 1919 is submitted by the Committee on Finance:

PROPOSED BUDGET OF APPROPRIATIONS FOR 1919.

Appropriations for general expenses:

No. 1	Salaries.....	\$6,400
No. 2	Printing, Postage and Stationery.....	1,000
No. 3	Clerical Expenses, Secretary's Service.....	416

No. 4	Miscellaneous Expenses.....	200	
No. 5	Stenographers.....	350	
No. 6	Traveling Expenses...	200	
No. 7	Committee on Membership.....	250	
No. 8	Committee on Unofficial Standards.....	100	
No. 9	Year Book.....	3,000	
No. 10	Premium on Treasurer's Bond.....	50	
No. 11	National Drug Trade Conference.....	200	
No. 12	Section on Scientific Papers.....	25	
No. 13	Section on Education and Legislation....	25	
No. 14	Section on Commercial Interests.....	25	
No. 15	Section on Practical Pharmacy and Dispensing.....	25	
No. 16	Section on Historical Pharmacy.....	25	
No. 17	Women's Section....	50	
No. 18	National Syllabus Committee.....	25	
No. 19	Committee on Recipe Book.....	50	
			\$12,416
	Appropriation for Open Accounts:		
No. 20	Journal... ..	\$6,250	
	(a) Publication....	\$5,000	
	(b) Clerical.....	800	
	(c) Postage and Stationery.....	300	
	(d) Freight, Drayage Miscellaneous... ..	150	
No. 21	National Formulary...	1,000	
No. 22	Badges and Bars.....	50	
No. 23	Certificates.....	50	7,350
			\$19,766

Do you approve of Budget of Appropriations for 1919 as above proposed? This will be regarded as *Motion No. 10 (Approval of Budget of Appropriations for 1919)*.

J. W. ENGLAND,

415 N. 33rd Street.

Secretary.

A. PH. A. COUNCIL LETTER NO. 8.

PHILADELPHIA, December 23, 1918.

TO MEMBERS OF THE COUNCIL:

Motion No. 9 (Election of Members; applications Nos. 44 to 55 inclusive) and Motion No. 10 (Approval of Budget of Appropriations) for 1919 have passed.

The following communication has been received from E. N. Gathercoal:

"Hugo Schaefer of New York, has resigned from the Secretaryship of the Scientific Section. At the Chicago meeting Mr. Schaefer was also elected Local Secretary for the coming New York Meeting. Because of the multitude of duties connected with the local secretary's office, he requests that he be released from the Scientific Section work.

I, therefore, make the motion, seconded by W. B. Day, that the resignation of Hugo Schaefer as Secretary of the Scientific Section be accepted.

When the nomination of a successor to Mr. Schaefer becomes in order, I should like to move the nomination of A. G. DuMez of Washington, as Secretary of the Scientific Section for 1918-1919. Seconded by W. B. Day."

Motion No. 11 (Resignation of Hugo Schaefer as Secretary of Scientific Section). Moved by E. N. Gathercoal, seconded by W. B. Day, that the resignation of Hugo Schaefer as Secretary of Scientific Section be accepted.

A communication has been received from C. H. LaWall, seconded by E. G. Eberle, moving that the Budget of Appropriations for 1919 be amended to include an appropriation of \$25 for expenses of Committee on Local Branches. This proposal has the approval of the Committee of Finance, but it has been received too late for amending the budget before January, 1919. Therefore, it is moved that an appropriation of \$25 for expenses of the Committee on Local Branches be included in the budget as passed. This will be known as *Motion No. 12 (Appropriation of \$25 for Expenses of Committee on Local Branches)*.

J. W. ENGLAND,

415 N. 33rd Street.

Secretary.

AMERICAN PHARMACEUTICAL ASSOCIATION

Organized: Philadelphia, 1852.

Incorporated: Washington, D. C., 1888.

OFFICIAL ROSTER FOR 1918-1919.

GENERAL OFFICERS.

<i>President</i> —CHARLES H. LAWALL.....	39 So. 10th St., Philadelphia, Pa.
<i>Honorary President</i> —OLIVER F. FULLER.....	310 W. Washington St., Chicago, Ill.
<i>First Vice-President</i> —F. W. NITARDY.....	66 Orange St., Brooklyn, N. Y.
<i>Second Vice-President</i> —THEODORE J. BRADLEY.....	70 St. Botolph St., Boston, Mass.
<i>Third Vice-President</i> —FRANCIS HEMM.....	2108 Locust St., St. Louis, Mo.
<i>General Secretary</i> —WILLIAM B. DAY.....	701 So. Wood St., Chicago, Ill.
<i>Treasurer</i> —HENRY M. WHELPLEY.....	2342 Albion Place, St. Louis, Mo.
<i>Reporter on the Progress of Pharmacy</i> —H. V. ARNY.....	115 W. 68th St., New York, N. Y.
<i>Editor of the JOURNAL</i> —E. G. EBERLE.....	253 Bourse Building, Philadelphia, Pa.
<i>Local Secretary</i> —HUGO H. SCHAEFER.....	115 W. 68th St., New York, N. Y.

OFFICERS-ELECT FOR 1919-1920.

President—L. E. SAYRE.....	Lawrence, Kas.	
First Vice-President—THEODORE J. BRADLEY.....	70 St. Botolph St., Boston, Mass.	
Second Vice-President—HARRY WHITEHOUSE.....	Johnson City, Tenn.	
Third Vice-President—E. FULLERTON COOK.....	145 No. 10th St. Philadelphia, Pa.	
Members of the Council {	J. H. BEAL.....	801 W. Nevada St. Urbana, Ill.
	CHARLES H. LAWALL.....	39 So. 10th St. Philadelphia, Pa.
	S. L. HILTON.....	1033 22nd St. N. W., Washington, D. C.

OFFICERS OF THE HOUSE OF DELEGATES.

<i>Chairman</i> —OTTO F. CLAUS.....	3513 Herbert St., St. Louis, Mo.
<i>First Vice-Chairman</i> —S. L. HILTON.....	1033 22nd St. N. W., Washington, D. C.
<i>Second Vice-Chairman</i> —E. F. KELLY.....	Lombard and Green Sts., Baltimore, Md.
<i>Recording Secretary</i> —JEANNOT HOSTMANN.....	115 W. 68th St., New York, N. Y.

OFFICERS OF THE COUNCIL.

<i>Chairman</i> —LEWIS C. HOPP.....	1104 Euclid Ave., Cleveland, Ohio.
<i>Secretary</i> —JOSEPH W. ENGLAND.....	415 No. Thirty-third St., Philadelphia, Pa.

OFFICERS OF THE SECTIONS.

SCIENTIFIC SECTION.

<i>Chairman</i> —E. N. GATHERCOAL.....	701 So. Wood St., Chicago, Ill.
<i>First Vice-Chairman</i> —C. B. JORDAN.....	409 Russell St., Lafayette, Ind.
<i>Second Vice-Chairman</i> —C. O. EWING.....	Bureau Chemistry, Pharmacognosy Laboratory, Washington, D. C.
<i>Secretary</i> —HUGO H. SCHAEFER*.....	115 W. 68th St., New York, N. Y.

SECTION ON EDUCATION AND LEGISLATION.

Chairman—	W. F. RUDD.....	1216 Grove Ave., Richmond, Va.
Secretary—	C. A. DYE.....	Ohio State University, Columbus, Ohio.
Associates—	WILLIAM MANSFIELD.....	Albany College of Pharmacy, Albany, N. Y.
	E. L. NEWCOMB.....	719 6th Ave., S. E., Minneapolis, Minn.
	W. H. ZIEGLER.....	213 Rutledge Ave., Charleston, S. C.

SECTION ON PRACTICAL PHARMACY AND DISPENSING

Chairman—	R. W. TERRY.....	Groveport, Ohio.
Secretary—	Edward Davy.....	21 E. 12th Ave., Columbus, Ohio.
Associates {	WILLIAM GRAY.....	1753 W. Congress, Chicago, Ill.
	IRWIN A. BECKER.....	Michael Reese Hospital, Chicago, Ill.

SECTION ON COMMERCIAL INTERESTS.

Chairman—	E. FULLERTON COOK.....	145 N. 10th St., Philadelphia, Pa.
Secretary—	H. S. NOEL.....	3124 Kenwood Ave., Indianapolis, Ind.
Associates—	HUGO H. SCHAEFER.....	115 W. 68th St., New York, N. Y.
	J. H. REHFUSS.....	252 Summer Ave., Brooklyn, N. Y.
	I. M. LIGHT.....	31 W. Lake St., Chicago, Ill.

SECTION ON HISTORICAL PHARMACY.

<i>Chairman</i> —HUGO KANTROWITZ.....	104 John St., New York, N. Y.
<i>Secretary</i> —W. O. RICHTMANN.....	1721 Van Hise Ave., Madison, Wis.
<i>Historian</i> —E. G. EBERLE.....	253 Bourse Building, Philadelphia, Pa.

WOMEN'S SECTION.

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<i>Third Vice-President</i> —MRS. F. W. MEISSNER.....	820 Main St., LaPorte, Ind.
<i>Secretary-Treasurer</i> —MRS. JEAN MCKEE KENASTON.....	Bonesteel, S. Dak.
<i>Historian</i> —MISS BERTHA OTT.....	Bethesda Hospital, Cincinnati, Ohio.

*Resigned on account of his duties as Local Secretary, A. Ph. A.

GENERAL COMMITTEES.

(Appointed by the President.)

INTERNATIONAL PHARMACEUTICAL NOMENCLATURE.

OTTO RAUBENHEIMER, <i>Chairman</i>	Brooklyn, N. Y.	H. M. WHEPLEY.....	St. Louis, Mo.
F. M. APPLE.....	Philadelphia, Pa.	G. M. BERINGER.....	Camden, N. J.
J. W. STURMER.....	Philadelphia, Pa.		

HEALTH INSURANCE.

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HUGH CRAIG.....	Detroit, Mich.	J. H. BEAL.....	Urbana, Ill.
W. C. ANDERSON.....	Brooklyn, N. Y.		

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J. H. BEAL.....	Urbana, Ill.	S. L. HILTON.....	Washington, D. C.

PATENTS AND TRADEMARKS.

F. E. STEWART, <i>Chairman</i>	Philadelphia, Pa.	S. C. HENRY.....	Chicago, Ill.
W. A. PUCKNER.....	Chicago, Ill.	R. P. FISCHELIS.....	Philadelphia, Pa.
C. L. ALSBERG.....	Washington, D. C.		

PHARMACEUTICAL SYLLABUS.

W. H. RUDDER, 3 Lyons Block, Salem, Ind.....	Term expires 1919
E. L. NEWCOMB, 719 6th Ave., S. E., Minneapolis, Minn.....	Term expires 1918
E. G. EBERLE, 253 Bourse Building, Philadelphia, Pa.....	Term expires 1920
HARRY B. MASON, P. O. Box 484, Detroit, Mich.....	Term expires 1921
GEORGE M. BERINGER, 501 Federal St., Camden, N. J.....	Term expires 1921
H. H. RUSBY, 776 DeGraw Ave., New York, N. Y.....	Term expires 1923
WILLIS G. GREGORY, 344 Richmond Ave., Buffalo, N. Y.....	Term expires 1924

PHYSIOLOGICAL TESTING.

PAUL S. PITTINGER, <i>Chairman</i>	Philadelphia, Pa.	H. C. HAMILTON.....	Detroit, Mich.
W. A. PEARSON.....	Philadelphia, Pa.	HENRY C. COLSON.....	Baltimore, Md.

REVISION OF CONSTITUTION AND BY-LAWS.

J. H. BEAL, <i>Chairman</i>	Urbana, Ill.	H. M. WHEPLEY.....	St. Louis, Mo.
J. W. ENGLAND.....	Philadelphia, Pa.	G. M. BERINGER.....	Camden, N. J.
HARRY B. MASON.....	Detroit, Mich.		

STATUS OF PHARMACISTS IN GOVERNMENT SERVICE.

S. L. HILTON, <i>Chairman</i>	Washington, D. C.	C. A. MAYO.....	New York, N. Y.
G. M. BERINGER.....	Camden, N. J.	W. B. DAY.....	Chicago, Ill.
E. G. EBERLE.....	Philadelphia, Pa.		

UNITED STATES PHARMACOPOEIA.

E. N. GATHERCOAL, Chicago, Ill.....	Term expires 1919
E. FULLERTON COOK, Philadelphia, Pa.....	Term expires 1920
E. H. LAPIERRE, Cambridge, Mass.....	Term expires 1921
H. A. B. DUNNING, Baltimore, Md.....	Term expires 1922
HERMANN ENGELHARDT, Baltimore, Md.....	Term expires 1923
A. B. LYONS, Detroit, Mich.....	Term expires 1924
WILLIAM MITTELBACH, Boonville, Mo.....	Term expires 1925
REID HUNT, Boston, Mass.....	Term expires 1926
L. D. HAVENHILL, Lawrence, Mass.....	Term expires 1927
L. F. KEBLER, <i>Chairman</i> , Washington, D. C.....	Term expires 1928

WEIGHTS AND MEASURES.

JEANNOT HOSTMANN, <i>Chairman</i>	New York, N. Y.	H. P. HYNSON.....	Baltimore, Md.
H. V. ARNY.....	New York, N. Y.	C. M. SNOW.....	Chicago, Ill.
E. F. COOK.....	Philadelphia, Pa.		

WILLIAM PROCTER, JR., MEMORIAL FUND.

J. F. HANCOCK, <i>Chairman</i>	Baltimore, Md.	F. G. RYAN.....	Detroit, Mich.
A. R. L. DOHME.....	Baltimore, Md.	PARKER COOK.....	Baltimore, Md.
B. T. FAIRCHILD.....	New York, N. Y.	J. K. LILLY.....	Indianapolis, Ind.
CASWELL A. MAYO.....	New York, N. Y.	H. S. WELLCOME.....	London, Eng.
E. G. EBERLE.....	Philadelphia, Pa.	CHAS. G. MERRELL.....	Cincinnati, Ohio.
J. L. LENGFELD.....	San Francisco, Calif.	JOSE P. ALACAN.....	Havana, Cuba.
C. M. FORD.....	Cambridge, Mass.	E. L. PATCH.....	Stoneham, Mass.
CLEMENT B. LOWE.....	Vineland, N. J.	LEWIS C. HOPP.....	Cleveland, Ohio.
WILLIAM B. DAY.....	Chicago, Ill.	JAMES E. HANCOCK.....	Baltimore, Md.
W. S. RICHARDSON.....	Washington, D. C.		

TIME AND PLACE OF NEXT MEETING.

THEODORE J. BRADLEY, <i>Chairman</i>	Boston, Mass.	W. F. RUDD.....	Richmond, Va.
J. O. BURGE.....	Nashville, Tenn.	F. W. NITARDY.....	Brooklyn, N. Y.
E. SPEASE.....			Cleveland, Ohio.

BOARD OF CANVASSERS FOR 1919.

F. P. STROUP, <i>Chairman</i>	Philadelphia, Pa.	E. E. HESSLER.....	Philadelphia, Pa.
IVOR GRIFFITH.....	Philadelphia, Pa.	A. HUNSBERGER.....	Philadelphia, Pa.
W. W. MCNEARY.....	Philadelphia, Pa.	W. A. PEARSON.....	Philadelphia, Pa.

CLOSER AFFILIATION OF PHARMACISTS AND PHYSICIANS.

JACOB DINER, <i>Chairman</i>	New York, N. Y.	CHARLES HOLZHAUER.....	Newark, N. J.
W. B. DAY.....	Chicago, Ill.	I. A. BECKER.....	Chicago, Ill.
	H. A. B. DUNNING.....		Baltimore, Md.

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IVOR GRIFFITH, <i>Chairman</i>	Philadelphia, Pa.	C. W. JOHNSON.....	Seattle, Wash.
G. C. DIEKMAN.....	New York, N. Y.	E. S. THACHER.....	Milwaukee, Wis.
L. SAALBACH.....	Pittsburgh, Pa.	F. E. BIBBINS.....	Indianapolis, Ind.
	R. W. TERRY.....		Groveport, Ohio.

MODEL PHARMACY LAW.

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W. C. ANDERSON.....	Brooklyn, N. Y.	F. E. STEWART.....	Philadelphia, Pa.
	J. H. BEAL.....		Urbana, Ill.

SPECIAL COMMITTEES.

AMERICAN JOINT, ON HORTICULTURAL NOMENCLATURE.

H. H. RUSBY, <i>Chairman</i>	Newark, N. J.	O. A. FARWELL.....	Detroit, Mich.
	H. W. YOUNGKEN.....		Philadelphia, Pa.

FEDERATION OF PHARMACY AND DRUG ASSOCIATIONS AND HOUSE OF DELEGATES.

H. V. ARNY, <i>Chairman</i>	New York, N. Y.	A. R. L. DOHME.....	Baltimore, Md.
S. C. CASPARI.....	St. Louis, Mo.	S. C. HENRY.....	Chicago, Ill.
C. O. BIGELOW.....	New York, N. Y.	W. B. DAY.....	Chicago, Ill.
J. H. BEAL.....	Urbana, Ill.	C. M. KLINE.....	Philadelphia, Pa.
C. T. P. FENNEL.....	Cincinnati, O.	F. J. WULLING.....	Minneapolis, Minn.

COMMITTEES APPOINTED BY THE SECTIONS.

EBERT PRIZE (APPOINTED BY SCIENTIFIC SECTION).

F. R. ELDRED, <i>Chairman</i>	Indianapolis, Ind.	W. L. SCOVILLE.....	Detroit, Mich.
	W. F. RUDD.....		Richmond, Va.

QUALITY OF MEDICINAL PRODUCTS (APPOINTED BY SCIENTIFIC SECTION).

E. L. PATCH, <i>Chairman</i>	Stoneham, Mass.	O. A. FARWELL.....	Detroit, Mich.
H. ENGELHARDT.....	Baltimore, Md.	H. L. SCHULTZ.....	New York, N. Y.

SPECIAL SUBCOMMITTEES.

BOARDS OF PHARMACY.

H. LIONEL MEREDITH, <i>Chairman</i>	Hagerstown, Md.	E. BERGER.....	Tampa, Fla.
H. C. CHRISTENSEN.....	Chicago, Ill.	A. THURSTON.....	Columbus, Ohio.
	R. H. WALKER.....		Gonzales, Texas.

PHARMACISTS IN GOVERNMENT SERVICE.

A. M. ROEHRIG, <i>Chairman</i>	Savannah, Ga.	A. F. DuMEZ.....	Washington, D. C.
	A. M. THOMAS.....		Blaine, Wash.

FOOD AND DRUG CHEMISTS.

I. F. KEBLER, <i>Chairman</i>	Washington, D. C.	H. C. FULLER.....	Washington, D. C.
L. A. BROWN.....	New York, N. Y.	CHARLES E. CASPARI.....	St. Louis, Mo.
	THEO. WETTERSTROEM.....		Cincinnati, Ohio.

WHOLESALE DRUGGISTS AND MANUFACTURERS.

A. R. L. DOHME, <i>Chairman</i>	Baltimore, Md.	W. T. HOVER.....	Denver, Colo.
CHAS. J. LYNN.....	Indianapolis, Ind.	H. K. MULFORD.....	Philadelphia, Pa.
	F. G. RYAN.....		Detroit, Mich.

FACULTIES OF PHARMACY SCHOOLS.

A. H. CLARK, <i>Chairman</i>	Chicago, Ill.	HUGO SCHAEFER.....	New York, N. Y.
IVOR GRIFFITH.....	Philadelphia, Pa.	E. SPEASE.....	Cleveland, Ohio.
	C. W. JOHNSON.....		Seattle, Wash.

DELEGATES.

NATIONAL WHOLESALE DRUGGISTS' ASSOCIATION.

J. W. MORRISON, <i>Chairman</i>	Chicago, Ill.	F. E. HOLLIDAY.....	New York, N. Y.
R. H. WALKER.....	Gonzales, Texas.	P. ASHER.....	New Orleans, La.
	A. W. MILLER.....		Philadelphia, Pa.

NATIONAL DRUG TRADE CONFERENCE.

J. H. BEAL, <i>Chairman</i>	Urbana, Ill.	J. C. WALLACE.....	New Castle, Pa.
	S. L. HILTON.....		Washington, D. C.

NATIONAL ASSOCIATION OF RETAIL DRUGGISTS.

H. P. HYNSON, <i>Chairman</i>	Baltimore, Md.	J. W. GAYLE.....	Frankfort, Ky.
E. H. THIESING.....	Cincinnati, Ohio.	H. S. NOEL.....	Indianapolis, Ind.
	WILHELM BODEMANN.....		Chicago, Ill.

AMERICAN MEDICAL ASSOCIATION.

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REID HUNT.....	Boston, Mass.	J. L. LASCOFF.....	New York, N. Y.
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Committee on Publication: J. W. ENGLAND, *Chairman*; G. M. BERINGER, CASWELL A. MAYO, H. B. MASON, E. L. NEWCOMB, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on Progress of Pharmacy, *ex-officio*.

THE NEW YEAR.

The New Year comes clothed in mystery. But it comes with a great inheritance and holds great opportunities. The memories should give a determination to do great things in the thoughts of men, in their hearts, in their activities. The experiences of pharmacy should develop in pharmacists the resolve and purpose to shape it for doing greater and better service than ever before. A new year brings new hopes, new purposes, and it should be ennobled by high ambitions.

THE ADVISORY COMMITTEE OF THE A. PH. A. FOR SOLDIER AND SAILOR PHARMACISTS.

Every industry is looking after the welfare of its returning soldiers and sailors; the Committee above named is performing such work for pharmacists who have been and are still in the Service. This work is most important and druggists throughout the country will recognize their duty. The various drug journals have given splendid publicity. The time is now, and we feel assured that this is realized; it is a big undertaking and immediate funds are needed to activate this fine expression of patriotism, and an acknowledgment that druggists believe in the value of pharmacy—that they have an interest in those likewise engaged and who have given service to the country. See the report of progress of the Committee under Committee Reports and “do your bit.” The members of the Committee are giving more than their time.

WAR HISTORY OF PHARMACY.

The War Department, Historical Department, Col. C. W. Weeks, Chief, and Major Frederic L. Paxson, Chief, Economical Section, Historical Branch, desires data relative to the activities of pharmacy and pharmacists in the War.

The Historical Section of the A. Ph. A. is desirous of compiling such data. The only way to obtain them is from those who actively participated. The Chairman of the Historical Section is Hugo Kantrowitz, 104 John

Street, New York City; the Secretary is W. O. Richtmann, 1721 Van Hise Ave., Madison, Wis., and the Historian is E. G. Eberle, 253 Bourse Building, Philadelphia, Pa. The Chairman of the Membership Committees in their respective states are requested to collect such data and transmit them to the Historian. The contributions should be typewritten and in duplicate, double space between the lines and inscribed only on one side of the paper. The War Department desires brief authentic memoranda.

Whether these data are submitted to the War Department or not the American Pharmaceutical Association should have the records. All schools of pharmacy responded in one way or another to the call of the Government and records of the work accomplished should be preserved. Each school had alumni and non-graduates in the Service who should send in to these institutions data of pharmaceutical interest. An historical account of the participation of pharmacy in the war would have value, which to be complete requires coöperative work. This would entail considerable expense besides work of compilation, and the question arises as to whether it is worth the price.

SALE OF THE BAYER COMPANY.

The Bayer plant and stock was sold to the Sterling Products Company, of Wheeling, W. Va., and they in turn sold the dyestuff division to the Grasselli Chemical Company, of Cleveland, Ohio. The price of the purchase was over five million dollars, and the second sale involved nearly half of this amount.

SKIN DISEASES FROM LUBRICANTS USED BY METAL WORKERS.

The British Department of Scientific Research has investigated the cause of oil rashes. They are due to the plugging of the small glands at the roots of the hairs and to the mechanical injury to the skin by metallic particles suspended in the cutting lubricant. Washing on a liberal scale is a method of prevention and also the addition of antiseptics to the cutting lubricant.

TREATMENT OF VENEREAL DISEASES BY THE GOVERNMENT AND STATE.

Surgeon-General Rupert Blue, of the Public Health Service, has issued a ruling in regard to the mooted question of the cost of "606," in which trade interests have been embroiled, as follows:

In establishing clinics for the treatment of venereal diseases in the various cities of the country the question of furnishing free arsphenamine or salvarsan for the so-called "606" treatment is one that is causing some concern. When the Government furnishes this treatment free there are physicians who complain that the United States Public Health Service is practicing medicine in competition with them. On the other hand, it is said, there is the danger of pauperizing a certain class of patients by the loss of their self-respect and initiative. Surgeon-General Blue is sure of one thing, and that is that cost or no cost, the infected patients must be treated; not as a favor to them, but as a measure of public safety. He has directed that the question of charging for the necessary drugs be left to judgment of the State health officers.

THE AMERICAN PHARMACEUTICAL ASSOCIATION AND AMERICAN PHARMACISTS SHOULD TAKE A DEEPER INTEREST IN RESEARCH.

The editorial by H. V. Army in the December number of the JOURNAL A. PH. A. should be re-read. A resolve should come into action that the importance of pharmacy will be measured by the research work of pharmacists. Among the addresses delivered before the New York Section of the American Chemical Society was one by Frank R. Eldred, which is re-printed in part:

"It is a rather disquieting thought that we know almost nothing about the mechanism of the action of medicines and that our present medicines have been developed by empirical methods. The effects of many drugs now widely used were discovered accidentally, while certain synthetic drugs were apparently developed for the purpose of utilizing a cheap by-product or a readily available intermediate, and still others were discovered by trying, more or less indiscriminately, one substance after another until one was found which had the desired action. Only a few of the many German synthetic drugs have proved

to be of real value, while the larger number have been foisted upon the public by clever propaganda. It is not desirable that an institution should be established to foster this kind of research. Probably no one but a drug manufacturer knows how many remedies are proposed by chemists and others not chiefly occupied in the development or production of medicinal substances and therefore without any broad knowledge of the needs of medicine. No excuse can be found for many such proposals; some are based upon unsound reasoning and others are entirely lacking in originality, frequently to the extent of having been previously tried and discredited. It would only increase the number of drugs and at the same time lower their average efficacy if drugs inferior to those already available were placed upon the market. A research institute such as we are considering must not therefore lend its influence to the multiplication of drugs of doubtful value nor waste time in the investigation of many of the remedies which might be proposed.

"Although little is known in regard to the manner in which medicines produce their physiological effects, animal experimentation and clinical tests have yielded a great mass of facts in regard to the effects which are produced by various drugs and this forms the foundation of our present efforts in the development of remedial substances. Such facts are of course very important and must not be disregarded. As a result of such studies it has been possible to correlate molecular structure with physiological action in such a way that it has become a most valuable guide to the chemist working in this field, but when substances of such diverse constitution as cocaine, quinine, novocain, benzyl alcohol, and magnesium salts all act as local anesthetics, it becomes apparent that we must look more deeply for the cause of their physiological action.

"The problem is one for the physical chemist, and until the methods of physical chemistry are applied to the study of drugs and the actual mechanism of their action is investigated, we cannot hope for real progress in this most important field. Pharmacology, the study of the action of drugs, then becomes a study involving the application of recognized physical and chemical laws to the investigation of the reactions occurring between the living organism and the chemical agents employed. It is along such lines that an insti-

tute of pharmacology or therapo-chemistry should be developed rather than along the more superficial lines usually thought of in connection with pharmacological work. * * *

ISOTONIC COEFFICIENTS.

William A. Knight, writing in a recent issue of the *Chemist and Druggist*, states that "dispensers are nowadays often asked to prepare solutions of different substances of such strength that they will have the same osmotic pressure. This can, of course, be done by determining the freezing point of the solution of one substance and then by a series of experiments making a solution of the second substance with the same freezing point, but this method requires extremely careful manipulation and takes considerable time. If the substances are non-ionizing, the calculation is simple, since molecular proportions of all such substances produce the same osmotic pressure, *e. g.*, if 360 of milk sugar have the same osmotic pressure as 180 of glucose, then two of milk sugar have the same osmotic pressure as one of glucose. With ionizing substances the calculation is complicated by the fact that a salt such as sodium chloride is partly dissociated into ions of Na and Cl, each of which exerts osmotic pressure, and the amount of ionization varies with the strength of the solution. It has, however, been shown that equi-molecular solutions of substances of the same chemical class (*e. g.*, potassium and sodium salts of monobasic acids) are isotonic, but these relations hold good only for members of the same class, and not of different classes. The isotonic coefficients, *i. e.*, the numbers expressing the relative osmotic pressures, exerted by molecular proportions of the different classes of compounds in dilute solution, are as follows:

Sugars.....	2
Potassium and sodium salts of monobasic acids.....	3
Potassium and sodium salts of dibasic acids.....	4
Potassium and sodium salts of tribasic acids.....	5
Alkaline earth salts of monobasic acids.....	4

"The calculation can also be made from the partial coefficients of the constituents, *i. e.*, every acid radicle, 2; every atom of alkali metal, 1; every atom of divalent metal, 0. If we now wish to make 4 fluidounces of a solution of glucose isotonic with normal saline (0.9 percent NaCl), we have:

Amount of NaCl in 4 fluidounces of 9% solution

$$= 4 \times 0.9 \times 4.375^* = 15.75 \text{ grains,}$$

$$\text{and } 58.5 \text{ of NaCl : } 180 \text{ of glucose : : } 3 : 2,$$

$$\text{or } 2 \times 58.5 \text{ NaCl} = 3 \times 180 \text{ glucose,}$$

$$\text{or } 1 \text{ of NaCl} = (3 \times 180) \div (2 \times 58.5) \text{ glucose,}$$

$$\text{or } 15.75 \text{ NaCl} = (3 \times 180 \times 15.75) \div$$

$$(2 \times 58.5 = 72.6)$$

grains of glucose in 4 fluidounces of solution.

"Similarly, to calculate the strength of a solution of magnesium sulphate isotonic with sodium chloride, we have:

$$246.5 \text{ of magnesium sulphate : } 58.5 \text{ of sodium chloride : : } 2 : 3,$$

$$\text{or } 3 \times 246.5 \text{ magnesium sulphate} = 2 \times 58.5 \text{ sodium chloride;}$$

$$\text{for Mg} = 0 \quad \text{and Na} = 1$$

$$\text{SO}_4 = 2 \quad \text{Cl} = 2$$

$$\therefore \text{MgSO}_4 = 2 \quad \therefore \text{NaCl} = 3''$$

EGG SUBSTITUTES AND SO-CALLED EGG SAVERS.

The Pennsylvania Department of Agriculture has issued *Bulletin No. 314*, devoted to the class of preparations indicated by the title. More than forty of these preparations were investigated by Prof. C. H. LaWall, and in the introduction to his report he says:

"One of the most reprehensible ways of making money is to take some common, everyday substance, disguise or alter its appearance in some way, make a lot of exaggerated statements regarding it, and then sell it for about ten or fifteen times its market value, extolling it as an economical substitute for some expensive article. There has been no preparation of this class, within recent years, that has sprung into prominence with such rapidity as the so-called egg substitutes and with so little merit of legitimate warrant for their manufacture and sale."

The following are his conclusions, and Commissioner James Foust concurs by declaring the sales of such substitutes in violation of the Pennsylvania Food Act:

"First. The brightest light of publicity should be shed on these products, and the heaviest weight of official authority should be invoked to discourage their manufacture and sale.

Second. They afford an opportunity for unpatriotic profiteering, combined with the development of the art of camouflage to the point of perfection.

* It should be noted that the calculations are made for an imperial fluidounce.—EDITOR.

Third. Their names are deceptive; their composition in no wise resembles that of egg; the presence of color, in those where it is used, is a fraud, and the claims as to replacing value are either deliberate misstatements or ambiguous phrases.

Finally. Egg substitutes serve no purpose that cannot be served just as satisfactorily and much more cheaply by articles in daily use in every household."

SANITARY AND PROPHYLACTIC SERVICE IN BRAZIL.

On May 1 Brazil established a sanitary and prophylactic service to prevent the spread of malaria in the Republic. As the first step in this campaign provision has been made for supplying quinine of known purity at a minimum cost to the public. To accomplish this the President of Brazil has issued a decree creating an official quinine service.

By a second decree of the same date the Minister of Justice and Interior is authorized to organize medical commissions to begin a rural prophylactic service "for combating the destructive epidemics of the interior of Brazil."

NEW CHEMICAL AND DRUG MANUFACTURERS.

According to the *Journal of Commerce*, twenty companies for the manufacture and distribution of drugs, chemicals and dyes were organized during December, their aggregate authorized capitalization being \$6,145,000.00. The names of the companies with capitalization of \$50,000.00 and over which were incorporated in December are: Ambrine Laboratories, Inc., N. Y., \$250,000; American Remedies Co., Del., \$300,000; American Potash & Fertilizer Co., N. J., \$600,000; Aspirin Co. of America, N. J., \$125,000; Allen Pharmacal Co., N. J., \$100,000; DuPont Chemical Co., Del., \$3,600,000; H. & H. Medical Specialty Co., N. Y., \$50,000; K. T. C. Chemical Corp., N. Y., \$50,000; Kinsey Chemical Co., N. J., \$100,000; Laboratory Products Co., N. Y., \$250,000; Laxcarin Products Co., Del. (manufacturing and sale of medicines), \$100,000; Nono Laboratories Co., W. Va., \$100,000; The Panvar Co., Del., \$100,000; Pacific Herb Products Co., Wash., \$50,000; Pittsfield Chemical Co., Pa., \$140,000; Spanish-American Druggists Corp., N. Y., \$100,000; Standard Chemical Works, Pa., \$100,000; Victory Drug & Chem. Corp., N. Y., \$100,000; Washington Dye & Chem. Co., N. Y., \$150,000.

THE AMERICAN METRIC ASSOCIATION.

The annual meeting of the American Metric Association was held in Baltimore during the last week of December. The following resolutions were adopted:

"*Resolved*, That the American Metric Association hereby requests the formation of local sections throughout the country."

"*Resolved*, That the American Metric Association hereby expresses its desire to co-operate more fully with those American industries and trades using and contemplating the use of metric weights and measures."

"*Resolved*, That the American Metric Association send greetings to the universities, colleges and other educational institutions and respectfully invite their coöperation in bringing in the general use of meters, liters and grams for the welfare of America."

United States Senator John F. Shafroth read Bill S5037, which he has introduced in Congress, and asked for a discussion on the subject. This bill is a step toward the general use of metric weights and measures, making exceptions where such seem to be advisable for special work.

The Bill was endorsed by the American Metric Association.

Secretary of Commerce Honorable William C. Redfield was the principal speaker at the "Metric Dinner," held on the evening of December 27th. After outlining his practical experience as a manufacturer for thirty years and his travels in other countries in the interests of his export trade, he voiced the conviction that the metric weights and measures should and would be adopted for general use in the United States. The Secretary of Commerce said in part: "I believe that the metric system offers a return to simplicity, offers an effectiveness of thought, offers more to little children in our schools, if you please, which we are not justified in withholding from them."

The following officers were elected for the year 1919:

President—George F. Kunz, New York.

First Vice-President—Wm. Jay Schieffelin, New York.

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Third Vice-President—David A. Molitor, Detroit.

Treasurer—Arthur P. Williams, New York.

Secretary—Howard Richards, Jr., New York.

THE PHARMACIST AND THE LAW.

THE EXAMINER OF INTERFERENCES
OF THE U. S. PATENT OFFICE RECOM-
MENDS CANCELLATION OF THE
WORD "ASPIRIN" AS A
TRADE-MARK.

The decision of the Examiner of Interferences of the U. S. Patent Office, relative to the word "Aspirin," is evidently based on the opinion that the name of this product can no longer be considered a trade-mark. He holds that the respondent, the Farbenfabriken of Elberfeld Company, has not used the word "Aspirin" for the substance in question—"acetyl salicylic acid," as a trade-mark *within the meaning of the law*. An appeal may be taken to the Commissioner of Patents and finally to the Court of Appeals of the District of Columbia. Following the expiration of the patent on Aspirin (No. 644,077) February 27, 1917, the National Drug Trade Conference asked for a legal opinion from its attorneys as to whether or not the patentees, represented by the Bayer Company, Inc., could continue their monopoly through having registered the name "Aspirin" as a trade-mark. In their opinion "Aspirin" was a generic name of a preparation, and so, on the expiration of the patent, passed to the public along with the right to manufacture that preparation. A contrary opinion was given out by the attorneys for the Bayer Company, Inc.

There are a number of viewpoints that have legal bearing on the subject and were expressed in the opinion of the Examiner. The opinion recites that the company failed to maintain prior to 1915 the exact composition of the substance for which the trade-mark was granted. The Examiner's belief is that to the lay purchasing public, or ultimate consumer, the word "Aspirin" prior to 1915 had significance primarily, if not exclusively, as the name of the pharmaceutical substance disclosed in Patent No. 644,077, owned by the respondent. It is stated to be a point in law that when a trade-mark name is so commonly used that it becomes the name of the product it ceases to be a trade-mark.

The big question which seems about to be definitely answered is, "When the patent on a medicinal preparation expires does the right to call that preparation by its well-established name go to the public with the right to manufacture the preparation?"

THE WAR REVENUE BILL.

The War Revenue Bill will likely not become a law until the latter part of January. The Senate attached a large number of amendments and, at this writing, the bill has not been considered in conference.

The tax on distilled spirits adopted by the Senate was \$2.20 a gallon if used for other than beverage purposes, instead of \$4.40 as proposed by the House, and \$6.40 a gallon instead of \$8 when used for beverage purposes. On perfumes imported into the United States containing distilled spirits, in lieu of the internal revenue tax now levied, a tax of \$1.10 per gallon must be paid under the Senate bill, instead of \$3.30 under the House bill. The Senate fixed the tax on soft drinks at 10 percent of the price for which they are sold, instead of 20 percent in the House bill, and upon near beer, etc., at 15 percent of the price instead of 30 percent. The tax on mineral waters was reduced from 2 cents per gallon where the price is over 10 cents per gallon, to 5 percent of the price for which they are sold.

Other excise taxes in the House bill were considerably reduced, among them the tax on toilet soaps and powders from 10 to 3 percent; chewing gum from 6 to 3 percent.

The tax on perfumes, essences, extracts, toilet waters, etc., is made 1 cent for each 25 cents or fraction thereof of the amount paid for them, and the same tax is to be levied on patent medicines. These taxes become operative May 1, 1919. Provision is made, however, that these taxes shall not apply to the sale of medicinal preparations which are not advertised to the general lay public.

"ASPIRIN" MAKER SENTENCED.

Jose Kukay, owner of the Verandah Chemical Company which manufactured "aspirin tablets" in Brooklyn, was convicted December 30, before Magistrate Dodd of a violation of the Sanitary Code. He was sentenced to an indeterminate term of not more than three years in the penitentiary and a fine of \$500.

Kukay's home and factory were at 28 Verandah Place. There he manufactured the tablets, which, upon analysis by the Department of Health, were found to consist principally of talcum instead of aspirin.—*Daily Press*.

NEW YORK DRUG REGISTRATION LAW
FOR HABIT-FORMING DRUGS.

Under the new law enacted by the New York State Legislature, druggists and others

who deal in narcotics must file an application during this month for authority to deal in habit-forming drugs. This registration is for the balance of the New York State fiscal year, and

requires no fee; thereafter, during the month of June in each year, dealers and dispensers are required to register with the Department, the fee being \$1.00.

CHANGES OF ADDRESS.

All changes of address of members should be sent to the General Secretary promptly

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of the change of address is received before shipment or mailing.

Both the old and the new address should be given thus:

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Further information will gladly be furnished by any of the officers of the Association and members.

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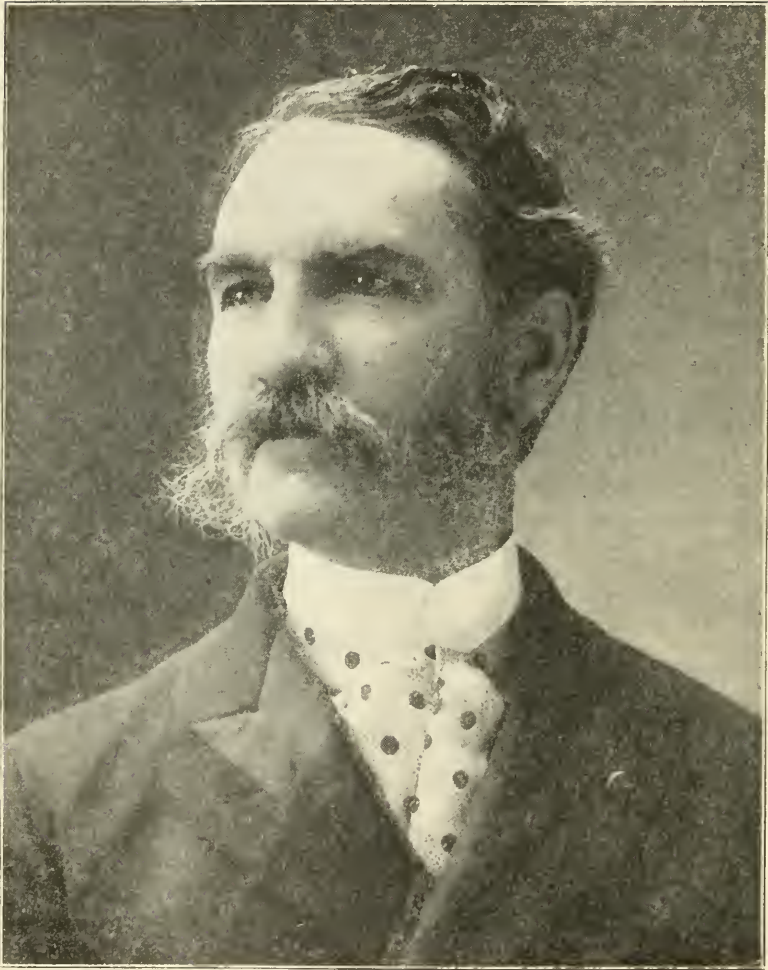
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THEODORE HENRY PATTERSON, M.D.

CHICAGO, ILL.

(Now of Seattle, Wash.)

A pharmacist for more than half a century and for fifty years a member of the
American Pharmaceutical Association.



T. H. PATTERSON

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THEODORE HENRY PATTERSON.

Theodore H. Patterson's American ancestry dates back to December 1685; a great grandfather was captain in a regiment of Washington's Life Guards. The subject of this sketch was born in Lorain county, Ohio, November 24, 1840. He received his early education in Elyria and Oberlin, Ohio, and when eighteen years of age began teaching school, utilizing vacation periods for furthering his own education preparatory to and in the study of medicine. He graduated from Charity Hospital Medical College at Cleveland, Ohio; soon thereafter he was appointed by Governor Brough of Ohio assistant surgeon in the 187th Regiment O. V. I., and was later promoted to major and Surgeon-in-chief of the second military district of Georgia.

After the close of the war he came to Chicago and opened a drug store, which was continued by him for over half a century and for nearly forty years in the same locality. For a number of years he was actively interested in the Chicago College of Pharmacy, serving as secretary and trustee, also for a time as president. He assisted in organizing and establishing the Illinois College of Pharmacy, which later became attached to the Northwestern University. Dr. Patterson has always exhibited an interest in organizations for the advancement of pharmacy, joining the American Pharmaceutical Association, of which he is now fifty years a member, in 1869. He has been secretary and president of both the Illinois Pharmaceutical Association and Chicago Retail Druggists' Association. He is a member of the G. A. R., the Military Order of the Loyal Legion, and of both the York and Scottish Rites in Masonry.

He has a family of two sons and one daughter. One of the sons is Registrar Charles W. Patterson of the Northwestern University School of Medicine, who was for many years, prior to the merger of the Pharmacy Department, N. W. U., with the University of Illinois School of Pharmacy, a member of the faculty of the former institution. The other son is a resident of Seattle, Wash., and his father is now at home with him. For the data of this writing we are indebted to the anniversary volume of the Chicago Veteran Druggists' Association, of which organization Dr. Theodore H. Patterson is an honored charter member.

E. G. E.

EDITORIAL

E. G. EBERLE, Editor

253 Bourse Bldg., PHILADELPHIA

THE NEXT REVISION OF THE U. S. PHARMACOPOEIA.

THE U. S. Pharmacopoeia is, admittedly, the leading pharmacopoeia of the world, and it is so because it is the most representative. Unlike all foreign pharmacopoeias, it is not published under governmental auspices, but in accordance with general principles determined by a convention composed of representatives from all sections of the country, the detailed application of these principles being worked out by a committee of revision elected by the convention from its membership.

The United States is the melting pot of the world. While its main stem is of Anglo-Saxon stock, its branches embrace the people of all nations, and in the framing of a pharmacopoeia for such a people, it is obvious that the founders of the present system of revision of the Pharmacopoeia of the United States builded far wiser than they knew in requiring a country-wide representative convention to determine the country-wide medical and pharmaceutical needs.

The needs of our nation in the way of medical material are not local. They are not governed by what is used only in Chicago, New York or Philadelphia, but what is used in *all* sections of the country. For example, Aconite is used in the Northern States, and Veratrum Viride in the Southern States, for the same therapeutic purposes. Solution of Iron and Ammonium Acetate is used on the Atlantic Coast, while other iron preparations are used on the Pacific Coast for the same purposes. The physician cannot and must not be handicapped in the selection of the drug-tools he works with, in the treatment of disease, by a delimited *materia medica*.

Obviously, then, no bureau or department of the U. S. Government, with a small body of men, out of touch with conditions in all sections of the country, even with an honorary advisory board (which would not be directly responsible), can hope to compare in efficiency with the thoroughly representative and wonderfully efficient system of revision now employed. True, the system can be improved, and this should be done with the closest coöperation between the Government departments and the Committee of Revision.

A matter of the greatest importance in the next revision of the United States Pharmacopoeia is the selection of delegates by schools of pharmacy and various associations that have representation in the Pharmacopoeial Convention. The delegates have a voice in the basic work of the revision and should be qualified for service on the Committee on Revision.

The Tenth Decennial Convention meets in May of next year and the selection of delegates by associations should be made this year. The revision of the Pharmacopoeia presents a timely subject for discussion. While the methods followed heretofore may not be perfect, they have been productive of what has been admitted to be the best of pharmacopoeias. The selection of members for the Committee on Revision in recent years has given representation to every department of medicine and pharmacy. The work is done, not only by those deeply interested, but usually by recognized experts in their particular line of work. It is true that the members serve practically without remuneration, but this has not caused them to neglect their duty. That the revision has not invariably proceeded as rapidly as should be the case is admitted, but this is a matter which can be corrected.

The main point is the determination of the general principles that shall obtain in the framing of the next Pharmacopoeia, and the selection of delegates that shall represent the best traditions of the medical and pharmaceutical professions.

E. G. E.

COÖPERATION IN STANDARDIZATION AND SPECIFICATIONS.

ROBERT P. FISCHELIS, in his address on protective gas masks before the New York and Philadelphia branches of the American Pharmaceutical Association, brought out the importance of coöperation in standardization and specifications. This was emphasized by the fact that lack of unity in standardization and specification caused some delay. The gas masks were essential for protecting the lives and health of thousands. The specifications were developed from experimentations in the laboratory on this protective apparatus; the experiences of the manufacturers may have been applicable for other purposes, but not for this. Until the order was made mandatory the manufacturers were inclined to furnish products according to their own ideas, which the experiences of many years, perhaps, had proven best.

The thought is applicable in many details of manufacture, not always explainable, but still the manipulation brings the desired result, and that is the essential thing. It meant little that according to art or science the other method was correct, when "over there" the lives and health of millions were at stake. We are not informed whether the points were empiric; it was sufficient that they contributed to a perfect mask and saved lives; the science can be proved later, if necessary.

Many instances could be cited of the harmful and costly effects of too rigid specifications, multiplicity of specifications, and of those loosely drawn. These facts have economic importance, and the experiences have established closer coöperation between the Government and the industries. The latter have been

represented by elected committees who have not only worked with the Government but established coöperation among firms and corporations and various branches of related industries. What has been done by the industries and the Government should be and has been done to some extent by the professions, and the coöperation should be closer among related professions. In the reconstruction of the Army Medical Department little, if anything, has been said of pharmacy and pharmacists. This is certainly not the best way to get best results. Unquestionably many discoveries in medical science have been made; just as in the construction of a pharmacopoeia all medical branches should be represented and coöperate, so also the useful armamentarium of the medical men is best developed through the working together for the interests of the professions and humanity. Medical research requires such coöperation.

Dr. George K. Burgess, in his address as President of the Philosophical Society of Washington, January 4, 1919, asks this question: "Is it well during the after-war period to demobilize completely this army of scientific men?" (men engaged in scientific work during the war). He preceded the question by the statement that "in America, individual initiative in the past has on the whole been more potent than the State in providing research. In the prosecution of the war, however, the federal government has spent huge sums on projects requiring scientific investigation and development, and in order to carry out the scientific projects of military urgency has mobilized the scientific men of the country." This work, so well begun, should be continued.

These specific points are applicable to standardization of drugs. There is a difference of opinion relative to the activity of many drugs, for example, digitalis, due to the fact that the coöperation between pharmacology and therapeutics is not as close as should be the case. This has been pointed out by Dr. Albion Walter Hewlett in his address as Chairman of the Section on Pharmacology and Therapeutics of the American Medical Association. Medical history and experience prove that contact between the science of drug action and the art of treatment is essential for best results. There should be closer coöperation between medicine and pharmacy in research.

E. G. E.

COMPULSORY HEALTH INSURANCE.

UNDER Editorial Notes references are given to papers and reports that have heretofore appeared in the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION. These reports were largely concerned with the effect of Compulsory Health Insurance on the drug business. Quite naturally druggists are concerned along these lines, but if the proposition really is beneficial to the majority such special arguments would have little value.

Many legislatures are now in session and in some states Compulsory Health Insurance laws have been proposed. Druggists, as citizens, should take an active

interest in this legislation. Full light should be had on the subject, it should be rationally investigated, and foreign experience with such measures contrasted with the facts.

Relative to Compulsory Health Insurance President Samuel Gompers, of the American Federation of Labor, recently expressed himself as strongly opposed to the system, as follows:

"This fundamental fact stands out paramount, that social insurance cannot remove or prevent poverty. It does not get at the causes of social injustice.

"The efforts of trade organizations are directed at fundamental things. They endeavor to secure to all the workers a living wage that will enable them to have sanitary homes, conditions of living that are conducive to good health, adequate clothing, nourishing food and other things that are essential to the maintenance of good health. In attacking the health problem from the preventive and constructive side they are doing infinitely more than any health insurance could do which provides only for relief in case of sickness, and yet the compulsory law would undermine the trade-union activity. There must necessarily be a weakening of independence of spirit and virility when compulsory insurance is provided for so large a number of citizens of the state."

Magnus W. Alexander, of West Lynn, Mass., in the legislative hearings in New York State and Massachusetts, made use of these words:

"An impartial judge of the health insurance proposal will recognize that its chief function would be to distribute funds and to provide medical care; that it lays but weak emphasis on prevention of disease, the great consummation toward which all health betterment efforts should tend. Instead of saving the money of wage-earners and our people in general, it seems designed to waste it; instead of adding virility and efficiency to our people, it gives every promise to lower their standards of independence and to discourage American grit; instead of promoting initiative and research amongst the medical profession, it seems to threaten to retard it with political and professional surveillance, and with complicated machinery."

Members should see to it that in every State where Compulsory Health Insurance laws are proposed the subject is studied from every standpoint.

E. G. E.

COÖPERATION BETWEEN PHARMACOLOGY AND THERAPEUTICS.*

BY ALBION WALTER HEWLETT, M.D.

It is important that a healthy coöperation should exist between those who are engaged in the scientific study of drug action and those who use drugs for the purpose of curing or alleviating disease; for the problems of pharmacology, like those of pathology, have a very immediate bearing on medical practice. Established modes of treatment frequently form the starting point of scientific studies, and the exact knowledge thus gained leads in turn to greater precision in treatment. Pharmacologic studies have uncovered new therapeutic possibilities that have ultimately proved useful in the clinic. Finally, a clear recognition of the fact that substances of similar chemical structure frequently possess pharmacologic properties that are similar but not identical has opened up a vast field of research. Numerous compounds of a given type are now produced with comparative ease by the organic chemist. While many or most of these may possess no great practical advantage over their original prototypes, yet such studies are constantly leading to improvements in our remedies, and the possibility is always present that the systematic combination of chemical and pharmacologic research will tap important fields that have hardly been suspected hitherto.

Now more than ever before, therapeutic advance depends on an intelligent utilization of the methods, the criticisms and the new discoveries of pharmacology. Older remedies are being restudied, and from the host of newer ones that are constantly being placed before the profession an intelligent choice must be made. Before I undertake to discuss how coöperation between the pharmacologist and therapist may be promoted, however, it may be well to point out some of the factors which tend to separate these two classes of workers. In the first place, their attitudes toward their respective problems are essentially different. The pharmacologist contemplates with scientific skepticism that which is unproved, and he proceeds slowly and carefully from the known to the unknown. The therapist, on the other hand, brought face to face with a crisis in the life of his patient, cannot refuse to try the unproved when remedies of known efficacy are lacking. Hence he often grasps at straws, being restrained only by the possibility of doing harm to his patient. Such a practice, justifiable in itself, too often leads to those habits of inaccurate reasoning that are reflected in therapeutic literature. Optimism in practice often means an unjustified and uncritical enthusiasm in the interpretation of results.

The pharmacologist and the therapist are further separated by the conditions under which their observations are commonly made. In the laboratory the action of drugs is usually studied on normal animals, and toxic doses can be administered with impunity. In the clinic, on the other hand, therapeutic doses alone are used, and the effects of these are often modified by disease. The pharmacologist is permitted to employ methods of study which involve operative or other harmful procedures. The clinician is restricted to those methods of study that can be used without harm to his patient. Finally, the laboratory worker plans a

* Chairman's address, read before the Section on Pharmacology and Therapeutics at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.—Reprinted from the *Journal of the A. M. A.*

series of experiments, and he endeavors to eliminate errors by repetition and by controlling the various factors that might influence his results. In therapeutics the number of observations is necessarily limited by the available clinical material, and the interpretation of results is often hampered by the fact that the effect of other factors, such as the natural course of the disease and the action of the other drugs used, is difficult to estimate and is, indeed, often estimated incorrectly. Under such conditions, years may elapse before even a simple therapeutic problem is conclusively answered.

As I have said, pharmacologic studies are usually made on normal animals. In seeking to utilize the knowledge thus obtained for therapeutic purposes, the following questions arise: 1. Are the effects observed produced by doses that can safely and easily be administered to patients? 2. Will the human organism react in the same manner as the animal studied? 3. How is this reaction modified by disease?

The question of dosage, simple as it may seem, has caused and will probably continue to cause occasional therapeutic stumbles. The fact that large doses of strychnine were known to produce a marked rise of arterial pressure in animal experiments was in part responsible for its extensive use by clinicians in conditions of low pressure. Yet it now seems established that in safe doses strychnine does not raise the blood pressure materially, either in man or in animals. The rise of pressure, therefore, is a toxic effect, and, so far as we know, it is not available for therapeutic purposes. Due consideration must also be given to the fact that in the laboratory intravenous injections are frequently used, whereas in medical practice these are seldom given except in emergencies. Finally, different species of animals may vary in their reactions to a given drug. When the reaction is essentially the same in a variety of mammals, it may be assumed that the human organism will respond in a similar manner; but when the reaction varies, the effect on man cannot safely be predicted from laboratory studies. In practice, moreover, even lesser quantitative variations in response may become of paramount importance, for it is our purpose to secure therapeutic results, and at the same time to avoid unpleasant side effects.

One of the most important methods for helping to bridge over the gap between animal pharmacology and practical therapeutics is the accurate study of the effects produced when drugs are given in the usual medicinal doses to human beings. The methods employed in making such studies must naturally be free from the possibility of doing harm. Fortunately a great variety of new methods have been developed in recent years which may be applied to the study of human functions. Without attempting to name all of these, I mention the following: bloodless determinations of the arterial and venous pressures; graphic records of the gastric contractions, of the arterial and venous pulse waves and of the electric changes accompanying cardiac activity; roentgenographic examinations of the alimentary tract; determinations of the rate of metabolism; chemical analyses of the alveolar air, of small quantities of blood and of excreta, and estimations of the various immune bodies in the blood. Each new method that can be applied to the study of human functions not only advances our knowledge of these functions and of their perversions in disease, but also makes possible more accurate studies on how these functions are influenced by various remedial measures.

In many cases such studies can be carried out on normal individuals, and within a short space of time sufficient data can be accumulated to establish with scientific accuracy certain aspects of drug action.

Ultimately, however, we must answer the question: Are these drug effects of value in combating the disturbances of functions that are encountered in disease? The final answer to this question can seldom if ever be given from studies either on normal animals or on normal men. In certain instances the diseased function is unusually susceptible to drug action. The body temperature of a febrile patient, for example, is reduced more easily by antipyretic drugs than is the body temperature of a normal person. Digitalis in therapeutic doses has relatively little effect on the heart rate when this is controlled in the usual way from the sinus region. Its reputation for slowing the heart of patients is based almost exclusively on observations which were made on those suffering from auricular fibrillation. Diuretics of the caffeine group produce a moderate diuresis in the healthy man, and may be ineffective or harmful in nephritic edema, whereas in cardiac edema they often cause a veritable flood of urine. The dilatation of the bronchi produced by epinephrin is most plainly demonstrable in conditions of bronchial constriction, whether produced experimentally or occurring during asthma. Finally, the treatment of infections can manifestly be tested only on infected animals or human beings.

Not infrequently the remark is made that the value of a therapeutic measure is determined solely by clinical experience. While I have no desire to contradict this assertion, it should be pointed out that ordinary clinical observations are often extremely difficult to interpret, owing to the vagaries of disease and to the many remedies that are so commonly employed in a single case. The past history of therapeutics warns us that in order to avoid error we need as much assistance as possible from every source. Pharmacology may not, indeed, answer therapeutic problems directly, but at least it aids in their solution. It shows how drug action may be made the subject of accurate study, and the critical attitude which it adopts must be carried over into the interpretation of therapeutic results, if progress in that subject is to be placed on a firm foundation.

On the other hand, pharmacologists could, I believe, be of greater help to those who work in the clinic if they would fully realize how their results may be given a form more suited to clinical needs. What, for example, is the effect of a given drug in small doses, especially when given over a long period of time? How are the effects modified when animals have been made the subject of disease? What pharmacologic problems can be studied on man himself, and especially on patients who are taking the treatment usually given for their disease? Work on such lines as these, whether by pharmacologists or by clinicians, will help to maintain contact between the science of drug action and the art of treatment.

CRITICISMS AND COMMENTS ON THE NATIONAL FORMULARY IV.*

BY JACOB DINER.

In the early days of the Formulary it represented a collection of formulae, gathered more or less indiscriminately from all corners, and endeavoring, in a most laudable manner, to unify, as far as possible, the rather divergent composi-

* Read before Scientific Section, A. Ph. A., Chicago meeting, 1918.

tions and constituents of preparations of the same name. The book was more in the nature of a reference book, was not official and therefore compliance with its formulae was neither binding on the compounder nor was deviation from formula a violation of and punishable by law. The conception as well as the execution of this book was most commendable and the originators as well as all subsequent workers and revisers deserve the highest commendation from the body pharmaceutical as well as from the members of the medical profession. However, two events have made it essential that this book should not only be a good reference book but that it be the best of its kind, and that it should be scientific and rational to the smallest minutiae. These two events are: Firstly, the passage of the National Pure Food and Drug Act, making the N. F. an official book of standards, and secondly, the ever increasing propaganda for legitimate and rational prescribing. To this may be added a third reason or consideration for care in the compiling and revising of the Formulary.

America and Americans have lived in a land where "milk and honey flowed." The "Horn of Plenty" was pouring out its contents in a seemingly never ending stream and the thought of conservation never entered our mind. The events of the past two years have brought home to us the meaning of the word "Conservation," and it is the duty of every good American individually and collectively to acquire the habit of Conserving and take a few lessons in Thrift. This has been done in the thorough American way with regard to money, food and clothing, and it behooves us to do likewise in the matter of drugs.

I do not by any means wish to advocate the saving of drugs at the sacrifice of health or life, but I do wish to emphasize that many drugs, which have been used lavishly because they were abundant, could well be eliminated or used more sparingly because they are not essential in the treatment of disease, and are badly needed for other important purposes.

Viewing the revision of the National Formulary from these three points we can divide my criticism of some of the N. F. preparations into three classes:

1. Non-essential preparations. By that I mean preparations which merely increase the bulk of the volume, adding neither to "elegant" pharmacy nor to the knowledge and armamentarium of the practitioner of medicine. Among these I might mention such preparations as *Acetum Aromaticum* and *Aqua Phenolata*. The first of these, at best, is but a useless toilet preparation hardly known to and rarely employed by either public, pharmacist or physician. The latter merely a 2 percent (approximately) solution of phenol, rarely used in that strength and easily made extemporaneously. Both of these and similar preparations merely clutter up the book, adding to its volume but not to its value.

2. Unscientific preparations. These can be divided into two classes: (a) Physiologically incompatible. A very good example of these is furnished by the different elixirs of the bromides.

Albertoni found that bromides lower the excitability of the motor cortex of dogs, so that a stimulation of the motor areas which under the conditions of the experiment gives rise to general epileptiform convulsions, will, after the administration of a bromide, be confined to the area directly stimulated.

Walter A. Bastedo states with reference to Bromides: "On the whole central nervous system except the medulla, there is a moderate but lasting general depression. Bromides have their chief employment as sedatives."

Potter says: "The Bromides are powerful depressants to the nervous system—they lower the activity of the cortical motor area and that of the brain as a whole, * * * * they lower the reflex excitability of the spinal cord," etc.

Stevens, A. A.: "Bromides are used to control convulsions, to allay nervous excitement," etc. Many more authors could be cited; but it requires no quotations to establish the fact that bromides are used as sedatives and anti-convulsants.

Now let us look at the action of alcohol when given in small doses. Quoting from the same authors, we find Sollmann's statement as to the "Stimulant Effects of Alcohol" as follows: These are observed in most individuals after taking "moderate" doses of alcohol. The phenomena are only too well known. There is an increase in the rate of the respiration and of the heart; the blood pressure rises. *There is an increased vivacity of motion, action, and speech.* * * * *

Bastedo, under Alcohol, these (highest faculties) are depressed and there is a certain degree of freedom from restraint, *i. e.*, "there is a breaking of the fetters which keep our animal natures within bounds."

Potter states, "that * * by a moderate dose this entire system (nervous system) is briefly stimulated" * * and again: "Internally in moderate quantity a single dose of alcohol acts briefly as a cerebral, cardiac and general stimulant."

Stevens maintains, "that alcohol first stimulates and then paralyzes all parts of the nervous system."

Personally I have no particular grudge against alcohol. I am neither an advocate of total prohibition, nor do I maintain that alcohol is entirely useless pharmacologically. Neither do I believe in the indiscriminate use of alcohol, especially so when it is given disguised, as in the case of elixirs, and where the "well feeling" so frequently noticed immediately after partaking of alcoholic beverages may lead the patient to an ever and ever increasing use of the drug. I believe, with many other pharmacologists, that alcohol is a depressant to the higher centers. I am in the habit of telling the students that the old-fashioned saying, "alcohol loosens the tongue" is a very accurate and scientific observation. The sense of deliberation and control is gone and, "the impulse rather than the sense rules." Now if we are going to employ bromides for the purpose of allaying hyperexcitability, a condition most decidedly akin to, if not entirely due to loss of control by higher centers, why combine it with a drug which principally acts as a depressant to the higher centers and has indirectly, if not directly, a stimulant effect upon our reflexes.

The only possible excuse that can be made in favor of the elixirs of bromides is that of palatability. But this is not founded on facts. We can present bromides in much more palatable form by the aid of syrup to which a small amount of citric acid is added or by the use of a fruit syrup, especially pineapple syrup.

(b) Irrational formulae, good examples of which are furnished by the different liquid preparations of bismuth salts. Of these salts pharmacologists state as follows:

Cushny: "Bismuth acts simply as a protective *powder* with perhaps some astringent properties. It has been found that when swallowed it is at first deposited in the most dependant part of the stomach, but is later distributed evenly over

the surface and forms a continuous sheet over any ulceration, which it thus protects from mechanical injury from the food and also from the chemical action of the gastric juice."

Sollmann states: "The *insoluble* basic bismuth salts are used on inflamed surfaces. They act largely mechanically."

Potter maintains, "that the action of the insoluble bismuth salts is chiefly a local one."

Stevens describes the action as feebly astringent and protective and Bastedo concurs in that view, and adds, "that internally the insoluble bismuth salts are used."

We know from experiments, both in men and animals, that absorption of bismuth salts causes a marked cardiac depression and may lead to other toxic symptoms. Admitting even that the hydrochloric acid of the stomach will precipitate the soluble bismuth salt from its solution, why should we bring it into solution first only to have it precipitated again? Surely the claim of palatability could not be made in favor of the bismuth solutions because bismuth salts are not at all disagreeable to the taste. Why then have a number of bismuth solutions such as Elixir Bismuthi, Elixir Cinchonæ Alkaloidorum, Ferri, Bismuthi et Strychninæ, and many others.

Another class of irrational formulae is represented by the alcoholic diuretics. We know that alcohol is an irritant to the renal epithelium and we also know that constant irritation of the kidney by alcohol leads to degenerative changes. What then can be accomplished, in a remedial way, by such preparations as Elixir Buchu with its many variations contained in the N. F.? Is it wise to break away from the old maxim: "Do no harm if you cannot do good."

Lastly, what is the object of the very numerous elixirs of cinchona and cinchona alkaloids? And equally insistent is the question why should we have such a varying dose of strychnine? In the Elixir Cinchonæ Alkaloidorum, Ferri, Bismuthi et Strychninæ we have 0.7 mg. of strychnine sulphate per 4 Cc. dose, similarly in the Elixir Cinchonæ Alkaloidorum, Ferri et Strychninæ, and in the Elixir Ferri Quininæ et Strychninæ. In the Elixir Ferri Pyrophosphatis, Quininæ et Strychninæ we have 0.56 mg. strychnine alkaloid for 4 Cc. dose while in the Elixir Pepsini, Bismuthi et Strychninæ we have 0.7 mg. of the alkaloid and in Elixir Glycerophosphatum Compositum only 0.5 mg. of strychnine glycerophosphate is given in each 4 Cc., but 8 Cc. is recommended as an average dose. I know that my critics will bring up the fact of atomic weight as explanation of the difference in doses. But against this I will say, that cannot explain the difference between the doses of 0.7 mg., 0.56 mg. and 0.5 mg. of strychnine alkaloid. Furthermore, in none of these preparations a very large dose of strychnine is given—would it not be more logical to have all preparations of strychnine and strychnine salts of the same strength, so that the physician could more readily remember how much strychnine he is prescribing?

In conclusion, I want to emphasize the fact that if we would have the physician make use of the National Formulary it behooves us to reduce its volume, simplify and standardize its formulae, and make the book scientifically unassailable.

FORDHAM UNIVERSITY,
FORDHAM, N. Y.

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DISCUSSION.

W. L. SCOVILLE: This is the first constructive criticism I have heard on the National Formulary, and it is helpful. The arguments are logical, but unfortunately human nature is not logical, and that is where the difficulty lies. I would like to state a few facts about the National Formulary as a matter of interest. Not in criticism of the paper, because I have none, but there are always two sides to a question. Doctor Diner has criticized the therapeutic action and justly so. In the early stages of the last revision the Formulary Committee made a special effort to obviate just that sort of criticism, and get the therapeutic questions settled. To do so they invited coöperation on the part of the medical societies. The American Medical Association appointed a committee to coöperate with the National Formulary Committee. We had a meeting, and the American Medical men simply said, "You must drop this and that; you must not do this and that." "What can we do?" we asked, and they replied, "Of course it is up to you; you must do so and so." We tried to reason with them, but did not come to an agreement. They were using those preparations and calling for them, and we asked if they did not want them standardized, and the answer was "No, we can not stand for that." Anyway, it came to a stage where we said we did not see how we could coöperate. We parted good friends, but simply had to take the situation as the pharmacists saw it, and did not further attempt to settle the question. The National Formulary Committee can not settle it unless the medical profession can come to a closer agreement.

LIQUOR CRESOLIS COMPOSITUS, U. S. P. IX.*

SUBSTITUTION OF OTHER OILS INSTEAD OF LINSEED OIL IN THIS FORMULA.

BY WILLIAM W. DAVIES.¹

Our Allies across the seas, and our enemies as well, have found it expedient and necessary in many instances to revise their pharmaceutical formulae to meet the conditions brought about by these war-times. Many of our large medicinal manufacturers have likewise gone over their private and special formulae and made changes which as perfectly well result in the desired therapeutic action of their products. Again it has been suggested from time to time that the Pharmacopoeial Committee should likewise heed the trend of affairs and permit certain variations in their set formulae in accordance with the apparent demand of the times. It may be here stated that the Pharmacopoeial Committee really has already done this very thing as we may note for instance in the formulae of *Liquor Cresolis Compositus* and *Pilulae Ferri Carbonatis* (Blaud's Pills) where the potassium salt used may be replaced by the equivalent amount of the cheaper sodium salt.

For the same reason of economy and conservation of supplies, it is the object of this paper to call attention to the desirability of permitting the substitution of Linseed Oil by the proper proportion of other cheaper oils, such as Soya Bean Oil or the like. This substitution will not change the germicidal value of the product since the percent of Cresol would remain the same.

The demand for Linseed Oil in the trades has caused the Government only recently to issue a request for the conservation of its supply. In this particular

* Authority to publish granted December 20, 1918 by the Surgeon General, U. S. Army.

¹ Sergeant 1st class, Medical Department U. S. Army.

formula, therefore, which now consists of 30 percent Linseed Oil, a large saving of both oil and money could be introduced by the Pharmacopoeial Committee announcing permission for a substitution as is suggested above.

This possibility of conservation of Linseed Oil and the attending monetary saving occurred to the writer, particularly in its application to Government contracts for Liquor Cresolis Compositus.

It might be well then to call the attention of the reader to a few figures. The Army Medical Department in the last six months has let contracts for about 250,000 gallons, or at this rate there appears to be at least an annual consumption of 500,000 gallons of Liquor Cresolis Compositus. Thirty percent of this or 150,000 gallons represents the quantity of Linseed Oil necessary to produce these annual requirements. When this subject was under investigation in September, 1918, the *New York Commercial* was quoting Linseed Oil at \$1.88 per gallon, making the cost of 150,000 gallons equal \$282,000. At the same time other oils were much lower, such as Soya Bean Oil at about \$1.20 per gallon, 150,000 gallons of which had a value of about \$180,000. Because of the closeness in the saponification value of the two oils mentioned they can be interchanged without altering the proportion of the oil used, hence the replacing of Linseed Oil with Soya Bean Oil at these figures would mean an annual saving of \$100,000 and conservation of 150,000 gallons of Linseed Oil, and the product obtained with either oil would be comparable in every respect, physically and germicidally.

It has been found that Corn Oil or mixtures of Corn Oil and Soya Bean Oil may be substituted for either the Linseed Oil or Soya Bean Oil in this preparation.

It appears that the U. S. P. specifications should be appended by a statement giving the names and quantities of other oils than Linseed, which might be used in the manufacture of Liquor Cresolis Compositus.

THE ASSAY OF HYPOPHOSPHITES.*

BY J. L. DICKERSON AND J. P. SNYDER.

For the assay of official hypophosphites, the U. S. P. and N. F. direct that weighed samples of the salts which have been previously dried to constant weight in a desiccator over sulphuric acid be treated with two portions of nitric acid, evaporating to dryness after each addition. The residue is dissolved in water, neutralized with alkali, made to a definite volume and an aliquot portion titrated with potassium sulphocyanate, ferric ammonium sulphate used as indicator. Our experience with the above method has been uniformly unsatisfactory. The results we obtain are low, caused no doubt by the failure of the nitric acid to completely oxidize the hypophosphite to phosphate, and through possibilities of danger of mechanical loss in handling the process. Fairly good results may be obtained by oxidizing the solution of hypophosphite with nitric acid and potassium permanganate and using the double precipitation method with ammonium molybdate and magnesia mixture, finally weighing as magnesium pyro-phosphate. This method is long and tedious, requiring considerable manipulation, and unless great care is used in washing the precipitate of ammonium magnesium phosphate high results will be obtained.

By taking advantage of the fact that a solution of a hypophosphite, when

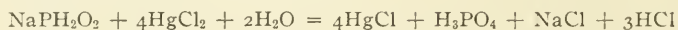
* Read before Scientific Section, A. Ph. A., Chicago meeting, 1918.

added to a solution of mercuric chloride, reduces an equivalent amount of the latter to insoluble mercurous chloride and collecting the precipitated calomel, treating this with an excess of iodine and back-titrating with sodium thiosulphate, we have been able to devise a method which works in a very satisfactory manner, gives good check results and takes a minimum amount of time and manipulation. The following is descriptive of the assay:

One gramme of the hypophosphite, which has been previously dried to constant weight in a desiccator over sulphuric acid, is accurately weighed and transferred to a 200 Cc. volumetric flask and made up to the mark with distilled water. When the salt has completely dissolved and the solution has been thoroughly mixed, 20 Cc. are pipetted into an Erlenmeyer flask of about 300 Cc. capacity, 20 Cc. of hydrochloric acid added, followed by 40 Cc. of mercuric chloride solution. The flask is placed upon the steam bath and allowed to remain there with occasional shaking for one hour or until the precipitated mercurous chloride is settled and the supernatant liquid is clear. The solution is filtered, the calomel collected upon a 11 cm. filter paper and washed well with distilled water. The filter paper and contents are transferred to the flask in which the precipitation was made, 3 to 4 grammes of potassium iodide added and 50 Cc. of *N*/10 iodine (75 Cc. in the case of ammonium hypophosphite). Stopper the flask and let stand for about one-half hour, with occasional shaking. The excess of iodine is now treated with *N*/10 sodium thiosulphate, starch solution as the indicator. 1 Cc. of *N*/10 iodine is equivalent to:

Manganese Hypophosphite.....	0.002538	Gm.
Ammonium Hypophosphite.....	0.002077	Gm.
Calcium Hypophosphite.....	0.002127	Gm.
Sodium Hypophosphite.....	0.0026517	Gm.
Potassium Hypophosphite.....	0.002604	Gm.

The reaction may be expressed as follows:



and in the case of manganese which is divalent



It is essential that the solution after the addition of the mercuric chloride be heated, or otherwise the calomel will not be completely precipitated. At steam bath temperature, it was our experience that there was no danger of reducing the mercurous chloride to metallic mercury. It is advisable in order to be sure that the reaction has been complete, to return the filtrate to the steam bath and after standing a short while, examine for a further precipitation of the calomel. If this should occur, it is filtered and the precipitate treated as described above.

We have found that it makes no perceptible difference whether the precipitate of mercurous chloride was washed with dilute hydrochloric acid or distilled water. The mercuric chloride solution is prepared by shaking 5 Gm. of U. S. P. mercuric chloride with cold distilled water and filtering. Excellent results were also obtained electrolytically, by determining in this manner the amount of the mercury remaining in the filtrate, a definite amount of a standard mercuric chloride solution being added to the sample of hypophosphite. The mercury is deposited by a current strength of one ampere upon a revolving cathode and required about 20 minutes for a complete deposition. Undoubtedly, although we have not tried it, the residual mercuric chloride could also be estimated by one of the volumetric methods for this substance.

THE PREPARATION OF FIFTIETH NORMAL POTASSIUM HYDROXIDE.*

BY WILLIAM J. THOMPSON AND J. P. SNYDER.

The directions of the United States Pharmacopoeia under the preparation of *N*/50 Potassium Hydroxide instruct one to prepare this solution by the dilution of either 20 mls of normal potassium hydroxide or 200 mls of *N*/10 potassium hydroxide at standard temperature to exactly 1000 mls. It furthermore states that the titer of this solution be verified by running it against 0.1881 gramme of potassium bitartrate, phenolphthalein being used as indicator. This solution is employed in conjunction with *N*/10 sulphuric acid in the titration of alkaloids with hematoxylin, cochineal, methyl red or iodeosin as indicators. The relative value of the two volumetric solutions should be determined each time, using indicator employed in the assay. The *N*/10 sulphuric acid according to the Pharmacopoeia is standardized against anhydrous sodium carbonate using methyl orange as the indicator. In addition, under *N*/10 sulphuric acid, we read, "This standard solution is employed in conjunction with the *N*/50 potassium hydroxide volumetric solution in the titration of alkaloids, using cochineal, methyl red, iodeosin, hematoxylin as indicators." For this purpose a special experiment should be made in which an accurately measured volume of 10 mls of the *N*/10 sulphuric acid should require 50 mls of the *N*/50 potassium hydroxide volumetric solution at standard temperature for complete neutralization. In analyzing the above methods for the standardization of the solution employed in the titration of alkaloids, the question naturally arises to which should we adjust or factor the solutions, to the *N*/50 potassium hydroxide standardized against potassium bitartrate using phenolphthalein as indicator, or to the *N*/50 sulphuric acid standardized against anhydrous sodium carbonate, methyl orange as indicator.

In truth, the directions of the Pharmacopoeia seem very indefinite on this point and indeed if it is possible to accurately interpret which to use as a basis for adjustment, serious errors may be introduced by switching the solution standardized with a certain indicator to a determination in which another indicator is used. For experience shows that for highly accurate work it is advisable to standardize volumetric solutions against material which will permit of the use of the same indicator used in the determination. But in the case of methyl red which we presume is used almost to the exclusion of all other indicators in the titration of alkaloids, it is not adapted for use with carbonates or organic acids, and as both potassium bitartrate and sodium carbonate fall under these heads, a direct standardization of the solution against these materials, using methyl red as indicator, is impossible. Recently, while in conversation with a gentleman, who had charge of a large laboratory where numerous samples of U. S. P. materials were tested daily, he informed us that he met this condition by disregarding the U. S. P. method of standardization of acid alkali solution, and determined their strength according to the sulphuric acid solution which was standardized by the barium sulphate method.

It is true that in many instances the error introduced would not be serious, as in the case of belladonna leaves or drugs containing about the same proportion of alkaloids, as the error of one percent in the solution would not be sufficient to

* Read before Scientific Section, A. Ph. A., Chicago meeting, 1918.

affect the results of two different laboratories working on the same samples. However, in the case of Opium or Extract of Nux Vomica where the alkaloidal content is relatively high, an error of one percent in the solution would introduce considerable difference in the results. It is our opinion that many times the different reports of laboratories when working on the same material may be traced to the different methods used in standardizing the solutions, and it is highly desirable that the Pharmacopoeia should give us very definite instructions as to how the solutions should be prepared and standardized, in order that chemists working upon alkaloidal determinations may all be on the same basis.

While the barium sulphate method of standardizing sulphuric acid undoubtedly yields excellent results, it is rather lengthy, as it requires that the precipitate of barium sulphate should be allowed to collect for at least 12 hours before filtration. We have been able to obtain excellent results by following out the method of G. Incze, *Z. Anal. Chem.*, 56, 177-91 (1917); *J. Soc. Chem. Ind.*, 36 (1917) (of which the following brief description is found in *Chemical Abstracts*, Vol. 2, No. 21, p. 2865):

"Yellow mercuric oxide is a trustworthy substance for use in standardizing acid solutions. It is readily obtained in a pure state, is free from water of crystallization and is not hygroscopic. Its use depends upon the reaction $\text{HgO} + 4\text{KI} + \text{H}_2\text{O} = \text{K}_2(\text{HgI}_4) + 2\text{KOH}$. At least 9 molecules of potassium iodide must be added for each molecule of mercuric oxide. In practice, it is advisable to add a somewhat larger proportion of potassium iodide, as for example: Ten mls. of a 60 percent potassium iodide solution to 0.4 Gm. of mercuric oxide.' As soon as the mercuric oxide is dissolved in the potassium iodide solution titrate the mixture with the acid solution to be standardized using methyl orange, phenolphthalein, or methyl red as indicator. The yellow mercuric oxide as bought is usually pure, but if desired it can be made by dissolving 100 Gm. of mercuric chloride in 1000 mls of warm water, cooling the solution and then adding 625 Gm. of a 6.4 percent sodium hydroxide solution. The mixture should be well stirred during the addition of the sodium hydroxide. The precipitate is collected and washed until the washings are no longer alkaline to phenolphthalein, air dried and stored in black glass bottles."

We have tested several lots of mercuric oxide and found the substance to be of high degree of purity, all that we examined showing a percentage better than 99.8 per cent of mercuric oxide when determined electrolytically and since this salt may be so accurately determined by the electrolytic method, it is readily possible to know the exact percentage of mercuric oxide in the particular lot used for standardization purposes. In actual practice for the standardization of the acid alkali solutions used in the determination of alkaloids, about 0.2 Gm. of yellow mercuric oxide is accurately weighed and transferred to a beaker. Ten mls of a 60 percent solution of potassium iodide are added and the whole stirred until none of the mercuric oxide remains. When this has occurred, 50 mls of the sulphuric acid, approximately $N/20$, are added and a few drops of methyl red test solution. Sufficient of the potassium hydroxide test solution is run into this from a burette to destroy the last trace of pink color and the amount consumed noted. Similarly, a blank is run against 50 mls of the acid and from the amounts of potassium hydroxide solution used in the blank and the above determination, the strength of the two solutions is calculated as follows:

Let x equal the strength of potassium hydroxide solution in terms of $N/50$.

Let y equal the strength of the sulphuric acid solution in terms of $N/20$.

Let A equal the number of mls of potassium hydroxide consumed in the titration.

Let B equal the number of mls of potassium hydroxide consumed in the blank.

Let C equal the weight of mercuric oxide.

$$\text{Then } x = \frac{0.5181C}{(B-A) 0.0011222} \quad y = \frac{B x}{125}$$

Of course, if preferred the liberated potassium hydroxide may be directly titrated by the sulphuric acid and calculations made accordingly.

We have tested numerous alkaloidal salts with solutions standardized by the above methods, and in all cases we have found the results to be correct. We recommend the yellow mercuric oxide as an accurate substance for the standardization of the solutions used in the determination of alkaloids, particularly, as it is adapted for use with methyl red as indicator.

ANALYTICAL LABORATORY
OF THE
NORWICH PHARMACAL COMPANY.

OLEORESIN OF PINUS PONDEROSA.*

BY E. R. MILLER AND E. V. LYNN.

Inasmuch as Schorger had found the oil of western yellow pine to be an excellent source for beta-pinene or nopinene, a barrel of oleoresin was obtained through the coöperation of the Forest Products Laboratory from the U. S. District Forester of California. The steam fractionation resulted in a larger amount of volatile oil of this species than had heretofore been prepared. Hence, use was made of the opportunity to re-examine the oil for its constituents as well as to isolate the nopinene for the special work for which the material had been obtained. The results of the special work on nopinene will be reported elsewhere.

As pointed out by Schorger, the bulk of the oil consists of beta-pinene, however, the presence of alpha-pinene was definitely established by its crystalline derivatives. Attempts to identify other well known constituents of coniferous oils failed, though their presence seemed indicated. In spite of the care exercised in the fractionation, the large amount of beta-pinene present in the oil appears to render their purification by fractional distillation difficult, hence the negative results may be accounted for at least in part

OZONIDES AND PEROXIDES OF THE TERPENES AS THERAPEUTIC AGENTS.*

BY A. V. LYNN.

For a long time the oxygenated constituents of the volatile oils have been looked upon as the bearers of the therapeutic properties of these products, whereas the terpenes were regarded as mere diluents, hence of little or no value. Thus, *e. g.*, the therapeutic, hence the commercial value of eucalyptus oil was determined, according to the U. S. Pharmacopoeia, by a cineol assay. The faith in this doctrine has, of late, been thoroughly shattered by the clearer recognition of the

* Read before Scientific Section, A. Ph. A., Chicago meeting, 1918.

therapeutic importance of the products resulting from the oxidation of the terpenes with either atmospheric oxygen or ozone. What the effect of the pure terpene, devoid of any added oxygen, may be has apparently received less attention. Indeed, it might be difficult to ascertain such action, since these hydrocarbons are now known to possess a great avidity for this element, which constitutes an important part of the atmosphere in which the animal and human organisms live upon whom the experiments must be conducted.

For a rational consideration of the entire subject it is necessary to differentiate, first of all, between the ozonides, the products of the action of ozone on the terpenes, and the peroxides, the products of the action of atmospheric oxygen on these mostly unsaturated hydrocarbons. Secondly, it should be recalled that, in either case, the addition reactions are by no means simple, *i. e.*, they do not necessarily run their course in one direction. Thirdly, it must be remembered that these addition products are very unstable, on which property their therapeutic value largely depends, yielding other oxidation products with the excess of terpene, and that all of these reactions are readily modified by differences in temperature and other conditions.

As a matter of fact, we know as yet so little about the chemical products that result from the initial addition of oxygen to the terpenes and the subsequent rearrangements of the labile oxides, both ozonides and peroxides, that the literature on the entire subject is apt to prove confusing rather than enlightening. Hence, a survey of the entire field, pointing out the difficulties as well as those phases of the subject which may be comprehended, at least after a fashion, seems desirable at the present time. This would seem true if for no other reason than to guard against exploitation by those who are interested commercially rather than scientifically.

CAMPHENE IN HEMLOCK OIL.*

BY E. V. LYNN.

A pinene fraction obtained from commercial hemlock oil, which had been used several years ago by the class in phyto-chemistry for the purpose of isolating borneol after the saponification of the oil had been effected, had been submitted to the action of dilute potassium permanganate solution by Mr. Max Phillips in an attempt to prepare pinene glycol. The unoxidized portion had been recovered by steam distillation and was used in an attempt to prepare optically active pinene nitrosochloride. After the inactive nitrosochloride had been filtered off, the mother liquid was set aside to allow the optically active addition product to separate. However, in place of the active nitrosochloride, crystals were obtained which had a camphor-like odor and which melted at 42°. Borneol, however, melts at about 203° and camphor at about 175°, whereas camphene melts at about 49°. Its identity with this hydrocarbon was established by converting it into borneol, m. p. 204°, by the Bertram-Walbaum hydration reaction. Camphene had not previously been identified in hemlock oil.

* Read before Scientific Section, A. Ph. A., Chicago meeting, 1918.

TEACHING PLANT CHEMISTRY.*

BY NELLIE WAKEMAN.

The subject of this paper is sufficiently broad to cover a number of papers of the necessarily limited scope of this one. Indeed, volumes might well be written upon the subject without exhausting it, for the subject would develop as it was discussed, continually presenting new phases for discussion, being practically unlimited.

Three main lines of thought, however, present themselves when the subject is considered briefly, (1) the value of the subject; (2) the materials for study; and (3) the methods of presenting the subject. It is my intention to touch upon the first two lightly, devoting the greater portion to the teaching of plant chemistry as it is actually carried out at the University of Wisconsin.

There can be no question of the importance of plant chemistry. The world is beginning to realize the importance of chemistry in general and of the chemist. Never have we heard so much of the value of chemistry as during this war. Numbers of papers have been written and addresses made upon "Chemistry and the War," and we all realize that though eventually the war will be won by the side that can put the largest armies of trained men into the field, yet the armies of to-day would be practically powerless without the chemists back of them.

We are all familiar with the slogan "Food will win the war," and when we stop to think of it we recognize our dependence upon the little chemists of the wheat fields, the sugar plantations, the cotton fields, and all the other fields, where, all unnoticed, there is happening the ever recurring miracle beside which the miracle of the loaves and fishes fades into insignificance, the daily miracle of the conversion of air and water into food for all living things. A simple chemical reaction it appears, $6\text{CO}_2 + 6\text{H}_2\text{O} = \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$. Our eyes are holden and we see no miracle. But, if Germany had mastered the mysteries of this reaction, the combined armies of all the world could scarcely hope to bring her to her knees; if England had mastered it, all the U boats that could ever be built would never be able to starve her out; and if we had mastered it, we would not now be limited to black bread and two pounds of sugar a month. No, there is no question of the importance of plant chemistry; but it has been neglected.

Important as the subject is in general, it is of especial interest to pharmacists for two reasons, (1) so much of our materia medica is derived from plant sources, and (2) so many of the advances hitherto made along plant chemical lines have been made by pharmacists.

The material for study is inexhaustible, both for practice and for research. Every plant drug of the Pharmacopoeia, every weed by the wayside, may be made to serve as material for some line of experimentation or investigation. The subjects open for investigation are almost as varied as the material obtainable. Moisture, ash, enzymes, carbohydrates, resins, oils, alkaloids, tannins, pigments, proteins, these are some of the larger classes of subjects, any one of which will furnish valuable experience for the beginner or a lifetime of work for the investigator.

For a good many years, how many I don't know, a three-credit course in plant chemistry, throughout the senior year, has been required of students in pharmacy

* Read before Section on Education and Legislation, A. Ph. A., Chicago meeting, 1918.

at the University of Wisconsin. This course, as the catalogue states, is supplementary to pharmacognosy, which is given as a two-credit course at the same time. The two courses together are designed to give the student as thorough a knowledge as possible, in the time available, of the U. S. P. plant drugs and their constituents. The course in plant chemistry is divided, somewhat arbitrarily, into two parts, the work of the first semester being of such a character that a knowledge of advanced organic chemistry is not required, while in the second semester definite chemical compounds, requiring more chemical knowledge, are studied. This division is necessary in our work at Wisconsin, because a large portion of the class is always made up of students of the two-year pharmacy course who are at this time but beginning the study of organic chemistry. According to this division, the work of the first semester is devoted principally to the isolation and study of constituents that are more or less natural mixtures. The old-time grouping of plant constituents is followed: oleoresins, resins, volatile oils, etc. Starch is isolated from potato; the fixed oil of almonds is prepared; oleoresin of pepper is made and piperin separated from the oleoresin; the distinction between a natural and a galenical oleoresin is noted and a nature oleoresin such as balsam of copaiba is separated into its constituent resin and volatile oil. A study of the water content of plants and drugs is also made and the rôle water plays in the biochemical processes of the plant, photosynthesis and enzyme action, is studied, as well as the significance of water in the curing of drugs.

A considerable amount of quantitative work is done during the first semester. Moisture and ash determinations are made; the saponification and acid numbers of resins and fixed oils are found; and iodine absorption numbers are determined.

Throughout the first semester all material isolated that would serve as illustrative material for the study of definite chemical compounds during the second semester is carefully saved. In this way the continuity of the work is preserved and the interest increased. Thus, the marc from which the fixed oil of almonds was obtained serves for the isolation of amygdalin when carbohydrates and glucosides are studied; and the piperin removed from the oleoresin of pepper furnishes material for an interesting set of experiments when the subject of alkaloids is reached.

During the first part of the second semester considerable time is devoted to the study of volatile oils,—not merely because the volatile oils are in themselves interesting and important pharmaceutical products, but because nowhere else in all the realm of chemical materials is there so readily available material illustrative of so many important organic reactions. Here we find saturated and unsaturated hydrocarbons, alcohols, acids, esters, ethers, aldehydes, ketones, and phenols in a form convenient for study. This work is placed at the beginning of the second semester because it has been found that at this time the students, who have just completed a five-credit course in organic chemistry, are benefitted by a review of the principal organic reactions, before they have had time to forget them, and also because much of the work upon volatile oils can be carried out most advantageously, especially by beginners, when the weather is cold.

During this semester, as in the preceding one, plant products are studied as members of more or less natural groups, carbohydrates, glucosides, tannins, pigments and protein products follow the volatile oils, being taken up, so far as possible,

from the standpoint of composition. In all of this work pharmaceutical materials are used, so far as practicable, for illustrative and experimental purposes. This choice of material is governed more by pedagogic than pharmaceutic reasons, the students being ordinarily most interested in pharmaceutical materials. Whenever the point in question could be better illustrated by material other than pharmaceutical, however, there is no hesitancy about introducing it. In any case, whether pharmaceutical materials are used or not for purposes of illustration, the aim is always to make the reaction as broad in its application as possible. For while it is good for a student to be able to find the ester and the alcohol content of oil of peppermint for example, it is better for him to know that a chemical principle is a natural law and that the principles of condensation and hydrolysis involved in these reactions are always the same whether they apply to the making of soap, the manufacture of perfumes, of collodion, of dope for airplane wings, of artificial silk, or any other of the countless similar reactions which take place in the laboratory, the manufactory, the plant organism, and our own bodies.

The work of the classroom and the laboratory are carefully correlated; and the students are encouraged to read as widely as possible. To facilitate this reading a list of references, together with suggestive questions and topics for discussion, follows each chapter of the "Guide" with which the students are provided. This list is supplemented by reference to timely subjects, usually made orally in the classroom or laboratory, and afterwards posted on the bulletin board. A collection of selected books is kept for ready reference in a small reading room contiguous to the laboratory; for though the students are encouraged, and even required, to constantly consult books in the general and departmental libraries, much time is saved by keeping some of the most useful where they may be readily available during the short periods of waiting which inevitably occur in every chemical laboratory. Another small collection, chiefly duplicates of books in the general library, is to be found in the instructor's office. These books are loaned to the students upon request. This has proved to be one of the most effective methods for securing the desired reading. Whether or not the student selects these particular books in order to advertise to the instructor his interest in the subject is immaterial. The desired end is accomplished and the student reads. Even if he reads but little, he handles the book, carries it home, knows what it is about and where he can find information on the subject. This is perhaps, after all, the main thing, for it is much more worth while to know where to find a great deal of information upon a large number of subjects, than to have our minds crammed to their limited capacities by facts about a few things. The educated man or woman has better use for the brain than making it a store house for facts. An encyclopaedia is better and more reliable for that purpose.

An important part of the work of this course is the note book work. The note book is kept in two parts, one devoted to laboratory experiments and the other to the answering of questions and the discussion of topics suggested by the Guide. The reading of note books, though something of a drudgery, should not be neglected, as it is one of the best methods for determining whether or not the students are getting what they should from the course. Furthermore, since the note book is the student's best, and most frequently used, book of reference, it should be carefully corrected.

The course in plant chemistry, as a whole, has been found most useful. It is interesting; it is practical from the standpoint of both chemistry and pharmacognosy, and it carries with it more of general culture than almost any other course in the curriculum.

ALCOHOL—ITS FUTURE.*¹

BY A. B. ADAMS.²

One of the subjects uppermost in the mind of the pharmacist to-day is alcohol. It is immaterial whether he is a large manufacturer or a small retailer. He wonders—how he can get along at present; what has the future in store?

Less than a year ago, with the suddenness of a bursting bomb, the prohibitionists won a great victory, and the manufacture of beverage spirits ceased. As alcohol is necessary for manufacturing purposes, regulations were issued by the Internal Revenue Department, under which non-beverage spirits could be obtained. These regulations are undoubtedly not perfect, and it will take years to make them so—if ever. To the pharmacist who was accustomed to buy and sell alcohol (and the vast majority never knowingly sold it for beverage purposes) it seemed an invasion of his rights to say that he has got to give bond, etc., can only sell at retail the medicated articles, regardless of the fact that the physician may not like any of the formulae for rubbing purposes. The physician, in turn, thinks he is abused when he cannot get a small quantity of the pure ethyl alcohol, for a specific purpose, without giving bond.

The manufacturer must be careful that all the private formulae he compounds conform to his sworn statement as regards medication. All of this is decidedly harassing. But these are harassing times and we all must put our shoulders to the wheel and help. Some of you have probably complained because your permit was refused or delayed for some reason; but see the other side—that of the other humans just like yourselves who have been directed by Congress to enforce the law of October 3, 1917.

One application was made by a duly credited physician to the Collector of Internal Revenue for ten gallons of alcohol and ten gallons of whiskey with which to treat his patients, "and please hurry the permit for the whiskey." A sanatorium made application for spirits which was to be used untreated for their patients. Such a place would soon have been doing a large business if the permit had been granted—which it was not. This is something of the other side. If we are to have National Prohibition after the war, and personally, I believe we are, then non-beverage alcohol is with us to stay. The thing for each to do is to try to the best of his ability to obey the spirit of the law and assist the Commissioner of Internal Revenue in the proper carrying out of the law given him to enforce.

Alcohol is necessary to the pharmacist. Sometimes he is able to make something else do fairly well, but that is about all. Tincture of Jamaica Ginger has been

* Read before Scientific Section, A. Ph. A., Chicago meeting, 1918.

¹ Mr. Adams desires it to be understood that any expression in this paper is his personal opinion, and not an official one. This paper was written before the war had ceased, therefore some statements are not applicable to present conditions; there are, however, suggestions embodied which may prove of value.—EDITOR.

² Chief Chemist Internal Revenue Bureau.

used as a beverage, and will be; Lemon Extracts have and will, but because a few perverts out of 10,000 normals satisfy their craving for intoxicants by such means, should we prohibit the manufacture of such preparations? I say *no*, but such preparations should be made *standard* in order to reduce the chance of improper use, and the seller of such preparations should keep his eye on his sales to see that they are not abused. Why you ask?—Because if you, as legitimate users of alcohol, do not want more restrictions put upon you, then keep your use and sale of alcoholic preparations clean. If necessary, be more strict. In compounding a tonic, don't try to see how little medication you can put in, but use sufficient so that criticism will be reduced to the minimum.

It is of course needless to say that as long as a drop of alcohol is sold there will be demands to stop it, but careful supervision on the part of the pharmacist will disarm many such objectors and the real mass of the people will be satisfied.

DENATURED ALCOHOL.

The restrictions placed on non-beverage alcohol have caused many to turn to denatured alcohol. Congress undoubtedly intended that industrial users of alcohol should, wherever possible, receive the benefits of alcohol free of tax. That more users do not apply I believe is due to a misunderstanding.

It is probably questionable as to whether the Commissioner of Internal Revenue would approve the use of denatured alcohol in preparations intended for internal use, although the same might be poisonous, as Tincture of Nux Vomica; the reason for such refusal being as to where to draw the line, but there are undoubtedly many other preparations, such as liniments, cold creams, and similar semi-paste toilet articles for which, if the question were properly presented to the Commissioner of Internal Revenue, permission might be granted for the use of denatured alcohol. Of course, in cases such as this, the manufacturer would want to use a specially denatured alcohol, and would be required to give a bond, to store the material in a certain place and follow some few restrictions. As soon as the formality of the bond and the restrictions are understood, it is found that such procedure is not the nightmare that it first appeared to be.

The ideal denaturant has never been discovered, and I believe the present time to be an ideal one for manufacturing pharmacists to get together to see if they could not arrive at some denaturing material which would render the alcohol unpotable and still leave it efficient for such technical uses.

Leaving out of consideration the additional internal revenue tax, alcohol is no higher than other commodities at the present time. Vast quantities of alcohol are used in the Munitions Industry in the production of nitro-cellulose and other war necessities. As soon as the war ceases, the manufacture of such materials will automatically cease. Such alcohol will then be available for the arts and naturally the price will tend to return to normal, unless, of course, the revenue taxes remain. I think alcohol in the future should be more plentiful than it has been in the past six months, because there are unlimited quantities of molasses in Cuba, and, if the "bottoms" are available, it could be easily transported into this country. Therefore, there seems no reason to be worried about the supply. The cost of non-beverage alcohol of course will be high as long as the revenue taxes remain on it. As to the probability of such taxes being removed, you are in just as good position as I am to judge. We all know that the Government is obliged

to raise immense sums of money by taxes, and it is the rule to keep taxes on such products as have been taxed in the past.

For these reasons, I firmly believe, as previously said, that the manufacturing pharmacist should look to denatured alcohol as the solution to one of his problems. Of course, in the preparation of his tinctures; etc., such use will probably not be granted, but there are vast quantities of alcohol used for extractive purposes and for the manufacture of semi-solid articles, which I believe are entitled to the privileges of the tax-free article. . . .

PRONUNCIATION OF PHARMACEUTICAL LATIN.*

BY A. B. STEVENS.

Much confusion exists in the pronunciation of pharmaceutical Latin terms. There appears to be no uniformity among teachers or text-books. Some follow the Roman system, others the English and many in actual practice use a mingling of the two systems. High schools and colleges universally teach the Roman system. Teachers of pharmacy naturally look to text-books on Pharmaceutical Latin for correct pronunciation. But comparison of such text-books shows a marked difference in practice among authors. For instance, Robinson's "Latin Grammar of Medicine and Pharmacy" uses the Roman system. Dr. O. A. Wall in his "Elementary Lessons in Latin" does not state which system he uses, but from the sounds given letters it is evident that he uses the Roman System. The same author in his excellent work on "The Prescription" devotes 72 pages to the use of Latin in medicine and pharmacy, but the only reference he makes to pronunciation is found in the foot-note on page 127 in which he very aptly states:

Incidentally it may be remarked that it is absurd to give scientific nomenclature, derived largely from modern English words, the pronunciation which was supposedly used by Cicero for the Latin he spoke 2000 years ago.

In another text-book, "Pharmaceutical Latin" by Hugh Muldoon, the author gives both the Roman and the English systems, but states that:

Though the latter system is recommended as being the more practical because of its similarity to English, it will be found that many prominent men in the profession use the Roman method, perhaps more generally a mingling of the two. . . . It is much more important for a pharmacist to be able to interpret a prescription correctly than it is to be able to pronounce in a faultless manner the Latin contained therein.

Dr. M. L. Neff, in his book on "Prescription Writing" does not allude to the pronunciation of Latin.

Clothers and Bice in their "Elements of Latin for Students of Medicine and Pharmacy" have the following to say regarding the pronunciation of Latin:

Latin is now pronounced differently in different countries. English-speaking people use either the Roman or the English method, the Roman being the one preferred by scholars generally. In this book the English method will be used as that prevails in medicine and pharmacy.

Other text-books on pharmacy, such as:

"Principles of Pharmacy" by Arny, "Treatise on Pharmacy" by Caspari, and "Practice of Pharmacy" by Remington, all devote considerable space to pharmaceutical Latin but do not give anything on pronunciation.

* Read before Section on Education and Legislation, A. Ph. A., Chicago meeting, 1918.

The writer in his "Manual of Pharmacy and Dispensing" followed the English method.

From the preceding it is evident that there is a decided lack of uniformity in the pronunciation of medical and pharmaceutical names. The principal argument in favor of the Roman method is the fact that it is taught in our public schools. This would be a strong point in its favor, if the majority of those who study pharmacy were Latin students, but many of our high school graduates have not studied Latin and those who have are not strict in the use of it in the pronunciation of medical and pharmaceutical terms.

The English method is more easily acquired by English-speaking people but the strongest argument in its favor is the fact that, with one exception, the English method is used by botanists in the pronunciation of botanical names of plants. One of the first subjects studied by a pharmacy student is botany, in which he becomes familiar with the names of many drugs. How absurd and impractical it would be for a pharmacist to use one system in the pronunciation of botanical drugs, and another for the preparations made from them, and also for inorganic drugs. Under such conditions is it any wonder that those who try to use the Roman method naturally fall into the habit of mingling the two methods?

It seems as though this is a question of great importance to the study of pharmacy, and one that should be discussed, and if possible settled by the Section on Education.

From the preceding it must be evident that I am in favor of the English method. However, I would not so strongly object to the universal adoption of the Roman method if the botanists would adopt that method, but that is practically hopeless as they are a very large body of men, and practically united on the English system.

DISCUSSION.

BERNARD FANTUS: We need an authority on this subject to which reference can be made. It is most lamentable that there is no agreement relative to the pronunciation of medical and pharmaceutical terms among teachers. Students may hear Dig i tā lis or Dig i tā lis; Hy os cy ā-mus or Hy os cy a mus; Sco pol ām ine or Sco pol am ine. Now which is correct, and how should we pronounce not only the Latin but also the English names of drugs? I take it in our ordinary conversation we use the English names rather than Latin names. I have great difficulty in getting authority on the pronunciation of English names of drugs. Further than that, I find it difficult to get authority on proper spelling. Especially does it seem that the proper spelling of the newer drugs is quite diversified, and it is difficult to get authoritative decisions. I have appealed, for instance, to an author of a text-book on Pharmacology for decisions on questions of this kind. He answered, "Everybody spells the way he pleases." When you look through this author's book you will find that is so. There is absolutely no system on spelling that he carries through the book.

There is this thought also that comes to me: Who should be the ultimate authority on the spelling of medical terms? Is it not the Pharmacopoeia? If so, who looks after the orthography of the Pharmacopoeia? The question of, for instance, the introduction of spelling reform is one that I believe a serious one. Take the words ending in *in* and *ine*. Those of us who are allied with the Pharmacopoeia ought to stand by it. For instance, when I write an article for publication in a medical journal, and use the *ine*, they scratch off the *e*. I believe this is an important topic for teachers.

THE PREPARATION OF TINCTURES BY THE DILUTION OF FLUID-EXTRACTS.*

BY EDWARD D. DAVY.

It is not uncommon, in fact it is a common practice among pharmacists to prepare tinctures needed from time to time by dilution of fluidextracts. In some cases this procedure is warranted, as may be seen by taking into consideration the percentage of alcohol in either preparation and also the solubility of the active agents in varying strengths of alcohol. When tinctures are needed for immediate use, or for those which have a limited demand in everyday practice, they are commonly made from the fluidextract without considering the result of such dilution. Fluidextracts are usually at hand, and dilution of them therefore is an easy method for making tinctures on short notice, but the resulting preparations of some of these are questionable. A few examples will suffice to make clear the result of this procedure.

Fluidextract of Aconite has an alcoholic menstruum composed of three volumes of alcohol and one of water, or 71% alcohol, while that of the tincture has seven volumes of alcohol and three of water, or 66.5% alcohol. The difference in alcoholic strength of the two menstrua is not so striking as in other cases and, since the activity of the preparation is dependent on the alkaloids present, the dilution of the standardized fluidextract may be used to advantage and in this case would not throw out of solution any of the active agents with so small a change in the alcoholic content.

In the preparation of Tincture of Cannabis from the fluidextract there could be no serious objection to the common practice of dilution, inasmuch as the alcoholic content in the two preparations is the same.

In preparations of Calumba the activity is due in part to a small alkaloidal content, also to gum and resin. The fluidextract U. S. P. VIII contains 66.5% and the tincture 57% alcohol. It will readily be seen why in this dilution, involving the solution of gum and resin, a precipitate forms so that the resulting preparation does not represent the extractive matter obtained in a tincture made by the usual method.

In the Fluidextract of Cinchona U. S. P. IX the menstruum contains hydrochloric acid, while that of the tincture has none. It would be manifestly unfair and unwise to make a tincture whose alkaloids should be as such in combination with their organic acids, from a solution the alkaloids of which are in the form of hydrochlorides. In the preparation of Fluidextract of Lobelia, acetic acid is used in the menstruum and since this tincture as well as that of cinchona are commonly used in compounding, the presence of acid might greatly impair the value of subsequent mixtures in which they were used.

In the Fluidextract of Belladonna the menstruum is 76% alcohol while that of the tincture is about 49% and the result of dilution is the formation of considerable precipitate which can be overcome only by making the dilution with approximately 76% alcohol. It is obvious that this method would work in most every case but the tincture would be unlike the *official* preparation.

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.

It has been a common practice, and still is to some extent, to prepare the tincture and also the infusion of *Digitalis* from the fluidextract regardless of the fact that all the recent investigations show *digitalis* preparations lose their efficiency to a greater or less extent with age. The medical profession in general is insisting on a fresh tincture and also the freshly prepared infusion, and the Revision Committee of the U. S. P. IX endorses the idea. This is shown by the absence of alcohol in the infusion which acted merely as a preservative and allowed for its keeping a greater length of time.

In the Fluidextract of *Rhubarb* the menstruum is 76% alcohol while that of the tincture is 49%, a difference of 27% in the two menstrua. The active constituents of *rhubarb* are largely resinous matters and cathartic acid. On diluting the fluidextract with a 49% alcohol and glycerin menstruum, considerable deposit forms in forty-eight hours which increases with time until its maximum is reached. Glycerin tends to prevent the precipitation but does not entirely overcome it.

In fluidextracts one cubic centimeter represents the extractive matter from one gramme of drug, but in very few cases do we actually get all of the extractive matter from the evaporated percolate in solution. The extractive being largely, if not wholly aqueous, is incorporated with the first percolate whereby its alcoholic strength is lowered and a deposit results. Fluidextracts if made by the same process will be quite uniform and they present the best means now available for administering drugs in concentrated form, but in no way do they represent other preparations when diluted.

Excluding the tinctures of Iodine and Ferric Chloride there are 20 official tinctures wholly or partly dependent on the alkaloidal content for their activity, while 32 are dependent on glucosides, resins, oils or acids. If one follows consistently the last named tinctures when made from fluidextracts, it will be found that in nearly all cases where the alcoholic content is made that of the Pharmacopoeia a decided precipitation occurs with the exception of those in which there is no change in menstrua. Squills present an exceptional case in that the tincture has a higher alcoholic content than the fluidextract but in this case a deposit results from a dilution. In all these cases it remains to be proven that the precipitated matter is inactive in those drugs dependent on gums, resins or glucosides for their activity.

It will be noted that in fluidextracts one has in many cases a product nearing saturation and a menstruum varying from 0% to 27% in alcohol from its corresponding tincture. The tincture in most cases represents only 10% of the drug thereby making the extraction more complete and retaining in solution all of the extractive since it is completely dissolved in the menstruum used. It is true that some tinctures under ordinary working conditions will precipitate on long standing due to evaporation or effect of light and heat, conditions over which we have no direct control, leading some to believe it to be due to the same cause in either case.

In conclusion it might be said that Pharmacy has been greatly drawn from its original course by too many "ready to use" preparations. It is the aim of everyone to bring it into a professional rather than wholly commercial light, and also to eliminate many so called "short cut" methods imposed on the profession, thereby taking the initiative from the individual. If any dilutions as above mentioned

are made the individual preparations should be thoroughly studied before making such dilutions, and a procedure other than this must be considered a very poor one to follow.

DISCUSSION.

CHARLES H. LAWALL: The evident care with which the statements were made in the paper and conclusions drawn appear to me to be very worthy of widespread publication to the pharmaceutical profession. This investigation goes to show that we are moving in circles, in a way. I do not mean to detract in any way from the value of the paper by that remark, but I am reminded of discussions on this subject in 1895. The conclusions reached at that time were practically the same as the conclusions reached in this paper. We believed then, and still believe, that the manufacture of pharmaceutical preparations requires a certain amount of attention, care and skill.

WILLIAM GRAY: In the first eight hundred mils of fluidextract percolate we may assume that it is saturated with the active constituents. When the last percolate is evaporated it becomes a more or less aqueous product. When this is mixed with the first percolate the strength of the alcohol is reduced and consequently there is a precipitation.

C. M. FORD: The manufacturers of fluidextracts age their preparations by allowing them to stand for some time, so that insoluble matter is precipitated.

R. W. TERRY: They obtain a preparation of better appearance but may not invariably represent the drug. The finished product, however, in most instances, is standardized.

HENRY P. HYNSON: I can go a little further back on this subject than Professor LaWall. I regard the paper of great importance because it touches upon a subject that is not yet settled. I want to ask him if he knows whether the propaganda started a few years ago, to have fifty percent extractions take the place of tinctures and fluidextracts, has made any progress.

CHARLES H. LAWALL: No, because after all it is a matter of educating the physician. If the physicians ever become acquainted with the value of fifty percent preparations and learn to prescribe them, then we should admit such preparations to the Pharmacopoeia.

R. W. TERRY: In the preparation of Tincture of Capsicum the effect of different strength alcohol is very nicely shown. If all the menstruum is not made up at one time and a further amount of menstruum is made up to finish the percolation, and there is even a slight variation in alcoholic strength, the percolate comes through cloudy or milky.

H. P. HYNSON: There does not seem to be any reason why we should have fluidextracts and tinctures of variable strength. I want to ask the Chairman of the Committee of Revision of the U. S. Pharmacopoeia if he does not think the propaganda for "50 percent tinctures" should be continued. I want to leave that thought with you.

A NOTE ON TINCTURE CINCHONA COMPOUND.*

BY F. W. NITARDY.

The U. S. P. directs Tincture Cinchona Compound to be made by percolating a definite amount of red cinchona, bitter orange peel and serpentaria with first a definite amount of hydro-alcoholic menstruum containing some glycerin, completing the percolation with a plain hydro-alcoholic menstruum and adjusting the tincture so that each 100 mils will assay 0.45 Gm. of cinchona alkaloids.

In the practical application of this formula, it has been found that the finished tincture will sometimes assay 50 percent or more above the specified strength (due to cinchona bark of high alkaloidal strength). The subsequent adjustment of this tincture to U. S. P. strength produces a product that contains less bitter orange peel, serpentaria, and glycerin than would be present if the cinchona used

* Presented before Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.

does not assay much above U. S. P. strength, thereby defeating one of the principal objects of official standards for preparations, namely uniformity.

A preparation made in two portions, the first representing one-half the volume of the finished tincture and containing all of the bitter orange peel and serpentaria, the other representing the red cinchona adjusted to proper strength (double that of the compound tincture), and these mixed in equal volumes, would produce a product that would be more nearly uniform in all its ingredients than one made by the present process, regardless of any adjustment necessary for obtaining proper alkaloidal strength.

The official formula, if changed as above described, would read as follows:

Red Cinchona, No. 40 powder.....	200 Gm.
Bitter Orange Peel, No. 40 powder.....	160 Gm.
Serpentaria, No. 60 powder.....	40 Gm.

Prepare 950 mls of Tincture by Type Process "P" as modified for assayed tinctures (see U. S. P. IX, page 444), from the red cinchona, and prepare 1000 mls of Tincture by Type Process "P" from the bitter orange peel and serpentaria, using as the first menstruum for each, a mixture of 75 mls of glycerin, 675 mls alcohol and 250 mls of water, completing the percolation in each case with a menstruum of two volumes of alcohol and one volume of water. Adjust the Tincture prepared from cinchona so that each 100 mls will contain 0.9 Gm. of cinchona alkaloids, using a mixture of glycerin, alcohol and water in the proportions of the first menstruum for this purpose. When finished, mix equal volumes of the two tinctures so prepared.

If thought more desirable, the two steps may each be given as separate preparations, and the compound tincture directed to be made by the mixing of equal volumes.

SPIRIT OF PEPPERMINT, U. S. P.*

BY E. F. KELLY.

The collection of samples of this galenical throughout the State of Maryland by the Board of Health for examination and the resulting prosecution of several pharmacists under the State Food & Drugs Act on account of variations in its strength, have called attention to some facts about this preparation that may be of interest here.

In the first place, it was not generally known, it seems, that the U. S. P. now recognizes Essence of Peppermint as an official synonym for the Spirit, and some dealers were marketing an off-strength preparation as Essence of Peppermint under the assumption that they were not amenable. Secondly, there is no official standard set up by the U. S. P., even as far as directing in the official formula, that a certain finished quantity be made, and this is also true of Spirit of Spearmint.

The official directions are to macerate 10 Gm. of peppermint in 500 mls of water for 1 hour, and express strongly. Mix 800 mls of alcohol with 100 mls

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.

of oil of peppermint, add the macerated leaves and enough alcohol to make 1000 mls, macerate for 6 hours and filter.

The failure to direct the addition of sufficient alcohol through the filter to give 1000 mls was doubtless an oversight as this procedure is directed in the formulas for making all of the official spirits, with the exceptions of peppermint and spearmint and aromatic ammonia, and was directed in the U. S. P. VIII for those of peppermint and spearmint. The peppermint displaces a certain volume and this displacement, with the evaporation of alcohol in filtration, causes a loss of approximately six percent in volume, as found by several experiments. No doubt many who prepare this spirit will, through habit, make up the volume after filtration with alcohol, causing a corresponding deficiency in strength in the finished preparation.

Careful examination of Spirit of Peppermint U. S. P. shows that it contains approximately 10.6 percent of oil of peppermint and not 10 percent, as commonly understood. This higher percentage of oil is the result of the loss in volume before referred to, and checks, as will be noted, with the 6 percent loss in volume.

The question as to the correct legal standard, that may be raised under such conditions, demonstrates the importance of having all official formulas direct, whenever possible, a finished quantity either by weight or volume, or a definite number, particularly, when no other requirement is made.

STERILIZED DISTILLED WATER.*

BY E. FULLERTON COOK AND LOUIS GERSHENFELD.

The U. S. Pharmacopoeia IX introduced a process for preparing sterilized distilled water and it is assumed that any trained pharmacist is now prepared and able to furnish that official product on demand.

The directions of the U. S. P. seem simple and without complications, and without experience the druggist may feel that it is an easy task to prepare sterile water and dispense it on order.

Those, however, who have had experience in the making of sterile products, especially when apparatus must be adapted for the purpose and the work conducted under drug store conditions, know the difficulty met with, and the likelihood of failure. If an autoclave is available, its use would always be preferred to the official method, as it insures sterility, but since this is frequently not at hand, especially in a pharmacy, this paper was undertaken to prove the efficacy of the official process of the Pharmacopoeia, that is, boiling in a flask, and also to show the necessity for the most extreme caution, if success is to be attained by this method.

The Water Required.—The Pharmacopoeia directs the use of "freshly distilled water" for sterilizing. This preliminary requirement must not be ignored, since distilled water, even though but a few days old, will be teeming with bacterial life and if sterilized, would contain the dead organisms, and thus produce a "bacterin." It would also contain the toxins produced in the water during the life of the bacteria and such a water, if used as the solvent for a substance to be used as an intravenous or subcutaneous injection, would produce systemic effect and might cause serious consequences from the introduction of foreign proteid.

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.

TABLE I.—EXAMINATION OF WATER FOR STERILIZATION.

Fermentation Test.	Incubation on agar plates after standing				
	1 day.	4 days.	7 days.	10 days.	14 days.
1. Tap Water from 145 N. 10th St., Phila. collected in sterile container after running for 5 minutes.....	Negative	About 120 colonies per mil	+	+	+
2. Tap Water, distilled as directed by the U. S. P. IX, using Liebig condenser, and collected in a sterile flask, under cover.....	...	Slight growth, a few isolated colonies per mil	+	+	+
3. Distilled water, collected directly from Stokes Automatic Still, in a sterile flask.....	...	Slight growth as in No. 2	+	+	+

TABLE II.—STERILIZATION OF WATER.

	Incubation on agar plate after standing				
	1 day.	4 days.	7 days.	10 days.	14 days.
4. Distilled water No. 2—boiled for 30 minutes in sterile hard-glass flask, stopped with cotton. (U. S. P. IX method).....	Sterile	—	—	—	—
5. Distilled water No. 2—boiled for 30 minutes in sterile glass flask closed with sterile rubber stopper and tubes (see Fig. 1).....	Showered several isolated colonies per mil*	+	+	+	+
6. Distilled water No. 2, contained in a sterile hard-glass flask stopped with parchment paper, and heated in Arnold steam sterilizer for 30 min....	Showered several isolated colonies per mil	+	+	+	+
7. Distilled water No. 3—boiled for 30 minutes in a sterile hard-glass flask stopped with cotton. (U. S. P. IX method).....	Showered only one colony	1 colony	1 colony	1 colony	No growth
8. Distilled water No. 3—boiled for 30 minutes in a sterile hard-glass flask, closed with sterile rubber stopper and tubes (see Fig. 1).....	Sterile	—	—	—	—
9. Distilled water No. 3 in a sterile hard-glass flask, stopped with cotton and capped with parchment paper and heated in Arnold steam sterilizer for 30 minutes.....	Not sterile	+	+	+	+

* The supposition is that the boiling was not active enough in Nos. 5 and 7.

TABLE III.—TEST ON UNSTERILIZED FLASK.

	Incubation on agar plate after standing			
	1 day.	4 days.	7 days.	10 days.
10. Tap water in an unsterilized flask, stopped with cotton and boiled for 30 minutes.....	Not sterile	+	+	+
11. Tap water in an unsterilized flask and closed with rubber stopper and tubes (see Fig. 1) and boiled for 30 minutes.....	Not sterile	+	+	+
12. Tap water in an unsterilized flask, stopped with cotton and heated for 30 minutes in an Arnold sterilizer.....	Not sterile	+	+	+

TABLE IV.—STERILIZATION IN THE PRESENCE OF SPORE-BEARING AND NON-SPORE-BEARING ORGANISMS.

	Incubation on agar plate after standing			
	1 day.	4 days.	7 days.	10 days.
13. Distilled water, to which an active culture of staphylococcus was added, placed in sterile flask, stopped with cotton and boiled actively for 30 minutes.....	Sterile	—	—	—
14. Distilled water, to which an active culture of <i>B. subtilis</i> was added, placed in sterile flask, stopped with cotton and boiled actively for 30 minutes.....	Sterile	—	—	—

Ordinary tap water is even worse, as it often contains dissolved solids in addition to the bacterial life and toxins (see Table I, experiment No. 1). Therefore only "freshly distilled water" must be used.

The Flask.—The Pharmacopoeia directs that "a flask of hard glass" must be used. This may be any of the non-soluble glass flasks now on the market. If an ordinary chemical flask is used, the hour's boiling will cause the solution of appreciable quantities of soluble silicates, and when the water cools these silicates separate in fine, needle-like crystals and render the water unfit for use. The directions require also that this flask be sterilized before using, which means dry heat, at from 160° to 170° C., for two hours (or by autoclave sterilization) (see U. S. P. IX, Part II, p. 616). To prove that this precaution is necessary, the boiling process was carefully tried, using an unsterilized flask. In no instance was the water sterile. (See Table III, Nos. 10, 11, 12.)

The Process.—The Pharmacopoeia directs that the freshly distilled water be placed in a sterile flask of hard glass, stopped with sterilized absorbent cotton and boiled for thirty minutes.

These directions were strictly followed, and the results are reported in experiments Nos. 4 and 7. No. 4 was sterile on the first day and remained sterile for at least two weeks. No. 7 showed one colony per mil at first, but gave no growth on the 14th day. The degree of evaporation in the two flasks indicated that No. 7 had not been boiled as actively as No. 4, which probably accounted for its unsterile condition. This same condition existed in Nos. 5 and 8; less evaporation in No. 5 corresponded with the result—an unsterile condition.

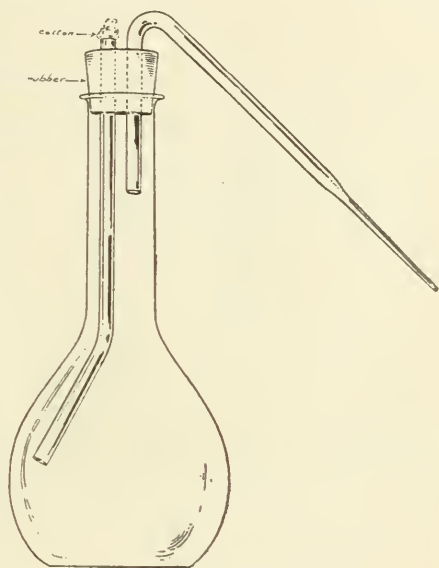


Fig. 1.—Sterilizing Flask.

Further experiment on this point shows the necessity of directing "active boiling" in the U. S. P. process, if sterility is to be insured.

Because of the difficulty of maintaining sterility in distilled water and normal salt solution when portions are to be withdrawn, the cotton plug was replaced with a sterile rubber stopper carrying two glass tubes (see Fig. 1). One of these tubes serves as an intake for air, being plugged with cotton and extending almost to the bottom of the flask. The other permits the water to flow from the flask when inverted and is constructed on the siphon principle so that all liquid drawn into the tube will be discharged and not drawn back into the flask. The sterility of the outlet is insured, when water is to be drawn, by dipping it for a few moments into chloroform in a bottle. The first water that flows from the flask washes out the chloroform and is discarded.

This apparatus proved very satisfactory, the stopper being inserted before boiling the water. Experiments Nos. 5 and 8 show the result of their use, No. 5 not being "actively boiled."

The use of the Arnold sterilizer live steam for 30 minutes did not produce a sterile product in any instance (see experiments Nos. 6 and 9). Evidently this method requires, reheating on successive days to be satisfactory.

It has been suggested that probably a sterile, freshly distilled water might be prepared by direct distillation with a glass Liebig condenser, collecting the distillate in a sterile flask, under aseptic conditions. This method did not yield a sterile product in any instance (see experiment No. 2).

Conclusions.—Use the autoclave method if practicable for preparing sterilized distilled water and suggest it in the U. S. P. text. Always use freshly distilled water and a sterile, hard-glass flask. If the boiling method is to be followed, stopper the flask with absorbent cotton or the tubes and stopper, heretofore suggested, and boil the liquid actively for at least thirty minutes.

PRESCRIPTION CLINIC.*

BY CHARLES H. LAWALL AND IVOR GRIFFITH.

(1)	Sodium Salicylate.....	2 drachms.
	Sodium Bromide.....	1 $\frac{1}{2}$ drachms
	Caffeine Citrate.....	36 grains
	Peppermint Water.....	1 $\frac{1}{2}$ fluidounces
	Syrup.....	2 fluidounces

At a recent meeting of the Pittsburgh Branch, A. Ph. A., the foregoing prescription was discussed and it was said that it was twice prepared by different dispensers and each time exhibited a brown precipitate. According to the journal in which the article appeared suggestion was made that the precipitate was probably due to some impurity present in the sodium salicylate or to a trace of iron due to coming in contact with the spatula (?), used in compounding. These were mere conjectures, however, and the filled prescription was not exhibited.

Filling the prescription as it stands, with sodium salicylate U. S. P., and without a *spatula* (!!!), resulted in the unsightly mixture shown herewith and, no matter in what order the ingredients were mixed, the same reaction was in evidence. The precipitate is salicylic acid. It is simply a case of the stronger organic acid, citric acid of the caffeine citrate (which is not a true salt but a mixture), displacing the weaker organic acid, salicylic acid from its combination with sodium. The alkaloidal caffeine goes into solution. The incompatibility is corrected by using caffeine (alkaloid) 18 grains instead of the 36 grains of the caffeine citrate.

(2)	Thymol Iodide.....	1 drachm
	Zinc Paste (Lassar).....	
	(without salicylic acid).....	8 drachms

A student brought this prescription in with the statement that it had resulted in a dark ointment compared with the product dispensed by another phar-

* Presented before Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918. Several of the prescriptions were discussed; Charles H. LaWall, H. P. Hynson, J. H. Beal, J. C. Peacock, C. M. Ford, and others participated in the discussion.

macy. We did not find this to be the case when the prescription was filled with U. S. P. thymol iodide, but found the solution of the problem by compounding the same prescription with a poor grade of thymol iodide, which an examination proved to contain a trace of free iodine. The modified Lassar's paste is stiffened with starch and the latter reacts with the free iodine and the latter thymol iodide gave rise to the dark color of the ointment. This is simply another argument in favor of using nothing but high-grade chemicals, and from reputable manufacturers. It recalls to our mind the dilemma of a pharmacist who purchased a stock of thymol iodide from a peddler and found it only partially soluble in alkali solution. Examination of it under the microscope demonstrated the presence of a considerable quantity of lycopodium, with which it had been sophisticated. One experience of this type usually cures a peddler patron.

- (3) Solution of Hydrogen Dioxide,
 Glycerin, of each sufficient to make... 4 fluidounces

We referred in our paper last year to the fact that it had been stated in several drug journals that this prescription, on standing, developed oxalic and tartaric acids, through oxidation of the glycerin by the dioxide. We have failed to find any evidence at all of oxalic acid or tartaric acid in the prescription after a period of one year. It was originally filled with an acetanilid-free dioxide solution and C. P. glycerin. The experiment was later made with dioxide preserved with acetanilid but the results were exactly the same. One fact clearly demonstrated by occasional assaying of this prescription was the preservative effect of the glycerin on the peroxide. Prof. E. A. Ruddiman in his authoritative work on *Incompatibilities* carefully states that "hydrogen dioxide is said to oxidize glycerin to glyceric, oxalic and tartaric acids." (IV Edition, page 200.)

In the face of the foregoing evidence, we are inclined to say, that while this may be true with greater concentration and higher temperature, it is not true of mixtures of peroxide and glycerin under prescription conditions.

- (4) Heavy Magnesium Oxide..... 10 grains
 Phenyl Salicylate.....
 Acetyl Salicylic Acid, of each..... 5 grains

"In the presence of moisture, and this is furnished by the acetyl salicylic acid crystals, calcined magnesia reacts with the acetyl salicylic acid with the production of magnesium acetyl salicylate. Further chemical interaction takes place with the possible production of magnesium salicylate and magnesium acetate. There will also be an exchange of radicals of the salol and the magnesium oxide with the formation of more magnesium salicylate and pure phenol or magnesium phenolate." The foregoing is a statement which recently appeared in the *Journal of the American Medical Association*.

In order to test its correctness the prescription was compounded under ordinary conditions with pure chemicals and dispensed in parchment papers. One paper was left open to atmospheric contact for one week, but there was no apparent change in the physical character of the powder, nor was there any appreciable difference in its odor. The magnesium oxide was apparently unaltered (at least

not to a great extent) for the alcohol-insoluble portion of the powder at the end of a week was practically the identical weight of the magnesium oxide originally used. We are not prepared to state that no changes will take place, in the presence of much moisture, and in time, but think that under ordinary conditions and with precautions to exclude moisture the prescription is dispensable, and would be all used up before any marked changes occurred.

(5)	Iodine.....	24 grains
	Methyl Salicylate.....	2 drachms
	Anhydrous Lanolin.....	4 drachms
	Cotton-seed Oil.....	6 fluidounces

The iodine was reduced to a fine powder and the melted anhydrous wool fat added to it. To this was added, with constant trituration, the oil slightly warmed, and finally, the methyl salicylate with shaking. A qualitative test performed on this mixture, two days after its compounding, resulted in the discovery that the iodine had been completely absorbed and was tightly held in organic combination with the oils. It is questionable therefore, whether the physician gets the action desired from the iodine prescribed.

(6)	Argyrol.....	40 grains
	Potassium Iodide.....	20 grains
	Iodine.....	20 grains
	Glycerin.....	6 grains
	Water.....to make	1 fluidounce

(Year Book, 1916, p. 275.)

Attention was originally drawn to this prescription through an article printed in the *Critic and Guide*. The above prescription was filled and used by the patient with the result that the throat became intensely inflamed and irritated. What actually happens is that, contrary to expectation, the organic silver compound is dissociated and attraction takes place between the free iodine and the silver with the production of some silver iodide, which evidently caused the intense irritation of the inflamed mucous membrane instead of soothing it. There is no way of preventing this and the doctor should be informed of the dangerous incompatibility and advised to leave one of the reacting factors out.

(7)	Bismuth Subsalicylate.....	2 drachms
	Sodium Bicarbonate.....	4 drachms
	Cerium Oxalate.....	30 grains
	Elixir of Orange, to make.....	3 fluidounces

To all appearances there is no difficulty about filling this prescription. When it leaves the counter, it is a harmless looking, white mixture, and a shake well label is affixed in a prominent place. In about fifteen minutes, however, trouble starts through evolution of copious amounts of carbon dioxide and the reaction is violent enough to burst the bottle or push out the cork and spill the contents. This happens even when the bismuth salt contains no free salicylic acid. The presumption is that the varying and unstable bismuth compound is dissociated and the liberated salicylic acid reacts with the sodium bicarbonate with the production

of sodium salicylate and carbon dioxide. The cerium oxalate apparently plays no part at all in the reaction.

(8)	Resorcinol.....	20 grains
	Zinc Oxide.....	4 drachms
	Boric Acid.....	20 grains
	Olive Oil.....	2 fluidounces
	Solution of Calcium Hydroxide.....	6 fluidounces

This looks like a formidable prescription at first glance, but should cause no difficulty in the hands of a thoughtful compounder. There are several ways of incorrectly compounding it. One is to dissolve the boric acid and resorcinol in the lime water, add the zinc oxide and finally the olive oil. A better way to fill it and one where no difficulty is encountered, is to dissolve the resorcinol in the lime water. The olive oil is then added and the mixture thoroughly shaken. Then the zinc oxide, in the form of a fine impalpable powder, is added and the mixture thoroughly shaken. Finally, the boric acid is incorporated by rubbing it up in a mortar with a little of the mixture, and then transferring into the remainder of the prescription. The result is a smooth mixture that does not readily separate out.

(9)	Corrosive Mercuric Chloride.....	1 grain
	Solution of Potassium Arsenite.....	2 fluidrachms
	Syrup.....	1 fluidounce
	Peppermint Water to make.....	3 fluidounces

No matter how this prescription is compounded, trouble will be encountered. The arsenite in the presence of the excess of carbonate in the Fowler's solution brings about a change in which the corrosive sublimate is converted partly into mercurous chloride and partly into metallic mercury with the change, at the same time, of the arsenite into the arsenate. Neutralizing the solution of potassium arsenite with hydrochloric acid or rendering it slightly acid will retard the change. The doctor would do better by using solution of sodium arsenate in equivalent amount.

(10)	Iodoform.....	
	Bismuth Subnitrate.....	
	Mild Mercurous Chloride of each.....	2 drachms
	Use as dusting powder.	

This prescription was filled by a Philadelphia pharmacist and dispensed in a white vial topped with celluloid. In a day or so, the patient returned the vial requesting an explanation for the chameleon-like tendency of the powder to change its color. When dispensed, the mixture was a light canary-yellow. After being placed in the sunlight for a while the actinic rays get in their work by releasing some of the iodine from its combination and this iodine and calomel make friends with the ultimate production of the red iodide of mercury. Oddly enough, on shaking the vial well, the red color apparently fades, although, in reality, it only lessens in its intensity of tint by being neutralized by the heavy yellow of the rest of the powder on being shaken with it. The red color reappears on the side exposed to the light as often as it may be remixed and exposed again.

PHARMACEUTICAL STANDARDS, PAST AND PRESENT.*

BY EDWARD KREMERS.

It has long been a practice in this country to relegate preparations that were not regarded "worthy" of a position in the United States Pharmacopoeia to the National Formulary. In not a few instances the pharmacist has continued to demand a standard when the physicians on the U. S. P. Committee of Revision demanded the deletion of certain preparations. The pharmacists' demand arose in part from the fact that physicians continued to prescribe preparations discarded by the Sub-committee on the Scope of the Pharmacopoeia. Likewise, popular medication makes demands for pharmaceutical standards, quite irrespective of regular medical practice, a demand which the pharmacist may not ignore.

To this well-known situation that has always been with us, the rearrangement of the drug market, notably the restrictions on the use of sugar and the scarcity of glycerin as a sugar substitute in pharmaceutical preparations, has made the present problem of standards a very perplexing one. If to this there be added the statement made by a well informed chemical manufacturer that more than one-half of the chemicals of the new chemical factories, that have sprung up like mushrooms since the war, have to be rejected because not up to the standard of the U. S. P.; if we further call attention to a circular letter issued by a crude drug firm to all state agricultural experiment stations, asking the sick and the lame, the maimed and crippled, in fact all who can not take part in the important economic problems of this nation, to use such time and strength as they possess in the gathering of wild medicinal plants and to cure them to drugs without giving more than a hint as to what to collect and not even a suggestion as how to cure; if we thus add inexperience and unguided ignorance to the more rational attempts made at the solution of a problem that is so grave under normal conditions, we may well expect that standards are going, provided they have not already gone, a-glimmering, if you will pardon this inelegant but highly characteristic expression.

Such being the situation, not only in this country but throughout the world, the entire problem of standards may seem highly inapropos at the present time. Yet the contrary is the case. That this is being realized is clearly shown by a number of recent events. Not only has the work on standards been continued by the Government, by such organizations as the Council of Pharmacy and Chemistry of the A. M. A. and by various pharmaceutical organizations, but it has been receiving the special attention of such bodies as the American Association of Drug Manufacturers and the American Association of Pharmaceutical Chemists and is to receive further consideration when the Association of American Food and Drug Officials meet in this city somewhat later in the month.

Not many years ago this Association appointed a Committee on Unofficial Standards. One of the special problems of this committee was to look into the pharmacopoeial history of such chemicals, vegetable drugs, and galenicals as had been dropped from the U. S. P., but had not been given a place in the N. F. It

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.

was planned at that time to readopt one of the old pharmacopoeial standards or a revised modification thereof. No doubt, many of these revived standards will find their way directly or indirectly into the N. F. Some of them may already be included in the latest revision thereof.

There are two phases of work on standards that deserve special mention in this connection. One of them has already been referred to in connection with papers that I have presented to this section, both of which had to deal with what I have chosen to name "A century of the U. S. P., 1820 to 1920." One of these had to deal more particularly with the galenical oleoresins of the U. S. P., the other with the Liquors of the same official guide. (Exhibit of proof of Dr. Du Mez's manuscript on Oleoresins.)

In this connection it possibly should be pointed out that more than a year ago, the American Association of Drug Manufacturers appointed a Committee on Standards, and that this Committee has shown its appreciation of the historical significance of standards by beginning its work in the Lloyd Library. Unquestionably this work will prove valuable to the members of the organization that has undertaken the task. To what extent it will prove beneficial to pharmacy at large remains to be seen. A thorough monograph of each class of preparations, giving the literary references to all information to be had about each specific preparation in that class, is certainly a requisite to all intelligent and scientific discussion and research looking toward its improvement, also to the establishment of a present standard, even if that standard is to be one that was laid down in the past.

The other phase of standards to which I desire to direct your attention, however briefly to-day, is represented in the reproduction of standards, past as well as present, by means of the card form for the dissemination of information. Aside from the general information, each item is to receive a separate card, and each standard under that given item a separate card. Thus information on the Liquors may be supplemented by another card on Arsenical Liquors, this in turn by a card on Fowler's Solution, and this finally by numerous cards giving a fac-simile reproduction of the text of each standard, foreign as well as domestic, together with references to the special literature on that standard. (By way of illustration the card for *Liquor Potassii Arsenitis*, U. S. P. 1890, was exhibited.)

Without going into the merits and defects of the card system as a method of distributing and collecting encyclopaedic information, it may suffice to point out that an actual beginning is being made and, what is equally important, it is a beginning to which any individual may make a contribution or as many contributions, as he sees fit. Let us hope, therefore, that the beginning already made may prove acceptable and that its acceptability will be demonstrated by numerous contributions from others.

SECTION ON COMMERCIAL INTERESTS, AMERICAN PHARMACEUTICAL ASSOCIATION.*

ABSTRACT OF THE MINUTES OF THE SESSIONS HELD IN CHICAGO, ILL., AUG. 14 AND 15, 1918.

Chairman R. P. Fischelis called the first session of the Section on Commercial Interests of the American Pharmaceutical Association to order at 2.00 P.M., Wednesday, August 14, in Congress Hotel.

Owing to the absence of Secretary F. W. Nitardy, Hugo H. Schaefer was named Secretary pro tem; he occupied the chair during the reading of the Chairman's address.

Address of Chairman R. P. Fischelis:

LADIES AND GENTLEMEN: Many problems of a commercial nature have confronted the pharmacist during the year that has passed since we met in the city of Indianapolis—problems of more than ordinary importance and interest because many of them were directly concerned with the winning of the war or were the result of war-time conditions. In considering the subjects that might be touched upon in my address as your chairman—it became necessary to concentrate thought on a few matters which seemed to loom most important out of the great variety of subjects deserving of consideration.

We have therefore arranged our program so that one session might be devoted to a discussion of making our pharmaceutical man-power more efficient commercially, and the other session to a discussion of subjects connected, more or less directly, with the winning of the war.

In order that our discussions may be as broad as possible in the short time allotted we have asked some of our members to take up special phases or angles of the subjects under discussion and we trust that all present will feel free to speak their mind and give us the benefit of their views.

The subject matter of your chairman's address has been divided into two sections and is intended to introduce the topics to be discussed and the papers to be presented. But before going into the program of the day, permit me to call your attention to one of the rules of the American Pharmaceutical Association affecting the work of this Section, which, to the best of my knowledge, has not been observed for the past few years.

This rule requires the Section on Commercial Interests each year to select a topic for discussion at meetings of State Pharmaceutical Associations and the presentation of a summary of these discussions at the next annual meeting of the Section. No topic was selected last year so there is no summary to present. However, I wish to propose as the topic for the ensuing year: "Pharmacy and Pharmacists After the War." It is high time for us to be planning for the immediate future of both pharmacists and pharmacy. This war is causing world-wide changes in our mode of living, in science and in our industries. If we want to keep pace with the progress of the times we dare not wait until after-the-war conditions are upon us. I would therefore recommend that the incoming officers of the Section on Commercial Interests request every State Association to make a discussion of the topic suggested above a part of the program at their next annual meeting. The discussion might include such questions as the help problem, the problem of correct prices, our attitude toward imported merchandise, and other similar problems. I would further recommend that this subject be brought to the attention of the Council of the A. Ph. A. with the request that the Association take the initiative, or at least an active part, in any movement designed to meet the new conditions and protect pharmaceutical interests after the war.

The main topic before us to-day is more or less educational in its nature. We have heard the criticisms leveled at our colleges of pharmacy for not turning out graduates who are of greater value to their employers as far as the commercial side of pharmacy is concerned. The attitude

* Papers with discussions will be printed apart from minutes.

of most college men is that there is not sufficient time in the minimum pharmacy course for so-called commercial training. In order to get at a basis for discussion, a questionnaire was sent to every college of pharmacy in the Conference.

The most important questions asked were:

1. How many hours of Commercial Pharmacy, as defined in the Syllabus, are included in your minimum Pharmacy course?
2. Who teaches Commercial Pharmacy in your course?
3. What are the teacher's special qualifications for teaching this subject?
4. What portion of the course as mapped out in the Syllabus, do you include in your instruction?
5. What portion of the course, as mapped out in the Syllabus, do you exclude?
6. What special subjects do you reach under the heading of Commercial pharmacy that are not covered in the Syllabus?
7. What subjects receive special attention in your Commercial course, as for instance, salesmanship, advertising, book-keeping, accounting, etc.?

It was hoped that the answers to these questions would indicate first, the extent of the commercial training courses in our schools; secondly, what commercial subjects there is a special demand for; thirdly, whether competent authorities were covering the subject; and fourthly, to what extent the Syllabus was being used as a guide.

The information that has come to hand is very interesting. We have, for instance, a letter from one Dean which reads:

"It is my opinion that the best way to handle this matter of teaching commerce in colleges of pharmacy is not to make the question part of the proceedings at all. I do not think we should combine commercial courses with pharmaceutical courses, but I am a firm believer in giving the pharmaceutical student a good grounding in those laws and customs upon which all commercial transactions are based; for instance, I feel that students should be given a series of from eighteen to twenty-four lectures on contracts, agency, property, real and personal, commercial paper, bailments, etc.

"It is my opinion that such subjects as salesmanship, advertising, etc., ought not to be taught in Colleges of Pharmacy. The Colleges ought to continue to lead in professional and ethical pharmacy and not to follow the pander to the altogether too commercial tendencies of to-day.

"The A. Ph. A. ought not to dignify this question by giving it attention. Bringing the matter forward only gives the more commercially inclined opportunity for increasing their commercial propaganda."

Another letter reads:

"While I appreciate the importance of the so-called Commercial Pharmacy, I am of the opinion that the many courses offered are rather a sad comment on American pharmacy. We have long given a course in Drug-Store Practice, which alternates with a similar course in the History of Pharmacy, so that even all of our two-year men have an opportunity to take both. I mention this merely to show that I am not unmindful of the situation, though I have but little sympathy for the attempts that are being made at present to remedy it."

The number of hours devoted to the subject of commercial pharmacy in the various colleges ranges from 0 to 90. The teachers in most cases are the professors of Pharmacy, many of whom have had practical drug store experience. In a few cases experts in business science are employed. In most cases the Syllabus is used as a basis for the course and only rarely are there any additions.

It would seem, therefore, that we have plenty of justification for the criticism that there is not enough commercial training in our schools to-day to fit men for the present-day retail store. At the same time it is difficult to suggest just what might be eliminated from the regular pharmacy course in order to make room for such training.

We have a number of papers bearing on that subject on our program to-day and I shall therefore take no more of your time in discussing it.

The second portion of this address bears on war-time problems.

We have heard a great deal about the conservation of drugs and considerable effort is being exerted to carry out a rational program of drug conservation, but there is another phase of conservation which needs our special attention at this time.

A short time ago I received from the superintendent of a concern engaged in pharmaceutical manufacturing a note stating, "that so far as actual figures show, ordinary packing cases have advanced from 100 to 130 percent; excelsior from 125 to 150 percent, corrugated paper 50 percent, labor 50 percent. Taking everything into consideration it can be safely stated that in order to get the same results in manufacturing and shipping pharmaceutical products we must spend two dollars where we formerly spent one."

Another manufacturer sent out a notice to this effect: "For many years it has been the custom of American pharmaceutical and chemical manufacturers to make no charge for packing cases in export shipments. Years ago when lumber was plentiful and cheap it was a very easy matter to carry this cost into the selling price. Now, however, conditions have changed and there has been a very notable increase in the cost of wooden containers, which frequently are made of heavy lumber, and in addition have to be strapped with steel bindings. Recently several of the larger American manufacturers have decided to charge back one-half of the cost of such cases."

Manufacturing concerns of all kinds outside of the drug field are doing everything possible to conserve coal and many other things that go into the manufacture of the necessities of life and we, as pharmacists, must not trail behind in this work.

The department stores in some of our larger cities are only open for business six and a half hours a day in order to conserve coal. There is no reason why the drug store should be open twenty-four hours of the day, and the shortage of help will undoubtedly force some reforms in the connection.

There is one source of absolute waste in the pharmaceutical field and that is in the return of biological and pharmaceutical products to manufacturers. Most of these returns are made just because it is permissible. Many buyers are reckless and lay in far greater supplies than they actually need, returning these goods to the manufacturer for credit, after their expiration date. This is absolute waste. It is not only a waste of serum or vaccine or whatever the medicinal may be but it is also a waste of glass, packing material, rubber, and everything else that enters the manufacture of these products. I think that some cognizance should be taken of this question, and I believe this Section should go on record as approving of a campaign of conservation of all materials concerned in the manufacture and supply of medicinal products.

In order to crystallize sentiment along this line I have prepared the following resolutions which I would like to present at this time:

"Resolved, that it is the sense of the Commercial Section of the American Pharmaceutical Association that steps should be taken by pharmacists everywhere to conserve materials entering into the manufacture, packing and distribution of pharmaceutical and biological products, and

"Resolved, further that the return of drugs and merchandise for credit, especially biological products which are so urgently needed for conserving the life of our military and civil population, be discouraged and steps be taken to prevent the reckless ordering of these products in quantities greater than actually needed.

"Resolved, further that the Council of the A. Ph. A. be requested to sanction the appointment of a committee of five to be known as the Committee on Conservation—this committee to consider suggestions regarding changes of formulas to aid conservation of glycerin, etc."

CHAIRMAN PRO TEM SCHAEFER: You have heard the address of the Chairman. It contains three recommendations, as follows:

"I would therefore recommend that the incoming officers of the Section on Commercial Interests request every State Association to discuss the topic suggested at the next annual meeting. this discussion to include such questions as the help problem, the problem of correct prices, our attitude towards imported merchandise, and other similar problems."

"I would further recommend that this subject be brought to the attention of the Council of the American Pharmaceutical Association, with the request that the Association take the initiative, or at least an active part, in any movement designed to meet the new conditions and protect the pharmaceutical interests after the war."

"That the Council of the American Pharmaceutical Association be requested to sanction the appointment of a committee of five, to be known as the Committee on Conservation, this

committee to consider suggestions regarding changes of formulas to aid in the conservation of all materials concerned in the manufacture and supply of medicinal products."

On motion duly seconded and carried the recommendations were concurred in. Chairman Fischelis then resumed the chair and H. S. Noel acted as Temporary Secretary.

The following papers were read and discussed and referred for publication:

"Commercial Training in Colleges of Pharmacy," by E. Fullerton Cook. (See p. 880, October, 1918.)

"A Square Peg in a Round Hole," by Charles W. Holzhauer. (See p. 874, October, 1918.)

"Repetition Makes Reputation," by W. W. Figgis. (See p. 35, January, 1919.)

"The Profits in Turnover," by H. S. Noel. (See this number of the JOURNAL.)

The following Nominating Committee was appointed: Charles W. Holzhauer, Harry B. Mason and W. W. Figgis.

The first session of the Section on Commercial Interests was then adjourned.

SECOND SESSION.

The second session of the Section on Commercial Interests of the American Pharmaceutical Association was called to order by the Chairman, Robert P. Fischelis, at 9.30 A.M., Thursday, August 15. H. S. Noel acted as Temporary Secretary.

Chairman Fischelis stated that the program of this session was designed to take up the question of conservation, not only of drugs, but many other things that enter into the pharmaceutical manufacture and trade. The first paper was by A. R. L. Dohme, of Baltimore, entitled "Conservation in Pharmacy." (See p. 790, September, 1918, JOURNAL A. PH. A.)

The next paper was on "The Conservation of Crude Drugs," by Hugo H. Schaefer. After discussion, this paper was referred to the Conservation Committee. (See paper and discussion, p. 1049, December issue JOURNAL A. PH. A., 1918.)

The following papers were then read, discussed and referred for publication:

"The Advance by Kilometers," by H. V. Arny. (See p. 1052, December, 1918.)

"Advertising Pharmacy to Pharmacists," by J. C. Peacock. (See p. 1056, December, 1918.)

"The Appearance of a Package and its Contents as a Factor in Merchandizing," by F. W. Nitardy. (See p. 32, January issue JOURNAL A. PH. A., 1919.)

The report of the Nominating Committee was made by Chairman Charles W. Holzhauer, and approved by the election of the following:

Chairman—E. Fullerton Cook, of Pennsylvania.

Secretary—H. S. Noel, of Indiana.

Associates—Hugo H. Schaefer, of New York; J. H. Rehfuess, of New York; I. M. Light, of Illinois.

The Section on Commercial Interests, American Pharmaceutical Association, was then adjourned.

JOURNAL OF THE

THE PROFITS IN TURNOVER.*

BY H. S. NOEL.

I am in no way responsible for the saying that honest opinions, like homely women in street cars, stand the longest, but I will go on record before this audience as one who has honest opinions about the conduct of the retail drug business. Whether or not these opinions of mine are fit to stand, you are to be the judges.

I am certain that my intentions are of the best and that what I have to say will appeal to you in a different manner than the preachings of a young colored minister who was long on war talk but slow to enlist. He proclaimed loudly his intentions of helping to win the war and wound up his prayer one Sunday morning in this manner: "Use me, Lord, use me—in mah advisory capacity."

A great many men who have been in business for a number of years show a tendency—an unfortunate tendency I think—to crystallize. They resent innovations; they are satisfied to let well enough alone and refuse to meet the demand of changing business conditions. I will not go so far as to say that they are always failures or doomed to failure eventually, but I do say that their chances for independence and money making are materially lessened. Some men and some stores are money-makers despite crude business methods, a lack of accounting methods, inventory or semblance of system of any kind. They remind me of the farmer in Arkansas, whose house was built on posts. He put a picket fence around the house and kept hogs underneath his home. When a traveler asked him if he thought the practice a good one and in keeping with modern ideas of sanitation, he remarked that he had been keeping hogs that way for fourteen years and was yet to lose a hog.

Up in New England, in the town where I was born, there is still in existence a small drug store run by a man who in my youth was considered an excellent pharmacist. In his store will be found the same fixtures and show cases and a part of the goods that were there forty years ago.

Time was when this druggist made a good living. He is respected by all and is a member of the local board of health. He has no business these days, however. Half the time the store is closed because there are no customers. If stock grew in value with age he would now be independent. Changes in business may come and go, but this druggist goes on doing business just as he did forty years ago. The methods by which men became successful then are not those of to-day, however, and he has been left behind in the march of progress.

The time was when inventory once a year was considered often enough and by many too often.

In the brief time at my disposal I cannot hope to say much about the value of the inventory, departmentizing business, selection of side-lines, the value of advertising, etc. The time allotted is all too brief to treat of one single phase of merchandising which I have selected to talk upon. It is the importance of turnover and the part it plays in the success or failure of the retail drug business.

In debating it is customary, in order that the judges may have firmly fixed in their minds the exact meaning of expression used, to devote a part of the de-

* An address before the Section on Commercial Interests, A. Ph. A., Chicago meeting, 1918.

bate to a definition of terms. Talking, as I am, to an audience that is quite familiar with the expressions I shall use, there is but one term that we must think alike upon if I am to be understood by all.

What do we mean by turnover?

It is an expression that is commonly used with reference to the number of times in a given period of time that the investment in stock in the store is turned into cash. Perhaps we should say that turnover is the annual business of a store, and the stock turns the number of times stock is turned into cash. For our purpose, however, let us assume that by turnover we mean stock turns, and by stock turns—turnover.

There are three ways in common practice of determining the rate of turnover; but only one real way from the auditor's standpoint.

1. Divide the total sales by average inventory at cost.

This method has little to commend it as a part of the sales represents gross profit margins.

2. Divide sales at selling price by inventory at selling price.

3. Divide sales at cost by average stock on hand at cost.

The third method is to be preferred by far.

Let us assume that a druggist does a business of \$18,000 a year. Let us further assume that his gross profit is 35 percent and therefore that the cost of the goods is 65 percent, or \$11,700. It is a very easy matter then for us to determine that with an average investment in stock of \$5,000 this druggist has turned stock a little better than twice.

It is very apparent that the greater the sales and the smaller the investment required to make those sales, the greater will be the profit. Anything that tends to increase sales without increasing investment hastens the turnover.

As long as the maximum sales can be made on a minimum investment without increasing the cost of producing the business materially, we may safely conclude that the problem of turnover has been solved.

While it is claimed by some that increasing the turnover increases the overhead expense, there are numerous and specific examples to the contrary.

In Albany, New York, there is a drug store that has a very meager stock in point of quantity. Most of the needs of this store were supplied by a nearby wholesaler from whom the store received goods twice daily by delivery and from one to five times daily by messenger. The annual business of this store was around \$12,800 a year. Figuring the gross expense at 35, the cost of goods was approximately \$8,300, or 65 percent. The average inventory was never above \$1,500, which gave this store then a turnover of better than five.

In a small town in Indiana, a druggist died leaving only a small life insurance and a drug store with a stock valued at \$2,300. The store was a problem to the widow. She went to a wholesaler for advice and he said: "If you take the money you get out of selling the store you will get \$138 a year." He advised that she keep the store and get a man to run it.

Through the efforts of the friendly wholesaler she secured the services of an honest conscientious clerk. He came on a profit-sharing basis—this was before the war—the woman and the clerk each drew out \$75.00 a month. By agreement the net earnings were to be divided between the proprietress and the clerk.

For two years the total income has been \$2,400, or \$1,200 apiece. A striking fact is that at no time has the stock inventoried more than \$50.00 above the original investment and at one time was \$27.00 less.

This profit from both the stores I have just mentioned was made possible through quick turnover of stocks which in turn was made possible through buying as needed of a nearby wholesaler.

There are several ways in which druggists can meet the problems that confront all merchants in war times. One important method is the curtailment of stock in an effort to hold the investment as near as possible to normal in order to avoid tying up too much capital without extending profits, and the other is to endeavor at all times and in all lines to make use of the turnover by converting capital into cash and making a dollar earn profits as many times as possible during the year.

Thus we determine that frequent converting of merchandise into cash, made possible by buying often and as needed, is one big factor in promoting turnover. We may well consider several other important factors that contribute to the desired end and have an important bearing on turnover: nearness to a wholesaler or other source of supply, carrying advertised lines for which a demand has already been created and which, therefore, require less selling energy, and retail drug store advertising.

The great difficulty with most druggists, in my opinion, is not an unwillingness to systematize business, but a lack of knowledge of the best means to obtain the desired facts. There are far too many druggists who guess at what the net profit will be and at the cost of doing business. Upon inquiry I find that many retailers base profits on net costs at the time of purchase and on total sales at the end of the year. These druggists then wonder why it is that the bank balance does not jibe with the profits shown on paper. I find upon investigation that druggists who pretend to have a semblance of system very frequently do not figure correctly. They omit the addition of a fixed sum for themselves in overhead and almost always figure overhead too low through omission of certain expense items, that properly belong to overhead classification. The result is, of course, a high percentage of profit on paper and a small credit balance on the check book. The money is gone but unaccounted for.

My first job in a drug store included, among other humble tasks, the care of a steam-heating plant for a three-story business block. I'm qualified with a license as a pharmacist and qualified without a license as a fireman.

I visited the cellar five to ten times daily in cold weather and was reminded when the other tenants had cold feet by code signals on the steam pipes. It seemed to me that I hadn't a friend in the block. Someone was continually knocking. I learned after a time to keep my eye on the gauge more than on the coal shovel and the result was that an indication of five pounds of steam on the gauge caused me to consign all the tenants to warmer climates without visiting the coal pile. An accounting system is to the druggist what the steam gauge is to the boiler. Both are quick, sure indications, and labor savers necessary to the successful operation, respectively, of a steam engine or the drug business.

Imagine trying to run a railroad engine without gauges. It would be a matter of guesswork you will agree. And so it is with the drug business or any other

business and particularly so in such trying times when the universal cry is full-speed ahead. It is a hazardous undertaking to attempt to man the throttle without a competent engineer and a guide for him to work by.

Hugh Chalmers once made the remark that what one man can do others can do. This might lead us to believe that what is possible for a big store is also possible for a small store. It might delude us into thinking that one man was always endowed by Nature with as much gray matter as every other man. We know that literally this statement is not true, but, on the other hand, we do know that both men and business conditions are capable of change and improvement.

William H. Ingersoll, who was chairman of the cost accounting systems and retail service committee of the Associated Advertising Clubs of the World, is authority for the statement that the large store has become large because it could take advantage of the possibilities, while the small store needs help and must be raised to an accurate basis of knowledge of its own business.

Let us not make the error of thinking that all the advantages are with the big store. True it has the advantage of capital but in system and accounting methods the small store has only to reach out to equal the large store's efforts. The big purchasing power is not so great an advantage as many would have us believe. Quantity "buys" to secure better prices necessitate ware-houses and storage quarters and quick turnover. On the surface of things it appears that the chain stores and big buyers have all the best of it. They go around the wholesaler and take his profits and are thereby in a position to sell cheaper and still make greater profits. This idea is largely fallacious.

In the first place the quantity purchases seldom bring better than 10 or 15 percent cash discount. In order to make buying such quantities advantageous several stores usually share in the deals. This means drayage, repacking and frequently storing, and the overhead of a wholesaler is practically tacked on to the cost of the goods before they are sold. The great advantage that the chain store has in selling the merchandise at a profit is one that is open to any retailer and that is turning stock frequently. The chain stores that can purchase in quantity with a frequent turnover have an advantage. There is no denying it. The message I bring to smaller retailers is the fallacy of attempting to imitate the chain stores in buying as a means of meeting their competition.

The best method of accomplishing that end is to disregard their buying power and stick to the attempt to convert small quantities of merchandise into cash as frequently as possible during the year. If you can turn your stock often enough you can meet their prices without loss and with as great a profit as they enjoy.

When the chain store buys a \$500 order of ten-cent articles and disposes of the entire lot at a profit of a penny or two on the item and reinvests the money in the same or other merchandise within thirty days' time, they are traveling at the rate of twelve profits a year and making good profits. You cannot hope to beat that kind of competition. They are not doing this as often, however, as you think they are.

The overhead expense is heavier in proportion in the chain store than in the small store. And, of course, the volume of business is greater. But the retailer who avoids the tempting discounts and sticks to the "buy-as-you-need" plan will

do more to stimulate healthy turnovers and secure handsome profits than he can possibly secure through contracts and deals.

There is just this much in favor of the quantity deal. If you can save five or ten or better discount on a quantity that you can conservatively estimate will turn into cash within sixty days, well and good. Beyond that point quantity deals at any reasonable discount are expensive bargains. Druggists are slow in realizing these things apparently because there is evidence on all sides that the practice is much in vogue.

My attention was recently called to the store of a druggist in Texas, who, six or seven years ago, was apparently doing a successful business. Along came a crop failure two seasons in succession. Cash business shrunk; collections were poor. He had always been a so-called big buyer with an eagerness to secure a better discount and a quantity price above every other consideration.

An extra five, long terms, easy payments, trade discounts, all appealed to him. His shelves were loaded with goods that moved slowly or not at all, goods that were least in demand he always had in stock. He had very few of the more popular products because he had reached a point where the wholesaler demanded cash for all purchases. The manufacturer who gave him five and two and patted him on the back in big-buyer terms had the inside track.

Investigation showed that he had exhausted his resources. He had money tied up in stock; people owed him; creditors demanded cash—the one thing he did not have. He owed the wholesaler \$2,500 and his banker over \$2,000, all of which was past due. He asked the advice of a traveling man who told him there was a slim chance for him if he would take it. The retailer was advised to ask the banker and wholesaler to keep creditors off while he confined his purchases to quantities as needed and deposited daily sales and collections with the banker.

The plan worked. He bought in small quantities almost exclusively through the wholesaler. It took two years of hustling to get out of the hole and be a free man again. Yet, do you know that even to-day one of the hardest tasks for this druggist is to resist a salesman with an extra discount offer or a five-gallon price where a quarter pound would mean a thirty-day stock? That man holds a dime up close to his eye and hides the dollar profit within reach of his other hand.

When such men as J. Ogden Armour, doing a business of over 500 million a year, William H. Ingersoll of dollar watch fame, and John A. Bush, president of the Brown Shoe Company, St. Louis, warn merchants of the danger of overstock and the profits to be made from quick turning stocks, it would seem that no better authority could be found.

Armour, writing in *System Magazine*, makes it very clear that the basis of profitable business is active money kept constantly turning; that it is rolling capital that earns the profits.

The way to increase the profits on a rising market without putting the retail selling price so high that people will not buy is to make more sales, or make small profit so many times during the year that the very fact of its multiplying will increase the profits, says Mr. Armour in substance.

Armour believes in quick turnover, even to a point where the margin on a dollar is in fractions of a cent. The turnover is maintained by intensive sales methods, quick distribution and sound credit.

William H. Ingersoll, of Robert H. Ingersoll & Bros., says that the small store needs a training school that it may occupy in its more circumscribed influence a position equivalent to that of the bigger enterprise in its bigger sphere.

John H. Bush tells of a Texas merchant who started in the retail business with a capital of \$750. He made a connection with one shoe house, one dry goods house and one hat house as his source of supply. In five years he was doing \$300,000 a year gross. His first shoe purchase was for \$350. In 1916 his Fall order was for \$12,000.

Another merchant in another town scattered his orders. He divided his shoe business among ten firms. He carried a \$10,000 stock and developed a "specialty habit." He had annual sales of \$12,000 and made no money. A few years later he changed his methods. He installed a stock of \$2,800 from one house. He did a gross business of \$16,000, enjoying six turnovers and an excellent profit, of course. His orders are small, forwarded every two weeks.

These are not theories, they are facts from real life and experience. If other businesses are capable of being handled in such ways why not the drug business?

There are in the United States approximately 47,000 retail druggists. Of these over 25,000 are rated from \$3,000 to \$10,000 and approximately 14,000 from \$10,000 up. The remainder fall below the \$3,000 class. The majority then are of comparatively small capitalization. It is, therefore, all the more important, considering the wide range of stock carried by the average druggist that the merchandise be kept turning. The longer goods remain on the shelves the more expensive they become. Ten items that move slowly retard the turnover of the whole stock at the end of the year. It is only by the exercise of watchful care in buying that the retailer can hope to present a satisfactory turnover figure on his inventory sheet.

I have made a careful investigation of business magazines and books by well-recognized authorities in a great many lines of business, and everywhere, as never before, the retailer is being advised along one single line of thought and that is to systematize business, watch the inventory and buy carefully, with the dominant idea in mind that the rate of turnover on proposed purchases is more to be considered than quantity discounts. If proper records are kept it is an easy matter to determine the rate of turnover. Without the right accounting methods, doing business resolves itself into a matter of guesswork. The way to take your business out of the single cylinder class and put it into the twin six class is to know where you are at all of the time. This can be accomplished only by proper accounting.

Too many of us worry in generalities. We know there is something wrong but we are not specifically introspective. It seems to me that if I were a merchant and wanted to improve my business I would endeavor to analyze it from an outsider's standpoint. If a merchant will go away somewhere once a week or once a month and concentrate his mental energies on specific causes of the symptoms of illness in his business, he will soon find out what his troubles are. Once you can determine the cause of the difficulty the battle is half won.

DISCUSSION.

HARRY B. MASON: I don't want to be understood as saying a word against the very vital principle of having as frequent turnovers as possible, but I might point out that it is possible

to carry the turnover idea to a point where you lose money instead of making. To make this practical and to bring it down to a focal point, let me imagine a gross of any article which is offered at the gross price of \$50.00. Say that you could get the same article gross in dozen lots at the price of \$55.00, which I venture to say is a very fair average. Now, it is also a very fair assumption that a gross would last you a year. Would it be wise to buy it and have it in stock? We assume a hypothetical case where you buy a gross of something for \$50.00 and save \$5.00, and that gross will last you one year. Against that you have a method of buying a dozen at a time every two weeks, say, as advocated by Mr. Noel. Now, have you saved the money or have you lost money by tying up your capital for the twelve months? That is the question. If you tie up \$50.00 for a year, what have you lost? If the stock would last you a year, you have lost half of six percent, namely, 3 percent for a year. And if you had sold half during the first six months you would have got your money back so that you average 3 percent loss on this \$50.00 investment for twelve months, therefore that has cost you \$1.50; but if you have bought at the \$55.00 price you have lost \$3.50, which you could have made had you bought the gross. That emphasizes the point that I started out with, that with live items of stock it is decidedly profitable to buy the larger quantities and get the better price and discount.

C. W. HOLZHAUER: As to the matter of buying in small quantities, the theory is very good; but there is one objection which we have found. You have sale for an article right along and you buy one-sixth of a dozen, say, and you sell it out. Somebody forgets to put it in the order book and the next customer comes in and you are out of that article and you lose a sale and you stand a chance of losing the further business of the customer. It might possibly be better, from a business point of view, to buy a couple of dozen of an article, and have it in stock when the customer calls for it rather than run the chance of being out of it right along.

Here is another matter I would like to ask about. What does Mr. Noel refer to by a stock-book? I don't quite understand what he means by keeping a stock-book.

H. S. NOEL: I was in LaFayette, Indiana about four weeks ago and I went into a large drug store there. A very enterprising clerk showed me a loose-leaf stock-book in which he had listed the stock of the store. The business of the store permitted the employment of a stock clerk. In this book the purchases and sales were listed and the items so arranged that the book also served as a directory of the store, whereby items might be found by any one knowing the key. The arrangement made it possible to know the quantity of an article sold in a given period of time and also the amount on hand at any time.

Answering Mr. Mason, I had very carefully considered the matter of those druggists who invest in gross quantities, and at the end of three months are able to take a quarter of that capital and re-invest it in something else. That may apply to a few lines but the large number of items in the average retail drug store must be considered and the unfortunate tendency of the smaller druggists who try to imitate the larger stores in purchasing quantities with the idea that enough can be saved on discount to sell at cut rates and make as much money as the larger store. That is the idea that I am trying to bring to your attention. Those druggists who are above the \$10,000.00 figure possibly can invest in stock and turn it over in thirty days, or sixty or ninety or one hundred and twenty days, and re-invest part of that money according to their good judgment. That is a splendid idea, but I caution the smaller retailer against trying to imitate the big fellows who can buy in such large quantities and effect rapid turnovers.

J. H. REHFUSS: I agree with Mr. Noel in regard to the matter of buying in small quantities. On the other hand the matter of buying in large quantities is sometimes desirable, but it requires careful handling. Mr. Mason says that the difference is only about 10 percent on pharmaceuticals. I have found, at times, that the difference is as high as fifty percent. Fluid-extracts in five-gallon lots can be obtained at about half the price when compared with buying in quarter-pound lots. And it pays a man to take a chance and buy five gallons when there is assurance that it will be sold within a reasonable time and the goods will not spoil while waiting for sale.

With reference to the matter of stock-book, I am sorry that Mr. Noel did not go into that more fully. I hoped he would say more about the stock-book also indicating the location of an item. I know some druggists have such a stock-book and have found it exceedingly useful. I have tried to compile a stock-book of that sort and have put a man on that work for about two weeks. He almost gave up the job and at the end of two weeks said it was too big a task.

I expect to complete it some day, but I would like to know if any one present has ever undertaken to do that. It has been done and is a great convenience. A new clerk does not know where an item is, which has been called for by a customer, and the sale is lost, the customer goes elsewhere and very often never returns to the store. A stock-book, properly kept, would remedy that condition. We started out with the idea of classifying the different departments in the store. For example, group the package medicines in one part, the fluid extracts, the perfumes, all under different headings. I believe that some system can be devised whereby each druggist could have a stock-book, showing the location of the stock, the cost and the selling price, and the quantity purchased at different times of the year, and this would be of much assistance in the conduct of business.

C. W. HOLZHAUER: Instead of keeping a stock-book, we find that a card system is preferable. The book is not flexible enough. You may have 300 items under "F" or "G" and you purchase a new item. You might not have room to put it in your book and maintain the alphabetical arrangement. We use a card system. At the top of the card is the name of the article and there is the problem how to list the articles. On the card we have a space provided for the location in the store and the selling price. The plan is such that any item can be located in the section of the shelf where it is placed. Under that we have a column for the amount purchased, from whom purchased, the price we paid and the amount we bought. It has been a very interesting study for me to see the different prices which have been paid for the same article from different houses. I bought one standard proprietary article from a jobber in New York and I paid that man four different prices for the same article, in the same quantity, within six months. The amount of money involved was very small but I had the record. You will find it very helpful to have all this matter on the card. Every item on the bill is put on the card. If Mr. Jones comes in and wants to sell a gross of something we go to the card and see how much was purchased last year, and if we can use this quantity at a discount, well and good we take it; and, if not, we turn it down immediately.

H. S. NOEL: May I ask if the card system is at once both a purchase-book and a stock-book?

C. W. HOLZHAUER: It was so started, but there should be two books. The information on the price is available to everybody in the store, and that is one objection. But we have not progressed far enough to arrange that as yet. It is principally a purchase and a location record.

H. S. NOEL: The book that I was telling you about was one of the neatest records I ever saw. It gave the exact location of all the items. The stock clerk can take certain leaves out of the book, it might be section "J," shelves 1, 2, 3 and 4. He takes these and goes to section "J," shelves 1, 2, 3 and 4 and finds the items listed as they are arranged on the shelf. The book at once gives him the stock record and location and a green clerk can find any item from the stock-book record. That firm carries a stock of between \$30,000.00 and \$40,000.00 and it is no small task to inventory and keep a stock-book in a store of that size.

THE NATIONAL PHARMACEUTICAL SERVICE ASSOCIATION.

ITS PAST WORK AND FUTURE AIMS.

BY GEORGE M. BERINGER.

At the request of the Executive Committee of the National Pharmaceutical Service Association, the following statement, reviewing briefly the activities of this organization, has been prepared for dissemination. It is very appropriate that at this time, the officers should present to the members and friends a résumé of the work in which this Association has been engaged and the reasons for continuing, even more strenuously, our efforts. It may be considered as a report by the executive officers of the management and discharge of the duties assigned to them.

The National Pharmaceutical Service Association grew out of a meeting of medical practitioners held at the Philadelphia College of Physicians and Surgeons on Wednesday evening, June

20, 1917, to which a number of pharmacists had likewise been invited. At that meeting a number of the eminent physicians and surgeons present, whose age debarred them from active military service, decided to organize a medical Reserve Corps and through this to offer their professional services to the Government during the war.

Recognizing that in civil practice, physicians depended upon the coöperation of the pharmacists and that pharmacy formed an important link in the ethical practice of medicine, this meeting of physicians adopted a motion suggesting that a similar reserve pharmaceutical corps be organized to coöperate with the medical corps in rendering efficient service to the Government, if the need should arise. The following pharmaceutical and drug trade organizations of Philadelphia were represented at that meeting: The Philadelphia Branch of the American Pharmaceutical Association, The Philadelphia Association of Retail Druggists, The Philadelphia Drug Exchange, and the Philadelphia College of Pharmacy. The representatives of these organizations called a joint meeting of their members at the Philadelphia College of Pharmacy on June 25, at 8 P.M. to take action upon the suggestion emanating from the meeting of June 20th, and to determine the best method of mobilizing the pharmaceutical interests to the support of the Government.

It is a peculiar coincidence that the American Pharmaceutical Association was organized in the Philadelphia College of Pharmacy in 1852, and that the National Pharmaceutical Service Association, sixty-five years later, owes its inception and organization to a meeting held in the same college. At this meeting it was pointed out that a medical reserve corps was a very appropriate organization to support the medical corps of the Army, but as no pharmaceutical corps was now established in the Army, a reserve pharmaceutical corps was not practicable.

The objects of this Association as set forth in the preamble and constitution adopted, are:

To mobilize all of the pharmaceutical interests to the support of the Nation; to protect the lives and health of those in the military service of the country by providing supplies of dependable medicine and educated pharmaceutical service for the dispensing thereof; to develop the pharmaceutical service of the Government according to the most advanced professional standard; to secure the establishment of a pharmaceutical corps in the U. S. Army, with ranking commensurate to the services rendered by the enlisted pharmacists; to improve the standing of the pharmacists in the Navy; to secure pharmaceutical representation on the Advisory Council to the Committee on National Defense; to coöperate with the Government and the medical profession in providing the best medical attention for those in the service.

The growth of the Association was comparatively rapid and its propaganda for the recognition of pharmaceutical service in the departments of the Government has spread all over the country. It was at once seen that the army, with its preponderate need for men and for medical service, offered alike the greatest need and the greatest opportunity for approved pharmaceutical service. The absence of a pharmaceutical corps in the United States Army, although such corps have been established in most of the foreign armies and are rendering efficient service therein, has for many years been recognized as a defect in the medical department of our army, and various pharmaceutical organizations, notably the American Pharmaceutical Association, have for years advocated the establishment of a pharmaceutical corps with appropriate rank as a branch of the medical department of the army.

An effort was made to obtain an interview with Surgeon-General Gorgas for the purpose of presenting the need for a pharmaceutical corps as a branch of the medical service of the Army. On July 24, 1917, a conference was held between a Board of Army Medical Officers appointed by the Surgeon-General and a committee composed of Samuel L. Hilton the Chairman of the Committee on National Defense of the American Pharmaceutical Association and Eugene G. Eberle, Joseph W. England and George M. Beringer representing this Association. Pursuant to this conference, a formal brief was filed with the Surgeon-General setting forth in further detail, the work of the Pharmaceutical Corps in foreign armies and the need for such in the army of the United States. This brief was very widely circulated and has been the basis of many of the arguments in favor of a pharmaceutical corps in the army, that have since appeared in the pharmaceutical press, and newspapers of the country.

Shortly after the organization of the National Pharmaceutical Service Association, it was learned that Congressman George W. Edmonds of Pennsylvania, who in his earlier days had been a pharmacist, approved the object of the Association and the purpose to secure a Pharmaceutical Corps in the army and that he would be willing to introduce and further the passage of a measure having this in view. Thus, it became one of the first duties of your Executive Committee to prepare the draft of an act of Congress which was subsequently introduced in Congress as H. R. No. 5531, and commonly spoken of as the Edmonds Bill.

Quite naturally, a bill proposing such an innovation in the methods so long in vogue in the medical department of the United States Army met with some criticism and some opposition. The Surgeon-General was averse to such a reorganization of the medical department during the progress of the war. For the most part, the criticism published evidenced prejudice, lack of knowledge of the duties of the pharmaceutical corps in foreign armies or a misunderstanding of the provisions of the Bill. Constructive criticisms are desirable so that any real defects in the measure may be corrected.

At the hearing held on the Edmonds Bill before the Committee on Military Affairs of the House of Representatives on March 19, 1918, this Association was well represented and in addition to the verbal arguments, a formal brief was submitted which has likewise been published in the pharmaceutical journals.

From the first, your officers realized that the Association was engaged in a campaign of education and that to arouse the public to the actual conditions under which medicines are supplied to the sick and wounded in the military service of the Nation and the moulding of public opinion whereby Congress would be compelled to authorize the modernizing of this branch of the medical service, and to assure to our soldiers the supervision and care of trained pharmacists for the dispensing of needed medicines, was no small task.

This propaganda has been carried on as extensively as the means at our command permitted. We have prepared and disseminated literature setting forth the service of pharmaceutical corps in foreign armies, especially the exemplary work of this corps in the armies of France, and the existing need for such service in our own army.

The indorsement of the movement by the American Medical Association was secured and its influential journal has editorially cordially favored the creation of a pharmaceutical corps as a need of the army medical service. A number of the other medical associations have likewise by resolution endorsed the Edmonds Bill and the medical journals have generally supported the movement. The National, State and local pharmaceutical associations have co-operated and the pharmaceutical press has devoted much space in energetically advocating our cause.

Thousands of our petitions have been distributed and scores of these signed by influential citizens have been filed with Congress. Hundreds of letters have been addressed to congressmen, senators and departmental officials urging the necessity for the proper dispensing of medicines necessary to conserve the health of our soldiers. The campaign of education thus initiated has undoubtedly had considerable effect.

This Association has been actively preparing and disseminating literature relative to the pharmaceutical service in the U. S. Army and many of the articles appearing in the public press have been inspired by our literature or the personal effort of members. It is safe to say that during the eighteen months that have elapsed since the organization of the National Pharmaceutical Service Association more has been done toward enlightening the American public on the lack of scientific pharmacy in the U. S. Army than had been accomplished in all the years of prior agitation on the subject.

The work of the National Pharmaceutical Service Association is not done. Although this war may be at an end, our efforts must not cease until an approved modern dispensing of the medicines and the best of medical attendance is assured to every man in our Nation's army and navy and a proper recognition for the pharmacists engaged in the Government service is established. This necessity has long been recognized by some and is now understood and demanded by more of our people than ever before. The American people expect that their soldiers

and sailors shall be given efficient medical attention, comparable at least with that which they received while in civil life and the increasing current of public sentiment to secure this end is marked and is a welcome indication of the progress of the propaganda and that our campaign of education has not been futile.

Every educational movement must be continued throughout a number of years before definite results are obtained and we may now consider that we are entering the second stage of our campaign. We recall that the Food and Drugs Act became a law only after the agitation of a well organized movement had been carried on for a quarter of a century. Of the final results of our efforts in behalf of a pharmaceutical corps in the U. S. Army, there can be no doubt as our aims are along the lines of modern medical classification and scientific military progress that have already been adopted by most of the progressive nations.

The prospects for the enactment of a law embodying the principles contended for in the Edmonds' Bill are brighter than ever before. Even though the Edmonds Bill has not been brought out of the Committee on Military affairs and in deference to the wish of the previous Surgeon-General has not been acted upon, we know that many prominent and influential members of Congress have expressed themselves as favorable to the objects advocated and we believe that we are fully warranted in our opinion that the sentiment in this branch was so strong that the Bill would have passed the House if it had been voted upon.

Now that the war is over, the objection of the former Surgeon-General to a reorganization of the Medical Department of the Army no longer can hold. It is becoming more apparent that the attitude of that Department was due to a misunderstanding of the desires of pharmacy and the purposes that a pharmaceutical corps in the army should serve and it is an important part of the duty of your officers and executive committee to explain away all grounds for such a lack of appreciation of the services that pharmacy can and will render the Medical Department of the Army if opportunity be afforded.

The reorganization of the Army and of its Medical Department is sure to receive the early consideration of Congress and in any act reorganizing this branch of the army service the principles for which we have been contending must be incorporated. Our efforts are now being concentrated to secure in these reorganization laws a fair recognition of pharmacy and the establishment of a pharmaceutical corps, even though in the Army in peace times it be but a cadre that may be readily extended in times of need to the necessities of the Nation.

This organization must be kept intact and actively continue the work that has been mapped out for it. It must maintain its energetic efforts and propaganda until the objects for which it was organized are achieved. To lose heart at this time, would mean the sacrifice of all of the progress that has already been made and destroy the hope of accomplishing the worthy objects and aims for which pharmacists have been contending for so many years and for the attaining of which the National Pharmaceutical Service Association was organized. To carry on this work to a successful conclusion this Association must have the loyal support of the body pharmaceutic and its membership and its treasury should indicate no lack of interest on the part of the druggists of the United States.

THE APOTHECARY, A LITERARY STUDY.

BY EDWARD KREMERS.

II. FRA ANGELICO, an Italian Colleague.

Fra Angelico is not a priest who delivers tirades against the substitution practices of the apothecaries,* but an apothecary himself. Neither is he the apothecary of a monastery of the renaissance, but a modern lay representative of his calling. Fra Angelico is the nickname of Signor Angelo, who has a monopoly on everything pharmaceutical in a little God forsaken village up in the mountains on the border of the Sabine and "Albanian" hills, not distant from Rome.

It is in his shop where toward evening the gentry of the village meets: the priest, the schoolmaster, the surgeon, the tax commissioner and several "benestanti" who do not hold office but whose faces reflect the abundant harvest of olives and grapes of the previous season. Not only is the apothecary shop the place of rendezvous of this select circle, but the apothecary himself is its principal figure. No one dares contradict him, especially if, before beginning a longer speech, he brushes his large silver spectacles on his coat sleeves and begins thus: "*Ecco, signori miei, this is the way it is.*"

At the time he is introduced to the literary public he is somewhat advanced in years, *viz.*, fifty-five years of age and his bald head is surrounded by a circle of short, black hair, hence the nickname given to him by his fellow citizens.

Only twice Signor Angelo has been out of his nest in the mountains. Both times he was in Rome, which to him is the world. Hence he talks positively about anything and everything. His other information has been drawn from a few books that have been picked up in a haphazard way and which constitute his library. However, Signor Angelo is something more than an apothecary and the head of the village gentry, he is a poet. Neither is he a man of leisure who dashes off a bit of verse on a special occasion for the sake of entertainment. He is a poet by the grace of God, for he writes because he cannot do otherwise. When of an evening he steps to the window and sees the moon rise over the ragged hills and the firefly flitting in his garden, the situation becomes irresistible and he dashes off sonnet after sonnet. He is even an honorary member of the Arcadia, a circle of poets in Rome.

Yet Fra Angelico is not the hero of a story, he is but its raconteur. The hero is Barbarossa¹ and the heroine is Erminia with whom everyone, including our apothecary has been in love one time or other. This, however, was some years ago when Signor Angelo was younger and before the tragic end occurred. Indeed, our faithful apothecary is still in love with her and it is really her memory that inspires him to write sonnets.

It was after a stay in Rome, that Paul Heyse was overcome with an insatiable desire for solitude. So he went into the Sabine hills and found this forlorn village where he had intended to stop for a day. Yet he remained a fortnight. He avoided the two inns where the German painters were quartered, and found a

* *Comp. Abraham a Santa Clara, Gargantua and Garzoni.*

¹ Barbarossa, a "Novelle" by Paul Heyse. Vol. 5, p. 126 of his "*Gesammelte Werke.*" Verlag von Wilhelm Hertz, Berlin, 1878.

hospitable roof in the apothecary shop. The apothecary had the greatest patience with Heyse's poor command of the Italian language, but he abused the author's patience by reading two dozen sonnets at a sitting. Heyse was generous enough to listen patiently and not to reveal to his host that he was a writer by profession.

Thus matters took their course until one day the author asked his host why he had not married. With some reluctance the apothecary enters upon the theme. He admits that he once was in love with a girl who possessed all the charms which Apollines found in a hundred contemporary women when he painted his Venus. She was a very poor girl, yet she rejected him as she did all suitors, until one day there came a foreigner, a Swedish general.

"*Ecco, amico mio*, this is the way it was," he begins his story one evening about nine o'clock. With a sigh he had trimmed the lamp, leaned back in his chair behind the counter, half closed his eyes and placed his hands into the pockets of his jacket. The place in front of the shop was deserted. The splashing of the fountain was the only noise audible from without and the snoring of the apprentice who slept in the adjoining chamber, from within. After a long pause he began as was his custom, "*Ecco, amico mio*."

But the story of Erminia and her lovers has no particular pharmaceutical elements though told by an apothecary. However, it is told in the vivacious and fascinating style of Paul Heyse and is well worth reading. Finally, it may be of interest to note that the same author has at least twice described an apothecary in some detail: this Italian representative of an out of the way place (1869) and a German representative of a small residential town that is just being forced to awaken from its long sleep of several centuries of self contentment.

MRS. EUGENE G. EBERLE.

It is with sincere sorrow that we record the death on February 9, 1919, of Mrs. Eugene G. Eberle, wife of the Editor of the JOURNAL. Mrs. Eberle was of Texas birth, and came with Mr. Eberle to Philadelphia a few years ago when the JOURNAL office was moved to this city.

Mrs. Eberle possessed a peculiarly beautiful and self-sacrificing nature, the sort of woman who seemed to embody in concrete form the highest ideals of a true wife and mother. She added to the usual charm of the Southern gentlewoman a rare graciousness of manner which endeared her to every one she met—a truly lovely woman and a worthy helpmate of her husband.

She leaves two daughters, Mrs. Briggs and Mrs. Gibbs, and two sons, Ambrose Ryan and Joseph Ryan. Interment was at Honey Grove, Texas, the place of her birth. Our sympathy goes out to Mr. Eberle and his family in their sad bereavement.

JOSEPH W. ENGLAND.

PROCEEDINGS OF THE ANNUAL MEETING OF THE NATIONAL
DRUG TRADE CONFERENCE HELD AT THE HOTEL
EMERSON, BALTIMORE, JANUARY 7, 1919.

MORNING SESSION.

The meeting was called to order by President James H. Beal at 10.30 A.M.

The minutes of the last annual meeting were approved as printed without reading.

The roll of delegates being called, disclosed the presence and absence, respectively, of the following delegates:

Representing the American Pharmaceutical Association: James H. Beal, John C. Wallace and Samuel L. Hilton.

Representing the National Wholesale Druggists Association: Charles A. West, represented by Frank E. Holliday as alternate, George W. Lattimer, and C. Mahlon Kline.

Representing the National Association of Retail Druggists: Samuel C. Henry and Eugene C. Brokmeyer, James F. Finneran and the alternate he had appointed both being absent.

Representing the American Association of Pharmaceutical Chemists: George C. Hall, by Harry Noonan, alternate; W. C. Abbott, by J. H. Foy, alternate, and B. L. Maltbie.

Representing the American Drug Manufacturers Association: Charles M. Woodruff, Franklin Black at the forenoon session in person, and at the afternoon session by R. C. Stofer, alternate, and Fred B. Kilmer.

Representing the Proprietary Association of America: Fred K. Fernald by Frank A. Blair, alternate, Harry B. Thompson, and Philip I. Heuisler.

Representing the National Association Boards of Pharmacy: David R. Millard and W. T. Kerfoot, Jr., H. Lionel Meredith being absent.

REPORT OF EXECUTIVE COMMITTEE.

The Executive Committee then submitted the following report:

Report of a meeting of the Executive Committee of the National Drug Trade Conference held at the Hotel Emerson, Baltimore, Md., on the 6th day of January, 1919, at 2 o'clock P.M., pursuant to a call of the President dated December 17, 1918.

Meeting called to order by the President at 2.45 P.M.

President James H. Beal, Secretary Charles M. Woodruff and members George W. Lattimer and John C. Wallace present. Dr. A. R. L. Dohme came in later before the meeting was over.

A communication from the Chairman of the War Service Executive Committee of American Industries of the Chamber of Commerce of the United States of America was read and referred to the Conference.

The Secretary-Treasurer then read the following financial report which was received and referred to an auditing committee consisting of Mr. Wallace and Mr. Lattimer, with instructions to report to the Conference at the meeting called to be held on January 7, 1919.

FINANCIAL REPORT.

TO THE OFFICERS AND DELEGATES OF THE NATIONAL DRUG TRADE CONFERENCE:

I hereby submit my financial report to January 1, 1919:

RECEIPTS.

Balance on hand January 1, 1918.....	\$373.18
Received from Association Assessments.....	350.00
Check No. 40 drawn own account by mistake and recharged (see check No. 42).....	13.73
Total.....	<hr/> \$736.91

JOURNAL OF THE

EXPENDITURES.

Check No.	'18,	Payee.	Account.	Amount.
33	1/11	E. G. Eberle	Floral spray, Prof. Remington.....	\$ 10.00
34	1/25	Western Union	Telegrams.....	2.79
35	2/6	U. S. Chamber of Commerce	Dues for 1918.....	10.00
36	2/7	Parke, Davis & Co.	Printing Memorials and Officers for 1918.....	18.57
37	3/15	John C. Wallace	Telegrams.....	10.79
38	3/21	C. M. Woodruff	Letterheads and postage.....	8.88
39	4/9	American Pharmaceutical Assn.	Printing Proceedings.....	6.60
40		James H. Beal	Expenses to Chicago	13.73
41	7/5	James H. Beal	Stationery and postage.....	14.00
42	7/17	C. M. Woodruff	Postage and check 40; see receipts..	18.23
43	8/19	C. M. Woodruff	One-half expenses attending execu- tive meeting at Chicago.....	33.00
44	9/2	C. M. Woodruff	One-half expenses attending special meeting at Baltimore.....	56.67
45	10/2	John C. Wallace	Expenses.....	12.75
46	10/3	Geo. C. King Ptg. Co.	Printing ordered at September, 1918 meeting.....	37.50
47	10/4	W. U. Tel. Co.	Telegrams.....	1.16
48	12/27	U. S. Chamber of Commerce	January Nation's Business.....	3.00
49	12/31	C. M. Woodruff	Postage, telegrams and manifoldg.	11.00
Total.....				\$268.67

SUMMARY.

Receipts.....	\$736.91
Expenditures.....	268.67
Bal. Jan. 1, 1919.....	\$468.24

The credentials of delegates and alternates were then read and approved. (For list of delegates and alternates see above.)

President Beal moved that any officer or member of a standing committee who had not been re-elected or re-appointed as a delegate to the Conference be held to be entitled to act as such officer or member until his successor had been elected or appointed.

Secretary Woodruff seconded the motion, and it was put to vote and unanimously carried.

A communication to the Conference from the National Association of Manufacturers of the United States of America urging opposition to proposed legislation compelling the use of the metric system was then read and referred to the Conference without recommendation.

A communication dated December 18, 1918, from the Hon. Joseph E. Ransdell, United States Senator from Louisiana, inviting the Conference to send representative to a conference to be held at the auditorium of the Smithsonian Institution, January 22 and 23, 1919, on the subject of our merchant marine, was read and referred to the Conference with the recommendation that such representatives be sent.

Secretary Woodruff then read several amendments to the Code of Rules and Regulations, which were discussed, modified and amended and referred to the Conference. (See proceedings of afternoon session.)

An informal discussion of Harrison Act features of the War Revenue measure then followed. The discussion related particularly to the so-called McCumber amendment providing for the keeping of records of sales of exempted items, and

ended in an understanding that if President Beal could be provided with a copy of the amendment he would prepare resolutions to be presented to the Conference.

There being no further business the Committee adjourned.

(Signed) JAMES H. BEAL, *President*.

CHARLES M. WOODRUFF, *Secretary*.

The committee appointed to audit the account of the Secretary-Treasurer submitted the following report:

TO THE PRESIDENT, OFFICERS AND DELEGATES TO THE NATIONAL DRUG TRADE CONFERENCE:
Gentlemen:

Your committee appointed to audit the account of the Secretary-Treasurer have performed that duty, find it correct and submit the following:

DR.		
January 1, 1918	To balance on hand.....	\$373 .18
	To assessments received.....	350 .00
		\$723 .18
CR.		
	By vouchers paid.....	254 .94
	Balance on hand 1/1/19.....	468 .24
		\$723 .18
	JOHN C. WALLACE	} <i>Committee.</i>
	GEO. W. LATTIMER	

The report was received, approved and ordered placed on file.

The following communication referred to the Conference by the Executive Committee without recommendation was read, ordered received and placed on file. It was remarked by one delegate that the communication amounted to a commendation of the action long since taken by the drug industry; and by another delegate that the communication evinced a change of heart on the part of the United States Chamber of Commerce which was now recommending and urging what it had formerly discouraged as out of harmony with the general purposes of the Chamber of Commerce of the United States of America.

To National Trade Associations:

The recent conference of War Service Committees held at Atlantic City, under the auspices of the Chamber of Commerce of the United States, made a declaration regarding the importance and the development of National Trade Associations. This declaration we take pleasure in placing before you, for your information. It is as follows:

"The experiences of the war have clearly demonstrated the value of national trade organizations and their service to the country as well as to industry.

"This conference heartily approves the plan of organizing each industry in the country in a representative national trade association and expresses the belief that every dealer, jobber, manufacturer, and producer of raw materials should be a member of the national organization in his trade and cordially support it in its work."

"Very truly yours,

JOSEPH H. DEFREES,

Chairman, War Service Executive,

Committee of American Industries."

A communication from the National Association of Manufacturers of the United States of America urging opposition to proposed measures for the compulsory adoption of the metric system by the United States, and referred to the Conference by the Executive Committee without recommendation, was read and after remarks by W. L. Crounse and Delegates Holliday and Wallace ordered laid on the table.

The communication dated December 18, 1918, from the Hon. Joseph E. Ransdell, referred to the Conference by the Executive Committee, inviting the Conference to send representatives to a conference to be held at the auditorium of the Smithsonian Institution January 22 and 23, 1919, on the subject of our "Merchant Marine" was read, the recommendation of the Conference concurred in and the President of the Conference authorized to appoint representatives.

Secretary Woodruff then gave notice that at the afternoon session he would move the adoption of the amendments to the Code of Rules and Regulations referred by the Executive Committee to the Conference. These amendments were informally discussed, some changes made and laid over until the afternoon session for action. As finally adopted, they will be found in the proceedings of the afternoon session.

The question of a proper exemption from alcoholic legislation so as to permit the sale of legitimate preparations containing alcohol was then discussed at considerable length and upon motion duly made and carried Delegates Thompson, Brokmeyer and Crounse, alternate for C. Mahlon Kline, were appointed a special committee to report something concrete at the afternoon session. The President then named Delegates Wallace, Henry, Black and Millard, and Alternates Holliday, Foy and Blair as a Committee on Nominations.

The morning session of the Conference then adjourned to meet at 2.30 in the afternoon.

AFTERNOON SESSION.

Session called to order at 3.00 P.M., all delegates and alternates being present. Delegate C. Mahlon Kline, who was not present in the morning, sat during the afternoon session.

A communication from Delegate Black was read announcing that he would not be able to remain during the afternoon session and had therefore appointed R. C. Stofer as his alternate for the rest of the meeting.

The formal adoption of the several amendments, notice of which given in the morning, was moved by Secretary Charles M. Woodruff and supported by Delegate Henry. They were first adopted seriatim and then as a whole. The amendments as finally adopted are as follows:

Section two: Members and Delegates.—The Conference shall consist of three delegates from each of the following organizations:

- The American Pharmaceutical Association
- The National Wholesale Druggists Association
- The National Association of Retail Druggists
- The American Association of Pharmaceutical Chemists
- The American Drug Manufacturers Association
- The Proprietary Association of America
- The National Association Boards of Pharmacy

and three delegates from each of such other national pharmaceutical organizations as may be hereafter admitted to membership by a unanimous vote at any regularly called meeting of the Conference at which all constituent organizations are represented. Such delegates shall be elected or appointed, as each association may determine, during the year preceding the annual meeting, and shall serve for the annual meeting following their election or appointment, and until the next annual meeting; or until their successors are elected or appointed. The presence of nine delegates shall be necessary for a quorum at any meeting of the Conference.

Duly appointed representatives of medical or pharmaceutical organizations not members of the Conference, or other persons may be granted the privileges of the floor by vote.

All votes for the admission of new members, or granting the privileges of the floor, and all discussions relating thereto, shall be had in executive session.

Delegates who are unable to attend any meeting may designate in writing or by other means satisfactory to the Conference persons who may act as their alternates and such alternates shall have all of the rights and privileges of the delegates whom they represent.

Section three: Officers and Committees.—The officers of the Conference shall consist of a President, a Vice-President, and a Secretary-Treasurer. They shall be elected by ballot at the regular meeting and shall serve during the year and until

the close of the next annual meeting, or until their successors are duly elected; provided the President and the Secretary-Treasurer shall be delegates from different organizations.

The Secretary-Treasurer shall be the custodian of the funds of the Conference, which he shall deposit in some depository to be designated by the Executive Committee subject to withdrawal upon his order.

There shall be a standing committee to be known as the Executive Committee, which shall consist of the President, the Secretary-Treasurer and one member from each delegation except the delegation of which the President and the Secretary-Treasurer are members, each such member to be elected by the delegates from the organization which he represents on the Committee.

The Executive Committee shall act as a Committee on Credentials, and shall have charge of the business of the Conference during intervals between meetings, all of its actions being subject to review by the Conference.

Special committees shall be appointed by the President unless otherwise provided for by motion.

Section four: Meetings.—The Conference shall hold an annual meeting at such hour and place, and on such day between the first day of November and the fifteenth day of December of each year as the President may determine.

Special meetings may be called by the President at any time and shall be called when so ordered by the Executive Committee, or when so requested in writing by five duly appointed delegates. Except in case of emergency not less than ten days' notice in writing shall be given of the time and place of all regular or called meetings.

It was further moved to amend section three by adding thereto the following:

"The actual traveling, hotel and incidental expenses of the members of the Executive Committee in attending any meeting of the Committee not held during the week of any meeting of the Conference shall be paid out of the funds of the Conference."

It was further moved to amend section five by adding thereto the following:

"On all motions and resolutions except motions to adjourn each delegation shall vote as a unit and the vote shall be announced by the member of the delegation representing it on the Executive Committee, who shall be chairman of the delegation for that purpose."

The motion to adopt this amendment was laid on the table.

The Nominating Committee then reported the following nominations:

President: James H. Beal, representing the American Pharmaceutical Association.

Vice-President: Samuel C. Henry, representing the National Association of Retail Druggists.

Secretary-Treasurer: Charles M. Woodruff, representing the American Drug Manufacturers Association.

A call of the other constituent organizations was had and the following members of the Executive Committee announced by the respective organizations named:

By the National Wholesale Druggists Association: George W. Lattimer.

By the National Association of Retail Druggists: James F. Finneran.

By the American Association of Pharmaceutical Chemists: Dr. W. C. Abbott.

By the Proprietary Association of America: Harry B. Thompson.

By the National Association Boards of Pharmacy: Harry L. Meredith.

On motion the Secretary was then unanimously ordered to cast the ballot of the Conference for the officers and committeemen nominated, which he formally did, thereby constituting the President, the Secretary-Treasurer and the members announced by the respective organizations the Executive Committee for the ensuing year.

Secretary Woodruff then moved that the Conference continue its affiliation with the Chamber of Commerce of the United States of America and that Delegate Hilton, of Washington, D. C., be appointed counselor. Motion unanimously carried.

The special committee appointed to report some concrete action on the subject of alcohol legislation then submitted the following:

Your Committee respectfully suggests that the following amendment to such Alcohol Legislation as may be introduced into the various state legislatures, be adopted:

Provided, that nothing in this act shall prevent the manufacture and sale of such preparations as flavoring extracts, essences, tinctures, perfumes or remedies containing drugs or medicines which do not contain more alcohol than is necessary for legitimate purposes for extraction, solution or preservation, and which contain drugs in sufficient quantity to medicate such compounds, and which are sold for legitimate and lawful purposes and not as beverages.

Your Committee respectfully represents that the form of exemption herein submitted is taken from the Arizona statute which was enacted by the legislature of that state for the purpose of giving effect to the provisions of a constitutional amendment providing against the manufacture and sale of intoxicating liquors.

Your Committee further represents that said exemption contained in such statute has been so construed by the prosecuting attorneys of that state, as to permit the sale of legitimate preparations containing alcohol, but has further been construed to prevent the sale of preparations containing an excess of alcohol, and which are capable of being used as a beverage, and to prevent the sale of legitimate preparations under circumstances from which the seller could deduce an intention to use them as beverages.

We respectfully ask that the National Drug Trade Conference shall approve the form of exemption herein submitted and shall urge its constituent members to use legitimate efforts to secure its adoption as a part of such legislation as may be introduced against the sale of intoxicating liquors, and further respectfully ask that a Committee be appointed to submit the exemption and induce if possible its acceptance by the Anti-Saloon League or other persons proposing legislation against the sale of intoxicating liquors.

H. B. THOMPSON.

E. C. BROKMEYER.

W. L. CROUNSE.

The report was received and adopted, and the following gentlemen appointed a committee to carry out the recommendation of the report: Delegates Henry, Hilton, Kline, Stofer, Foy, Blair and Kerfoot.

After considerable discussion of the so-called McCumber amendment to the War Revenue Act requiring a record to be kept of sales of items coming under the operation of Section 6 of the Harrison Act, Delegate Stofer moved that President Beal be requested to prepare a brief upon the subject and authorized to call to his assistance such members of the Conference as he chose; said brief when prepared to be presented to the Conferences for their consideration.

The motion was duly seconded and carried.

President Beal announced that he selected as his assistants all the members of the Conference and requested suggestions.

There being no further business the Conference adjourned subject to the call of the President.

JAMES H. BEAL, *President*.

CHARLES M. WOODRUFF, *Secretary-Treasurer*.

COMMITTEE APPOINTMENTS.

President Beal announces the following special committee appointments.

Committee on Pharmaceutical Corps: Samuel C. Henry, *Chairman*; George C. Hall and S. L. Hilton.

Committee on Alcohol Legislation: S. L. Hilton, *Chairman*; Charles A. West and James F. Finneran.

Committee on Anti-narcotic Legislation: John C. Wallace, *Chairman*; Fred K. Fernald and Eugene C. Brokmeyer.

Committee on Formulas and Labels: Harry B. Thompson, *Chairman*; C. Mahlon Kline and B. L. Maltbie.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

CHICAGO.

The ninety-ninth monthly meeting of the Chicago Branch, American Pharmaceutical Association, was held Friday evening, January 24, 1919, at the City Club, with Vice-President A. H. Clark in the chair. The meeting was preceded by a dinner. At eight o'clock the business session was called and opened with the annual reports of officers and committees. Secretary-Treasurer Gathercoal reported for 1918 an average attendance of 45 at the meetings, and 71 new members received, with 32 lost, leaving a present membership of 204. Receipts for the year totalled \$496 and disbursements \$454, leaving a balance on hand of \$42.

The secretary reported that the data for the Honor Roll of Illinois pharmacists is now coming in. It was moved that the original questionnaires be deposited with the University of Illinois School of Pharmacy and that the Illinois Pharmaceutical Association be requested to publish a preliminary roll in installments, if need be, in the state-wide edition of C. R. D. A. News and a complete roll under various classifications in the next annual Proceedings. A vote of thanks was extended to the Illinois State Department of Registration and Education, and to Supt. F. C. Dodds in particular, for the excellent service rendered in obtaining the data for the Honor Roll.

Special attention was called to the next Branch meeting, which will be the one-hundredth monthly meeting. Mr. Wilbur L. Scoville of Detroit and Dr. Geo. D. Beal of Urbana have consented to address the Branch on that occasion, and every member is urged to be present and to extend our invitation to every Chicago druggist to hear these addresses. The Branch adopted a motion to invite the members of the Chicago Section of the American Chemical Society to attend this meeting.

The report of the Nominating Committee was then called for and the Chairman reported as follows: *President*, A. H. Clark; *First Vice-President*, E. Von Herrmann; *Second Vice-President*, Otto Mentz; *Third Vice-President*, Ad. Umenhofer; *Council Member*, Clyde M. Snow; *Membership*, O. C. Buss; *Legislation*, James H. Wells; *Practice*, I. A. Becker; *Medical Relations*, Dr. Bernard Fantus; *Publicity*, Thos. H. Potts, and *Secretary-Treasurer*, E. N. Gathercoal. This report was unanimously adopted.

The topic of discussion for the evening was "Pharmaceutical Reconstruction." Mr. J. H. Riemenschneider introduced the discussion, speaking from the retailers' standpoint. He was followed by Dr. A. S. Burdick of the Abbott Laboratories, who outlined some of the benefits and problems of the reconstruction period from the pharmaceutical manufacturers' viewpoint, and Secretary S. C. Henry of the N. A. R. D. spoke from the legislative side of the question. Mr. C. P. Van Schaack, who was to have represented the wholesale druggists, unfortunately was forced to send his regrets.

Each of these talks called forth not only the applause of the audience but also a wide discussion. A résumé of each is appended.

Pharmaceutical Reconstruction from the Standpoint of the Retail Druggist. Summary of an address by J. H. Riemenschneider.

"I am decidedly optimistic regarding the immediate future of retail pharmacy. The retailer has never known so prosperous a year as the one just passed. Not only has the volume of business increased, but the percentage of gross profit has increased, for so much of the business has been in prescriptions and medicines, yet the overhead expense has not so greatly advanced, for although the salaries of clerks has markedly increased the

number of clerks employed has been reduced, because of the scarcity of clerks and the reduction in hours of business.

"Prices of goods are coming down but slowly and it will be a long time if ever before pre-war prices are reached. Labor is high, raw materials are high and the normal domestic and foreign markets never better. Hence a disastrous slump in prices, except of a few items with which the government is heavily stocked, need not be expected. Retail prices will naturally fall rather more slowly than the jobbing prices.

"My advice to the retailer is this: buy according to your needs and your turnover, not heavily, nor yet too sparingly.

"In regard to overhead expenses bear in mind that with the passing out of all the saloons, rents of retail stores are not going to be higher for some time to come. Clerks' salaries may go somewhat lower but let us never permit them to reach the old pre-war levels. A business or profession that cannot or will not pay its workers a reasonable compensation commensurate with high education and moral standards must expect to draw only the riff-raff of society. I hope pharmacy will never again see the day when she will be disgraced by qualified drug clerks working for \$75.00 per month.

"Among other blessings in disguise that the war has brought to the retail druggist is the income tax—for that tax has made him keep books and take inventory. With a real knowledge of his financial conditions he can eliminate leaks, make all of the departments profitable and meet changing conditions on a solid basis.

"Another blessing of similar nature is prohibition. The retail druggist has long taken abuse and reprobation, most of it unjust and uncalled for, as a retail liquor dealer. Now all retail druggists must unite in their aim to remove this stigma forever. We should stand solidly against including any intoxicating liquor as a medicine. All forms of alcoholic liquors are out of my store for good. This stand will also tend to eliminate possible competition from former saloon owners.

"Nearly all druggists have accumulated real profits this past year. Care for your resources now—hold your profits and surplus tightly—don't invest in uncalled for luxuries nor wild-cat schemes. Conserve your resources and there will be no need in the im-

mediate future for any retail druggist to be forced out of business.

Pharmaceutical Reconstruction from the Manufacturers' Standpoint, by Dr. A. S. Burdick, Vice-President Abbott Laboratories.

"A few firms, biological and surgical supply manufacturers particularly, made a large amount of money out of the war. Most of the strictly pharmaceutical manufacturing concerns sold to the government under very keen competition and very little war profiteering was practiced. However, nearly or quite all of these concerns have materially increased the volume of their business and the capacity of their plants. When the government wished to place its first order for 193 million compound cathartic pills, the manufacturers' representatives sat up in amazement at the magnitude of the order. There was not gambooge enough in the whole country to make that many C. C. pills. Now, however, we are accustomed to work in these larger terms.

"On top of Government business came the influenza. This world-wide epidemic is perhaps the worst sweep of a disease since the great scourges of the middle ages. The world demand for medicines has been enormous. The demand for many items in the manufacturers' stock increased 300 or 400 percent. Very fortunately the armistice was signed before the full effect of this demand for drugs was felt. And from a strictly business standpoint this influenza demand had a good effect in profitably unloading stocks which in many lines were very large and in clearing the decks for the reconstruction period.

"Prices are going down, especially of certain chemicals and surgical supplies demanded by the government in medical and munitions work and of which great stocks have been accumulated. We hope this reduction will be gradual. The practice of retailers buying from hand to mouth is a very bad one at this time for it creates a vicious circle, a tendency to an unsteady market and financial disaster.

"Chemical and pharmaceutical research work carried out on an enormous scale in connection with war activities is now reacting as a wonderful stimulant for the reconstruction period. You are all informed of the great broadening out along chemical lines, especially in heavy chemicals and synthetic dyes. The production of synthetic chemical medicines has also received a great impetus and many houses are establishing large corps of research

men for the development of new synthetic remedies. The output of such medicines as have so far been manufactured has been very largely taken by the government but these will now be placed in increasing quantity on the market. All of these industries will continue to grow and compete for world trade.

"Standardization of products, of methods of production and of prices are all war benefits accruing to the manufacturers and which will assist wonderfully in reconstruction. Standardization of products applies particularly to the long list of drug preparations that are U. S. P. or N. F. It means too the dropping from the list of many preparations of little medicinal value and that are "slow-sellers." Standardization of prices does not mean that all of the manufacturing houses are going into a combine and establish identical prices for each article on the list but it does mean that if one house carefully estimates the cost of a preparation and adds a reasonable profit no other standard house can manufacture and sell that preparation for a price much lower. If a standardized product made by a standard process must bring a certain minimum price, then if a similar product is offered for sale at a much less price, it is a certainty that something is wrong with the product.

"I am an optimist. The immediate future of pharmaceutical manufacturing is bright. The war has been terrible and yet it has been a great stimulus to endeavor and industry."

E. N. GATHERCOAL, *Secretary*.

LUZERNE COUNTY.

The second regular meeting of the Luzerne County Branch of the American Pharmaceutical Association was held in the Auditorium of the Greater Wilkes-Barre Chamber of Commerce, Monday evening, January 27th. We discontinued our meeting since our organization last September due to the prevalence of Influenza.

At this meeting three candidates for membership in the A. Ph. A. and the local branch were proposed, which brings our membership close to fifty, and more prospects.

A constitution was adopted, with the exception of the amount of local branch dues.

Future meetings will be held at the Hotel Sterling the second Thursday of each month, lunch to be served during the meetings, with the idea of making it a social as well as a business session.

At least one Relief Clerk is to be employed

by the Branch, for the use of the members, and more if it is deemed necessary.

The following Committees were appointed for the year:

Professional Relations, W. V. Green, *Chairman*.

Practical Pharmacy, John Lowman, *Chairman*.

Membership, Ellsworth Lynn, *Chairman*.

Commercial Relations, M. Greenstein, *Chairman*.

Banquet, Louis Frank, *Chairman*.

J. D. MORGAN, *Secretary*.

NASHVILLE.

A joint meeting of the Nashville Branch, A. Ph. A., and the Nashville Drug Club, was held in the Commercial Club Rooms, Thursday, January 23, 1919. D. J. Kuhn presided. The Tennessee Board of Pharmacy being in session, members of that body were in attendance at this meeting, as follows: Ed. Sheely, of Memphis; Harry Whitehouse, of Bristol; and M. E. Hutton and Ira B. Clark of Nashville.

Two communications were received in response to inquiries sent out asking what action had been taken by local associations relative to the signing of the pledge not to sell proprietary remedies for venereal diseases. One of these replies was from R. J. Frick, of Louisville, Ky., in which he stated that no action had been taken by their local association as a body, and his advice to the members was that they should use their own judgment. He feared that the signing of this pledge would be used against the druggists later as an admission that the sale of these preparations should be prohibited.

The other communication was from Ed. Sheely, of Memphis, who stated that no action had been taken by the Memphis Retail Druggists' Association, but that most of the retailers had signed the pledge as a war measure. Mr. Sheely stated that he understood that the Government would establish a clinic in Memphis to treat venereal diseases, but so far this had not been done.

Attorney Charles Hune, of the Tennessee State Board of Pharmacy, said that the Tennessee Pharmacy Law, which was passed more than twenty years ago, was now obsolete, and he outlined the draft of a new bill along the lines of the American Pharmaceutical Association Model Pharmacy Law, which may be introduced at this session of the Legislature.

D. J. Kuhn, Ira B. Clark and M. E. Hutton were appointed a committee to canvass Nashville in the interest of pharmacists returning from service, as requested by Chairman F. H. Freericks, of the American Pharmaceutical Association Committee on Soldier and Sailor Pharmacists.

President D. J. Kuhn called the attention of those present to a newspaper report that some druggists were selling denatured alcohol for beverage purposes. It was said that negroes would call for it by crossing their arms over their chest, representing the skull and cross-bones. A strong resolution was adopted discountenancing druggists guilty of selling denatured alcohol for beverage purposes.

WILLIAM R. WHITE,
Secretary.

NEW YORK.

The January, 1919, meeting of the New York Branch of the American Pharmaceutical Association, was called to order by President Turner in the Lecture Hall of the New York College of Pharmacy Building, on Monday evening, the 13th, at 8.15 o'clock.

One hundred and three members and friends were present.

The Treasurer's annual report was received and referred to the Audit Committee.

Member of the Council.—Prof. Jeannot Hostmann brought in no report.

Membership Committee.—No new members were reported.

Fraternal Relations.—Dr. Leon Lascoff had no report to bring in.

Audit Committee.—Dr. Jacob Diner reported that he would go over the Treasurer's annual report.

Education and Legislation.—Mr. R. S. Lehman brought in a report which after some discussion was ordered accepted.

A letter was read from Mr. Frank Freericks regarding the Committee appointed to obtain positions for the returning soldier pharmacists. It was moved, seconded, and carried, that the Branch approve Mr. Freericks' suggestions in that we direct our representatives to the New York Pharmaceutical Conference to suggest that the conference take up this work, and that in addition the Branch vote \$25.00 towards the General Fund which is to be collected for this work.

Chairman Schaefer, of the Remington Honor Medal Committee, reported that some money would still have to be collected in order to

pay for the die for the medal. It was moved, seconded and carried that the Chairman of this Committee be allowed to send out a request for further donations with the next notice of the regular meeting.

The Chairman of the Nominating Committee recommended that the following officers be elected:

President, Robert S. Lehman.

Vice-President, Jacob H. Rehfuß.

Secretary, Hugo H. Schaefer.

Treasurer, Gustave Horstmann.

Chairman of Audit Committee, Jacob Diner.

Chairman of Committee on Education and Legislation, E. J. Kennedy.

Fraternal Relations, J. Leon Lascoff.

Progress of Pharmacy, George C. Diekman.

Membership Committee, Dr. Charles Fischer.

It was moved, seconded and carried that Hugo Kantowitz cast one vote unanimously electing the ticket as presented by the Nominating Committee.

Mr. Lehman in a few words thanked the Committee for the honor conferred upon him.

SCIENTIFIC SESSION.

Dr. Paul S. Pittenger read a paper on "Biologic Assays." Considerable discussion followed. A rising vote of thanks was then tendered the speaker and his assistant in appreciation of their efforts.

Under regular procedure the meeting was declared adjourned.

HUGO H. SCHAEFER,
Secretary.

PHILADELPHIA.

The January meeting of the Philadelphia Branch of the American Pharmaceutical Association was held at the Philadelphia College of Pharmacy on Monday evening, January the 21st, with President W. W. McNeary occupying the chair. Business matters dispensed with, the feature of the evening was presented in the nature of a scientific paper read by Dr. Robert P. Fischelis, until recently a sergeant in the Gas Defense Service at the Long Island plant. The title of the paper was "Gas Defense Methods of the U. S. Army." Dr. Fischelis held his audience thoroughly attentive from the first word to the last, and the reading of the paper occupied about ninety minutes. Illustrative material was furnished in the way of a sample mask, complete in every detail and various parts, some old and some of the newest types.

It would not be possible to give a compre-

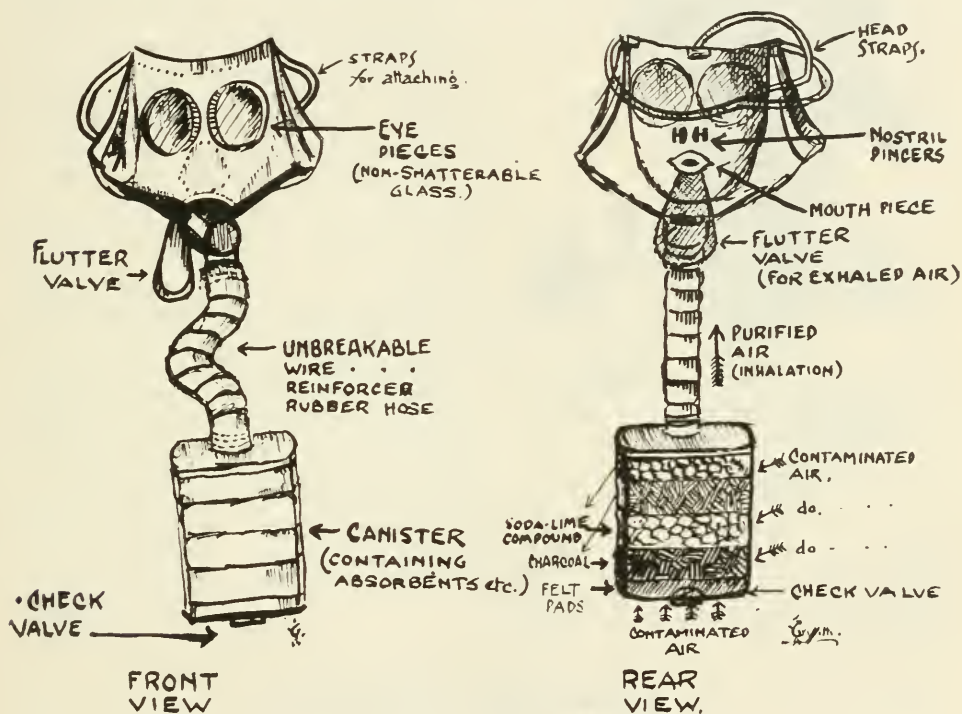
hensive abstract of the lecture without going to great length and the following quotations are simply given verbatim from an extract of a previous lecture given by Sergeant Fischelis in New York and carefully abstracted in the *Druggists' Circular*:

"Between June 30, 1917, and the signing of the armistice, 2,400,000 gas masks were manufactured on Long Island and sent to France for the American Expeditionary Forces. Not a single soldier who had one of these masks, and who put it on when the signal of gas attack was sounded, was gassed; and not one

would pass through the cloth, reach the flesh and cause a burn which would be very slow and very difficult to heal.

"There seems to be no question but that the knowledge that the United States had perfected the gas mask, had accumulated a tremendous supply of a very deadly gas, and had developed airplanes for gas attacks on a large scale, was one of the factors which impelled the Germans to sue for peace. Chemical warfare had much to do with ending the war."

Sergeant Fischelis demonstrated the com-



Showing Construction of Masks.

defect was found in any of the masks issued to the men at the front."

Such was the record of remarkable efficiency attained by the Gas Defense Service of the United States Army, as described by Sergeant Fischelis.

"This meant," he said, in describing the mask, "that the American gas mask was proof against all gases used by the Germans, except mustard gas, and mustard gas is really a volatile liquid, which penetrates cloth and similar substances, rather than a gas. A soldier wearing a gas mask might receive a drop of mustard gas on his sleeve and not know it. In an hour or so the mustard gas

ponent parts of the mask, explaining the need for charcoal as an absorbent of gas, and the method by which this material was combined with soda-lime and permanganate in every mask. The mixture accounted for the high efficiency of the American mask. The charcoal absorbed the gas, and the soda-lime reacted upon the gas absorbed—especially on phosgene gas—to neutralize it.

"Testing masks was a labor of the chemical or control department of the great gas mask factory on Long Island," the Sergeant said. "The masks were tested with actual gas in order to discover defects or leaks. This country used laboratory tests wherever prac-

ticable, in order to spare the men; but France and England insisted that the man-test was the only safe test, and so the man-test was



The Mask in Use.

made. There are men in the Chemical Warfare Service whose heart and lung actions have shown decided deterioration as the result of

their work in testing masks with actual gas."

When the armistice was signed, Sergeant Fischelis said, the factory had just perfected a new mask which was proof against the newest and most insidious gas employed by the Germans—a smoke gas, so-called, which could penetrate the charcoal mass used in the masks. This gas he described as really very fine particles of a poisonous substance which entered into the molecular spaces of the charcoal and thence was drawn into the lungs. It presented a new problem, which was finally solved by enclosing the canister of the mask, containing the charcoal, in felt. The felt excluded the smoke gas. This mask, he said, was deemed proof against any gas that the Germans might be able to devise. Quantity production was ready to start on November 4, last; then came the signing of the armistice.

Dr. Fischelis was given a rising vote of thanks for his excellent and carefully given presentation. Discussion of his lecture was lively and was participated in by Messrs. England, Lowe, Stroup, and others. Private Trautwine, of the Chemical Service Section, spoke interestingly of certain phases of the gas production in this country and stated that he would have offered some still more interesting data, were he wearing a red discharge stripe on his coat sleeve. He was still in the service, however, and revealed nothing that he was not supposed or allowed to.

The meeting, the best attended of the season, adjourned at 11 P.M.

IVOR GRIFFITH,

Secretary.

COMMITTEE REPORTS

REPORT OF THE COMMITTEE ON PATENTS AND TRADEMARKS.*

BY F. E. STEWART, *Chairman.*

Your committee is presenting conclusions in this year's report consisting of concrete statements of the facts and principles presented in former reports. Our reports have been, in a general sense, a protest against the invasion of the pharmaceutical field by the nostrum manufacturers and commercial drug business, and the degradation of the pharmacist to the level of a petty shopkeeper acting as mere sales agents for materia medica products and preparations manufactured under the control of unlicensed practitioners of medicine and pharmacy. We see in this commercialization of what ought to be a professional calling the ruin of all we have been working and hoping for, namely, the restoration of pharmacy to its true position as a branch of medical science and practice working in coöperation with the medical profession in its altruistic service of preventing disease, relieving suffering, and healing the sick—working, not as competitors, but as co-partners, each working in its particular field of practice.

* Abstract of report presented before Section on Legislation and Education, A. Ph. A., Chicago meeting, 1918.

CONCLUSIONS.

(1) The right to imitate or copy the published writings and inventions and discoveries of others is a public right, upon the proper exercise of which civilization in a great measure, depends. Those who attempt by unfair means, to prevent the public from exercising this right are appropriating what does not belong to them and are robbing the public.

(2) The Constitution of the United States (Article I, Section VIII, Clause 8) gives Congress the power to promote progress in science and useful arts by granting authors and inventors the right to the exclusive use of their respective writings and discoveries for limited times; but such grants should never be made except in compliance with the copyright and patent laws and never conferred without adequate proof that these terms have been complied with in such manner as to attain the object above mentioned.

(3) The granting of patents for ready-made prescriptions, consisting of mere aggregations of old and well-known drugs, showing in their inception and preparation no greater skill than naturally to be expected from skilled physicians and pharmacists in the regular routine of practice, hinders progress in medical science and in the useful arts of pharmacy and drug therapy. Moreover, such patents promote self-medication by people who are unacquainted with the nature of disease, and drugs and their uses, who are also incapable of making a diagnosis, are not skilled in the treatment of the sick, and who, depending upon the misleading claims made by the recommendations of manufacturers and dealers in drugs, often neglect to obtain proper medical aid until it is too late to be of service.

(4) The granting of patents for hitherto unproduced chemical substances, merely because they have hitherto been unproduced, and without proper consideration as to whether they are *new* and *useful* inventions, in the proper meaning of the patent law, and without proof that they possess sufficient value to warrant granting to their alleged inventors the valuable privileges pertaining to patent grants, is contrary to wise public policy and should not be permitted.

(5) The advertising of substances as therapeutic inventions, or inventions for nutriment, when they are not inventions in fact, and therefore unworthy of patent protection, promotes unfair competition in trade, and is a fraud upon the public. As this fraud is common, and its existence well known to the public at large, the Patent Office in granting patents for such alleged inventions without proper investigation, becomes partner in a crime against humanity.

(6) The registration of names as trademarks which are to be used afterwards and advertised as the names of the articles themselves, creates and fosters unfair monopoly in the manufacture and sales of such articles, and thus hinders progress in commerce and the arts. As names are not proper subjects of patent or copyright, and as there is no law which grants ownership in names, whether such names are invented or coined or not, such registration inculcates false ideas in regard to the objects and nature of copyright and patent grants, causes confusion in the public mind, and, as each case must be fought out in the courts on its merits, when injunctions are brought for infringements of trademarks, the registration of names which afterwards become currently used as the names of the products themselves, practically creates a *secret* patent system, perpetual in character, whereby the inventors of nothing but names are enabled to obtain monopoly privileges, far more restrictive and valuable than inventors of new and useful inventions are permitted to obtain by patents.

(7) Scientific and professional requirements necessary to observe in rendering the altruistic service which the public has a right to demand in exchange for granting practitioners of medicine and pharmacy exclusive privileges in conducting their respective vocations, necessitates special education and training, and also requires conformance with the rules of practice laid down by these professions for the guidance of members in their relations to each other and to the public at large. These rules obligate members of these closely related and mutually dependent vocations to donate the results of their observations and experiences to the common fund of knowledge, receiving in exchange therefor, the right to freely use the knowledge obtained by the entire profession in carrying out its beneficent work. Therefore, the proper introduction of therapeutic agents to science requires coöperation between competent physicians, pharmacists, chemists, pharmacologists, and clinicians associated with the medical and pharmaceutical schools and colleges; also the coöperation of the professional societies and professional press. Furthermore, these requirements demand that the source or genesis, physical, chemical, physiological and therapeutic properties of each new substance, or "composition of matter," introduced as a

therapeutic agent, shall be published in scientific literature, and impartially discussed by the professional societies and professional press for the purpose of freeing such knowledge from pretense and error; and, furthermore, as therapeutic verdicts can only be obtained as a result of observations carried on under conditions of environment, which eliminate as far as possible the personal equation, and influences of climate, race and social conditions, this altruistic work cannot be properly accomplished when alleged therapeutic inventions are undergoing commercial introduction by advertising. As this research work is carried on in public institutions largely supported by public funds, and as the use of these public institutions for advertising purposes practically converts the entire educational machinery of medicine and pharmacy into a great advertising bureau for the exploitation of such alleged new products, it therefore follows that therapeutic inventions should never be introduced by advertising, but should be left free to science and their manufacture open to competition.

(8) Owing to the fact that commerce in *materia medica* products is essential to the obtaining of supplies for the use of the medical and pharmaceutical professions in carrying on their respective altruistic vocations, and also required to meet the legitimate demands of the public for domestic practice, the employment of proper commercial methods, including advertising of brands, is not to be condemned. Brands of products may be properly protected by process patents or the registration of brand marks, or word trademarks, provided such word trademarks are used as such, and not employed as the names of the products themselves. Consequently, the name of the product should always appear on the label together with the word trademark, when such is used, and the latter should be displayed in such manner as to clearly indicate that it is intended as a word trademark, and not intended as a generic designation.

For example, "Eagle Brand" condensed milk is advertised in the reading pages of the medical and pharmaceutical journals without interfering with the impartial discussion of condensed milk in the reading columns. But it is apparent that the impartial discussion of the "Eagle Brand Condensed Milk" in the reading columns is an entirely different matter. Discussions relating to the food value or methods of manufacturing condensed milk do not relate to the brand of condensed milk manufactured by Borden, but to condensed milk itself. Consideration of brands, except for special purposes which should be made plain to the reader, belong to the advertising columns exclusively, and the manufacturer should pay for the advertising space, which in this instance, is doubtless the case. No producer should ask publishers to donate free space in their reading columns for advertisements. This is unfair to all concerned, for it misleads the reader, gives unfair advantage to one advertiser at the expense of other advertisers, and throws an unnecessary burden of expense upon the publisher. This example is important for it brings out clearly the unfair advantages demanded by the commercial introducers of monopolized *materia medica* products claimed by them as new and useful therapeutic inventions. These unfair methods seriously hinder the introduction of such products to science by preventing proper coöperation between medical scientists and the manufacturers engaged in the pharmaceutical, and pharmaco-chemical industries.

Finally, your committee, in its various reports, has endeavored to present the reasons why the medical profession, and medical scientists, object to the monopoly of therapeutic agents. We have endeavored to emphasize the fact that there can never be proper coöperation between the educational institutions engaged in the teaching of *materia medica* and drug-therapy, and manufacturers and dealers in *materia medica* supplies, except upon a professional basis which recognizes the altruistic character of professional service and conforms thereto. We have called your attention to the close relationship that ought to exist between the medical and pharmaceutical professions, and endeavored to show that pharmacy cannot exist as a profession when separated from medicine and conducted as a purely commercial vocation. We have pointed out the fact that the attempt to convert pharmacy into a purely commercial vocation means the degradation of the pharmacist to the level of a petty shop-keeper, the downfall of the pharmaceutical educational system and the colleges of pharmacy, the doing away with the boards of pharmacy and their examinations and licenses to practice, and the depriving of the medical profession and the public of the services which educated pharmacists should render as members of a profession which, under the guidance of proper rules, might become what its advocates have so longed hoped and worked for, *i. e.*, a profession in fact as well as in name. In this connection we have endeavored to show that one of the reasons why pharmacy has not "come into its own" is because of the abuses of the patent and trademark laws, and the unfair monopolies of *materia*

medica products and preparations obtained by unlicensed practitioners, who have taken advantage of these abuses to protect capital employed in a commercial drug business carried on in competition with licensed practitioners of medicine and pharmacy, and using unfair commercial methods, including misleading advertising, injurious alike to legitimate practice and the public welfare. In proof of all this your committee has furnished evidence which has not been controverted, and is believed to be incontrovertible, and now rests its case with the suggestion that this report, together with the previous reports of this committee, and of the special committee on national legislation for the years which deal largely with the same subjects, be referred to the National Research Council at Washington for consideration and proper action.

COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 9.

PHILADELPHIA, January 11, 1919.

TO THE MEMBERS OF THE COUNCIL:

Motion No. 11 (Resignation of Hugo Schaefer as Secretary of Scientific Section) and *Motion No. 12 (Appropriation of \$25 for Expenses of Committee on Local Branches)* have each received a majority of affirmative votes.

A. G. DuMez of Washington, D. C., has been nominated by E. N. Gathercoal as Secretary of the Scientific Section. The nomination has been seconded by W. B. Day. Are there further nominations?

Motion No. 13 (Election of Members). You are requested to vote on the following applications for membership:

- No. 56. Rene R. Oca, Separacion 40, Santo Domingo City, Dominican Republic, rec. by Dr. A. Rodriquez and Rene Rodriquez.
- No. 57. John Anderson, c/o E. R. Squibb & Son, New Brunswick, N. J., rec. by Charles H. LaWall and Wm. B. Day.
- No. 58. Henry Edward Bowles, 240 E. Center St., Pocatello, Idaho, rec. by H. H. Whittlesey and Wm. B. Day.
- No. 59. Alvah J. Pope, Cor. Central Ave. and E. 33rd St., Cleveland, Ohio, rec. by Wm. B. Day and J. W. England.
- No. 60. Hjalmar Gustaf Anderson Tesch, Soedertelje, Sweden, rec. by A. R. L. Dohme and H. Englehardt.
- No. 61. Max Soskin, 439 Brooke Ave., New York, N. Y., rec. by Hugo Schaefer and Jacob Diner.
- No. 62. James Clayton Campbell, 463 Concord Ave., Detroit, Mich., rec. by F. F. Ingram, Jr. and Leonard A. Seltzer.

No. 63. Max S. Adler, 219 Verne Street, Tampa, Fla., rec. by D. E. Murphy and M. M. Taylor.

No. 64. Dennette Weymouth Smith, Merryville, La., rec. by Robert T. Grace and Joe W. Peyton.

No. 65. George Elwood Ewe, 353 E. Walnut Lane, Germantown, Phila., Pa., rec. by J. W. England and E. G. Eberle.

No. 66. Charles F. Walker, c/o Medical College of Virginia, Richmond, Va., rec. by Wortley F. Rudd and Wm. B. Day.

No. 67. Edwin Garner Swann, Pharmacist, U. S. Navy Dispensary, Navy Yard, Philadelphia, Pa., rec. by E. G. Eberle and J. W. England.

No. 68. Tachong Lee, 29 14th Ave., Columbus, Ohio, rec. by Azor Thurston and Edward D. Davy.

No. 69. Leonard Bergstein, 509 N. Lake St., Madison, Wis., rec. by Edward Kremers and Nellie Wakeman.

415 N. 33RD STREET.

J. W. ENGLAND, *Secretary*.

A. PH. A. COUNCIL LETTER NO. 10.

PHILADELPHIA, January 22, 1919.

To the Members of the Council:

Motion No. 13 (Election of Members; applications Nos. 56 to 69 inclusive) has received a majority of affirmative votes.

Motion No. 14 (Election of A. G. DuMez as Secretary of Scientific Section). Moved by E. N. Gathercoal, seconded by W. B. Day, that A. G. DuMez be elected as Secretary of Scientific Section, succeeding Hugo Schaefer, resigned.

The following communication has been received from General Secretary Day:

"The members of the Council will recall in

1914 Professor John Uri Lloyd offered to care for the remainders of the publications of the American Pharmaceutical Association and to supply these on order as needed. At that time, General Secretary and Editor, James H. Beal, had resigned and, upon the acceptance by the Council of Professor Lloyd's offer, the material accumulated at Scio and Columbus was forwarded to Cincinnati where it was planned to store it in the Lloyd Library. However, Professor Lloyd, in making the offer, was not aware of the immense amount of material that had accumulated and, when it arrived, he found that he did not have room for it in the Lloyd Library and was compelled to store it in his warehouse. Here it remained for four years and, in the meantime, Professor Lloyd had inventoried a large part of it and had promptly filled all orders for proceedings and year books.

Meanwhile, the accumulation continued—historical matter was sent by Professor Kremers from Madison, and by Dr. Whelpley from St. Louis, the remainder of the third edition of the National Formulary from Lancaster, and the remainders of successive editions of the Year Book.

The conditions brought about by the great war necessitated the use of a much larger space for storage of drugs and other materials by Lloyd Bros. and demanded every bit of space in the warehouses for this emergency. Accordingly, in November last, Mr. Rouse, General Superintendent for Lloyd Bros., wired me that it would be necessary to store the American Pharmaceutical Association material elsewhere as the warerooms would be needed for large shipments of drugs, just received. I wired back, authorizing Mr. Rouse to store the material temporarily in Cincinnati. He accordingly moved it to a vacant store-room for which we agreed to pay a rental of \$25.00 a month, with the understanding that we might remove the material at any time. However, this gave us no facilities for filling orders from the stock and, after advising with the Chairman of the Publication Committee, the Treasurer, and the Chairman of the Finance Committee, I had the material shipped to Chicago so that I might check it up and inventory it and decide upon storage here.

It filled a freight car, there being 160 boxes of books aggregating 42900 pounds in weight. It has already cost us \$75.00 for packing and

cartage in Cincinnati; \$163.49 freight charges and war tax; and \$40.00 cartage in Chicago.

I have provisionally stored these boxes in the basement of the School of Pharmacy while I check them up and inventory them. As soon as this inventory is completed, I will report further to the Council with suggestions for the disposal of the property but, meanwhile, it becomes necessary to provide for the expenditures already made by adding to Budget Item No. 4, Miscellaneous, an additional appropriation of \$300.

I therefore move that this appropriation—which is approved by the Finance Committee—be granted, and J. A. Koch seconds this motion.

In this connection, I would like also to move that a vote of thanks be extended by the Council to Professor John Uri Lloyd for his generous services in caring for this material, free of charge, and filling orders from it for us during the past four years. Not until I actually saw the accumulation did I appreciate the services that Professor Lloyd has rendered and the time and expense that it must have cost him to give this important assistance to the Association. He has refused to accept any compensation, therefore I feel that we owe him a debt of gratitude which can be only partly expressed by such a vote."

Motion No. 15 (Additional Appropriation of \$300 to Item No. 4, Miscellaneous, of Budget of Appropriations). Moved by W. B. Day, seconded by J. A. Koch, that an additional appropriation of \$300 be made to Item No. 4, Miscellaneous, of Budget of Appropriations.

Motion No. 16 (Vote of Thanks to Prof. John Uri Lloyd). Moved by W. B. Day, seconded by J. A. Koch, that a vote of thanks be extended by the Council to Prof. John Uri Lloyd for his generous services in caring for material belonging to the Association, free of charge, and filling orders from it for us during the past four years.

J. W. ENGLAND,

415 N. 33RD STREET.

Secretary.

P. S.—Treasurer Whelpley reports that on January 18, 1919 he had received payments of annual dues for 1919 from over 1200 members, which is an unusual record of promptness in payments.

CORRECTIONS FOR ROSTER.

(January Issue.)

Pharmaceutical Syllabus Committee, E. I. Newcomb's term expires 1919. W. H. Rudder was appointed for the term ending 1925.

General Membership Committees, Edward L. Wickham of Newark is a member of the Com-

mittee from New Jersey. M. M. Taylor is chairman of the Committee from Florida, and D. W. Ramsaur is a member from Jacksonville. The address of A. M. Thomas on Special Subcommittee "Pharmacists in Government Service" should be Santa Rosa, Calif., instead of Blaine, Wash.

CORRESPONDENCETHE POSITION OF THE COMMITTEE ON EDUCATION AND SPECIAL TRAINING
IN REGARD TO S. A. T. C. UNITS IN SCHOOLS OF PHARMACY.

WAR DEPARTMENT.

Committee on Education and Special Training, Section
of Training and Instruction Branch War Plans Division,
General Staff.

January 18, 1919.

CHARLES H. LAWALL, President,
American Pharmaceutical Association,
39 South 10th Street, Philadelphia, Pa.

DEAR SIR:

You have requested, as President of the American Pharmaceutical Association, a statement of the position of the Committee on Education and Special Training in regard to S. A. T. C. units in schools of pharmacy. The basis of this request is that the subject has been under discussion by many who are interested in education in pharmacy and in the pharmaceutical journals, and that it is not clear that the position taken by the War Department has been fully understood. With the permission of the Chairman of the Committee on Education and Special Training the following explanation is made:

The object of the Students' Army Training Corps was to furnish a supply of educated men from whom officers for the new army could be chosen, and to direct their training while in educational institutions so that those selected for commissions would more quickly be prepared to assume their duties as officers. It was strictly a war measure, and not an attempt by the Government to standardize education. Any effect this plan may have had on the problems of education in any line in peace times is entirely incidental, and this matter received consideration only to the extent that it was the aim of the Committee to disturb existing methods of education as little as was consistent with the attainment of its aims.

In the case of pharmacy the fundamental consideration was that the needs of the Army for pharmacists would be satisfactorily met through the draft. Although there was no real necessity for the inclusion of pharmacy students in S. A. T. C. for the purpose of supplying pharmacists for the Army, the Committee, nevertheless, decided that a limited number might wisely be accepted on the basis that this training would also prepare them for service as chemists and in other useful capacities. The plan finally evolved was to recognize those pharmacy schools in institutions which already had S. A. T. C. units, and to limit the admission to those students in these schools who were eligible for the Collegiate Section. This required graduation from an approved four-year high school, or an equivalent education.

A committee of representative educators in pharmacy, chiefly from the schools which would be eligible under this plan, was consulted September 29, 1918. This committee was requested to draw up a sample course in pharmacy. As in the case of all programs for courses adopted by the Committee, this program in pharmacy was not prescribed, but was issued as an example of what would be acceptable.

Yours very truly,
Committee on Education and Special Training.

(Signed) By H. D. ARNOLD,
Lieut.-Colonel, Medical Corps, U. S. A.

HDA/MNN

METHYL SALICYLATE SHOULD NOT BE DISPENSED FOR OIL OF WINTERGREEN
OR OIL OF SWEET BIRCH.

BY J. W. ENGLAND.

There are reasons for believing that some pharmacists dispense Methyl Salicylate when Oil of Wintergreen or Oil of Sweet Birch is called for, and they do this on the ground that the U. S. Pharmacopoeia (IX) recognizes Oils of Wintergreen and Sweet Birch as synonyms of Methyl Salicylate, but in so doing they are clearly in error, as the following correspondence indicates:

"CHARLES H. LAWALL, Chairman, Committee of Revision, U. S. P.:

Under Methyl Salicylate, U. S. P. IX, Oil of Wintergreen and Oil of Sweet Birch are given as synonyms.

Is a pharmacist justified in dispensing methyl salicylate for oil of wintergreen or oil of birch?

The Pharmacopoeia states that 'the label must indicate whether the methyl salicylate has been made synthetically, or distilled from either of the above-mentioned plants.'

If the label must differentiate, must not the pharmacist differentiate when he receives a prescription for the synthetic or the natural product?

In the U. S. P. VIII, under *Veratrum*, both *Veratrum Viride* and *Veratrum Album* were recognized, but the pharmacist receiving a prescription for Tincture of *Veratrum Viride* did not dispense Tincture of *Veratrum Album*.

(Signed)

J. W. ENGLAND."

To this letter the following reply was received:

"MR. J. W. ENGLAND, Philadelphia, Pa.:

In reply to your letter of January 25th, in my opinion a pharmacist is never justified in substituting methyl salicylate for oil of wintergreen or oil of sweet birch where these are called for on prescription or used for medicinal purposes. The clause showing the requirement for differentiating in labeling supports this view.

I cannot see the purpose of the confusing way of including these in the same text, as is done in the U. S. P. IX. The only conditions under which it really makes little or no difference is when the product is used solely in flavoring, and then, strictly speaking, it does not come under the U. S. P. at all.

(Signed)

CHARLES H. LAWALL."

DISCHARGE OF PHARMACISTS FROM SERVICE.

Considerable correspondence has passed between President Charles H. LaWall and the War Department relative to the discharge of pharmacists. The following is the last communication received on the subject:

CHARLES H. LAWALL, President, American Pharmaceutical Association:

Referring to your letter of December 16, 1918, addressed to the Surgeon General, in which you inclose copy of a letter to the Provost Marshal General, relative to the discharge of registered pharmacists from the Army, you are informed that, while the services of pharmacists serving in the Medical Department cannot be spared at this time, due consideration will be given to applications for discharge of pharmacists attached to other organizations of the Army.

(Signed)

J. C. ASHBURN,

WASHINGTON, D. C., January 24, 1919.

Adjutant General.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Committee on Publication: J. W. ENGLAND, *Chairman*; G. M. BERINGER, CASWELL A. MAYO, H. B. MASON, E. L. NEWCOMB, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on Progress of Pharmacy, *ex-officio*.

THE MENACE OF COMPULSORY HEALTH INSURANCE.

As pointed out by Dr. J. H. Beal and Chairman Harry B. Mason, the efforts for putting a Compulsory Health Insurance law on the statute books of every state are being continued. The druggists are deeply concerned as citizens, and no business will be more seriously injured than theirs if such legislation is enacted. Active work by the propagandists is being done among legislators and through the medium of editorials in the daily press. Without study of the subject the proposed legislation appeals to legislators and their constituents. Careful investigation has been made by the Committee on Compulsory Health Insurance of the American Pharmaceutical Association; reports and discussions on the proposed legislation have been printed and, for your convenience, reference is made to Volume VI of the Journal of the A. Ph. A., pp. 41, 235, 314, 701, 881, 885 and 1081 and Volume VII, pp. 381 and 899.

The blame of neglect will not rest on the pathfinder, the American Pharmaceutical Association, if this proposed legislation is enacted. Legislatures are in session—watch the calendar; the important subject should be discussed by local associations, business and civic leagues, etc., and the press should be given contra-arguments for editorials. Will you do your part? Study the references given you.

In concluding his remarks before the Wisconsin Medical Society, October 4, 1918, Dr. Edward H. Ochsner of Chicago, said: "I firmly believe that to establish compulsory health insurance would be one of the most serious mistakes that any commonwealth could possibly make, because it would be bound to lower the quality of medical services rendered to its citizens, it would increase loss of working time from sickness, it would throw an enormous financial burden upon the tax-payer, the employer and the employee, it would greatly reduce the incentive to thrift and industry and put a premium on deception, sloth and shiftlessness, and compel the industrious, hard-working, clean-living workman to pay

tribute to the untruthful, lazy, shiftless and immoral, and finally, it would have a tendency to take from independence and self-reliance its proper pride and from dependency its salutary shame."

RESOLUTION CONCERNING NOMEN- CLATURE.

The following resolution was passed by the Division of Organic Chemistry at the meeting of the American Chemical Society, held at Cleveland, Ohio, September 12, 1918. The resolution was unanimously endorsed by the Division of Industrial Chemists and Chemical Engineers at the recent meeting in Cleveland, Ohio:

WHEREAS, *The Journal of the American Chemical Society* and *Chemical Abstracts* have adopted and consistently employ the pure English terms "benzene," "toluene," and "xylene," including all of their derivatives, in place of the hybrid forms "benzol," "toluol," "xylol," etc.; and

WHEREAS, these English terms alone are to be found in publications devoted to pure organic chemistry, both in this country and Great Britain; and

WHEREAS, industrial and technical journals have become lax in their use of these strictly correct English forms; and

WHEREAS, the one-time confusion between the words "benzene" and "benzine" now no longer exists, owing, primarily, to the discontinuance of preparation of this latter named product, and, again, to a recent and well-made suggestion of the term "benzolene" for this same petroleum benzine fraction, if later to be placed on the market;

Therefore be it Resolved, that the members of the Division of Organic Chemistry of the AMERICAN CHEMICAL SOCIETY shall hereafter encourage the use of these English terms exclusively, where and whenever opportunity permits.

This is an opportune time for coöperation in the movement for better or more uniform nomenclature. There are chemical terms which are of greater importance for chemists

than pharmacists; the reverse is also true. The *ine* ending for alkaloids could just as well be adopted by chemists; for pharmacists it differentiates these from other principles. Pharmacists should, perhaps, spell "gram" without the *me*; the abbreviation, however, should be "Gm.," using l. c. letters for smaller denominations. The JOURNAL has adhered to the spelling of the U. S. Pharmacopoeia. The abbreviation for cubic centimeter should be Cc., the first letter having reference to "cubic." The word "percent" has been used in this publication instead of the word *per* and abbreviation for *centum*, convinced that the contraction is as justifiable as for many other words that might be cited; when the two words *per* and *centum* are used this argument does not hold, therefore, there is no hesitancy in employing the abbreviation *p. c.* or mark, •%. Some of these questions were discussed in the JOURNAL A. PH. A., for August 1916, Vol. V, p. 900.

Progress is being made on the nomenclature of cultivated plants. There are many problems which concern related industries and professions and point out the value and need of coöperation.

DIFFERENCE IN THE BEHAVIOR OF THE RESINS FROM PODOPHYLLUM PELTATUM AND P. EMODI.

In a recent presentation, before the Pharmaceutical Society of Great Britain (evening meeting, Edinburgh, December 18, 1918), D. B. Dott said that some years ago he had proposed the introduction of a test depending on the different behavior of the resins from *Podophyllum peltatum* and *P. Emodi* towards solution of ammonia. He stated that, when treated with a moderate amount of dilute ammonia, *P. Emodi* resin leaves at least twice as much insoluble matter as that of resin from *P. peltatum*. The insoluble portion varies greatly according to the proportion of ammonia and period of maceration, but there is, with like treatment, a greater insoluble portion from the former; proportionate figures given from tests were, as 25-60, 16-43, and 21-55. He submitted that 0.5 Gm. resin (from *P. peltatum*) when mixed with 5 Cc. of dilute ammonia (10%) and 5 Cc. of water, filtering after twenty minutes, washed and dried at 100° C. should not leave more than 0.13 Gm. (26 percent).

The pharmacologic question did not enter

into the discussion; the difference in constituents or relative proportion of them was admitted, and also that variation in solubility was due, to some extent, to the method of preparation and storage. Mr. Dott conceded that the U. S. P. test with alcohol and alkali is probably more distinctive, but an ammonia test may be a useful addition.

APPLICATION OF MAGNESIUM SULPHATE TO SCALDS.

Dr. S. J. Meltzer in the *Journal of Pharmacology*, and *Experimental Therapeutics* for November 1918 records results of experiments with external application in burns of a concentrated solution of magnesium sulphate carried out several years ago; the experiments were repeated and similar results were obtained. The experiments were made on non-injured and nonshaved rabbits' ears. The animal was deeply anesthetized. About one-third of each ear was submerged for a short period in hot water. Then the water was removed and one ear was submerged in a 25 percent solution of epsom salt (1 mol. $MgSO_4 + 7$ mol. of water) and the other ear was submerged in a solution of sodium chloride (either 0.9 or 6 percent). The ears were kept submerged in these solutions for about two or three hours, the solutions being changed two or three times during this period. The experiments with submersion in water of temperatures between 56 and 63° C. have always shown that the inflammation of the ear which was submerged in $MgSO_4$ was undoubtedly retarded or nearly completely prevented.

Meltzer has also had occasion to see cases of burns in human beings. First and second degree burns were invariably arrested in their development when molecular solutions of $MgSO_4$ were applied early. Third degree burns, as a rule, ran a more favorable course under application of $MgSO_4$ than under any other treatment. Higher concentrations than 25 percent seem to exert a still better influence. The favorable action of the application of $MgSO_4$ in advanced stages of burns of second and third degree is less striking, especially on account of the infection present; but even in this stage it seems to exert a favorable influence and according to Meltzer ought to be used either in combination, or alternately, with antiseptics.—Through J. A. M. A.

VALUE OF SACCHARIN AS FOOD IN DIABETES.

From his experiments, reported in the *Medical Record*, December 21, 1918, the conclusion is drawn by Dr. W. E. Burge that saccharin, in addition to serving as a sweetening agent, serves to facilitate oxidation, and hence should be positively helpful, particularly in a disease such as diabetes, where the principal trouble is defective oxidation, instead of harmful, as some have claimed.

SPHAGNUM MOSS.

Dr. G. H. Heald writing in *Sanitarium Quarterly* states that, "many of the processes and medicaments in use by physicians have been borrowed from a non-medical source. Perhaps for generations the knowledge of their use has been handed down from mother to daughter, or from father to son. Meantime the profession has looked upon these 'grandmother's remedies' with scorn, or at least with indifference, until some physician who was not too wise to learn from his lay friends has made a discovery which he duly reported to his medical society, or described it in a *Medical Journal*, and it became the common property of the profession.

"A notable example is the discovery of vaccination by Jenner. The country folk were well aware of the fact that persons who, as a result of milking cows with sore udders, contracted cow-pox, were immune to small-pox. But it took a Jenner to force this idea of the protective influence of cow-pox into the minds of a rather reluctant profession.¹

"A grandmother's remedy more recently adopted by the profession is the use of sphagnum moss as a surgical dressing. History does not record how far back 'bog moss' has been in use by the country people as a dressing for boils and discharging wounds. Perhaps some physicians were aware of this practice, but if so, they did not realize their opportunity, and passed it by as unworthy of their notice.

"But back in the seventies of the last century a circumstance brought the virtues of this moss to the attention of a surgeon who did not let slip the opportunity to enrich medical practice. A laborer in a peat moor in northern Germany was seriously wounded in the forearm. Not having surgical dressings at hand his companions applied 'first aid'

in the form of 'peat moss' picked up from the ground. Surgical help could not be obtained for ten days. Meantime the dressings were not changed. When finally the surgeon undid the wound, he was astonished to find it practically healed. Not being of the hide-bound variety, he communicated his findings to his fellow physicians, and further investigation showed the great superiority of *Sphagnum* moss as a dressing for discharging wounds. It then became a standard dressing in hospital and private practice. In the Russo-Japanese war, the Japanese physicians used it extensively as a first-aid dressing at the front, and sometimes these dressings were not removed for as long as ten days, and yet the wounds were generally found to be in much better condition than similar wounds dressed with cotton.

"There are several points in which *Sphagnum* moss is superior as a dressing to absorbent cotton. It will absorb liquid more rapidly, and will take up about three times as much liquid as cotton, and will retain it better than cotton. The liquid absorbed by *Sphagnum* distributes equally through the dressing, thus the moss continues to absorb fluid until it is completely saturated. A cotton pad will not do this.

"In ordinary hospital practice where the surgeon has the time and the material to dress his wounds from time to time cotton answers well every purpose; but where wounds must be hastily dressed, to remain without further attention for an indefinite time, *Sphagnum* is so far superior to cotton as to be in a class by itself. The last but not by any means the least advantage of *Sphagnum* is that it is much cheaper than cotton. It may never entirely replace cotton in hospital and private practice, but in the emergency practice of the battlefield it is likely to be used in preference to cotton, so long as the supply lasts."

LINEN PLANT TAGS.

Linen cloth is now being used to some extent for tagging plants. Writing on wooden tags soon becomes illegible, while copper tags are not only expensive, but are not large enough for sufficient data. The linen tags are first soaked several days in water to remove the sizings and then dried and smoothed with a hot flatiron. Data are written with India ink, using a round-pointed pen. The ink soaks in but does not run. Such tags will last

¹ See also p. 38, January issue, *JOURNAL A. PH. A.*

a year or longer. When they are to be used for longer periods or under conditions where the tags come in contact with the ground, they are coated with paraffin after labeling. One method is to dip them in a mixture of gasoline and paraffin (proportion, 1 quart of gasoline to one-half pound paraffin). The

gasoline evaporates, leaving a film of paraffin. If the tags become coated with mud, they can easily be washed and the ink shows up clearly. Such tags may be used in a variety of ways, for when treated in this manner they last exceptionally well.—*Jour. N. Y. Botanical Garden.*

SOCIETIES AND COLLEGES.

THE HOSPITAL CORPS OF THE NAVY.*

At a meeting of the National Pharmaceutical Service Association held in the Philadelphia College of Pharmacy on Friday evening, December 20th, Lieutenant Commander George F. Cottle, Detail Officer of the Hospital Corps of the United States Navy, and Lieutenant W. T. Minnick, Commandant of the Hospital Corps unit, training at the Philadelphia College of Pharmacy, presented a comprehensive and interesting account of the work of the organization in the war.

Up to 1898 the "apothecary" of the Navy was an appointee of the medical officer under whom he was to serve, being selected from the "baymen" or from civil life. The "baymen" were enlisted men detailed as nurses from other branches of the Naval service and frequently were those who had proven inefficient elsewhere. They were not selected for special fitness or training for the work. When the services of the apothecary were no longer needed, he was discharged from the Naval service.

As the work of the Medical Corps increased, and more need was found for proper hospital facilities and medical aid, a permanent Hospital Corps was established by law. This was in 1898. The Corps consisted of Hospital Apprentices, Hospital Apprentices, 1st class, Hospital Stewards, and twenty-five Pharmacists, with warrant rank.

No further change was made in the organization of the Corps until 1912, when the rank of "Chief Pharmacist" was established. This grade carried with it pay and allowances of an ensign, which is that of the Annapolis graduate when first detailed to duty.

The services rendered by the Hospital Corps had been of such value as to justify the recommendation by the Surgeon-General of the Navy for the advanced rank.

* From reports of Secretary E. Fullerton Cook of the National Pharmaceutical Service Association.

In 1916, in recognition of the efficiency shown by these pharmacists, legislation was secured from Congress, authorizing the appointment of as many pharmacists as the needs of the service demanded, and in 1917 the Surgeon-General further recognized the importance of the service by recommending temporary rank of Lieutenant (Junior Grade), and Lieutenant, for 82 of the members of the Corps, and the appointment of 220 Pharmacists (temporary). The several ratings of the Corps are Hospital Apprentices, second and first class; Pharmacist's mate, third, second and first class; Chief Pharmacist's Mate (acting appointment), Chief Pharmacist's Mate (permanent appointment); Pharmacist, and Chief Pharmacist. For the period of the war, all Pharmacists and Chief Pharmacists were advanced first to Lieutenants (Junior Grade) and later to Lieutenants, and a large number of Chief Pharmacists' Mates were given temporary appointments as Pharmacists.

The duties of the members of this Corps, especially those who hold the higher ratings, are greatly varied and call for many qualifications and extensive training.

Nursing.—Inasmuch as women nurses are not available for sea duty, this group of men are required to perform any nursing duties which the needs of the service may demand, such as the care of the sick, giving of baths, the care of the bed, and bed clothing, taking of temperature, pulse, and respiration, preparing of charts, the administration of enemas and hypodermics, the preparation of patients for the operating room and any of the various services appertaining to nursing.

Operating Room.—In addition to the preparation of the patients for operations, these men are trained to take care of the surgical instruments and equipment, to do all of the necessary sterilization, know the instruments, care for them and to make all preparation for operations. During the operation, they may serve as assistants to the surgeon, and often

administer the anesthetic. They may also be called upon to prepare the injection and assist in administering arsphenamin (salvarsan).

Ward Management.—The Hospital Corpsmen become the responsible officials in the establishment and management of the Hospitals. They are responsible for much of the internal organization of the hospital, for the cleanliness and routine work of the ward, and also responsible for all records and property.

X-Ray Department.—A limited number of men have received special training as X-ray operators. This is becoming increasingly important and the complete specialized training must include the knowledge of apparatus and experience in the taking of X-ray pictures and X-ray examinations, and also the development of the plates and making of prints.

Recruiting.—In the recruiting stations of the Navy, the Hospital Corpsmen serve as assistants, making the preliminary physical examinations, preparing the necessary records and securing the identification data, including the making of finger print impressions.

Commissary.—Pharmacists are responsible for the planning and administration of the commissary department and equipping a Naval hospital for any number of patients up to 2,000. This includes not only the equipment of the various wards and divisions of the hospital, but also the procuring of the food, its inspection and the supervision of the preparation of special diets for the patient.

Transportation.—The transportation of wounded and sick on board ship is often a difficult problem, and requires knowledge and skill in the methods of handling, the use of stretchers and ambulances, and the preparation of the injured for transportation. This duty falls entirely upon the Hospital Corps.

First Aid.—As the hospital corpsman secures experience and rating justifying advancement to the rate of Chief Pharmacist's Mate, he is often placed on "independent duty." Most of the smaller ships of the Navy, destroyers, submarines, mine-sweepers, and cargo ships, need medical aid, and the hospital corpsman here serves as the first aid medical officer. Every kind of emergency work may fall to his lot. Sickness, accidents, or other injuries may require his attention at any time. He must be familiar with antidotes to poisons, and all of the many emergency conditions which he may face. This includes, not only

the occurrences which may happen aboard ship, but, when ashore in our Island Possessions, he may be called upon at outlying stations to administer first aid and help to the native population.

Laboratory Technique.—Their knowledge of chemistry and microscopy must be sufficient to aid in a proper control over the water supply, to make an examination of foods, carry out such clinical tests as may be demanded, such as blood examination, urine tests, examination of feces, the Widal and Wassermann tests, etc., as any of these may become a part of their duty.

Pharmacy.—As a pharmacist, the hospital corpsman will have charge of the dispensary either in hospitals on land or on board ship. This rarely calls for the manufacture of pharmaceuticals, but must embrace a knowledge of the medicines on the supply table of the Navy as well as those generally used in medical practice and sufficient chemical training to pass upon the quality of these supplies. The ordering and the proper care of the medical supplies and pharmaceutical equipment, together with the bookkeeping records of the department, the compounding of the prescriptions, and the preparation of such materials as the Dakin-Carrel Solution, are a part of the every-day work.

Clerical.—An important function of the Hospital Corpsman is clerical. The typewriter must be used for reports. They must be familiar with the bookkeeping methods of the commissary department and must be prepared to take charge of, or supervise such records. They must supervise the Hospital galley (kitchen) and mess-hall, and must oversee the ordering of supplies and are responsible for the storage and quality of foods. They must be familiar with all forms used in the medical corps, and be able to properly prepare them. These forms include records of enlistment, discharge, medical examinations, laboratory tests, sick and death reports, requests for leave, official correspondence, etc.

Hygiene and Sanitation.—At any time, the hospital corpsman may be detailed to serve on shore duty with the marines. Here he occupies the important position of sanitary officer. He must be qualified to establish a camp, look after the water supply, examine the quality of water available, and, if necessary, purify it for the troops, take care of all refuse about the camp, establish proper

latrines, provide bathing facilities and install and superintend the operation of incinerators for the disposal of all sewage and refuse. In this service, he must also be prepared to establish and equip a field hospital and aid in its management, as has already been outlined.

LIEUTENANT COMMANDER COTTLE.

Lieutenant Commander Cottle illustrated the work of the Corps by a number of lantern slides and drawings, showing the possibilities and training given by the Navy under the present Naval regulations, and also the enormous growth of the organization during the present war. He also spoke of the splendid service rendered, under many trying conditions, by this branch of the service.

Dr. Cottle in subsequent remarks, in answer to some of the comments, set forth the spirit which should animate those who seek service in the Corps in war time. The essence of his statement was that every American citizen undoubtedly wished to serve his Country in some capacity during such a time of struggle as that through which we have passed, and that, if his opportunity came through service in this Corps, then the question of mere personal advantage or rating rightly took a second place as compared with service to be rendered. He stated that it could not be expected that men without proper military training should immediately upon first enlistment be given a high rating; that efficient Naval service required extensive military training, and that the opportunity to do one's bit in an honorable way had been welcomed by many men, and should be gratifying to the

young men of the Country. He called attention, however, to the fact that for men qualified both in professional and military subjects, there was provided in the Navy an excellent opportunity for recognition and pay in the Hospital Corps, and that for men in the Naval service and who were prepared to assume the increased responsibility of war, temporary commissions, and larger opportunity for service were given.

In concluding his report of the meeting Secretary E. Fullerton Cook states that it will be seen by pharmacists that the duties of members of this corps are far broader than the usual activities of the apothecary in civil life, although pharmaceutical training in accordance with the curriculum of a modern college of pharmacy embraces a large percentage of the work demanded of the hospital corpsmen. The full recognition of pharmacy in the Navy with its related activities, as the collaborator with the physician in the maintenance of health, treatment of disease, and the healing of wounds has been established, and every pharmacist in the country should lend his aid to the Naval authorities. Men who secure commissions are required to successfully pass severe competitive examinations. Naval pharmacists firmly believe in proper control over the granting of commissions to Pharmacists in the Navy, and with the new light which has come to all who are interested in the Medical Department of the Navy and in the work of its Pharmacists and Hospital Corpsmen, the N. P. S. A. may well be proud of the work that has been done by pharmacists in the Naval service and glad of the recognition the Navy has accorded them.

CHANGES OF ADDRESS.

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of the change of address is received before shipment or mailing.

Both the old and the new address should be given thus:

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To 20 Main St., Glens Falls, N. Y.

GODLEWSKI, CHAS.

From 1880 West Third St., Chester, Pa.
To 2380 W. Third St., Chester, Pa.

ROSE, WILLIAM W.

From Box 77, Berlin, Md.
To Smyrna, Del.

BANDTEL, CHARLES M.

From R. F. D. 1, Redwood Heights Farm,
Santa Cruz, Cal.

To 1159 Masonic Ave., San Francisco, Cal.

HERETH, F. S.

From Berlin, N. H.
To c/o E. R. Squibb & Sons, Washington
and York Sts., Brooklyn, N. Y.

APPLE, FRANKLIN M.

From 3233 W. Berks St., Philadelphia, Pa.
To General Delivery, St. Petersburg, Fla.

MULFORD, H. K., JR.

From Camp Devens, Mass.
To Wayne, Pa.

DECEASED.

FULLER, CHAS. F.

540 W. Randolph St., Chicago, Ill.

VORDICK, A. H.

6351 Berlin Ave., St. Louis, Mo.

COOPER, James W.

1 Court St., Plymouth, Mass.

KLEINAU, GEO.

941 Park Ave., New York, N. Y.

MAYER, PETER

103 N. 2d St., Marshalltown, Ia.

SCHAPPER, F. C.

617 Arlington Pl., Chicago, Ill.

PEGG, H. W.

887 Market St., Kingston, Pa.

WOLF, M. F.

Eastern Ave. and Chester St., Baltimore, Md.

CHARLES B. JORDAN
LAFAYETTE, IND.

President of the American Conference of Pharmaceutical Faculties, 1918-1919



C. B. JORDAN

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CHARLES BERNARD JORDAN.

Charles Bernard Jordan, president of the American Conference of Pharmaceutical Faculties, was born on a farm near Morrice, Michigan, November 7, 1878. He completed the eighth grade in the country schools and then entered the Morrice high school from which he graduated in 1897. For the several years following he taught in the country schools and in the grades at Morrice. In 1904, he graduated from the Ypsilanti State Normal College and was Superintendent of Schools until 1908.

During the years he was a high school student, and later a teacher, at Morrice, he gained practical experience in the drug store of W. A. Conley. In September 1908 he entered the University of Michigan School of Pharmacy. He received the degrees of Pharmaceutical Chemist and Bachelor of Science from this institution in June 1910. He received the degree of M.S. from this school in September 1912.

In September 1910 he was made director of Purdue University School of Pharmacy, which position he still holds.

Professor Jordan is a tireless worker and always takes an active part in state and national pharmaceutical meetings. He has been a member of the Indiana State Pharmaceutical Association since 1910. He was secretary of the Section on Education and Legislation of the American Pharmaceutical Association in 1916-1917, and chairman of the same Section in 1917-1918. Each year he has contributed to the programs of the associations and has held many important committee appointments. He has worked unceasingly for higher educational standards for pharmacy. At the meeting of the Indiana Pharmaceutical Association in 1912, he introduced the subject of prerequisite legislation, at which time only four or five approved. The same Association unanimously approved prerequisite legislation at its 1918 meeting.

Besides being an active member of the Indiana Pharmaceutical Association and the American Pharmaceutical Association, Professor Jordan is a member of the American Chemical Society and the Indiana Academy of Science. In addition to contributing to the programs of these associations he has written many papers which appear in the leading pharmacy journals on the educational problems of pharmacy. The chief aim and object in all his work is to raise pharmacy to a plane of high professional standard.

CHAS. O. LEE.

EDITORIAL

E. G. EBERLE, Editor

253 Bourse Bldg., PHILADELPHIA

PROHIBITION LEGISLATION AND THE DRUG BUSINESS.

IN nearly all States legislative bills relating to the sale of alcoholic preparations are pending. Quite a number of the proposed measures, and some that have already been enacted into laws, have a direct bearing on the drug business. The fact that those engaged in the business to be regulated are law-abiding citizens and desirous of legislation which will promote better citizenship is not infrequently ignored by legislators. Intentionally, or otherwise, legislators do not discuss proposed legislation with those affected by it, and in many instances the latter are not informed relative to the text of bills until they appear in print. Even though these bills are killed they take the time of the legislature and involve expenditures on the part of the State and interested citizens. There is now more need than ever for an advisory body, composed of representative business and professional men, to whom proposed legislation should be referred for careful study. If the regulation is necessary, then the bill should be carefully prepared by such commission for final action by the legislators.

The following bill has found place on the calendar of the Idaho Legislature:

"It shall be unlawful for any pharmacist, druggist, apothecary, merchant, trader, peddler, or any other person, male or female, in this state with or without license to sell by wholesale or retail, or to give away, directly or indirectly, or to have in his or her possession any patent medicine or other medicine compound or mixture which contains in excess of 2 percent of alcohol."

Violation is made a felony, subject to penitentiary imprisonment of not less than one year nor more than two.

A California bill provides for the use of ethyl alcohol in the manufacture of non-drinkable preparations, but no provision is made therein for the sale of preparations containing alcohol.

The measure which has been approved by the House Judiciary Committee, defining "beer, wine or other intoxicating malt or vinous liquors" as any liquor which contains more than one-half of one percent of alcohol, applies to the war prohibition act which becomes effective July 1st, and is not subject to controversy with State law save as the constitutionality of the original act shall be attacked successfully.

The state laws differ on the alcoholic content in their prohibition laws. West Virginia draws the line below one-half of one percent alcohol content; in Alabama, South Dakota and Maryland any beverage containing alcohol is declared intoxi-

cating; Michigan bars liquors "of intoxicating properties;" the North Carolina law specifies liquors that "will produce intoxication," leaving the decision of such condition to court; the Texas law practically conforms to the latter, while in Maine the basis of alcohol content is "not over three percent." The "dry" leaders contend that the States have no right under the prohibition amendment to attempt to define an intoxicating liquor, while the opposition holds that each State can give its own definition of an intoxicating drink.

We are concerned in the exemption clause pertaining to the sale of alcohol-containing preparations. The wording of this clause should be uniform, and to that end Chairman George W. Lattimer, of the N. W. D. A. Committee on Legislation, suggests that of the Arizona law, which reads:

"Provided, also, that nothing herein shall prevent the manufacture and sale of such preparations as flavoring extracts, essences, tinctures, perfumes or remedies containing drugs or medicines which do not contain more alcohol than is necessary for legitimate purposes of extraction, solution or preservation, and which contain drugs in sufficient quantity to medicate such compounds, and which are sold for legitimate and lawful purposes, and not as beverages."

E. G. E.

THE SEPARATION OF DISPENSING FROM PRESCRIBING.

THE dispensing and prescribing of medicines are different and not interchangeable functions. True it is that many physicians prescribe and dispense, and while under certain conditions this may be allowable and necessary, as a general practice it should not be permitted, for reasons that have been frequently presented. The question has often been discussed in connection with the dispensing of narcotics, and now that regulations are being perfected for controlling the sale of medicines employed in the treatment of venereal diseases it is again a topic for discussions.

When the Venereal Disease Act was before the British Parliament the British Pharmaceutical Society sought to have the officinal dispensing of venereal remedies on physicians' prescriptions reserved exclusively to pharmacists, but the medical profession, as represented by the British Medical Association, refused to give up this part of its dispensing practice. The attitude of doctors in this country is not so different. The contention is, and rightly, that pharmacists should advance their educational standards, but how much pharmacy is taught in medical schools? While medical men may not be willing to admit that it is just as wrong for the members of their profession to dispense medicines as for pharmacists to prescribe, they can not reasonably contend that they, without special training and education in pharmacy, are qualified for pharmaceutical work.

The progress of medicine is in a degree dependent upon that of pharmacy, and every encouragement should be given to advance it; there should be hearty and sincere coöperation between the two professions. The right of pharmacists to dispense should be as firmly established as that of doctors to prescribe.

In the latter connection we desire again to refer to the discontinuance of sales by druggists of remedies for venereal diseases. This is right and proper, but the prescribing of such medicines is equal in importance to the prescribing of narcotics. It is true that physicians as a class are honorable men, and the same is true of pharmacists. That the medical profession is not free from charlatans will be admitted, and those who doubt this will be convinced by reading the report of Francis W. Shepardson, Director of Registration and Education for Illinois, on the status of the medical profession in that State, recently printed in the *Journal of the A. M. A.* Under the existing conditions it will be evident that there are opportunities for imposition and that there are those who will take full advantage of them.

It seems to us that the medical men, as represented by the Medical Associations, should not only favor the discontinuance of dispensing by physicians but seek in every possible way to effect a separation of dispensing and prescribing as distinct and not interchangeable functions. It will help the advancement of both professions and thereby benefit the public.

There should be morale in professions and among professions. A recent definition given for the word "morale" is "belief in one another." In that sense it means that the votaries of the same and related professions believe in each other, and, to carry the thought further, those who are engaged in related professions believe that coöperatively they can and will do better work. It is applied serviceable friendship of those coöperating, and for those served—the public.

E. G. E.

THE NEXT PHARMACOPOEIA.

The following letter to pharmacists has been issued by Chairman C. H. LaWall of the Committee of Revision of the United States Pharmacopoeia. All pharmacists are invited to assist by offering suggestions for the next revision. A separate sheet is to be used for each subject discussed, giving first the title of the subject, then a brief abstract of recommendation, the details and reasons for proposal. The address of the Chairman is 39 So. 10th street, Philadelphia, Pa. The letter follows:

"May, 1920, only a little more than a year hence, will again witness the assembling in Washington of the delegates to the United States Pharmacopoeial Convention. This fact should stimulate pre-convention activity on the part of those who have had experience with the present revision and are prepared to suggest improvements for a new edition.

"It is desirable at this time that pharmacists, physicians, chemists, botanists, biological experts, or any others who use the U. S. P. IX should submit to the Chairman of the Revision Committee, either personally or through associations, such helpful information as their experience may have suggested, or which may have come to their attention.

"These suggestions will be compiled systematically and circularized to the present Revision Committee, the authors being credited in each instance with the recommendations, and the compilation will be submitted to the 1920 Convention for the benefit of the new Committee of Revision.

(Signed) CHARLES H. LAWALL "

PHYTOCHEMICAL NOTES.¹83. The Volatile Oil of Canada Balsam.²BY MAX PHILLIPS.³

Although Canada balsam is one of the early contributions made by America to the materia medica, the chemistry of this substance is but little understood. Of the two products into which this drug resolves itself upon steam distillation, the volatile oil has yielded but one of its constituents, namely, *l*-pinene.

Inasmuch as the occasion had arisen to prepare a larger amount of *l*-pinene for certain experiments with this hydrocarbon, 15.9 K. of commercial Canada balsam were subjected to steam distillation. 3725 grammes of oil resulted, corresponding to a yield of 23.4 percent. With the oil there came over a flocculent substance which was removed by filtration. The residue remaining in the still was a hard, yellow resin.

The density of the oil at 20° C. was 0.8472; $[\alpha]_{D_{20}} -27.8^{\circ}$; $n_{D_{20}} 1.4718$. These constants, with the exception of the density, come within the limits of those previously observed.

The oil was then fractionated. In order to prevent unnecessary decomposition, amounts of 500 Cc. were distilled in an ordinary fractionating flask at a fairly rapid rate. In no case was much more than one-half hour consumed to bring about the first rough separation. The last lot amounted to but 190 Cc. The following table records the amounts obtained in each fraction, also the time consumed in each operation:

—153°.	153–158°.	158–163°.	163–168°.	168–173°.	173–178°.	178–183°.	Residue.	Time.
Vol. in Cc.								
9 Cc.	16 Cc.	26.8 Cc.	190 Cc.	142 Cc.	47.5 Cc.	28.8 Cc.	49 Cc.	32 m.
6	6	18	167	164	58	28	55	38
6.2	4	18	175	165	54.5	31	50	26
5.6	3.5	30	175	157	52	29	52	36
6.2	5.4	25.2	200	142	53	25	49	26
6	4.6	30.6	200	133	55	30	46	30
5	4.6	33.4	190	137	55	27	49	32
6.6	5	41	190	137	51	27	49	29
4	4	25.4	110.6	80	26	13.8	28	17

Although the oil is reported to contain about 50 percent of pinene, the above table reveals but a small total in fraction 153–158°. The residue had a decided limonene odor. That decomposition had taken place became apparent, not only from the vapors formed at temperatures above 175°, but also from the yellow resinous character of the residue, although distillation had been interrupted at 183° C.

A refractionation with a column of three bulbs was undertaken. That there was an appreciable lowering, in part at least, of the boiling point, becomes apparent from the data recorded in the following table:

¹ From the laboratory of Edward Kremers.

² Read before Scientific Section, A. Ph. A., Chicago meeting, 1918.

³ Fritzsche Bros. Fellow.

Original fraction.	—153°.	153°+.							
—153°	8.2 Cc.	43 Cc.							
		153-8°.	158°+.						
153-158°	3.8 Cc.	6 Cc.	77 Cc.						
		158-63°.	163°+.						
158-163°	8 Cc.	8.2	143 Cc.	143					
				163-8°.	168°+.				
163-168°	4.4 Cc.	11.2	516 Cc.	839 Cc.	372 Cc.				
					168-73°.	173°+.			
168-173	0	4.6	44.4 Cc.	810 Cc.	435 Cc.	296			
						173-8°.	178°+.		
173-178	0	0	0	13 Cc.	343 Cc.	163 Cc.	218		
							178-83°.	183°+.	
178-183	0	0	1 Cc.	5.6 Cc.	46 Cc.	140 Cc.	63 Cc.	190 Cc.	

The specific gravity and angle of rotation of the respective fractions are recorded in the next table.

	—153°.	153-8°.	158-63°.	163-8°.	168-73°.	173-8°.	178-83°.
Sp. gr. at 20.....	0.819	0.838	0.852	0.853	0.853	0.848	0.842
Optical rotation in 1 dm.							
tube.....	17.03	—22.54	—23.54	—25.56	—27.83	—28.21	—28.02

The residue, that is, the material which had boiled above 183° C. in the first fractionation, was distilled under a pressure of only 38 mm. The following table contains a list of the various fractions obtained together with the sp. gr. of each:

Fractions.								
—75°.	75-95°.	95-105°.	105-15°.	115-25°.	125-35°.	135-45°.	145-55°.	155-65°.
								Residue.
								Vol. in Cc.
39.5	100	132	47.5	27	46	35	45	26.6
								42 g.
								Sp. Gr. at 20° C.
0.844	0.847	0.837	0.832	0.833	0.837	0.847	0.862	0.893

PREPARATION OF NITROSOCHLORIDES.

Nitrosochlorides were prepared from some of the fractions given below according to the method of Wallach for the preparation of pinene nitrosochloride. For each preparation 29.5 Cc. of oil were used. The results obtained are tabulated below.

Fraction.	Wt. of nitrosochloride.	Yield.	Rotation of oil.
158-163	2.32 Gm.	9.2 percent	—23.54
163-168	1.62 Gm.	6.4 percent	—25.51
168-173	0.71 Gm.	2.8 percent	—27.83
173-178	0.14 Gm.	0.55 percent	—28.21

The amount obtained diminished in accordance with the well known rule that the yield of optically active pinene nitrosochloride diminishes as the angle of rotation of the pinene increases. In this case, however, the diminution in the yield is out of all proportion to the slight increase in the angle of rotation and must, no doubt, be attributed in part to other causes.

CONVERSION OF NITROSOCHLORIDES TO BENZYLAMINE AND PIPERIDENE BASES AND TO NITROSOPINENE.

The nitrosochloride obtained from fraction 153-163 was converted to nitrosopinene. (Heusler-Pond, p. 43.) The purified compound melted at 132°C . (m. p. of nitrosopinene = 132°C . Heusler-Pond).

From the nitrosochloride of fraction 163-168 $^{\circ}$ the nitrolbenzylamine base was prepared, according to the method given in Heusler-Pond p. 43. It melted at 122°C . (m. p. of nitrolbenzylamine base of pinene = 122°C .).

The nitrosochloride of fraction 168-173 $^{\circ}$ was converted to the nitrolpiperidide base. The pure compound melted at 118°C . (m. p. of nitrolpiperidide of pinene is 118-119 $^{\circ}\text{C}$.).

From the nitrosochloride of fraction 173-178 $^{\circ}$ a nitrolbenzylamine base was prepared. It was found to melt rather low. The compound was recrystallized several times and was then found to melt rather sharply at 91-93 $^{\circ}\text{C}$. This melting point is far too low for the nitrolbenzylamine base of pinene. Moreover, the nitrolbenzylamine base of limonene melts at 93 $^{\circ}\text{C}$., which fact would seem to indicate that in fraction 173-178 $^{\circ}$ limonene is present. However, no tetrabromide could be prepared from this fraction.

SUMMARY AND CONCLUSION.

A rather preliminary chemical investigation of the volatile oil of Canada balsam has been made. The presence of pinene, previously reported by Fluekiger has been confirmed. That there is at least one other terpene present in this oil is indicated by the boiling points of certain fractions and by the benzylamine base of fraction 173-178 $^{\circ}$.

84. An Unusual Oil from *Monarda punctata*.*BY MAX PHILLIPS.[†]

In connection with the experiments on the cultivation of *Monarda punctata* it became necessary to collect a larger amount of seeds. Hence, between October 18 and 20, 1917, forty-five pounds of matured flower tops were collected. The corollas had dropped long ago, so that only the calyces with the mature fruit remained on the expanded base of the former inflorescence. Having been stored for about a month, the fruit heads were threshed, 3.5 lbs. (= 7.7 percent) of seed being obtained. However, there also resulted 40 lbs. (18,181 Gm.) of chaff which was not devoid of odor. Hence, this material was subjected to steam distillation. The original oil (152 Gm.) and the cohobated oil (12 Gm.) were mixed, affording a total of 164 Gm. or 0.9 percent. This is an unusually high yield of oil for *Monarda* material collected so late in the season.¹

* Read before Scientific Section, A. Ph. A., Chicago meeting, 1918.

[†] Fritzsche Bros. Fellow.

¹ From the work that has been done upon *Monarda punctata*, it seems that the largest yield of oil is obtained from young plants not yet in blossom. Last November 800 lbs. of dry plants were distilled at this station and a 0.77 percent yield of oil was obtained. (See also N. Wakeman, "The Monardas," p. 24 of Univ. of Wis., *Bull.* 448.)

This oil was exceedingly dark in color, possessed the relatively high density of 0.952 and assayed 82 percent of phenol.² It may be that if the material had been distilled immediately after the seeds had matured, in late summer or early fall, the density would have been found lower and the phenol content not so high. Hence, the experiment should be repeated earlier in the season. Although the amount of oil obtained was small, it nevertheless invited at least a preliminary investigation. For this purpose it was roughly resolved into its phenol and non-phenol components by shaking out the former with aqueous 5 percent sodium hydroxide solution and recovering the phenols from the phenylates by means of acid. Previous exposure to so low a temperature as -22° C. for two days had not caused anything crystalline to separate, even though the oil was diluted with an equal volume of heptane.

Phenols.—It has already been pointed out that the phenol content of the oil was 82 percent. With so large an amount of phenol the assay with 5 percent aqueous potassium hydroxide was likely to cause minor difficulties of technique. As a matter of fact, two days did not suffice to effect a separation of the two layers. However, this was readily brought about by the addition of 5 cc. of heptane.

In the separation of the phenol from the bulk of the oil, 200 Cc. of 5 percent sodium hydroxide solution were used at a time until all of the phenol had been removed. The bulked aqueous alkaline solutions were shaken repeatedly with ether in order to remove non-phenols dissolved in the phenylate solution. After recovery of most of the ether, the remaining solution, upon exposure to the cold, crystallized to an orange-colored mass. The bulk of this residue (40 Gm.) consisted of thymol, as was shown, upon purification with petroleum ether, by both crystalline form and melting point. The purified pigment, however, looked more like dihydroxy thymoquinone than thymoquinone. Hence, in place of obtaining non-phenol materials, as expected, both substances isolated proved to be phenolic in character.

The aqueous phenylate solution was then rendered acid with hydrochloric acid, a dark brown, viscid oil separating. This was rectified by steam distillation and then by direct distillation, the operation being interrupted when the temperature of 235° had been reached. During the process of distillation, crystals were observed to form in the condenser. Recrystallized from water, they melted at 135 to 136° and, after further purification by sublimation, at 140° . They also gave Lieberman's³ quinhydrone reaction with thymoquinone, hence may safely be pronounced as hydrothymoquinone. This diatomic phenol was also isolated from the "tarry" residue remaining in the flask from which the phenols had been distilled.

The phenol oil that had distilled over below 235° did not crystallize within a week, hence was fractionated. Most of it came over between 225 and 235° and this fraction crystallized after an hour's standing. The bulk of the crystals consisted of thymol, but again brick-red crystals of what looked like dihydroxy thymo-

² The phenol content of the ordinary oil averages about 50 percent, though it runs as high as 60 percent. (See Wakeman's *Bull.* above given.) Hood even reports 72 percent, U. S. Dept. of Agr., *Bull.* 372.

³ *Ber.*, 18, 3196.

quinone were observed. However, the amount was too small to make any tests of identity.

The aqueous distillate resulting from the steam distillation of the crude phenols was boiled with an excess of barium carbonate. The only observation worth recording was that the solution became wine colored, a color reaction produced by monohydroxythymoquinone under like circumstances.

It may be worth while to point out that of the 45 Gm. of crude thymol separated in crystalline state from the oil, 40 Gm. were obtained from the ether⁴ with which the alkaline phenylate solution had been shaken, and only 5 Gm. from the oily phenols separated from the aqueous phenylate solution by acid. Hence, of the 134 Gm. of phenol indicated by assay, only 45 Gm. or 33.5 percent crystallized out and were characterized as thymol. No small amount of phenol separated as "tar."

Non-Phenols.—The small amount of non-phenol portion of the oil was likewise fractionated. Below 177° only 10 Cc. came over, and between 177° and 235° less than 20 Cc. From the residue in the flask some hydrothymoquinone was separated as described under "phenols" and identified as such.

Conclusions.—Although the amount of oil was too small to accomplish much, nevertheless this preliminary investigation has added at least one substance to the list of known constituents of *Monarda punctata*, viz., hydrothymoquinone.⁵ Reasoning by analogy with *Monarda fistulosa*⁶ seemed to show conclusively that it must be present in the plant, but its isolation had heretofore escaped all efforts. Moreover, the presence of monohydroxythymoquinone is indicated by a color reaction and that of dihydroxythymoquinone but wants definite chemical identification. Hence, this minor diversion from a major problem seems fully justified, and if only for the reason that it will stimulate the efforts to secure a much larger amount of material next year and thus take another step in further establishing the interesting parallel in the biochemistry of *Monarda punctata* and *M. fistulosa*.

COMMERCIAL CULTURES OF BULGARIAN BACILLUS.*

BY EDGAR B. CARTER.

A short historical sketch opens the paper to show that Metchnikoff did not originate the theory of the harmfulness of the absorption of bacterial toxins from the intestines nor was he the first to suggest the use of the Bulgarian Bacillus in the treatment of these conditions. The bacteriological characteristics and the chemical

⁴ The fact that thymol, dissolved in aqueous sodium hydroxide, can subsequently be shaken out with ether does not seem to have been reported in the literature before, although this phenomenon was observed by Jahns in connection with carvacrol. *Ber.*, 15, 817.

⁵ It may be worth mentioning that hydrothymoquinone has been precipitated from ordinary, colorless, *Monarda punctata* oil by Dr. Edward Kremers by merely diluting the oil with the requisite amount of heptane; also that a number of previously unknown constituents have been isolated and identified by Dr. N. Wakeman. (See *Circulars of Wis. Pharm. Expt. Station.*) In both cases, however, the results had not been published at the time of this writing.

⁶ I. W. Brandel, *Pharm. Rev.*, 19, 244.

* Read before Scientific Section, A. Ph. A., Chicago meeting, 1918.

changes produced in milk by the organism are taken up briefly, after which the three forms of commercial cultures are discussed. The advantages and limitations of each are shown. The paper closes with a description of the tests used to establish the values of the cultures with a simple test by which the pharmacist may satisfy himself as to their viability. A bibliography follows.

Philosophy is a very potent force in scientific work; it reasons far ahead of the known into the realm of the unknown, thereby furnishing not only an incentive for original work but assisting in the formulation of systematic schemes by which this work may be directed. In 1901, when Eli Metchnikoff, in a public lecture at Manchester, England, announced that his investigations had led him to the conclusion that the lifetime of mankind is limited largely by the absorption of toxins and the products of putrefaction from the bowels, he laid the foundation for all his subsequent work in which he attempted to discover the means of eliminating or at least decreasing this intestinal putrefaction, with a view to prolonging life for a number of years.

While we cannot feel that the work of Metchnikoff has to any extent solved the problem of the prolongation of life, he himself dying at the age of seventy-one, there can be no doubt but that his philosophy is sound and that possibly a younger scientist may take up the same work and ultimately achieve this great man's object.

There is probably no doubt but that a great many of the conditions appearing in man in which symptoms profoundly affect the nervous system, the circulation, and in a variety of ways the entire body, can be clinically traced to the intestines. As Metchnikoff pointed out and demonstrated, the absorption of these putrefaction products of proteins—the phenols, skatol and indols—produce degenerative changes in the arteries, kidneys, liver and digestive organs.

It is interesting to note that a few years later, the writer of the famous Craig Kennedy stories in the *Cosmopolitan* took for the plot of one of the crimes, in which the famous Craig brought the criminal to justice, the gradual but progressive poisoning of a rich husband by his young and beautiful wife, in which the dastardly deed was accomplished by secretly administering indol in the man's food and drink. It made an excellent and exciting story, although a very improbable one when we consider the strong and obnoxious fecal odor of indol, but no doubt it would have done the work if the man could have been forced to eat it.

Metchnikoff was not the first investigator to consider the harmfulness of the absorption of putrefaction products from the bowels nor was he the first to suggest a remedy. Since the trouble resulted from the bacterial decomposition of protein, it was quite natural that the early workers should attempt to combat the condition by adding acid-producing bacteria and carbohydrates to the diet on the basis of antibiosis or mutual antagonism which they had learned existed—cultures between many acid-producing bacteria and the saprophytic group. So in 1886 we find Escherich¹ and Brudzinske² proposing the use of *B. lactis aerogenes* and in 1887, Quincke³ suggesting the use of the yeast *Oidium lactis*. It was not, however, until 1906 that Metchnikoff⁴ suggested the use of the Bulgarian Bacillus which had previously been isolated and studied by Massol,⁵ Cohendy⁶ and Bertrand and Weisweiler.⁷

BACTERIOLOGY.

The *Bacillus Bulgaricus* (*B. Massol*) is a non-pathogenic, non-motile, non-sporulating, non-liquefying, Gram positive bacillus (involution forms are Gram negative) showing wide variations in lengths, from 2 to 50 microns and occurring singly or in short and long chains. It is both an aerobe and anaerobe, growing with difficulty on ordinary media, but easily cultivated in milk or in medias containing whey or malt. It grows best at 44° centigrade, fairly well at 30°, slightly at 25°, but not at all at 20°.

CHEMISTRY.

The *Bacillus Bulgaricus* belongs to the lactic acid-forming class of bacteria and in common with the *B. lactis aerogenes*, *streptococcus lacticus* and others, splits the hexoses of the monosaccharides into two molecules of lactic acid. In milk cultures the lactose is hydrolyzed and converted into galactose and glucose. The *Bacillus Bulgaricus* probably has nothing to do with the primary hydrolysis, for it does not form acid from lactose in the culture tube nor does it grow very well in media made with lactose. Not only is the bacillus resistant to high acid concentration but it is a vigorous acid producer, forming from 2 to 3 percent of acid in suitable media. While it is customary to speak of the acid resulting from the splitting of the sugars by the *Bacillus Bulgaricus* as lactic acid, Bertrand and Weisweiler⁷ have shown that acetic and succinic acids are also produced in appreciable quantities. Recent work of Van Slyke and Baker⁸ indicates that only a small part of lactic acid remains free in milk cultures. Immediately upon its formation, the lactic acid begins to combine with the basic phosphates and citrates of calcium, magnesium, sodium and potassium, forming monobasic or acid phosphate and citrate salts. When these reactions are complete, the acid combines with the calcium caseinate⁹ forming calcium lactate and free casein. Hence the formation of the curd.

COMMERCIAL PREPARATIONS.

It is not within the scope of this paper to discuss the indications for the therapeutic use of Bulgarian Bacillus. We shall leave that to the clinicians. The preparation has been used for the treatment of practically every disease ranging from diabetes to fetid perspiration, but since all good things are carried to extremes by the enthusiast, we should not be surprised that some absurd claims should be made for Bulgarian Bacillus. It is sufficient to say that there is and will doubtless continue to be a very steady and increasing demand for preparations of Bulgarian Bacillus from the medical profession, who are surely separating the wheat from the chaff. It is for the pharmacist and pharmaceutical chemist to furnish them with dependable and potent products.

So far, the general use of Bulgarian Bacillus cultures has been limited to three forms—first, the liquid cultures; second, the tablets; and third, the suspension in a medium such as petrolatum—the problem being that of making accessible to the doctor massive doses of viable bacilli.

It is evident that the maximum doses of the bacilli can be obtained by the administration of the straight liquid culture in which the media is practically filled with bacterial bodies. Naturally such a culture, after incubation, must

be kept at a cool temperature—below 20° centigrade (68° F)—or the bacilli will continue to grow and soon exhaust themselves, so while liquid cultures require greater care, there can be no doubt but that they possess greater counts and if properly cared for should have a very rapid and very potent effect. The liquid cultures are prepared by growing the bacilli in sterile liquid medias, preferences being given to some variation of the Cohendy media. This consists of slightly alkaline whey to which has been added gelatine and cane-sugar. The growth is controlled by titrating the acidity and by actual bacteria count, and is stopped just short of an acidity which experience has taught us is detrimental to the life of the bacilli.

Before marketing it is tested bacteriologically to establish the identity of the culture and to assure the absence of contaminating microorganisms. The better laboratories also test each lot to determine its actual power to inhibit the growth of *bacillus coli*.

The tablets are prepared from milk or other liquid cultures, mixed to a mass with milk sugar, starch, or both, dried and formed into tablets. Although the bacilli are materially diluted by the powder necessary to form a tablet, their vitality is preserved over a much longer period of time and under more adverse temperatures. They are usually tested by dropping one tablet in a pint of sterile milk and incubating to obtain the souring of the milk with the characteristic curd in twenty-four hours.

Another method of preserving viable Bulgarian Bacilli is that of drying the culture at a low temperature and mixing them with an inert substance such as petrolatum. The petrolatum is generally colored red to minimize the effect of the light on the bacilli. This method, although in use for a number of years, was patented last March.¹⁰ There can probably be no doubt but that this method is the most effective one known to-day for preserving the bacilli, but one cannot help but wonder if the protection afforded by coating the bacilli with mineral wax is not sufficient to prevent their later growth and multiplication in the intestines.

TESTS OF BULGARIAN PREPARATIONS.

Because of the fact that Bulgarian Bacillus can only be grown in a proper incubator and because of the fact that media used, which if contaminated will grow pathogenic bacteria abundantly, thereby making a dangerous instead of a beneficial culture, it would seem that the preparation of Bulgarian Bacillus cultures had best be left to the properly equipped biological laboratory. Bulgarian Cultured Milk, however, can be prepared very nicely in a drug store equipped with a fireless cooker, as the soft, smooth curd which results from the growth of Bulgarian Bacillus is very distinctive, as are the flavor and acidity. Bulgarian Cultured Milk can only be made of milk which has first been rendered sterile by boiling for a few minutes.

Even though he makes no attempt to grow the cultures, it is possible, however, for the pharmacist to make simple tests which will aid him in determining the value of the various cultures in which he is interested. The only absolute scientific tests of the cultures are the plating tests in which definite quantities are inoculated into suitable media, poured into petri dishes, and the number of typical colonies that develop, counted. Such a procedure can only be carried on by a trained bacteriologist.

Some men have attempted to judge the viability of these cultures by examinations for motility under the microscope, forgetful of the fact that the Bulgarian Bacillus is non-motile. Others have attempted to stain a smear of the culture and have also met with failure because there is not sufficient albuminous material in the media to properly fix the bacteria to the slide. If a few drops of the culture be mixed with a large drop of egg white or Mayer's Albumin Fixative and the two well mixed and smeared, if this smear be dried, fixed by heat, stained by Gram's method and examined under the high power of the microscope, a fairly good estimate may be made of the number of viable bacilli. All dead bacilli stain a Gram negative while those which are still viable are Gram positive. This interpretation will have to be modified in case the involution forms appear, as they generally stain as negative, even when living and capable of growth.

It is needless to say that the majority of the druggists to-day are making strong efforts to furnish their trade with potent biological products and are providing facilities for the storage of perishable articles at a reasonably low temperature; and it is the loyal coöperation of this class of pharmacists that makes possible the marketing of dependable cultures of Bulgarian Bacillus.

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ANALYSES OF MILK OF MAGNESIA.*

BY ROBERT WOOD TERRY.

Due to the wide variation of the declared content of magnesium hydroxide in the various standard brands of Milk of Magnesia, and the silence of other manufacturers as to the content, the writer became interested to know how many of these standard brands conformed to the U. S. P. IX or to the former standard, the N. F. III. It was with this object in view that these analyses were made.

Table A shows the percentage of Magnesium Hydroxide in the leading seven brands and five control samples—one prepared according to the U. S. P. IX, one according to the N. F. III, one according to Beringer's process¹ modified by

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.

¹ Geo. M. Beringer, *Proc. N. J. Ph. A.*, 1913, pp. 46-48.

the writer, and two prepared from magnesium oxide. It will be noted that these seven standard brands vary from 5.22 percent to 9.79 percent $\text{Mg}(\text{OH})_2 w/w$ or from 23.9 to 44.9 grains per fluidounce. The U. S. P. demands from 6.5 percent to 7.5 percent $\text{Mg}(\text{OH})_2 w/w$ or from 29.7 to 34.4 grains per fluidounce, while the former standard, the N. F. III, is 24 grains to the fluidounce or 5.23 percent w/w .

It is a deplorable fact that manufacturers will market a product that is as easily assayed as milk of magnesia with absolute disregard for official standard.

TABLE A.

No.	Source.	$\text{Mg}(\text{OH})_2 w/w$.	Carbonates.	Foreign alkalinity. ¹	Sp. gr. C 25 C. ²	Remarks.
1	Proprietary.....	5.71%	Ft. trace	6.4 mils N/10 V. S.	...	Not U. S. P. or N. F. ³
2	Pharm. house.....	8.53%	Ft. trace	6.4 mils N/10 V. S.	...	Not U. S. P. or N. F.
3	Pharm. house.....	7.37%	Ft. trace	8.0 mils N/10 V. S.	...	U. S. P. except foreign alkalinity ⁴
4	Pharm. house.....	8.42%	Ft. trace	11.2 mils N/10 V. S.	...	Not U. S. P. or N. F. ⁵
5	Pharm. house.....	5.22%	Ft. trace	7.2 mils N/10 V. S.	...	Not U. S. P. Exactly N. F. ⁶
6	Drug syndicate...	6.73%	Ft. trace	9.6 mils N/10 V. S.	...	U. S. P. except foreign alkalinity
7	Pharm. house.....	9.79%	Ft. trace	6.4 mils N/10 V. S.	...	Not U. S. P. or N. F.
8	N. F. III.....	3.22%	Ft. trace	3.2 mils N/10 V. S. ⁷	1.010	Not N. F. ⁸
9	U. S. P. IX.....	3.52%	Ft. trace	6.4 mils N/10 V. S. ⁹	1.011	Not U. S. P.
10	Prep. MgO	6.24%	Present	6.4 mils N/10 V. S.	...	Not U. S. P. or N. F.
11	Comm. MgO	4.83%	Trace	4.8 mils N/10 V. S.	...	Not U. S. P. or N. F.
12	Mod. Beringer....	4.42%	None	7.3 mils N/10 V. S.	...	Slightly below N. F.

¹ Amount contained in 100 mils of magma. ⁶ Claimed 24 grains to fluidounce, found 23.96.

² Approximate.

⁷ N. F. contains excess of sulphate.

³ Claimed 24 grains to fluidounce, found 26.2. ⁸ Should be 24 grains, assayed 14.78.

⁴ Claimed 32 grains to fluidounce, found 33.8. ⁹ Washings corresponded to U. S. P. acid test.

⁵ Claimed 40 grains to fluidounce, found 38.6.

There are only two of the seven that conform to the U. S. P. IX, and two that conform to the N. F. III. Although several of them declare a different standard on their labels, it should be in bold type and not in the reading matter. The writer does not approve of the U. S. P. IX standard for the preparation, yet the manufacturers should consider the standard for the sake of uniformity and justice to the public, if for nothing else. Milk of magnesia is widely used to delay the coagulation of cows' milk in the infant's stomach and a slight variation of alkalinity here will retard or accelerate the coagulation far more than is proportional to the concentration of the alkali. So it will be seen that this variation is really of more importance than is at first apparent.

In assaying milk of magnesia, phenolphthalein is the proper indicator, rather than methyl-orange as is directed by the U. S. P. IX. If the methyl-orange is added to the magma before acidification, the methyl-orange acts like certain organic coloring materials in the presence of certain metallic hydroxides and forms a magnesium lake. This substance has no property of an indicator and upon acidification the indicator property is not restored. If the methyl-orange is added after acidification of the magma, the influx of the alkaline volumetric solution causes momentarily a precipitate of magnesium hydroxide which partially destroys the methyl-orange, and under these conditions, the end point is anything but definite.

None of the samples contained excessive carbonates as shown by the U. S. P. IX test except No. 10, which was made from a magnesium oxide which is marketed especially for preparing milk of magnesia.

In testing for foreign alkalinity, the writer did not use the official process, namely—that of evaporation of the supernatant liquid from a dilute magma to constant weight and titration of the residue. The writer's method is to mix 25 mls of magma with 175 mls of distilled water and titrate the supernatant liquid, using phenolphthalein as indicator. This is quite a saving of time and at no expense of accuracy. The figures for foreign alkalinity in Table A are the number of mls of $\frac{N}{10}$ acid required to neutralize the foreign alkalinity of 100 mls of the magma. The U. S. P. limits this to 4 mls, whereas the above preparations in every case except one contained more than this (even up as high as 11.2 mls). Sample No. 9 was prepared strictly according to the U. S. P. IX and the washings corresponded to the dilute sulphuric acid drop test, yet the product exhibits a foreign alkalinity of 6.4 mls per 100 mls of magma.

In the U. S. P. IX process, the magnesium hydroxide is produced by the interaction of sodium hydroxide and magnesium carbonate, sodium carbonate being the only by-product of the reaction, it is far easier to titrate sodium carbonate than to evaporate the liquid to constant weight and then titrate. It requires only a few seconds to ignite a part of the magma in a porcelain crucible to determine if any starch, sugar, gum or mucilaginous substances are present. Their presence would be indicated by carbonization. I presume this is the object of evaporating to constant weight in the official foreign alkalinity test.

The specific gravity of this U. S. P. IX magma is 1.011 and the N. F. III magma is 1.010 at 25° C.

It is agreeable to note that two of the marketed samples claimed 24 grains to the fluidounce and these assayed 26.2 and 23.96 grains, respectively; one claimed 32 grains and assayed 33.8 grains; one claimed 40 grains and assayed 38.6 grains; one claimed 46 grains and assayed 44.9 grains. It is significant to note that samples prepared according to the U. S. P. IX and the N. F. III fell way below the desired strength. The U. S. P. IX sample contained only 3.52 percent $Mg(OH)_2$ while it should be between 6.5 percent and 7.5 percent. The N. F. III sample contained only 3.22 percent while it should be 5.23 percent. Sample No. 10, that prepared by a special magnesium oxide for this purpose, assayed 6.24 percent, while it should be about 8.5 percent, that is, according to the manufacturer's statement. Sample No. 11, prepared from a commercial magnesium oxide, assayed 4.83 instead of being 7 percent as desired. Sample No. 12, that prepared by Beringer's process but washed by the writer's procedure, assayed 4.42 percent instead of being 5.23 percent as desired. Charles H. LaWall gives results of assays of milk of magnesia with practically identical results. The variation in the content of magnesium hydroxide was over 300 percent.²

In the preparation of sample No. 12, the magma is precipitated by pouring the hot magnesium sulphate solution into the hot sodium hydroxide solution, maintaining a degree of alkalinity throughout the precipitation that ensures complete precipitation of the magnesium, which does not occur in the N. F. III

² Chas. H. La Wall, JOURNAL A. PH. A., 1914, pp. 1002-1003.

process where the procedure is reverse, in the cold.³ Beringer's process contains an excess of about 10 percent alkali, which is proper. The writer modified Beringer's process only in washing the magma, endeavoring to formulate an extemporaneous process. As the precipitation is conducted at boiling temperature, the magma filters rapidly, so that as soon as precipitation is complete, the whole may be poured at once on a filter paper and allowed to drain; the magma is then transferred back to the vessel and distilled water added equal to double the volume of desired magma; the mixture is then boiled and refiltered, this being repeated again twice; then the washings will conform to the U. S. P. IX dilute sulphuric acid drop test. It is true that considerable magnesium hydroxide is lost due to the several transferrings necessary, but what was desired here, was to see how rapidly a milk of magnesia could be prepared, which was accomplished in three hours. Washing in this manner, although probably not feasible on a large scale, would be of considerable advantage to the pharmacist because of the rapidity of production and the use of a minimum amount of distilled water, which is one of the reasons that few retailers make their own milk of magnesia. It is quite possible that milk of magnesia could be washed by dialysis on a commercial scale, and if so, it would have several advantages over the decantation method.

The quantitative relations of the sodium hydroxide and magnesium sulphate in the N. F. III formula are in error, as it requires 81.5 grammes of absolute sodium hydroxide to precipitate 250.0 grammes of magnesium sulphate. The N. F. process calls for only 81.0 grammes of U. S. P. sodium hydroxide, which is only 90 percent absolute sodium hydroxide, so that there is a deficiency of alkalinity amounting to a little over 10 percent making it impossible to prepare a magma from the N. F. formula containing over 4.7 percent $\text{Mg}(\text{OH})_2$. There is always considerable magma lost mechanically in siphoning off the supernatant liquid and in transferring the magma from the strainer. But, peculiarly, if all the 250.0 grammes of magnesium sulphate were precipitated, it would produce theoretically a magma containing 5.9 percent magnesium hydroxide less than mechanically lost.

The preparation of milk of magnesia by hydrating the oxide has proven a failure in the hands of the writer and also several manufacturing pharmacists. It is almost impossible by this method to secure complete hydration, some of the oxide remaining unhydrated and suspended throughout the mixture. A macroscopic examination of the mixture will show its semi-granular nature. Milk of magnesia prepared by this process seems to cake on standing.

In the U. S. P. IX process, there is an alkaline carbonate medium for the precipitation, yet the magma seems to be composed of both oxide and hydroxide which does not give the proper viscosity to the product and, furthermore, it requires eight to ten washings to remove the alkalinity. If the hydration of the magnesium carbonate is intended to be performed by the sodium hydroxide only, and not by absorption of water in the reaction, which is probably the case, then the U. S. P. formula would require for the 125.0 grammes of magnesium carbonate, based on the following reaction, 82.37 grammes of absolute sodium hydroxide to ensure complete hydration of the carbonate:

³ Sam. T. Hensel, JOURNAL A. PH. A., 1914, pp. 1118-1120.

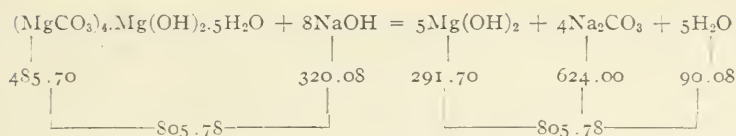


TABLE B.

No.	Sulphates.	Chlorides.	Heavy metals. ¹	Arsenic trioxide. ²	Talcum.	Ignition.	Hot and cold permanganate.	
							Acid.	Alkaline.
1	Small amount...	None	Minute trace	Faint trace	None	No carbonization	No reaction	No reaction
2	None.....	None	Present	Faint trace	None	No carbonization	No reaction	No reaction
3	Trace.....	None	Minute trace	Faint trace	None	No carbonization	No reaction	No reaction
4	Trace.....	None	Present	Faint trace	Present	No carbonization	No reaction	No reaction
5	Faint trace....	None	Present	None	None	No carbonization	No reaction	No reaction
6	None.....	None	Trace	None	None	No carbonization	No reaction	No reaction
7	None.....	None	Minute trace	Faint trace	None	No carbonization	No reaction	No reaction
8	Present ³	None	None	None	None	No carbonization	No reaction	No reaction
9	None.....	None	Minute trace	None	None	No carbonization	No reaction	No reaction
10	None.....	None	Minute trace	Faint trace	None	No carbonization	No reaction	No reaction
11	None.....	None	Minute trace	Faint trace	None	No carbonization	No reaction	No reaction
12	Present ⁴	None	Trace	None	None	No carbonization	No reaction	No reaction

¹ U. S. P. IX test.² U. S. P. IX test.³ BaCl₂ test; precipitates slightly.⁴ Does not precipitate. BaSO₄ remains suspended.

The U. S. P. formula calls for 80 grammes of U. S. P. sodium hydroxide, the equivalent of 72 grammes of absolute sodium hydroxide, a deficiency of 10.37 grammes of absolute sodium hydroxide. The U. S. P. IX formula should have at least 91.52 grammes of U. S. P. sodium hydroxide, the equivalent of 82.37 grammes of absolute sodium hydroxide, to ensure complete hydration, and to have an excess of sodium hydroxide in the formula 100.0 grammes is about the proper amount to use. Then the formula will theoretically produce a magma containing 7.507 percent of magnesium hydroxide. "The official formula, known as McNeary's formula, has proven somewhat unsatisfactory in our hands, etc."⁴

The writer believes the production of milk of magnesia by the interaction of magnesium sulphate and sodium hydroxide is far superior to the U. S. P. IX process. The degree of gelatinization of the hydroxide may be controlled by the dilution of the solutions that are to be mixed and the temperature of the mixing. The magnesium hydroxide should be as gelatinous as possible and still maintain fluidity; in this condition we have pharmaceutical elegance combined with maximum therapeutic activity. Due to the minute state of subdivision of the magma, it exhibits maximum activity and does not separate so readily on standing.

Table B gives results of tests for sulphates, chlorides, heavy metals, arsenic, talcum, and the application of ignition and acid and alkaline permanganate tests. The samples were tested for sulphates to determine which were prepared by the sulphate method and to determine the extent to which the magmas were washed. The samples were tested for chlorides to determine if distilled water was used in washing the magma. Three of the magmas marketed by pharmaceutical houses contained more heavy metals than allowable by the U. S. P. IX tests. None of the preparations contained as much as the allowable limit of arsenic, 1-100,000, based on 1-100,000 of the magnesium hydroxide content of the magmas. Talcum was present in one marketed product and how it could be present, and why, is

⁴ Nat. Stand. Disp., 1916, p. 983.

not understandable. None of the products were carbonized on ignition, thus probably showing the absence of sugar, starch, gum, etc. None of the preparations reacted with acid or alkaline permanganate, thus showing the absence of glycerin, sugar, etc. Sample No. 1 gave no ether soluble extractive matter, thus showing the absence of flavoring oils.

Table C shows results of a microscopic examination of the magmas which readily shows the difference of the physical state of the magnesium hydroxide produced by the different processes. Several of the samples contained small acicular crystals resembling sodium sulphate but what the crystals were was not determined.

TABLE C.

MICROSCOPIC EXAMINATION OF MILK OF MAGNESIA.

No.	Result.
1	Particles in minute state. No crystals.
2	Magma fairly finely divided. No crystals.
3	Magma finely divided, same as No. 1, occasional acicular crystals.
4	Resembles gelatinized starch. Acicular crystals present.
5	Exceedingly fine magma. No crystals.
6	Magma very fine, occasional small crystals.
7	Resembles small gelatinized starch grains. No crystals.
8	Particles in minute state. No crystals.
9	Resembles gelatinized starch grains. No crystals.
10	Resembles gelatinized, large, starch grains. No crystals.
11	No examination made.
12	No examination made.

From the above data, information is gleaned that may be useful to the Revision Committee of the U. S. P. X, as follows:

1. That milk of magnesia be prepared by interaction of magnesium sulphate and sodium hydroxide and that the sodium hydroxide be in excess of the theoretical amount to at least 10 percent.
2. That tests be conducted to determine the feasibility of washing the magma by the hot process as above suggested, or by dialysis.
3. That the purity rubric read, magnesia magma yields not less than 5.0 percent nor more than 5.5 percent of $\text{Mg}(\text{OH})_2$ (58.34).
4. That the limit of permissible foreign alkalinity be raised to the equivalent of 8.0 mls of $\frac{N}{10}$ V. S. to 100 mls of magma.
5. That the foreign alkalinity be determined by titration of the supernatant liquid from a diluted magma rather than by evaporation.
6. That a portion of the magma be ignited in a porcelain crucible to determine the presence or absence of carbonizable organic matter.
7. That a test be included to limit the presence of heavy metals.
8. That a test be included to limit the presence of arsenic.
9. That the process be made so as to form a magma containing as high as 6 percent $\text{Mg}(\text{OH})_2$ if possible and that it be then assayed and diluted to meet the purity rubric.⁵
10. That the assay process be identical with that of the U. S. P. IX except phenolphthalein replace methyl-orange as the indicator.

COLUMBUS, OHIO,
AUGUST 10, 1918.

⁵ This procedure will cause the magma to separate, but inasmuch as it appears impossible with our present processes to produce a magma of the desired strength that will not separate, it seems to the writer that the logical and proper thing is to sacrifice pharmaceutical elegance for uniformity.

HISTORY OF THE ARSENICAL SOLUTIONS.*

ABSTRACT.

BY H. A. LANGENHAN.

The use of arsenic in medicine begins at an early period, although it was restricted to external applications only. At the end of the eighteenth and beginning of the nineteenth century its use for internal administration came into effect. Hence in 1771 we find that a Thomas Wilson placed on the market in London a secret preparation commonly known as *Tasteless Ague and Fever Drops* which, according to the specifications of his patent, contained arsenic trioxide. It was this preparation which Hughes, the apothecary at the infirmary of Stafford, analyzed and attempted to duplicate, at the request of Dr. Fowler, also of the infirmary. In 1786 Dr. Fowler published a detailed report of the effects and results obtained from the use of his solution of arsenic, to which he applied the title *Liquor Mineralis*. This solution found its way into the London Pharmacopoeia of 1809 and into the U. S. P. of 1820. From these it rapidly found its way into most of the pharmacopoeias and at the present time can be found in over twenty of the standards of various countries.

As a natural sequence, other preparations of arsenic soon came into medical use. Dr. Withering, a co-worker of Dr. Fowler's, used a solution of arsenic trioxide in water. This he found was prone to decomposition and adopted the use of Fowler's alkaline solution. A short time after the introduction of Fowler's solution, Dr. De Valangin, a Swiss physician practicing in London, introduced a solution under the name of *Solution of Solvent Mineral*. This consisted of arsenic trioxide, obtained in a round-about way, dissolved in water containing some hydrochloric acid. This solution first appeared in the London Pharmacopoeia of 1851 and in the U. S. P. of 1870. In the latter, it was known as solution of arsenious acid.

Because of the use of arsenic, iodine and mercury in the treatment of "psoriasis, lepra and lupus," Dr. Donovan, of Dublin, prepared a solution containing these three elements in combination. This solution appeared in the Dublin Pharmacopoeia of 1851, as originally prepared by Donovan, and in the U. S. P. of 1850. In the latter text the modified formula suggested by Soubeiran was adopted (*J. Chim. Pharm.*, 27, 774 1841). Although some American treatises give Procter the credit for the suggestion of the modified formula which the latter published in 1847, (*Am. J. Pharm.*, 19, 93) the two are identical in substance, although Procter makes no mention of Soubeiran's report.

At the present time Donovan's Solution, is found in the United States Pharmacopoeia and the British Pharmacopoeia. Other pharmacopoeias apparently have not adopted it.

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* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.

A PROPER COLLEGE OF PHARMACY COURSE THAT IS OF INTEREST
TO THE COMMERCIAL DRUGGIST.*

BY EDWARD SPEASE.

It is perhaps presumptuous for me to assume that I can offer a course in Pharmacy that is completely formed and well balanced enough to deserve the term "proper" as outlined in the subject given to me, and it might be better to rewrite the subject thus—Some Ideas on Pharmaceutical Education that may be of Interest to the Commercial Druggist.

The above subject would further imply that besides the Commercial Druggist, there is some other kind. I shall not attempt to differentiate between the two.

While it is true that many noble men and women have given up their entire lives for the sake of ideals, I do feel that in the case of the retail drug merchant he should be so equipped that he can succeed financially. I do not believe that he is called upon to conduct his business at a loss, and the public receives better service if he be contented with his choice of life work.

In no other profession or business is the temptation greater to be dishonest, due to the lack of knowledge of drugs by the laity and, from early times, through more or less of superstition thrown about drugs and cures by charlatans, all business. To-day needs a knowledge of methods, and training is just as essential for the small merchant as for the large one.

Upon the editorial page of the July 1918 issue of the *Bulletin of Pharmacy* appears an editorial under the caption "The Survival of the Fittest." There are some very excellent thoughts inscribed, as well as a few that I can scarcely subscribe to. The worthy editor has limited his article to the "training of young men for the actual conducting of drug stores." I shall view my subject from that angle.

The major portion of the editorial is a plea for the teaching of biological pharmacy, and, that less time be devoted to the manufacture of galenicals and the microscopic study of crude drugs. In regard to the study of biological pharmacy, I believe, the writer's point is well taken. In my own school we are not giving this subject enough attention, and this is probably true of some other schools.

The problems that confront educators on this particular subject are largely due to their appreciation that a thorough training in both elementary bacteriology and chemistry should precede biologic pharmacy. This is impossible in the short time now allotted to pharmacy courses. It is true that a student, thoroughly grounded in salesmanship, can handle and sell biologics to the full satisfaction of the manufacturer if he reads their literature and handles them solely as merchandise. But here, I wonder if the true merchant should not know something of the quality of his merchandise? This same thought holds true for everything the druggist sells.

Should not the pharmacy student be trained in the method of manufacturing galenicals so that he can intelligently judge of those he buys, whether he should buy or make them and perhaps become a judge of the house from whom he buys?

* Read before the Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.

A slight touch of microscopy might not be amiss in order that he may know how the manufacturer should judge his crude drugs, if for no other reason. I believe in the technical or scientific studies for the pharmacy student, if for no other reason than that he may talk intelligently to the physicians and customers. Is not the training he now receives intended solely that he may properly carry out the basic principles of salesmanship?

I also think that without commercial pharmacy the student is utterly unfit to be loosed upon the public. Let us teach him salesmanship, advertising, system, business methods, and the like, but let us not do so at the expense of his knowledge of the scientific side. Why can we not teach both? The professor who said that it is "universally conceded that there is none too much time" now for the teaching of pharmacy, stated a truth. Did it ever occur to you that there is a far greater number of things for the retail drug merchant to learn than for any other merchant?

The "chain" store hires its specialist for each line, or at least for similar lines, and especially for those lines that require specific knowledge for both buyer and salesman. Do you like to buy shoes of a merchant who does not know leather, or who is ignorant of the quality he carries? You may answer he carries standard brands, and the druggist should do the same. I ask, is the laity informed on standard pharmaceutical merchandise, and who should be the judge?

The physician to-day—or perhaps it would be more fair to say the physician teaching in the medical schools—says it is a mistake to teach the pharmacy student a knowledge of the therapeutic action of drugs, because he will counter-prescribe. Have any of you ever observed it to be the rule that mankind errs in ethics and honesty because of too much knowledge?

Every pharmacist knows that it is impossible to properly buy, preserve and compound drugs without some knowledge of their general therapeutic effect. The true fault with pharmacy to-day is lack of education. Our schools have sometimes made the graduate feel that he is completely educated, when he has only touched the "high spots." Our schools and our profession have not kept pace with the times.

Pharmacy is a broad subject, and we must view it so. Too many of us have single-track minds. Have our schools, our professors, our jobbers, our manufacturers, and, yes, our physicians, constantly recognized the fact that they best serve the public, and consequently themselves, by looking after the retail drug merchant? In my opinion they have not all done so. I do not want to be understood as antagonistic to the drug manufacturer, but I am trying to look at this subject from the broader viewpoint—that of the public.

Is the public best served by the manufacturer selling directly to the physician? I say no. The physician forgets his therapeutics, if he ever was taught any, and "dishes" out the genteel proprietary sold him by the manufacturer. The manufacturer also stocks up the druggist with them. These two stocks are duplicated, and the public suffers from old merchandise, from fitting the drug to the case, from a lack of intelligent prescribing; and the druggist suffers from loss of business, and the dead stock which remains on his hands.

The same condition may prevail in biologics; does it? Would it not be better to have the retail drug store as the depot for medical supplies, both drugs and biologics, and thus have one stock to furnish a number of physicians rather than

to have a stock in each physician's office? Would the public not have better service and fresher supplies according to this plan? As it is now, the manufacturer's salesman in a locality is the depot for the physicians' supplies.

This seems to me a mistaken policy for the manufacturer to pursue. Will it not eventually kill the business of the pharmacist, thus materially injuring the business of the manufacturer? Will the physician ever be trained so he can compound his own drugs, or should he rely entirely on those compounded by manufacturers? As stated before, this form of compounding will never be for each individual patient. Right here is where the public is not best served. In my opinion it is a short-sighted policy on the part of the manufacturer, as his desire to sell much merchandise to-day may kill his market for to-morrow.

The public will some day demand an accounting. Will the retail drug merchant go, and will his drug line revert to the doctor and his sundries and specialties to the department store? I rather doubt this sort of adjustment. The public is accustomed to go to the druggists for merchandise and drugs of quality. They prefer to buy remedies for minor ills directly from the druggists. Our schools must come to the front and save the retailer. How? By more education to help him cope with business conditions, and, the knowledge we can give him will help him to triumph over his difficulties.

To do this, we must elevate our standards. We must bring high-school graduates into pharmacy; we must kill schools maintained for financial profit and equipped merely to advise the sale of manufacturers' specialties. We must lengthen our courses. Two years is sufficient time for the scientific subject for the retail merchant. Two years more should be spent in salesmanship, advertising, accounting, investments, business law, insurance, business organization, and courses in economics, English, and even psychology. Why not courses that show the selling points of a toothbrush, of what it is made? The same of hand brushes, cigars, rubber goods, and the numerous other sundries. Let these last be the "high spot" courses; not the scientific ones. Let us teach honest merchandising, and not just the best way to "put over" on the customer a package of anything that persistent advertising has put on the shelf.

In this connection I should like to call to your attention the courses outlined in the catalogue of the School of Pharmacy of the University of Washington. I cannot agree that the colleges are "stubborn," but must insist that too much stress has been given by the propagandist that the school of pharmacy is passé. The school should also prepare students for analytical pharmacy, manufacturing, entrance into medicine, and for lives of scientific work; but with these things this paper is not concerned.

I urge that druggists now in the retail business should make it their concern to see that the pharmacy schools make better clerks and better future pharmacists. This can only be accomplished by a broader educational training, a longer period of preparation, and by combining the schools with the universities where the services of the proper teachers may be obtained.

I firmly believe in commercial pharmacy and likewise feel that education as well as training is essential to good merchandising.

CLEVELAND SCHOOL OF PHARMACY,
WESTERN RESERVE UNIVERSITY.

THE PRACTICAL PHARMACIST FROM A MANUFACTURER'S
VIEWPOINT.*

BY ROBERT C. WHITE.

Practical Pharmacy and Dispensing suggests chiefly practical pharmacy, as it would seem that practical pharmacy should include dispensing.

Having been away from all dispensing proper for fifteen years, the ordinary process of elimination leaves in the title the two words "practical pharmacy." The personal element involved in practical pharmacy, of course, brings us to the man himself, thus making our subject "The Practical Pharmacist." There may be many definitions for the word practical, but at the present time the writer prefers the definition as applied to a machine. If you asked any one engaged in manufacturing what a practical machine was, the reply would be, ninety-nine times out of one hundred, "one that worked," and yet a modification must be applied to this in that it must be one that works dependably, or in other words one that works all the time effectively. Many manufacturers load a machine down with many parts of nickel and brass, with unnecessary cams and gears, which all tends to make a bewildering array of trimmings. This, unquestionably, may momentarily attract the attention of the ignorant, and even admiration, but machines so constructed will not work day in and day out without trouble. But what a joy to a manufacturer is a machine that day in and day out never fails. How soon the rhythm grows into the makeup of the operator. How month after month its steadfast performance endears it to the owner, simple, unobtrusive, but efficient; daily performing all expected of it, and all summed up in the word dependable. Now of the pharmacist. What is a practical pharmacist? We all know what comprises the pharmacist, but what of the practical pharmacist? Like the fancy machine, we have all seen the fancy pharmacist. The silk-shirted man, with the goatee, the black-rimmed glasses secured with broad black ribbon, whose chief ambition in life is to have his neighbors call him "Doc," but whose ointment is gritty, whose shelves are dusty, whose dispensing sink is full of dirty utensils and roaches, whose cellar is a fire menace to the neighborhood, and who buys his lime water from the jobber. This man makes many motions, uses much energy, appears very wise, but bewails the fact that the doctor sends his patients to other druggists who appear mere plodders, finally gives up, claims the retail business has gone to the canines, and calls on the manufacturer for some kind of a position many of which he understands are obtainable, with short hours, large pay, and no work.

This explains just why the manufacturers find a good retail druggist looking for a position a rarity.

As a rule a practical man makes good anywhere, for practical after all spells success. Successful men in any calling are ordinary men whose development has not been arrested by cigarettes, hops, the cabaret, short skirts and idleness, and who realize that to be something they must do something.

This brings us to a more important part of this subject. Why do manufacturers receive applications chiefly from retail failures, or from men hunting for something easy? Do the greater number of the practical pharmacists, as

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.

graduated from our colleges, go into the retail business and, proving successful, remain there? And do only the shirkers and indifferent students seek positions with the manufacturers, on the basis that the manufacturing business provides short hours, easy work, and large pay? This is a matter which demands our attention whether we be engaged in the retail drug business, the manufacturing business, or in the teaching of pharmacy in colleges. In fifteen years' of experience in the manufacturing business the writer has been surprised to find how prevalent is the idea that the manufacturing business is full of ease and simplicity, and that the retail business is full of exhausting work and responsibility. This is an idea which must sooner or later be corrected in the colleges where men are trained, and later in the retail or manufacturing business where men become practical. In years gone by the retail druggist was accustomed to look askance at the manufacturer, because his place of business became large, and he created the impression of wealth. There was the age when the retailer preferred to make all the products which he was capable of compounding, and purchased only such products of the manufacturer as the manufacturer's advertising campaigns forced him to handle. The breach between these two great factors in practical pharmacy, it would seem, is now entirely healed, and it is apparent that these two great bodies of business men must view the question of help from the common standpoint of need. How often has the retail druggist disparagingly stated that a large number of bright young druggists are being absorbed by the manufacturing business, yet how often has the manufacturer bewailed the fact that so many bright college graduates possess the ambition to enter the retail drug business in order that they may be in business for themselves. So long as the retail druggist is largely dependent upon the manufacturer for a very large proportion of his merchandise, and so long as the manufacturer must needs be dependent upon the retail druggist for the disposing of his wares, it would appear that their interest, so far as labor is concerned, could be none other than mutual.

A man to be successful in either branch of the business must be practical. Too many of us let ourselves grow with the idea that the colleges should turn out finished and perfected men. This is not the case. The colleges, at best, can only turn out men sufficiently versed in the art of pharmacy to become practical. In conversation with manufacturers, college professors, and successful retailers the impression comes to the writer that there are two different phases to consider.

The student after graduating from college, and passing his State Board Examinations, may engage in business immediately, or more often may serve a certain length of time with a retail druggist in order to become practical in the retail business, to learn the buying, the art of handling customers, the keeping of accounts, etc., but, even so, he may in a very short while, if he has the ambition leading in that direction, become the independent possessor of a business of his own. This may involve tedious work, it may include long hours, and by some it is stated that very large fortunes are not often made in the retail business, consequently a man must, according to the dictates of his ambition, figure on the value of his independence as found in his own business. The manufacturing field, on the other hand, is by no means a rosy path to success. A man leaving college, and obtaining employment in a large manufacturing plant, finds a bewildering array of machinery, numerous people, and intricate methods through which to climb to success. He must shoulder many heavy responsibilities. The difference that exists between these

two fields is no more clearly exemplified than by the fact that very rarely does a successful retailer make a good manufacturer, and more rarely does a manufacturer ever become a successful retailer, allowing that the training in college has been the same. This brings us to the place where we must realize that the practical training of these two classes after college differs radically. To the manufacturer it would appear, at this stage, that the young pharmacist in college has been given a training which leans more to the retail business than to manufacturing, and rightly so, for fully eighty percent of the men graduating from college engage in the retail business. Thus the manufacturer is justified in his claim that he must begin where the college left off, and train the young pharmacist for the manufacturing game. Does this not then suggest to our colleges the need of some modification, whereby additional training could better fit men for manufacturing? When a college graduate enters a retail drug store, he is, or should be, of considerable use to the proprietor from the moment of his employment. This is not the case in the manufacturing business. The college graduate is lacking in many of the practical phases concerning the compounding of drugs on a large scale. Very brief mention is made in our text-books and colleges of the various large appliances and mechanical processes which are necessary for the turning out of goods in a large way. Therefore, for the sake of our young men, who must needs engage in the manufacturing work wherein only a few in a great number may go far in reputation and skill, would it not be wise to make a plea that our colleges of pharmacy give more time to subjects dealing with manufacturing, and thus develop what might be called "the practical all round pharmacist?" The day is not far distant and in fact is beginning to dawn, when all the reputable manufacturers of the country will not only be willing, but glad to reveal, to any one sincerely interested, their methods, and, in the majority of cases, even glad, to reveal the workings of their usually self-invented processes and machinery. There are a number of manufacturers of pharmaceutical machinery who would undoubtedly be glad to place in our colleges of pharmacy more or less permanent exhibits of their machinery, at least those of smaller dimensions, whose catalogues illustrate clearly the uses to which these machines might be put. Would this not prove also a very helpful factor to the retailer who shows his interest in manufacturing things, by giving up yearly a large amount of his already overtaxed time to listen to statements by salesmen and detail men of the various processes used by their respective houses in making goods in a large way?

The question of help for the retailer or the manufacturer is not therefore the vital question. The question is how our colleges can help develop the practical retail pharmacist and the practical manufacturing pharmacist to the end that they may go far in their calling, for it is only from the colleges of pharmacy that the manufacturer and retailer may draw. How many misfits are there in the retail drug business who would have proven great manufacturers if their inherent love of mechanics had not been dwarfed; how many unsuccessful men in the manufacturing drug business would have developed into great merchants had their lot been cast behind the counter where their talent for handling prospective customers could have been developed? How much more successful might be the colleges, and, how many years of a young's man's life spent in apprentice work in the manufacturing business might be saved if our colleges attempted to give more attention to the methods used in this large field of practical pharmacy.

But what of the practical man himself? The man himself must possess health, the body demands air, fuel and water in proper proportions; the ideal combination leads to physical health. The practical pharmacist must maintain his health. How many men treat a piece of mechanism with the utmost care and yet are regardless of self. How often we see druggists who give more attention to their balances and microscopes than they do to their own bodies, the most wonderful of all instruments. So much for the body. Next the mind of the practical man must possess inspiration, truth and purpose, yet these must be balanced. Too much inspiration without truth and purpose means lack of common sense. Too much truth and insufficient inspiration and purpose produce the theorist. And purpose without truth produces only the dreamer, and the practical pharmaceutical field is no place for the dreamer.

So the pharmacist after leaving college must develop his practical ability, and ability is practical when it comprehends the relative value of things and accomplishes that which is really worth while.

How much time and effort is wasted by many pharmacists—they weigh so accurately everything used in their business, but rush into plans and schemes involving capital and energy without attempting to place the cost on one side and the result on the other side of their mental balance. Before committing himself to any course of action the practical pharmacist should first reason—is it worth while?

This leads us next to experience, that most costly but most thorough of teachers—the more experienced a pharmacist becomes the better practical pharmacist he should be, and his association with other pharmacists should to a considerable extent give to him the benefits of their experience—hence the value of our many pharmaceutical associations.

And now in conclusion, the practical pharmacist must be a man of good pharmaceutical training, having physical health, in order that he may radiate good health and cheerfulness. His mind must be possessed of inspiration, truth and purpose—creating in him a belief in his business, a belief in himself, and a belief in his fellow men. He must have sufficient experience gained by himself, augmented by the experiences recorded in his association with others to the end that he understands the relative value of things, and accomplishes that which is really worth while. With fifty thousand such men in the United States pharmacy would not have to ask the recognition now sought in the Army, and the never-ending articles on the "Relationship of the Doctor and Druggist" would disappear from the columns of our pharmacy journals forever.

DISCUSSION.

JOHN A. HANDY: I would like to say a word of appreciation of this paper. For nine years I was instructor in one of the colleges of pharmacy. I had no business experience except what would naturally be obtained by working in a drug store, and was suddenly transferred to a large factory where I had to take over the duties of handling large numbers of men and women and boys and girls. Instead of making preparations in a small way we manufactured in large quantities. I can appreciate every word that the author has said regarding the opportunities for good live, healthy, well-balanced students of pharmacy in the practical pharmacy fields. I am looking now for such a balanced man to come into our factory and work. Some want to come in because of the shorter hours and larger pay but most of them have been failures in the retail business. This paper is an inspiration.

A UTILIZATION WHICH CONSERVES.*

BY J. C. PEACOCK.

The explanation of this paradoxical title is the utilization of stock on hand in order to conserve capital.

The specific application of the plan is to those drugs which come under the Harrison Act, especially the tablet, pill and such other forms as are possible of use under certain circumstances.

The quantity of these drugs, which is dispensed by the average pharmacist is not large, at most. But they represent invested money which, being idle, is consuming the profit that some other item yields. It is very probable that most pharmacists, who anticipated the wants on physicians' prescriptions before the days of this law, found, when they made their first inventory under it, an accumulation of various tablets, pills, elixirs, syrups, etc., of many strengths, and, perhaps; of several makes.

It is also quite as probable that, with each succeeding inventory, they have been impressed with the extent to which this stock has remained on hand.

And, surely, after one or two such presentations of this fact, the pharmacist must realize that this portion of his capital is seriously inactive.

The tablet forms of cocaine, morphine, codeine and heroine, as alkaloids and salts, are perhaps the greater portion of such stock. There are tablet triturates and hypodermic tablets of all, and in addition to these, pills, elixirs, syrups and some other forms of the three opiates.

The pharmacist who would like to get rid of these can do so by constant attention to the calls for such drugs on prescriptions, for there are many opportunities wherein a tablet can be used as well as the powder, by merely crushing it. Those who, prior to the law, had been accustomed to using tablets of such drugs, whether the dispensing tablets of some manufacturers or the common triturate, instead of weighing the drug from the stock bottle, must have found this a very natural process by which to reduce their amounts of the uncalled for items. They, no doubt, have long since lessened their stock of such drug forms to what little is really needed since the law went into force.

Compactness of the stock of each article as to strength helps very much. For instance, portions of tubes of hypodermic tablets of the same strength should be put into as few full tubes as will carry them, to prevent reordering when there is enough at hand. This remark applies equally to other tablets and other forms of the substances.

Though it requires time to utilize large stocks by such methods, they will eventually be consumed, and, because these goods need not be restocked, that much capital conserved. To that end these materials must be kept well within memory, but to keep them so preëminent in our thoughts is a task indeed for anyone, since, in the rush of work, we are apt to be influenced more by vision than by memory and use that to which habit leads us. It will therefore be found better to take a physical means of facility, than to tax the memory.

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.

A very simple reminder, which has been found thoroughly practicable, is to tie the bottles of the tablets, or other packages, to the container of the drug itself, so that the hand will not fail to find the article to be used.

If it is not advisable to mix lots, as previously suggested, tie all of the packages of the same strength to the container and always use the smaller lot first.

Not every prescription will permit of such use, and, though many do, none but appropriate uses are in mind; for deceit cannot qualify as conservation.

As an illustration of a proper use: An open package of a considerable quantity of one-eighth grain codeine sulphate triturates are to be reduced to near requirements. The bottle is accordingly tied to the codeine sulphate bottle, and, when the prescription comes in, calling for four grains of codeine sulphate in three ounces of Brown Mixture thirty-two of these tablets containing four grains of codeine sulphate (and some sugar or sugar of milk) are used. Following the utilization of the one-eighth grain tablets, others, such as one-sixth, one-quarter and one-half are used in the same manner, perhaps in succession, or, with the visible reminder to prompt the memory, these strengths may be thought of and used in preference, according to circumstances.

Thus, lot after lot of these needless items are reduced or entirely consumed and proper record made of the number and strength of the tablets so used along with any other data needed to properly check up the inventory.

This example of course extends to other tablets as well as to those of codeine sulphate.

Pills may likewise be used if reducible to powder. Gelatin coated pills are better suited for use in capsules since the material of the capsule itself, the final integument, is also gelatin.

The utilization of some of the other forms of the narcotics, which may be used in similar ways, is a matter for thought in each individual instance.

If kept in mind by one means or another, there will be found an occasional opportunity to utilize these substances, but the plan must pass the censorship of conscientious consideration.

IS RESEARCH WORK ALONG THE LINES SUGGESTED BY THE LAST REVISION OF THE PHARMACOPOEIA POSSIBLE OR PRACTI- CAL IN SCHOOLS OF PHARMACY?*

BY CHARLES S. CHASE, M.D.

The foregoing interrogatory is pertinent and timely, it seems to the writer of this paper. Pertinent for either of two reasons, and practical because the experience of the biological laboratories connected with the large drug manufacturing houses of our own and foreign countries has fully proven it to be so.

As to the first query, its pertinency. The fact that for more than a score of years wholesale manufacturers of drugs have found pharmacodynamics necessary in assaying all glucoside-containing drugs, and many others, discloses a field

* Read before Joint Session: Section on Legislation, A. Ph. A., American Conference of Pharmaceutical Faculties and National Association of Boards of Pharmacy, Chicago meeting, 1918.

manifestly waiting for research pharmacists to visit and explore. A second reason touching its pertinency may be stated as the anxiety all practitioners of medicine, especially internists, always manifest with reference to the probable effects of the drugs they use therapeutically. The evidence even of percentage strength shown by chemically assayed drugs carries with it many times nothing further. It offers no suggestion to a practitioner that the presence of atropine in belladonna, for instance, in varying quantities may or may not produce certain physiological changes in the organism. This point is all-important to the practitioner, and should be, therefore, to the manufacturing or dispensing pharmacists who desire to efficiently serve him. What it might mean to those most vitally interested, the patients, becomes a matter of conjecture, not of certainty.

The graduate pharmacist, therefore, of the present day who desires to serve in the higher ranks of his profession should feel a strong impulsion toward post-graduate work. His work in such direction, further, should be elected with special reference to a well-defined course in pharmacodynamics. Such a course a graduate student in the College of Pharmacy of the University of Iowa elected at the beginning of the session of 1917-18. She chose as her minor what I will name as pharmaceutical pharmacology, selecting as her particular theme the corroboration of the U. S. P., as to the directed bio-assay of Cannabis. The methods followed were those laid down in the text, with two changes. One was with reference to a control, or comparison dose, of a known standard preparation of the drug; the other was in the use of but one animal, a dog. The animal was selected, however, with much care, having in mind constantly the desirable qualities of good nature, a quiet disposition, good health, and absence of timidity.

The second step in the experimental work was obtaining a preparation of the drug to be standardized of as great purity as could be obtained. This was done by seeking it from a manufacturer of acknowledged skill and care. A fluid-extract of the drug whose strength was to be ascertained was next prepared. A dose of this was selected arbitrarily, being 0.03 mil per Kg. wt. of the animal used. The same dose of the assumed standard, it should be observed, was used in the control experiment. The drug was well diluted with water and given the animal by means of a stomach tube. The end reaction in both the control and the tested drug was manifest incoördination, shown by lack of ability to longer support its head apparently, a drooping of same being present, and a spreading widely of the hind legs. Also a "lack of interest" in what was happening about him was plainly observable, from a lively, very much interested animal he became an apathetic, uninterested and very indifferent one.

The symptomatology of the animal as to nervous conditions, the rate and character of the heart and respiration, the stomach (nausea, etc.), bowels, urinary organs, etc., etc., was closely observed and carefully recorded. The same routine was followed after three days, using the same animal and the same dosage of the same preparation. This was repeated for six consecutive periods each three days apart, after which a summation of the results was made and tabulated. The specimen under examination was shown by this physiological titration to be much inferior to the control, and a dose of about 0.045 mil was found to be needed to produce the symptoms shown after using the control. It should leave the laboratory, therefore, or the hands of a dispenser so marked.

A criticism might here be offered by an investigator with reference to having used but one animal in the experimentation, namely, that one in so doing would not have an opportunity to institute comparisons between several animals. To such objection it could be replied that a single animal used at stated intervals would be much less likely to cloud the results than would several with marked variations as to habits, power of resistance, or degrees of susceptibility, temperament, etc. This point, indeed, is well made in an elaborate criticism of the process by P. S. Pittenger, Ph.C., presented before the Scientific Section of the American Pharmaceutical Association, at its session at Indianapolis in 1917. (Biological Assay Method of the U. S. P., IX Revision. See JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, Vol. VI., No. 10. October, 1917.)

It may be observed, further, that it was required that the research should trace the complete history of Cannabis from the date of its appearance as a drug, and especially as an official drug, with its varying actions as noted by different observers; also that any hints as to its physiological action in the earlier days should be carefully noted and compiled. It is of interest to recall a statement found in the "Pharmacopoeia Londonensis, or the New London Dispensatory, 1682." It observes, speaking of its action, "That it cures the Cough and Jaundice, but fills the Head with Vapours." T. Lauder Brunton, three hundred years later, makes practically the same observation in reporting its action. The drug has therefore an ancient but not so honorable a history. It was found on the whole that the specimen under investigation maintained its reputation for effecting the results declared for so many centuries it would produce. It is known, of course, to this body; it is little used however by the medical profession. Such use in practice, as it has, is restricted almost exclusively to the profession of veterinary medicine.

It may not be improper, before closing, to remark that the prosecution of the research herein outlined was of such interest to the student who conducted it that she has requested the privilege of supplementing it during the approaching session of 1918-19. She asks for the opportunity to carry forward the recommendations of the Pharmacopoeia with reference to the other drugs named as worthy of verification by this process. Especially might it be worth while to attempt to standardize ergot, though neither mentioned nor recommended by the Pharmacopoeia. The usual process of discoloration of the comb and wattles of the cockeral as recommended by Worth Hale and others, seems to be accepted as a fairly good and accurate one, but it could disclose a possible Dale's paradox which might be disastrous, in an unfortunate combination of ergot and epinephrin for instance.

On the whole, therefore, it seems to the writer that it is well worth while for students of pharmacy to seek opportunities wherever and whenever they offer themselves to engage in original research work, if possible. Also it would amply repay them to be able to corroborate the percentage strength given on labels of original containers under certain conditions. Finally, the fields of opportunity along the lines suggested in this paper are full of such possibilities as would amply repay for one such services rendered.

THE DISTRICT OF COLUMBIA ADVERTISING LAW, ITS ENACTMENT,
ENFORCEMENT AND SOME RESULTS.*
WASHINGTON PLAN.

BY L. F. KEBLER.

The District of Columbia, like many other communities, has suffered from and is still afflicted with various forms of unfair advertising. The reader often discovers that he is victimized but usually find it out too late to act, or does not feel like making complaint because one seldom wants to admit that he has been imposed upon. The best class of merchants have for years realized the unfairness, both to business and the public generally, of all desceptive advertising, but found themselves handicapped to effect relief. The evil seemed to grow. The consumer became restless. Our merchants in self defense, found themselves compelled to use their influence against the growing evil.

The matter was taken up by the Retail Merchants Association. This organization for a time endeavored to carry out the reform through the efforts of its own membership. It was soon found that little progress was being made. In the latter part of 1915, a Vigilance Committee was organized consisting of a representative of the various civic bodies of the District and certain citizens, especially interested in honest advertising, together with five members of the association. The members of the Vigilance Committee serve gratuitously. The purpose of the committee is to study local advertising, receive and investigate criticisms, false advertising and unfair dealings. The committee early in its work decided to use moral suasion, as largely as possible, to bring about the results desired. All the work and experience gravitated toward the enactment of a law, which could be used to control the situation. At the instance of the Retail Merchants Association a bill was drafted with this end in view and submitted to the Chairman of the District committee, the Hon. Ben Johnson. Congressman Johnson did not consider the draft adequate. He therefore redrafted the bill, introduced and fathered it until it became a law. The need of a law to cover existing conditions was apparent to any one who gave the subject consideration. It did not take Congress long to see the necessity judging from the short time elapsing between the time of introducing the bill and its enactment into law, four months.

The law is entitled "An Act to prevent Fraudulent Advertising in the District of Columbia." The bill became a law May 29, 1916, and the two important sections 1 and 3, read as follows:

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be unlawful in the District of Columbia for any person, firm, association, corporation, or advertising agency, either directly or indirectly, to display or exhibit to the public in any manner whatever, whether by handbill, placard, poster, picture, film, or otherwise; or to insert or cause to be inserted in any newspaper, magazine, or other publication printed in the District of Columbia; or to issue, exhibit, or in any way distribute or disseminate to the public; or to deliver exhibit, mail or send to any person, firm, association or corporation any false, untrue, or misleading statement, representation or advertisement with intent to sell, barter, or exchange any goods, wares, or merchandise or anything of value or to deceive, mislead or induce any person, firm, association, or corporation to purchase, discount, or in any way invest in or accept as collateral security any bonds, bill, share of stock

* Read before Section on Education and Legislation, A. Ph. A., Chicago meeting, 1918.

note, warehouse receipt, or any security; or with the purpose to deceive, mislead, or induce any person, firm, association or corporation to purchase, make any loan upon or invest in any property of any kind; or use any of the aforesaid methods with the intent and purpose to deceive, mislead or induce any other person, firm, or corporation for a valuable consideration to advertising such services.

That any person, firm, or association violating any of the provisions of this Act shall, upon conviction thereof, be punished by a fine of not more than \$500 or by imprisonment of not more than sixty days, or by both fine and imprisonment, in the discretion of the court. A corporation convicted of an offense under the provisions of this act shall be fined not more than \$500, and its president or such other officials as may be responsible for the conduct and management thereof shall be imprisoned not more than sixty days, in the discretion of the court."

It will be noted that this is a rather inclusive law. The "knowing" element does not find a place. It covers every form of advertising, whether by newspaper, magazine, poster, placard, exhibit, circular, or otherwise. The Vigilance Committee adjusted numerous complaints of unfair advertising appearing in the windows, newspapers, etc., brought to its attention, even before the law became effective. In some instances it clearly developed that the management was not aware of the nature and character of the advertising being carried and willingly modified the advertising to comply with the facts.

The first case taken into court under the law was based upon advertisements appearing in the nature of placards, signs, etc., placed in the windows, and throughout the store. It covered men's clothing and supplies. Certain goods were advertised as being sold at a reduction, when as a matter of fact they were found to be of such a grade and character that the actual prices charged were more than they were regularly sold for. Standard brands of collars were included in the sale but if a prospective buyer sought to purchase them his size was no longer available and probably never was. The salesman would then endeavor to make a sale of another brand of goods. Pure substitution. The defendant was found guilty by jury trial, fined \$300 and given a jail sentence of 60 days. The latter however was suspended by the court.

The second was different in character and consisted in advertising and selling at reduced prices the high-grade clothing of a merchant of standing and integrity. Concerning such a transaction no exception could of course be taken, but mingled with these goods were articles of low grade and character, not a part of the quality merchant's wares. As the stock diminished, constant supplies of low grade material were brought in to be sold as goods of the best character; sold at prices considerably in excess of those generally charged for this grade of goods at regular sales. The defendant's in this case resided outside of the District of Columbia and it was therefore necessary to serve subpoena on them at such time as they would be present in the District. The opportunities came. The parties in the transaction were taken into court. Three defendants finally pleaded guilty and were fined \$100 each.

The third case covers advertising appearing in the newspapers of garments advertised as "natural wool" and "Australian wool," respectively. The "natural wool" garments contained from 50 to 89 percent of material other than wool. The "natural wool" garments represented by the sales-people as "all wool" consisted of only 45 percent of wool. The defendant and some of his witnesses contended that the color of the goods showed their nature and it was immaterial whether they contained 10 percent or 100 percent of wool. He furthermore testified that

he advertised and sold the goods in good faith; based on the representation and claims of the parties he had purchased them from. He did not seem to think that he was responsible for the claims and representations under which he sold his wares provided some one from whom he purchased the goods, at a sharp bargain perhaps, told him so and so. I fear such a claim would not get the druggist very far under present laws. If this principle should be sustained by the higher courts, the consumer would certainly be in an unfortunate predicament. Part of the Court's instructions to the jury follows:

"The jury are instructed that the defendant is on trial under the Act of Congress to prevent fraudulent advertising in the District of Columbia, and that it was not intended by the Act to charge an offense against a merchant who bought goods from a manufacturer or wholesaler and advertised or caused them to be advertised in the same way and manner as they were represented by the manufacturer or wholesaler at the time of said purchase, provided he honestly believed and had cause to believe the said representation to be true. And the jury are therefore instructed that if the defendant advertised the said goods as the same were represented at the time of the purchase from the manufacturer or wholesaler and he believed and had reason to believe the said representation to be true, then their verdict should be not guilty."

The jury found for the defendant. This interpretation of the Act is not considered good law in many quarters. It has in it the element of "knowingly," fraught with so much danger, in the laws enacted years ago. In fact it has long since been recognized that no law with this element in it, can be successfully executed in the interest of the public.

Let us now turn our attention to medical advertising. It is well recognized that this form of advertising presents some of the most difficult problems encountered by those interested in truthful advertising. False and fraudulent advertising accompanying the package is now quite well covered by the various Food and Drug laws, but such advertising is not reached by these laws where it appears in newspapers, circulars, magazines, posters, and otherwise, excepting in a restricted sense.

Soon after the organization of the Vigilance Committee and before the local advertising law was passed, a drastic criticism was received regarding the character of the medical advertising carried in the local newspapers. The communication was referred to a special committee for investigation and report. On April 25, 1916, this special committee submitted its report to the general committee. This report was referred to a second special committee for further consideration and final recommendation. This second committee reported back favorable action on the original report which was unanimously adopted. The essential features of the report follows:

The business of a goodly number of the so-called patent medicines has been built upon the credulity of the public especially the suffering sick and susceptible, by some of the cleverest and most ingenious advertising. Truth and honesty were often and still are lost sight of. In fact truth became such an unknown quantity in many instances that various promoters of nostrums seemed to vie with one another for supremacy in the realm of fairy tales. For example, a certain professor with a weak solution of salt and sugar dropped in the eyes, promised to cure consumption, paralysis, Bright's disease, cataracts, the morphine habit, and anything else the son of man may be afflicted with. His income was about \$150,000 a year. He is now serving time. In another instance a half ounce of

flavored vaseline, sold for a dollar, on the basis that it would remedy all defects of the eye. A third claimed to cure cancer, typhoid fever, consumption, scarlet fever, etc., by the laying on of various shaped packets filled with clay and charcoal. It is sad to relate but true, that those least able to pay, the poor, bear the burden of these gigantic frauds. These people seem to bite most voraciously at any sugar-coated bait. The tricksters can make a great market for a watery solution of salt and sugar, by using big words, extravagant words, mysterious words.

The newspapers play a very important part in disseminating information on the subject under consideration. Some are inclined to criticise these publications rather harshly. It is not believed however that a wholesale attack would be productive of the greatest good. That some censure lies, all will admit. There is room for improvement.

There are approximately 25,000 patent medicines advertised and sold in the United States and it is undoubtedly true that the management of any paper would find some difficulty in deciding what secret medicine advertisement is or is not within the realm of truth.

The "Specialist?" A multitude of sins are covered by the term "specialist." It is frequently used to work the unsuspecting public. Ignorant young men and old men are their special prey. The former is frightened because of the manifestation of certain physiological functions and the latter is promised the restoration of certain lost powers due to advancing age. Some one will say: "The poor fools ought to be stung." Let us not judge them without due evidence. Most people have or have had utmost confidence in the doctor. He to many, seems like one having superior knowledge and power. They appear to be like little children in these matters. Some of these so-called specialists are specialists about everything from the social diseases to pulmonary tuberculosis, diabetes, etc. Recently a case of pulmonary tuberculosis in the last stages came under observation. There was no ray of hope left. She had been treated by one of these men until all money was gone. Then she was cast off to die or left on the hands of some one more charitable.

The advertisements of "Blood Poison" specialists are generally so vile, repugnant and often salacious, that they should not find a place in any paper that reaches the fireside of any home. Think of such material falling into the hands of adolescent boys and girls who will make diligent inquiry. What impression it must leave! What idea must these young folks gain of the morals of the world? How they must picture in their minds the character of the editor of the paper or Mr. Merchant whose advertisement is found by the side of such material. "Damaged Goods" must be holy to them in comparison. The diseases commonly known as "Blood Poison" can be as a rule successfully treated, but such treatment can not be satisfactorily accomplished by mail. The disease leaves in its wake such frightful results that any physician who lightly treats a case has missed his calling and it would be far better for the community to either have his license revoked or have him placed where he no longer would be a menace to the public. The character of these men usually is such that they care little for the unfortunate victim after their shekels are gone. They have no feeling for their fellow-man.

It is sometimes difficult for a paper to decide what course to take. There are at least two ways out of the dilemma, and they are either to refuse all advertisements of a medical nature, or enlist the services of those who are competent to judge. The necessity of either of the above courses of action might be considered arbitrary and domineering and not productive of the best results. It is therefore suggested that the following seven rules be adopted as a tentative working basis.

1. Investigate the nature and character of the business and forces behind it.

NOTE: Interrogate the prospective advertiser from the view point of the consumer and your patron. Does he come with clean hands? A few questions will usually determine the nature of the business.

2. Get some idea as to the virtues of the medicine and the ingredients supposed to impart these virtues.

NOTE: If the prospective party submits copy claiming to "cure diphtheria" ascertain what is in the product that will effect this "cure."

3. Refuse all advertisements bearing claims and representations which mislead or deceive the consumer, or are liable to bring him injury, whether by direct or indirect statements or testimonials.

NOTE: There is no drug or mixture of drugs known to the medical profession which will cure tuberculosis. It will therefore be false to say (direct statement) "It will cure consumption." "An infallible cure for consumption." If the direct claims are without foundation, it would be equally deceptive to mislead the unfortunate sick by indirect statements, such as, "Valuable for tuberculosis." "Has cured tuberculosis," or by means of a testimonial, authentic or otherwise. The manner of propagating the falsehood is immaterial.

4. Reject any advertisement for any medicine which claims the medicine to be a "cure" or "infallible cure" or "unfailing cure," etc., or a remedy for any disease or condition for which the medicine is not a cure or remedy in truth and in fact.

NOTE: The following are some of the diseases or conditions which cannot be cured by any drugs at present known: Arteriosclerosis, asthma, Bright's disease, cancer, cataract, drunkard's liver, epilepsy, infantile paralysis, locomotor ataxia, paralysis, pellagra, pneumonia, whooping cough, yellow fever.

5. Refuse advertisements for mail order treatments or treatment in absentia.

NOTE: Diseases cannot be correctly diagnosed in the absence of a patient. It is sometimes almost impossible for the skilled physician at the bedside with every possible facility, to make a correct diagnosis.

6. Refuse all advertisements that offend the home, the reader or the clean, honest advertising merchant.

NOTE: The home is the most sacred institution. It is the best patron of the press. The columns of the press should be as free as possible from anything that defiles this institution. Clean advertisers do not relish the idea of having their advertising matter displayed by the side of vile, degrading, salacious matter.

7. In case of doubt, consult some one able to decide.

A committee was appointed and instructed to interview the management of the various papers and advise them of the findings of the Vigilance Committee, with the suggestion that they consider discontinuing carrying advertisements of a character adverse to the report. Each and every manager agreed willingly

to eliminate the advertisements as fast as practicable. Many of them did so. The idea of practicality apparently did not however present itself in some instances. Complaints that the papers were not acting in good faith were received. Some members in the drug trade became uneasy feeling that it was unfair to them to have their business connected or associated with many of the deceptive advertisements appearing in the papers. A special conference was called to which representative druggists were invited. The conditions obtaining were fully considered. This conference resulted in the appointment of a committee on Medical Advertising, consisting of two druggists, two physicians and an attorney. The committee was given authority to look into the nature and character of medical advertisements appearing in the newspapers, circulars, posters, magazines, etc., circulating in Washington. Numerous meetings were held. It was early decided that the function of the committee was false medical advertising and not an attack on patent medicines. No objection would be made to any medicine that made its way on honest advertising or did not work injury to the public. It was considered advisable to direct efforts along certain lines. Those liable to bring injury were first considered. The second line included the so-called "Prescription Scheme Products." It was decided to enlist the assistance of the drug trade, generally. A member of the committee appeared before the Retail Druggists Association and advised the organization of the findings of the committee, and asked the cooperation of the retailers in this matter. It seemed to be simply a question of the druggists voluntarily assisting in eliminating certain abuses or having outsiders step in and do the work, possibly not to their advantage. The organization voted unanimously to support the committee on medical advertising and act on its recommendation, as rapidly as possible. The association claimed that some of the undesirable business was thrust on them by the ads carried in the papers. If the papers did not carry certain ads no demand for certain questionable medicines would exist.

The next step was to advise the newspapers of the above action and attitude of the druggists with the suggestion that no advertisements be carried which will tend to bring reproach on the business. With some exception the local papers have assisted in improving conditions.

A special case illustrating the work of the committee was that of an advertisement being circulated by a party regarding an alleged radium preparation. It was advertised as a radio-strontium product having miraculous power for the curing of many human ailments. The case was carefully prepared and ready to be taken into court. The defendant realized his guilt, appeared before the Chairman of the committee and promised that he would discontinue the business if he was not taken into court. The Chairman, acting upon the general workings of the committee advised the party in question to put his promise in writing and the matter would be taken up by the committee at its next session. This was done and after due deliberation the committee voted to discontinue further action provided good faith was shown, and the business discontinued as promised. So far as it is known the business has been discontinued and the object of the law attained.

The psychology of untruthful advertising presents many angles. The ultimate goal is the "almighty dollar." The bars of restriction are often thrown down and full rein given to the wildest flight of get-rich-quick fiction. Some frankly

admit that the methods are unfair to the reader but attempt to justify them on the ground that they bring desirable financial results to the advertiser; in other words, "The end justified the means."

It is fully realized by some that the results do not tally with the promises. Others in man to man talks will you tell that their methods are not only dishonorable but distasteful to them. The newspapers are looked on as accomplices in the business. The flamboyant style of advertising is defended on the ground that it keeps a certain industry, city or state before the public. It is fortunate that there are very few persons who act along the above lines but it behooves the buyer nevertheless to exercise caution in purchasing.

DISCUSSION.

JACOB DINER: One of the New York daily papers took up the matter of deceptive advertising, and now whenever a case of misrepresentation is reported the papers confer with the merchants, and in the majority of cases they come to an adjustment. When they fail to do so they publish the facts, and this is quite a severe punishment. There has been a law passed in New York, which is being rigidly enforced, relating to the advertising and sale of remedies intended for the treatment or alleged cure of venereal diseases. That law is very drastic. It not only prohibits the advertising of such remedies, but prohibits the handling of them. The Washington plan, as outlined by Dr. Kebler, is the most comprehensive I have heard of.

M. E. DORSEY: With reference to the venereal law of which Dr. Diner spoke, the subject is coming before the public in a general way. It seems to me this Section should make a recommendation to the Council. A state law is all right but without federal enactments a state law will not be very effective. Such medical advertising should be stopped by the Post Office Department refusing the mail service to papers carrying this kind of advertising, otherwise the restriction will be local. National advertising of this character should not be permitted and the Associated Advertising Clubs of America can help to this end. When national advertising of these remedies is cut out the problem is solved. In our city, Ottawa, we have taken from our shelves every remedy for the treatment of venereal diseases. The War Department has asked that, and I think it is proper and right.

L. F. KEBLER: In order to stop the indiscriminate sale of venereal remedies publicity must not be given in the advertising columns of the newspapers. The public will ask for these preparations as long as they are advertised.

M. E. DORSEY: I move the adoption of this resolution:

Be It Resolved, that the Committee on Legislation of the American Pharmaceutical Association be instructed to take up with the War Department at Washington the control of advertising pertaining to venereal diseases, and use their influence with the Associated Advertising Clubs of America to entirely eliminate from the daily and weekly press all advertising pertaining to venereal diseases.
(After some discussion this motion was carried and referred to the Council.)

HOW CAN COÖPERATION BE SECURED BETWEEN STATE MEDICAL AND PHARMACEUTICAL BOARDS FOR JOINT CONTROL OVER THE PREPARATION, DISTRIBUTION, PURITY AND SALE OF DRUGS?*

BY F. E. STEWART.

Manifestly, state medical and pharmaceutical boards cannot exercise control over the preparation, distribution, purity and sale of drugs, except indirectly, by coöperating with the national and state authorities having charge of the

* A reply to Query No. 21 of the Section on Education and Legislation, A. Ph. A., and presented before joint session of this Section with the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy, Chicago meeting, 1918.

enforcement of the national and state pure food and drug laws. These laws provide machinery for their enforcement, and no persons or association of persons can have any authority to enforce these laws or use the machinery provided for the purpose except those who are legally empowered to do so. Therefore, the query might more appropriately read: "How can coöperation be secured between State Medical and Pharmaceutical Boards, and the authorities having charge of the Enforcement of the National and State Pure Food and Drug Laws, for the purposes of Exercising Control over the Preparation, Distribution, Purity and Sale of Drugs?"

The "Food and Drugs Act, June 30, 1906" is entitled: "AN ACT for preventing the manufacture, sale or transportation of adulterated or misbranded or poisonous or deleterious foods, drugs, medicines, and liquors, and for regulating traffic therein, and for other purposes." "Query No. 21," as above revised, is in harmony with the objects of the National Pure Food and Drug Law; as defined in the title of the act, and, as the State laws are patterned after the national law, it is in harmony with state legislation on this subject also. To properly answer the query, therefore, a comprehensive study of the national and state pure food laws would be necessary to prepare us to consider how state medical and pharmaceutical boards can coöperate with the constituted authorities.

The limits of this paper will not permit anything more than a brief statement of some of the methods by which such coöperation may be secured.

Let us first consider the meaning of the word coöperate. As defined by Webster's dictionary, the word "coöperate" means, "To act or operate jointly with another or others; to concur in action, effort, or effect." One of the great difficulties in securing coöperation between interests of physicians and pharmacists is want of recognition of the fact that pharmacy is an important branch of medical science and practice, and both are engaged in the same business. The physician sells his advice for money, and the pharmacist sells drugs. To that extent both vocations are commercial. But the sale of drugs by the pharmacist and of advice by the physician only represents what each is doing for a living. It is also necessary to consider the negative side, *i. e.*, what each is *not* doing. Both must refrain from doing things that injure the business of the other before there can be coöperation between them. The field of the physician is to diagnose the disease and prescribe the remedy, that of the pharmacist to select, prepare, preserve, compound and dispense the remedy of a drug or combination of drugs. Neither should poach on the preserves of the other. There seems to be no way of defining the boundary line between the field of the pharmacist and physician in this regard. Possibly, it might be accomplished by establishing neutral territory between them—a kind of buffer state like Switzerland is and Belgium was. A limited line of open formula household medicines, chosen by the medical and pharmaceutical professions coöperatively, is suggested. The U. S. P. and N. F. contain a sufficient variety of simples and compounds to make up such a list. Pharmacists might carry a line of such remedies in stock ready-made, put up in cartons with properly worded and censored circulars enclosed, giving accurate information as to their indications and uses.

The word "coöperate" also means, "to associate a number of persons for their common benefit." How can the several parties associate themselves to-

gether for their common benefit in the enforcement of the national and pure food laws? The practice of medicine and pharmacy and drug-therapeutics have a common object, that is to prevent, mitigate, and cure disease. To the extent that physicians and pharmacists coöperate in carrying out this object their common interests and the interests of the public are benefitted. The plan, therefore, should be one for securing coöperation between the State boards of pharmacy and medicine, representing the medical and pharmaceutical professions, with the pure food and drug authorities for promoting the public health by extending definite aid to the constituted authorities having charge of the enforcement of the national and State pure food and drug laws.

The first step in the process of enforcing the pure food and drug laws consists in the establishment of standards for determining the identity, purity, quality and strength of the *materia medica* products and preparations on the market. This step was taken by Congress and the legislatures of the several States of the Union when they made the United States Pharmacopoeia and National Formulary legal standards for the medicinal drugs, chemicals, and preparations of the same included in their pages. Coöperation for the purpose of enforcing these standards is of the greatest importance in securing the object we desire to obtain.

Standardization of State laws to conform with the national pure food and drug law is also important. Conflicting laws have rendered conditions intolerable.

But there are many preparations on the market advertised in the newspapers or medical journals or both claiming to be therapeutic inventions or discoveries for which no standards have been established. Some of these preparations are doubtless worthy of a place in the United States Pharmacopoeia or National Formulary, while some of them represent nothing except pretense to therapeutic values not in fact possessed. The next step in standardization would be for the representatives of the medical and pharmaceutical professions to coöperate for the standardization of medicinal drugs, chemicals, and preparations not included in the United States Pharmacopoeia and National Formulary. This step in the process of standardization would separate the wheat from the chaff.

This means legislation to do away with secret medicines altogether. People who take medicine on their own responsibility should have the privilege of knowing what they are taking that they may consult physicians or medical books and use the medicines advisedly.

The next step would be coöperation for the enforcement of the Sherley Amendment to the Pure Food and Drugs Act relating to misleading advertising, and in this way get rid of the chaff. The following announcement relating to the Sherley Amendment was published by the Bureau of Chemistry, U. S. Department of Agriculture, August, 1914:

"Suggestions for labeling medicines under the Sherley Amendment to the Food and Drugs Act, June 30, 1906. The Bureau has received many inquiries relative to the proper labeling of medicinal preparations in compliance with the requirements of the Food and Drugs Act, as amended by the act of August 23, 1912, commonly known as the Sherley Amendment."

The following suggestions are offered to manufacturers or proprietors of such preparations to serve as a guide in the preparation of labels:

"1. *Claims of Therapeutic Effects.*—A preparation cannot be properly designated as a specific, cure, remedy, or recommended as infallible, sure, certain, reliable or invaluable, or bear other promises of benefit unless the product can be a matter of fact depended upon to produce the results claimed for it. Before making any such claim the responsible party should carefully consider whether the proposed representations are strictly in harmony with the facts, in other words, whether the medicine in the light of its compositions is actually capable of fulfilling the promises made for it. For instance, if the broad representation that the product is a remedy for certain diseases is made, as, for example, by the use of the word "remedy" in the name of the preparation, the article should actually be a remedy for the affections named upon the label under all conditions, irrespective of kind and cause.

"2. *Indirect Statements.*—Not only are indirect statements and representations of a misleading character objectionable, but any suggestion, hint, or insinuation, direct or indirect, or design or device that may tend to convey a misleading impression should be avoided. This applies, for example, to such statements as "has been widely recommended for," followed by unwarranted therapeutic claims.

"3. *Indefinite or Sweeping Terms.*—Representations that are unwarranted on account of indefiniteness of a general sweeping character should be avoided. For example the statement that a preparation is for "kidney troubles" conveys the impression that the product is useful in the treatment of kidney affections generally. Such a representation is misleading and deceptive unless the medicine in question is actually useful in all of these affections. For this reason it is usually best to avoid terms covering a number of ailments, such as "skin diseases, kidney, liver, and bladder affections," etc. Rheumatism, dyspepsia, eczema, and the names of many other affections are more or less comprehensive, and their use under some circumstances would be objectionable. For example, a medicine should not be recommended for rheumatism unless it is capable of fulfilling the claims and representations made for it in all kinds of rheumatism. To represent that a medicine is useful for rheumatism, when as a matter of fact it is useful only in one form of rheumatism, would be misleading; such statements as "for some diseases of the kidney and liver," "for many forms of rheumatism," are objectionable, on account of indefiniteness.

Names like "heart remedy," "kidney pills," "blood purifier," "nerve tonic," "bone liniment," "lung balm," and other terms involving the names of parts of the body are objectionable for similar reasons.

"4. *Testimonials.*—Testimonials, aside from the personal aspect given them by their letter form, hold out a general representation to the public for which the party doing the labeling is held to be responsible. The fact that a testimonial is genuine and honestly represents the opinion of the person writing it does not justify its use if it creates a misleading impression with regard to the results which the medicine will produce.

"No statement relative to the therapeutic effects of medicinal products should be made in the form of a 'testimonial' which would be regarded as unwarranted if made as a direct statement of the manufacturer.

"5. *Refund Guarantee.*—Statements on the labels of drugs guaranteeing them to cure certain diseases or money refunded may be so worded as to be false and fraudulent and to constitute misbranding. Misrepresentations of this kind are not justified by the fact that the purchase price of the article is actually refunded as promised."

It is evident from the above Announcement of the U. S. Department of Agriculture that the Sherley Amendment ought to be embodied in the various state pure food and drug laws, and properly enforced by the coöperative efforts of the state medical and pharmaceutical boards, working with the authorized agencies having charge of the enforcement of these laws. The Sherley Amendment might then be used as an effective sieve for separating the pharmaceutical wheat from the nostrum chaff which takes up so much valuable space on the shelves of drug stores throughout the country.

The next step in carrying out a coöperative plan for "controlling the preparation, distribution, purity and sale of drugs," would be the standardization of the alleged new therapeutic inventions now being so extensively advertised by the

great chemical houses engaged in the pharmaco-chemical industries. The commercial introduction of some of these products represents one of the worst forms of the nostrum evil. The nostrums to which I refer are first advertised in the medical journals to fool the doctor, then advertised in the newspapers and other periodical literature to fool the people. The doctor and druggist become the cat's paw for raking the chestnuts out of the fire. As the public is injured rather than benefitted by using these products promiscuously for self medication, the patent law protecting capital invested in their manufacture, advertising, and sale, is being perverted. The object of the patent law is to promote progress in the science of the materia medica and in the practice of the useful arts of pharmacy and drug-therapeutics, not to protect and foster a commercial business in medicinal products carried on in unfair competition with educated and licensed practitioners of medicine and pharmacy. Coöperation between medical and pharmaceutical State boards for correcting this evil would do more for legitimate pharmaceutical practice than all the other methods of coöperation ever suggested.

We need a coöperative method for introducing new and useful medicinal drugs, chemicals, and preparations of the same to science, and brands of the same to commerce. The co-partners in this plan should include representation from the great manufacturing houses engaged in the legitimate pharmacal and pharmaco-chemical industries. They should be invited to coöperate in giving the medical and pharmaceutical professions, and the public, a square deal. If they refuse to coöperate in doing so, laws should be passed and enforced to put them out of business. This is the tendency of the pure food and drug laws, the anti-narcotic laws, the medical and pharmaceutical license laws, and other similar legislation now under the consideration of political economists. That is why certain houses opposed to square deal object so strenuously to what they call "attempts of the government to dictate to them how do to their business. What is the Government for except to see to it that the people get fair play?"

New materia medica products and preparations should not be introduced by advertising. Advertising should be confined to brands of products, leaving the products themselves open to competition and introduction to science by the coöperative investigations of medical, pharmaceutical, and chemical scientists. Therapeutic advertising is particularly objectionable. Therapeutic verdicts of judicial character can only be obtained as the result of original research by competent observers conducted under conditions of environment which eliminate as far as possible errors due to the personal equation and differences of climate, race and social conditions. Persons engaged in the sale of advertised products are not in a judicial position. Consciously or unconsciously they are biased in their judgments in favor of the products they advertise for sale. The same applies, possibly in a less degree, to research workers who advocate new methods of treating disease. Both classes of introducers occupy the position of advocates, not judges. What they say in favor of the products they are advocating and against the products of competitors, must be received *cum grano salis*, no matter how honest their intent.

The bias of the commercial introducer is in direct proportion to the amount of capital he has invested in advertising the product for sale. For that reason the building up of great commercial monopolies in the manufacture and sale of alleged new therapeutic discoveries, under the protection of the patent and trade-

mark laws, should never be permitted. The only legitimate demand for medicines is that created by their proper use in the practice of competent physicians, aided by the investigations of the laboratory workers, and reported in the professional societies where their merits can be impartially discussed. Each alleged discovery must be compared with prior discoveries before it can be decided whether the old should give place to the new. The decision should not be influenced by monetary considerations. Much of the demand created by advertising is purely fictitious and immediately commences to diminish when the advertising ceases. The exploitation of the sick room for gain is a crime against humanity that ought to put those guilty of it behind the prison bars. Coöperation between the medical and pharmaceutical State boards for the purpose of putting an end to this crime would be in harmony with the altruistic ideals concerning which the medical and pharmaceutical professions are so fond of boasting.

CONCLUSIONS.

State medical and pharmaceutical boards can coöperate in the joint enforcement of the laws for controlling the preparation, distribution, purity and sale of drugs, in many ways: Following are some of the ways:

1. By a joint study of these laws and regulations for their enforcement. Joint meetings should be held for that purpose.
2. By suggesting improvements in the laws and regulations for the purpose of harmonizing them more closely with the scientific and professional requirements essential to the proper practice of pharmacy and drug-therapeutics as coördinate branches of medical science and practice.
3. By insisting that druggists and manufacturers shall observe the suggestions in regard to the labeling and advertising of medicines contained in the Announcement issued by the U. S. Department of Agriculture relating to the Sherley Amendment to the Pure Food and Drugs Act of June 30, 1906.
4. By reporting violations of these laws to the constituted authorities and following up their complaints to see that they are properly considered and acted upon in every case.
5. By bringing cases of violation to the attention of the State and county medical societies, also to the national medical and pharmaceutical societies, so that members of these societies may be placed in position to recognize and distinguish between the sheep and the goats when purchasing materia medica supplies or writing prescriptions.
6. By teaching physicians and pharmacists through the medium of their societies the necessity of standardization as applied to the materia medica thus making them realize the importance of the United States Pharmacopoeia as a guide to prescribing and ordering supplies.
7. By insisting that medical and pharmaceutical schools and colleges shall teach their students the rules of conduct which should guide them in their relations to each other as physicians and pharmacists; also in regard to their relations to the public as practitioners of correlated and mutually dependent medical arts.
8. By teaching physicians and pharmacists to cease acting as sales agents for nostrums of all kinds to the extent that it is possible under existing conditions to do so, remembering, on the part of physicians, that in case pharmacists should throw their nostrums out of stock to-day, they would be forced to put in new stock before night to meet the demands of the medical profession, and remembering, on the part of the pharmacists, that physicians who do their own dispensing, are often induced to do so because the druggists in their vicinity refuse to give the public proper pharmaceutical service preferring to recommend their own nostrums, and the nostrums of others, to their patrons, rather than confine themselves to the legitimate practice of pharmacy.
9. By exerting their influence as boards of medicine and pharmacy upon Congress to secure proper revision of our patent and trademark laws so that they can no longer be employed to protect and foster a commercial drug business carried on in unfair competition with educated and licensed practitioners of medicine and pharmacy.

CAN THE RETAIL DRUGGIST CONTINUE AS A MANUFACTURER?*

BY FRANK T. STONE.

In many ways Washington occupies the most unique position of any city in the United States. In 1878 Congress in its wisdom voted us out of a vote and we therefore have no suffrage. I will not discuss the reasons here. In a measure we are wards of the Government; Congress adopts a paternal attitude toward us, and passes all laws governing Washington and the District of Columbia. Many who live and conduct business here feel that we are the "most" governed and best regulated city in the world.

You are familiar with the great National movement culminating in the passage of the Food and Drugs Act in 1906, giving three departments of the Government supervisory power over food and drugs. The Department of Agriculture with its corps of brilliant chemists assuming the duty of inspection, testing for purity or impurity, with the power to enforce the law, reaches out with its strong and impartial arm to every nook and corner of the country.

You of the States no doubt have personally had experience with this legislation in one way or another and profited by it. We know we have in the District of Columbia, because we have been up against double-barreled inspection from 1906 to this minute. Many of the practices of the past are now the exceptions and the exercise and enforcement of this beneficent law has resulted in striking changes, advantageous to the public and the retail druggist alike. If you of the States have not been forcibly impressed with its operation you will, sooner or later, come to recognize its virtue.

Immediately accessible to the Department of Agriculture, the District of Columbia undoubtedly provided a fertile field for testing this much-needed law, with the result that changes were recommended and made with regard to the compounding of many of the so-called simple and semi-complex preparations, and their accuracy insisted upon under penalty of the law. I want to say before proceeding further, that the deductions herein presented are drawn, not only from my own personal observation, but also from the experiences of others who have had occasion to know the extent of the laws' operation under executive authority.

If the painstaking proprietor who has successfully conducted a well-regulated drug store for ten or fifteen years could give his time to making his own preparations, there is little doubt in the writer's mind that his store would not be a favorite place for Dr. Kebler's inspectors, for collecting samples prepared for human ailments. In the retail store doing a daily business of \$100.00 or over the proprietor is bound to pass on much of the detail, and usually the manufacturing of simple preparations, to clerks, in many instances irresponsible clerks—men who will always remain in that capacity because of the lack of ambition and energy to seek a higher level in the profession.

The druggist of the District of Columbia is very nearly the average druggist, or was up to 1906. Since that day, many vicissitudes have come his way. Members have received citation from the Department of Agriculture to show cause

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.

why their preparations differed from the formulas of the U. S. P. and N. F. For example: If in 100 different stores as many individual clerks, of varying degrees of ability, make an equal quantity of the same preparation under conditions peculiar to their locality, it is quite certain that some of the products will vary materially from the proper standard even assuming that their supplies are derived from one and the same source and are in themselves of proper quality. That this variation is likely to be in excess of 20 percent on one or the other side of the correct strength in a relatively large number of instances reference to collections and analyses of samples of simple and complex products has demonstrated over and over again, not only in the District of Columbia, but elsewhere.

It is futile to say that another clerk or the proprietor should assay or test qualitatively and quantitatively each preparation made, though obviously this could readily be economically done for the entire 100 pints or gallons if made in one operation, at one time, and by one operator. I do not mean to imply that assaying or otherwise standardizing is not advisable. On the contrary, no one is more desirous of dispensing a standardized preparation than the pharmacist, but can he do it under the conditions found in the average store and make and standardize them on the premises? Practically, he can not.

How many pharmacists have the necessary facilities and technique to standardize the assayable tinctures of the Pharmacopoeia? Even experts arrive at materially different results with many of the processes, and commercially well-known makes of many of them are physiologically as well as chemically tested before marketing—an improvement, even if super-pharmacopoeial.

Again, under stress of war conditions, the reduced amount of available competent labor in retail stores tends to eliminate any work that can be as well or better done on the large scale. Even in normal times it is easily demonstrable that the waste of time, energy and material in preparing 100 gallons of such a useless preparation as tincture of arnica by 100 different clerks in as many separate establishments makes it an economically unsound procedure when compared with making the 100 gallons at one time and at one place. At current prices for arnica flowers and alcohol, the futility of it is obvious. Who now makes his own tincture of nux vomica—even under the procedure of the two previous editions of the U. S. P.? Was not the maker of the powdered extract the real manufacturer? Can you beat a machine for making pills or seidlitz powders?

The theory of standardization is fast becoming a necessary commercial practice—necessary because it makes for economy and efficiency. Nowhere is the value of coördination more clearly shown than in the conduct of the present war. Not only has the Government standardized American products wherever possible, but in some striking instances the standardization has been extended to conform to the requirements of the Allies as well, making the use of one device and parts of devices interchangeable. By this method the highest efficiency in the conduct of the war has been obtained.

Prior to the war many large business establishments, maintaining retail stores throughout the country, had already begun standardizing their preparations with resulting economy and accuracy and shipping these preparations from one central producing plant to all their distributing points, so that the quality of a given product would be almost identical, whether purchased in New York or San Francisco, Chicago or New Orleans. Thus not only was economy effected,

but time, labor and the possibility of wide variation in the quality of preparations were avoided, with attending local, state or federal penalty.

From past experiences most of those present will doubtless recognize the desirability of encouraging the responsible manufacturers in the movement they have undertaken—a movement which relieves the individual druggist of responsibility for accuracy and at the same time assures a uniform and standard product to the public. Just how far such a movement will succeed depends largely upon the retail druggist. If his time can be more profitably devoted to the local manufacture of such preparations, undoubtedly he will continue as at present, but it is my opinion that no busy man can afford to devote his time to their manufacture or supervise and assay compounds prepared by his clerks, in order to be assured of accurately prepared products in conformity with the law. The logical alternative seems to be the encouragement of the large and responsible manufacturers who are properly equipped to produce standard and uniform preparations with infinitely less expense in comparison with the facilities of the retail druggist, the time invested and the small profit accruing from his labors in this field.

THE PHARMACIST'S OBJECTIVES.

BY MRS. H. R. KENASTON.

This brief outline offered upon the subject selected is designed primarily as a prelude to the discussions that may follow rather than any effort on the part of the writer to give an extended delineation of the possible results that will most assuredly be the reward of those in the profession who may elect to continuously seek progress in the profession of pharmacy.

Further, it is assumed that adequate collegiate training has preceded the legal recognition essential to the practice of pharmacy. Equipped with the legal rights and the protection conveyed with the same, it should be the aim of the pharmacist to practice the profession in its phases of adaptability of all that this right conveys and the objectives be to excel in one or more definite and clearly defined lines, selected and specialized upon, to the extent that a more or less perfected practice may be attained.

Many are the thoughts and intense are the feelings that rush to the young pharmacist's mind and grasp the soul, leading onward and ever upward in the conquest of life, but out of the wierd variety and multitude of possibilities, there are two that are preëminently important—the feeling of happiness and ambition—the joy of having attained certain professional standings, and the ambition to excel until the goal toward which the mind has directed effort has been the nearer and nearer at hand.

Every pharmacist must aspire to establish greater professional efficiency from day to day; the ardor of this aspiration should increase by added efficiency, looking toward the highest possible degree of professional service and scientific research work to the end that some new truth may be made known to the members of the profession, the benign crowning of a task strenuously followed to a successful end and that the world may have the benefit of an added truth, snatched from

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.


Nature's wealth of unknown values and applied to the economic advancement of the scientific world.

The sublime heights to which scientific pharmacy may ascend should beckon the members of the profession to their utmost efforts that each may offer some tribute to its advancement. Talent and education are empty names if permitted to remain dormant; to be real they must be brought into action, and their forces combined in the greatest benefit to humanity and to life itself.

Of what avail would have been the discovery of vaccination without its use in protection against suffering and death? How great the original truth presented to the world, yet how small in comparison if the smallpox vaccination had been the only one adapted to the economic forces of the nations of the world.

Comparatively considered, the value of any of the advances to the profession has been wonderful, but how much more wonderful has been the adaptability of scientific research work to multiplied phases of the medical and mechanical requirements and adapted to the conditions that are responsible for their existence and value both scientifically and commercially.

If the members of the world of pharmacy are a student body as they should be, and the individual effort is given to meet the requirements of the medical profession, it is clearly ethical that this information be given the medical profession. Advise the prescribing physician that the pharmacist is informed and that he can and will meet the most fastidious wishes of the physician. Every pharmacist should assume the burden and privilege of elevating the standard of the profession to the end that his best in professional skill, courteous treatment of all patrons and customers, quality of the product dispensed and adequate commercial management be ever maintained and that efficiency in the various phases of the profession comprise the sum total of his or her professional career.

 In view of the existing conditions resulting from the changed commercial relations because of the war, and the extraordinary conditions have developed an increased demand for the highly trained member of the profession, the compelling necessity has shaped into results many of the semi-dormant sources of production giving to American manufactured chemicals and drug products a market not formerly existing to the same extent; scientific pharmacy with the accompanying commercial advantages has been noticeably stimulated.

The field of practical pharmacy has the honor to place many stars on the great American Service Flag. Those who have been called to the colors represent many of our most talented and highly educated members. Their places must be filled—the colleges and universities must provide for the main part of the research work, because of their ability to meet the requirements, and the fact that the average retail pharmacist could not, if he would, because of the lack of facilities, and if equipped, fails in many of the essential requirements; however, the retail pharmacist has a great part to play and is absolutely a requisite factor in this body pharmaceutic.

The economic value of all research work is evidenced by application in practical, useful methods and it is through the retail pharmacist that the public receives many of its direct benefits.

Pharmacists must assume the solution of the problem of providing the therapeutic agents and of placing these agents in the hands of the consumer, prepared, tested, standardized and commercialized.

HOUSE OF DELEGATES, AMERICAN PHARMACEUTICAL ASSOCIATION

MINUTES OF THE SESSIONS HELD IN CHICAGO, ILL., AUGUST 14, 15 AND 16, 1918.
FIRST SESSION.

The first session of the House of Delegates, A. Ph. A., was called to order by Chairman Samuel C. Henry in the Congress Hotel, Chicago, at 4.30 P.M., August 14, 1918.

Secretary Hostmann announced that credentials had been received for 86 delegates representing 32 State associations, and for 98 delegates representing non-voting organizations. In attendance were 31 delegates representing 19 State associations and 27 non-voting delegates.

The order of business was suspended, and the Chairman introduced Colonel Raymond, of the M. C., U. S. A., who spoke as follows:

MR. CHAIRMAN AND GENTLEMEN OF THE AMERICAN PHARMACEUTICAL ASSOCIATION:

I came to listen to your deliberations and learn something, rather than to talk and impart. This morning I had the privilege of listening to a paper read before the Section on Education and Legislation, which I thought might be of interest to me. The paper seemed to touch upon a very vital point, a matter of interest probably to you all, namely, the commissioning of pharmacists in the Army.

I am not commissioned by the Surgeon-General to come here and speak on this subject, and sometimes we have to be very careful as to what we say. We do not generally get hurt by saying too little, but sometimes we venture too far and say too much. If that subject will interest you, I will say just one word upon it.

I am not going to promise you much, I am going to tell you about a little hardihood I must have had in speaking upon this subject before the dental gentlemen. I spoke before the Ohio State Association about eight years ago, and at that time the Dental Corps of the Army was without commissions, and had been so for eight years. I want to tell you that at that time the question of commissions for dentists was in practically the same state as the question of commissions for pharmacists is in to-day.

I am not a pharmacologist, neither am I a dentist, and yet you may be surprised to know that I am now an honorary member of the Ohio State Dental Association, and I want to tell you in a few words how it happened. Maybe you can draw a lesson from it.

When the Dental Association met here last week I recalled to mind that I said a few words before the Ohio Association eight years ago, and I looked among my old papers and found a short printed abstract of my remarks of eight or ten years ago, and I put it in my pocket and I have it here now. I said to those gentlemen, something in this fashion:

"To secure a real, efficient dental corps, the appointees ought to grow up with the Army, not have a corps of fifty dental surgeons to-day, and the next day, or six months, or twelve months from to-day not have half of them, and new men coming in all the time to take their places; there is no permanency about it, but when you make it worth while you have got to come in and get a commission for life. The men should be commissioned officers.

"I do not mean to say that the man without shoulder straps is peculiarly outranked, yet it is pretty nearly so in the Army. The Army dentist of to-day is unclassifiable, if I may use that term, simply because he has no recognized rank. He is like a ship without a rudder. As matters are at present the dentist has no authority over his soldier patients. They very well said to him, if it suits me, at my pleasure, when he went among them to do his official duty. On the other hand, holding a commission, the men understand that you are sent by the President to do something, and when you speak it is, as it were, a message from the President calling for obedience. That is the difference.

"The corps must have authority vested in it. It must be permanent and it must be commissioned to be permanent, in order to fight for the principles for which it stands. It must be commissioned to be permanent, and it must be permanent to amount to anything."

Gentlemen, that is not promising you anything at all. It is simply saying what I said to those men eight years ago after they had been in the service eight years, and it amounts to about this, that before you gentlemen can get commissions in the Medical Department of the Army, you have got to show them in Washington that you are deserving thereof.

My father was always very much liked by the young people, and he went into a wholesale drug store one day, and he saw a lad there whom he knew, about so big (indicating) and he said, "Will, are you here," and Will said, "Yes, I just started with the firm." My father said to Will, "Make yourself indispensable," and ten or fifteen years after that time that young fellow told me what my father had said to him, "make yourself indispensable," and he said it impressed itself upon his mind, and at the age of thirty-five he was the President of one of the biggest book stores in the country.

I do not know that I can say anything to you better than my father said to that boy, "Make yourself indispensable." In other words, gentlemen, it does not lie with me, or with the authorities in Washington; it is up to you.

THE CHAIRMAN: Colonel Raymond, I can say for those assembled here that we thank you for your kind words, and we are indeed interested in your reference to the Dental Corps, and your previous visit to the Dental Organization, and there can be no doubt in the minds of anyone who studies the subject but that the Dental Corps has been an efficient force in the Army, the Surgeon-General only recently having expressed himself as highly gratified with the services rendered by that Corps. In view of your experience in having addressed the dentists some years before they secured recognition, and in view of the efforts on the part of the pharmacists of the country to secure recognition in the Army, let me say to you for the benefit of the individual pharmacists, and inasmuch as we all know that the pharmacists are actual requirements of the Army, I sincerely trust and look forward to the time when you may be an honorary member of this Association, after the Pharmaceutical Corps has been established. I may say to you that I am such an optimistic individual and so thoroughly American that I have not the slightest doubt in my own mind but that day is coming, and coming soon.

Chairman Henry then appointed the following as a *Committee on Resolutions*: Wm. C. Anderson, New York; W. H. Cousins, Texas; F. W. Meissner, Indiana; J. A. Koch, Pennsylvania; and F. H. Freericks, Ohio.

The Secretary read a communication from William R. White, of Nashville, Tenn., suggesting that the members forward copies of current issues of all pharmaceutical journals to pharmacists in the service. After a detailed discussion this suggestion, upon motion duly made and seconded, was adopted.

Vice-Chairman Otto F. Claus assumed the chair while Chairman Henry read the following:

ADDRESS OF THE CHAIRMAN OF THE HOUSE OF DELEGATES.

TO THE MEMBERS OF THE HOUSE OF DELEGATES:

Permit me, first of all, to express my appreciation of the confidence reposed in me and the honor conferred upon me by my election to the chairmanship of this body.

The irregularities of the action taken by the parent body relative to the changes made in the by-laws of this body and the transfer of certain important functions from the parent body to the House of Delegates having been called into question by one in authority, the matter has been taken up by a special committee and a report thereon will be presented to you at a later session. However, your Chairman is of the opinion that such action was in all respects regular and we shall proceed with the work before us with that thought in mind, unless you direct otherwise.

You will shortly have presented to you the report of the special committee on federated pharmacy and I bespeak for this report your earnest and serious consideration. It must be very apparent to all that the idea of federated pharmacy, that is, one grand organization that would have supervision over all matters pertaining to our honored calling, appeals to the mind and the heart of every true organization man. In considering this question, however, we cannot and

should not close our eyes to the actual conditions as they exist. For instance, we are all aware of the fact that the interests of the various branches of the drug industry are not always along parallel lines and when it so happens, as it frequently does, that the interests of the various branches do differ, it is but natural and proper that those interests directly affected should champion their own cause. True, it is proposed in the plan of federation, which has been under consideration, to have the various organizations now in existence continue and to permit them to continue their activities concerning those matters which directly affect their members. And right here the man who is in touch with current events rises and propounds the question: why federate? Your Chairman frankly confesses that he has not as yet heard a satisfactory answer and that in spite of the fact that he has honestly endeavored to do so, he has not succeeded in finding a satisfactory answer.

These thoughts are not uttered with the idea of influencing your action, but merely to cause you to carefully consider the action you take relative to the report of this special committee, and I might add that they are in line with the action of the committee and the conference of delegates from other organizations with your committee. It seems to me that the House of Delegates as at present constituted offers a very convenient channel through which the A. Ph. A. can give expression to the thoughts and desires of the various branches of the trade, and in the National Drug Trade Conference there has already been provided an agency for carrying such plans into effect. Let us all, therefore, do our utmost to make these two agencies of the greatest possible value and let us use them to the utmost in our efforts toward the uplifting of our honored profession.

VICE-CHAIRMAN CLAUS: You have heard the reading of the address of our Chairman. What is your pleasure?

Upon motion the address was accepted.

CHAIRMAN HENRY: We will now have the report of the Secretary.
Secretary Hostmann read as follows:

REPORT OF THE SECRETARY OF THE HOUSE OF DELEGATES.

There is nothing your Secretary can add to what he has said in his reports of the past three years, and he believes that repetition would be only tiresome and wasteful.

I again express the hope and wish that the status of the House of Delegates will be so fixed that the officers thereof may know just what they are to do. Due to the chaotic condition in which affairs were left last year your Secretary and Executive Committee have not been able to be very active. The details concerning the reasons therefor have been mentioned by the Chairman, and will be further brought out in the report of the Committee on the House of Delegates.

Your Secretary, having secured 250 reprints of the Minutes of the last session, mailed a copy thereof to each member of the last House as well as to the Secretary of each State association. In addition to the Minutes there was mailed to the State Secretaries a letter asking for active interest in the deliberations of the present House. This letter was accompanied by one from Chairman Army of the Committee on the House of Delegates appointed by President Dohme, in which, in asking for coöperation, he announced that this important committee would report to this body.

In closing I will again express the hope that at the present sessions the questions of doubt now existing as to what is what will be answered so that the House may proceed to take its proper place in the organized effort to better conditions for American pharmacy and everything relating thereto.

THE CHAIRMAN: You have heard the report of the Secretary, which contains no recommendations. What is your pleasure?

MR. CLAUS: I move it be accepted. Carried.

THE CHAIRMAN: We will now listen to the report of the Committee on Federated Pharmacy.

Chairman H. V. Army then read the report of the Committee on Federation.

REPORT OF THE COMMITTEE ON FEDERATION OF AMERICAN PHARMACEUTICAL ASSOCIATION:

In accordance with a recommendation made last year in the address of President Wulling and approved at a general session of the Association, President Dohme on January 22nd appointed

the following as members of a Committee on Federation: H. V. Army, C. E. Caspari, C. H. LaWall, W. A. Hover, F. J. Wulling, J. H. Beal, J. U. Lloyd, S. C. Henry, A. R. L. Dohme and W. B. Day.

The Committee was immediately organized by correspondence and since then four bulletins have been issued in which the basic principles of the federation of American Pharmaceutical bodies were discussed. During the same time, largely through the energetic efforts of President Dohme, other national and State pharmaceutical organizations became interested in the plan of federation.

The discussion by correspondence showed that a satisfactory solution of the problems before us could be secured only by meeting of the Committee, alone and with representatives of other organizations likely to be included in the plan of federation.

Such meeting was held in Chicago on August tenth on the morning of which day eight of the ten members of the Committee met and informally discussed federation and passed a motion reaffirming the principles of federation enunciated in the address of President Wulling last year.

In the afternoon, a conference, at which the Committee met with the representatives of National Drug Bodies, brought the results outlined below. At this conference, H. V. Army presided, while W. B. Day acted as secretary and on roll call the following delegates were found to be present:

From the National Association of Boards of Pharmacy: *H. C. Christensen*. From the American Conference of Pharmaceutical Faculties: *T. J. Bradley, R. A. Lyman and Edward Kremers*. From the American Drug Manufacturers' Association: *C. J. Lynn, R. C. Stofer and C. M. Woodruff*. From the Proprietary Association of America: *F. A. Blair, E. F. Kemp and Z. C. Patten*. From the National Association of Retail Druggists: *W. H. Cousins and S. C. Henry*. From the American Association of Pharmaceutical Chemists: *C. H. Searle and W. S. Burdick*. From the American Pharmaceutical Association (Federation Committee): *H. V. Army, C. E. Caspari, C. H. LaWall, F. J. Wulling, J. H. Beal, J. U. Lloyd, A. R. L. Dohme, S. C. Henry and W. B. Day*.

In addition to the foregoing delegates, H. M. Whelpley, H. P. Hynson and M. A. Mandabach were present as guests and were given the privilege of the floor.

The National Wholesale Druggists' Association selected a delegation consisting of J. W. Morrisson, Francis Keeling, Jr., and Paul Schuh, none of whom were present at the conference.

After a general discussion of federation, the following resolution was submitted by C. J. Lynn:

WHEREAS: The experience of the last fifty years and more have demonstrated that one national organization has not adequately cared for the varied interests of the several branches of American Pharmacy: which experience is the underlying reason for the organization of the several independent national associations now existing, which have heretofore most effectively represented their respective interests; and

WHEREAS: Many of the delegates here present are without power to bind their respective organizations to any plan of federation; therefore be it

Resolved, That it is the sense of this informal meeting that a mergence of such organizations in a larger federation at this time is not practical; and be it further

Resolved, That having in the National Drug Trade Conference an organization which has already accomplished much good for the common interests of the several associations here represented, it should be the aim and purpose of these bodies to further develop the Conference so that it may be still more efficient in promoting the general welfare of scientific and commercial pharmacy, in which we are all concerned.

That resolution was put to a vote and was approved, Messrs. Wulling, Dohme, Caspari and Lyman asking to be recorded as voting against it.

There was then passed a motion that a conference of delegates from organizations invited to the 1918 meeting be held on the Saturday prior to the 1919 meeting of the American Pharmaceutical Association, and that a committee consisting of one representative from each National drug body be chosen as a Committee on arrangements for the 1919 conference. This motion carried and the Chair selected the following committee: J. W. Morrisson (N. W. D. A.), H. C.

Christensen (N. A. B. P.), T. J. Bradley (A. C. P. F.), C. J. Lynn (A. D. M. A.), F. A. Blair (P. A. A.), W. H. Cousins (N. A. R. D.), C. H. Searle (A. A. P. C.) and H. V. Army (A. Ph. A.).

On Monday, August twelfth, your Federation Committee met again for a final discussion of the problems entrusted to it, notably those questions relating to the House of Delegates and the federation of State pharmaceutical associations, that is being accomplished through the work of the House.

At this meeting the following recommendations were adopted and are transmitted to the House and to the General Session of the association for final action:

1. *Resolved*, That it is the sense of the Committee that the by-laws of the House of Delegates should be so amended that all voting delegates to the House having the right to vote shall be members of the A. Ph. A. at the time they serve.

2. *Resolved*, That it is the sense of the committee that the continuation and strengthening of the House of Delegates and the active exercise of its functions present a great opportunity for the furtherance of the federation of pharmaceutical organizations for the better coördination of the efforts of such organizations in national and state affairs and for the proper development and evolution of pharmacy.

A third resolution (given hereafter) is based upon the fact that last year Chairman J. H. Beal of the House of Delegates proposed five additions to the functions of the House, as follows:

(A) Transfer the reception of fraternal delegates from other pharmaceutical and allied organizations or from departments of the United States Government from the General Sessions to the sessions of the House of Delegates.

(B) Abolish the Committee on Resolutions provided for in Articles I and IX, Chapter X of the by-laws and transfer its functions to a similar committee of the House of Delegates.

(C) Instruct the committees on the United States Pharmacopoeia and on the National Formulary to report to the House of Delegates.

(D) Make it the duty of the Committee on Patents and Trade-marks to report to the House of Delegates.

(E) Transfer the reports of the Commission on Proprietary Medicines (except upon financial matters and upon the election of members) from the Council to the House of Delegates.

The first of the above recommendations was adopted at the Third General Session of the Association last year; the second recommendation was referred to the committee on Constitution and By-laws, which has not yet reported thereon; the third, fourth and fifth recommendations were laid on the table.

Your Federation Committee gave this matter its careful attention and believing that all of the five recommendations are of vital importance to the development of the House of Delegates submits the following:

3. *Resolved*, That the recommendations made last year by Chairman Beal of the House should be adopted.

A final recommendation made by your committee is:

4. *Resolved*, That the Committee on Federation be continued for another year.

In conclusion, your Committee begs, in summarizing its work, to say that as in all great undertakings, the work accomplished by it during the past year is not as great as was desired by some of its members. It has, however, made one great step toward federation by starting a movement toward the enlargement of the scope of the Drug Trade Conference, by which it is hoped that a broad federation of national drug organizations will be secured. It will make another advance if the plan of federation of State associations in the House of Delegates is strengthened, by the adoption of the resolutions submitted above. These two basic purposes accomplished, the Conference and the House will be as two piers of a great bridge and when as years go on there is completed between the two a connecting span in the shape of service features so vitally needed by American pharmacy, the federation idea will then be a realized dream.

THE CHAIRMAN: What is your pleasure relative to this report?

H. P. HYNSON: I move that this report be adopted and its recommendations agreed upon.

THE CHAIRMAN: The Chair desires to do that which this body wants done. Inasmuch as this report contains recommendations and resolutions, which it is suggested should be adopted, this report should be referred to the Committee on Resolutions. It seems to me the proper course would be to have the report referred to the Committee on Resolutions, and then brought in and discussed at the next meeting of this body.

H. P. HYNSON: I wanted the opportunity to make a motion for the adoption of the report which I had so much at heart, and which seems to be a long step toward progress that we have been striving to accomplish for so many years.

H. M. WHELPLEY: I move that this report be received and referred to the Committee on Resolutions. Seconded.

(After some further discussion the latter motion was carried.)

THE CHAIRMAN: The Secretary has a proposition to change the by-laws of the House of Delegates, which he desires to submit at this time.

SECRETARY HOSTMANN: In these recommendations contained in the report of this Committee there is one which recommends that the membership in the House of Delegates be limited to delegates who are members of the American Pharmaceutical Association only, and if that is adopted it will mean an amendment to our by-laws, and in order to save time I am submitting it now, because amendments to the by-laws have to be submitted in writing and lay over. I, therefore, offer the following amendment:

Amend Chapter II, Article I, Line 4 to read "provided, however, that such delegates so appointed must be members of the American Pharmaceutical Association at the time they serve."

THE CHAIRMAN: Let us understand just what the purpose is.

SECRETARY HOSTMANN: Delegates should be members of the American Pharmaceutical Association at the time they serve in the House of Delegates, because organizations—for instance, the Missouri Pharmaceutical Association—may appoint as a delegate a person not yet elected a member, but who would be elected between the time of being appointed as a delegate and when in attendance.

THE CHAIRMAN: I think you have made your point very clear and unless there is any objection it will lay over as provided for in the by-laws.

H. M. WHELPLEY: I move that the House of Delegates recommend to the Association that the dues of members serving in the Army and Navy be suspended during the period of the war, provided such members do not desire to receive the Year Book and the JOURNAL.

THE SECRETARY: I move this be referred to the Committee on Resolutions. Seconded.

H. M. WHELPLEY: We have members serving in the Army, also in the Navy, who desire to receive the Year Book and the JOURNAL, and expect to pay their dues. This is the reason the motion is worded in the particular manner that it is.

The motion was carried.

On motion of William C. Anderson the first session of the House of Delegates adjourned to meet Thursday afternoon at 4.30 o'clock.

SECOND SESSION.

The second session of the House of Delegates was called to order by Vice-Chairman Otto F. Claus, at 4.30 P.M., Thursday, August 15, 1918.

Secretary Hostmann read the minutes of the First Session in abstract form.

THE CHAIRMAN: You have heard the reading of the minutes of the First Session in abstract form. What is your pleasure?

H. V. ARNY: I note the resolutions presented were adopted and referred to the Committee on Resolutions, according to the minutes. That should be changed to read, "Received and referred to the Committee on Resolutions."

WILLIAM C. ANDERSON: I think that change ought to be made. I move that the minutes be approved, with the change noted. Carried.

The Chairman appointed the following Committee on Nominations: Wm. C. Anderson, J. A. Koch and J. G. Godding.

THE CHAIRMAN: We will next have the report of the Committee on Resolutions.

Chairman William C. Anderson, of the Committee on Resolutions, presented the following report for that Committee:

REPORT OF THE COMMITTEE ON RESOLUTIONS.

Mr. Chairman, the Committee considered the resolutions referred to them, and find that Resolution No. 1 provides for an amendment to the by-laws, and that was presented and a formal amendment to the by-law was prepared, and laid over under the rules. Consequently, that is with the House of Delegates, rather than in the hands of the Committee, and will come up in regular order, and we will take no action on it.

Resolution No. 2 is as follows:

"Resolved, That it is the sense of the Committee that the continuation and the strengthening of the House of Delegates and the active exercise of its functions present a great opportunity for the furtherance of the federation of pharmaceutical organizations for the better coördination of the efforts of such organizations in national and state affairs and for the proper development and evolution of pharmacy."

We recommend the adoption of that resolution. I would suggest that these be acted upon seriatim,* in order to save time.

"Resolved, That the Committee on Federation be continued for another year."

We recommend the adoption of the following:

"Resolved, That we transfer the reception of fraternal delegates from other pharmaceutical bodies and other local organizations, or from the Departments of the United States Government, from the General Sessions to the Sessions of the House of Delegates."

We recommend the adoption of the following:

"Resolved, That the Committee on Resolutions be abolished, as provided for in Articles I and IX, Chapter 10, of the by-laws of the American Pharmaceutical Association, and transfer its functions to the same Committee of the House of Delegates." In other words, have one Committee on Resolutions, instead of two.

We recommend the adoption of the following resolution:

*"Resolved, That we instruct the Committee on the United States Pharmacopoeia and on the National Formulary to report to the House of Delegates."*¹

That means that those Committees can report to other Sections, if need be, but there must also be a report to the House of Delegates.

We recommend the adoption of the following resolution:

"Resolved, That it be made the duty of the Committee on Patents and Trade-marks to report to the House of Delegates."

That simply means that in addition to the other reports they are to submit one here as well.

We recommend the adoption of the following resolution:

"Resolved, That the Report of the Commission on Proprietary Medicines, except upon financial matters, and election of members, be transferred from the Council to the House of Delegates."

We recommend the adoption of the following resolution:

* This was done and each recommendation was separately discussed before adoption, and the minutes are abridged to the extent of not reporting each separate action.—EDITOR.

¹ This resolution was discussed at considerable length. It was brought out that by being presented here all State associations would have the benefit of the report by being presented in the House of Delegates, giving wide publicity, and also that such presentation here did not prevent the report going to the Sections as heretofore.—EDITOR.

"Resolved, That the House of Delegates recommends to the Association that the dues of members serving in the Army or Navy be suspended during the period of the war, provided that such members do not desire to receive the JOURNAL and the Year Book."

The discussions having been separately conducted and each resolution approved, S. L. Hilton moved the adoption of the report as a whole; the motion was seconded by President Dohme, and carried unanimously.

SECRETARY HOSTMANN: At yesterday's session I introduced an amendment to the by-laws, Chapter II, Article I, adding to Line 4 the words, "provided, however, that such delegates be members of the American Pharmaceutical Association at the time they serve." I move, Mr. Chairman, that we adopt that amendment to the by-laws. Seconded by S. L. Hilton.

After a spirited discussion by Messrs. Freericks, Hynson, Arny, LaWall, Koch, Hostmann, Dorsey, England, Whelpley and Anderson, the latter moved to amend so that the amendment read as follows:

Amend Chapter II, Article I, By-laws of the House of Delegates, by adding to line 4 the words, "provided, however, that the delegates so appointed will have the privilege of the floor, but no vote, unless they be members of the American Pharmaceutical Association."

The vote being called for the amended motion was carried.

SECRETARY HOSTMANN: I have a communication in which the Council recommends to the House of Delegates a discussion of the subject of combination dues of the American Pharmaceutical Association and the State association on the basis of 100% membership of the State association, the latter collecting the combined dues and remitting to the American Pharmaceutical Association its portion of the dues.

This communication was made the first order of business for the next session, and the second session of the House of Delegates was then adjourned.

THIRD SESSION.

The third session of the House of Delegates was called to order by Chairman Henry at 2.00 P.M., August 16th.

The minutes of the previous session were read in abstract by Secretary Hostmann.

THE CHAIRMAN: Unless there is some objection the minutes will take the usual course. According to the action taken yesterday, the first order of business is the communications from the Council, which we will now have.

SECRETARY HOSTMANN: The first one is the communication read yesterday, that the Council recommends to the House of Delegates a discussion of the subject of combination dues of the American Pharmaceutical Association and the State association on the basis of 100% membership of the State association, the latter collecting the combined dues and remitting to the American Pharmaceutical Association its portion of such dues.

THE CHAIRMAN: It appears to the Chair that the recommendation of Council is that we, the House of Delegates, discuss this proposition.

E. F. KELLY: The general proposition in the beginning was an attempt to bring the state associations into closer touch with this Association. This proposition was originally brought up by Dr. Hynson, with the idea of provoking discussion on the possibility of combining the dues, so that when a man paid association dues these carried membership in both the State and this Association. In just what form it should be done is immaterial to us, but the idea was for the House of Delegates to discuss this matter, and then have the members take it before their State associations at the next annual meeting.

I am frank to say that when it comes before the Maryland Association I will bring it up, but I doubt whether we will get very enthusiastic support, because my experience is that you have got to start out with a project of this kind and wait

for it to mature. I believe, if we could bring this thing about, it would be one of the greatest steps toward federation that we could take.

H. V. ARNY: In addition to what Mr. Kelly has said, I will possibly be a little more specific. The general idea was that this plan would be on the same basis as a clubbing rate. We pay the American Pharmaceutical Association \$5.00 a year, and we pay our State association \$2.00 a year, and the question arose, could we make the members of State associations a combined rate of \$5.00. We want, first, the members of the State associations to go back to their respective State organizations next year and bring the question before them for general discussion. If they favor the joint rate idea, the apportionment will come later.

We could perhaps also apportion a smaller percentage of the State membership; in other words, 25%, 30% or 40%. I suggested an idea of making a special rate for subscriptions to the JOURNAL of the American Pharmaceutical Association, not the Year Book, on the basis of, say, something like 25%, so if they desire to affiliate to the extent of getting the JOURNAL, a special rate for that would be given. From that we crystallized into the thought of bringing it squarely before the Association to put it before the State associations with the proposition whether it would be worth \$5.00 to belong to both.²

JACOB DINER: When a non-member is in a receptive mood to be talked to on the subject of Associations, it is just as easy to point out to him the wider interests which are opened up to him by membership in the American Pharmaceutical Association, and it is quite feasible, in fact, possible, to more readily interest a man in a membership which will carry with it membership in the State association and in the A. Ph. A. for only a small additional sum. When a man is brought into the mood to join, it is not so much a matter of how much it is going to cost as whether he should or should not affiliate, and when he decides to do so he would just as soon join both as one. It would materially aid the State associations, and at the same time the American Pharmaceutical Association.

C. B. JORDAN: I know what my State Association is going to say. Of course, the question is how much is to be paid by the different State associations. I would like to ask those of you who were at the Council meeting if you think we are in a position to say to that State Association, for the sake of discussion, that the fee will probably be \$5.00, and that the American Pharmaceutical Association will accept \$3.00, provided we get 100% membership? Can we also state to the members that they will become bona fide members of the Association, and will receive the JOURNAL and the Year Book?

I think this is one of the best propositions I have heard of in a long time. We can go back to the State associations and put it up in such a way, provided we can get sufficient copies of the JOURNAL and the Year Book to show them what they will receive, that we will get favorable action on it, but, as Dr. Kelly says, it will take a lot of work to crystallize the plan.

H. V. ARNY: We feel if the Association goes into it that it should be on the basis of 100%, but, of course, that does not imply that the plan is not workable if we do not get 100% of the State associations. It would be of great advantage to the members of the State associations if, as in the case of the New York State Pharmaceutical Association, members instead of paying \$7.00 a year would have to pay only \$5.00 a year.

WILLIAM C. ANDERSON: I move that the House of Delegates approve of this proposition, and request the delegates from each State association to bring this matter up before their respective State associations for active discussion at the next annual meeting.

JACOB DINER: I second that motion.

² It was later developed that some State associations have annual dues of \$5.00, which would make it necessary to fix some other basis. The subject is, however, for discussion and further action.

THE CHAIRMAN: That is all very clear now. I think you brought out the points the Council desired to be discussed, and if there is no further discussion I will call for the question. The motion was carried.

A communication from the President of the National One-Cent Letter Postage Association was read and referred to the incoming House of Delegates.

The report of the Nominating Committee was called for. It reads:

REPORT OF THE NOMINATING COMMITTEE.

Your Committee on Nominations respectfully recommends the election of the following: For Chairman, Otto F. Claus, of Missouri; for First Vice-Chairman, Samuel L. Hilton, of the District of Columbia; for Second Vice-Chairman, E. F. Kelly, of Maryland; for Recording Secretary, Jeannot Hostmann, of New Jersey.

(Signed) WM. C. ANDERSON,

J. A. KOCH,

J. G. GODDING.

On ballot they were declared elected.

The newly-elected officers were then duly installed and responded briefly, expressing their thanks for the recognition, and Chairman Otto F. Claus assumed the chair.

Samuel C. Henry thanked the members for having honored him with the office which he was now relinquishing, and for the assistance given him. He continued in part as follows:

I sincerely trust that the House of Delegates will realize, now that it has been properly constituted and organized, that the members have within their control a power and influence that can be wielded for the good of pharmacy.

I regret very much that during the past year it was not my privilege, to have the opportunity to do some of the things I desired to do for this organization. I think every one here realizes that it was not any lack of desire upon my part, but simply a physical impossibility for me to do those things. But I want to assure you in retiring from this office that whatever may be possible for me to do in the days that are to come, or if in any way I can help this House of Delegates, or the parent body, or anything connected with the A. Ph. A., I am ready and willing to do it to the limit of my ability. A federated Pharmacy you and I believe in and desire, and is a consummation to be hoped for. Some of us may see difficulties in the way of a complicated amalgamation of all pharmaceutical affairs put under one banner. But the essential thing has been to do that which will be most of all for the good of pharmacy. You have the House of Delegates, you have the Drug Trade Conference, and, while the Drug Trade Conference makes mistakes at times, being a human agency, it does good most times, it can be made a power for greater good, and let us use the instrumentality we have at our command, and I am very sure if it is used, and the House of Delegates uses it in a proper way, pharmacy will be advanced.

E. G. Eberle moved a vote of thanks to the retiring and re-elected officers. The motion was seconded by Jacob Diner and adopted by a rising vote.

The House of Delegates then adjourned sine die.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

Chairman Ivor Griffith, of the Committee on Local Branches A. Ph. A., has addressed a letter to the Branches which conveys a good suggestion that should be productive of results. It follows the lines of a recommendation made by Secretary J. W. England several years ago of submitting each month a paper prepared by some member of the Association to all the Branches for discussion. The first article of the contemplated series has also been sent out, and this is printed immediately following Chairman Griffith's communication to the Branches of the American Pharmaceutical Association which reads:

As Chairman of the Committee on Local Branches of the American Pharmaceutical Association, and anxious to afford the Committee a tangible reason for existence, I sincerely request your assistance to carry out a plan which the Committee believes will benefit each Local Branch as well as the Association itself.

The plan is to offer to the Branches, at each stated meeting, one or two four-minute papers written by men prominent in the profession and dealing with a timely and appropriate subject which can be utilized as the basis of a general discussion. This need not interfere with the regular program, and the papers may be publicly read by the Secretary or any branch member.

The first paper which accompanies this note is timely and comes from the pen of the present President of the Association, Dean Charles H. LaWall. The subject is one that is of particular interest to the druggist and, coming from the American Pharmaceutical Association, it will give the Association prestige and take away from it the slur that it never does anything constructive for the retail druggist.

The Committee anticipates that it will have your hearty coöperation in this matter,

because it feels that it must and will have the encouragement of every one concerned in furthering the interests of our Association in every conceivable way.

Yours for Pharmacy,
(Signed) IVOR GRIFFITH.

SHORTER WORKING HOURS FOR PHARMACISTS.

BY CHARLES H. LAWALL.

In beginning this brief contribution to a very important subject I wish first to disclaim any intention to give advice to retail pharmacists or to try to solve a very practical problem by proving how desirable it is in theory. What I can, with propriety, do is to refresh the minds of some who hear or read this symposium with facts and recollections.

In the first place, it must be clearly recognized that what is easily possible in one kind of neighborhood may not be at all possible or practicable in another, even in the same city, and then there is the variation, too, in urban and suburban locations. Contrasting present practice, however, with that of twenty-five years ago, we can see that great progress has been made, and judging by modern tendencies, the next five or ten years will see changes now looked upon as the dreams of an idealist.

In most city stores in residential neighborhoods the doors of pharmacies are not opened until 8.00, 8.30 or even 9 A.M. In many of these same stores an afternoon during the week is "taken off" by all hands, and the store is open for business only upon certain hours on Sunday. This is in part made possible by the influence of pharmaceutical associations in bringing together as friends those who otherwise would be enemy rivals, suspicious of each other's every act. There are now large sections of some cities where all stores but one are closed in turn, by mutual

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coöperation and agreement. That this practice will increase instead of decreasing, there is not the slightest doubt. Once having tasted the freedom of shorter hours, few go back and ask to have the shackles welded on again.

Another factor, but one that is not so much in the interests of the profession as the voluntary progress described above, is the compulsory shortening of hours which has already been accomplished in some States. This is brought about through the influence of trades unions. In West Virginia, for instance, I have been told that everything is unionized, and that even the drug clerks are not permitted to work more than eight hours a day, except upon the payment of an increased wage for overtime service. This, of course, naturally results in cutting down the hours, but it cannot be looked upon as a satisfactory or healthy method, nor one that will help pharmacists in their aim to obtain professional recognition.

In conclusion, let me say that just as true as is the saying "Old times never return," so true is it that in the near future a pharmacist who ventures to keep open longer than a reasonable time for his neighborhood, will be looked upon as an "old timer" who is unprogressive. The worst of it is and what retards the change even now is that he will not be aware of it. But it is true. Isn't it?

LUZERNE COUNTY.

The Luzerne County Branch, A. Ph. A., held the regular monthly meeting in the Hotel Sterling, Thursday evening, February 13. Thirty-two members were present and after the serving of luncheon the following business was transacted:

Mr. Greenstein, chairman of the Commercial Relations Committee, reported his investigation of the effect the new tax law will have on the business of the pharmacist. Information along this line, he reports, is not very definite and will not be until the bill is signed.

Mr. Lynn, chairman of the Membership Committee, presented fourteen applications for membership.

A resolution was adopted in which the members agreed not to purchase any more patent preparations for the treatment of venereal diseases and to coöperate with the Public Health Bureau in discouraging their sale.

The next meeting will be held the second Thursday in March.

J. D. MORGAN, *Secretary*.

The February, 1919, meeting of the New York Branch of the American Pharmaceutical Association was called to order by President Lehman in the Lecture Hall of the New York College of Pharmacy Bldg. on Monday evening, the 24th, at 8.15 o'clock.

Thirty members were present.

The Treasurer's report was received and showed a balance of \$64.00 on hand.

Auditing Committee: Dr. Diner reported that he passed all the bills he had on hand.

Membership Committee: No new members were reported.

Fraternal Relations: Dr. Lascoff brought in a report that the Booklet on useful Formulas be sent to each member.

Education and Legislation: Mr. Kennedy brought in a lengthy report which after some discussion was ordered accepted.

Dr. Dana S. Hubbard, Acting Director, Bureau of Public Health Education, now delivered his talk on the work of his bureau. Considerable discussion followed and a vote of thanks was tendered the speaker.

Under regular procedure the meeting was declared adjourned.

HUGO H. SCHAEFER, *Secretary*.

PHILADELPHIA.

The February meeting of the Philadelphia Branch of the American Pharmaceutical Association was held Tuesday evening, February 25th in the quarters of the Philadelphia Clinical Association, with the President W. W. McNeary occupying the chair. Reading of the minutes of the previous meeting and other business matters dispensed with, the Secretary read a communication from the Chairman of the Committee on Local Branches of the Association, explaining a plan which is being put into effect whereby prominent members of the Association furnish monthly a four-minute paper which is read at every local section in the Country. The first paper which was read by the Secretary was one written by Prof. Charles H. LaWall, the incumbent President of the A. Ph. A., dealing with "Shorter Hours for Pharmacists." The presentation was interestingly discussed by Messrs. Cliffe, Peacock, and Hendrickson. The scientific program of the evening was then opened by Dr. W. A. Pearson, dean of the Hahnemann College, who delivered a highly interesting lecture on the "Wonders of Physiological Chemistry." It is rarely that

such a highly scientific study is presented in such a thoroughly interesting manner, as was done by Doctor Pearson. He primarily analyzed the chemical constitution of the human being, pointing out the simple as well as the more complicated constituents of flesh and bone. His explanation and classification of protein compounds, his story of the analysis and synthesis of the amido-acid compounds by the Germans Fischer and Abderhalden, his introductory remarks concerning the cycle of changes through which proteins injected into the human economy must necessarily undergo in order to be fitted into their place in the human structure, were agreeably received by the audience.

Speaking particularly of some of the phenomena of physiological chemistry, which were as yet only vaguely understood, Doctor Pearson treated consecutively the following subjects:

(1) Enzyme action in the gastric and intestinal juices, explaining that pepsin and other proteolytic ferments existed in these digestive fluids in an inactive condition to be released for use in direct proportion to the amount of food to be digested. This happy balance was in some mysterious way calculated to a nicety by nature's own mathematical methods. In other words, the enzymes secreted were in direct proportion to both the amount and character of the food to be acted upon.

(2) *Thermoregulation of the Body*.—The lecturer pointed out the similarity that exists in degree of body temperature in the case of the Eskimo at the Pole or the Peruvian at the Equator. He also explained why the temperature of the body is raised when certain fevers or diseases oppress it. This elevation is partially the cause and partially the effect of the chemical reduction of the foreign bac-

terial proteins produced in the body fluids by the invading bacteria. Normally the happy balancing of forces in the body regulates and maintains the normal body temperature. Disease upsets this balance. Doctor Pearson also referred to the wonderful chemical and physical processes which are daily occurring in our livers and kidneys with the elimination of useless products and the retention and absorption of the necessary principles.

The paper was discussed by Prof. C. H. LaWall and F. E. Stroup.

Dr. George Koch, Agricultural Chemist to the Nulford Company, then presented a valuable paper on the "Cultivation of Medicinal Plants in the United States." This year was the critical year in this industry, the speaker explained, because it will tell whether this new American venture which has apparently been placed on a thoroughly scientific basis can survive foreign competition. He very clearly and thoroughly went into the story of the development of this new branch of American horticultural science and pointed out the fact that in this as in many other sciences, the ingenious Yankee quickly overcame all difficulties and placed the proposition on a paying schedule. The various methods of growing and general peculiarities of the following medicinal plants were discussed in detail: Belladonna, digitalis, hyoseyamus, stramonium and cannabis. Doctor Koch's paper will be published in full in the JOURNAL and consequently it will be unnecessary to abstract it more fully. The paper was discussed by Messrs. Glass, Stroup and Hessler. The Chairman appointed the following committee on Nominations to present their report at the next meeting: Prof. C. H. LaWall, E. G. Eberle and Raymond Hendrickson. The meeting was attended by over 40 persons.

COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 11.

PHILADELPHIA, PA., January 31, 1919.

TO THE MEMBERS OF THE COUNCIL:

Motions No. 14 (Election of A. G. DuMez as Secretary of Scientific Section), No. 15 (Additional Appropriation of \$300 to Item No. 4, Miscellaneous, of Budget of Appropriations and No. 16 (Vote of Thanks to Prof. John Uri Lloyd for Services) have each received a majority of affirmative votes.

President C. H. LaWall writes:

"The information contained in Dr. Day's communication relating to the storage of the archives and stock of the A. Ph. A. brings us to a realization of two things: First, the extent of our indebtedness to Prof. Lloyd for so generously accepting such a complicated and tremendous responsibility and fulfilling his obligations thereto in such a satisfactory manner and without remuneration. Second, the dire need of the Association for a home,

where centralized authority, properly equipped, can handle such things as a matter of routine. This is another argument for the much needed increase in membership."

In December, 1917, the Secretary of the Council received a request from the U. S. Chamber of Commerce asking that the American Pharmaceutical Association name a War Service Committee to meet in conference with the U. S. Chamber of Commerce War Committees in Washington, D. C.

The request was sent immediately to President A. R. L. Dohme and as a matter of record the following communication of January 22, 1919, is here given:

"In the matter of the War Service Committee, concerning which you wrote Mr. S. L. Hilton under date of January 4, 1919, I am pleased to inform you that when I received your request to have such a committee named, I only had a day or so in which to act before the Conference of the United States Chamber of Commerce War Committees held their meeting at Washington. I, therefore, named Mr. Hilton as Chairman, because he lived at Washington, with authority to name his associates. He named as such associates Messrs. J. H. Beal and A. R. L. Dohme, and the very next day we met at Washington and registered at the Chamber of Commerce Conference, held there in December, 1917.

This Committee became known, and is known, as the A. Ph. A. War Service Committee of the U. S. Chamber of Commerce. It has been acting ever since that time in connection with that Association. In fact, Mr. Hilton only recently attended the Atlantic City Conference of the U. S. Chamber of Commerce as such War Service Committee Chairman. I expected to be able to attend the Atlantic City Conference, but was unable to secure accommodations at Atlantic City, and hence could not attend. He, however, named an alternate in my place.

I trust this will straighten up the matter of the War Service Committee of the A. Ph. A. as far as your records go."

The Secretary of the Council has received the following communication of January 26, 1919, from S. L. Hilton, Chairman of the War Service Committee of the American Pharmaceutical Association:

"I think you are quite right, there should be some statement as to the work of the War

Service Committee, and I am pleased to make a report:

"In December, 1917, and while Dr. A. R. L. Dohme was the acting President of the Association, I received from him a notice that he had appointed me chairman of a committee to be known as the War Service Committee of the A. Ph. A. and directing me to attend the meeting of War Service Committees of the Chamber of Commerce of the U. S. A. to be held the following day at the New Willard Hotel, Washington, D. C. He further directed that I was to select my associates. This was the first knowledge I had of a meeting to be held here and naturally I made some inquiries with the result that I 'phoned Dr. Dohme later in the day that I had received his letter, that I would be pleased to act and that I had selected Dr. J. H. Beal and himself (Dr. A. R. L. Dohme) as my associates, and while I could not get in touch with Dr. Beal in time for the meeting I would notify him, and I urgently requested Dr. A. R. L. Dohme to be present and attend the meeting for the reason that important matters would be considered and I thought the President of the Association should be present. We attended the meeting, found delegates from all branches of the drug trade and had a very important conference with them looking to the combined action of a united drug trade; this, however, was not entirely carried out as some interests felt that they should work alone.

"Following this initial meeting there were a number of conferences and our association was always represented, further there were weekly meetings of members of the War Service Committee members located in Washington to discuss matters of importance that were constantly coming up with the Government, the manner of procedure to avoid loss of valuable time when coming to Washington to get in touch with the proper officers of the government service, especially in regard to contracts, furnishing supplies, etc.; of course, we did not figure much in this, but we had the advantage of working together as a unit and bringing about that coördination that was so much desired.

"Then very frequently various departments would want to get in touch with some particular branch of an industry and this was accomplished through the chairman of the War Service Committee of that industry. On many occasions I was called upon to fur-

nish information with reference to professional pharmacy and I am happy to say that I was able to give the information, and on many occasions promptly, even now with the men returning I have received calls from the departments asking whether these men can be taken care of and positions secured for them in our branch, all of which I have advised fully.

Dr. J. H. Beal, Mr. E. G. Eberle and myself attended the Congress of War Service Committees at Atlantic City, held under the auspices of the Chamber of Commerce of the U. S. A., which I am sure all agree was worth while. Mr. Eberle I selected as an alternate, as Dr. Dohme was unable to attend.

"This Congress was called for the purpose of carefully considering the ways and means of bringing about a safe and sane readjustment of conditions to somewhere near pre-war conditions, so as to avoid as much as possible trade and labor difficulties, sudden and rapid declines or depreciation which possibly might bring on a panic and devise ways and means whereby capital and labor could come closer together on a common ground to avoid future trouble and loss of money. The result was most encouraging and I am confident will work out to the satisfaction of every interest. Another important point that was worked out was the question of the cancellation of contracts by the government and the methods of adjustment of same, then to what would be the result if the government should release at one time the enormous supplies of material on hand for which they had no further use. If this was done the market on the majority of commodities would go to pieces, much good has been accomplished and the industries in every particular line will be given an opportunity to take over such material thus holding market condition and avoiding serious losses.

"Since this Congress at Atlantic city, there has been held a meeting of the chairmen of the War Service Committees at the Waldorf Astoria, New York, for the purpose of taking care of a number of questions that were not settled at Atlantic City owing to the lack of time. This meeting in New York I had the pleasure of attending and I looked after the interests of the A. Ph. A.

"This about covers all of my activities as Chairman of this Committee. Yet there is possibly more work to be performed and I

will give same my best attention until my successor is appointed."

J. W. ENGLAND, *Secretary*.
415 North 33rd St.

A. PH. A. COUNCIL LETTER NO. 12.

PHILADELPHIA, PA., February 17, 1919.

TO THE MEMBERS OF THE COUNCIL:

The following communication has been received from William B. Day, Chairman of the Committee on Invested & Trust Funds:
"TO THE COUNCIL OF THE A. PH. A.:

REPORT OF THE COMMITTEE ON INVESTED AND TRUST FUNDS.

Rule 16 of the General Rules of Finance (see page XLVIII of Year Book, Vol. 5) imposes upon our committee the duty of annually recommending to the Council the banks and safety deposit vaults in which the funds and securities, respectively, of the association shall be kept for the ensuing year.

"It therefore becomes our duty to report to the Council with such a recommendation for the fiscal year 1919.

"Treasurer Whelpley informs me that at the present time the principal bulk of the funds and the current account are kept in the International Bank of St. Louis. Some funds are in the Boston Penny Savings Bank, though most of the money, formerly kept there, has been invested in Liberty Bonds. The Treasurer rents for the A. Ph. A. a box in the Title Guaranty Trust Company vaults of St. Louis where the securities of the Association are kept. All of the bonds held by the Association are registered and therefore, cannot be sold without authorization of the Council.

"As Chairman of the Committee on Invested and Trust Funds, I have made inquiry through one of the leading banks of Chicago, concerning the security of these several institutions above named. I have the following information from my bank in reply to this letter of inquiry:

" 'The International Bank, St. Louis, Mo., have been valued correspondents of ours for a great many years and we regard them highly. In our opinion they are in a strong position, their statement of March, 1918, the latest in our possession, showing a capital of \$500,000 with surplus and profits of \$350,000. They favor us with an excellent account and we believe they are entitled to your entire confidence.'

"It is our understanding that the Boston Penny Savings Bank was established more than fifty years ago and it is considered a safe and conservative institution. Their officers appear to be highly regarded and the bank has been recommended to us as being worthy of full confidence. They are said to have a surplus of over \$600,000 and deposits of about \$13,000,000."

"We understand the Title Guaranty Trust Company do not transact a general banking business, but confine their operations to the examination of titles and abstracts and the making of real estate loans. We have been informed that they control the American Trust Company, of St. Louis, which institution does a regular banking business and has deposits in the neighborhood of \$7,000,000. The management of each institution appears to be in excellent standing."

"In view of this opinion, it is the judgment of our committee that it will probably be best not to disturb the places where the funds and securities are being kept and we make this our recommendation."

The following report has been received from General Secretary Day:

"TO THE COUNCIL OF THE A. PH. A.:

APPROXIMATE INVENTORY OF ASSOCIATION PROPERTY.

"An approximate inventory of the Association property recently shipped from Cincinnati has now been completed. I append a brief summary of it.

Proceedings.

1851-1911 (except 1860 when none was issued). One complete set.
Otherwise none for the years 1851, 1854, 1856 and 1859.
Total all other issues in cloth binding..... 2800 copies
Total all other issues in paper binding..... 2300 copies
Total all other issues unbound.. 2400 copies

Year Books.

No. 1 (1912) cloth bound..... 200 copies
2 (1913)..... 350 copies
3 (1914)..... 400 copies
4 (1915)..... 270 copies
5 (1916)..... 300 copies

Fifty-Year Index.

1852-1902, cloth..... 80 copies
unbound... 100 copies

National Formulary III.

Cloth, plain..... 148 copies
Leather, plain..... 9 copies
Cloth, interleaved..... 36 copies
Leather, interleaved..... 28 copies

Bulletin and Journal.

Bulletin, Vols. 1 to 6 (1906-1911), 2 full sets bound.

Journal, Vol. 1 (1912) complete with index, 17 copies bound in cloth.

Unbound numbers of the Bulletin (1906-11) and Journal (1912-14) as follows:

Reserved in files:

	Bulletin.						Journal.		
	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.	1914.
Jan.	30	11*	10*	15	5*	29	37	28	25
Feb.	22	13*	30	15	..	26	40	25	32
Mar.	15*	22	5*	11*	22	26	21*	25	25
Apr.	27	12*	17	6*	27	23	32	30	28
May	18	15*	20	14	25	25	33	35	8*
June	13*	5*	18	14	28	29	32	30	6*
July	20	15*	19	15	31	31	32	36	4*
Aug.	14*	12*	17	15	31	30	40	35	2*
Sept.	10*	19	5*	3*	15*	19	30	30	None
Oct.	12*	22	8*	1*	31	22	34	28	1*
Nov.	15*	14*	15*	5*	24	22	30	26	None
Dec.	3*	16*	7*	15	28	27	32	32	4*

* Indicates entire stock of this issue.

"In addition to these, there are about six boxes of duplicates of the Bulletin and Journal none of which, however, are of the issues marked with an asterisk in the above classification and, therefore, of no value for the completing of sets.

"Other Property, not inventoried:

1 box containing electros used in Year Books.
4 boxes of exchanges, chiefly unbound drug journals.
9 boxes historical material.

DISPOSAL OF THE PROPERTY.

"Attention was called in my last communication (Council Letter No. 10) to the fact that rental for a store room in Cincinnati cost us \$25.00 a month. Considering the bulk of the property (160 boxes aggregating over twenty tons in weight) I do not think we could store it in Chicago for less than that amount. If it were reduced to a third of its present bulk I could undertake to store it indefinitely and without expense here at the School. Upon going over the cash book I find the sales of Proceedings and Year

Books for the past four and a half years (Sept. 1, 1914 to Feb. 1, 1919), total \$320.35. Fully half of this amount has been for current issues of the Year Book. Evidently we could reduce our stock greatly and still retain sufficient to supply all demands for many years to come. Certainly the storage charges would soon consume the value of the property. I, therefore, make the following recommendations for the disposal of the property and ask the approval of the Council:

1. Retain 50 copies of each issue of the Proceedings up to and including 1910 (so far as this number is available).
2. Retain 100 copies of the 1911 Proceedings (practically a year book) and of each issue of the Year Book.
3. Retain the 80 bound copies of the 50-year Index.

4. Retain all stock of the N. F. III.
5. Retain all *bound* volumes of the Bulletin and Journal.
6. Retain the unbound copies of the Bulletin and Journal listed in the above *tabulation*.
7. Retain all historical matter pending further report.
8. Retain all *bound* volumes among the *exchanges*.
9. Dispose of the remainder for its value as paper.

"I estimate that if these recommendations are put in effect we can reduce the bulk of the stored property by more than a half.

"I suggest also that we advertise sets of the five Year Books (1912-1916 inclusive) at a reduced price of \$10.00 for the set."

J. W. ENGLAND, *Secretary*.

415 N. 33rd St.

COMMITTEE REPORTS

AMERICAN PHARMACEUTICAL ASSOCIATION FINANCES.

(Addenda to the Treasurer's Report, by H. M. Whelpley, August 1, 1918.)*

It is now ten years since I assumed the responsibilities of acting as your treasurer. The decade has been an important one in the history of the Association. The membership has almost doubled. The assets and trust funds are about twice the sum represented ten years ago. The Bulletin has become the JOURNAL OF THE A. PH. A., with all that signifies. The Year Book is now even more useful to the calling of pharmacy than ever before. The National Formulary of to-day is a large and important government standard. In a word, the A. Ph. A. has gradually but constantly developed its resources and extended its influence with the passing of time.

To-day we meet for the second convention since the United States entered the World War. We find pharmacy, like every other calling, vitally concerned in the most supreme period in the history of our country. The A. Ph. A. is in fair financial condition to meet the stress of the hour, and our membership ready for individual as well as collective action.

A. Ph. A. Members in the Service.—The association is well represented in the Government war service. Many members enlisted early in the conflict, and more are in the draft. Some were in the service when the war broke out. We have members who are so situated that they desire to pay their annual dues and continue to receive the Journal and Year Book. Others are "over there," somewhere in France, Italy, Russia or other section of the world. I have a list of about fifty members who entered the service but cannot be reached regularly by mail. Many of these will return to civil life and pharmaceutical pursuits after the war. They should again be active in the A. Ph. A. I recommend that the names of all such members be published in the Year Book. Also that those who after the war pay dues for the first fiscal year following the one in which the war closes be recorded as having continuous membership from the date of joining before or during the war. That the printed roll of members indicate the number of years of war service for which dues are remitted. Furthermore, that such years of war service, during which no dues are paid, shall not be counted in determining the date such a member may become a life member by paying a stated lump sum, or by paying for thirty-seven consecutive years, as stated in the By-laws. (This recommendation was adopted.)

The Collection of Dues is the first duty of the treasurer, his second obligation being to take good care of the funds. Ten years ago, the Association permitted delinquents to remain in our

* Submitted at the 1918 meeting. The treasurer's report for 1917 was published in the JOURNAL OF THE A. PH. A., Vol. VII, No. 5, May, 1918.

ranks for three years. Some were carried for even five or more years. To-day, delinquents may be suspended for the non-payment of dues on or after July 1st of the first fiscal year for which they owe. We carry no one beyond one year. To-day, all are paid up to January 1, 1918 and only 381 are delinquent for the past seven months. This number, no doubt, includes many who are in the war service. Owing to war conditions, I have not been quite as insistent, early in 1918, as I was one year previous. I have many letters from delinquents and the sentiment of the following is a fair sample:

"Here is my five dollars and I am off for 'Somewhere in France.' Good luck to the A. Ph. A.! If we soldiers are as watchful as the treasurer, the Kaiser will not be able to escape us."

Auditing the Treasurer's Accounts.—At the 1917 meeting, the Council of the A. Ph. A. instructed the Committee on Finance to employ a registered auditing firm to examine and report on the records and funds of the treasurer. The report of the auditor was published in the JOURNAL OF THE A. Ph. A. for May, 1918. The auditor approved of the methods of book-keeping, accounting and reporting on the financial condition of the Association. After examining the books and records, the auditor considered it unnecessary to recommend any changes whatsoever.

A. Ph. A. Membership.—The exigencies of war times have brought unusual fatalities to our membership and rendered the securing of new members difficult. In order to meet the new conditions, the officers and committees have given constant attention to the work of retaining those already members and securing new ones. As a result, we find to-day practically the same roll as we had August 15, 1917, when a total of 2,640 was reported. We have, however, an unknown quantity in the nearly four hundred who have not paid for 1918. Many of them are now or will soon enter the service. This cuts down our prospective assets compared with the amount realized on the 381 who, one year ago, owed for 1917. That figure was one thousand dollars.

The National Formulary receipts were very large last year, owing to the recent publication of the N. F. IV. I reported \$1390.67 from January 1 to August 15, 1917. We received only \$4059.24 from January 1 to August 1, 1918.

Current Funds.—This account consists of \$16,865.28 in bank and \$10,000.00 in St. Louis 4% bonds known as the General Fund. The total is \$26,865.28 compared with \$16,806.81 on August 15, 1917. The difference is not a profit, but due to the \$10,973.06 paid into the current account by the National Formulary account after the 1917 meeting. In fact, we have lost \$914.59 since August 15, 1918, and we may look for further decrease in revenue from dues and perhaps also from the National Formulary.

Permanent Funds.—These steadily grow apace with time by the accruing of interest. We now have a total of \$39,020.93 or \$1597.15 more than one year ago.

The Trust Funds have in twelve months increased \$286.48 and now amount to \$8949.93.

Special Fund.—Under this heading, we carry the A. Ph. A. Research Fund of \$11,202.55.

Total Funds.—On August 1, 1918, your treasurer was responsible to the Association for a total of \$86,038.69.

SUMMARY OF RECEIPTS FROM JANUARY 1 TO AUGUST 1, 1918.

Cash on hand, January 1, 1918.....		\$ 6,282.86
National Formulary IV.....		4,059.24
Annual dues and Journal for 1916.....	\$ 10.00	
Annual dues and Journal for 1917.....	240.00	
Annual dues and Journal for 1918.....	6,704.75	
Annual dues and Journal for 1919.....	555.00	
		<hr/>
		\$ 7,509.75
Dues only of the A. Ph. A. for 1917 and 1918.....		28.00
2 Parchment Certificates of Membership @ \$5.00.....	10.00	
3 Paper Certificates of Membership @ \$3.00.....	9.00	
		<hr/>
		19.00
National Formulary IV.....		2,001.75
Journal Advertising.....	2,725.97	
Journal Subscriptions.....	146.82	
Journal, Miscellaneous.....	163.61	
		<hr/>
		3,036.40

Carried forward.....	3,036.40	
Proceedings and Year Book.....	51.60	
Index.....	0.50	
Gold Buttons.....	6.00	
Gold Pin.....	2.00	
Plated Pin.....	0.25	
Plated Button.....	0.25	
	<hr/>	8.50
Bank Exchange.....		1.99
Interest on St. Louis City Bonds.....	400.00	
Interest on deposit in International Bank.....	328.15	
	<hr/>	728.15
(FUNDS.)		
American Pharmaceutical Association Research Fund for Liberty Bonds purchased 1917.....	5,000.00	
American Pharmaceutical Association Research Fund Interest on Liberty Bonds.....	100.00	
	<hr/>	5,100.00
Procter Monument Fund for Liberty Bonds Purchased 1917.....	3,000.00	
Procter Monument Fund Interest on Liberty Bonds...	60.00	
	<hr/>	3,060.00
Ebert Legacy Fund for Liberty Bonds purchased in 1917,	2,000.00	
Ebert Legacy Fund Interest on Liberty Bonds.....	40.00	
Ebert Legacy Fund Interest on St. Louis City 4's.....	40.00	
	<hr/>	2,080.00
College Prize Fund, Interest on.....		0.85
Life Membership Fund	597.80	
Life Membership Fund, Fee.....	75.00	
	<hr/>	672.80
Centennial Fund, Interest on.....		73.87
Ebert Prize Fund, Interest on.....		24.08
Endowment Fund, Interest on.....		145.86
		<hr/>
		24,543.10
		<hr/>
		\$34,885.20

SUMMARY OF DISBURSEMENTS FROM JANUARY 1 TO AUGUST 1, 1918.

Salaries.....	\$ 4,691.65
A. Ph. A. Journal.....	3,745.43
Printing, Postage and Stationery.....	495.44
Clerical.....	248.00
National Formulary.....	211.50
Miscellaneous Expenses.....	163.10
Membership Committee.....	52.80
National Drug Trade Conference.....	184.37
Year Book, No. V.....	2,949.88
Women's Section.....	7.80
A. Ph. A. Revision and Research Fund.....	\$4,059.24
A. Ph. A. Revision and Research Fund.....	100.00
	<hr/>
	4,159.24
Traveling Expenses.....	39.50
Section on Education and Legislation.....	8.75
Certificates.....	5.00
(FUNDS.)	
Ebert Legacy Fund.....	80.00
Procter Monument Fund.....	60.00
Ebert Prize Fund.....	24.08

College Prize Fund	0.85
Life Membership Fund.....	672.80
Centennial Fund.....	73.87
Endowment Fund.....	145.86
Total.....	\$18,019.92

SUMMARY OF ASSETS AUGUST 1, 1918.

(PERMANENT FUNDS.)

Life Membership Fund.....	\$23,317.40
Centennial Fund.....	3,131.55
Ebert Prize Fund.....	1,157.35
Endowment Fund.....	7,010.16
Ebert Legacy Fund.....	4,404.47

Total Permanent Funds..... \$39,020.93

(SPECIAL FUND.)

American Pharmaceutical Association Research Fund, Total..... 11,202.55

(FUNDS HELD IN TRUST.)

Rice Memorial Fund.....	178.40
College Prize Fund.....	40.86
Procter Monument Fund.....	8,730.67

Total Funds Held in Trust..... 8,949.93

(CURRENT FUNDS.)

Cash on Hand.....	\$16,865.28
Bonds which belong to Current Funds.....	10,000.00
	26,865.28

Total..... \$86,038.69

RE-ESTABLISHMENT OF SOLDIER AND SAILOR PHARMACISTS.

The Advisory Committee of the A. Ph. A. for Soldier and Sailor Pharmacists perfected many of its plans at a meeting in Cincinnati, during the last days of December. Chairman H. C. Christensen of the Sub-committee on Reciprocal Registration is meeting with hearty co-operation from the several State Boards of Pharmacy, and it appears now that arrangements will be completed within the next month with nearly all of them for Reciprocal Registration to the advantage of Pharmacists and Assistant Pharmacists who are in the service, and who may find it necessary to locate in some other State. Some of the State Boards of Pharmacy do not have an early meeting, and action by them will need to be deferred, but the Committee confidently looks for coöperation on the part of every State Board. Chairman Edward Spease, of the Sub-committee on Education, has submitted to the colleges of pharmacy, the feasibility of arranging for a Special One-Year Course for Registered Pharmacists who may not have had the advantage of a pharmacy college education, and it is hoped that in some manner a plan may be devised by the colleges which will offer special opportunity for the returning men.

In its endeavor to reach pharmacists, drug clerks and chemists, who are now in the service, the Committee has secured assistance of the K. of C. and of the Y. M. C. A. War Service Bureaus. The K. of C. has arranged to post bulletins in all of the huts and Army buildings, and through Mr. Clarence O. Bigelow arrangements have been made with the Y. M. C. A. for the posting of large placards, announcing the work of the Committee in all of the Y. M. C. A. huts and buildings overseas. Through the United States Employment Service, in charge of Chief I. W. Litchfield, posters and announcements of the work of the Committee are also being made in every one of the Army camps within the country. In the Navy through the assistance of the Bureau of Medicine and Surgery, proper announcement has been arranged for in the Hospital Corps Supplement. The Committee is seeking still further means of reaching every soldier and sailor pharmacist, drug clerk and chemist, wherever he may be, and will appreciate every assistance that can be rendered in that respect. It is suggested, that those who are in correspondence with men in the service mention the work of the Committee, and ask that they communicate with it, and also urge other pharmacists in the service with whom they may come in touch to do so.

The Committee has decided to ask local coöperation in all cities throughout the country having a population of more than fifty thousand, and in all such cities a local committee will be appointed to have the work in charge. Many inquiries for positions have already come to the Committee from men who are now being discharged from the service, and in every case the Committee has been fortunate in being able to offer quite a list of openings. It is becoming even more evident, however, that the problems of the Committee will be great when the last half of the men return from the service, and it must be in possession of information from every drug store in the country in order to provide for systematic distribution in keeping with the needs of each section. Funds will be badly needed, though some contributions have been made by a few manufacturing houses. The Committee in order to properly carry on its work requires a number of employees to take care of correspondence and the compilation of data. Everyone should take to heart that the scope of the Committee's work and its success in the first place depend upon sufficient financial support. All contributing checks should be made payable to H. M. Whelpley, Treasurer, and mailed to the A. Ph. A. Advisory Committee for Soldier and Sailor Pharmacists at No. 1005 Mercantile Library Bldg., Cincinnati, Ohio.

(Signed) FRANK H. FREERICKS, *Chairman*.

THE 10TH MEETING OF THE CHICAGO BRANCH OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The one hundredth meeting of the Chicago Branch, A. Ph. A., was held February 21, at La Salle Hotel, preceded by a dinner. The subject of the evening was "Pharmaceutical Research." The two papers on the subject were by Wilbur L. Scoville of Detroit and Dr. George D. Beal of Urbana. These were freely discussed, and will be printed in the April number of the JOURNAL OF THE A. Ph. A., at which time also a report of the meeting will be included under "Local Branches."

The Branch whole-heartedly resolved that pharmaceutical research should receive more active support from pharmacists. The meeting was a most successful one and besides a good attendance, letters from pharmacists of various sections were read, expressing their regrets on account of not being able to attend the centenary meeting.

THE VICTORY MEETING OF THE AMERICAN CHEMICAL SOCIETY.

Secretary George D. Beal, of the Division of Pharmaceutical Chemistry, has sent out the following announcement: "The Victory Meeting of the American Chemical Society will be held in Buffalo, New York, April 8th to 11th. The topic before the Division of Pharmaceutical Chemistry at that time will be "The Possibilities of Drug Research." We wish to hold a symposium on this very timely topic, which has been brought to the fore by Professor Herty in his editorials in the *Journal of Industrial and Engineering Chemistry*, and invite your coöperation. We will also have our usual program of papers on topics of general interest. The titles of papers should be in my hands by March 21st, or in Secretary Parson's hands by March 24th."

The address of Dr. George D. Beal is 203 Chemistry Building, Urbana, Ill.

Sincerely yours,

G. D. BEAL, *Secretary Division of Pharmaceutical Chemistry*.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Committee on Publication: J. W. ENGLAND, *Chairman*; G. M. BERINGER, CASWELL A. MAYO, H. B. MASON, E. L. NEWCOMB, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on Progress of Pharmacy, *ex-officio*.

BETTER RECOGNITION AND UTILIZATION OF PHARMACISTS IN THE BRITISH ARMY.

It is gratifying to note that the efforts of the British Pharmaceutical Society have met with a degree of success. England and the United States act along related lines of thought in many things and this may be an encouragement for us. The American Pharmaceutical Association and the National Pharmaceutical Service Association are continuing their efforts for better recognition of pharmacists in the U. S. Army.

Army Council Instruction No. 8 of the British War Office under date of January 3, 1919, reads as follows:

CLASSIFICATION AND EMPLOYMENT OF PHARMACISTS AND DISPENSERS.

1. All pharmacists and their assistants and dispensers serving in the R. A. M. C. will in future be classified as:

(A) *Superintending Pharmacists*, (B) *Pharmacists*, or (C) *Dispensers*.

2. (A) *Superintending Pharmacists* and (B) *Pharmacists* will only include those who are.

(i) Registered as pharmaceutical chemists or chemists and druggists in Great Britain. (Major or Minor qualification of the Pharmaceutical Society of Great Britain.)

(ii) Registered as pharmaceutical chemists in Ireland. (Licentiate of the Pharmaceutical Society of Ireland.)

3. The Officer in charge R. A. M. C. Records will verify the qualifications of each man claiming to be a pharmacist and will make the necessary entry on the soldier's documents accordingly.

4. (C) *Dispensers* will include the following:

(i) Those men who have passed the R. A. M. C. examination as dispenser in accordance with Standing Orders, R. A. M. C.

(ii) Those who hold the diplomas of the Society of Apothecaries of London or of Dublin as apothecaries' assistants.

(iii) Those who are registered as chemists and druggists or as druggists in Ireland.

(iv) Those who have been engaged in dispensing medicines for a period of not less than three years [see par. 5 (iv)].

5. Verification of the qualifications of men to be registered as dispensers will be carried out as follows:

(i) By reference to the entries on attestation papers.

(ii) By production of the certificates issued by the licensing body.

(iii) By reference to the official Register of Chemists and Druggists and of Druggists in Ireland.

(iv) By inspection of testimonials from previous employers, and, if considered necessary, by an oral and practical examination conducted by an officer of the R. A. M. C., assisted by a pharmacist.

6. All pharmacists on being posted to the R. A. M. C. will undergo the usual recruits' training at the R. A. M. C. Reserve Training Centre at Blackpool, and will then be posted to the larger hospitals at home, where they will undergo a two months' course of instruction in the duties of a N. C. O. in charge of a dispensary and in the regimental duties of a N. C. O. of the R. A. M. C.

7. The Officer i/c the hospital to which pharmacists are posted for training will arrange for them to be examined at the termination of their course as to their knowledge of the methods of accountancy in the receipt, issue, and dispensing of medical stores, etc., and as to their capability of undertaking the general duties of a N. C. O., R. A. M. C. He will forward a report of the examination to the D.D.M.S., with a nominal roll of those pharmacists whom he considers in all respects fit for subordinate charge of a dispensary.

The D.D.M.S., if he concurs, will forward the names of those recommended to the Officer i/c R. A. M. C. Records, who will have them registered as superintending pharmacists and cause the necessary entries to be made in their documents. These superintending pharmacists will then be considered as available for the subordinate charge of a dispensary,

and will be posted as required by the D.D.M.S. for the Command or District, or by the D.G.M.S. or D.M.S. of the Force in which they are serving.

8. In the event of a pharmacist being unfavorably reported upon the termination of his training, the Officer i/c the hospital may arrange for his further instruction for a period of two months and re-examination, or he may report that he is unsuitable to be employed as a superintending pharmacist. If he considers, however, that he is suitable for employment in dispensing duties although not capable of subordinate charge, he will submit a report on the matter to the D.D.M.S. for transmission to the Officer i/c R. A. M. C. Records. In this case the soldier will remain recorded as a pharmacist, but he will not be eligible for employment as a "superintending pharmacist."

9. In the event of a pharmacist being considered by the Officer i/c the hospital as quite unfit to be employed in the dispensing of medicines, a special report will be rendered by the latter to the D.D.M.S. for transmission to the W.O.

10. All pharmacists serving in the R. A. M. C. at the present time at home and abroad will, unless they are employed on other special duties, be posted to hospitals for instruction and examination, but the period of instruction may be curtailed at the discretion of the Officer i/c the hospital. Reports on each pharmacist should be rendered as in paras. 7, 8 and 9.

11. In all hospitals of 100 beds and over a superintending pharmacist will be placed in subordinate charge of the dispensary, but the other personnel employed therein on dispensing duties may be either pharmacists or dispensers.

12. A dispenser who has, prior to the date of this A. C. I., passed the examination for dispensers in accordance with the Standing Orders, R. A. M. C., will, if otherwise suitable and recommended by the D.D.M.S., be eligible for the subordinate charge of a dispensary.

13. Where the duties of a superintending pharmacist are being carried out at the present time by a female dispenser, and the Officer i/c the hospital is satisfied that the duties are being satisfactorily performed, the present holders of the appointment may be retained.

14. A superintending pharmacist, or N.C.O., R.A.M.C., qualified as in parag. 12, other than a civilian, appointed to the subordinate

charge of a dispensary will be granted the acting rank of sergeant with pay while so employed, and in those hospitals where three or more pharmacists or dispensers are employed he will be given the acting rank of staff sergeant with pay.

15. No increase of establishment is authorized by this A. C. I., and these ranks will be included in the total ranks of staff sergeants and sergeants in those units for whom a War Establishment exists.

16. In the case of hospitals for which no War Establishments exist, these ranks will be held supernumerary to those authorized by the Officer i/c R. A. M. C. Records for the company on the strength of which they are borne, but will be included in the total of other ranks authorized for the hospital or other formation in which they are employed.

17. In those cases where the number of hospital beds on the establishment is less than 100, but the dispensing duties for outpatients are sufficiently important to justify the appointment of a superintending pharmacist, the D.D.M.S. of the Command will submit the case for consideration to the W. O. or to the G. O. C.-in-C. of the Force abroad.

18. In the event of there not being sufficient pharmacists available in the Force or Command, application should be made to the Officer i/c R. A. M. C. Records through the usual channels.

19. Superintending pharmacists will only be included in drafts for service overseas when specially ordered by the W. O., but when units are mobilized for service overseas and dispensers are included in the establishment, a superintending pharmacist should invariably be detailed as the senior except in the case of field ambulances, where dispensers only should be posted.

20. Dispensers may be ordered overseas at the discretion of the Officer i/c R. A. M. C. Records.

METHODS OF STERILIZING HYPODERMIC INJECTIONS.

The following list, in tabulated form, was prepared by Lesude and appeared in the *Schweizer Apotheker Zeitung*, and we have rearranged the matter from a reprint in *The Pharmaceutical Journal and Pharmacist* of January 18, 1919, p. 34.

(a) Sterilizable in the autoclave at 115° for fifteen to twenty minutes:

Adrenalin, sodium benzoate, brucine sulphate; iron, guaiacol and sodium cacodylates; caffeine; sodium cinnamate; cocaine hydrochloride; salts of codeine; creosote; eucaine; sodium formate; gelatin (twice or thrice); guaiacol; heroine; holocaine; lactic acid; magnesium sulphate, salts of mercury with mineral acids; salts of morphine; novocaine hydrochloride, salts of pilocarpine; salts of quinine; non-phosphatic sera; strychnine sulphate; stovaine.

(b) Sterilizable at 100°:

Salts of aconitine; adrenalin; alypin; apomorphine hydrochloride; salts of atropine; brucine; sodium cantharidate; cantharidin; cinnamic acid; colchicine; duboisine sulphate; emetine hydrochloride; galyi; potassium, sodium and iron glycerophosphate; hyoscyamine hydrochloride; ludyi; methylene blue; narceine hydrochloride; nirvanin; salts of physostigmine; quinine cacodylate; scopalamine hydrochloride.

(c) Sterilizable by Tyndallization (four to five times at 60° to 70°):

Aristol; chloral; curare; ergotinine; hectine; hectargyre; lecithin; sodium nucleinate; oils.

(d) Sterilizable by filtration through a Chamberland filter:

Calcium glycerophosphate, organic extracts isotonic salt solution; therapeutic sera; tuberculin; vaccine; mineral waters; yeast.

(e) To be prepared with aseptic precautions:

Crystalline aconitine; arsacetin; collargol; cholesterin; all colloids; cryogenin; crystalline digitalin; electrargol and all electric colloids; ichthyol; most mercury salts with organic acids; medicated oils; protargol; salvarsan; neosalvarsan.

BENZYL ALCOHOL AS A LOCAL ANAESTHETIC.

The application of benzyl alcohol, phen-methylol, as an anaesthetic is credited to Dr. David L. Macht, of the Pharmacological Department of Johns Hopkins University. It is reported to be very much less toxic than cocaine and possesses the advantage of being without some of the unpleasant reactions peculiar to cocaine.

According to press reports the local anaesthetic properties of benzyl alcohol were accidentally revealed to Dr. Macht while he was experimenting with benzyl benzoate. He happened to taste a minute particle of the benzyl alcohol and found that his tongue had become completely anaesthetized. There was

a slight irritability and this was followed by a sensation of numbness, coolness and hardness, very much like that caused by a cocaine solution. A series of careful experiments followed and the anaesthetic properties of the benzyl alcohol were amply established. The results were so satisfactory, in fact, that the use of the chemical was commenced at the Johns Hopkins Hospital. The discovery came at an opportune time last spring, when the supply both of cocaine and novocaine was short and prices had been sent to unprecedented figures by the government demand for war uses.

NARCOTIC "MUSTS" ISSUED TO THE NEW YORK DRUG TRADE.

Commissioner Frank Richardson has obtained suggestions relative to enforcement of the New York Narcotic Law, and after analysis of them has prepared a summary which has been mailed to New York druggists. They follow:

An apothecary is compelled:

1. To register with the Department of Narcotic Drug Control before he can purchase, possess, sell, distribute, or dispense cocaine, opium or its derivatives.
2. To use official triplicate order forms in purchasing narcotic drugs.
3. To require from the physician an order on an official order form before furnishing narcotic drugs. He cannot accept in lieu of the order form the physician's official or unofficial prescription blank.
4. To keep a separate file of unofficial prescriptions for cocaine or opium or its derivatives for a period of two years.

5. When filling prescriptions on official triplicate prescription blanks to indorse on the face of the original and the duplicate—the date of filling, file number, his name and business address, and name of the person to whom delivered, if other than the person for whom the prescription was issued, and keep one duplicate on file for two years and mail the other to this department within twenty-four hours from date of filling.

An apothecary cannot:

6. Fill a prescription written on official triplicate prescription blanks later than four days from date of issue.
7. Sell hypodermic syringes or needles to any person other than a dealer in surgical instruments, apothecary, physician, dentist,

or veterinarian, except on the written order of a physician.

In all cases of apparent conflict with the Harrison law, the Federal law takes precedence.

The commission also has summarized the law for the benefit of physicians and will send copies to every doctor in New York.

COMMITTEE NAMED TO PLAN DRUG RESEARCH INSTITUTE.

Dr. William H. Nichols, president of the American Chemical Society, has announced the appointment of a committee on an estimate of cost and an outline of policies for the proposed National Institute of Drug Research. The committee consists of prominent chemists, biologists and pharmacologists and also representatives of the large interest, in manufacturing pharmacy, and includes specialists who are peculiarly fitted to cope with present-day problems relating to intoxicants and the dangers of drug addiction. Its personnel is as follows:

Dr. John J. Abel, pharmacologist, former president of the American Society for Pharmacology and Experimental Therapeutics, professor of pharmacology at Johns Hopkins Medical School, discoverer of the substance now known as adrenalin and an investigator of the action of alcohol on the body, Baltimore, Md.

Dr. Raymond F. Bacon, director of the Mellon Institute for Industrial Research, University of Pittsburgh, in charge of important researches on bread, fruit juices, coffee, and many lines of industrial chemistry, Pittsburgh, Pa.

Dr. Frank R. Eldred, chief of the scientific department of a prominent firm of manufacturing pharmacists and formerly chairman of the pharmaceutical division of the American Chemical Society, Indianapolis, Ind.

Dr. Charles H. Herty, chairman; editor of the *Journal of Industrial and Engineering Chemistry*, and former president of the American Chemical Society, New York City.

Dr. Reid Hunt, pharmacologist, president of the American Society for Pharmacology and

Experimental Therapeutics, professor of pharmacology in the medical department of Harvard University, a noted authority on the effects of poisons and alcohol upon the human body, Cambridge, Mass.

Dr. Treat B. Johnson, professor of organic chemistry, Sheffield Scientific School, Yale University, and specialist on compounds occurring in the human body, for which work he was awarded last year the Nichols medal for preëminence in research, New Haven, Conn.

Dr. P. A. Levene, chief of the department of biological chemistry, Rockefeller Institute for Medical Research, and an expert on proteins and enzymes and the chemistry of nutrition, New York City.

Mr. F. O. Taylor, chairman of the pharmaceutical division, American Chemical Society, specialist in the manufacture of drugs, Detroit, Mich.

Dr. Herty in a recent address before the New York Academy of Sciences outlined a tentative plan of the institute, the organization of which has been considered on a basis of \$10,000,000. The object of the institute will be to make a thorough study of the effect of various medicinal substances upon the human organism, to suggest greater means for curing the ills of mankind and to prevent the abuse of drugs through gaining a wider knowledge of their physiological effects.—*Paint, Oil and Drug Reporter*.

PROPOSED FLORA OF THE PHILIPPINES.

The Philippine Bureau of Science is planning to start the preparation of a new dictionary of plant names of the Philippine Islands and a critical enumeration of all known species in the islands, with an adjustment of the synonymy, in preparation for the final undertaking, a general flora of the Philippines. It may be possible to combine the Filipino names with the systematic enumeration, thus making a single publication that will include all the technical and local names credited to every plant in the Philippines.

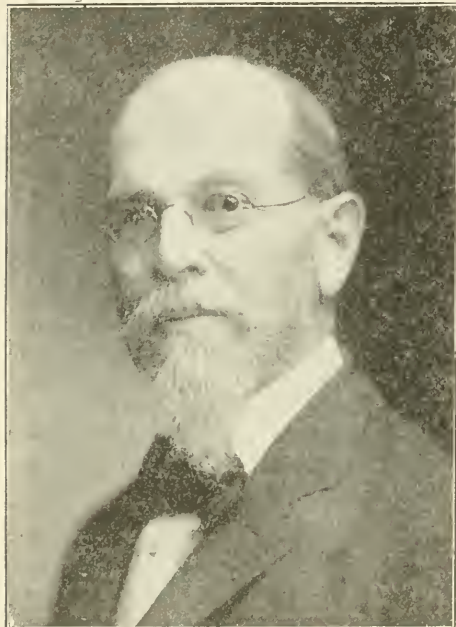
OBITUARY.

JAMES OSCAR BURGE.

J. O. Burge, honorary president of the American Pharmaceutical Association, 1916-1917, died at his home in Nashville, February 6, 1919. He joined the American Pharma-

ceutical Association in 1878 and during all these years was an untiring worker for its interests. The meeting of this organization convened in Nashville in 1913, and it was largely due to the efforts of Mr. Burge that

this city was selected. He served as local secretary, and how well he performed the duties is still remembered by the greater number of those in attendance. He was secretary of the Section on Commercial Interests from 1893-1895, at one time a member of the Council, and for years of important committees. His great interest was in the work of the Membership Committee and a large percentage of the A. Ph. A. members from the southwest were brought into the Association through his efforts.



JAMES OSCAR BURGE

In Tennessee he contributed largely to the success of the State Association meetings; by this body he was honored with nearly every office and seldom, if ever, failed to attend the annual conventions. He ever exhibited an interest for pharmacy and was instrumental in the establishment of the Nashville Branch, A. Ph. A., of which he was for a number of years the presiding officer.

The following is reprinted from the Nashville *Banner* of February 7, 1919:

"The death of J. O. Burge, which occurred at his home, 1502 McGavock, February 6th, is a distinct loss to the business, social and religious life of Nashville. He was gentle,

kind and considerate in all his relations with his fellow-men. He was a good friend, a good neighbor, a good Christian, an ideal citizen and one who was strongly drawn by home ties. The latter exemplified one of the finest traits of his character.

"For many years he had been closely associated with the drug trade, and if any druggist in the state were asked who is the best known man in the pharmaceutical profession in the state the name that would at once suggest itself is that of J. O. Burge, of Nashville.

"James Oscar Burge was born near Bowling Green, Ky., March 27, 1848, and was in his 71st year at the time of his death. He graduated from the Philadelphia College of Pharmacy in 1876 and received high commendation from the faculty. Prior to his graduation from the College of Pharmacy he had had ten years' practical experience in the business.

"For a number of years he was in the drug business at Franklin and Bowling Green, Ky., and in 1880 came to Nashville and organized the firm of Burge & Matthews. In 1882 he sold his interest to his partner, and returned to Bowling Green, where he still owned a store. In 1885 he returned to Nashville as the head of the firm of Burge & Rascoe, corner of Broad and Market Sts. After he had severed his connection with this firm he conducted drug stores at the corner of Fifth and Woodland Sts., Union and Cherry Sts. and various other locations in Nashville, and his name is more closely associated with the drug trade of Nashville than that of any other man. Until about a year ago he was acting as chemist for Berry, DeMerville & Co., wholesale druggists, but resigned this position to take an active part in the management of the Wharton Chemical Company and the Gattis Chemical Company, which he had organized in connection with his son, J. O. Burge, Jr.

"In 1877 he married Miss Nannie B. Hill, of Nashville, who survives him. Also surviving him are two sons, Edward E., of the claim department of the N. C. & St. L. railway, and J. C., Jr., of the Ford Tobacco Works, the Wharton Chemical Company and the Gattis Chemical Company. He was a member of the Edgefield Baptist Church.

SOCIETIES AND COLLEGES.

MEETING OF
AMERICAN DRUG MANUFACTURERS
ASSOCIATION

The Executive Committee of the American Drug Manufacturers Association met recently and completed arrangements for the Eighth Annual Meeting of that organization. The Waldorf-Astoria, New York City, will be the place, as in the past, and the dates will be March 24, 25, 26 and 27. Owing to the increase in the activities of the Association, the convention will be a four-day instead of the three-day affair of bygone years. The 24th will be given over to the Committee on Standards and Deterioration, the morning of the 25th to the Biological Section, and the regular sessions of the Association as a whole will start on the afternoon of the 25th, when the delegates of allied associations will be received.

The convention this year will be featured by many innovations, notably a series of roundtables for the discussion of such problems as fire insurance, returned goods, credit matters, elimination of monthly statements, etc., and a debate by authorities of nationwide reputation on the much mooted question of trade acceptances, as applied specifically to drug manufacturers. Dr. Chas. H. Herty will speak on the Proposed National Institute for Drug Research which will also be one of the principal subjects of general discussion.

Of particular interest to the trade generally will be the consideration which will be given the problem of the future of alcoholic medicinal preparations. Those of foresight in the drug trade recognize that with national prohibition upon us these preparations will become the subject of regulation in practically every state and, in many cases, of regulations so drastic as to seriously embarrass their legitimate manufacture and sale.

THIRTY-FIFTH ANNUAL MEETING OF
MINNESOTA STATE PHARMA-
CEUTICAL ASSOCIATION.

The thirty-fifth annual meeting of the Minnesota State Pharmaceutical Association was held in St. Paul, February 24-26, 1919. An open discussion on the problems of the

retail druggist was of general interest and also the topic of "National Legislation" presented by Secretary S. C. Henry, of the N. A. R. D. The program of the Scientific Section announced the following titles of papers and addresses:

An Address—"Reconstruction Problems in Pharmacy," presented by request of the, officers of the association by Dr. C. B. Jordan, President of the American Conference of Pharmaceutical Faculties, and Dean of School of Pharmacy, Purdue University, LaFayette, Ind.

"War Experiences of a Pharmacist," by Lieutenant Cleve Backman, Rushford, Minn.

"Participation by Pharmacists in General Health Problems," Dr. H. M. Bracken, Executive Officer, State Board of Health.

"The Pharmacists Cooperation in the Suppression of Venereal Diseases," by Dr. Irvine, of the State Board of Health.

"Upward Pharmacy," by Miss Marie A. Piesinger, New Prague.

Report, Committee on Adulteration, by Prof. Gustav Bachman, Chairman.

"The Therapeutic Value of Digitalis Leaves Collected at Different Seasons of the Year," by E. L. Newcomb, Minneapolis.

"Alcohol Determination Methods," by Prof. Chas. H. Rogers, Minneapolis.

"Old Time Pharmacy, Including an Exhibit of Old and Rare Pharmaceutical Volumes" by G. J. DeMars, Fertile, Minn.

"Pharmacy and the Druggist," by L. J. Aberwald, St. Paul.

"Pharmacy an Essential Speciality," by Dr. Henry Kraemer, College of Pharmacy, University of Michigan, Ann Arbor, Mich.

"The Advent of Pharmacy into St. Paul," by H. W. Rietzke, St. Paul.

"Some Remarks on Pharmacy in the Army," by Lieutenant Joseph Vadheim, Tyler, Minn.

Dean Frederick J. Wulling, besides presiding over these sessions, was named on the program as a contributor of a paper and also Charles McGregor, of the Minnesota Board of Pharmacy.

The Northwestern Branch, A. Ph. A., met jointly with this section and following its adjournment elected officers for the ensuing year.

THE PHARMACIST AND THE LAW.

USE OF ALCOHOL IN MEDICINALS.

The Commissioner of Internal Revenue has recently issued regulations for the sale of alcoholics. Preparations, such as elixirs, etc., of the U. S. P. and N. F., that are used largely as vehicles must bear a statement as follows:

"This preparation has been made with non-beverage alcohol, and the sale or use thereof for beverage purposes will render the vendor or user liable to severe penalties."

All persons are forbidden to sell or deliver distilled spirits or wines for use or sale for other than beverage purposes, to any person, firm or corporation not qualified as a user or dealer as herein required (the permit to sell) and then only upon delivery of the person so qualified an application therefor in due form.

The Regulations:

If an alcoholic compound is already listed in T. D. 2544, or subsequent decisions of similar purport as one requiring special tax for its manufacture and sale, permit shall not be issued, nor will permits be issued to retail liquor dealers except pharmacists, as herein-after provided.

Where the manufacturer desires to make United States Pharmacopoeia or National Formulary products, the permit may be approved by the collector of internal revenue without submitting the matter to this office, and as to such products a statement of the names by classes, such as "tinctures," "extracts," etc., and that they conform to the standards above specified will be sufficient without any further description or statement of formula.

In the case of alcoholic medicinal compounds which are not in conformity with the United States Pharmacopoeia or National Formulary, the manufacturer will file with the collector, when requesting a permit for the use of non-beverage alcohol or non-beverage wines, the following data in duplicate: The name of the preparation, by whom manufactured, for whom manufactured in cases where same is not placed on the market by the manufacturer, the advertising matter distributed with the preparation, and the percentage of alcohol by volume contained in the finished product.

A sworn statement, in duplicate, must be furnished that the medicinal compound contains no more alcohol than is necessary for the purposes of extraction, solution or preservation; that it contains in each fluidounce a

dose as a whole or in compatible combination of one or more agents of recognized therapeutic value; that it contains no agents either chemically or physiologically incompatible with the active medicinal agents upon which the medicinal claims are based, and that it is not a beverage and is not to be sold or used as a beverage. The Commissioner of Internal Revenue reserves the right, when in doubt as to the non-beverage character of the preparation (and the applicant must accept such reservation), to demand at any time the formula and process by which the article is manufactured. The collector immediately after issuing the permit will forward one copy of the data above specified to this office for filing in the Division of Chemistry, retaining one copy for his files.

Where the collector is in doubt as to whether or not the medicinal compound is a beverage, he will issue the permit and submit the entire matter to the Commissioner of Internal Revenue with a commercial package or packages of not less than 16 ounces of the product for determination.

Homeopathic pharmacists, in order to obtain and use non-beverage alcohol in the manufacture of potencies, attenuations or dilutions, or sell the same, are required to make application and obtain permit and give the required bond in the same manner as any other user or dealer in non-beverage alcohol. Such pharmacists in order to obtain and use non-beverage alcohol, must, under all circumstances, qualify by filing bond and obtaining permit regardless of the manufacture and sale of the dilutions.

Any physicians or other person desiring to purchase or use such attenuations, potencies or dilutions or the non-beverage alcohol for making the same, must likewise qualify by filing bond and obtaining permit, except that a Homeopathic physician or any other person may obtain from the pharmacist not exceeding two drachms of any attenuation, potency or dilution at one time without filing bond and obtaining permit. A physician may dispense these attenuations, potencies or dilutions in quantities ordinarily prescribed to patients, and such patients need not file bonds or hold permits. Homeopathic physicians and pharmacists who are unwilling to take out permits and give the required bonds may, prior to June 30, 1919, purchase and use beverage spirits produced from materials fermented

prior to 11 o'clock P.M., September 8, 1917, and tax paid at the beverage rate.

The ruling contained herein as to the use and sale and the right to manufacture such dilutions, potencies or attenuations, places the Homeopathic pharmacist, or physician and user of the dilutions, potencies or attenuations in practically the same position as pharmacists and physicians of other schools. Any person claiming the right to use non-beverage alcohol must establish his right by complying with the laws pertaining to the same and the regulations issued in pursuance thereof.

Non-beverage alcohol and non-beverage wine may be used in the manufacture of bona fide flavoring extracts for culinary purposes and soft drinks where such extracts are manufactured in accordance with the standards prescribed in the U. S. P. and N. F. and by the Secretary of Agriculture. Where not manufactured in accordance with such standards the sworn data and samples required herein as to alcoholic and medicinal compounds will be required. (See Art. 8, d and e.)

Pharmacists who are holders of special tax stamps as dealers will be entitled to use or sell alcohol or wines for other than beverage purposes, but they will be required to obtain permit, give bond, and make application as herein prescribed.

Pharmacists who hold permit and have given bond will be permitted to sell non-beverage alcohol in a quantity not exceeding one pint, without a physician's prescription, to persons who do not hold permits and who have not given bonds, but not in advance of orders, provided they first medicate the same in accordance with any one of the formulas recited hereafter:

- (1) Carbolic acid 1 part, alcohol 99 parts.
- (2) Formaldehyde 1 part, alcohol 250 parts.
- (3) Bichloride of mercury 1 part, alcohol 2,000 parts.
- (4) Bichloride of mercury 0.8 gramme, hydrochloric acid 60 Cc., alcohol 640 Cc., water 300 Cc.
- (5) Bichloride of mercury $1\frac{1}{2}$ grains, hydrochloric acid 2 drachms, alcohol 4 ounces.
- (6) Formaldehyde 2 parts, glycerine 2 parts, alcohol 96 parts.
- (7) Carbolic acid 1 drachm, tannic acid 1 drachm, alcohol 1 pint, water 1 pint.
- (8) Alum $\frac{1}{2}$ ounce, formaldehyde 2 drachms, camphor 1 ounce, alcohol and water, each 1 pint.
- (9) Liquor Cresolis Comp. (U. S. P.), 10 Cc., alcohol 1,000 Cc.

When medicated as herein provided, the alcohol will be regarded as having lost its identity as such and when thus medicated and sold in good faith for rubbing purposes, special tax liability will not be incurred.

The container of such alcohol will bear a "Poison" label.

Any abuse of these privileges will, however, result in recall of the pharmacist's permit and its cancellation.

Attention is hereby called to the fact that non-beverage alcohol cannot be dispensed to persons who do not hold permits, whether upon physician's prescription, or otherwise, except in a quantity of one pint or less, and on condition that the alcohol is first medicated according to one of the 9 formulas set forth herein.

The so-called non-beverage spirits and non-beverage wines must not be dispensed on a physician's prescription, unless in the compounding thereof the same are so medicated as to render them absolutely unfit for use as a beverage. In case of prescription compounding, the druggist will be held absolutely responsible as to the sufficiency of the medication.

Manufacturers of extract of Jamaica ginger will not be issued permits covering the use of non-beverage alcohol in the manufacture thereof unless the same is made in accordance with the process prescribed in the United States Pharmacopoeia. Manufacturers of alcoholic preparations which it is possible to use internally, such as flavoring extracts, must, wherever standard process of manufacture is prescribed by the Secretary of Agriculture, use such process.

Where the same person, firm, or corporation is operating a number of drug stores in the same city, the withdrawal or purchase for sale or use of alcohol and wine for non-beverage purposes at all of these stores may be covered by a single bond, permit, and serial number. The bond in such case must be in sufficient amount to cover the operation at all the different stores, and the name and location of each store where sales are to be made must be stated in the appropriate spaces in the bond. The original permit will be posted at the main store, and a copy of the same must be posted at each of the other stores with a notation in the margin thereof setting forth the fact that the original is posted at the main store, giving the street address where the same is located.

NARCOTIC LAW AND RULINGS.

By the terms of Section 1006 the Harrison Law is amended to require every person who manufactures, imports, produces, compounds, sells, deals in, dispenses or gives away opium, or coca leaves or any of the salts, derivatives, compounds or preparations thereof, to register with the collector of Internal Revenue in his district *within thirty days after the passage of the act* and annually thereafter on or before July 1st. All persons, firms or corporations who engage in such business subsequent to the passage of the Act, shall register in a like manner.

Registration must be accompanied by the payment of a special license tax as follows:

Importers, manufacturers, producers or compounders, \$24.00 per annum; wholesale dealers, \$12.00 per annum; retail dealers, \$6.00 per annum; physicians, dentists, veterinaries, \$3.00 per annum. These taxes are to be in lieu of the present fee of \$1.00.

By the terms of the bill a manufacturer is deemed to be any person "who imports, manufactures, compounds or otherwise produces for sale or distribution any of the aforesaid drugs."

A stamp tax of one cent for each ounce or fraction thereof is to be levied upon all opium, coca leaves, any compound, salt, derivative, or preparation thereof and it shall be unlawful to purchase, sell, dispense or distribute any of the aforesaid drugs, compounds, or preparations except in the original stamped packages or from the original stamped package, except on prescription of a duly registered physician, dentist or veterinary, in which case a label bearing the name and registry number of the druggist, serial number of prescription, name and address of patient, and name, address and registry number of the person writing the prescription.

Section 1007 provides that a record shall be kept of all sales of articles formerly exempted from the provisions of the Harrison Anti-Narcotic law. This section amends Section 6 of the Harrison law, making it read as follows, the new matter as prepared by the Conference Committee being in italics:

"Sec. 6. That the provisions of this act shall not be construed to apply to the *manufacture*, sale, distribution, giving away, dispensing, or possession of preparations and remedies which do not contain more than two grains of opium, or more than one-fourth of a grain of morphine, or more than one-eighth

of a grain of heroin, or more than one grain of codeine, or any salt or derivative of any of them in one fluidounce, or, if a solid or semi-solid preparation, in one avoirdupois ounce; or to liniments, ointments, or other preparations which are prepared for external use only, except liniments, ointments, and other preparations which contain cocaine or any of its salts or alpha or beta eucaine or any of their salts or any synthetic substitute for them: Provided, that such remedies and preparations are *manufactured*, sold, distributed, given away, dispensed, or possessed as medicines and not for the purpose of evading the intentions and provisions of this act; *Provided further, that any manufacturer, producer, compounder, or vendor (including dispensing physicians) of the preparations and remedies mentioned in this section shall keep a record of all sales, exchanges, or gifts of such preparations and remedies in such manner as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, shall direct. Such record shall be preserved for a period of two years in such a way as to be readily accessible to inspection by any officer, agent, or employee of the Treasury Department duly authorized for that purpose, and the State, Territorial, district, municipal, and insular officers named in section 5 of this act, and every such person so possessing or disposing of such preparations and remedies shall register as required in section 1 of this act and, if he is not paying a tax under this Act, he shall pay a special tax of \$1 for each year, or fractional part thereof, in which he is engaged in such occupation, to the Collector of Internal Revenue of the district in which he carries on such occupation as provided in this Act. The provisions of this Act as amended shall not apply to decocainized coca leaves or preparations made therefrom, or to other preparations of coca leaves which do not contain cocaine."*

According to James F. Finneran, N. A. R. D. Journal, Commissioner B. C. Keith has ruled as follows:

"An ointment containing either nutgall or nutgall and opium in a quantity sufficient to make an ounce is not considered a preparation coming within the exemption of Section 6 of the Harrison Act, even though the prescription calling for such preparation is marked 'For external use only,' as such preparations are not sufficiently denatured to prevent their use internally.

"A prescription calling for one ounce

Bell's syrup of codeine, one ounce paregoric, and two ounces syrup of wild cherry, is a narcotic prescription, and must be prepared in accordance with regulations; that is, must bear the name and address of the patient, the date, the name and address of the physician and his registry number, and such a prescription cannot be refilled (see T. D. 2309, dated March 11, 1916).

"A prescription for an ordinary cough syrup containing paregoric and no other narcotic preparation is exempt under Section 6, and can be refilled (see T. D. 2309)."

SECTIONS FROM THE NEW WAR REVENUE BILL.

SOFT DRINKS.

Section 628 provides a tax of fifteen per cent on all beverages containing less than one-half of one percent of alcohol. The same section imposes a ten percent tax upon all unfermented grape juice, ginger ale, root beer, sarsaparilla, pop, artificial mineral waters (carbonated or not carbonated), other carbonated waters or beverages, and soft drinks including fruit or berry juices sold in bottles or other containers. This section also imposes a tax of two cents per gallon upon all natural mineral waters or table waters sold by the producer, bottler or importer thereof in bottles or other closed containers, provided the sale price is over ten cents per gallon.

Section 629 provides that the taxes enumerated in section 628 shall be paid by the manufacturer, bottler, producer or importer, who shall be required to make monthly returns and if the tax is not paid when due, a penalty of five percent is imposed in addition to a charge of interest at the rate of one percent for each full month from the time when the

tax becomes due. Sections 628 and 629 become effective May 1, 1919.

Section 630 provides that on and after May 1, 1919, a tax of one cent for each ten cents or fraction thereof of the price be paid by the consumer of soda water, ice cream, ice cream sodas, sundaes, etc. This tax is to be paid by the consumer at the time of purchase.

PROPRIETARY GOODS.

Section 907 imposes a consumption tax of one cent for each twenty-five cents of the retail price of proprietary medicines, toilet articles, cosmetics, etc. This section as passed by the Senate noted that medicinal preparations which are not advertised to the lay public were to be exempted from the tax. This exemption clause has been modified and now reads as follows:

Provided, That the provisions of this section shall not apply to the sale of vaccines and bacterines which are not advertised to the general lay public, nor to the sale by a physician in personal attendance upon a patient of medicinal preparations not so advertised.

The taxes imposed by this section shall be collected by whichever of the following methods the Commissioner may deem expedient: (1) By stamp affixed to such article by the vendor, the cost of which shall be reimbursed to the vendor by the purchaser; or (2) by payment to the vendor by the purchaser at the time of the sale, the taxes so collected being returned and paid to the United States by such vendor in the same manner as provided in section 502.

This section, 502, provides for making monthly returns to the collector of Internal Revenue in accordance with the regulations of the Commissioner.

Section 907 becomes effective May 1, 1919

BOOK NOTICE.

A Compend of Pharmacy. By F. E. Stewart, M.D., Ph.G., Phar.D., revised by Heber W. Youngken, Ph.G., Ph.D. Published by P. Blakiston's Son & Co., Philadelphia. Price, \$1.50.

This is one of "Blakiston's Quiz Compends." The Reviser states that "the object of the author of this Compend is to present information concerning official products and preparations in such clear, concise and condensed form as to be of especial service to the student in memorizing it." And further, "But it is not the purpose of the author to place in the hands of students or drug clerks desiring to pass examining boards a book to serve for 'cramming.' The work will be found of great value

for use in the regular educational course, just the same as a 'quiz' would be, but it is not intended, neither is it adapted, for conducting students 'across lots.' There is but one way to obtain a practical education, and that is by careful, systematic study and practical experience."

The authors have indicated the contents of the book by the quotations given. In the present revision the drugs and preparations of the National Formulary are also considered. There is a demand for books of this kind and in the preparation of this Compend due consideration has been given to its purposes, as outlined by the authors.

CHANGES OF ADDRESS.

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of the change of address is received before shipment or mailing.

Both the old and the new address should be given thus:

HENRY MILTON,

From 2342 Albion Place, St. Louis, Mo.

To 278 Dartmouth St., Boston, Mass.

Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written or typewritten.

HENRY, A. M.

From Homestead, Fla.

To Tallahassee, Fla.

SCHLUETER, DR. R. E.

From Camp Hancock, Augusta, Ga.

To Metropolitan Bldg., St. Louis, Mo.

COLLINS, GEO. W.

From Box 66, Mt. Vernon, Ill.

To 507 S. Division St., Ann Arbor, Mich.

STEVENS, F. S.

From Auburn, Cal.

To East Auburn, Cal.

SCHETTLER, GEO. M.

From 263 Woodward Ave., Detroit, Mich.

To 55 W. Fort St., Detroit, Mich.

SEELEY, M. J.

From Science Hall, Corvallis, Ore.

To 381 Passaic Ave., Nutley, N. J.

SCHMIDT, A. E.

From 814 Madison Ave., Peoria, Ill.

To 303 Columbia Terrace, Peoria, Ill.

SPEASE, ED.

From 10011 N. Blvd., Cleveland, Ohio.

To 1483 E. 134th St., Cleveland, Ohio.

TYLER, E. A.

From 5 Bryant Terrace, Rahway, N. J.

To 244 Murry St., Elizabeth, N. J.

TWOMBLY, A. P.

From 721 Huntington, Boston, Mass.

To Box 94, N. Rochester, N. H.

WINN, H. A.

From 76 Park Ave., Portland, Me.

To 51 Somerset Ave., Winthrop, Mass.

MANSFIELD, WM.

From Albany, N. Y.

To 36 Hollywood St., E. Orange, N. J.

COHEEN, I. L. SGT. 1ST CLASS

From Field Hosp. 139-110 S. T. Camp,
Donaphan, Ft. Sill, Okla.

To Field Hosp. 139-110 S. T. Camp,
A. E. F.

BRADT, F. J.

From 339 Vinewood Ave., Detroit, Mich.

To 302 Maidstone Ave., Detroit, Mich.

BIENSTOCK, S.

From Broadway St., Hartford, Conn.

To 990 Broad St., Hartford, Conn.

DELGADO, E.

From Prineipe 19 Havana, Cuba.

To San Nicholas 245, Havana, Cuba.

GRIFFITH, I.

From 4615 A St., Wyoming, Philadelphia,
Pa.

To 39 S 10th St., Philadelphia, Pa.

HAERING, G. V.

From 510 Madison, Chicago, Ill.

To 570 W. Madison, Chicago, Ill.

BARRETT, CHAS. L.

From Broadway and Line Sts., Camden,
N. J.

To 40 Harvard Ave., Collingswood, N. J.

HENSEL, S. T.

From 351 Mercantile Bldg., Denver, Colo.

To 315 Mercantile Bldg., Denver, Colo.

TURNER, J. L.

From 281 Greene Ave., Brooklyn, N. Y.

To 1398 Metropolitan Ave., Brooklyn, N. Y.

MORGAN, WM. F.

From 136 Meserole Ave., Brooklyn, N. Y.

To Silver Lake Pharmacy, Baldwin, L. I.,
N. Y.

TAKAMINE, J.

From 120 Broadway, N. Y., N. Y.

To Clifton, N. J.

NOVACK, H. J. DR.

From 3131 Norris St., Philadelphia, Pa.

To N. E. Cor. 32nd and Diamond St.,
Philadelphia, Pa.

COX, E. H.

From 65 Peachtree, Atlanta, Ga.

To No. 10 Auburn Ave., Atlanta, Ga.

BUTTERY, L. L.

From Gonzales, Texas.

To er Central Drug Store, San Angelo, Texas.

DONIGER, S.

From 79 Sherman Ave., N. Y., N. Y.

To Residence unknown.

- ARNOLD, H. C.
From 173 E. 85th St., N. Y., N. Y.
To P. O. Box 71, Berlin, N. H.
- ANDERSON, A. E.
From Residence unknown.
To 1162 13th Ave., Moline, Ill.
- DONNET, J. S.
From Residence unknown.
To 1335 N. Caroline St., Baltimore, Md.
- HAGER, M. M.
From 1484 Hoe Ave., Bronx, N. Y., N. Y.
To 320 Hart Ave., Brooklyn, N. Y.
- HARGREAVES, C. C.
From 1242 Vigo St., Indianapolis, Ind.
To Apt. 505, 430 Mass Ave., Indianapolis, Ind.
- NANKIVELL, J. H.
From 157 Inf. A. E. F., N. Y.
To 157 Inf., 4158 So. Williams St., Denver, Colo.
- FORD, C. M.
From Box 114, Cambridge, Mass.
To 851 1st Ave. N., St. Petersburg, Fla.
- THURSTON, E. W.
From 4003 N. Griffin Ave., Los Angeles, Cal.
To 4144 Carrollton Ave., Indianapolis, Ind.
- WHITNEY, R. B.
From 126 Willet St., Jamaica, N. Y.
To 34 S 17th St., Philadelphia, Pa.
- RABINOWITZ, H.
From 364 E-4, N. Y., N. Y.
To 353 Vernon Ave., Brooklyn, N. Y.
- RODRIGUEZA, RENE.
From Sarin Hall, Notre Dame, Ind.
To Separacion 113 Sante Domingo City, Dominican, Rep.
- HIRSCHER, A. M.
From 1807 4th St., Minneapolis, Minn.
To Janesville, Minn.
- POTTER, J. S.
From 65 Hillside Ave., Hillside, N. Y.
To 1254 Salem Ave., Hillside, N. Y.
- KOSSLER, H. S.
From 444 S. Main St., Pittsburgh, Pa.
To 206 S. Main., Pittsburgh, Pa.
- LIPSCOMB, W. L.
From Brownsville, Tenn.
To Dyersburg, Tenn.
- CERMAK, F. J.
From 18501 Detroit Ave., Cleveland, Ohio.
To 3501 E. 93rd St., Cleveland, Ohio.
- MEEKER, G. H.
From Media, Pa.
To School of Med., Univ. of Pa., Phila., Pa.,
cr Dr. S. Egbert.
- PARIS, J. E.
From Golconda, Ill.
To Paragould, Ark.
- TYLER, E. A.
From Rahway, N. J.
To 244 Murray St., Elizabeth, N. J.
- WILDMAN, E. A.
From 620 E St., Indianapolis, Ind.
To 2923 Washington Bld., Indianapolis, Ind.
- DEAN, J. A.
From 5420 Baltimore Ave., Philadelphia, Pa.
To 614 S. 48th St., Philadelphia, Pa.
- BARNSTEAD, S. O.
From Cincinnati, Ohio.
To 3rd and Cedar St., St. Louis, Mo., cr
J. T. Milliken.
- CHEATHAM, W. B.
From 781 Alcatraz Ave., Oakland, Cal.
To 145 Nassau St., N. Y., N. Y., cr
Associated Pharmacist.
- KOCH, E. W.
From 2257 N. Ill. St., Buffalo, N. Y.
To Univ. of Buffalo, Medical Department,
Buffalo, N. Y.
- VARGAS, JORGE
From 1120 Boylston Ave., Boston, Mass.
To 19 Shailer St., Coolidge Cor., Brookline,
Mass.
- SEYBERT, J. E.
From Indianapolis, Ind., cr Eli Lilly & Co.
To 304 Kenmore Road, Indianapolis, Ind.
- BREWER, J. E.
From 1541 Arch St., Norristown, Pa.
To 215 Summit St., Norristown, Pa.
- CARDARELLI, E. J.
From 99 Wilson St., Brooklyn, N. Y.
To 34 West Union Ave., Bound Brook, N. J.
- DECEASED SINCE JANUARY 1, 1919.
- MARTIN, J. F.
Bourbon, Ind.
- BLOCK, MITCHELL
Excelsior Springs, Mo.
- HANEY, E. R.
666 North 57th St., Philadelphia, Pa.

CORRESPONDENCE

SOLDIER AND SAILOR PHARMACISTS

CINCINNATI, OHIO, January 31, 1919.

TO THE MEMBERS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION:

Doubtless you have heard about the work of this Committee. It is first of all an A. Ph. A. Committee, engaged in a service to the young men who have been called out of Pharmacy by their country, many of whom must look for new positions and new openings when they return to civil life. While it is our primary mission to help in re-establishing the returning soldier and sailor pharmacists, we are thus at the same time serving the cause of American pharmacy.

We have undertaken an enormous task, the scope of which can hardly be realized by those who are not directly engaged in it. What real need is there for the work which this Committee has undertaken? Frankly, we do not know how many of the more than ten thousand pharmacists and drug clerks, most of whom are still in the service, will be in need of help to become re-established, but we do know that it is our mission to find out, and we do know that it is too late to undertake helping them when they are all back, and when possibly a good part may not know where to turn. When the last half of the men return, those men who have been longest in service, who have been subjected to the greatest hardships, then particularly will American pharmacy be called on to show what it can do. Let us hope that not a single American pharmacist who is in the service will find difficulty in becoming re-established, but let us be ready to help, if necessary.

Many of the A. Ph. A. members have already filled out and returned their report card. Some of the members have aided by contributing toward our Expense Fund, and we accept this opportunity to thank them. The Committee has been greatly hindered because of the lack of ample funds. The scope of our work necessarily has been controlled by such lack and our ultimate, complete success is absolutely dependent upon having sufficient funds. The work must be systematically arranged, and must be systematically carried on, and a clerical force is necessary for that purpose. We are assured now that we have undertaken a worth-while cause, but the complete and creditable success of our work will depend largely upon sufficient financial assistance to assure thoroughness. We maintain that American pharmacy can take care of its own, and we ask you to help prove it, if we are called upon to do so.

THE A. PH. A. ADVISORY COMMITTEE FOR SOLDIER AND SAILOR PHARMACISTS.

(Signed) FRANK H. FREERICKS, *Chairman*.

THE PRESCRIBING AND SALE OF REMEDIES FOR VENEREAL DISEASES.

PITTSBURGH, PA., February 10, 1919.

THE EDITOR:

Your Editorial Note* on "Venereal Diseases" in January issue records complaints on the part of the medical profession on the loss of profitable clientele. This is so contrary to the usual attitude of said profession in the past that one wonders if it, like the Germans of old, has undergone a regeneration.

It appears to me that if the Government's object is to be successful, treatment of this class of diseases must be properly regulated, and the establishment of maximum fees to be charged will prove no small factor towards its accomplishment. In the past patients of this class of diseases frequently have been victims of malpractice as well as robbery.

Pharmacists are asked to discontinue the sale of medicines purporting to cure venereal diseases, would it not be well for Surgeon-General Blue to help them act the good Samaritan by furnishing the following data in zones of, say, one hundred miles' radius?

1. A list of physicians who are competent to treat venereal diseases.
2. A list of physicians who made pledge to treat these diseases according to Government rules and the fee charged for treating same.
3. A copy of the state law controlling the treatment of venereal diseases.
4. A supply of literature for customers applying for medicine for the cure of said diseases.
5. Location of approved clinics.

(Signed) LOUIS EMANUEL.

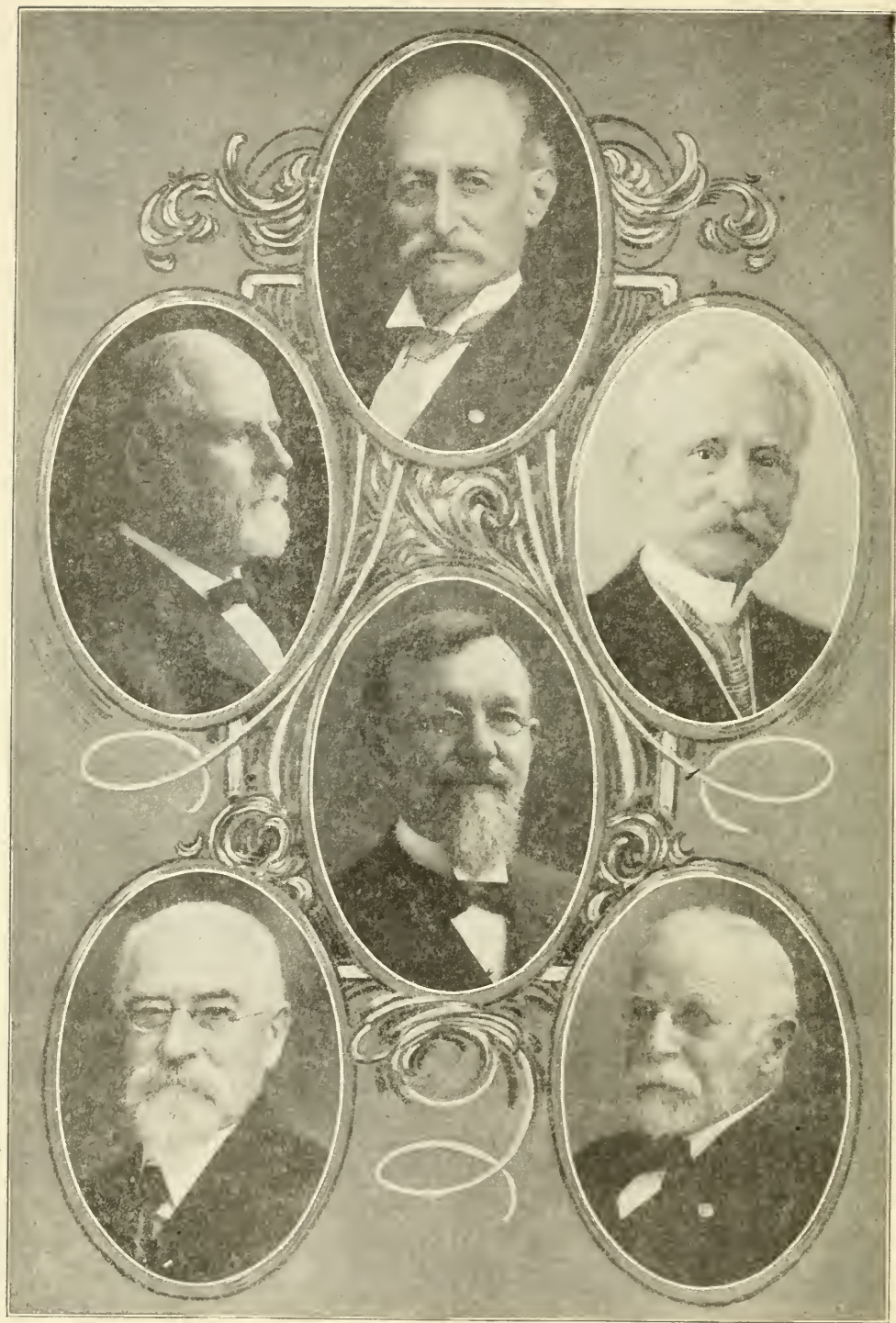
* January issue JOURNAL A. PH. A., p. 78.

THREE HUNDRED AND TWENTY-FOUR YEARS OF MEMBERSHIP IN THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Joseph L. Lemberger, Lebanon, Pa., 61 years; the other members are all of Philadelphia: Alfred Mellor, 55 years; Richard M. Shoemaker, 54 years; Edwin M. Boring, 52 years; and Adolph W. Miller and Charles A. Weidemann, each 51 years.

"It is expedient to have an acquaintance with those who have looked into the world; who know men, understand business, and can give you good intelligence and good advice * * "

"If wrinkles must be written upon our brows, let them not be written upon the heart. The spirit should not grow old."



Pennsylvania Pharmacists who have been members of the American Pharmaceutical Association for more than a half century: Top, Joseph L. Lemberger, Lebanon, 1858; left, second row, Alfred Mellor, Philadelphia, 1855; right, Richard M. Shoemaker, Philadelphia, 1865; center, Edwin M. Boring, Philadelphia, 1867; left bottom row, Dr. Adolph W. Miller, Philadelphia, 1868; right, Dr. Charles A. Weidemann, Philadelphia, 1863.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. VIII

APRIL, 1919

NO. 4

A RECORD OF YEARS AND WORK IN AND FOR THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Few associations include within their present membership such a large percentage of affiliates who have continuously exhibited their attachment to the purposes of the organization, as the American Pharmaceutical Association. It speaks for the worthy objects of the Association; the devotion to them by the members offers the very best argument why non-associated pharmacists should affiliate, and such attachment by men who have made good in their respective activities emphasizes the importance of pharmacy. These examples have made it possible to have pictures of half-century members in the issues of the JOURNAL for the past few years, and, in this number, those of six veteran pharmacists of one State, certainly a record the Association may well be proud of.

It is not the purpose, at this time, to present sketches of these faithfuls of the American Pharmaceutical Association; these have been written in the JOURNAL, in the State association records, in the College transactions or in the reports of bodies wherein their activities were for the time more directly concerned. The comments will be brief, and are abstracted from letters which came with the photographs. All of them have been honored by their Alma Mater, the Philadelphia College of Pharmacy, and most of them have during many years exhibited an active interest in this institution. Three of the men devoted nearly all of their years to the retail drug business, while the others engaged in wholesaling and manufacturing.

Joseph L. Lemberger is the dean of the American Pharmaceutical Association. A sketch appeared in Vol. VI, JOURNAL A. PH. A., p. 771. He became a member in 1858, and was president of the American Pharmaceutical Association in 1905. These references will answer the purpose of extended statements relating to him.

Alfred Mellor joined the Association in 1864, and while he did not participate actively in its proceedings, he writes: "I have always valued highly my membership and the personal touch with its members." The latter will remember his connection with the firm of Mellor & Rittenhouse, for many years extensively engaged in the manufacture of extract of licorice. He comments further that there are few left of those who were members when he affiliated.

Richard M. Shoemaker became a member of the American Pharmaceutical Association in 1865. He is the senior partner of Robert Shoemaker & Co., one

of the oldest wholesale drug firms, continuing under same name, in the United States. He was the first treasurer of the Alumni Association of the Philadelphia College of Pharmacy, and until 1909 took an active interest in the A. Ph. A., as a local chairman of the Committee on Membership.

Edwin M. Boring, though in his eightieth year, has only recently retired from the retail drug business. His affiliation with the American Pharmaceutical Association dates back to the New York meeting of 1867, when John Milhau was president of the Association. He contributes his picture "as an evidence of a tendency to active old age in the drug business if combined with a reasonable amount of outdoor work, and recreation, which can be obtained by the meetings of our Association; without my membership and the proceedings for over fifty years there would have been a void which could not have been filled by any other means." The firm of which Mr. Boring was a member, and then successor, was that of E. B. Garrigues & Co., at Tenth Street and Fairmount Avenue. He is now, and has been for many years, one of the board of trustees of the Philadelphia College of Pharmacy.

Adolph W. Miller is a graduate in pharmacy and also an alumnus of the Medical Department of the University of Pennsylvania. His activities have been, and still are, in the firm of Aschenbach & Miller. "The number of those who have held membership in the parent pharmaceutical association for more than fifty years demonstrates," he says, "that the profession of pharmacy is not insalubrious, that in order to lengthen his span of days every pharmacist should at once join the American Pharmaceutical Association, and that he should faithfully attend the annual conventions, as well as the monthly meetings of the local branches, not only for their scientific and their social features, but also as hygienic measures, so as to infuse new life and happiness into his ordinary *modus vivendi*." Dr. Miller follows the lines indicated by him; he is seldom absent from local, state and national pharmaceutical association meetings, and finds time for other conventions and meetings devoted to science and culture.

Charles A. Weidemann, like the subject of the preceding sketch, graduated in both pharmacy and medicine, and in the same institutions; he also joined the American Pharmaceutical Association during the same year. Prior to graduation he had experience both in the wholesale and retail drug business, and during the Civil War in hospital service. After graduation, in 1867, he established a retail drug store at 22nd and Green Sts., and remained in the business until 1902, since which time he has continued in the practice of medicine. He is a member of the board of trustees of the Philadelphia College of Pharmacy, and since 1900 recording secretary. He has been a member of the Pennsylvania Pharmaceutical Association since its organization in 1878.

The unselfish devotion of these members to the cause of pharmacy makes it unnecessary to measure lines and number words; the purpose of the writing is to mark mile-stones in the history of these individuals and the American Pharmaceutical Association, while adding a slight tribute to those of others which have heretofore been worthily and fittingly bestowed upon them during their years of activity and association.

E. G. E.

EDITORIAL

E. G. EBERLE, Editor

253 Bourse Bldg., PHILADELPHIA

ASSOCIATION MEMBERSHIP A PRIVILEGE, DUTY AND OBLIGATION.

THE keynote of progress is coöperation; the greater the endeavor and the closer the coöperation the greater the progress. The successes of individuals, the accomplishments of professions, are due to coöperative efforts; many are entitled to credit for the achievements of the individuals who are obligated to others for the work they have been able to do. Looking back into the history of the American Pharmaceutical Association, we find the records of work done by many pharmacists who unselfishly gave of their time and means so that present-day pharmacists might benefit. This is true of those who comprise the membership now, and every druggist of the country profits directly or indirectly by their work; many of them fail to discern their reciprocal obligations. It is like the unearned increment in taxation; the right of inheritance is in a degree a species of graft. Neither the heir to a fortune, who spends his time concerned only for himself, nor the one who inherits property and leaves it to increase in value, through the enterprise and industry of others, while he sojourns abroad, earn anything. So it is in professions; the large number are either confident that there are zealous workers for and contributors to progress in the results of whose work they can share, without cost or worry, or they have failed to justly appraise their obligations to their respective professions. Our development is dependent on borrowed capital of suggested ideas, motives and desires; we should recognize our responsibilities to that capital, as co-workers, both in receiving and giving. The lessons of the last few years should bring about a change in the attitude of individuals relative to their responsibilities; the application of right principles is essential to effect right relations.

Association membership gives pharmacists a higher appreciation of their profession and also of those likewise engaged, and of those in related work—an inspiration to promote pharmacy and contend for its rightful recognition. We have both individual and collective responsibilities,—now as never before should the spirit of the Golden Rule be generally applied.

Aside from the duty of coöperation, membership in the American Pharmaceutical Association is really a profitable investment,—the Year Book and the Journal are of greater value than represented by the five dollars in annual dues paid by the members. Instead of the Association membership being three thousand it should include ten thousand or more pharmacists.

E. G. E.

PROPOSED NATIONAL INSTITUTE OF DRUG RESEARCH.

BY F. E. STEWART.

A National Institute of Drug Research is proposed by the American Chemical Society. This project originated in a conversation between Dr. Charles H. Herty, then chairman of the N. Y. branch of the American Chemical Society, and editor of the *Journal of Industrial and Engineering Chemistry*, and a "well known organic chemist, one who has been particularly successful in working out methods for the manufacture of certain much-needed coal-tar medicinals." This is a statement made in an editorial appearing in that journal, September, 1918, entitled, "War Chemistry in the Alleviation of Suffering." As the editorial in question clearly states, the object of the proposed institute in its conception, I am quoting from it as an important part of the history of the project.

In conversing with his friend, the editor asked the following question: "Suppose, during your researches, you made some new compound which you believed would prove more efficacious against certain diseases than any of the known compounds whose details of manufacture you have solved, where would you turn to have it tested thoroughly?" He replied: "I don't know."

In commenting upon this reply, the editor says:

"The negative answer was not surprising, rather it was confirmatory. It is a peculiar situation that exists in this country to-day. The three great commercial applications of the so-called 'coal-tar chemicals' are, first, explosives, for which means are never lacking for the thorough testing of new products; second, dye-stuffs, for which, fortunately, the equipment for testing as to standard, fastness, durability and aesthetic suitability is simple, inexpensive and accessible to every worker; third, medicinals, and here the problems of investigation become much more complex and the responsibility even greater. Rarely does the chemist possess the technique for their testing; he must rely upon the pharmacologist and the physiologist to determine the therapeutic value of his product.

"In university circles there is often lacking that spirit of coöperation between the several classes of research workers which would insure a thorough examination of these new products of the organic chemical laboratory, or, if the spirit be willing, the means for conducting the tests are too limited, especially now when university finances are so severely contracted. In a few manufacturing establishments provision is made for animal experimentation, but these facilities are entirely inadequate and not available to all organic chemists. In government laboratories some provision is made for this work, but restrictions are enforced by inadequate appropriations. And still people suffer, though much suffering has been alleviated by discoveries made in other lands.

"Fortunately, through the generous provision of wealthy individuals, certain institutions have been established and endowed where the chemist and the biologist can work in the closest coöperation. The importance of the intimate coöperation of these workers is evidenced by the work on the synthesis of a new anti-syphilitic drug which was recently accomplished in the laboratories of the Rockefeller Institute for Medical Research. This remedy is now tested from the clinical viewpoint in the hospital of the same institution. Similar institutions, however, are few in number and the capacity for work of this kind is necessarily restricted.

"A suggestion has been advanced which seems to cover the situation admirably, namely, that an institution somewhat analogous to the Mellon Institute be founded in which adequate provision for laboratory tests of all kinds would be made and to which, through the establishment of fellowships, manufacturing organizations could send well-trained young men for working out specific problems. Coöperation should be established between this institution and the organic laboratories of our universities, as well as with the hospitals of the country."

Dr. Herty names ten million dollars as the sum required for the establishment of the institute on an adequate basis. In his recent address before the New York Academy of Sciences, he said that the plans for the organization of the proposed institute were steadily progressing. He called attention to the fact that the need is urgent for some institution where "the ablest research workers among our chemists and pharmacologists can study life problems and can gain true insight into the fundamental reasons for the action of medicinals upon the body; an institute where, through the creation of fellowships, manufacturers can submit specific problems for investigation and solution under the most favorable conditions of expert work and abundant equipment."

This project was first broached at a meeting held at the Chemists Club in New York, last fall, which was participated in by a number of speakers selected for the occasion, who presented the subject from various points of view. Among the speakers were the chief chemist of the U. S. Agricultural Department, Washington, D. C. and the director of the Mellon Institute, Pittsburgh. Their discussion was listened to with much interest, especially on account of the questions suggested by what they said.

The question of auspices was under consideration and the chief chemist of the Agricultural Department said that such an institute as that proposed by the representative of the Rockefeller Institute for Medical Research, who first proposed the plan to Dr. Herty, and was the "well known organic chemist" referred to in his editorial, could not be conducted under governmental auspices, for the reason that the government with its experts and laboratories is working for the entire American people and cannot favor in its operation any one class of the community. As already stated, the plan proposed is somewhat of the character of that operated by the Mellon Institute, the director of which stated in his discussion that the results of the researches made by the Institute concerning problems placed in its hands for solution were of a confidential character, and under no circumstances is the manufacturer who has his products tested permitted to exploit the Mellon Institute in advertising.

Now, what the medical profession want and urgently need are therapeutic verdicts from competent authority, in relation to so-called new remedies, and, judging from the editorial in the *Journal of Industrial and Engineering Chemistry*, already quoted, the editor is aware of that, and the plan of the institute includes the pronouncing of such verdicts by competent authority. How are such verdicts to be obtained? Evidently, according to the editorial referred to, they are to be obtained by "coöperation between the proposed institution and the organic laboratories of our universities as well as with the hospitals of the country." The "pharmacologist and the physiologist" cannot "determine the therapeutic value" of new therapeutic agents. Therapeutic verdicts, to be at all conclusive, must be the products of the observation of many competent observers, carried on under conditions of environment which will preclude the errors resulting from the personal equation and those resulting from differences in race, climatic and social conditions. To obtain such verdicts takes time. The history of medical science clearly demonstrates this to be a fact. Many years must elapse before sufficient clinical evidence has accumulated in relation to a new medicinal drug, chemical or preparation of the same, to establish its therapeutic position in relation to other

therapeutic agents used for similar purposes. The work of the chemist, pharmacologist, physiologist and physician are all required in carrying out the plan.

Is the plan of the proposed institute adapted for securing such verdicts? The answer to this question depends largely upon the question of commercial control of the products to be investigated. The ethics of the medical profession from the time of Hippocrates until the present obligate its members to donate the results of their inventions, discoveries and experiences to the profession, so that the same may be freely used throughout the world for the treatment of the sick and the prevention of disease. Every medical man connected with the universities, hospitals, professional societies and professional press, is bound by these obligations. How can coöperation between the manufacturers engaged in the pharmacal and pharmaco-chemical industries, on the one hand, and the medical profession and its educational institutions, on the other, be obtained, unless the *materia medica* products presented to the proposed institute of drug research be open to competition? Monopolized *materia medica* products and medical ethics are not compatible. Is the medical profession to let down the bars which now safeguard the sickroom from commercial exploitation? It is well known that the American Chemical Society favors the patenting of medicinal chemical products. Is the plan one for promoting the commercial interests of the manufacturers of patented chemical products? If so, what is to become of medicinal plants, galenical preparations, biological products, animal extracts, internal secretions, etc.? Do they not merit just as much attention from medical scientists as patented, synthetic chemicals? Is it not true that any plan devised for promoting the commercial interests of the manufacturers of any one class of *materia medica* products to the exclusion of one or all of the other classes would be a menace to the public health? If it were possible to raise ten million dollars for the purpose of paying physicians connected with the universities and hospitals to devote their time and attention to original research for the purpose of pronouncing therapeutic verdicts in behalf of commercially controlled *materia medica* products, would such verdicts be accepted by the medical profession as conclusive? Would they not be looked upon as "paid testimonials and write-ups?" Would the medical journals feel warranted in accepting the reports of such researches in their reading columns? Why should the publishers of medical journals do the advertising for the manufacturers of commercially controlled products without pay? Would not such reports be properly classed as advertisements and properly relegated to the advertising columns where they belong? Would not such a plan, if it could be carried out successfully, result in converting the entire educational machinery of the medical and pharmaceutical professions—medical and pharmaceutical schools and colleges, societies and press—into a great advertising bureau for the exploitation of the sickroom for gain?

Salvarsan has been cited as a type of proper commercial introduction. The choice is unfortunate. Salvarsan is a type, not of proper commercial introduction, but of German propaganda for exploiting the American chemical industries. The product was first tested therapeutically in the hospitals in Germany, a country in which *product* patents on chemicals are not allowed; and then *product* patented in the United States—in fact it was controlled by fifty American patents. The method of control was carefully planned to defeat the object of the United States patent

laws, the object of which is to promote progress in science and useful arts by granting inventors seventeen years' monopoly in the sale of new and useful inventions in exchange for the publication of full knowledge thereof for the benefit of science. The proper application of the patent law stimulates competition, which the Salvarsan plan effectually prevented and would have continued to prevent indefinitely except for the war with Germany, which resulted in throwing its manufacture open to competition in the United States.

The Salvarsan plan of commercial introduction had already excited the strongest indignation and condemnation of leading medical scientists in this country, and the adoption of such a plan by the American manufacturers engaged in the pharmacal and pharmaco-chemical industries is not to be considered as the proper one for obtaining the coöperation of the medical profession and educational institutions in the United States engaged in the teaching of medicine and pharmacy. The commercial introduction of new materia medica products by advertising is not only contrary to medical ethics, but a serious hindrance to progress in science and the useful arts of pharmaceutical chemistry and drug therapeutics.

The patent law requires that the invention shall be new and useful. It is a question worthy of consideration whether a chemical substance is new in the meaning of the patent law merely because hitherto unproduced. Every educated chemist knows in advance what chemical substances are possible and their chemical names. Both are fixed beforehand by recognized chemical laws.

It is the intent of the law that the monopoly shall be limited to seventeen years, after which the public at large shall have the right to manufacture and sell the invention on equal terms with the original patentee, whose right to the exclusive use of the invention then expires. These wise provisions of the patent law have long been defeated by a scheme for perpetuating monopolies indefinitely. Patents are obtained for chemical products under their chemical names, and short names are registered in the Patent Office as trade-marks, which are afterward used not as trade-marks to distinguish between brands of the products, but as synonyms to take the place of the long chemical names.

The German chemical houses were quick to take advantage of this abuse of the patent and trade-mark laws already existing in the United States. Monopolies were created in chemical products by patent and continued indefinitely by patenting alleged improvements, and registering names as trade-marks. The German chemical houses were thus enabled to control the American chemical industries along the line of organic synthetic products, including dyes and medicines.

In spite of protests which were frequently made to Congress during the past forty years, this system of abuse was permitted to grow and was looked upon as legitimate because it was "made in Germany" until the eyes of the American people were awakened by the great world war. The German patents were then investigated and it was discovered that in addition to the scheme for perpetuating monopolies above referred to, many of these patents had been obtained by fraud. This was discovered when attempts were made to reproduce the patented products by means of the processes described in the applications for patent.

Much study has been given to the subject by the former Alien Property Custodian, A. Mitchell Palmer, now Attorney General of the United States. We were informed by the Philadelphia *Ledger* for March 12th that

"A program by which the German strangle-hold is to be loosened from the throat of the American dye industry" was made public by Mr. Palmer on that date in an announcement of the creation of an American corporation to take over all the German dye patents and hold them as a trust for the benefit of the native industry. The plan is thus described: "The corporation, to be known as the Chemical Corporation, is non-commercial in character and already owns 4,500 of the *product patents* through which the Germans at one time practically controlled the manufacture of dyes in this country and wholly controlled the importation of them by European concerns which were not German. The Chemical Foundation will hold the patents for the various terms for which they were originally issued and by the granting of licenses under them within devote them 'to the Americanization of such institutions as may be affected thereby, and to the exclusion or elimination of alien interests hostile or detrimental to the said industries, and to the advancement of chemical and allied science and industry in the United States.'"

It is to be hoped that the Chemical Foundation will reform the abuse of the United States patent and trade-mark laws, especially in relation to new medicinal chemicals. New materia medica products should not be introduced by advertising. Their manufacture and sale should not be monopolized. They should be open to competition and introduced to science through the medium of the professional societies and press. Advertising should be confined to brands of products, presented to the medical and pharmaceutical professions through the medium of the advertising columns of the medical and pharmaceutical journals. Protection to brands by the proper use of process patents and by the employment of brand names, registered as trade-marks, may not be objectionable, but "product patents" whereby the sale of the products is monopolized by individuals, firms or corporations, hinders progress in science and commerce, discourages improvements in processes of manufacture, protects a system of therapeutic advertising, misleading in character, and therefore the entire patent and trade-mark system as thus conducted is inimical to the public welfare.

It is not my intent to discourage original research. The plan would be ideal if placed on an altruistic basis.

CHEMISTRY'S OPPORTUNITY IN PHARMACEUTICAL RESEARCH.*

BY GEORGE D. BEAL.

Professor Charles H. Herty, Editor of the *Journal of Industrial and Engineering Chemistry* of the American Chemical Society, has recently presented the question of a needed development of facilities for research on medicinal agents as applied to pharmaceutical chemistry. In the editorial column of that Journal for September last he relates a conversation with a chemist who has been prominent in working out methods for the manufacture of coal-tar medicinals. The question is asked, "Suppose during your researches you made some new compound which you believed would prove more efficacious against certain diseases than any of the known compounds whose details of manufacture you have solved, where would you turn to have it tested thoroughly?" And the reply, also quoted, was "I don't know."

* Read at the One Hundredth meeting of the Chicago Branch, A. Ph. A., February 21, 1919.

Few editorials in the journals of that society have brought out the number of comments which have been provoked by those paragraphs. The New York Section arranged a symposium on the subject to which representatives of all of the allied groups contributed. A number of timely suggestions were made as to the manner in which such a need might be satisfied. These included the establishment of a research institute, the endowment of fellowships, the creation of research funds, etc. The chemical society has been so impressed that its Board of Directors has appointed a committee to analyze the situation.

The inference is drawn in the editorial that this country is without such resources, and that if the American Chemical Society does not come to the rescue as the sole accredited body of scientists in the country capable of solving such problems we will be unable to develop them. Questions similar to this have occurred to those of us who have given thought to the development of research touching on the scientific aspects of pharmacy. Probably, however, we have felt that the profession itself was in a position to take care of the problems as they presented themselves. At least we have felt that there was some latent appreciation of the opportunities in the field. Perhaps the spirit of research has not been sleeping so soundly as it has appeared to the members of the allied sciences.

A mistaken point of view is prevalent among the chemists to-day. There is a tendency to belittle all claims of pharmacy to a place among the scientific professions. This is due to a failure to inquire into and to understand the nature of the different organizations of pharmacists. Since the average person's contact with what he knows as pharmacy is over the counter of a drug store, he regards the pharmacist as a tradesman or artisan. He is likely to assume that scientific knowledge of the dispensing of medicines is only required of the man who writes the prescription. When talking of pharmaceutical chemistry, all emphasis is placed on the chemistry, pharmacy representing merely the channel through which the products reach the public.

This idea is present in the mind not alone of the laboratory chemist. Not two weeks ago a member of the Chemistry Committee of the National Research Council expressed the opinion that the American Pharmaceutical Association did not need and had no claims to representation on that committee. He stated in very plain terms that no trade organization need expect to be admitted, that the Council had as its purpose the promotion of research, and that only those who were directly interested in the development of the research idea need hope for admission. The writer took great pleasure in exhibiting the honorable record of the American Pharmaceutical Association and had the satisfaction of hearing him admit his misconception and say that the Association was clearly entitled to representation thereon.

The American Pharmaceutical Association has been a medium for the promulgation of new knowledge and the development of the research idea for nearly seventy years, practically three decades before the American Chemical Society came into being. After reading the early volumes of Proceedings one usually concludes that the American Pharmaceutical Association was the forerunner of this other society, and that the latter came into being only when the field of chemistry in this country had finally developed beyond the stage of medicinal chemicals. There are certain journals published in this country whose pages for even a longer time

have been monuments to the untiring zeal of the pharmaceutical investigator. Botany as well as chemistry has profited by the versatility of those men whose names head the pharmaceutical roll of honor.

This Association has for a number of years recognized the need for steadfast encouragement of the spirit of investigation by the creation and continuance of its research committee. The Division of Pharmaceutical Chemistry of the American Chemical Society has endeavored to support this idea, in part through its Committee on Analytical Methods, organized with a similar end in view.

The University of Wisconsin has taken one of the most noteworthy steps in this direction by securing from the state legislature an appropriation for the establishment at the University of a Pharmaceutical Experiment Station. There under the able direction of Prof. Edward Kremer's many valuable results have already been obtained in the development of the pharmaceutical resources of the state. We may mention particularly those studies in the cultivation and marketing of medicinal plants and those leading towards the extension of the volatile oil industry to embrace those oil-bearing herbs which may be profitably grown in that state.

Many people have the idea, as Professor Herty may, that research in drugs must of necessity content itself with the proving and standardization of new remedial agents. The question as to whether or not too much stress is laid on the development of new remedies, and whether the liberal use of an editorial blue pencil on to-day's materia medica lists, particularly of the synthetics, might not result in decided benefits, is at least debatable. We can afford for a time to do with less of such advancement and make a greater effort to determine with accuracy the properties and the underlying reasons for those properties of the many agents which are already known. Such a study will prove the truth or falsity of the claims made for certain vegetable drugs and synthetics, clarifying the materia medica to that extent. This will make for the more efficient use of synthetic and phyto-chemistry and should cause a greater development of organo-therapy.

The past war has developed the latent chemical resources of this country and its people to a remarkable extent, and much of the energy expended in the development of chemical warfare materials, particularly the toxic agencies of combat, can be rapidly turned into the field of synthetic medicine. I feel that we shall have lost one of the material benefits of this war if we do not succeed in making some real use of this talent in the permanent advancement of pharmaceutical knowledge. The average chemist of research caliber is ready and willing to deal with any question of real necessity. In order to avoid duplication and to secure the selection of really desirable fields of work, some agency is advisable from which the general line may be indicated. The writer is of the opinion that some sort of a centralized research bureau should be instituted, in fact, it is becoming necessary if we are to utilize to the greatest extent the resources mentioned.

It has been proposed by a number of writers and speakers that there be established in connection with one of our universities a research institution similar to the Mellon Institute of Industrial Research at the University of Pittsburgh, organized by the late Robert Kennedy Duncan. Such an institution must be endowed as to building, equipment and general administrative and operative staff. It will be possible to refer problems necessary of immediate solution to

the general scientific staff for their study. These will involve pharmacological testing, development of methods of analysis, improvement of manipulatory methods in the plant, the suggestion of new sources of material and the development of new commercial avenues for old products and by-products. In short, such an institute would do for the profession generally what the research and control laboratories of our large corporations do for those organizations.

It is hoped that fellowships will be generously endowed in part for the study of specific problems in which the donors have an interest and in part for study of a graduate order for the advancement of pure science. Nominations to these fellowships would undoubtedly be made by the universities; election ought to be by the governing board of the institution for it appears that they would be the only authority in a position to compare the qualifications of all of the nominees.

In order to be of maximum service the organization must be placed upon an extremely broad footing with the greatest liberality in its field of operations. There is always the danger that an institution which draws its support from the industries may be forced by financial circumstances to devote its time to these industrial problems, in such a way that the spirit of research may become stunted or even choked altogether in its growth and the institution fail in the accomplishment of its purpose. But if in establishing fellowships as liberal action is taken as has been done with the duPont Fellowships instituted in our leading schools during the past year, I believe that the foundation would be in a fair way to accomplish all that it has set out to accomplish.

In order to provide for the greatest possible growth it seems that it would be desirable to secure the establishment at first of a foundation rather than an institute. In the latter case there must be a large initial outlay for the physical plant, administration and operation, and unless such a plant is provided for by outright gift, the capital required in the way of endowment would undoubtedly prevent for some time the commencement of the project. If the work be begun by a foundation, on the interest of a sum held in trust by certain trustees administering the foundation, the establishment of some fellowships is assured and investigational work can be begun by one man in any university laboratory. This plan is not the one which has seemed to be popular, and would not result in the immediate provision of the laboratory resources called for in the editorial which suggested this paper. It will serve as a real working basis and is capable of unlimited development. By all means, let us have our research institute, with its laboratory facilities and research staff available for the assistance of all investigators in the field, but let this laboratory be a natural growth from the foundation, and do not let its coming at first absorb all of the strength which might go towards the promotion of study in the laboratories of nearly every state in the Union.

I have mentioned the need for some sort of centralization of research, some sort of clearing house of ideas, as it were. This is the general policy underlying the National Research Council, which is a child of the National Academy of Sciences. In this council all of the national scientific societies whose object is the advancement of learning are banded together for the prime purpose of preventing lost motion in investigational work. The Council stands ready at all times to suggest lines of study and to advise in the prevention of too much duplication. It will suggest possible avenues of development along which an investiga-

tor may proceed because it is so in touch with the different laboratories that it can provide for the interchange of information and material, for the want of which many an investigation has been abandoned.

To illustrate, the Division of Chemistry and Chemical Technology, one of the nine subdivisions of the Council, during the first year of its existence assigned over one hundred and ten research problems to single chemists or chemical committees in this country. Many of these have been successfully solved because the investigators were able to draw upon all of the facilities for research which their laboratories afforded. The Division has in addition handled many requests for information regarding manufacturers and sources of material used in the industries and in research, has brought about coöperation between investigators on allied problems, has directed the attention of manufacturers to investigations related to their field, and has acted generally as a central clearing house of information.

It should be possible to have in pharmacy a central body in possession of much information of value to any worker; able to procure necessary literature, to secure the coöperation between the manufacturer with an abundance of material and the investigator having behind him only the frequently limited resources of school laboratories. An institution of this kind could be represented directly in the various fields by its own agents, or by the agents of corporations which would ultimately benefit by the development of those new resources. A wealth of material for investigations would speedily become available to any laboratory, no matter how meager its funds for research.

There is difficulty in the testing of new medicinal agents unless the discoverer has the proper pharmacological training. If one is associated in a university with a skilled technician the resources of his laboratory are usually available. With a certain amount of training and supervision the chemist himself can acquire the necessary manipulative skill and ability to interpret results in a rather limited field. But as the chemist and pharmacologist grow in experience and gain a reputation in their fields they usually make for themselves a position of responsibility in their faculty circle. This results in extended duties, administrative tasks, advisory work with students, the direction of large laboratories and courses and a rapidly extending relationship to the whole institution. Unless the investigator be a very exceptional person, the opportunity of continuing his personal investigations has gone glimmering. He must take on research students, divide his problems among them, and content himself with brief conferences and rapid perusals of reports, and the wheel begins another revolution with these younger men.

The investigator may be connected with some manufacturer or have the fortune to interest some manufacturer in his work. In order to secure aid of this latter sort there is necessarily some sort of agreement regarding the possession of production rights to this and other substances derived therefrom. Such an agreement must be entered into in good faith by both parties in order that there will be, on the one hand, no throttling of research ambitions, and, on the other hand, a genuine recognition of the financial support which is making possible the continuation of the study. The one danger most likely to come to pass is that the

student's time will turn gradually to those lines which are profitable financially with too little attention to the scientific development of the field.

One of the greatest obstacles in the way of the investigator in plant analysis is the difficulty of securing allied species for comparative study. The writer has for several years been engaged in a study of the chemical composition of the plants of the *Rumex* family, especially as a source of medicinal agents of the anthraquinone group. Because of limited resources, even in the State University, it has been necessary to limit the investigation to the rather narrow field of a few members of the family found in the United States. The literature reports a partial analysis of the root of an European variety and the composition of the above ground portion of an African variety. If there happened to be some central body with correspondents in different parts of the globe, it should be possible for an investigator to secure enough of representative samples to make the desired comparative study.

There is room now for coöperative work in plant analysis by which a revision will be made of the compositions as previously published. Lloyd and others have pointed out that by the methods formerly used, the proximate principles previously reported have been largely decomposition products of colloidal principles which were directly the result of vital processes within the tissues. This doubtless explains the difference in physiological effect frequently noted between simple drug preparations and crystalline derivatives and also may explain the failure to coördinate physiological activity in many instances with the result of chemical assays.

Alkaloidal assaying consists chiefly of the application of methods designed to take advantage of the comparatively simple differences in physical properties of these bases and their salts. The "shaking-out" process is based upon the principle of the coefficient of distribution. It has been possible by direct measurement to determine the efficiency of the extraction of each alkaloid, which in the case of a single one in a drug constitutes a quantitative separation. In many plants there are a number of related alkaloids, one of which by a slight variation in structure may have more intense activity. The determinations of this individual in a mixture then will require the recognition of a difference in chemical properties, or the formation of a derivative with such properties, as a basis for its separation. These, as a rule, are not problems of a difficult nature, but require careful attention to detail with many duplicate determinations. They are not likely to be taken up without hearty encouragement and support which will render possible the neglect of other work for the time.

The chemistry of American volatile oils cannot progress much farther until provisions are made by which the investigations can be carried into the field. Here, as in the matter of drug composition, all depends upon the authenticity of the samples. The chemist who can go to the herb plots for his material, or who can carry his still into the woods and take the oil as it comes from the plant, has an immense advantage over the chemist who must obtain his supposedly genuine subject from a New York or Chicago jobber. Some one must pay car fare to the woods, and provide portable apparatus, or must furnish plots and agricultural labor for the herbs.

Two of the most striking recent examples of coöperative research have been the development at the Rockefeller Institute of an important anti-syphilitic and the development by Dakin, Dunham and Daufresne of the line of chlorine containing antiseptics from the hypochlorites under the auspices of the British Medical Research Council and the Herter Laboratories of New York. Here the actual proving of the value of these compounds was carried out by beneficiaries of the Rockefeller Institute, in hospitals operated by them. I believe there has been no greater triumph of science in the last war than along the line of the alleviation of suffering and the removal of the liability of the frightful after-fatalities of the battlefield, a triumph which can be traced altogether to the strong organization for research.

Probably more efficiency could be shown in the revision of the Pharmacopoeia if in the past there had been possible a carrying over by a central organization of the Committee on Revision with its sub-committees by whom the necessary investigations could have been carried forward simultaneously with the appearance of the various factors necessitating this revision. The collection and correlation of the mass of literature which appears on any important subject in a decade is no small task. While work being continuously carried forward may be invalidated from time to time by findings of the investigator or by other circumstances, there is no lost motion in taking up the scattered threads of the subject and piecing together a new fabric, more durable than the old, and having greater validity because of the errors recognized and overcome.

The Drug Laboratory of the Bureau of Chemistry at Washington has published some valuable papers on the identification and estimation of the newer synthetics, laying stress on those of more common occurrence in headache and cold remedies. At the same time there are being offered in some of the leading universities courses in qualitative organic analysis having to do with the identification of pure compounds and the separation of mixtures. These courses are being offered by men who in many cases have brought long years of training as research chemists to their work. They have developed simple methods of attack by means of which a student of limited experience but with a thorough grounding in the fundamentals of organic chemistry can rapidly solve the composition of complex mixtures. Such students have but one obstacle to contend with, they are unfamiliar with therapeutic properties and cannot associate substances as is done by the chemist who has devoted his time to the medicinal use of synthetics.

The writer is fearful lest the delegation of the promotion of pharmaceutical research to one institution or association not directly allied with pharmacy may result in the defeat of the purpose which its projectors are attempting to achieve. If pharmaceutical research be made a function of the American Medical Association we would expect it to be interpreted in terms of therapeutics; if of the drug manufacturers it would cause the establishment of a laboratory where manufacturing pharmacy in all of its ramifications would be studied on a large scale and where cost accounting might well be the criterion by which all results would be measured. The National Association of Retail Druggists finds its real interest in the problems which affect the profits and losses of the retail trade, while the American Chemical Society would have a tendency to view everything in its chemical phase. Each group will pay only minor attention to the contributory data which

has been laboriously brought together by students in other fields ever since pharmacy first became a science.

No one association, representing one of the contributing sciences, and not having its major interest in the field as a whole, can be expected to make the generous provisions, nor offer the broad-minded administration or direction, which such a foundation requires. I believe most emphatically that if the United States is to have an institute of drug research, it should be all that the name implies, and should be controlled, or at least feel the guiding hand of, that group which will finally be obliged to accept or reject and be governed in every sense by its findings.

There is only one organization in the United States which has the broad foundation necessary and is so organized as to contain within its membership students from every associated field. That organization is the American Pharmaceutical Association. It has already asserted its right to be the promoter of drug research and has done more than any other organization of the country toward this purpose by the creation of its research committee and by the establishment of a fund for its development out of the sole earnings of the Association.

This sum might be made the nucleus for a large fund to be obtained by donation from those most interested in the promotion of pharmaceutical knowledge. Much will depend upon the attitude to be taken by corporation members, but the Association should not look to those alone. The interests of the foundation should be the interests of each member, and an investment in the foundation cannot fail to return dividends to all of those coöperating in its creation. Most institutions must have small beginnings, but if it is the will of the members of the American Pharmaceutical Association that the Association continue to recognize and forward research, their determination will result in an establishment which will remain for all time as a monument to the ideals of the Association.

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THE TACK IN THE TIRE.*

BY W. L. SCOVILLE.

This is the automobile age; an age of speed, of rapid changes, of swift development. Five years ago—just a little more than the space of a college course—the world was at peace. The road was clear and smooth and the weather was fine. Riding was good. Then suddenly just around a curve the German machine viciously struck the Belgian car, telescoped it, and rushed into the French car coupled with a low-powered British. These stood the shock without collapsing, but were driven back until the German machine realized that it, too, was seriously damaged. Then began a struggle for the roadway which lasted four and a quarter years, which developed ways and means of powers, of repairs and of efficiency with startling rapidity. And because men of science, of skill, of thought, and of dexterity set themselves wholeheartedly to the task of clearing the road and making it "safe for democracy" the struggle is now over and the rebuilding is begun.

* Read at the One Hundredth meeting of the Chicago Branch, A. Ph. A., February 21, 1919.

But it is a new world. Speed records have been broken, and the speed of living and of accomplishment is advanced. The "flivver" of to-day can beat not merely the star trotter of yesterday in speed but can beat a hundred of him in endurance. Not only speed but the standard of distance is increased.

Now increased speed and longer distances bring new and varied scenes into view. The vision is broadened and the rural fields, where life begins, attract the sight. The world has ridden out into the fields of science, has seen men of science perfect almost in a day the aeroplane, design the tank, evolve means of protection from noxious gases and invent new gaseous poisons, perfect foods, find improved methods of healing wounds and make whole men out of men with parts missing. The world has learned that back of the operators are the scientists who have discovered what and how to operate. That back of the factory is the place of learning, and that the college is but the commencement of learning. That every branch of material things leads back to a small place of experiment, of investigation, of testing and of decision. That science underlies most of the material things of life, and that men of science have played a fundamental and important part in ending the titanic struggle in which the odds were first with the heaviest machine. Science has come to the front, and is destined to wear honor decorations. It will receive new homage and be accorded a new place in the vision of the peoples.

Where will pharmacy come in? Will it get a recognition as a branch of science? Will it pose as an observer or as one of the observed? The answer is not flattering. In the great war struggle pharmacy was classed as a non-essential vocation. It was denied leadership and initiative. Why? Is it not because pharmacy has been riding in the tonneau instead of driving? Because it has been content to be a passenger in the car of chemistry or of medicine instead of driving its own car? There is a world of difference between driving a car and being a passenger therein. The passenger keeps up with the pace, gets all of the view and most of the enjoyment, but the driver picks the road, is alert for obstacles or chances, makes quick decisions and is responsible. He sees less, but he sees the essentials and achieves them. His eyes are always ahead, and he is working with hands and feet and head to get there. He follows or sets the pace as opportunity offers and he is alert to opportunity. And he gets the credit for the pace and accomplishments of the car.

II.

Now under the simile of the automobile I have suggested that pharmacy lacks influence in the scientific and professional world because we have been regarded as adjuncts to chemistry or of medicine rather than as a branch of those sciences with problems and utilities of our own.

We have not impressed the world with the idea that we are a real branch of science, although pharmacy has been an important factor in the development of chemistry and medicine.

Chemistry started in the laboratory of the apothecary, and we are proud of our Scheele and Liebig and those pharmacists of the early days who laid the foundations of chemistry. And medicine too owes a lot to such pharmacists as Sertürner, Pelletier, Goulard and many others who helped to establish therapeutics

on a sound basis. But we cannot live in the past, our eyes should now be to the front, and our pride be delegated to our apprentices. Is pharmacy to be swallowed up in other sciences and lose its identity, or will it find a new place for itself by search—or research? Is there nothing of value to mankind that pharmacy should develop, not already known?

Our Association has already laid the foundation for funds to support research, and other funds are available when the need and the worker can be offered. But research depends more upon a spirit than upon an opportunity. It starts in the mind and the ambitions of men, not in the treasury. And it is fundamentally an individual question. Results will be of collective value, but the initiation of the results must be individual.

A profession is advertised through its leaders, not through the rank and file. So if pharmacy is to become known to the public, it will be through the achievements of its leaders. Affiliations of interests within pharmacy may help to develop leaders, but it cannot create them. Furthermore, the qualities which make political leaders rarely develop scientific leaders.

The development of research in pharmacy must depend upon the few rather than the many: upon those who are interested in the professional and scientific aspects. This means the colleges and a few manufacturers or manufacturing pharmacists. But it is to the colleges that we must look in large measure for research, for not only is the atmosphere of the college most favorable but research is itself a valuable form of teaching. If the research is done by the professor and instructors, the students will get some of the spirit and enthusiasm. But there is also opportunity for research by the students, under proper direction. That they are not qualified for the advanced work is plain, but there are many questions in which student aid is valuable.

In the perfecting of formulas their very inexperience is an advantage. And in the development of facts which require repeated experiments they can do much of the work without sacrificing anything of the educational training.

I have wondered whether the long list of standard preparations and prescriptions which students are called upon to prepare in the college laboratory is wise. Repetition is necessary in education, and each preparation may involve some new or modified principle which is valuable for teaching. But is an exclusive technical training on these lines the most valuable outlook for their future work? Is the trend of the times demanding more training in pharmaceutical manufacturing or prescription practice? If it is not, the question may be asked whether our education has been looking ahead. Whether we have not been so interested in the history and development of pharmacy that we have forgotten to prepare for its future. Whether our attention has not been too much to the satisfactions of the past, and not enough to future developments.

Labarraque's Solution, for instance, has been a familiar preparation for many years, but no pharmacist thought—constructively at least—that its caustic properties prevented its development as a therapeutic agent. When an urgent need for such a preparation sprang up, the problem of adapting it to its purpose was not beyond the ability of some of our students.

There has been a great development in iron preparations in recent years,

but whether the popularity of certain forms, as Blaud's pills, is due to an advantage in that particular salt of iron or mainly to its chemical sensitiveness, as contrasted with more stable salts of iron, has not yet been shown. Are still more chemically-active forms of iron available which have not yet been tried out?

Have we been too empirical and superficial in our pharmaceutical problems?

When the war demanded almost our full resources of glycerin, and the question was asked whether pharmacy could not reduce its use of this article, who was in a position to pass sound judgment on the question? Who knows what is the real function of glycerin in pharmacy? That it hinders or prevents precipitation in many preparations has been repeatedly observed. But whether it owes this property to its solvent action or to a protective quality has not been determined. If its chief value in pharmacy is as a solvent, then it is a necessary adjunct. But if it acts as a protective agent, preventing oxidation or reduction, or simply increasing density, then there are other and more economical agents which can take its place. We have been far too content with the observation of results, and too little concerned with the principles by which the results are obtained, and so we lack a scientific foundation upon which to build our applications.

The wave of prohibition now just commencing finds pharmacy ill-prepared to judge just how important is alcohol in medicinal preparations. We know how much is needed to prevent fermentation, and how much is required for extraction and reasonable permanency in solution, but the function of alcohol in preventing chemical and therapeutic deterioration is yet but little understood. Yet this is one of its most important functions. Modern pharmacy is very largely a development from the infusions, vinegars and wines of the older days to the more permanent and reliable alcoholic menstrua of to-day, and we should be qualified to give a better answer to-day to the questions regarding the necessity of alcohol in medical preparations, entirely aside from its therapeutic value, than we are now able to give. And because we lack much of specific information in this regard we are threatened with a return to obsolete and unreliable medication through the zealous efforts of prohibitionists. We need to appreciate more the value of alcohol in preserving medicinal activity as well as in preventing putrefactive changes and precipitation, aside from its solvent function.

The medical agents of the future must be more reliable than those of the past or present. Standardization must grow. There are still a number of alkaloidal drugs and preparations in the Pharmacopoeia (as Lobelia, Veratrum, Gelsemium, Sanguinaria, Gossypium, etc.), for which no assay process has been evolved that is satisfactory. The time will come when cathartic drugs, astringent drugs and the bitters, and their preparations will be standardized. Reliability is the watchword in pharmaceuticals.

Pepsin is now standardized, but little attention has thus far been paid to the reliability of liquid preparations of pepsin—in which form by far the largest quantity of pepsin is administered.

The above are but suggestions. There is no lack of subjects for research in pharmacy, some fundamental and some perfective. And the variety is sufficient to furnish work for several grades of equipment and training.

III.

Research is primarily an attitude. It is a search for the undiscovered. An interest in the future.

Education is the development for the future. It implies instruction in the arts and sciences of the present and a preparation for that to come. An education which covers thoroughly instruction in past and present conditions but neglects questions as to the future, lacks virility. It is interesting but not progressive. It may make animate encyclopedias but it cannot claim credit for constructive men.

Is not this the main difficulty in our pharmacy schools? Men and women are graduated who understand the whys and wherefores of the pharmaceutical art and science of the past, but who have no definite idea of the tendencies and needs of the future. Pharmaceutical operations and preparations are taught as though they were finalities instead of progressive. Labarraque's Solution was a finality for two generations, but when it was found lacking in an important quality it quickly became the parent of a new and modernly useful preparation. And the history of this may be paralleled by many other pharmaceutical preparations in the future. For if pharmacy has attained to the limit of perfection even in standard preparations, we must soon prepare for the obsequies. But it is for us to say whether pharmacy is senile or is still growing.

Does it make no difference in teaching the subject of pills, for instance, whether we simply teach three forms of pills—hard, friable, and soft mass—and several forms of coatings, as though it were all merely a matter of choice, or whether we begin with the hard-mass pill, and develop it through its series of coatings, designed to prevent taste, then come to the friable pill, developed to improve solubility, and then discuss the soft-mass pills as a further evolution, and finally leave the student with the question in his mind, evolved rather than suggested, whether we have yet attained the possible perfection of pills? Would it be any better pedagogy to teach the tincture as an evolution of the vinegar and wine—and possibly of the infusion and decoction—and to point out the constant tendency to increase the alcoholic strength in order to obtain therapeutic stability?

So may all the preparations be presented as stages in the evolution of pharmacy, and an interest in future developments created in the mind of the students. Then after a period of postgraduate practice there might be found less tendency to complain that there is so little use for the science of pharmacy as taught in our colleges, and more interest displayed in using that science for the perfection of pharmaceuticals and the meeting of modern needs.

The business end of pharmacy has developed largely through the incentive to experiment. Old business methods that were good enough for our fathers are not good enough for us, and the proprietor experiments on new methods. Some succeed and some do not, but the essential difference between business and scientific research is that the former brings quicker results. The business man must constantly look ahead, try new things, plan new appeals, hold whatever is good of the old but prove all things. This is essentially the research spirit. Cannot our pharmacy schools fit some of that into the scientific end of pharmacy? Instead of dwelling long and minutely upon the preparations on the lists, preparing a large number of them in the laboratory, and creating the impression in

the mind of the student that the preparations of a generation ago, still in demand, are typical of to-day, should we not devote less time to the details or modifications of pharmaceuticals and train them a part of the time through experimenting on improvements or on new things? What they may discover will be of far less value than the inquisitive mind and the forward look which they may develop. To graduate them with clear and definite ideas of the imperfections and possibilities of their profession is to create a new courage and determination to improve it.

If research is to develop in pharmacy it must derive its spirit from the colleges. What research the professors and instructors, with or without the help of students, can do will be valuable. But beyond that the manufacturers and institutions must look to the colleges not only for the training but for the scientific spirit. So must we have the research spirit before the research laboratory. The latter will come after the spirit is shown to utilize it. When a single individual responds to the need for a local new college building with a construction and equipment aggregating nearly a million dollars, it is plain that an equal need for an institution of more than local need must only be recognized to be met. But recognition includes a preparation for its use as well as a use for its results.

IV.

There are two incentives to research. The desire for discoveries that shall bring direct financial results, and for discoveries that shall be of permanent service to our vocation and the world, and shall bring us satisfaction.

I suppose that in all cases of research, both motives exist, but one will predominate in any given case. Both motives are desirable. The commercial motive in its pure form tends to obtain and apply results quickly, but it inclines to be satisfied with results that, though superficial, meet present conditions. The altruistic motive aims further, but tends to supersatisfaction with discoveries already made and to accept as final whatever seems good from an altruistic standpoint. Each motive is impatient with the other. One is too eager for the new, the other too content with present foundations. One tends to develop greed, the other pride. But neither greed nor pride are a sound basis for progress. And since human nature tends to one or the other, counteraction is desirable.

This is the essential difficulty with the special research laboratory. It usually demands the right to pass final judgment on questions which it has worked out, because its results are "scientific." And finality of judgment is more often the foe to progress than may seem.

Judges in law are trained to weigh evidence and decide on the merits; and they find it easier to weigh than to get the full evidence. So in science. We need all the incentives to get full evidence before we can come to sound and lasting judgment. "Impartial judgment" is an attractive phrase, but it more often means impatient than impartial. It inclines to base judgments upon present knowledge, pride and prejudice rather than upon all possible evidence. To give undue weight to what is known and to refuse it reasonable limitations.

Thus even in research, we need the stimulus of rivalry and opposition to secure fairness. It is but human to search out the evidence that justifies our bent, and to be content with that.

So if special research laboratories are to be established for the working out of Pharmacopoeia and National Formulary problems, or for coöperation in commercial problems, these should not be made final. There should be other courts of appeal. Altruistic labor has this advantage, that while it is usually less thorough in its work, it is more open in its acceptance of evidence.

The special and the coöperative research laboratories are very desirable. We can accomplish much through them. We should not distrust them nor cultivate a critical spirit, but we must not lose sight of the fact that science is the interpretation of known facts, and that all facts are not yet known, and that interpretations may not be infallible.

Commercial laboratories are doing much of unselfish altruistic work in research, and college professors are not lacking in sympathy and understanding of commercial conditions. This favors coöperation. It is a factor which the technical industries are beginning to develop systematically. Technical students are being delegated to industrial shops for a part of their college course, such experience being a part of the curriculum, required for graduation. And the industries are turning over some of their problems to the college laboratory for research. Such conditions are to be encouraged.

We shall arrive at more satisfactory and lasting conclusions by developing both motives in research than by trying to establish a single laboratory, however well equipped with men and tools, which shall pass final judgment on scientific questions.

BALLOTA HIRSUTA, BENTH.

AN ADULTERANT OF HOREHOUND (*Marrubium vulgare* L.).

BY CLARE OLIN EWING AND JOSEPH F. CLEVINGER.

Within the past two years a number of shipments of "Horehound," *Marrubium vulgare* L. offered for entry proved to consist entirely of the young herb of a spurious species, which was identified in this laboratory as *Ballota hirsuta* Benth. This finding was announced in Service and Regulatory Announcements, Chemistry 20, Item 212(1917), although no details were given, since at the time the Bureau had not adopted its present policy of including descriptive paragraphs regarding adulterants found in crude drugs. More recently there has come to our attention a shipment of horehound in interstate commerce which proved to contain approximately 25 percent of material from this same species. A sample was referred by the commercial firm interested to a consulting analyst, who erroneously pronounced it to be *Ballota acetabulosa* Benth., and not *Ballota hirsuta*. The two species resemble each other closely, and both so nearly resemble true horehound that it is not easy to point out striking macroscopic distinguishing characteristics, which are especially difficult to detect in the dried and crushed condition in which the material is imported. In view of the instance of confusion of the *Ballota* species above cited, as well as because of the substitution of a spurious product for horehound, it is thought that a brief statement of the chief differential charac-

teristics of the three species may be of interest. These data are based upon the examination of specimens in the National Herbarium of the Smithsonian Institution, Washington, D. C., and the New York Botanical Gardens, Bronx Park, New York City.¹

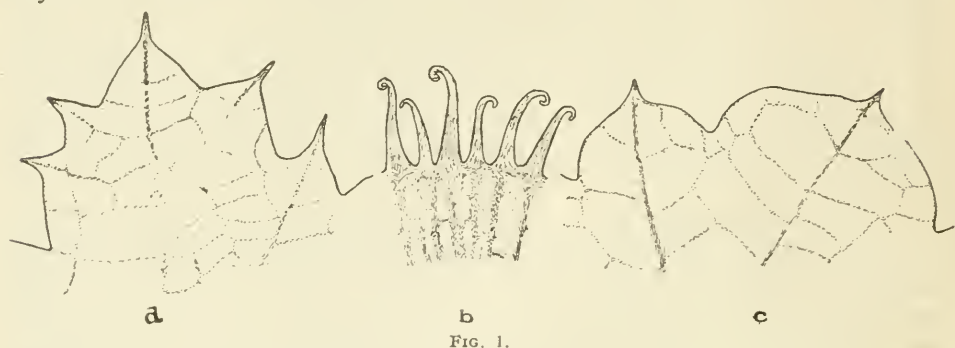


FIG. 1.



FIG. 2.

Differential characteristics of *Marrubium vulgare*, *Ballota hirsuta* and *Ballota acetabulosa*.

FIG. 1.—I. Calyx margins $\times 6$. (a) *Ballota hirsuta*. (b) *Marrubium vulgare*. (c) *Ballota acetabulosa*.

FIG. 2.—II. Characteristic hairs $\times 60$. (d) *Ballota hirsuta*. (e) *Marrubium vulgare*. (f) *Ballota acetabulosa*.

The leaves of the three species in question are so similar that examination with a handlens does not enable one readily to distinguish between them. The herb, however, is nearly always collected in the flowering condition and the shape and lobing of the calyces of the flowers, which are generally fairly abundant,

¹ Specimens were kindly made available to the Bureau through the courtesy of Dr. N. L. Brittin, Director.

afford the most striking means of differentiation. The calyx of true horehound, which is only about half as large as those of *Ballota acetabulosa* and *Ballota hirsuta*, is tubular, whereas the calyx of both *Ballota* species is nearly funnel-shaped. The margin of the calyx of *Ballota acetabulosa* has 10 to 20 very obtuse lobes, in fact it is almost crenate (Fig. 1-c); this distinguishes it from the dentate margin of *Ballota hirsuta*, which has 10 to 20 acute lobes (Fig. 1-a); in both species the lobes terminate in very short nearly awl-like teeth barely one-half cm. in length; both thus differ markedly from *Marrubium vulgare*, which, as is well known, has 10 awl-shaped recurved teeth about 2 mm. in length (Fig. 1-b).

Under the microscope the leaves of *Marrubium vulgare* show tufted hairs, which are usually curved or bent and almost sessile (Fig. 2-e). Those of the leaves of *Ballota hirsuta* are usually straight and are somewhat elevated by a multicellular basal stalk (Fig. 2-d). In both cases one hair generally attains a considerably greater length than the others and may contain 2 or 3 cells; this elongation is perhaps more frequent and pronounced in *Ballota hirsuta* than in true horehound. The tufted hairs of *Ballota acetabulosa* have a long, oftentimes much bent central stalk, from which many straight hairs branch (Fig. 2-f). Other types of hairs are present on the leaves of the three species, but they are not especially characteristic. The non-glandular hairs in the throat of the calyces furnish another microscopical characteristic which distinguishes both *Ballota species* from true horehound. In the former these hairs contain tiny prismatic crystals, presumably of calcium oxalate—they are insoluble in acetic acid and soluble in hydrochloric acid. The hairs in the throat of the calyx of *Marrubium vulgare* show no crystals.

No chemical data regarding *Ballota hirsuta* appears to be available in the literature, and it is therefore impossible to state whether it might be valuable as a substitute for horehound in the manufacture of cough drops or other medicinal preparations. It has, however, an agreeable odor and may possibly be a desirable material for use in the manufacture of confectionery. Its similarity in odor to true horehound seemed so striking that for purposes of comparison a small amount of candy was prepared from an infusion of the material. The flavor was not at all unpleasant and very closely resembled that of a candy similarly prepared from genuine horehound.

PHARMACOGNOSY LABORATORY,
BUREAU OF CHEMISTRY.

THE CULTIVATION OF MEDICINAL PLANTS.*

BY GEORGE P. KOCH.

War with all its horrors, and terrible as the results may be, does produce some good. It stimulates production, compels efficiency, and teaches us to be more self-reliant.

This applies to every phase of our national life, and one of the results of the great world war has been to teach the United States how it may produce the supply of medicinal drug plants necessary to its health and life.

* Read before Philadelphia Branch, A. Ph. A., February meeting, 1919.

Before the war most of the crude drugs used in this country were imported and many were supposed to be unsuitable to our climate and soil conditions.

War rendered importation impossible and compelled us to learn how to grow these drug plants in this country, whether conditions were suitable or not.

This has been done, and the United States is now able to grow the more important drug plants within its own borders, in large quantities and at a commercial profit.

Cultivation of medicinal herbs is reported as early as the middle of the sixteenth century, when plants used for medicine were grown in Italian gardens. About sixty years later, a large tract of land was set aside in Paris for a botanical garden, a portion of which comprised the "Jardin Botanique de la Faculty de la Medicine." Then other nations began to devote their attention to the cultivation of medicinal herbs. Medicinal plants have been grown in the United States for the last two centuries, and for many years were termed "healing herbs." Their crude products formed the remedy used. As soon as commercial preparations appeared on the market, many small, private gardens of healing herbs were discontinued, as it was cheaper and more convenient to buy the more standardized preparations than to grow and use the plants. Thus, individuals, companies and corporations devoted their interests to collecting medicinal plants and preparing commercial drugs. There are, however, still many medicinal plants that are grown in a small way in private gardens. These plants are used in cookery, for decorative purposes and, to a small extent, for their medicinal value.

There is a great variety of plants used for medicinal purposes, but the amount of them is very small compared with staple crops, such as corn, wheat and potatoes. Many of the drug plants grew wild, and their leaves, roots or barks were collected and sold to those interested in manufacturing.

As more and more of the wild and virgin soil was brought under cultivation, there was less area for these wild growing herbs. Consequently, as the wild plants disappeared, the prices steadily advanced. With the advance in price to the point where cultivation was profitable, individuals began growing these plants under commercial conditions.

As the cost of production of medicinal plants was considerably less in foreign countries than in the United States, the greater amount of the crude drugs was imported. Hence, drug culture never became a very important phase of agriculture in the United States. The only medicinal plants that were cultivated were small crops yielding volatile oil, and various species of medicinal plants grown by pharmaceutical departments of universities, principally for class work. A few large companies engaged in the manufacture of drugs were carrying on experiments concerning the culture of a few plants. It was not until 1914, when the importation of crude drugs was checked, that we began to realize how dependent the United States was upon other countries for these products. With the steady increased demand for crude drugs and a continued lack of supply, prices advanced rapidly. These high prices furnished a great stimulus for drug raising in the United States. Making easy money by raising drugs, for a time, was a popular newspaper story. Several of the large drug manufacturing houses, State experiment stations and pharmaceutical departments of the large universities, began

extensive experiments to determine to what extent medicinal plant culture could be successfully and profitably carried on in the United States.

The cultivation of some medicinal plants is no more difficult than that of some agricultural plants. The principal objection found in propagating these plants in this part of the country is that it requires considerable hand labor. Hence, as the wages paid are high, the cost of production is usually rather expensive. Thus it was desirable to perfect methods, wherever possible, so that the highest standard of quality of the product in question was always obtained and the most effectual labor-saving methods employed, as by the utilization of machinery.

More or less detailed experiments were made with the five species of drug plants which were most important and most likely to be adapted to the state of Pennsylvania. Practical and the scientific considerations were constantly carried on. The five plants considered were *Atropa belladonna*, *Hyoscyamus niger*, *Digitalis purpurea*, *Cannabis* and *Datura stramonium*.

Belladonna has probably received the greatest amount of consideration by investigators. It requires a long time for belladonna seeds to germinate, and since the growing season in the field is comparatively short, in order that belladonna growing should be successful, it is necessary that these plants be first developed under glass. The germination period for belladonna seeds may be from three to eight weeks, usually only a small percentage germinating in three weeks. Treating the seeds with acids, as shown by Sievers⁷ and others, proved of no particular advantage. Some investigators have reported that freezing them hastened germination, while others have found such treatment to be ineffective.

As belladonna plants are grown for some time under glass, and infectious organisms as "damping-off" fungi must be guarded against, the sterilization of the soil to be used is to be recommended.⁴ This not only destroys the destructive organisms but it kills weed seeds, which are always numerous. Sterilization, likewise, greatly increases the available constituents of the soil to be utilized by the growing plants.

Belladonna plants will make a very large growth in one season. If the proper care and conditions are given these plants, three pickings of leaves can be harvested. Besides the leaves and roots, it has been found⁴ that the stems of belladonna plants can also be utilized. Since three crops of leaves are harvested, it is apparent that this is a vigorous grower, hence, a hearty feeder upon the soil. This being the case, sufficient plant food must always be available for the ready use of the plant. Schneider⁶ states that with the particular soil used, no marked increase in yields was realized where fertilizers were applied. Carr¹ reports the contrary and the investigations carried out at our laboratories⁴ show conclusively that applying complete fertilizer resulted in very marked increases, namely, 3 to 3¹/₂ times the yield of those plants receiving no fertilizer treatments. Hence, the application of sodium nitrate, acid phosphate and potash is to be recommended.

When cultivating belladonna under Pennsylvania conditions, it is desirable to plant the seeds in sterile soil under glass about December 20th to January 1st. In about seven weeks plants will be sufficiently large for potting. In order that the cost of production be kept at the minimum, the plants need to be potted but once. Repotting into larger pots is not necessary. As soon as the weather and soil conditions permit, these plants are transplanted into the field.

In the cultivation of belladonna, an important consideration is to successfully control the attacks of insects. Practically all of those insects that are destructive to truck crops are destructive to these plants. Of the chewing insects, the Colorado potato beetle is by far the most destructive, while the green and pink aphids are the most harmful sucking insects.

Hydrocyanic acid fumigation is the most successful and desirable means of controlling all the insect pests while the plants are being propagated in the greenhouse. In the field, chewing insects can be controlled by the various arsenical spray mixtures.⁴ The best of these are Paris green and arsenate of lead. For combating aphids, nicotine sulphate, otherwise known as "Blackleaf 40," has been found the most effective. All insect injury can be controlled if proper precautions are taken and the spray applied as soon as any of the destructive factors make their appearance.

In order that the resultant product of dry belladonna shall be of the best quality, the drying should be carried on under the most favorable conditions. Sievers⁸ first air-dried samples of belladonna, after which the remainder of the moisture was driven off by drying in a hot air oven. Other investigators report various means of drying. The results which have been obtained at the Mulford Laboratories⁴ indicate that in order to secure the most desirable product the leaves of belladonna should be dried at a temperature not above 55 to 60° C.

One reason why belladonna culture did not flourish a few years ago was because it was very difficult to secure viable seeds. Belladonna plants are very prolific seed producers and an average sized plant will easily produce an ounce of clean, dry seed. Hence, we can harvest several pounds of seed from a small number of plants. Most belladonna growers have now learned how and when to collect the seed. In growing belladonna, as with other medicinal plants, it is important to have a product with the active principle as high as possible. It is true that the alkaloidal content of two belladonna plants may be quite different, even if grown under identical conditions of temperature, moisture, soil, fertilizer treatments, etc. This difference is due to the individualism of the respective plants. In like manner the various parts of the same plant will vary greatly in activity. Still further, the leaves of the same plant will show a remarkable difference in percent of alkaloid. This variation, according to Sievers,⁸ may be from 0.110 to 0.766 percent. Hence, it behooves us, in order to produce a final product of the highest activity, to select strains of plants producing the highest alkaloid content. These must be cultivated under the most favorable conditions and the crop harvested when the leaves have reached the size at which the most alkaloid is present in them and, at the same time, we get the largest yield possible.

In considering the requirement of the United States Pharmacopoeia for belladonna, a word may be said with regard to the utilization of the stems of this plant in conjunction with the leaves. Since the United States Pharmacopoeia calls for the admixture of no more than 10 percent foreign matter, which might be stems, this will not permit the utilization of all the stems in conjunction with the leaves as they exist on the plant under field conditions, as this ratio is approximately two parts of leaves to one of stems. Investigation of this matter⁴ has revealed the fact that the alkaloidal content of belladonna leaves and stems used collectively in their proportion as grown in the field was considerably above the

United States Pharmacopoeia requirement. This is an important factor for practical as well as scientific consideration. It would bring into use the stems, and further, it would facilitate the harvesting, cutting and drying the crude material, and thus reduce the cost of production.

The same method of propagation under glass, germination, potting, planting, fertilization and growing in the field, which were employed in belladonna culture, can be applied in the cultivation of henbane, or *Hyoscyamus niger*, another member of the nightshade family. As henbane is more delicate, it requires a little more skill and caution than belladonna. However, if proper precautions are always taken, from a cultural standpoint, henbane can be grown as successfully in Pennsylvania as belladonna. As with all the other medicinal plants here to be considered, only one year's growth of henbane can be obtained, hence the annual variety is cultivated.

A few of the most important phases may be mentioned in the propagation and treatment of henbane. The plants should have attained considerable size—about 3 inches—before potting. Great care must be exercised when transplanting into the field as the plant should have attained a fair size. This plant does not have the massive root structure which belladonna has, consequently it is more delicate. Similar to belladonna, henbane is a vigorous feeder, hence it is most desirable to have sufficient plant food available for it during the growing season. Insects, especially the potato beetle, are very destructive to henbane. Stockberger^{9,10} well expresses it when he says that "leaves of henbane usually suffer severely from attacks of the potato beetle during the first year." We³ have found that by careful spraying of henbane plants with arsenate of lead (5 pounds to 100 gallons) the plants were able to withstand the attack of these beetles. Paris green applied in all of the ordinary concentrations proved destructive to the plant.

Henbane, like belladonna, produces many seeds. One large plant would produce sufficient seed to plant two or three acres.³ The mydriatic alkaloid content of the leaves of the annual variety of *Hyoscyamus niger*, which was cultivated at Glenolden,³ was 0.073 to 0.120 percent, while analysis of the roots and stems was 0.081 percent. These results compare very favorably with the United States Pharmacopoeia requirement, which is 0.065 percent.

Digitalis purpurea is a perennial plant, which was grown rather extensively in European countries and has long been grown in flower gardens in the United States as an ornamental plant. *Digitalis* grows wild over a very large area of western Washington and Oregon. Up to three years ago this wild plant was considered a very destructive weed, especially in pasture land, and land owners treated it as a weed, pulling out the immense stalks at blooming time, thus preventing its spreading. With the curtailment of the normal supply from abroad, and the advance in market prices paid for digitalis, this weed of the far west was carefully collected and placed upon the market.

Digitalis can be successfully grown in Pennsylvania.⁵ Open, well drained soil is preferable, as it is the most natural medium for this plant, and it makes possible early planting in the field. A good crop of digitalis can be grown on a heavy clay loam soil, if sufficient plant food is available.

Probably the most important factor, in growing a successful crop of digitalis, is securing plants. Direct field sowing has not proven satisfactory.⁵ Even though

the seeds of digitalis germinate rather quickly, weeds usually get the upper hand. Consequently, it is quite difficult to separate the weeds from the small digitalis plants.

Seeding small $1\frac{3}{4}$ inch pots with 6 to 8 viable seeds and allowing the plant from these to grow under glass for 7 to 8 weeks, then planting them in the field when they are from 2 to $3\frac{1}{2}$ inches high, has been found to be a most successful method. They make a very vigorous leaf growth, so that at harvesting time, which is just before the heavy frosts, a crop of from 500 to 700 pounds of dry leaves per acre can be collected, and this would be considered a satisfactory yield. Since the winters are usually quite severe in Pennsylvania—at least the soil is frozen to some depth—no attempt is made to grow digitalis as a biennial or a perennial plant. Formerly it was thought that the leaves of the second year's growth were the only ones that could be utilized in the manufacture of drugs. Experimental evidence has demonstrated the fact that the first year's growth of leaves is as active in medicinal principle as the second, hence, they are now used.

The drug plant cannabis, or *Cannabis Indica*, formerly imported, is now successfully grown here on a commercial scale. Imported Indian Cannabis was formerly thought to be the only variety suitable for use in the preparation of medicines. However, cannabis grown by scientific methods in the United States is now extensively used by American drug manufacturers. As with the other medicinal plants, the climate, season and conditions of growth affect the quality of cannabis.

Thus technical skill is necessary in order to produce cannabis of quality. Most of the cannabis culture in the United States is carried on in the Southern states, principally Kentucky and South Carolina. It can be very successfully grown in Pennsylvania. Grown under well cultivated conditions, and with plenty of available plant food, cannabis attains a remarkable height. It was not uncommon to find cannabis stalks on the Mulford Drug Farm from 9 to 10 feet in height. Harvesting such a forest of material would seem, at the outset, a somewhat difficult operation. This difficulty has, however, been conquered. The male plants are first removed, then with an ordinary corn binder the female plants are cut off as high as possible from the ground. The upper one-fourth to one-third of the female plants is then cut into small pieces with an ensilage cutter. By adopting these methods the cost of producing cannabis has been greatly reduced.

Stramonium (*Datura Stramonium*) grows as a weed in nearly all parts of the United States. While as a weed it makes considerable growth, it produces much better under cultivation. It thrives remarkably well on a heavy clay loam soil which is well supplied with manure. Under conditions of cultivation, after planting the seeds, no special care is necessary, other than occasional cultivation, before the plants have attained a too rank growth. Since it has been found² that the stems of stramonium, which are very pulpy and succulent, can be employed in conjunction with the leaves, and the alkaloid requirement of the U. S. P. still easily met, it has greatly facilitated the handling of this crop. The plants can be mowed with a mowing machine, ground in an ensilage cutter and then dried.

After we have carefully worked out the methods for the cultivation of these various medicinal plants, the question still presents itself, does it pay to grow these plants? First of all, in growing any crop commercially, whether it is wheat,

potatoes, apples or medicinals, there must be a market for the produce. The next factor to consider is, from which crop can we realize the greatest returns for the capital invested? Hence the grower must first acquaint himself with the market conditions and then, after careful calculation, determine which crop will be most profitable. If medicinal plants have been decided upon as the crop to be grown, and all the prerequisites, capital, market, satisfactory market price, skill, equipment, proper soil, etc., are at hand for the production of such a crop, then the grower must take into further consideration that if too many individuals engage in growing the same crop, the market price will drop below the figures on which he based his profits, and a financial loss will be the result. Under commercial conditions in order to warrant the cultivation of medicinal plants they must yield a greater return than other agricultural crops.

Five medicinal plants have been considered in this paper. Prices for the crude drug of two of them, namely, belladonna and hyoscyamus, are to-day lower by half than those paid for them in December, 1917, at which time the prices for crude drug materials had reached the high mark. We have not been importing any of these five drug plants within the last year, and our consumption—hence the demand—has been much greater than a year and a half ago. This clearly demonstrates that the United States has met the original so-called possible crude drug crisis, and all the demands have been and are being met, by products from plants grown here on a commercial scale.

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THE PREPARATION OF PHENYLCINCHONINIC ACID.*

BY EDWARD D. DAVY.

The cancelling of patent rights on synthetic preparations made in Germany and the issuance of licences to American manufacturers able to produce these

* Read before Columbus Branch, A. Ph. A., March 12, 1919.

products according to standard requirements as to physical, chemical and physiological tests, led chemists throughout the country to efforts along this line of work which heretofore had received very little attention.

The following is the result of work by the writer on phenyleinchoninic acid (former trade name Atophan), taking into account first the preparation of the products entering into it:

Benzylidin-Anilin.—This is made by mixing molecular quantities of anilin and benzaldehyde, the anilin being added slowly to the benzaldehyde. The result is the splitting off of one molecule of water when the two combine, leaving $C_6H_5N.C_6H_5CH$. It may be crystallized readily by pouring the mixture into shallow vessels, and within a few minutes crystals form and in the course of a half hour it becomes a crystalline mass from which the greater portion of the water may be poured and the rest removed by drying *in vacuo* at the temperature of the water bath. The crystallization, however, is not absolutely necessary, as the water formed will collect on the surface of the benzylidin-anilin and may be separated mechanically, the subsequent drying being done as with the crystals.

Pyroracemic or Pyruvic Acid.—This is made preferably by the destructive distillation of tartaric acid. The tartaric acid is mixed intimately with an equal weight of potassium acid sulphate and the mixture subjected to distillation at a temperature not exceeding $220^{\circ}C$. This is best done by the use of an oil bath, the distillation being continued four or five hours or until no more distillate is received. The process is very slow and the tartaric acid is broken down into carbon dioxide, water and pyroracemic acid, the acid being purified by redistilling from an oil bath, the portion between $130^{\circ}C$. and $180^{\circ}C$. being saved. The tendency is very strong for the acid to retain the water, some of it even above 130° , unless the distillation is conducted very slowly, raising the temperature not faster than 1° per minute from $100^{\circ}C$. to $130^{\circ}C$. The yield in acid is stated by some authorities to be 25 percent of the tartaric acid, but in working with small quantities the yield was found to be slightly below that figure.

Pyroracemic acid is a syrupy liquid, miscible with all ordinary solvents, is of light straw color and has a specific gravity of about 1.280.

A great deal of trouble was experienced in making the distillation from the tartaric acid, due to excessive foaming, and several preventive measures were tried with varying results. Cerasin was added, but owing to the extreme viscosity of the mixture it did no noticeable good. A method is suggested of charring the acid in an open vessel and after cooling the fused mass is broken into pieces and subjected to distillation. This plan has objectionable features owing to the loss of pyroracemic acid during the charring. Another effective means was tried, that of continuous stirring in the flask until it became charred after which it boiled quietly. This was attended with less loss of acid, as the greater portion condensed on the sides and neck of the flask while the water with a lower boiling point passed off. It is quite possible that a mechanical stirrer within the distilling chamber might be used with success in making distillations in large quantity.

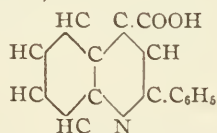
It was first thought that the presence of carbon was the chief factor in allaying the foaming, but on using the same potassium acid sulphate repeatedly, and which carried with it considerable carbon, no decrease was noted, so it is concluded that the formation of water in the decomposition of the tartaric acid is directly

responsible. The use of fused potassium acid sulphate tends to lessen the foaming, but does not eliminate it.

The method for the combination of these products is the same as that outlined in the patent which follows: According to this invention 2-phenyl-quinolin-4-carboxylic acid is made by boiling an alcoholic solution of benzyldin-anilin and gradually adding pyroracemic acid to the boiling solution. From the rather indefinite statements regarding the percentage yield it would seem that the latest patentees obtained a yield of about 135 percent of the pyroracemic acid used. By the above process I obtained a yield of 85 percent in one case and 90 percent in another, the variation being due largely to the presence of water in the pyroracemic acid used as otherwise the experiments were carried out under the same conditions.

Procedure.—The benzyldin-anilin is boiled in dehydrated alcohol (reflux condenser) for fifteen or twenty minutes and the pyroracemic acid added slowly to the boiling solution. The mixture assumes a cherry-red color and should be boiled for about two hours after all the acid is added. The excess alcohol is then distilled from the mixture until a portion of the phenylcinchoninic acid is noticeably separated, after which the mixture is cooled as rapidly as possible, then placed in an ice bath, when it becomes a crystalline mass. Cold alcohol is then added, after which it is filtered with suction and washed with cold alcohol or ether until the tarry matter is completely removed. The use of ether as the final wash liquid facilitates the drying of the crystals, the tarry residue being very soluble in it. The residue is spoken of in the patent as "residue insoluble in soda lye," but it may as well have been spoken of as insoluble in acids, as it is insoluble in either strong acids or alkalies and might well be used as a varnish for laboratory ware on which acids or alkalies have a corrosive action.

Pyroracemic or acetyl formic acid, $\text{CH}_3\text{CO}\cdot\text{COOH}$, combines with the benzyldin-anilin to form phenylcinchoninic acid, $\text{C}_6\text{H}_5\cdot\text{C}_9\text{H}_5\text{N}\cdot\text{COOH}$, which is, as stated, 2-phenylquinolin-4-carboxylic acid,



Inasmuch as there are four uncombined hydrogens as a result of this union, it is quite probable that the acid acts as an oxidizing agent, thereby eliminating it.

The Ninth Revision of the United States Pharmacopoeia states that the melting point should be about 210°C ., but samples of Atophan taken from the open market had melting points from 208° to 209°C ., corrected. It was found that the presence of water in the pyroracemic acid materially lowers the melting point and the product on melting decomposes at a lower temperature (noted by darkening). On observing the aforementioned precautions in redistilling the acid to eliminate the water a product was obtained with a melting point of 209.5°C . and no noticeable decomposition at its melting point.

In summing up the difficulties encountered it might be said that the destructive distillation of the tartaric acid and the subsequent distillation of the pyroracemic acid to eliminate the water were the chief ones.

THE MANUFACTURE OF ACETPHENETIDIN.*

BY WILLIAM A. KONANTZ.¹

HISTORICAL REVIEW.

I. WORK OF HALLOCK.

Acetphenetidin was probably first made by the American chemist, E. J. Hallock,² in 1879, while investigating the properties of the mono-nitrophenetols ($\text{NO}_2\cdot\text{C}_6\text{H}_4\cdot\text{OC}_2\text{H}_5$) and some of their derivatives. Hallock treated *p*-aminophenetol ($\text{NH}_2\cdot\text{C}_6\text{H}_4\cdot\text{OC}_2\text{H}_5$) with acetyl chloride and observed that "this oil combines, like aniline, directly with acetyl chloride to form a crystalline solid." This crystalline solid must have been crude acetphenetidin; unfortunately, however, Hallock did not isolate it in the pure state and determine its physical properties and chemical constitution. He contributed practically nothing to our knowledge of the compound, and therefore he is not commonly regarded as the discoverer of acetphenetidin. His preparation of the crystalline solid is usually considered as merely the result of a test which he applied to confirm the presence of an amino group in *p*-aminophenetol, and not as a positive discovery of a new substance.

The method by which Hallock arrived at his crystalline solid has no value for the commercial synthesis of acetphenetidin; it is, however, of historical interest and deserves description. Pure phenetol ($\text{C}_6\text{H}_5\cdot\text{OC}_2\text{H}_5$), or a solution of phenetol in acetic acid, was treated with fuming nitric acid, and the resulting dark red, viscous liquid distilled in a current of steam. The product consisted of a solid and a liquid in varying proportions according to the conditions of nitration. The solid, which was found to be *p*-nitrophenetol, was purified by repeated crystallization both from acid and from alcohol. Hallock also prepared *p*-nitrophenetol by the action of potassium ethyl sulphate and potassium hydroxide on *p*-nitrophenol in sealed tubes at high temperatures, and by heating ethyl iodide and potassium hydroxide with *p*-nitrophenol under the same conditions. The *p*-nitrophenetol obtained by these methods he reduced to *p*-aminophenetol by means of tin and hydrochloric acid. The resulting salt, after the removal of the tin with hydrogen sulphide, crystallized in rhombic plates of a pearly lustre. These crystals were treated with potassium hydroxide, when the free base was obtained as an oily liquid resembling aniline. Hallock's conversion of this base into acetphenetidin by means of acetyl chloride has been described. In his original paper, and also in a paper published two years later, Hallock³ stated that the yields of *p*-nitrophenetol and *p*-aminophenetol which he obtained by these methods were very poor.

2. WORK OF HINSBERG.

The credit for the discovery of acetphenetidin is usually given to the German chemist, Oscar Hinsberg, who was the first to determine its chemical constitution, physical properties, and medicinal action. Hinsberg was led to his discovery by a consideration of the work of Fischer and Skraup and of Cahn and Hepp.⁴

* Contribution from the Graduate College of the State University of Iowa.

¹ Research assistant 1917-18 in the College of Pharmacy of the State University of Iowa.

² *Am. Chem. J.*, 1, 271, 1879.

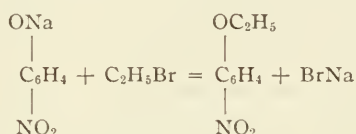
³ *Ber.*, 14, 37, 1881.

⁴ *Z. angew. Chem.*, 26, 158, 1913.

Fischer and Skraup had found that phenolic hydroxyl groups and their ethers produce antipyretic and analgesic effects, while the experiments of Cahn and Hepp⁵ had proved that acetanilid is an antipyretic and analgesic of great power. Schmiedeberg⁶ had also shown that aniline and its simple derivatives are partially converted by the organism into *p*-aminophenol. Knowing these facts and wishing to overcome the toxic action of acetanilid, Hinsberg conceived the idea of introducing into the molecule of acetanilid an alkoxyl group. One of the results of this idea was the discovery of acetphenetidin in 1886. Associated with Hinsberg were Kast, who determined the physiological action of acetphenetidin,⁷ and Duisberg, director of the Farbenfabriken of Elberfeld, who made possible its production on a large scale.⁸

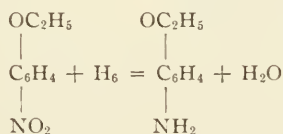
In the descriptive portion, or specification, of the United States patent⁹ granted to Oscar Hinsberg and assigned to the Farbenfabriken of Elberfeld, we find the following description of the method which was first used in the commercial preparation of acetphenetidin:

"Fifty kilos of the potassium salt of paranitrophenole are mixed with three hundred kilos of alcohol, adding forty kilos of bromoethyl. The mixture is heated in an autoclave at a pressure of three to four atmospheres during about eight hours. At this time the reaction is finished, whereby paranitrophenetole is obtained according to the following equations:



"In order to separate the mononitrophenole, which has not taken any part in the process, from the ether recently formed, the solution is treated with steam. By this operation the ether distills, leaving behind the paramononitrophenole.

"For the reduction of the paranitrophenetole forty kilos of this ether are mixed with sixty kilos of muriatic acid and sixty kilos of water. To this mixture are gradually added, at a temperature of 70° C., twenty-five kilos of iron filings, the whole being stirred continually. As soon as the ether is entirely reduced, paramidophenetole is obtained, as explained by the following equation:



"The solution obtained in this manner is saturated with chalk diluted with water, and for the purification of the amido compound treated with steam the distillate is absorbed in water acidulated by muriatic acid. The muriatic salt of the paramidophenetole crystallizes in white leaves. Fifty kilos of this product are melted with one molecule of melted acetate of sodium and twenty-four kilos of glacial acetic acid. The melted mass is repeatedly boiled with water and the new monoacetylparamidophenetole obtained from the filtrates after cooling. It has the following formula:

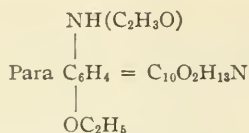
⁵ *Z. klin. Med.*, 1886, 33; *Berl. klin. Wochschr.*, 1887, 1 and 2.

⁶ *Arch. exp. Path. Pharm.*, 8, 1 (1878).

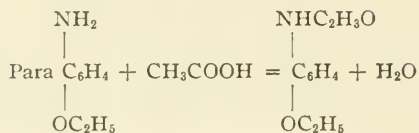
⁷ *Z. Med. Wiss.*, 1887-9.

⁸ *Z. angew. Chem.*, 26, 49, 158, 240, 352 (1913).

⁹ U. S. Pat. No. 400,086, March 20, 1889.



and is obtained according to the following equations:



"The monoacetylparamidophenetole crystallizes in white leaves, melting at 133° to 136° C. It is tasteless, little soluble in cold water, more so in hot water, but easily in alcohol, chloroform, benzole, etc."

The patentee claimed originality for the product but not for the process of manufacture. In fact, all the intermediates and methods described had been known to chemists for years prior to the time of application for the patent, so there was really nothing new in the process. The only useful improvement was its application on a commercial scale.¹⁰

Although the starting point in this synthesis is *p*-nitrophenol, no method for its production was described by the patentee. It is of interest to know that before the medicinal value of acetphenetidin was discovered, *p*-nitrophenol was a useless by-product in the manufacture of dianisidin from *o*-nitrophenol.¹¹ In order to complete the description of the method which was actually used in the manufacture of acetphenetidin it is necessary to add the nitration of phenol, which, according to Duisberg,¹² was carried out by the direct nitration of phenol in aqueous solution, the ortho and para nitrophenols thus formed being separated by distillation with steam, when the ortho compound passes over and the para isomer remains in the residue. The *o*-nitrophenol was used in the manufacture of dianisidin and the *p*-nitrophenol in the manufacture of acetphenetidin.

In 1889 Hinsberg¹³ described two methods for the preparation of acetphenetidin which are suitable for use in the laboratory. These methods are as follows:

"The ethyl ether of *p*-nitrophenol is reduced in the usual manner by adding it to a warm mixture of tin and concentrated hydrochloric acid on the water-bath. The colorless solution is then freed from the greater part of the tin by adding sheet zinc, saturated with sodium hydroxide, and shaken out twice with ether. The ethereal solution is dried with potassium hydroxide and then distilled. The portion going over between 242 – 245° (unc.) is vigorously shaken in a separatory funnel with ice-water and an excess of acetic anhydride (about 1.5 molecular weights to 1 molecular weight of phenetidin). After the disappearance of the anhydride the acetphenetidin is filtered off and crystallized from diluted alcohol with the aid of animal charcoal. The phenetidin, like aniline, may also be acylated with boiling glacial acetic acid."

"To go from *p*-aminophenol, acetylaminophenol and an equivalent part of sodium hydroxide and ethyl bromide or ethyl iodide are dissolved in sufficient alcohol to form a clear solution and warmed on a water-bath for two or three hours under a reflux. On diluting the alcohol the product, in case pure acetaminophenol was used, is clean and white and usually requires no further purification."

¹⁰ Kebler, "Phenacetin: Methods of Analysis and Commercial Status," p. 34.

¹¹ *Z. angew. Chem.*, 26, 49, 1913.

¹² *Ibid.*, 26, 240, 1913.

¹³ *Ann.*, 305, 276, 1899.

3. WORK OF RIEDEL.

In 1888 J. D. Riedel obtained a German patent¹⁴ on a process for making *p*-aminophenetol, which he stated was serviceable in the manufacture of acetphenetidin. In this process one molecule of *p*-nitrophenol is ingeniously made to furnish a large number of molecules of acetphenetidin. The process seems to have been used on a commercial scale because *p*-nitrophenol was rather difficult to obtain in pure condition by the nitration of phenol, and because the cost of production of acetphenetidin was dependent on the utilization of the *o*-nitrophenol as dianisidin or in some other way.¹⁵ The details of the method as described in the patent-specification are as follows:

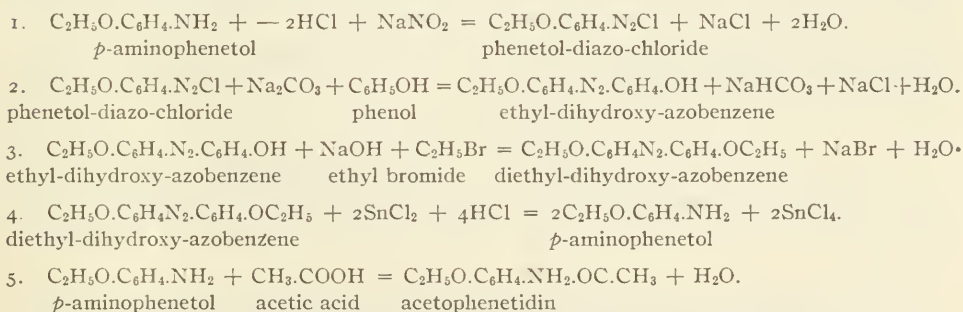
"A solution of 150 grammes of para-amidophenetol and 380 cc. of 20 percent hydrochloric acid in 2200 cc. of cold water, is diazotized by adding, with cooling, a solution of 70 grammes of sodium nitrite in 550 cc. of water. The solution of the diazo compound thus formed is poured into a solution of 104 grammes of phenol and 220 grammes of sodium carbonate in 400 cc. of water. After one hour the ethyl-dihydroxy-azobenzene separates out quantitatively. After filtering from the liquid portion it may be recrystallized from dilute alcohol.

"100 grammes of dry ethyl-dihydroxy-azobenzene and 17 grammes of sodium hydroxide are dissolved in 500 cc. of alcohol, 46 grammes of ethyl bromide are then added and the solution heated in an iron autoclave for ten hours at 150° C. After distilling off the alcohol the sodium bromide is extracted from the residue with water and any unchanged ethyl-dihydroxy-azobenzene with dilute sodium hydroxide solution. The residue, diethyl-dihydroxy-azobenzene, is crystallized from alcohol.

"70 grammes of stannous chloride are dissolved in 300 cc. of concentrated hydrochloric acid, to this solution 100 grammes of diethyl-dihydroxy-azobenzene are added, and the mixture warmed gradually on the water-bath. As soon as the diethyl-dihydroxy-azobenzene is dissolved the mixture is rendered alkaline with 180 grammes of sodium hydroxide, and the para-amidophenol distilled off with superheated steam."

The *p*-aminophenetol obtained in this way can be converted into acetphenetidin by acetylation or can be made to yield a double quantity of *p*-aminophenetol by repeating the above-described process of diazotizing and coupling with phenol.

The following equations illustrate the successive steps involved in the manufacture of acetphenetidin by this process:



4. WORK OF PLATT.

In 1893 Charles Platt¹⁶ described the method of manufacturing acetphenetidin as follows:

¹⁴ *D. R. P.* No. 48,543, Dec. 28, 1888; *Frdl.* II, 526.

¹⁵ May, "The Chemistry of Synthetic Drugs," p. 71.

¹⁶ *J. Anal. Appl. Chem.*, 7, 77, 1893.

"There are four steps involved in the preparation of phenacetin from phenol, which is the starting-point in its manufacture, and these, though simple, require care and attention, that the resulting drug may be of the requisite purity. First, the phenol is converted to nitrophenol by gradually adding it (one part) to two of nitric acid in four of water. An oil separates which is washed and distilled with steam, when the volatile ortho-nitrophenol distills over, leaving the non-volatile para-nitrophenol as a residue.



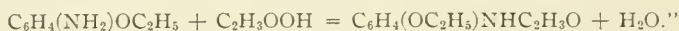
"In the second step the ethyl radical, C_2H_5 , is substituted in the hydroxyl group of the nitrophenol by treatment with ethyl iodide forming ethyl nitrophenol.



"The third step consists in treatment with sodium-amalgam, whereby the nitro radical of the ethyl nitrophenol is reduced to amidogen with the formation of phenetidin.



"The final step is the treatment of phenetidin with anhydrous acetic acid, then substituting the radical $\text{C}_2\text{H}_3\text{O}$ for one atom of hydrogen in the amidogen group.



It will be observed that this description is quite general; it is typical of the descriptions which are given to this day in most text-books and reference-books concerning the method by which acetphenetidin is made commercially. The most valuable part of Platt's paper is that which treats of the qualitative examination of acetphenetidin, many tests being given for its identification and the determination of its purity.

5. WORK OF TÄUBER.

In 1878 H. N. Morse¹⁷ reported that when *p*-nitrophenol is reduced with tin and glacial acetic acid, instead of obtaining the acetic acid salt of *p*-aminophenol, one obtains the acetyl derivative, $\text{HO.C}_6\text{H}_4.\text{NH}.\text{OC}.\text{CH}_3$. In 1894 E. Täuber was granted a German patent¹⁸ on a process that converts this chemical into acetphenetidin. The process is described as follows:

"Mix 150 grammes of *p*-acetamidophenol, 165 grammes of potassium ethyl sulphate, and 40 grammes of sodium hydroxide (dissolved in 500 cc. of 60 percent alcohol) in an autoclave and heat the mixture for four hours at 150°C . On diluting the resulting solution with three parts of water the phenacetin separates out in fairly pure crystals."

It should be noted that this process is practically identical with one described by Hinsberg in 1889 (see Section 2).

6. WORK OF PAUL.

In 1896 Ludwig Paul¹⁹ published an article on the technical applications of ortho and para nitrophenol, in which he described in some detail the different steps in the manufacture of acetphenetidin. The following paragraphs are quoted from his article:

"By the nitration of phenol there are formed, as is well known, two isomeric mononitro-compounds, *o*-nitrophenol, long, sulphur-yellow needles of a disagreeable odor, and *p*-nitrophenol, prismatic crystals of a faintly yellow to brown color according to their purity, possessing only a very faint odor.

"Their essential and, for the technical separation, valuable distinction, however, lies in their different behavior toward water-vapor.

¹⁷ *Ber.*, 11, 232, 1878.

¹⁸ *D. R. P.* No. 85,988, June 19, 1894.

¹⁹ *Z. angew. Chem.*, 1896, 387.

"Only the *o*-nitrophenol distills over with this, and in such purity, indeed, that it is suitable without further treatment for conversion into *o*-nitroanisol or dianisidin.

"On the other hand the *p*-nitrophenol remains behind as a crystalline mass mixed with tarry substances, from which it can be freed by repeated recrystallization from a small amount of naphtha."

"1. Purification of *p*-nitrophenol: 800 grammes of crude *p*-nitrophenol are dissolved in 8 to 10 liters of water with the addition of 250 grammes of chalk, and heated by passing in steam. The mixture is then filtered and 200 grammes of sodium carbonate and 5 kilos of salt added to the filtrate. After again filtering there crystallizes 950 grammes of the pure sodium salt of *p*-nitrophenol.

"2. Para-nitrophenetol: 480 grammes of the pure sodium salt of *p*-nitrophenol, 3120 grammes of denatured alcohol, 300 grammes of ethyl bromide (crude) and 100 grammes of sodium carbonate are heated under a reflux condenser for about 10 hours. The contents of the vessel are then cooled, the solid *p*-nitrophenetol filtered off, and, in order to separate any unchanged *p*-nitrophenol, washed with water until the washings are only faintly colored yellow. For complete purification the crude *p*-nitrophenetol is recrystallized from about 3 parts of alcohol, from which it is obtained in large, faintly yellow colored prisms, which melt at 56-57°.

"The yield amounts to 340 grammes, corresponding to 68 percent of the theory, according to which 499 grammes should be obtained. 22 percent of the *p*-nitrophenol remains unaltered, the greater part of which can be recovered from the mother liquor by evaporating and acidifying.

"3. Para-amidophenetol: 212 grammes of *p*-nitrophenetol are gradually added to a solution of 848 grammes of stannous chloride in 1060 grammes of hydrochloric acid, warmed to 50-60°. The reaction which ensues is a rather vigorous one, and is rendered complete by heating.

"When the reaction is ended, 250 grammes more of hydrochloric acid are added. After standing 12 hours the crystals of *p*-amidophenetol are filtered off, and, in order to free them completely of adhering tin, dissolved in 0.75 liter of hot water with the addition of 100 grammes of hydrochloric acid. Into this solution sheet-zinc is introduced until all the adhering tin is precipitated. After filtering the colorless solution and extracting the tin residue, a further addition of 100 grammes of hydrochloric acid is made. One obtains 140 grammes of the hydrochloride of *p*-aminophenetol, colorless prismatic crystals, 1 cc. long, corresponding to 64 percent of the theory.

"4. Phenacetin: Since the following-described experiment with 15 grammes of *p*-aminophenetol hydrochloride gave a yield of 75-90 percent of phenacetin, and by considering the amidophenetol recovered even the theoretical yield, further experiments would have been useless.

"16.7 grammes of the hydrochloride of *p*-aminophenetol, 8.7 grammes of dry sodium acetate, and 8.3 grammes of glacial acetic acid were heated under a reflux condenser for about 3 hours. The acetic acid solution was then dissolved in 10 parts of boiling water, and freed from resinous by-products by filtering. After cooling the phenacetin crystallizes out with a faint reddish color. By recrystallization from water with the aid of animal charcoal one obtains 15 grammes of phenacetin in the form of small, perlaceous, glistening flakes. The yield corresponds to 90 percent of the theory."

This method, it will be seen, is practically the same as that described by Hinsberg (see Section 2).

7. WORK OF KLIMMEK.

In 1898 United States letters-patent²⁰ were granted to Otto Klimmek of Chicago, Illinois, on the product oxyethylacetanilid, which is identical with acetphenetidin, and on a process of making the same from *p*-aminophenetol. This patent was subsequently found to be invalid. In the patent-specification we find the following description of the product and the method, both of which the patentee claimed were his inventions:

²⁰ U. S. Pat. No. 606,288, June 28, 1898.

"In carrying out the process of manufacture I add to the paramidophenetol one molecule of glacial acetic acid. The mass is placed in a flask having a return-condenser and maintained at a temperature of 100° C. in a water-bath for from four to five hours. This solution is then thrown into eighty parts of boiling water and maintained at the boiling-point for a few minutes, a sufficient quantity of animal charcoal having been added to secure on filtration a perfectly clear liquid. The solution is now filtered while hot and allowed to crystallize rapidly. The large volume of water above mentioned thoroughly dissolves the solids, so that all of the impurities and coloring-matter are absorbed by the charcoal. The resulting product, oxyethylacetanilid, having the formula $C_{10}H_{13}NO_2$ (1:4), after being separated from the water is a solid composed of very small, lustrous crystals taking the form of scales. It is white, very light and 'fluffy,' soft or velvety to the touch, and is tasteless. It is almost insoluble in cold water. In boiling water when agitated it dissolves readily."

8. DISCUSSION.

From a review of the work which has been published on the manufacture of acetphenetidin one can obtain a general idea of the processes which have been found technically useful; however, these processes lack the quantitative data which would enable one to determine their relative value.

The process most often referred to, and no doubt the one most largely used in practice, at least in the beginning, is that of Hinsberg, based on the scheme: phenol \rightarrow *p*-nitrophenol \rightarrow *p*-nitrophenetol \rightarrow *p*-aminophenetol \rightarrow acetphenetidin. The chief disadvantage of this synthesis is the fact that it is quite difficult to obtain a good yield of *p*-nitrophenol in pure condition by the direct nitration of phenol, for *o*-nitrophenol is the chief product, and the *p*-nitrophenol is invariably mixed with tarry substances which are troublesome to remove. The process is not altogether satisfactory because the cost of production depends to a great extent on the ease with which the *o*-nitrophenol can be disposed of and its value; thus acetphenetidin becomes the by-product instead of the main product as is desired.

This disadvantage is not overcome by the Täuber method, as its starting-point is likewise *p*-nitrophenol. The only advantage of the Täuber method seems to be that both the reduction and the acetylation are performed in one operation. It is probable, however, that this advantage is overcome by the cost of the materials required to effect the double change.

The only process which does not start with *p*-nitrophenol, and which therefore obviates the chief disadvantage of these other processes, is that of Riedel, and it might seem that this process would be chosen for the manufacture of acetphenetidin. It is conceivable, however, that the process might, in spite of its freedom from side reactions, fail in one particular, that of the cost of production, since many materials are used which are quite expensive from the technical point of view.

It is evident that our knowledge of the details of the different processes, and their possibilities of improvement, is very limited. In order to obtain a more thorough knowledge of these things this research was undertaken and the phases of the individual syntheses systematically investigated.

(To be concluded in next number.)

THE AMERICAN RED CROSS PHARMACY IN PARIS.*

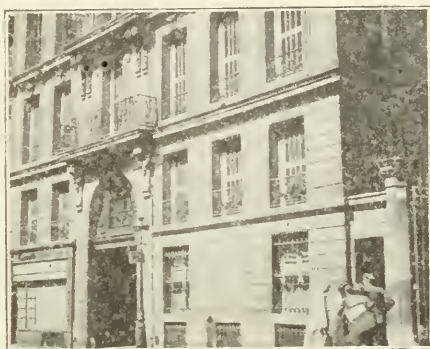
BY GEORGE LAWRENCE BURROUGHS.

General Nature of Work Conducted.—The Section of Hospital Supplies has charge of the receipt, storage and issuance of all technical, medical and surgical supplies. This includes drugs, surgical and dental instruments, X-ray apparatus, anesthetics, biological products, hospital accessories and a laboratory for the manufacture of pharmaceuticals.

Location of Section.—The Section is a headquarters activity, operating as a sub-division of the Department of Requirements, reporting to the Director of the Department, and receiving its requisitions for supplies from the Medical and Surgical Department. All the warehouses of the Section are located in or near Paris, shipments of supplies being made direct to A. E. F. activities or to Zone warehouses in which there is located a pharmacist to oversee the local distribution of the supplies.



Staff of A. R. C. Pharmacy. Left to right: Major Geo. L. Burroughs, Captain Frank E. Norton, Captain Allen R. Bishop, Captain Charles G. Shedd.



Laboratory of A. R. C. Pharmacy, 12 rue de Tilsitt, Paris, France.

The number of the personnel employed in the Section has averaged forty-one, the lowest number employed being twenty-three and the highest fifty-nine. This average does not include the time between January 10 and June 17, 1917, when only the Pharmacy was operating. During that period there was an average of fourteen personnel who worked fifteen hours daily, Sundays and holidays included, in their efforts that orders for supplies should be promptly filled.

Growth of Section.—In the fall of 1917 the Medical and Surgical Department, realizing the immense importance to the A. E. F., the handling of medical supplies was destined to become, decided that the supplies should be segregated and under the charge of an experienced pharmacist with executive ability, who understood the work to be performed and the necessary care to be used in the handling of such articles as would in the hands of untrained persons be liable to produce injury.

The hotel at 10-12 rue de Tilsitt was leased, as the rooms were admirably suited for the storing of drugs and surgical instruments, owing to the possibility of keeping an even temperature throughout the building. These rooms were

* Passed as censored and contributed to the JOURNAL A. PH. A.

fitted with a shelving arrangement to hold an enormous stock of supplies and yet have each item so accessible that it could be obtained without any loss of time; the entire arrangement reflected that these supplies are primarily intended for the quick emergency work arising through the sudden shifting of Army units. That this arrangement was properly conceived is proven by the records of the Section in having filled fifty-six requisitions in one day, and during the past ten months it has been the proud boast of the Section that each night has seen the day's requisitions filled.

Warehouses of the Section.—The headquarters of the Section is located at 10 rue de Tilsitt and is generally known as the A. R. C. Pharmacy. The building, formerly an apartment hotel, was leased in January, 1918, and commenced its activities the first week by issuing supplies through the French Hospital Supply Service at 20 rue Troyon. This arrangement with rue Troyon was continued during the first five months, for all rail shipments, but ninety percent of the deliveries were made direct from the Pharmacy through camion service.

The basement of the building is used for receiving, packing and shipping; probably seventy-five percent of all supplies issued by the Section has passed through these rooms.

On the first floor are located the general offices of the Section and in the various rooms the drugs and antiseptics are stored.

The rooms of the second floor contain the dental supplies, surgical instruments, rubber goods, sutures, serums and laboratory equipment.

With a well organized force, each department is in charge of a man fitted by previous training for the handling of supplies under his care; pharmacists for the laboratory and drug department; a dental and surgical instrument man of over twenty years' experience in this line of work, supervising the instrument department; the hospital accessories and X-ray apparatus in charge of an experienced hospital superintendent, and the shipping looked after by a man to whose competency is due, in no small measure, the prompt issuance of supplies.

The rooms, nineteen in all, are numbered, the sections lettered, and the compartments in each section again numbered, making it possible even by the dim light permitted during the night air raids to locate the items wanted.

A well equipped laboratory was established at 12 rue de Tilsitt for the manufacture of pharmaceuticals, the packing of them in convenient sizes, and of drugs purchased in bulk. This laboratory has been a valuable adjunct to the Pharmacy and has paid for its equipment several times over. The laboratory was not only the means of a large financial saving, but it enabled the delivery within a few hours of many preparations which otherwise would be delayed from two to six weeks, if obtained from local houses.

In this laboratory all the tablets supplied during the first three months were made, and such preparations of the U. S. P. and N. F., with which American doctors are more familiar and which differ in their composition from those of the Codex, are still being compounded.

By June the operations of the Pharmacy had reached a stage of such importance that the Section of Hospital Supplies was created. The warehouses at

25 rue de Villejust and 17 rue Pierre Charron were added to the Pharmacy and all supplies pertaining to the Section were transferred to these three warehouses. Previous to this the supplies had been scattered in various warehouses of the Section of Stores, making it practically impossible to know the amount of reserve stock on hand, as the Pharmacy had no information on stock outside its own warehouse.

In August the distribution of all alcohol and ether was assumed by the Section, and the Bureau of Manufacture commenced to issue its tanks of nitrous oxide and oxygen through the service of Hospital Supplies. This large addition of stock necessitated more space. The powder magazine of Fort D'Ivry and the riding academy at 12 rue Duphot were therefore loaned to the Section through the courtesy of the French authorities, both properties being free of rental charges. The three warehouses—Fort D'Ivry, 17 rue Pierre Charron and 12 rue Duphot—are used entirely for reserve stock. All the receiving, assembling and shipping are carried on at 10 rue de Tilsitt and 25 rue de Villejust.

Material Furnished.—To give an itemized account of material furnished would involve so many varieties of articles that it would be tiresome in the extreme. An idea may be gained of the work by the following amounts issued during the past six months—July 1, 1918, to January 1, 1919; in this are consolidated all the supplies under a few brief headings:

Drugs.....	75,016 lbs.	Rubber Gloves.....	15,108 prs.
Tablets.....	3,954,178	Dental Supplies.....	4,517 articles
Serums.....	21,566 vials	Sutures.....	73,404 tubes
Laboratory Reagents.....	1,252 lbs.	Goggles.....	2,158
Laboratory Equipment.....	21,766 articles	Rubber Tubing.....	111,463 feet
Microscopic Stains.....	4,520 grammes	Rubber Sheeting.....	38,517 feet
Surgical Instruments.....	69,477	Adhesive Plaster.....	22,059 feet
Surgical Units.....	271	Hospital Accessories.....	68,697 articles
Syringes.....	14,044	Oil Silk.....	4,920 feet
Surgical Needles.....	30,690	Bottles.....	9,996

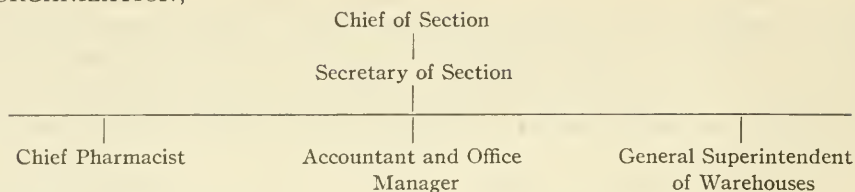
and also the hundreds of tanks of nitrous oxide and oxygen, the records of which are in the Bureau of Manufactures.

An idea of the growth of the Section may be obtained by the increase in the variety of articles carried in stock as shown in the following table taken from the inventory of May 1, 1918, and that of January 1, 1919:

	Number of kinds in stock May 1, 1918.	Number of kinds in stock January 1, 1919.
Drugs.....	277	648
Surgical Instruments.....	252	396
Dental Supplies.....	27	204
Laboratory Equipment.....	51	209
Hospital Accessories.....	0	142
Oxygen and Nitrous Oxide Tanks.....	0	21
	607	1620

The value of the stock fluctuates rapidly, owing to the variations between receipts and shipments, but the average value of the entire stock for insurance has been 9,000,000 francs.

ORGANIZATION;



The Secretary has charge of all correspondence of the Section, supervises the making out of assembly orders and distribution sheets, requisitions for supplies and orders for transfer of material between the warehouses.

The Chief Pharmacist is responsible for the filling of all assembly orders. All technical employees are subject to his authority and in the absence of the Chief of the Section he takes charge of the headquarters.

The General Superintendent of Warehouses takes care of the receiving, shipping and storage of supplies subject to the advice of the Chief Pharmacist. He has charge of the movement of supplies outside the Section, and of the camion service for the Section.

The Accountant, working with the advice of the Comptroller at General Headquarters, is responsible for all funds of the Section. He has charge of the pricing of inventories and invoices of supplies to consignees. The management of the offices and all the personnel of the Section are in his care, subject to the approval of the Chief.

Necessity for the Section.—The necessity for the Section is quite obvious. The handling of drugs and many surgical instruments is strictly regulated by law during peace. If the public health service of civilized nations has found it a necessary precaution in times of peace, these regulations should be even more rigidly enforced during a condition of war.

The importance of medical and surgical supply service can hardly be exaggerated, and the purchase, manufacture and distribution of these supplies should be in charge of a technically trained and experienced person in order that the highest degree of efficiency in the work be given.

The pharmacist being technically trained and also a business man of no small ability is best qualified to have charge of hospital supplies. He is acquainted with the conditions necessary for the proper storing of perishable stock, the varied amounts of stock necessary to carry according to the probable demand, what supplies require conserving and whether other articles could safely be used to replace those temporarily out of the market.

It is quite simple to estimate the number of shoes, hats, food supply, etc. for one thousand or ten thousand men, but it is much more complex to estimate the quantities of the thousand varieties of medical supplies, varying as they do with the kinds of cases treated in each hospital, the illnesses prevalent in the zone and even with the weather conditions.

The drugs must be properly labeled, their quality and nature verified. There must be maintained a checking system that will prevent error of sending the wrong package. In the A. R. C. Pharmacy each item is checked three times to prevent the human element of mistakes which are always liable to occur, and on several occasions this proved a most fortunate system. During all the rush work

of filling orders for waiting messengers we have yet to find a single case of sending out the wrong supplies. Several cases of goods have been received and were found to be mislabeled or to contain mixed supplies, such as vials of veterinary antitetanic serum with vials of mixed typhoid; asafoetida pills labeled "quinine" and even Linimentum Saponis labeled "Potassium Iodide." These errors were probably due to the shortage of experienced assistants in the manufacturing houses, due in turn to so many pharmacists being engaged in war work.

Without a Section of Hospital Supplies, considerable wastage of material might be occasioned by improper storage and also by unfamiliarity with the various names of the supplies. Many articles might be reported not in stock and purchase orders made when there would be a sufficient supply on hand under other names than the ones called for on requisitions. All such errors are practically impossible with this Section, as each requisition is passed on by a person familiar with all the synonyms of the articles in his department, and whose duty it is to know what there is on hand that could be used in place of the desired articles, and if it would be acceptable to the consignee, before a purchase order is made out. This applies not only to drugs but to many surgical instruments and accessories.

Emergency Service.—The personnel of the Section of Hospital Supplies is in the position of the stoker on a battleship; while the battle rages above he neither hears nor sees it, but he knows that on his efforts depend the manoeuvring of the ship and the success of the battle. So with the Section of Hospital Supplies; the men have not the added stimulant of the field workers in being in the forefront and seeing the actual results of their labor. These men never see the moving troops nor hear the roar of cannon, but with a true patriotic devotion they work unceasingly night and day in order that the pain of wounds may be relieved and the wounds cared for. Food and clothing may be and often are delayed for days, but anesthetics, antiseptics, and all medical supplies must be delivered immediately or lives will be lost that might have been saved. For this reason the Section of Hospital Supplies knows no difference between night and day. Week-day, Sunday and holiday are all the same to them in their efforts to get the supplies quickly to the medical corps and enable the surgeon to save the lives of wounded men. To their efforts many hundreds of men owe their lives, but it will be for the field worker to tell of the numerous times in which the antiseptics, the sutures and surgical instruments arrived at the place where needed, and the many times when, the regular source of supply being cut off, the A. R. C. Pharmacy stepped promptly into the breach and filled the emergency call. The reputation of the Pharmacy for dependability was early established, and was maintained throughout the entire period of active warfare, and how well it met the many calls upon it during the retirement of our armies in March, May and June, and again in the advance of July, will be testified to by the Medical and Surgical Department, through which the requisitions are received and by which their distribution is directed.

During the trying days of the three enemy offensives, the effectiveness of the arrangement for emergency work was thoroughly tested and was equal to every demand put upon it. Though greatly handicapped by the small number of its force, which at this period was only fourteen, without thought of sleep a force of four worked continuously for periods of thirty to forty hours assembling, pack-

ing and loading the cases into the ambulances, camions and staff cars—on one occasion the car of the Commissioner for France was used in the early morning hours to hurry the much needed supplies to the battle line.

Requisitions.—A large percentage of requisitions has been rush orders received by telephone and delivered to the camions calling for the supplies a few hours later. Shipments by rail were made as quickly as the transport orders could be arranged. In the following table it is the orders for shipments by rail received during the last few days of the month which appear as undelivered during the month received, making the deliveries in August, November and December exceed the requisitions received:

Month, 1918.	Requisitions received.	Requisitions delivered.
January and February.....	42	42
March.....	79	79
April.....	133	133
May.....	137	137
June.....	336	336
July.....	486	464
August.....	494	506
September.....	529	523
October.....	682	605
November.....	409	419
December.....	384	417

The following table shows the days on which the greatest number of requisitions were received:

June 13, 14, 15.....total	57	September 27.....	42
July 13.....	28	October 3.....	46
July 16.....	22	October 4.....	41
July 17.....	25	October 12.....	53
July 18.....	28	October 25.....	56
July 20.....	34	October 29.....	43
August 1.....	39	November 4.....	38

Every order received on these days was either shipped the same day or was ready packed, awaiting transportation.

The units served may be illustrated by the distribution of requisitions for October, November and December:

	October.	November.	December.
U. S. Army and Navy.....	62	72	39
A. R. C. Hospitals and Dispensaries.....	345	242	175
A. R. C. Warehouses.....	79	13	15
French Hospital Supply Service.....	163	0	6
French Hospitals.....	8	61	48
British Hospitals.....	3	6	1
Belgian Commission.....	7	3	1
Polish Army.....	1	3	2
Rome Commission.....	1	0	0
Switzerland Commission.....	1	0	0
Miscellaneous Units in France.....	12	9	4
Balkan Commission.....	0	0	69
Montenegro Commission.....	0	0	8
Tchecho Slovaque Commission.....	0	0	3
Palestine Commission.....	0	0	1
Greek Commission.....	0	0	2
Col. House—Peace Commission.....	0	0	12

An example of how quickly orders are filled may be given from a recent experience, when at five o'clock in the afternoon a rush order was telephoned to make up six camionette units of emergency supplies for relief work on the returning ex-prisoners who were in desperate need of medical attention. This entire order, making approximately half a ton of assorted supplies to each load, was assembled, packed, each unit numbered, and a list of the contents made of each case, ready and awaiting the camionettes at half past six o'clock.

One of the great aids in filling emergency orders has been the so-called "Burlingame Unit," which was made up by the Pharmacy force. It consisted of all the surgical instruments, sutures, antiseptics and drugs necessary for a surgeon's use in treating five hundred cases. This unit has been carried on hand at the Pharmacy, ready packed for immediate delivery.

Instances such as the above could have been enumerated many times, as the Section of Hospital Supplies has at all times given of its best efforts to cooperate with the Medical and Surgical Section in making the American Red Cross Service all that the American people demanded.

Despite the arduous duties of their own section, when in March the call came for assistance in caring for refugees, the men of this Section volunteered for night work in this relief and several of them served at the railroad station until midnight during that week. Again in July, when wounded men were arriving in Paris in large numbers, our personnel assisted in the receiving and undressing of these patients at the hospital.

To work in the Section of Hospital Supplies has been a privilege greatly appreciated and an honor highly prized by all the personnel, in whom there is established a feeling of pride amply justified by the record of their achievement in maintaining the honor and reputation of the American Red Cross in its greatest humanitarian work—saving the lives of sick and wounded.

The Section is still one of the most active in the organization and daily the loaded camions leave its office with the medical supplies for all parts of Europe.

EBERT-HALLBERG-OLDBERG.*

BY HENRY M. WHELPLEY.

The Ebert-Hallberg-Oldberg pharmacy period of Chicago, Illinois, the Middle West and in a way of the entire country, stands out with increasing prominence as time passes and we gain the advantage of perspective.

Each one of these three men was sufficiently strong in character, active in work and efficient in accomplishments to place a city even of the size of Chicago on the pharmaceutical map and keep it there during decades of subsequent history. The co-existence of the three is a remarkable circumstance. It was not, however, mutual affinity that brought them together. It is with some hesitation that I hyphenate the three names for this sketch. They are euphonius enough as I say, "Ebert-Hallberg-Oldberg," and I hope the echo will not disturb their peaceful and well-earned "rest beyond."

* An address, illustrated with lantern slides, before the Section on Historical Interests, A. Ph. A., Chicago meeting, 1918.

In spite of their friction and lost motion, each one devoted his life to the common cause of better pharmacy. The Chicago period, marked by the subjects of this sketch, began in the early forties, when Albert Ethelbert Ebert, a child of one year, came with his parents to the new town, Chicago. At the age of thirteen years, in October, 1853, he apprenticed to the drug firm, F. Scammon & Co., of 140 Lake St.



O. W. Steinmeyer, Carlinville, Ill., to the left; Albert E. Ebert to the right. The picture shows the usual pose of the latter.

Carl Svante Nicanor Hallberg was within a few months of legal age when he arrived in Chicago, in the spring of 1877, and engaged as drug clerk for C. F. Hartwig.

Oscar Oldberg came to the city and became a member of the faculty of the Chicago College of Pharmacy in 1883, at the age of thirty-seven years. He was the last to arrive, but soon established himself as qualified for a full third of the work necessary to keep local pharmaceutical affairs in a state of constant ebullition.

These three men came to their common home at widely distant dates: Ebert, in 1841; Hallberg, in 1877; and Oldberg, in 1883. Their deaths occurred in the same sequence and during a single decade, Ebert's in 1906, Hallberg's in 1910, and Oldberg's in 1913. Thus only seven years elapsed from the first to the last demise. It is not my purpose on this occasion to repeat extended biographical in-

formation already on record, so I refer those interested to some of the published sketches, as follows:

Ebert: Bulletin of the A. Ph. A., December, 1906, Memorial Issue.

Hallberg: Bulletin of the A. Ph. A., October, 1910, p. 531.

Oldberg: Journal of the A. Ph. A., March, 1913, p. 413.

I made the acquaintance of the three during the year 1884. It was Oldberg whom I first met. I became pharmaceutical editor of the *St. Louis Druggist* in February, 1884. The Oldberg-Wall Laboratory was then in full operation in St. Louis. I had been graduated by the St. Louis College of Pharmacy the year previous, and counted Professor Otto A. Wall, of the faculty, as a personal friend. I accepted his invitation to become his assistant in the school and soon met his partner in business, Oscar Oldberg. They were both at work on the *Companion to the U. S. P.*, by Oldberg and Wall. I can recall Oldberg as I saw him for the first time. It was in the dining room of his St. Louis home. He was at work with books, proofs and manuscripts spread over the long dining table from which the dishes and cloth had been removed. I was awed in the presence of such a real author who was fifteen years my senior. I do not recall seeing him again

until eight or more of us went from St. Louis to Milwaukee, a few months later, for the A. Ph. A. convention. By the way, the since deceased of our party are: M. W. Alexander, H. F. Hassebrock, C. F. G. Meyer, Enno Sander and F. W. Sennewald. I was neither a member of the A. Ph. A. nor a delegate to that body, so my name does not appear in the roster, but I was an observant attendant at the A. Ph. A. sessions. Here I met Ebert, saw Oldberg and heard Hallberg. The proceedings were new and strange to me. They were quite unlike the meetings of the Sons of Temperance to which I then belonged. I had held office in a Cobden, Ill., lodge and in another one at Otsego, Mich. As I recall the Milwaukee A. Ph. A. convention, Ebert-Hallberg-Oldberg made a more lasting impression on me than all of the other participants together. I found Ebert ever alert and rather suspicious. He was a watch-dog of the treasury and a guardian of American pharmacy, as exemplified in the A. Ph. A. Oldberg evidenced a cool and calm determination. He seemed to be of the same opinion still, even after submitting to a preponderance of expression and nominally accepting arguments as being convincing. To him, financial questions were an annoyance. Hallberg did not often agree with either of two sides in a debate but proposed a procedure of his own. Either or both of the other views might be good, but his was the correct method to follow. This is the general impression that Ebert-Hallberg-Oldberg made on me during that A. Ph. A. meeting of thirty-four years ago. I recall one extended and animated discussion which will illustrate their relative characters. It is also timely and reminds us of the A. Ph. A. Research Fund debates, the echoes of which have not entirely died away.

A proposition was before the Milwaukee meeting, to set aside the sum of five hundred dollars each year for research work. Ebert sprang to the floor and moved to postpone action for one year. He said something about money going like the dew of the night before the sun of the day. He said research was a good word but in this case meant experimentation and that was all it would amount to. He wanted a year for the A. Ph. A. to think it over and formulate a rigid plan for handling the money and conducting the work. Oldberg urged the importance of immediate action and laid stress on the fact that the Association had the money on hand. Hallberg waited until the two views had been expressed and then said the right thing to do would be to give the money or as much of it as could be spared to the colleges of pharmacy for real pharmaceutical research. He then mentioned



Oscar Oldberg to the left; William M. Searby to the right. In profile, these two pharmacists resembled each other.

some of the unsolved problems in pharmacy and most of them are still in the experimental stage.

So much for Ebert-Hallberg-Oldberg. Now a few comments on each in a personal relation to myself for, after all, it is the personal touch that has the most to do with the sum of daily life. I do not anticipate what I have said and particularly what is now to follow will meet with universal approval. These men were too strong and pronounced during years of active life to receive a unanimity of expression from associates. I shall not, however, anticipate a single dissenting voice when I say that never in life would these three men link themselves in intimate association as I have done in the caption, "Ebert-Hallberg-Oldberg." When Oldberg came to Chicago in 1883, the three men had a common interest and work in the Chicago College of Pharmacy, but divergent views regarding needs and methods prevented them from doing real team work. Some years later, a rumor became common that Chicago had three "bergs," Oldberg, Hallberg, and between them an iceberg. Ebert might well be termed the iceberg in effect, even though his nerve tension gave him a constant high temperature. Hallberg laughed at the rumor of the three-berg story. Oldberg disdained to take notice of it. Ebert told me that if both of the "bergs" would listen to him, there would not be an iceberg between them.

OSCAR OLDBERG, PHARM.D.

He was proud of that title and, early in his work as a teacher, advocated the general adoption of the degree.

Of the three men, Oldberg was the first that I met and he was the last to pass away, but I never knew him well. Some say that no one did. I was unfortunate in my first meeting, the one in his St. Louis home in 1884. It is true I went to Oldberg on an errand, but I was his partner's assistant at the College. I was a graduate of the school, I was an editor and I was ambitious to know people who were making good in the world of pharmacy. Oldberg was intent on his proof-reading and scarcely noticed me. Somehow, that first impression was a lasting one. I never detected the least bit of magnetism in Oldberg's make-up. I was a member of an American Conference of Pharmaceutical Faculties Committee, of which he was chairman. He sent me a report to "sign." This I declined to do, and he wired me a command to sign without further delay and a long, long letter from him followed. It was written in the imperative mood and among other things told me what I must do as dean of the St. Louis College of Pharmacy. The document, which I believe I still have, was an attempt at both politics and diplomacy, but fruitless in effect on me. I believe Oldberg was a good judge of human nature but a poor hand at managing people.

Oldberg believed in condensing the A. Ph. A. meetings by having work all day and much of the night. He had no use for any part of the entertainment. Somehow, I induced him to go to the Missouri Botanical Garden with us in 1901. This was one of our entertainment trips during the St. Louis meeting. Oldberg told me, as local secretary, that it was the first time he had ever taken part in an A. Ph. A. entertainment and he admitted that he had enjoyed it. He added that he did not expect to ever again go on such an occasion, for it encouraged a feature of the meetings of which he did not approve.

I must here testify to my full appreciation of much good and timely work accomplished by Oldberg. I have in mind particularly the way in which he contended that it was the province of the school to train and of the Board to license the pharmacist.

I think the real surprise of Oldberg's life came when he learned that Hallberg had nominated him for president of the A. Ph. A. The news gave him a distinct shock and he seemed to regret that the nomination came from the fellow on the other side of the iceberg. Those who were on the Nominating Committee when Hallberg took the floor will recall with what earnestness and fervor the nomination was made.

CARL SVANTE NICANOR HALLBERG.

Hallberg never used his title, "Ph.G.," except in an academic way, but he did not object to the use of his full series of given names. In fact, he learned the given names of a large proportion of people about which he knew something. Hallberg told me that it was just as easy for him to remember "Henry Milton Whelpley, 2342 Albion Place, St. Louis, Mo.," as it was to recall "Whelpley, of St. Louis." He did admit, however, that he could not always think of his own telephone number, which fact made me feel that he was just human, after all.

Hallberg came into my life at the Milwaukee meeting of the A. Ph. A. in 1884 and remained there until we laid him to rest in Graceland Cemetery, Chicago, in 1910. We met at the A. Ph. A., Illinois, and other state pharmaceutical conventions, and were thus together a few times a year. In early days, I bunked with him in Chicago and after his marriage always visited his interesting home whenever I was in the city. Do not infer from this that we always agreed. He did not expect that much from any one. He enjoyed oral contention and never side-stepped an offhand dispute. I did not take his criticisms as abuse and he spoke and acted when we were together with a freedom which I believe was true to his



C. S. N. Hallberg to the left; Dr. Morton, Ft. Smith, Ark., to the right. This photograph was taken a few months before Dr. Hallberg's death.

innermost nature. I know he always made a confidant of Fred W. Meissner. Yes, Hallberg often consulted friends, but could not always convince himself that it was best to follow their advice. No one ever accused him of mental inertia and he was liable to get a new idea of his own and act on it with enthusiasm. To me, he was a bundle of information, ideas and enthusiasm. Conscious touches of satire and invective often got him into trouble. He was weak in diplomacy and knew it so well that he was more apt to "take his medicine" than to try to

fix things up. But Hallberg was tender-hearted and I have heard him make abject apology when he had been misunderstood and hurt some one's feelings.



C. S. N. Hallberg, Mrs. Hallberg and their son Carl, photographed in their Chicago home by H. M. Whelpley.

My life with Hallberg was so full of interesting incidents that I desist from starting on the list.

The manner in which he so freely gave his time as one of the executors of the Ebert estate and how he helped arrange for the funeral and then edited the Ebert Memorial Volume are all matters of record. He arose above all personalities of days gone by and performed a task which perhaps no one else could have done so well.

Then, let us recall how, after Hallberg's death, his friends in the A. Ph. A. over-subscribed to clear the title to the home for his widow and son. This was the only time that such an action was ever authorized by the A. Ph. A. It was a fitting testimonial to the fact that pharmacists of America understood and appreciated Hallberg as I knew and loved him.

ALBERT ETHELBERT EBERT.

I earned and saved sufficient money to take me through the St. Louis College of Pharmacy before I entered the institution, but my bank account was small when I finished. I was attending the Milwaukee meeting of the A. Ph. A. to represent the *St. Louis Druggist*. I did not feel able to join the association and explained the matter to Ebert. Just why I told him about it I do not know. I well remember, however, that he patted me on the shoulder and said, "My dear boy, that is all right. You stay right here, and if any one objects, just let me know." I was twenty-three and he was forty-three years old. Somehow, I never outgrew the feeling that he had a fatherly interest in me. I know I was only one of many boys he coached at pharmaceutical meetings. He also encouraged and helped many young men in writing papers. Ebert was called erratic by some. He, too, was rather weak in diplomacy but often gave good horse-sense advice. We were both members of the Committee on Transportation for the 1889 meeting of the A. Ph. A., at San Francisco. I had joined the A. Ph. A. in 1887. During the Mo. Ph. A. meeting at Excelsior Springs, that year, Wm. J. M. Gordon, George Leis and C. M. Ford, also members of the committee, met Ebert and myself and a few railroad men for a conference. It proved to be a long drawn out and strenuous discussion. The details do not now concern us. It was my first acquaintance with George Leis, but Ebert knew him well. Mr. Leis discussed me with

Ebert and said in my presence, "Why not make the young man president of the A. Ph. A. this year?" I do not think he meant it for more than a complimentary remark. I know I did not take it seriously, but what Mr. Leis said worried Ebert. At the first opportunity, Ebert mentioned the matter to me privately and said, "Look here, young man, don't you get the presidential bee in your bonnet! No, not now; perhaps some time, but not for years." What a wonderful example of good judgment, personal interest in a young man and a care for the welfare of the A. Ph. A. But that was just like Ebert. Twelve years later, when I became president of the A. Ph. A., I reminded Ebert of the 1889 incident. His only comment was, "Did I do that?"

Ebert did not like to "tie up" with people, for he knew sooner or later, and usually sooner, he would disagree with them and he wanted to be free to speak his mind. But I do know that Dr. George W. Sloan and Leo Eliel were held in high personal esteem by Ebert.

Ebert shunned office, for he could be more independent as a high private. But you never found him in the rear ranks. He occupied a seat in the front row and his presence helped make it the firing line. The only office I ever knew Ebert to really want was a place on the Board of Trustees of the U. S. P. C. Such a position he was given by the convention of 1900, and he served until his death, six years later. I was associated with him on the Board and must testify to his wonderful usefulness in the cause of American pharmacy. It was the beginning of the first decade for the Board and Ebert helped in establishing sound business precedents for time to come.

The Ebert Prize Fund of about twelve hundred dollars and the Ebert Legacy Fund of about five thousand dollars which he gave the A. Ph. A. indicate his regard for the value of that organization. Ebert was quite as much a man of deeds as he was of words.

The Chicago Veteran Druggists' Association, I believe, literally prolonged the life of Ebert. At the same time, his historical work for the C. V. D. A. proved to him that history makes some amends for the shortness of human life.

I have spoken of Ebert as I knew him, but he had a personal touch with hundreds of other pharmacists. His death received more extended attention in the drug world than that of any other retail druggist. The funeral ceremonies were attended and conducted by delegates from nineteen pharmaceutical organizations.

In closing, I cannot help but think of these three men as they would likely be if with us during the most supreme phase of our country since the Civil War. The ever-calm Oldberg would turn aside from routine work to help in the duties coming to those who must remain at home in civil life. Ebert, the sturdy warrior in times of peace, would enlarge his field of action during the world war, and every



Photo taken at Lake Minnetonka A. Ph. A. meeting. Left to right: Local Secretary Edward Shumpik; Treasurer S. A. D. Sheppard; C. M. Ford; Caswell A. Mayo; Albert E. Ebert; H. M. Whelpley.



Dedication of the Albert E. Ebert monument in Graceland Cemetery, Chicago.

act ring true to the cause of the World Democracy. Then comes Hallberg, who never was a pacifist in principle, word or action. He would go over the top on the slightest pretext. Hallberg was always a student of the nation's heart pulse. So, in brief, the contribution of pharmacy to the work of the Allies in the World War would have been even greater than it is now if Ebert-Hallberg-Oldberg were still with us.

A FRENCH PHARMACEUTICAL DILEMMA.

The French law prohibits the sale of "secret remedies" and includes under this definition all preparations not in the Codex, or the formula of which has not been published by the Government, hence excludes the sale of valuable recent additions to the *materia medica*, of utmost therapeutic value as well as the most evil mixture engendered by quackery. We are quoting an editorial of the *Chemist and Druggist* of February 22, 1919, in which a case of 1906 is cited in which the French higher court decided that a pharmacist who had supplied urotropine on a medical man's prescription was guilty of a punishable offense—urotropine not being included in the Codex it was a "secret remedy," hence might not be supplied. It is not now in the Codex. The General Association of Pharmaceutical Societies has drawn the Government's attention to the situation, and has asked for a ruling that a paragraph of the law of May 3, 1850, be construed that new remedies recognized as useful by the National Academy of Medicine, and the formulas of which are approved by the Minister of Agriculture and are published by consent of the owners and

inventors, shall no longer be considered "secret remedies." These then may be freely sold pending their inclusion in the Codex.

This has raised the question of pharmaceutical specialties "the nature and composition of which rests solely on the arbitrary choice of their manufacture." Professor Bourquelot gave the following definition at the Academy: "An honest specialty requires a legal existence as it complies with the sole condition of publishing its composition. The originality of the product resides in the perfection of its manufacture, and the use of operations and procedures which are not disclosed; but *no substance whatever may be administered to the patient unknown to the doctor.* That is the minimum of protection necessary for the health of the public, and which the Academy has the right of demanding." The Academy itself formulates the following addition to the law of 1850, *viz.*, "that every simple or compound remedy, the quantitative as well as qualitative composition of which is not known, shall be regarded as a secret remedy and proceeded against as such."

WOMEN'S SECTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

ABSTRACT OF THE MINUTES OF THE SESSIONS HELD IN CHICAGO, AUGUST 14, 1918.

First Session.

The Seventh Annual Meeting of the Women's Section of the American Pharmaceutical Association was called to order in the French Room of the Congress Hotel, Chicago, Illinois, Wednesday, August 14, at 9.30 A.M., by the President, Miss Zada M. Cooper. The Invocation was offered by Mr. Charles Avery.

Mrs. Forbrich, of the Local Committee, extended a hearty welcome, stating that the members had, during the past several months, perfected plans for the entertainment of their guests, and hoped for an enjoyable week; that the program provided for entertainments and sight-seeing, and the members of the Local Committee would do everything possible to make the occasion a most enjoyable one for guests and hosts.

Miss Zada Cooper expressed the appreciation of those present in a few well chosen remarks, assuring the people of Chicago that all the interest manifested by them was reciprocated, and that all members of the Section greatly enjoyed the privilege of the few days' stay in their midst. She thanked the hosts through the representative of the Local Committee, Mrs. Forbrich, for the delightful entertainment, which she knew would be enjoyed by the visiting members.

Miss Anna G. Bagley assumed the Chair while the President delivered her address.

THE PRESIDENT'S ADDRESS.

The Constitution of this Section enumerates five things in the article which states its object. This is what it says: "The object of this Section shall be to emphasize the right and capability of women to engage in pharmaceutical pursuits as a means of livelihood, to unite the women employed in pharmaceutical pursuits for mutual encouragement and assistance, to labor for the improvement of legislation regulating the registration as pharmacists of women employed in the practice of pharmacy in hospitals and other public institutions, to unite the women members of the A. Ph. A. in a Section for social purposes, and to coöperate in the promotion of the general progress of pharmacy and of the American Pharmaceutical Association."

These are all worthy objects. None should be lost sight of at any time, but perhaps at no time will they claim our attention equally. The first, "to emphasize the right and capability of women to engage in pharmaceutical pursuits as a means of livelihood" can be forgotten for the present, at least. Prejudice dies hard, but I believe there is little doubt at the present time of either the right or the capability of women to be in pharmacy. We do not need to emphasize this particular object, but the fourth one demands all the attention that this one does not need. It is, "to coöperate in the promotion of the general progress of pharmacy." Perhaps I may be reading an unusual meaning into the word progress, something not found in the dictionaries. Call it general welfare of pharmacy, if you prefer, it may not be promoting scientific progress, but that is not the only sort of progress and this surely will make for economic advancement. To come to the point, I would undertake to induce more young women to go into pharmacy.

Just now it is a patriotic duty for women to take up the study of pharmacy. There isn't anything spectacular about a pharmacist's work, but it is just as essential to the conduct of the war as that of the physician or the dentist. Without the necessary medicinal supplies the physician would be unable to do much that he is now doing. Incidentally, we know that the quality of service in the Army and Navy is not what it should be because of the lack of a pharmaceutical corps, but that is not the question that we are considering. In spite of the injustice being done to the soldier and the sailor, we know that pharmacists are having a large part in the manufacturing of medicines and chemicals, if they are not in dispensing, which will help materially to bring the war to a successful completion.

It is not the right and capability of women to engage in pharmaceutical pursuits that we need to emphasize; it is an absolute necessity from two standpoints, that of the profession and for the sake of womanhood itself. The profession must be kept up. The druggist must have help and young men are not available. He must be induced to lend his effort toward interesting young women to take up the study. Heretofore he has been on the lookout for bright young men who might be interested to become apprentices. Now he must transfer a part of that interest to young women.

Perhaps it may seem to you that women do not care about becoming pharmacists. You know that pharmacy has been open to women of America for many years and yet not many have gone into it. Why haven't they? The reasons, perhaps, are many and various, depending on the locality. In some localities, there has been that despicable business, a saloon in the guise of a drug store. No self-respecting young woman wants to become a bar maid, even if she had the chance. No druggist who has seen fit to conduct that kind of a business wants a woman around. Then very often the small-town druggist handles paints, oils and wall-paper, or employs only one individual who is able to handle these heavy commodities. However, there are two outstanding reasons, first, women have not been so much needed and, second, the women have not known about the opportunities in pharmacy. Not so *much* needed and yet they have been needed somewhat. Have we not been hearing about the shortage of drug clerks for some time? Women could have helped to reduce that shortage. Perhaps you may recall that the A. Ph. A. as long ago as 1906 called attention to this very thing. Listen to this resolution adopted at that time:

"Whereas, The general expression of satisfactory experience of members who have in their employ women pharmacists, is worthy of more than passing comment. Considering the present scarcity of assistant pharmacists and the meager prospect of any immediate improvement in this respect, we believe the ultimate solution of the problem lies in the encouragement of especially qualified young women to enter on the occupation of pharmacy. Therefore, be it *Resolved*, That wider publicity be given to the favorable reports obtained from sources where women pharmacists have been employed."

Now I know we have a feeling that resolutions do not get anywhere, that they do not accomplish anything, and I am not prepared to say that this one did bring results, but it was an expression, an honest expression, I think we may believe, of the state of affairs then existing, and that is my only reason for quoting it here.

The second reason for women not going into pharmacy heretofore in larger numbers was that they did not know of the opportunities. Let me tell you why. Unless a girl belonged to the family of a druggist or a doctor, or unless her family was on terms of intimate friendship with the druggist's family, it never occurred to her that she could be a druggist. I know this to be true from my connection with a college of pharmacy. With every incoming class one is interested to find out how they happened to come. An understanding of the motive which brings an individual to college is necessary to the teacher who would meet his students as distinct personalities. That phase of the question is irrelevant in this connection, however. The college as an institution wants to know why they have come. Private institutions that advertise are interested because it is a simple business proposition to know what sort of advertising pays. State institutions that do no advertising, in the strictest sense, are no less interested because they want to know what sort of publicity is valuable. Quite generally it is found that students have become interested through acquaintance with former students. The alumni of any college are its best friends and, if dissatisfied, its worst enemies. They recognize the debt they owe their alma mater or just from love of it they direct others to it. That explains why young people go to a particular institution, but why do they study pharmacy at all? That is only a step further. Almost always some druggist has interested them in one way or another. Sometimes the connection is hardly tangible, but it is there nevertheless. This is true of the girls as well as the boys. Some relative or friend was a druggist, or a doctor, and told them of the possibilities in pharmacy. Druggists have not talked to girls more extensively on the subject because they have not needed their help so seriously, and there has been no one else to tell them.

I suppose it is mostly during their last year in high school that they begin to think about what they are going to do—what college they will choose. If they talk with anyone besides their parents it will be with their teachers. Naturally they are likely to hear a good deal about

teaching. A successful teacher has love for her work and the natural sequence is a desire to interest others in it. If students are not definitely advised to teach they often enter the vocation because they lack knowledge of other suitable occupations. Women have been engaged in teaching for a long time and opposition to them as teachers ceased long ago. I am convinced that hundreds of young women just gravitate into this profession, some of them, by nature absolutely unsuited for it. That is why so many never get above mediocrity. I do not mean to say that all young women would make good pharmacists any more than all can become good teachers. But they should know about the opportunities in pharmacy. They seldom, if ever, see college of pharmacy advertisements for such advertising matter appears mostly in drug journals. Announcements of colleges are sent freely to high school principals but few young people, who have not yet attended college, find those publications intelligible. Besides, an interest in any profession must be aroused before the prospective student will pay much attention to a college catalogue. It simmers down to the fact that there is little publicity concerning pharmacy except that directed by pharmacists to pharmacists.

How then are young women to learn about it? Though not an avowed object of this Section, can we do any greater work in these days than to undertake to tell young women about pharmacy and perhaps urge druggists to try to get them into the profession? If we can do these two things it seems to me we shall be accomplishing something worth while. I said it was a necessity for women to rise to the situation. Women must help win the war. We are non-combatants and we must remain so, but that does not relieve us of responsibility. Unless we step in to fill whatever post is left vacant by the men who have gone to the front we show ourselves, not the weaker sex but worse than that, weaklings. That is one thing the American woman is not. We, who have had so much more liberty and opportunity than some of our sisters across the water, would resent any insinuation that we shall not rise to meet any situation, but resentment is unavailing if it does not stir us to action.

If every druggist's wife from Maine to California would take it upon herself to tell a few girls, whom she knows, about pharmacy, its opportunities and its needs, no other propaganda would be necessary. However, not every druggist's wife is within hearing of my voice and, even if they were, I am not so conceited as to believe that I could convince them of the wisdom of such effort. Still I am ambitious. I want this Section to undertake to reach some portion of the young women of the country. I believe we need no additional machinery. Our officers and committees could take care of it. If we are interested and enthusiastic no obstacle would be unsurmountable, unless it might be the financing of such a project.

Our Press chairman, Miss Bagley, believes that we might reach many girls directly through the magazines published by most high schools. If it were possible to do this, short readable articles, setting forth the opportunities for women in the profession, would make available some information and set some girls to thinking. I have long been of the opinion that we must reach the girls directly. No matter how much literature we may send to school principals, if it reaches the girls at all it fails of its direct appeal. If only we can get them thinking that there are possibilities outside of teaching and secretarial work, they can find out from some college in their own state the particulars about what entrance into the profession involves. They all know some druggist to whom they can go for information, if not advice.

Then, I would have our Outlook Committee enter upon a similar campaign from a different angle. If this committee could reach club women through the state federations, some mothers might be interested in hearing about congenial work for their daughters. Not being familiar with the machinery of these organizations, I am not sure what would be the best method of procedure, but our committee could decide that. There is also the general federation magazine which might accept matter for publication.

Then, our Secretary should reach still another group, the presidents of the Women's Auxiliaries of State Pharmaceutical Associations. This ought to be productive of much good because these women belong to the families of druggists and understand conditions. They should be urged to lend their personal efforts toward interesting young women in pharmacy. They can do this directly and through their husbands, but it is the direct personal effort that we wish especially to bring about. Where there is no auxiliary the association itself might be reached by asking the secretary to bring it to the attention of the association at a convention or, through the official publication of the association.

In every case the appeal should be brief and to the point. It ought to state that the Women's Section of the A. Ph. A. is backing the project. It ought to make plain the fact that this Section is made up largely of druggists' wives, that this is not the effort of women druggists. My reason for believing that emphasis must be placed upon this fact is because I find a number of men of the A. Ph. A. who believe that the Section attempts to segregate women pharmacists, not on the part of women pharmacists (which is exactly what we do not want, by the way) but by others. If A. Ph. A. members believe this, isn't it perfectly natural that people outside of the A. Ph. A. should draw that conclusion? In fact, I am not so sure but the very name itself has a decided tendency to make the uninformed interpret it that way.

Perhaps I may be allowed to digress a little to say, for the benefit of my sister pharmacists, that in the course of considerable correspondence on an entirely different matter, I have been very much gratified to have expressions that women pharmacists should have an active part in all the regular Section meetings of the Association and that they can be of real service there.

To return to what our communication should embody: It should set forth the fact that pharmacy offers many and varied opportunities to women, that the work is not limited to retail pharmacy, that manufacturing laboratories, analytical laboratories and hospital dispensaries are all open to them, and that the work is pleasant and productive of larger remuneration than most work requiring the same amount of preparation. It should tell them, too, that they can serve their country in no larger way. A great appeal is being made all over the country for women nurses, a noble work, but, though the glory of a pharmaceutical career has not played so conspicuous a role in poetry and fiction, though outwardly it may seem quite unromantic, it is none the less as necessary a part in the life and health of our men in the trenches and for our civilian population at home as the doctor's diagnosis of disease and prescription therefor, or the nurse's implicit following of directions. In fact it seems to me more fundamental. I would not depreciate the importance of the work of either surgeon or nurse; I have very great admiration for what they are accomplishing. Analyze the situation a little. How fruitless would all the efforts of doctor and nurse be in any acute disease if the wrong remedies were administered, how much could a surgeon accomplish without correctly made antiseptic solutions?

The letter or circular to state association auxiliaries should say less, perhaps, about the opportunities for women in pharmacy and more about women's possibilities for usefulness in the drug business, because the druggists' wives are not strangers to the advantages of pharmacy and will know how to interest girls, if they are convinced that women are able to meet the present emergency in any degree.

I have said much more about what I would have in this communication than is necessary to be included. To summarize: We should say enough to show that it is an agreeable field with abundant opportunity for advancement professionally and financially, enough to arouse young women to investigate the possibilities for themselves, enough to cause older women to exert themselves to bring it to the attention of the young people.

I realize that this program, which I am proposing, is one whose results we may never be able to measure. Even so, I think it is the thing for the Section to undertake. I am especially anxious to have you, who are not druggists, enter into it. We, who are druggists, are perhaps no more whole-heartedly interested in pharmacy and its progress, but it is in a different way than you are interested. It seems to me you can do no bigger thing for pharmacy just now than this. In other years, you can work along other lines: Shorter hours and Sunday closing, objectionable window displays or other advertising, patent medicine evils, and other unsolved problems. They are all worth your effort but they sink into insignificance now, in the face of the colossal task of winning this war. That interest must be paramount.

You have all done much: You have almost forgotten how wheat bread tastes, you have bought Liberty Bonds and War Savings Stamps and given to the Red Cross and the Y. M. C. A., you are all overworked with hours spent in making surgical dressings and all sorts of garments for soldiers, Belgian refugees and French orphans. If any waking moment is left the everlasting knitting is at hand, but all loyal women are doing all these things. You owe a duty to the profession of your husbands. Your very presence in this Section presupposes an acquiescence in its avowed object, "to coöperate in the promotion of the general progress of pharmacy."

I am reluctant to make even one specific recommendation when I look back and see how many excellent recommendations made by my predecessors in office have come to naught at

our hands—mine and yours. Yet I fear I must make a few, and trust that the committee acting upon them will not stop with approval. If my recommendations have any merit will you not adopt them and vote to have them carried out by our successors in office? If they are without merit, or you believe that for lack of finances or other reasons they can not be put into effect, I shall consider it good judgment to vote against them.

Therefore I recommend:

1. That our Press Committee be instructed to make an effort to get brief articles about the opportunities for women in pharmacy into high school magazines.
2. That our Outlook Committee be instructed to reach club women in whatever way seems most feasible with similar information.
3. That our Secretary be directed to communicate with the president of each Women's Auxiliary of the various State Pharmaceutical Associations, urging each woman to make an effort, in her own locality, to reach high school girls individually and through local women's clubs or local druggists' associations.

Mrs. Whelpley moved, seconded by Mrs. Christensen, that the President's address be referred to a committee. Motion carried.

Chairman, Miss Bagley, appointed as the Committee on Addresses, Mrs. H. M. Whelpley, Miss Clara Hulskamp and Mrs. M. M. Gray, to whom President Cooper's address was referred.

A paper was read by Miss Clara Hulskamp.

THE WOMAN PHARMACIST.

BY CLARA HULSKAMP.

At the present time, propaganda is being advanced as regards the filling of places occupied by men before the war. But, it is a fact, that the status of "The Woman Pharmacist" is already established. It is a matter of record that 35 years ago, in 1883, the Philadelphia College of Pharmacy graduated the first woman of that college, and, in the same year, a woman received the degree of Pharmaceutical Chemist at the University of Michigan. About the same time, a college was founded in Louisville, Ky., by Dr. J. P. Barnum, known as the "Louisville College of Pharmacy for Women." It has been said, it was the only college of its kind and it existed about nine years.

The colleges of pharmacy of the present day are co-educational and are urging the enrollment of women, as it is so poignantly felt that to "keep the home fires burning" it behooves the wives, daughters and sisters of pharmacists to awake to a specific interest in the profession; heretofore, it has been a matter of circumstances, individual desire or inclination.

Patience, neatness, aptitude, manipulative skill in dispensing drugs and chemicals, are some of the qualities of a first-class pharmacist. Are they not innate characteristics of women?

The requirements of a registered pharmacist are time of experience, education and state board examination; these requirements are well met by women as evidenced by the success in the past of the women applicants.

The field of endeavor in the profession of pharmacy may well be divided into two classes, the first being that to which time, energy and knowledge are devoted to pharmaceutical work alone, and the other includes business training in the mercantile world. Both fields claim successful women pharmacists.

To the embryonic woman pharmacist, let us pass along the word: "To succeed, you have to dream and dream true. Then you have to work faithfully, earnestly, steadily and agonizingly to make your dreams come true."

The Secretary-Treasurer, Mrs. H. R. Kenaston, gave the annual report as follows:

REPORT OF THE SECRETARY OF THE WOMEN'S SECTION.

To the President and Members of the Women's Section of the American Pharmaceutical Association:

Since our Nation is engaged in war, the report of your Secretary must necessarily include a mention of the part the members of this organization should take in the great struggle. While we regret the necessity for war activities, so long as the husbands, sons and brothers are engaged

in the conflict with the enemy, offering their lives for the cause of liberty, freedom and justice, the wives, mothers, sisters and sweethearts must prove their merit to this supreme effort by giving their all in full measure. Your Secretary has made every effort to advance the best interests of the Section with a minimum demand upon the time of all and, though the essential duties have been most cheerfully performed by all members of the Section, conservation of time and effort has ever guided the activities of the Section.

During the year since the Indianapolis meeting, the constitutional duties of the Secretary and the Treasurer have been performed. In addition, a large number of letters have been sent to the high schools and universities, directing the attention of the young women students to the vacancies caused by enlistment of drug clerks.

Further, it is just as clearly the patriotic duty of a young woman to prepare herself for the professional positions vacated by the necessities of war as it is her patriotic duty to offer her services as a Red Cross worker, or as the assistant in office or factory, where her energies have become a positive necessity. Each is a requirement for services, emphasized by the exigencies of war, and each is an essential factor in the successful mechanism of the nation. Though the intention in sending out the letters has been to promote the plan as indicated at the Indianapolis Convention, only time will reveal the results.

During the four years just passed, the European women have volunteered their services and their help has now become a necessity. The long-continued war has extended woman's sphere to include the most menial labors from which conditions she has entered the field of economic efficiency hitherto operated exclusively by men; and she has carried the added responsibilities with a fortitude, sacrificing in a degree akin to that of her brothers.

The women of America are not exempt from a tendency toward this condition. As the number of men in our Army multiplies, the demand for women to take the vacated positions likewise is extended to all the professions and occupations to which she may adapt herself; as the number of boys in the professional classes in the universities and colleges decreases, this number must be made up, so far as may be possible, by the young women from our high schools and preparatory educational institutions.

A survey of the conditions since America entered the war emphasizes the ardent desire of the American women to serve; young girls are assuming positions formerly occupied by men; the business colleges, universities and colleges show a predominating number of women students.

Girls are now employed in operating elevators, as ushers at theatres, etc.

With this yearning for service, comes the inquiry as to the possibility of each field. The Women's Section of the American Pharmaceutical Association is constitutionally required to disperse the advantages of the profession of pharmacy, and it is to this organization that the people may properly turn for the plan that will lead to success in placing this knowledge before the young women at the proper time in the progress of their education.

Your Secretary would recommend that each preparatory educational institution be circularized. Possibly the best procedure would be the appointment of a committee to consist of a chairman with a sub-committee in each state and country represented in the membership of the American Pharmaceutical Association, with provision for postage and official stationery.

The demand for educated pharmacists has never been so great, the salaries obtainable have never been so attractive as at the present, and the number of available pharmacists has never been so small. These, together with other reasons, must be placed before the young women if our efficiency as a Section is promoted and our reason for existing becomes a reality. Pharmacy is a work for which women are admirably adapted, clean and healthful work that any trained woman can do satisfactorily.

Very soon after assuming the duties of the Secretary-Treasurer's office, the balance in the hands of the former Treasurer, Mrs. F. M. Apple, was received, which amount is \$9.00. Anticipating additional expenses for the present year, this amount was made to meet all expenditures of the year, except that assumed as the chairman of the committee appointed by the retiring President, the duties of which shall be to prepare the Constitution and By-Laws to be printed in booklet form.

This report has been prepared and will be presented at a later time, when the action of the meeting will be the final disposal of this matter.

The President and Secretary issued invitations to such of the profession as could be located and also to the families of the membership so far as obtainable, giving special stress to prospective members for the A. Ph. A. within a distance that would reasonably be practicable to attend this meeting.

In conducting the necessary work of the office, I have written 386 letters and 94 post cards. Since assuming the office I have traveled 4,440 miles in the interests of official duties. Your Secretary is deeply grateful and desires to give public expression for the uniform kindness shown her, and for the kindly coöperation in all her official relations; all have tried to share with me the official duties.

To our President, Miss Zada M. Cooper, I extend my thanks for the interest and valued directions in the details of the year's work. Without her guidance and helpful assistance it would not have been possible to have accomplished all that has been done.

"There is a glory in doing right,
And a splendor in being true,
That is greater than anything else,
Life can possibly bring to you."

Fraternally submitted,

(MRS. H. R.) JEAN MCKEE KENASTON,
Secretary.

Motion by Mrs. L. F. Kebler that the Secretary's report be accepted and referred to a committee prevailed.

The President explained that since there are a number of recommendations covering the same points in the President's Address and in the Secretary's Report, if referred to the same committee these matters would better be coördinated, whereupon the same committee was directed to act upon Secretary's Report.

Mrs. C. F. Dye, Chairman of the Executive Board, was not present, and the report was presented by Miss Bagley:

REPORT OF THE EXECUTIVE BOARD.

Madam President and Members of the Women's Section of the American Pharmaceutical Association:

The Executive Board of your Section finds on summing up the year's work that there is little to report. This no doubt is due to the fact that the members of the Section, together with all other patriotic women, have adapted themselves to the needs of the hour and given all their time to their local organizations engaged in war work. As a result we have not been called upon to transact any other than routine business. However, much time, thought and correspondence were given to the formulating of a program, which we hope will be worthy of the best ideals of the Section.

The Board is deeply grateful to those who have so generously given their valuable time to contribute to the program. In recognition of their services and the messages they have brought us, we trust that the members will show their appreciation by adopting, for the present, as their motto the one word, Service, which may be applied in so many different ways.

Respectfully submitted,

MRS. CLAIR A. DYE, *Chairman.*
MRS. GEO. D. TIMMONS,
MRS. E. A. RUDDIMAN.

The motion by Mrs. Whelpley was seconded and carried that the report be accepted.

Miss Anna G. Bagley, chairman of Membership and Press Committee, reported as follows:

REPORT OF MEMBERSHIP AND PRESS COMMITTEE.

The Membership and Press Committee brings in a report of no report, not because there was not anything to be done, but because conditions prevailed with the Press Committee similar to those of the Membership Committee; it seems that the Press work was done for us. Heretofore if we wanted to get anything into the journals regarding what women were doing in phar-

macy, we generally had to beg for it. I have a very distinct recollection of asking the editor of a very prominent journal to give us a nice report, and I almost had to beg him to do it, but he reported the A. Ph. A. convention in big headlines, and made no mention whatever about the Women's Section. To-day we can not pick up a pharmaceutical journal but that devotes from one column to a dozen relating to the opportunities of women in pharmacy. Now is an opportune time for a Press Committee, and I hope that the members will be able to utilize the work that has been done voluntarily on the part of the journals and others interested in pharmacy. It is certainly pleasing to see the change of attitude.

By vote of the Section, the report of the Membership and Press Committee was accepted.

Miss Cooper read a letter from a former President, Mrs. J. G. Godding, of Boston, expressing regrets that she was unable to attend and wishing a successful meeting.

Letters were also presented from Mrs. Fletcher Howard, Mrs. John F. Hancock, Honorary President; Mrs. C. A. Dye, and Mrs. John Culley, a former President, each expressing regrets for absence and wishing a pleasant and successful session.

Before the close of the 1917 meeting, held in Indianapolis, the President appointed a special committee to rearrange and revise the Constitution and By-Laws, that same would include the various changes as adopted during the interval since the original were adopted.

Chairman Mrs. H. R. Kenaston, of the Committee on Constitution and By-Laws, presented the report as follows:

MADAM PRESIDENT: The Committee on the Revision of the Constitution and By-Laws have the honor to submit the following By-Laws and by the instruction of the Committee I move they be adopted as a substitute for the present Constitution and By-Laws.

Mrs. Kebler seconded the motion, which was carried.

President Cooper directed the Chairman to read the By-Laws.

BY-LAWS OF THE WOMEN'S SECTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.*

ARTICLE I.

Name and Object.

Section 1. This Section shall be known as the *Women's Section of the American Pharmaceutical Association*.

Sec. 2. The object of the Section shall be to emphasize the right and capability of women to engage in pharmaceutical pursuits as a means of livelihood; to unite the women employed in pharmaceutical pursuits for mutual encouragement and assistance; to labor for the improvement of legislation regulating the registration as pharmacists of the women employed in the practice of pharmacy in hospitals and other public institutions; to unite the women members of the American Pharmaceutical Association and the women of the families of members of the American Pharmaceutical Association in a Section for social purposes; and to coöperate in the promotion of the general progress of pharmacy and of the American Pharmaceutical Association.

ARTICLE II.

Membership.

Section 1. Members of this Section shall consist of the women who are regular members in good standing of the American Pharmaceutical Association, and the women who are of the families of regular members in good standing of the Association.

* To be presented to the Council and Association for final approval.

ARTICLE III.

Officers.

Section 1. The officers shall consist of a President, three Vice-Presidents, a Secretary-Treasurer, and a Historian, all of whom shall be elected by ballot annually, and shall hold their respective offices for one year and until their successors shall have been elected and qualified. Their duties shall be such as are prescribed in the parliamentary authority of the Section and in these By-Laws.

Sec. 2. It shall be the duty of the President to preside at the annual meeting, to appoint all committees not otherwise provided for, to see that the By-laws are observed, and to perform such additional duties as may be delegated to her by the Section or by the Executive Board.

Sec. 3. It shall be the duty of the Vice-Presidents to preside in their order in the absence of the President, and to perform such additional duties as may be imposed from time to time by the Section or by the Executive Board.

Sec. 4. The Secretary shall keep the minutes of the meetings and the records of the Section and of the Executive Board; shall conduct the general correspondence; shall notify all committees of their appointments and of any special duties which may be imposed; and shall also notify officers not present at the time of their election, of their election.

Sec. 5. The duty of the Treasurer shall be to receive and keep an account of the funds of the Section, and pay them out on the order of the Secretary, countersigned by the President.

Sec. 6. It shall be the duty of the Historian to record the progress and activities of women engaged in pharmaceutical pursuits in the several states, and to present a report of the matter accumulated at each annual meeting of the Section.

Sec. 7. An Honorary President for the year may be elected at each annual meeting by a vote of two-thirds of the women who are present.

ARTICLE IV.

Executive Board.

Section 1. The Executive Board shall consist of the President and the Secretary *ex-officio*, and three elected members, one of whom shall be elected by ballot at each annual meeting to serve for three years.

Sec. 2. It shall be the duty of the Executive Board to direct the affairs of the Section in the interim between the annual meetings, to arrange the program for the annual meetings, and to perform such additional duties as may be imposed upon it by the Section. The Board shall have authority to conduct its business by mail. All acts of the Executive Board shall be subject to revision by the Section. It shall be the duty of the Chairman of the Board to assign and supervise the work of the Standing Committees so that the work may be definite and uniform.

ARTICLE V.

Standing Committees.

Section 1. The Committee on Membership and Press, the Outlook Committee, and the Hospital Committee shall constitute the standing committees of the Section.

Sec. 2. The Committee on Membership and Press shall consist of eleven members of the Section, composed of a Chairman, elected by the Section, and ten active workers, who shall be appointed by the President.

Sec. 3. The Outlook Committee shall consist of nine members of the Section, appointed by the President, whose duty it shall be to investigate and report on the work of the women pharmacists, to investigate the education of women students wishing to take up the study of pharmacy and to coöperate with women's clubs.

Sec. 4. The Hospital Committee shall consist of four members of the Section, appointed by the President, whose duty it shall be to investigate and report on conditions of pharmacists in institutional pharmacy.

Sec. 5. The members of all special committees shall be appointed by the President, unless the Section shall prefer to elect.

ARTICLE VI.

Meetings.

Section 1. The Section shall hold one regular annual meeting during the annual meeting of the American Pharmaceutical Association, and such additional meetings or sessions as the Section shall determine.

Sec. 2. On the first day of the annual meeting the President shall appoint from the members of the Section a nominating committee of five, and not less than four tellers, to count and report the ballots at the annual election. The nominating committee shall report on the same day or a succeeding day, as the Section may direct, nomination for all the officers, for the member of the Executive Board, and for Chairman of the Committee on Membership and Press. Additional nominations may be made from the floor. The elections shall be by ballot, unless, where there is but one candidate for an office, it is dispensed with by unanimous consent. The officers elected who are present shall be installed at the close of the annual meeting.

Sec. 3. Special meetings of the Section may be called by the President at her discretion, and shall be called by her upon written request of the Executive Board, or upon the written request of any five members of the Section.

Sec. 4. Seven members shall constitute a quorum at any meeting of the Section.

ARTICLE VII.

Parliamentary Authority.

Except as herein provided, the proceedings of the Section shall be governed by the general rules of parliamentary law as stated in Roberts' Rules of Order Revised.

ARTICLE VIII.

Amendments.

Amendments to these By-laws shall be proposed in writing at one meeting and balloted for upon a subsequent day, when upon receiving the vote of two-thirds of the members present, they shall become a part of the By-laws.

NOTES TO BY-LAWS.

These notes relate to former and proposed By-Laws of this report, and are part of the proceedings.

As the only object of dividing the fundamental rules of a society is to separate the more important ones and make them more difficult to amend, there is no use in dividing them when they are all equally difficult to amend. It is simpler to call them all By-Laws and this change has been made.

By-Laws are divided into Articles, not Sections, and these sub-divided, when necessary, into Sections.

Article II.—Section 1. A slight change to make it clearer.

Section 2. This section is struck out as useless, as all members in good standing have a right to vote and hold office.

Article III.—Section 1. "Honorary President" is struck out as she is not an officer. The office is complimentary and carries with it no duties or obligations. It is provided for in Section 7 of this Article (See "Rules of Order," Revised, p. 267). A sentence is added to this Section, which renders unnecessary the remaining sections of this Article except the last. They have been retained, however, thinking you might prefer a brief statement of the duties. The Executive Committee has, in all cases, been changed to Board or Executive Board, as explained in Article IV.

Section 4. This has been corrected by inserting "and of the Executive Board," after "Section" in the second line.

Section 7 provides for an honorary president. As this is merely a compliment it should never be conferred except by a large vote. The section has been drawn up to conform to the rules sent me, that is, an honorary president is elected each year for one year.

Article IV.—This article provides for the Executive Board, which should never be called the Executive Committee. See "Rules of Order," Revised, p. 207.

Section 1. This section is re-written. The method of filling a Board at the first election should never be placed in the By-Laws, it should be provided for in a resolution adopted before adopting the By-Laws. You have already adopted By-Laws and now only propose to amend them, so that you will merely go on electing each year one member of the Executive Board for three years.

Section 2. Motions need never be seconded in boards and committees, so that provision has been struck out as it is misleading. (See "Rules of Order," Revised, p. 209.)

Article V.—This Article includes all of Section IV, except what relates to the Executive Board.

Article VI.—This covers meetings including Section IV of the Constitution and all in your By-Laws on meetings.

Section 1 is the same as Section 5.

Section 2 covers the annual elections, including the appointment of Nominating Committee and Tellers. There should never be less than four tellers unless the voters and the offices to be filled are very few.

Section 3 is the same as Article IV of the By-Laws with the change of a very few words.

Section 4 provides for the quorum.

Article VII is the same as Article V of the By-Laws.

Article VIII is the same as Section VI of the Constitution, corrected as to wording.

(Signed) MRS. H. R. KENASTON, *Chairman*.

ZADA M. COOPER.

Committee.

The above report, by her own motion as Chairman of the Committee, and seconded by Miss Bagley, was unanimously carried.

The By-Laws were adopted as read.

The next feature of the program was an address by Miss Harriet E. Vittum on "The Present-day Opportunities of the Woman Citizen of America."

Miss Vittum spoke of her activities among the foreign population, especially among the Polish people of Chicago, and in their own country. She attested to their loyalty here, and their patriotic devotion to this country, and their own. She spoke of the privations and sufferings of the starving mothers and children, and the heroism of their soldiers.

Miss Vittum contrasted the soldiers who had returned from France with those who were now going forward to fight in the cause of Democracy. Summing up the great work in which the United States enlisted, she pointed out the duties of the men and women of this country, and concluded her patriotic address with an appeal for more general vocational training for boys and girls so that they will be trained for filling positions they are best suited for. There was no dull moment throughout the address which held the attention of the Section.

Upon motion duly seconded and carried, the Secretary was instructed to send Miss Vittum a letter of thanks for her very able address, thereby more fully expressing the deep appreciation for the inspiration and added strength for our duties and our privileges.

President Cooper appointed the following committees:

Nominating Committee: Mrs. Gray, Mrs. Eberle, Mrs. Christensen, Mrs. Wakeman and Mrs. Lindvall.

Committee on Resolutions: Mrs. Thatcher, Miss Bagley and Mrs. Kebler.

Miss Bagley was invited to preside during the reading of the report of special Committee on Sorority.

Miss Zada Cooper, Chairman, presented the report as follows:

REPORT OF COMMITTEE ON SORORITY.

For the benefit of those who may not have been present last year, and in order to refresh the memories of those who were, perhaps a word about the reason for the appointment of this committee will not be amiss. Dean Jordan, of Purdue, in conversation with a group of women,

had told them that the women students at Purdue had expressed to him the wish that they might know women pharmacists elsewhere, and wondered if there might not be some sort of an organization that would join together the women pharmacists all over the United States. Dean Jordan was invited to speak to the Women's Section and did so, suggesting that the Section take the matter under consideration. It was decided that a committee should be appointed to investigate the whole question and report at the 1918 meeting. The incoming officers and Executive Committee were named as members of this special committee. Our task, then, was to determine the advisability of an organization and, if found advisable, the form it should take.

It seemed to me that the opinion of three groups of people would help us to judge wisely. Women pharmacists should be able to tell us whether they desired it, whether they felt a need for a closer affiliation. The deans of colleges should know the needs and desires of women students and, lastly, women students themselves would have an opinion.

In accordance with this impression I wrote to about fifty people, half of them deans of colleges, most of the others women who had been pharmacists for several years. Not all responded but a very good percentage of them was heard from. Almost without exception both men and women were absolutely opposed to a separate national association of women pharmacists. Many excellent reasons were given which I should like to quote if time permitted. Since the members of the Committee were nearly all of this opinion that part of the question seemed happily settled. Personally I was much pleased at this result, for I am so unalterably opposed to segregation of professional women that, had the opposite opinion prevailed, I must either have withdrawn from the Committee or have presented a minority report.

The other alternative, a sorority, did not meet with the same unanimity of opinion, yet the majority favored something of the sort. A word should be said about what the women students with whom I corresponded thought about it. These were mostly representatives of local pharmaceutical sororities or clubs. Without exception, naturally, they favored a sorority. I am sure, however, that this feeling is not unanimous, for in one way and another I found that at some colleges they were opposed or indifferent. In order to assure you that I have tried to be perfectly fair in summing up these opinions, I should, perhaps, confess that before I undertook the investigation, I was opposed to a sorority, at least of the ordinary type. During some years' connection with a University I had had considerable opportunity to observe, as an outsider of course, the effects of academic sororities, and, I had come to believe that the disadvantages outweighed the advantages and I was not blind to the fact that there were many advantages. Now, however, I was forced to change my mind. Many reasons entered into that change of front, not the least of which was the conclusion that pharmaceutical sororities were bound to come, in fact were already here. Therefore, it seemed the part of wisdom to approve the plan and try to shape the destiny to the very best of our ability, especially when I had always had a vague unexpressed feeling that it would be a pleasure to be bound by closer ties to other women pharmacists.

To go back a bit, before this correspondence was well under way I found that the Committee on Activities of Students and Alumni of the American Conference of Pharmaceutical Faculties, of which I was a member, would consider this very question also. It seemed to me that that body was perhaps the proper one to organize a sorority, that the Section, perhaps, could do no more than approve or disapprove the idea or, possibly, act in an advisory capacity. I continued my work, however, and submitted my findings to the Conference Committee as well as to the Women's Section Committee. The members of the Women's Section Committee, who expressed themselves, had agreed from the first to approve of the establishment of a sorority, but they also gave me permission to await the decision of the Conference before framing my report.

The Committee on Activities of Students and Alumni of the Conference at the meeting of Monday, August 12, 1918, made the following recommendation: "That the Committee be instructed to proceed at once to the organization of a pharmaceutical sorority in the Conference schools. The Committee, during the last year, has found the need for such, and, in a number of schools, local chapters have been formed in which we believe we have nuclei for a future sorority system. The part this Committee will play will be largely an advisory one. In this way we believe the faculties can wield an influence in shaping sorority destiny which will be well worth while."

The Conference adopted the recommendation. Therefore your Committee recommends that the Women's Section endorse the action of the Conference.

Respectfully submitted,

(Signed) ZADA M. COOPER, *Chairman*,
MRS. H. R. KENASTON,
Committee.

Mrs. Kebler moved, seconded by Mrs. Whelpley, that the report of the committee as read be endorsed. Carried.

No further business appearing the first session was adjourned.

Second Session.

The second session of the Women's Section, A. Ph. A., was called to order by the President, Miss Zada Cooper, at 2.00 o'clock P.M., August 14.

Mrs. Isam M. Light sang most charmingly two selections; Mrs. Fred P. Kennedy entertained the Section by rendering a number of delightful musical poems.

President of the American Pharmaceutical Association, Dr. A. R. L. Dohme, delivered an address on the subject, "Women of To-morrow."

WOMEN OF TO-MORROW.

Civilization can be measured by the respect shown woman. Tolerance has grown in history in direct ratio with the growth of the respect shown woman. Cave man, stone age man and bronze age man showed but little respect for woman and she was to all respects a man without any of his rights, positions or respect. He ruled her by brute strength because he was stronger. During the dark middle ages she was merely the bearer of children and the household drudge. Christianity was born at the time of Augustus Caesar; and at the height of the Roman Empire under Trajan and Marcus Aurelius it began to assert itself but people did not understand it. Then, when Rome decayed and the chaos of nations began, Christianity became dogmatism and theology and superstition and we are only emerging from this dogmatic theology in this twentieth century, and we are far from out of it yet. We are not practising what Christ preached to-day and our religion is not hence to-day Christianity, but it is yet largely dogmatic theology. Through all this domination of the world by the church, during the past twenty centuries, man has dominated woman because it was part of the church dogma. Paul preached it but not Christ. Who says and does things in the church—in any church, but most prominently in the old or orthodox church, surely not the woman. If this is true to-day—it was more true every century as we go back. The hope of the dawn of a civilization when there will be no war and when there will be a brotherhood of man and woman lies in the advent of a real Christianity, which means a harmony of religions, a revulsion from dogma and theology, and when this comes woman will come into her own as the equal of man before the law, in the social order and in reality. This war may, and many think it will, bring real Christianity and real religion and with it, real peace, real progress and real brotherhood of man on earth. Personally, I hope and believe it will—when it does then will woman begin to play a figure and influence in history. Because of the war she is now filling places once filled only by men. She will have to do so to a greater extent in the future. Therefore the woman in pharmacy will henceforth become an element in pharmacy. It is a calling she can fill, as well as grace. The patience, accuracy, neatness and service called for by pharmacy count among woman's strong points. This looks lovely but let me warn you it has a darker and more sinister side. With these assumptions of the places of men will come two things: (1) Assumption of his responsibilities as the bread winner, and (2) consequent loss of that great respect and veneration of woman born of the fact that she was helpless, weaker, dependent and *mater familias*. Woman cannot expect to assume the places and duties of man without losing proportionately the high respect in which she is held. If she becomes man's competitor she must assume the burden of the knocks and rough edges of competition. Then comes the suffrage, which will doubtless be voted, and this will still further accentuate the rough contact and consequent loss of the finer instincts of respect once held by the beloved wife, mother and woman. Therefore the woman of to-morrow has a great problem to face and decide for her sex. Will she remain the woman whose duty and instinct is to bear, love and rear the people of

to-morrow and retain the love and admiration and highest respect of man, which means the amenities and courtesies of life, or, will she assume the place of and knock elbows and shoulders with men in the market places of the world and become a skirt-wearing man who has lost all those finer attentions and devotions to-day lavished upon woman? The woman of to-morrow must, if she can, solve the problem and cut the Gordian Knot so that she may come into her own as a power for good and progress in the world and yet with all remain the loving helpmate and highly respected wife and mother of man. Unless she can solve the problem and secure her independence and active agency for good in the world without losing the respect of mankind as a loving helpmate, society of to-morrow will be a hopeless and a sorrowful thing, holding out little but a reversion to a lower type of civilization and culture.

The world will be revamped and reconstructed after this war. The world cannot have gone through the ordeal of fire, destruction, hatred and untold suffering without some good coming out of it for those who have suffered and died that we might live and make the world safer for their orphaned little ones to live in. The war represents the last dying gasp of feudalism and the rule of the many by the rich and powerful few or, as it is often put, the rule of might against right. The holocaust will have cost millions of lives of men, and woman will more than ever preponderate in numbers in the world. Why should she not have her influence in the remodeling and revamping of government and society? If there ever was a chance for woman to assert herself for the uplift, salvation and progress of humanity, that time is to-morrow—the near future. Woman does not love war and does not want war. She does not want to give up her husband, brother or son to be brutally shot to death in droves like cattle. If the women of this country or any country had been asked whether their country should or should not go to war—the answer would never have been in doubt for one instant. Instead there would have come from the forests of Germany, the meadows of France, the hills of England, the plains of Russia, the valleys of Italy, and the fields of the United States, the never ending sound of N O—a thousand times N O—and it would have come so loud that it would have echoed down the ages to come so that the hills and mountains of the whole earth would have heard it even down to the last generation. Therefore women of the Women's Section of the A. Ph. A., women of this great country of ours, women of all nations, women of the world—all of you women of to-morrow rise in your might, rise in your dignity, rise in your power that you hold over men, for the love we men bear you and I hope will always continue to bear you, and make your influence and your strength felt in the world of to-morrow and so help direct and steer the ships of state of the world that, after this war has established democracy on earth forever and the brotherhood of man and the sisterhood of nations and destroyed autocracy and the rule of the many by the few once and forever, the ugly tentacles and the hideous fangs of war shall be buried forever, never to be resurrected.

Then followed an illustrated lecture on "Community Work in Conserving Cereal Foods and Protecting the Public Welfare," by Dr. L. F. Kebler, Chief of the Drug Division, U. S. Department of Agriculture, Bureau of Chemistry.

COMMUNITY WORK IN CONSERVING CEREAL FOODS AND PROTECTING THE PUBLIC WELFARE.*

A STEREOPTICON LECTURE.¹

Suppose I should ask this assembly to name one of the leading industries of your community, what would your answer be? Suppose we should address a letter to the various communities in the world and ask what constitutes their chief industry? A variety of answers would undoubtedly be received. Some would say automobiles, others cotton, wool, farming, iron, steel, mining, etc. Some might mention some phase of the food problem, but the food industry as a whole would hardly be thought of. It is such a common industry and is with us all so large a

* Requested and approved by the U. S. Food Administration. Prepared by Dr. L. F. Kebler, Bureau of Chemistry, U. S. Department of Agriculture.

¹ Delivered before the Women's Section at the Chicago meeting of the A. Ph. A. Eighty slides were shown by the lecturer, illustrating the related points, and these are indicated throughout the address by the subjects presented.

part of the time, that we seldom think of it as an industry. We eat food three times a day when we can get it. Indeed, we spend the greater part of our efforts in producing, transporting, preparing, conserving and consuming our foods, so that we may live and have our being. With some the getting of food constitutes a veritable struggle for existence. By far the greatest amount of the labor on our farms is expended in raising, harvesting and marketing foods for man and the domestic animals.

The chief, ultimate purpose of all farm implements (plows, harrows, reapers, threshers, etc.) is for food production. All kitchen supplies and utensils and the capital producing them are parts of the same industry. Immense factories for preparing foods (products valued at \$2,300,000,000) exist in various sections of the country. Great elevators are constructed to hold our grains. A large amount of our transportation equipment is utilized for shipping foods from one community to another. Food constitutes the greatest industry of all peoples. At present it is an international problem. The capital invested in the food industry in the United States alone (one hundred billion dollars) is greater than that invested in many of the other largest industries combined. The value of the cereals alone in the United States at the farms for 1917 is estimated at eight billion dollars. This alone certainly represents some investment. We are not only the greatest food-producing nation in the world but the largest wheat-growing country as well. Russia comes second. We produce considerable for export. England, France and Italy even in pre-war times did not grow enough wheat to meet their own needs. Considerable was imported. In the present war the demand for imported wheat is very great.

Man derives the greatest part of his nutrition from the grains. The importance of the cereals in the life of a nation is therefore clearly evident.

Cereals (wheat, corn, rye, rice, etc.), for the most part, are derived from the grass family. The only important exception is buckwheat. Most of us do not look on wheat, corn or rye as grassy in nature, but the botanist so classes them.

One or more of these grains are grown in all parts of the world. Some thrive best in cooler weather (oats), others in warmer climates (rice). The part of these grasses used for human food is the seed. Herbivorous animals, however, consume all parts of the grasses as food to make foods for us. This illustrates how closely related is the source of food for mankind and the lower animals. We do not eat grass ourselves, but we do eat it by proxy. We make the milk-and-meat-producing animals manufacture it into foods for us. In the grains of all grasses is stored up nourishment for the young plant for use during the early days of its career. By the foresight of self preservation the parent plant, in providing for its young, produces a tremendous food supply. By robbing the young plants of this food man appropriates to his own use and the use of food-producing animals, a vast amount of nutrition. From this it is evident that the nutritive elements required by man are similar to those of many of the young plants. In the final analysis, man and the lower animals are dependent on plants for their foods. After the grain plantlet is well established it possesses the power of extracting its food from the earth and air, but in order to get a start in life there must be available for ready use certain well recognized food substances. From the nature of things it is quite evident that grains contain these various essential nutritives called proteins, carbohydrates, fats, vitamins and mineral matter.

FOOD NUTRIENTS.

Proteins.—Egg albumen, red and white meats, casein, gelatin, gluten, zein, legumin, fish meat, peptones, etc.

Carbohydrates.—Glucose, dextrose, grape sugar.—Fructose, fruit sugar; sucrose (ordinary sugar), lactose, milk sugar; maltose, malt sugar; starch, corn, wheat, potato, rye, rice, etc.

Organic Fats.—Butter, lard, beef fat, fowl fat, mutton fat, fish oil, oleomargarin, olive oil, cottonseed oil, peanut oil, corn oil, sesame oil, almond oil, cacao butter, cocoanut oil, nut oils, etc.

Vitamins. Food Hormones; Food Accessories.—Water soluble; in cereals, fruits, vegetables, meats and milk.

Fat soluble; in butter, egg yolk, roots, leaves, milk, cod liver oil.

Inorganic or Mineral Matter.—Water, compounds of calcium, magnesium, iron, sulphur, phosphorus, sodium, potassium, chlorine, etc.

These food elements vary considerably both in character and amount in the different cereals, but their food- and health-giving values are very similar. Wheat contains more protein than corn, and the two differ materially in character. The fat content of oats is considerably greater than that of rice, but their food value, measured in calories, is about the same, weight for weight.

The proportion of the several constituents contained in each cereal has been carefully determined by chemical analysis, and the order of their relative richness can readily be grouped. The protein content of wheat, rye and oats is about the same. Rice, corn and millet contain materially less. The fat content of oats and corn is much greater than either rice or wheat. In the carbohydrate content, rice takes first place, oats and buckwheat rank below it.

Barley is among the first in mineral content, while polished rice represents the lowest.

The preponderance of carbohydrates in cereals indicates that they should be combined in our diet with other foods, richer in fats and proteins. We have instinctively learned to do this. Our bread is spread with butter. In the case of sandwiches the protein and fat content of bread are enhanced by the addition of butter, meat, cheese, etc., as the case may be. Puddings are enriched with protein and fat by the use of milk, eggs and butter or other fatty material. Other forms of cooking show by natural selection of many years, that there is a natural tendency to balance the food nutrients required by the system. When there is a deficiency of certain food principles the system seems to have a way of making its wants known. The need of salt or water are cases in point. Cattle will travel miles and miles to get them.



FIG. 1.

Wheat is by far the most important cereal used by man. The Chinese consider it a special gift from Heaven. The cultivation of wheat is pre-historic. It antedates the Egyptian monuments and is more ancient than the Shepherd Kings and the Hebrew scriptures. It grows in all temperate regions of the earth. There are many varieties of wheat, red wheat, white wheat, hard wheat, soft wheat, starch wheat, winter wheat and spring wheat. In normal times we consume annually about five bushels per capita. It is the great bread-making grain of the world. Bread is the very basis of the food supply of humanity and the cereal most generally and satisfactorily used is wheat. It possesses certain basic characteristics which will be considered in connection with bread making.

There is a great shortage of wheat at present in the allied and neutral countries of Europe. If we expect, as we do, to win this war for permanent peace and humanity and make this world a decent place to live in, America must help supply the allied armies and their industrial workers,

their women and children, with a part of their food needs. This problem is second to none for the salvation of our country. Hungry men are not effective fighters, nor will men continue fighting with starving families at home, if by refusing to fight they can feed them. The failure of Russia is a notable example. A diet satisfies or fails in proportion to the bread it contains. Bread therefore is no longer figuratively the "Staff of Life." It is in reality.

It is impossible to know too much about the cereals and wheat in particular. On cutting a grain of wheat lengthwise into thin slices and examining them under a microscope of low power, three distinct parts can be readily made out. They consist of an external covering or skin, an internal substance or kernel and the germ. The skin or outer envelope, or "hull," as it is sometimes called, goes largely to make up the bran and is composed mainly of cellulose, impregnated with mineral matter. It contains the coloring matter of the wheat and is the protective coating of the grain of which it makes up about $13\frac{1}{2}$ percent. The kernel, also called endosperm, consists primarily of starch and the antecedents (gliadin and glutenin) of gluten. It makes up about

85 percent of the grain and furnishes the bulk of the white flour of the market. The germ is essentially the young plant and represents about $1\frac{1}{2}$ percent of the grain. The cells of the germ contain certain ferments or enzymes, which convert the insoluble starch and nitrogenous matter into soluble material capable of being absorbed and used by the young, growing plant. The germ is usually discarded in the manufacture of ordinary wheat flour, because the oil contained therein tends to turn rancid, thus making it difficult to keep the flour over an extended period of time.

A still higher magnification of a section of wheat grain (mounted in water) brings out the various parts more distinctly. Now we can see the bran layers, the starch granules and the gluten particles.

The chemical composition of the whole grain and the three component parts described above have been carefully worked out. The germ is characterized by its richness in protein, fat, and mineral matter; the kernel by the abundance of starch and protein it contains and the bran by the preponderance of mineral matter, cellulose and nitrogenous material.

The relative proportion of starch and protein differ in various kinds of wheat. Those grains which look so translucent and horny, are, as a rule, high in protein matter, while the grains which are soft, opaque and floury, contain less gluten and a larger proportion of starch.

Certain climatic conditions are favorable for hard wheat, others for soft wheat. The semi-arid region west of the Mississippi river, in both the United States and Canada, produces hard wheat, while soft wheat is largely grown in the states east of the Mississippi. Spring wheat belongs to the hard wheat variety, while the winter wheats are generally soft in type.

Whole wheat is not largely used as a food, although there are a few whole wheat proprietary foods placed on the market and greatly relished by many. A useful food may be prepared by soaking the berries in water, then boiling and finally mixing with milk and sugar and other suitable ingredients. This represents an old and very nourishing dish called "frumenty." It seldom graces our tables at present, although there may be some here whose environments have been such as to have actually enjoyed this dish.

At present the common procedure is to mill the grain into wheat flour by removing the germ and tough skin, then grinding the rest. This is easily done by the present elaborate process of the modern rolling mill. By rejecting the germ and bran the miller undoubtedly discards some of the most valuable food constituents of wheat. It is alleged this is not the miller's fault, but the caprice of the consumer, who has a natural or acquired aversion for dark bread. The aversion is claimed by some to be largely a matter of education.

The millings before the war varied from 56 percent (the finest patent flour) to 75 percent, in this country. That is, from each 100 pounds of wheat were made from 56 to 75 pounds of white, creamy flour. At present it is required to extract 74 pounds for each 100 pounds of wheat used. It is claimed that this flour is not quite as white or as good as that formerly made, but to the average consumer there is little difference excepting that he can get it only on a 50-50 basis. In England, at the present time, millers are required to make from 88 to 90 pounds of flour for each 100 pounds of wheat used. In France the extraction required is about 85 pounds and in Italy 90 pounds.

The bran is tough and fibrous and contains the coloring matter of the wheat. The miller therefore who is required to produce 85 to 90 pounds of flour from each 100 pounds of wheat can not produce as white a flour as when the bran is completely eliminated. He will furthermore be unable either to make quite as fine (size) flour or, if he does make as fine a flour, he does it at a little more expense.

The fibrous, branny material is not so easily or largely digested as the ingredients generally contained in patent wheat flour. This is one of the alleged objections raised to the use of whole wheat flour. It should be remembered, however, that the system needs a certain amount of indigestible material (roughage, ballast) to keep the bowels in good condition. This is very important. If all of our foods were entirely digested or without any practical residue, as in the case of sugar, starch, fats, meats, etc., our bodies would sooner or later be in an impaired state of health. The body also needs a certain amount of mineral matter to keep the various processes working smoothly. This is particularly true in the case of children. It is claimed by some that the deficiency of lime in our foods lowers our resistance to disease, particularly tuberculosis, which is so common in young life.

During recent years it has been found that certain substances, hitherto unknown, play a very important role in promoting growth and maintaining health. We do not know exactly what they are as yet, but for the present they are called vitamins, food accessories and food hormones. There are fat-soluble and water-soluble vitamins. Small amounts of both are required. All cereals are rich in water-soluble vitamins but poor in fat-soluble vitamins. The vitamins are contained in the outer layers of the grain and the germ. These are discarded in the making of white flour. They must therefore be obtained from other sources. Whole wheat flour contains the water-soluble vitamins. They are also present in fruit and vegetables. One or more of these must be included in the diet. Man can not live on white flour and pork or polished rice and fish and maintain health. The danger of mineral or vitamin deficiency need not be feared when an ample variety of food is eaten, and particularly is this true when there is an abundance of fruit and vegetables.

Wheat flour contains only a part of the mineral matter present in wheat. The greater proportion is in the offal which includes a number of fractions known in the trade as "red dog," "shorts," "middlings" and "bran." It is therefore clearly evident that if Graham flour is used in the manufacture of bread, a larger proportion of mineral matter will be taken into the body.

In order to make flour available for food purposes, cooking or baking in some of the many forms practiced must be resorted to. The simplest procedure is to mix the flour and water into a dough and bake. This makes a hard biscuit, difficult to masticate and harder to digest. Man was therefore early confronted with the necessity of converting flour into products that are light, porous and more easy of digestion. The problem was solved ages ago. Leavened bread was known to the Egyptian in the time of Moses. It consists in causing a gas to develop in the doughy mixture, converting it into a spongy mass, which is subsequently baked. Now in order to make bread of the above character, the flour to be used must possess the property of retaining or enmeshing the gas generated. This quality is inherent to the greatest degree in wheat flour, which contains several proteins, collectively called gluten. Gluten possesses the peculiar property of becoming viscid and tenacious when mixed with water. It also possesses sufficient coherence and stability, so that when the viscid, doughy mass is inflated or blown up with gas, it holds its spongy form until set by baking, instead of collapsing and allowing the gas to escape. Gluten also materially assists in retaining the moisture in the bread. It is therefore plainly evident that gluten plays a very important part in the making of bread and that wheat is the cereal par excellence in the economy and welfare of man. Patent wheat flour generally contains a larger percentage of gluten than does Graham flour. It also contains a minimum of substances which tend to inhibit the best leavening results. For these reasons it is possible to make a bulkier bread from white flour. A loaf of bread weighing one pound, made from white flour, is as a rule somewhat larger than a loaf of bread weighing one pound made from Graham flour. Considerable of this difference in bulk can be overcome by carefully watching the process of leavening and kneading, and baking the loaf in just the right manner. It has been shown that bread made from flours milled up to 80, 85, 90 and even 95 percent, can be made very nearly as bulky as that produced from a 74 percent flour.

The nitrogenous constituents of the other cereals such as barley, rice, corn, oats, etc., are materially lacking in agglutinating properties. The proteins do not become materially viscid when moistened and consequently these cereals are not well suited for bread making, in and of themselves. They can be mixed in certain proportion with wheat flour and make very acceptable breads. While the best kind of bread is made from wheat flour or a mixture of wheat and other cereal flour, yet larger quantities of lower grade breads are made from the flours of rye, barley, oats, corn, rice, etc.

The process for making bread light, spongy and porous, is called leavening, lightening with gas. The questions that now naturally present themselves are, what is the gas used and how is it produced? Two methods have long been in vogue, namely fermentation and baking powders. The former is by far the oldest and best. Its origin is lost in antiquity. Fermentation is due to the growth of small plants called yeast, which are capable of breaking up sugar into alcohol and carbon dioxide gas. Two pounds of sugar give about one pound each of the gas and alcohol. The gas causes the dough to swell up.

In order that yeast may produce the best results, that is the greatest amount of gas, it must grow vigorously. If its action is weak, fermentation is slow and a sour, unpalatable, heavy bread is likely to result. Such bread means a loss of food which should be carefully avoided.

Like all other plants, yeast requires air, water, protein, carbohydrate and mineral matter to build up its own structure and reproduce its species. Yeast plants, like children, require food to grow. It is plainly evident that yeast, during the process of fermentation, eats up a part of the food elements in the flour. Careful studies have shown that this amounts on the average to about 3 percent (1 barrel in 33). The tremendous amount of actual food consumed by yeast can hardly be realized. Thousands of gallons of alcohol are produced during the process of fermentation and later lost while baking. Numerous efforts have been made to recover this alcohol, but without satisfactory results. The food eaten by the yeast cells is lost.

The next question that prompts itself is where do the yeast cells originally come from? If we expose dough to the air these plant cells will ultimately find their way into it and start to grow and multiply. From this it would appear that yeast cells are floating about in the atmosphere. Yeast spores are in fact found about us on every hand.

During the time the dough is exposed, other small plants called bacteria also find their way into it and begin to grow. These bacteria frequently cause acids to develop so that the dough not only ferments but may become sour. For want of something better this sour, fermented dough was early used in the making of bread. It was called "leaven." A little of it was added to the fresh dough and the yeast present began to grow with greater or lesser rapidity, depending upon conditions. Most of the batch was baked, but a small part was set aside to start fermentation in subsequent batches of bread. Other forms of yeast were used. Some of us still have in mind the product known as "jug yeast." The only part played by the jug was that it served as a practical, efficient container for developing this yeast. From the nature of things it was evident that the various forms of yeast available would prove unsatisfactory. The house-

wife experienced many difficulties in keeping her yeast good. It often happened that the yeast batch was not in the best condition when needed for bread making. To prepare a new batch would require considerable time and labor. An accommodating neighbor is then a friend indeed.

Salt-raising bread is dependent upon a new and independent spontaneous fermentation for each baking. In its preparation there is added neither yeast nor a portion of fermented dough from a previous baking. It is therefore a matter of chance whether a good bread will be produced or not. There is, however, less likelihood of failure in places where the process has been in vogue for some time. The fermentation is started by mixing corn meal, salt and hot milk into a stiff batter and allowing it to stand in a warm place from 15 to 20 hours, or until fermentation is well established. The mass is then mixed with flour and water to produce the sponge. Salt is added to retard the growth of undesirable bacteria. It is certainly poor economy to use this method at any time and particularly now.

In order to overcome some of these difficulties, dried yeast cakes were provided. They are prepared by mixing strong stock yeast with corn meal and drying. These yeast cakes are of great service in places where compressed yeast can not be obtained. Old yeast cakes should not be used. They are liable to be weak or moldy, and result in the production of a low grade of bread, which means loss of food. Compressed yeast, known to all of us, represents the purest form of commercial yeast and should be used whenever available. In concluding the fermentation process for making the bread, the idea of saving food or avoiding the making of sour, sodden, soggy, unpalatable, indigestible wheat food products, can not be too vigorously emphasized.

The inevitable waste in making bread by the method of fermentation has received careful and diligent study. The obstacles to be overcome are numerous. In spite of all the work that has been done, it is still the most satisfactory and acceptable process. Ordinary bread made by other than the fermentation process is not so highly esteemed. Fermentation produces cer-

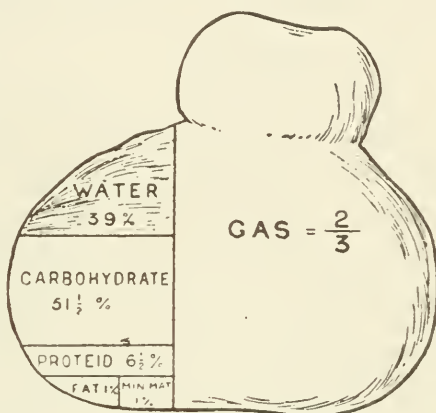


FIG. 17. DIAGRAMMATIC REPRESENTATION OF THE COMPOSITION OF A LOAF

FIG. 2.

tain aromatic substances which impart a sweetish, agreeable flavor to the bread. Yeast also introduces some of the desirable vitamin into the bread made from devitaminized flour.

The chief outcome of the various investigations have resulted in the development of a variety of baking powders. Baking powders consist of mixtures of various chemicals. They are quite generally used for simple, quick baking, including such foods as cakes, biscuits, gems, pancakes, etc. Self-raising flour contains some form of baking powder. There are many brands of baking powder on the market and they are quite generally employed for certain forms of baking. We have cream of tartar baking powders, alum baking powders and phosphate baking powders.

Aerated Bread. A variety of bread was introduced a number of years ago which was raised by means of mechanically injecting the gas into the dough. The method has not proven successful commercially. The cause for its failure is probably due to the fact that the bread does not possess the flavor or odor which appeals to the public taste. The psychology of foods plays a very important part in the life of a nation and must be reckoned with in matters of diet, if we expect to make progress.

MAIZE. INDIAN CORN.

Next to wheat, the most important cereal used for human food in the United States is maize. It is America's greatest cereal crop and our most important substitute for wheat. It is the great stock cereal. For the year 1917 we grew over 3 billion bushels, an average of 26.4 bushels to the acre. The boy farmers of late have shown us that this is less than a third of a crop. The possibilities for materially increasing this valuable cereal crop are therefore excellent.

We are told that there are several hundred varieties of corn, but for our purpose they may be grouped under three heads, namely: Field corn, sweet corn, and popcorn. Field corn is undoubtedly the most important and most generally used substitute for wheat in the United States. It is a staple article of diet. Some classes use it more largely than others. Our own Dixie people have learned to prepare many choice dishes from it. Ireland and Italy use it largely. It is literally the staff of life in Mexico, where the crop is of greater money value than the output of that country's famed gold mines. One probable reason why corn is not used more abundantly by some is because it is often associated with pellagra, a disease common among the poorer classes of the Southern states. Corn was looked on for years as the cause of this disease in some way, but the idea has been exploded in recent times.

The general structure of the corn kernel is similar to that of wheat. An examination of the kernel shows that it consists of four different parts. These may be designated as the coat or hull, the hard, glutinous layer underneath the hull, the chit or germ, and the starchy matter constituting the chief portion of the kernel.

The fine separation of the different parts of the corn by mechanical means has not been developed to the extent obtaining in the case of wheat. Like wheat, corn is prepared for food in many different ways. We have the white and yellow corn meal. Some prefer one to the other, depending upon custom. The food value is apparently the same. On the whole, corn is claimed to possess as much food value as wheat and this applies to all corn, whether flinty or starchy, or white or yellow, or any other color.

The protein (zein) of corn differs materially from that of wheat in both chemical and physical properties. The particularly striking feature is that zein does not become viscid or sticky on moistening. A mixture of corn flour and water does not produce a doughy mass. It can not be inflated by fermentation. This restricts the use of corn meal in the preparation of a desirable light bread.

Corn bread, corn cakes, and corn buns are eaten in large quantities. They are made from a number of mixtures and are raised to some extent by the common leavening agents; that is, yeast, baking powder and baking soda. Wheat flour is a common ingredient of these mixtures. They represent excellent and tasty dishes.

Johnny cake was originally a mixture of stone-ground corn meal, water and salt, baked into unleavened cakes. The name Johnny cake is frequently applied to a mixture of corn meal, milk, eggs, butter and baking powder. The complaint is at times heard that Johnny cake is more expensive than wheat bread because of the cost of the original ingredients composing it. From the information available it would appear that the original Johnny cake has been materially changed but that the old name has been retained. The expense of what might be called

modern Johnny cake is due to the addition of costly ingredients, not really a part of the original mixture. It is, however, not so much a question of the increased cost of the Johnny cake as it is a question of saving wheat for helping in this war. We must be willing to deny ourselves until it hurts, even our pocketbooks.

Hoe Cake.—Hoe cake is similar to old time Johnny cake. It was originally baked on a hoe, hence the name.

Pone Cakes (Corn pone).—A bread made from corn meal, with or without the use of milk and eggs.

Corn mush, corn pudding, or hasty pudding is made by gradually adding corn meal to hot water with vigorous stirring so as to avoid lumping. This mixture is often eaten either warm, cold or fried, with milk, syrup, butter, etc., as custom, means or habit may decree.

Corn Starch.—Starch made from corn.

Glucose.—Commonly made from corn, but can be made from other starch-bearing products.

Corn grits is corn hulled and broken.

Hominy is hulled corn, broken and soaked, then cooked for table use.

Corn Flakes.—During recent years they have come to play an important part at our breakfast tables. They are made by treating grits or broken corn by special malting processes, rolled while moist and toasted on continuous moving belts in large ovens. The flakes are nutritious and represent an excellent article of food.

Large amounts of alcohol and alcoholic beverages are made from corn. Its utilization for the latter purpose has been restricted by law as a conservation measure. It is plainly evident that the uses of field corn are many.

Sugar corn is a specially developed variety of maize of high sugar content, eaten while the starch is still soft. It is cooked and eaten while in the milk and is an esteemed delicacy of our tables. Who has not heard of our delicious roasting ears? Sweet corn should be eaten or cooked as soon as possible after being collected because of the rapid reduction of sugar content after being removed from the stalk. Who has not eaten some of the insipid corn purchased on the market? The ears may be either cooked in hot water or roasted. Roasting ears are best eaten hot. Enormous quantities are canned every year. Our Maine canned corn is known far and wide. Sweet corn is also dried while still unripe. When cooked and served with milk it forms a very tasty dish with a flavor all its own. Drying is a most excellent way to save this very important food at small expense. This feature has not been developed to the extent that it should be in these strenuous times. Sweet corn is of high food value. By proper planting this fine vegetable may be available in Washington from July to frost time, about the middle of October. Further north the period of time is shorter and is lengthened as we go south.

Popcorn is a highly prized food. It is largely used as a delicacy in this country. This variety of corn is hard and consists of small grains, which have the property of exploding when heated, resulting in a great enlargement of the starch grains. Popped corn is a delicious, attractive, edible food, particularly prized by children. Popcorn and apples call to mind fond recollections of childhood days when winter evenings were spent popping corn and eating apples around the fireplace.

Appeal after appeal has been made for us to eat more corn and save the wheat for the brave men at the front, fighting for our beloved land and our allies. Some of us have been wont to demur and ask why should we thus deny ourselves? Can not the allies eat corn as well as we? The reply is that Italy has been eating large amounts of corn and will eat still more. The corn consumed in England is rapidly increasing. In fact the food that these two countries are eating as bread would hardly be recognized by us as bread. A certain speaker from England said, "When I took ship to this country, it was almost impossible for me to stop eating bread. It was such a superior article to what we are eating in England." These two countries are therefore doing their bit in these matters.

Now, how about France? The story there is different. It is the land in which the battle rages and has raged for several years. It is where our boys are fighting to dethrone autocracy. Many of the best farms are laid waste. They can not be used to grow food. Implements and fruit trees are destroyed. Farm tools must be imported and fruit trees grown before food can be produced. There are no mills in France to grind corn, fuel is very scarce, coal \$75 a ton. In pre-war times bread was generally made and baked in large bakeries. Very little home bread

baking existed. Corn bread, in order to be satisfactory, must be eaten hot, soon after it is baked. Re-heating destroys its palatability. French women do not know how to bake corn products. To make acceptable corn dishes requires practice and experience. In the process of learning there is always more or less waste. All of the able-bodied men are either at the front or engaged in transporting supplies for the army or busy manufacturing ammunitions for war. No able bodied man force is at home. Only the aged, infirm, maimed, and the hundreds of thousands afflicted with tuberculosis are there to help the women. It can therefore be seen that to the lot of the women has fallen a stupendous task. They are compelled not only to take care of the home, if there is any left, but to raise the food, do the farm work, plow, sow and reap. Is this not enough? Would you now impose upon them the added task of learning to cook new foods, when they are already bowed down with sorrow and grief and untold burdens? Can we spare the food that must necessarily be wasted during the process of learning? Finally, where are they going to get the bake ovens and the fuel to do the baking with? It is no longer a theory that confronts us, but a condition. Can we conscientiously add to the burdens of these noble, self-sacrificing women? The French people came to our rescue in times of stress and trouble. They have and are acquitting themselves well in the present conflict. They have been doing far more than their part to make it possible to preserve liberty to the world. They saved Europe from autocratic oppression. Are we not willing to help a little by eating more corn that these gallant people may be able to continue in the struggle which will win the war for permanent peace and liberty?

OATS.

Scientists tell us that one pound of corn will give a little more heat (1685 calories) than a pound of oats (1670 calories), but on the whole oats may be regarded as the most nutritive of cereals. They are rich in fat, mineral and nitrogenous matter, but contain less carbohydrate than the other cereals.

Large quantities of oats are produced in this country and Europe. They grow best in cool, moist climates. On the farm we look on oats as horse grain. It is considered inhuman to make a horse work hard and not feed him oats. This cereal was not well thought of as a human food by many people in this country even 25 years ago.

The grain is closely invested with a hull. This hull, representing about 25 percent, is removed when used for human food. Horses are fed the unhulled grain. The oat grain with the hull removed is of the same general composition and structure as wheat. There is an external covering, the chit and the kernel proper. The protein of oats possesses very little agglutinating power. Oat flour therefore is not well adapted for bread making, but by mixing fine oatmeal with wheat flour, a good loaf can be produced. Oat meal when cooked in the form of porridge and eaten with milk forms an almost complete food. The various food elements of oats are well absorbed. For example, 95% of the protein, 93% of the fat and 96% of the carbohydrates are utilized. Oatmeal is sometimes stated to be heating, whatever that may be.

On account of the close adherence of the hull to the grain it is difficult to make a complete separation by the ordinary methods of grinding. The result is that a goodly amount of fibrous matter in the form of small particles is left in the meal. These particles tend to act as stimulants to the sluggish intestines, and are even irritating to some persons. The slight laxative effects produced by oatmeal are of service to persons suffering from habitual constipation, and persons leading a sedentary life. Rolled oats are considered superior to the ground material by some. The great pressure of the rollers seems to rupture the cell walls. The heat applied by means of the rollers seems to have a favorable influence on the fatty matter, rendering it less liable to turn rancid.

Oats are the basis of many of the "breakfast foods." They are usually sold to the consumer in package form. This adds to their cost but does not enhance their food value. It should be stated, however, that the handling of prepared oats in package form is believed to be more sanitary than the old time open barrel method. By reason of the fact that certain packaged oats have been heated and otherwise treated, they are more convenient to use and less troublesome to prepare.

RYE.

Next to wheat, rye is the great bread-making grain of the world. It is the principal supply of bread in many European countries and is used quite considerably in the United States by citizens of foreign birth. Rye resembles wheat in physical appearance, structure and chem-

ical composition. It does not contain the proteins that form gluten, as in the case of wheat, but it comes nearer doing so than any other cereal. Rye bread is more susceptible to leavening than any of the flours obtained from other cereals excepting wheat. Bread made from pure rye flour is rather dark in color, of a peculiar flavor, and apt to be dense, moist and tough. It keeps well, and if made from a fine flour, is about as digestible as bread made from wheat flour.

The composition of rye flour varies with the kind of rye used and its degree of fineness. The finest flours are deficient in proteins (building material) when compared with wheat flour, but somewhat superior to corn meal. More acceptable bread can be made from mixtures consisting of wheat and rye flours. In the case of breads made from the coarser flours, there is likely to be a material loss of the food unabsorbed by the system. This is particularly true in the case of the black bread (pumpernickel), the loss of which is said to amount to about 40 percent.

During pre-war times large quantities of rye were used in the manufacture of whiskey. This loss of food is conserved by a federal law forbidding the manufacture of ardent spirits.

BARLEY.

Barley is a great brewing grain. It contains a ferment (diastase) that converts starch into sugar. This cereal is comparatively rich in mineral matter and low in protein content. The mineral matter is located chiefly in the outer layers of the grain. Barley is used largely as a feeding grain, for horses and cattle. Distillers' and brewers' grains are also used for this purpose. Pearl barley is the whole grain with the hull removed. In this form it is used as a human food in the making of soups and barley water. Barley water is quite largely employed by physicians for diluting cow's milk in infant feeding. It does not possess much food value but is of service on account of the demulcent properties it contains. The gluten-forming elements are not contained in barley to any extent, in consequence of which dough made from the flour of this grain is not well suited to make good bread. Acceptable loaves can be prepared when mixed with wheat flours. Barley flour is used in preparing various dishes.

Malt is barley germinated artificially, then dried at a low temperature. It is used largely for converting starch into maltose sugar.

Malt extract is a syrupy saccharine mixture obtained from malt and used by physicians in the treatment of illness. It is also an ingredient in some brands of bread.

RICE.

Rice is not looked on as of great importance to us in the United States, but is in reality the "staff of life" for about one-half of the human race. It forms a staple food for China, Japan, Siam and the peoples of other oriental countries. Rice is high in starch and low in protein and fat. It is well adapted for the nourishment of those engaged in hard labor. Although rice offers sustenance for multitudes of people in the tropics, it does not seem to be so well adapted for those in the temperate zone. There are about 100 varieties of rice. They differ from one another, as in the case of wheat. We have red rice, glutinous rice, Carolina rice, round rice, etc. All rice is grown in damp, swampy soil, or on soil that can be flooded by irrigation. It is harvested and threshed like wheat. The grain in its natural state is of a brownish or yellowish or reddish color. We usually see it on the market as "pearled" or "polished" rice. This adds to its physical appearance but lowers its nutritive and health-giving value in some respects. In the polishing of rice, the bran removed contains the greater proportion of the ash and virtually all of the growing and health-giving elements, *viz.*, the so-called vitamins. Persons living on a diet restricted to polished rice and fish, are liable to suffer with the disease commonly known as beri-beri, a serious nervous condition, commonly called multiple or polyneuritis.

BUCKWHEAT.

On account of manner of use, buckwheat is generally considered along with the cereals, but botanically it does not belong to this group. It grows throughout the world, particularly in the temperate zone, in a cool, moist climate. It is a hardy plant. A profitable yield may be produced on soil too poor to grow most other crops. On rich soil we are liable to have a rank growth with a lodging of the grain. Buckwheat contains about the same amount of proteins and carbohydrates as corn, but less fat and more mineral matter. The seeds are enclosed in a dark, hard, indigestible shell, which is largely removed in the process of milling. The flour possesses a more or less dark tint, depending upon the amount of husk present. Buckwheat possesses some agglutinating properties and the dough is therefore susceptible of a considerable degree of aeration

The dough may be leavened by either yeast, baking powder or baking soda and sour milk. When mixed with wheat flour very satisfactory bread can be made. The fermentation process is slow and not as commonly used as baking powder for the making of griddle cakes. If baking powder or baking soda and sour milk is used the cakes can be baked as soon as the batter is stirred up. Some brands of flour (self-rising) are mixed with the requisite quantity of baking powder to save the housewife this trouble. Buckwheat griddle cakes are highly prized in the United States. A too liberal eating of these cakes is liable to cause a rash in some persons. Undoubtedly some members of this audience will recall cases in their own experience or at least have had their attention directed to this condition.

MILLET.

It is estimated that the millets are eaten by about one-third of the inhabitants of the earth. Tremendous quantities are consumed in India, China, Japan, Africa and elsewhere. This cereal is, however, little used in this country for human food. During recent years the utility of the millets for this purpose has been carefully studied. They compare favorably in composition with the other cereals. The commoner varieties of millet are fox-tail millet, broom-corn millet, barn-yard millet and Indian millet. The common sorghum belongs to this group, as does also kaffir corn. Some of the millets are well adapted for use in the fermentation or brewing industries.

It is clearly evident from the foregoing that the food value of the various grains is about the same. More appetizing, palatable and digestible dishes can be made from some than from others. Wheat easily takes first place in this respect. An effort has also been made to guard against loss by improper handling or treatment.

In our homes, aside from the children, who receives first consideration? Is it not the bread-winner, the one or ones who make the home possible? Who would not sacrifice to make father or mother, or brother better fitted to feed their loved ones or take care of and protect our homes? Not only are our homes threatened at present, but the liberty and safety of our country as well. Many a home has sent out a defender. They must all be fed with the best of food in order to fight the enemy effectually. If they fail, we are lost. The menace is at our very shores. We must be prepared to sacrifice and do our duty.

The President in the preparedness parade set a fine example of willingness to serve and forego all ostentation. He marched, carrying our emblem of freedom, like thousands of other citizens did in this parade. Millions of men and women are doing their bit. A million of the finest young men in the United States will soon be fighting side by side with the brave soldiers of the allies. Many of us can not fight, but we can help save food and thus help the fighters fight in this noble cause for liberty.

The greatest flag in the world is now before you. Ten thousand blue jackets are massed to form this living emblem of the American union. These noble boys, the flower of our homes, are laying down their lives, sacrificing their future, that old glory may float and proclaim liberty to the world.

What is more noble than an unselfish spirit? It is not so much what we have or give, but what we share, that shows our real character. Do you know that the world's food crop is short? Do you know that the United States is the greatest food-producing country in the world? Do you know that by our substituting other grains for wheat, by sharing we can help the fighters at the front and save people from starving? By saving a slice of bread a day, we make it possible to send wheat to the war stricken countries. We can not be too fully imbued with the grand principles laid down in the American's Creed, written by Wm. P. Page, which is as follows:

THE AMERICAN'S CREED.

I believe in the United States of America as a government of the people, by the people, for the people, whose just powers are derived from the consent of the governed; a democracy in a republic; a sovereign nation of many sovereign states; a perfect union, one and inseparable; established upon these principles of freedom, equality, justice and humanity for which American patriots sacrificed their lives and fortunes.

I therefore believe it is my duty to my country to love it; to support its constitution; to obey its laws; to respect its flag, and to defend it against all enemies.

I cannot more fittingly close this lecture than by quoting a few lines of a recent song which I am sure will appeal to you as it did to me.

"Somewhere in France is daddy,
Somewhere in France is he;
Fighting for home and country,
Fighting for liberty.
I pray every night for the Allies,
And ask God to help them to win,
For daddy won't come back
Until the Stars and Stripes they tack
On Kaiser Wilhelm's flagpole in Berlin."

A paper by Miss Elsa Schmidt was presented by Mrs. H. C. Christensen, entitled, "Women." Miss Schmidt contrasted the viewpoints of the past with the present, relating to women's activities. Formerly only a few lines were open to women, now there is no occupation in which they are not represented to a greater or lesser extent, and it should be the purpose of those now engaged to induce others to enter their chosen fields of activity. Pharmacy presented opportunities, she said, and the Women's Section should help in every way to augment the number of women so engaged. She pointed out that publicity was essential in the promotion; not only should articles on the subject be written for publications reaching the young women while they are in high school, but they should be interviewed and the possibilities in pharmacy explained to them; the interest of teachers and school officers should be enlisted to encourage their students to prepare for the study of pharmacy.

The last paper of the program was by Miss Helen E. Stouffer, on "Belladonna Culture."

Miss Stouffer presented her observations on belladonna culture in the drug garden of the Valparaiso Pharmacy School. She described the seed of belladonna and the difficulties encountered in its germination, due to the character of the seed-coat, which also sustains the vitality of the seed. Soaking the seeds in warm water for several weeks promotes germination. The seedlings are transplanted when 8 or 10 inches high.

Miss Stouffer stated that medium rich sedimentary loam was best suited for the plants. Lime, she said, improved the cultural qualities of heavy soil, or one tending to sour, but her experience did not show, as some contend, that the alkaloidal content of the plant was increased thereby.

The opinion prevails that sun-grown belladonna is richer in alkaloidal content than that of shade-grown plants. In Miss Stouffer's experience this did not prove out; she reports, that plants of the sunny bed, containing both flowers and some fruit, yielded 0.309 percent alkaloids, while those of the half-shaded beds showed 0.382 percent. Plants, containing neither buds nor flowers, of the sunny bed, yielded 0.356 percent of alkaloids, while those of the half-shaded beds, containing neither flowers nor fruit, showed 0.416 percent. Her experience is that just before flowering is the most economic time for collection of leaves. While the plants contain more alkaloid at maximum flowering time, due to growth, unless the size of the plants increased very materially, the alkaloidal strength lost offsets that in the added foliage.

Miss Stouffer reports on the fact that leaves of young *hyoscyamus* plants have assayed twice the normal alkaloidal content and concludes that the same would be true of belladonna.

The growth of the plants was slower in shaded woodland, but there was no material difference in growth of those half-shaded and those grown in the sun.

She states that there are many difficulties encountered in belladonna culture and the greatest source of trouble and destruction is the potato beetle. This she overcame by planting a row of potatoes around the belladonna bed; the beetles attacked the former and practically left the belladonna plants untouched.

The experience of the author is that belladonna grown in partially shaded beds is richer in alkaloids than that grown in the sun, and the leaves are richest in alkaloids just before the plants flower.

On motion of Mrs. Whelpley, duly seconded, the above papers and addresses were received and referred for publication.

REPORT OF THE COMMITTEE ON PRESIDENT'S ADDRESS.

This Committee recommends the adoption of the spirit of the President's recommendations, also that of the Secretary.

Further, we recommend that the committee to be appointed under the direction of the Executive Board shall be privileged to employ any suitable means to obtain results.

Respectfully submitted,

MRS. H. M. WHELPLEY,
MRS. M. M. GRAY,
CLARA HULSKAMP.

On motion the report was adopted. Mrs. Thatcher presented the

REPORT OF THE COMMITTEE ON RESOLUTIONS.

We, the Women's Section, now in session with the A. Ph. A., have certainly derived a great deal of pleasure out of the entertainments so generously planned for us by the ladies of Chicago. Each event has been deeply appreciated, and shall always be a source of very happy memories. Our heartiest thanks can but mildly express our gratitude.

To those who have been contributors, Miss Vittum, whose stirring address will not soon be forgotten; Mrs. Light and Mrs. Kennedy, whose music was an added pleasure; Drs. Dohme and Kebler, who made our afternoon session so attractive; we offer our deepest appreciation.

As it has pleased God in His infinite wisdom to bereave so many of our members,—Mrs. Charles Holzhauser, Mrs. A. B. Husted, Mrs. W. L. Dewoody, Mrs. Joseph P. Remington, and Mrs. George Timmons,—let us take this opportunity to condole with them by offering them a few words of comfort, knowing that "God works in a mysterious way His wonders to perform," though very often so unintelligible to us! May they find some balm to heal their very great sorrow.

We bow in reverence to Him and give thanks for our many blessings.

MRS. E. S. THATCHER,
ANNA G. BAGLEY,
MRS. IDA E. KEBLER.

On motion of Miss Bagley, seconded by Mrs. Kebler, the report was accepted. Mrs. M. M. Gray, Chairman of Committee on Nominations, presented the names of the following for nominees of the Section:

President, Miss Zada M. Cooper.

First Vice-President, Mrs. W. L. Dewoody.

Second Vice-President, Mrs. F. J. Wulling.

Third Vice-President, Mrs. F. W. Meissner.

Secretary-Treasurer, Mrs. H. R. Kenaston.

Historian, Miss Bertha Ott.

Member of the Executive Committee, Miss Zada M. Cooper.

Chairman Membership and Press Committee, Mrs. John Culley.

Miss Cooper declined to serve another year and Miss Anna G. Bagley was nominated as President. The Secretary was directed by vote to cast an affirmative ballot for the nominees, which was done, and the President declared the officers elected.

The following officers being present, were installed by Mrs. L. F. Kebler.

President, Miss Anna G. Bagley, Columbus, Ohio.

Second Vice-President, Mrs. F. W. Meissner, La Porte, Indiana.

Secretary-Treasurer, Mrs. H. R. Kenaston, Bonesteel, South Dakota.

Member of Executive Committee, Miss Zada M. Cooper, Iowa City, Iowa.

By vote of the Section, the Executive Board was directed to elect the officers not present at the meeting and that the Secretary notify them of their election.

Upon motion, duly seconded and carried, the Secretary was directed to write letters to all pharmaceutical associations and conventions during the year.

The President submitted to the Secretary the following committees:

COMMITTEE ON MEMBERSHIP AND PRESS.

Chairman, Mrs. John Culley, 2579 Monroe Ave., Ogden, Utah.

District No. 1, Maine, New Hampshire, Vermont, Massachusetts and New York—Mrs. St. Claire Ransford Gay, 2787 Broadway, New York.

District No. 2, Connecticut, Rhode Island, Pennsylvania, New Jersey and Delaware—Mrs. C. H. LaWall, 39 S 10th St., Philadelphia, Pa.

District No. 3, Maryland, Virginia, W. Virginia, District of Columbia and North Carolina—Mrs. Lyman F. Kebler, Bureau of Chemistry, Washington, D. C.

District No. 4, S. Carolina, Tennessee, Georgia, Alabama and Florida—Mrs. E. A. Ruddiman, 1916 Adelicia St., Nashville, Tenn.

District No. 5, Mississippi, Louisiana, Arkansas, Texas and New Mexico—Mrs. Emily K. Hilton, Sorocco, N. Mexico.

District No. 6, Kentucky, Ohio, Indiana and Michigan—Miss Elizabeth Jenkins, 5th St. & Wayne Ave., Dayton, Ohio.

District No. 7, Illinois, Wisconsin, Iowa and Minnesota—Mrs. M. M. Gray, 4151 Gladys Ave., Chicago, Ill.

District No. 8, Missouri, Kansas, Nebraska, N. Dakota, S. Dakota and Oklahoma—Mrs. D. F. Jones, 106 Granite Block, Watertown, South Dakota.

District No. 9, Colorado, Wyoming, Montana, Idaho and Utah—Miss Marjorie Ford, Denver, Colorado.

District No. 10, Arizona, Nevada, California, Oregon and Washington—Mrs. Jennie Maguire White, 416 Hayes St., San Francisco, Cal.

OUTLOOK COMMITTEE.

Mrs. G. D. Timmons, Chairman, 458 Greenwich St., Valparaiso, Indiana.

Mrs. John G. Godding, 278 Dartmouth St., Boston, Mass.

Mrs. Geo. H. Schafer, 713 Front St., Ft. Madison, Iowa.

Miss Daisy Frick, Audubon, Iowa.

Miss Clara Hulskamp, 546 W. St. Catharine St., Louisville, Ky.

Mrs. H. M. Whelpley, 2342 Albion Place, St. Louis, Mo.

Mrs. E. G. Fine, 814 Spruce St., Boulder, Colo.

Mrs. W. Bruce Philip, 1410 Fruitvale Ave., Fruitvale, Cal.

Mrs. E. S. Thatcher, 334 Ogden Ave., Milwaukee, Wis.

HOSPITAL COMMITTEE.

Miss Bertha Ott, Chairman, Bethesda Hospital, Cincinnati, Ohio.

Miss Mary R. Hamilton, Rochester General Hospital, Rochester, Pa.

Miss Norman C. Hawley, Butterworth Hospital, Grand Rapids, Mich.

Miss Leafy A. Sauer, South Side Hospital, Pittsburgh, Pa.

In behalf of the members of the Women's Section, it is my privilege to express our appreciation and gratitude for the many courtesies extended to make our stay in Chicago enjoyable and profitable. Especially do we acknowledge the trip to Municipal Pier; luncheon under the auspices of the Chicago Retail Druggists' Association; the ladies' card party in the Florentine Room of the Congress Hotel; the President's reception; luncheon served by courtesy of the Chicago Veteran Druggists' Association; the automobile tour of the city; visit to the Art Institute, Hull House and the Field Museum.

On motion the session adjourned.

MRS. H. R. KENASTON, *Secretary*.

ZADA M. COOPER, *President*.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

CHICAGO.

The One Hundredth Meeting of the Chicago Branch of the American Pharmaceutical Association was a very successful one, held Friday evening, February twenty-first, at the LaSalle Hotel. Satisfied with a good dinner, cheered by a large attendance and enthused by the array of fine speakers, the audience took to "Pharmaceutical Research" wholeheartedly, and resolved that this most important phase of pharmacy should receive its proper support from now on.

Wilbur L. Scoville, of Detroit, the first speaker, presented the subject in his usual simple, practical style and brought most clearly before his audience the short-comings of pharmacy and the needs of pharmacy in the great world of research.

Dr. George D. Beal, of Urbana, a chemist reared under pharmaceutical influence, followed with an excellent paper on Pharmaceutical Research from a chemist's viewpoint. Dr. Beal called attention particularly to the movement initiated by Dr. Charles H. Hertzy, of the New York Section of the American Chemical Society, for the development of facilities for research on medicinal agents as applied to pharmaceutical chemistry. The inference is drawn that if the American Chemical Society does not come to the rescue, as the sole accredited body of scientists in the country capable of solving such problems, we will be unable to develop such facilities.

Dr. L. V. Redman, President of the Chicago Section of the American Chemical Society, discussed the subject in a very instructive and pleasing way. He recognized the great need for continued constructive research in pharmacy as in all other lines of scientific industry.

Dr. Bernard Fantus, of Chicago, spoke of the great lack of interest among retail druggists regarding all kinds of research, even the

simplest, and deeply regretted that this is so. He strongly endorsed the work of the Research Committee of the A. Ph. A. and urged that this committee coöperate with the American Chemical Society in the proposed institute for research.

Dr. Edward Kremers, of Madison, Wis., in discussing the papers of the evening, said:

"What American pharmacy needs above all is a rebirth of the love for new truths in nature as it found expression in the life of Scheele. Not every pharmacist can hope to discover a new element or a new organic compound, but the vast field is ever open to him who has eyes to see while he is manipulating with his hands, no matter how humble the employment. This spirit is still alive in young men to-day as it was a hundred years or more ago. However, it requires cultivation, but we need not hope to witness a healthy growth in the atmosphere of over-commercialized pharmacy, which has been preached in season and out of season during the past generation, and the fruits of which doctrine we have just reaped during the war when our government refused to recognize pharmacy, as our officials knew it.

"This professional rejuvenescence of pharmacy does not necessarily require a large laboratory, it does not demand an endowment, but is mostly a question of attitude and proper atmosphere. Should the pharmaceutical lad of parts find his way into a commercialized pharmacy, this love for the search of new truths will soon be stifled in the wild chase for the almighty dollar. We cannot hope for a general rebirth of this kind until the practice of both pharmacy and medicine have become greatly restricted so that practitioners of both may be assured of a proper income, for the proper nurture of this spirit demands a relatively carefree mind.

"If on the one hand this general renaissance

of pharmacy can come only with the future, we can take up at once the establishment of special research institutes for highly trained experts and specialists. This, however, demands money, more money, and yet more money. But if we wait until some one endows a million, we shall never get anywhere. Make a beginning, no matter how small, but make a beginning! If the commercialized druggist of to-day may not hope to experience the rebirth which we desire and which pharmacy needs above everything else, he can at least recognize the signs of the times. If he cannot contribute a Liberty bond, he can contribute a war savings stamp without even touching his bank account. To fail to do this is to court inevitable disgrace for our calling.

"The spirit of research is something typically individualistic, though the carrying out of many an important problem of research demands the coöperation of a number of individuals. This spirit is helped but little by committees and resolutions. Committees may have charge of the distribution of funds, if there be any worth distributing, but let us beware lest we substitute administration for research. Let us not waste our time resolving but let us spend the few hours that may be at our disposal in doing.

"What is more, 'do it now!' Let us who can contribute our mites, do so, in order that those who are abundantly able to do more may awaken to the situation and do their share. For a long time American pharmacy has been quite content to receive. This parasitic professional life must come to an end. We must give as well; moreover, we must give as freely as we receive. Then and only then will American pharmacy receive that universal recognition which is due so important a calling."

A letter was read from Dr. H. V. Arny, of New York:

NEW YORK, February 13, 1919.

DEAR PROFESSOR GATHERCOAL:

I am indeed sorry that I cannot be with the Chicago Branch at its meeting of the twenty-first and discuss with you the important subject of Pharmaceutical Research. I know, however, that the subject will be well handled by Messrs. Scoville and Beal and I therefore need only add a few words of comment on my part.

1. Too much research that should be done by pharmacists is being left by us for men outside of pharmacy to do.

2. That valuable side of pharmaceutical research, suggestions coming from retail pharmacists, arising out of their own personal experiences, is growing less, year by year, as comparison of the present literature and the literature twenty-five years ago will show.

3. Pharmacy is that much the poorer because the research spirit is so largely being supplanted by the commercial spirit.

4. If we permit this condition to continue, we will find all of this kind of work being performed by other agencies, such as the American Chemical Society and the American Medical Association.

5. A significant step in this direction is the proposition to establish an institute for research in the chemistry and pharmacology of drugs under the aegis of the American Chemical Society.

6. No greater service can be performed by the American Pharmaceutical Association than to engender the spirit of research, by its JOURNAL, its Year Book, and its newly organized Committee on Research.

7. No greater service can be performed by the Research Committee than to correlate the research efforts of American Pharmacy and to let the world know what American Pharmacy is doing along these lines.

8. No greater service can be performed by the local branches of the A. Ph. A. than to back up the parent organization in this work.

All of which is respectfully submitted by
Yours sincerely,

H. V. ARNY,

Chairman, Research Committee,
American Pharmaceutical Association.

Letters from George M. Beringer, H. M. Whelpley, Charles H. LaWall, A. B. Stevens, Henry Kraemer, J. H. Beal and J. A. Koch were received, expressing much interest in the subject of the meeting and regret at their inability to be present.

E. N. GATHERCOAL,
Secretary.

COLUMBUS.

The February meeting of the Columbus Branch, A. Ph. A., was held in the Chemistry Building, Ohio State University, on the evening of February 12, President Terry presiding.

Following the reading of the minutes of the previous meeting, and a discussion of ways and means of increasing the attendance, the program was taken up.

The State Prohibition Bill elicited much discussion, especially on the statement of the flavoring extract manufacturers that the extracts could not be successfully made without alcohol. Azor Thurston gave his views on the subject and stated that he had successfully made a number of non-alcoholic extracts of the same strength as those now in use and no change would be necessary in the present measurements of extracts for domestic use.

A letter from the A. Ph. A. Committee on Local Branches and a paper by President LaWall on "Shorter Working Hours for Pharmacists" were received and read. The Committee's plan is to send monthly, a four-minute discussion of some live topic to stimulate interest and discussion, and the plan should receive the support of all.

The Branch went on record favoring the introduction into our State Legislature of a Bill preventing aliens from becoming Registered or Assistant Registered Pharmacists. The Secretary was instructed to inform the Legislative Committee of the Ohio State Pharmaceutical Association of the action taken by the Branch.

Mr. Terry gave an interesting and instructive talk on some practical experiments which he had recently carried out. Samples of paregoric were shown, being prepared by the official process and extemporaneously with tincture of opium; a calcium compound of creosote representing approximately 85 percent of creosote and a comparatively stable compound; the generation of hydrogen electrolytically to eliminate the blank experiment on the zinc in arsenic determinations; the modification of milk to prevent unnatural curdling.

Much interest was manifested in these subjects and he was requested to submit the review of his work in the form of papers to be presented to the JOURNAL of the American Pharmaceutical Association for publication.

PHARMACEUTICAL NOTES.*

BY ROBERT WOOD TERRY.

EXTEMPORANEOUSLY PREPARED PAREGORIC.

On several occasions the official formula for this preparation has been modified by using tincture of opium as the source of opium.

Tincture of Opium.....	40.0 mls
Benzoic Acid.....	4.0 grammes
Spirit of Camphor.....	40.0 mls
Spirit of Anise.....	40.0 mls
Glycerin.....	40.0 mls
Alcohol.....	392.0 mls

Distilled Water . . To make . . 1000.0 mls

Mix the alcohol, acid, spirits, glycerin, and then add four hundred and forty-eight mls of distilled water and mix thoroughly, then add the tincture of opium. After the mixture has cooled and the contraction ceased add sufficient distilled water to make the product measure one thousand mls. Filter if necessary.

In practice it has been found best to use 400 mls of alcohol and to reduce the quantity of spirit of anise slightly; this prevents a trace of cloudiness forming which will occur if the alcohol is not of pharmacopoeial strength.

The particular advantage of this procedure is, of course, in the rapidity of production. Another feature worthy of note is the positive assurance that the product contains the correct amount of morphine. In the official process for making paregoric there seems to be little room to argue that the opium would not be completely extracted, yet we have no positive assurance of this unless the finished product is assayed.

The product prepared by the use of tincture of opium will contain the correct amount of morphine, because it is mandatory that this tincture be assayed.

Tincture of opium and the camphorated tincture both contain 46 percent alcohol (absolute by volume); therefore no objection can be raised regarding a change of menstruum.¹

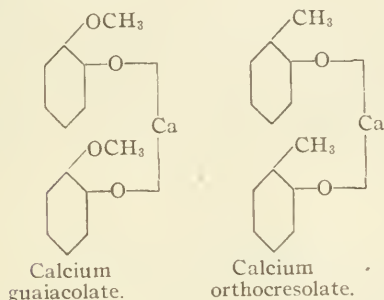
The few samples that have been prepared by this process are identical with those obtained by the official procedure as to color, taste and odor; occasionally, however, a sample is a trace light in color but not noticeable unless compared side by side with the official product.

CALCIUM CREOSOTATE.

This substance has been prepared by the

* February meeting, Columbus Branch, A. Ph. A.

writer by several different methods. It appears to be a mixture of calcium cresolate and calcium guaiaolate in about the proportion of one part of the former to three of the latter; this, of course, depending upon the percentages of these constituents in the creosote used in its manufacture. It will contain not only calcium orthocresolate, but also the meta and para varieties. Theoretically it should contain 85.6 percent of creosote based on the above proportion of cresol and guaicol. Analyses of several samples agree very closely with these figures.



Calcium creosotate is a white, dry, bulky powder having a suggestive odor of creosote and a sharp, somewhat aromatic taste. It is stable in dry air, but slowly decomposes in moist air and in the presence of carbon dioxide forming various colored products. It is slowly soluble in 0.3 percent hydrochloric acid, which liberates the creosote in globules.

The administration of this substance in capsules would appear to be an ideal method of administering creosote; especially since calcium is a synergist of creosote in all its indications.

ELECTROLYTIC ESTIMATION OF ARSENIC.

Considerable difficulty has been experienced by the writer with U. S. P. IX test for arsenic in that it is difficult to secure a sample of zinc that is sufficiently free from arsenic so as not to produce a stain on the mercuric bromide paper large enough to vitiate the results. This difficulty was overcome by modifying the U. S. P. IX method and generating the hydrogen electrolytically. A "side-arm U tube" is used, the lower portion of which contains c. p. concentrated sulphuric acid, which acts as a mechanical separator for the two arms of the tube. In the arm containing the negative electrode, or cathode, is added slowly the sample in a diluted sulphuric acid prepared

according to the directions in the U. S. P. IX except that the stannous chloride solution is omitted. When stannous chloride is added, spongy tin is deposited on the cathode which soon obstructs the free passage of the current. While pouring the sample into the cathode arm of the U-tube, a similar strength of c. p. sulphuric acid is poured into the anode arm to balance the pressure of the sample on the concentrated acid. The electrodes consist of platinum wires attached to copper wires each being sealed in glass tubes in such a manner that only the platinum wire protrudes from the glass. These glass tubes are then passed through one-hole stoppers at the top of the arms of the tube so that all the gases evolved must pass through the side arms. The cathode should be long enough to dip just below the surface of the concentrated acid. Attached, in a vertical position, to the cathode side arm is a purifying train of glass wool, lead acetate paper, lead acetate glass wool and finally the mercuric bromide paper as described in the U. S. P. IX. The source of current is a twelve-cell battery with carbon and zinc electrodes and charged with a fluid consisting of sulphuric acid, sodium dichromate and mercuric sulphate.

No fear of oxidation of the arsenous compounds need be entertained by the formation of persulphuric acid as this substance is only formed at the anode.

No blank stain of arsenic has been produced by this apparatus and by the addition of 2.0 mils of the standard arsenic solution there is produced a distinct stain on the mercuric bromide paper which ceases to increase in intensity after about forty minutes. In each test the current is allowed to flow for one hour.

ADULTERATED COCONUT OIL.

A certain lot of coconut oil behaved in a somewhat peculiar manner upon cooling after being melted. As the oil cooled and while the bulk of it was still liquid, there appeared throughout the liquid numerous large bodies of solids. These were about three-quarters of an inch in diameter, flat on one side and rounded on the other, just like a half-sphere. In the center of the flat side there appeared to be a nucleus with numerous radiations extending to the edge; also a large number of concentric rings about the nucleus. All in all they resembled beef-stearin formations as crystallized from ether and examined microscopically.²

The oil analyzed as follows:

	Sp. G.	Iodine No.	Saponification value.
Sample Examined..	0.9352 @ $\frac{25}{15}$ C.	15.3	255.3
True Coconut Oil..	0.91143 @ $\frac{40}{25}$ C.	8-9.5	258.0

AN ARTIFICIAL STOMACH.

It became necessary in the course of some research work to study the action of the hydrochloric acid of the gastric juice upon milk as taken by an infant. It was necessary that the acid and milk be mixed in a manner identical with the mixing in the stomach. After some experimentation the following apparatus was constructed, which appears to meet all the requirements:

The "stomach" consisted of a three-hole Woulfe-bottle, the center hole containing a centigrade thermometer. Into one of the other two holes is passed a right-angled glass tube; while the other hole contains two right-angled glass tubes. Attached to two of these glass tubes are rubber tubes about a meter and a half in length which are attached to separatory funnels—one to hold the milk and the other the acid solution. The third right-angled glass tube is an air outlet. By a careful adjustment of the stop-cocks of the separatory funnels the flow of the liquids can be regulated as desired.

When in use, all of the apparatus except the funnels is placed in a water-bath heated to such a degree that the internal temperature of the flask is maintained at 38° C.—the average temperature of the stomach during digestion. The rubber tubes are coiled about the flask in the bath so that when the liquids drop into the "stomach" they will have reached the correct temperature. The flow of acid is started before that of the milk, as this occurs in nature. The peristaltic movements of the stomach are simulated in a manner by slowly rotating the flask in the bath.

The object of the experiments was to determine the effect, if any, upon the physical character of the paracasein curds by the various substances used in infant feeding. The results of these experiments may be published at some future date.

1. E. D. Davy, "The Preparation of Tinctures by the Dilution of Fluidextracts," *JOURNAL A. PH. A.*, Feb., 1919.

2. Leach, "Food Inspection and Analysis 1914." Plate XL.

3. Azor Thurston, Dept. Pharm., O. S. U., Columbus, Ohio.

MARCH MEETING.

The March meeting of the Branch was called by President Terry in the Chemistry Building, Ohio State University, March 12.

A paper from the Committee on Local Branches on Compulsory Health Insurance, by E. G. Eberle, was received and discussed. A number of very good points are set forth in the paper and very good reasons advanced why druggists should use every effort to prevent the enactment of Compulsory Health Insurance laws.

The paper of the evening was read by Edward D. Davy on The Preparation of Phenylcinchoninic Acid, and he was asked to submit the paper to the *JOURNAL* for publication.

Mr. Thurston discussed briefly some of his recent work on santal wood oil and its adulterants.

EDWARD D. DAVY,
Secretary.

LUZERNE COUNTY.

The fourth regular meeting of the Luzerne County Branch of the A. Ph. A. was held in the Sterling Hotel Thursday evening, March 13th, with forty-four members present.

A paper prepared by Prof. Charles H. LaWall, on Shorter Working Hours, was read by Mr. Crandall.

Mr. Greenstein, of the Commercial Relations Committee, presented a plan, originated by Mr. Colley of his committee, and worked out by these two gentlemen, for concentrated buying of staples. The plan was approved by the body and referred back to the Committee for completion.

John Lowman presented an instructive paper on the Income and other taxes which affect pharmacists.

Louis Frank, of the Banquet Committee, announced that a banquet will be held Thursday, March 20th, at which time President Charles H. LaWall of the American Pharmaceutical Association will be present.

One candidate, Otto Wendel, was proposed for membership.

J. D. MORGAN,
Secretary.

NASHVILLE.

A special meeting of the Nashville Branch of the American Pharmaceutical Association and the Nashville Drug Club was held in the rooms of the Commercial Club, Thursday afternoon, March 6, for the purpose of discussing the new U. S. Revenue law. D. J.

Kuhn presided, and there were thirty druggists present.

Attorney W. B. Marr, the Counsel of the Nashville Drug Club, gave a very comprehensive outline of the law, showing its application to incomes, proprietary and patent medicines, toilet articles, tobaccos, soda fountain beverages and narcotics.

Charles S. Martin called the attention of those present to the necessity of immediately buying stamps for narcotics and placing them on all narcotics in stock. He also stated that the law required the registration of sales of all preparations containing narcotics that were exempted under the Harrison Law and that a payment of \$1.00 for registration fee was required. He discussed the details of keeping records of all soda fountain sales and said that the Government expected all druggists to become good bookkeepers. S. C. Davis, Ira B. Clark, D. S. Sanders, D. J. Kuhn and others joined in the discussion.

Two methods for keeping track of soda fountain sales were suggested; one, by means of discs representing the values for which soda fountain drinks were sold, these to be put in a box and afterward properly listed. The other suggestion was to have a special cash register for these sales.

S. C. Davis, Ira B. Clark and D. J. Kuhn were named as a committee to study the law and suggest rules and regulations for its enforcement.

Ira B. Clark then spoke of the new Pharmacy bill which will be introduced in the Tennessee Legislature. He called attention to the prerequisite clause and the provision requiring that at least three members of the Examining Board be graduates in pharmacy. On motion the draft of the bill was unanimously approved.

W. R. White offered Resolutions of Respect on the death of the late Dr. J. O. Burge, which were adopted.

The Club re-elected the following officers: D. J. Kuhn, President; Ira B. Clark, 1st Vice-President; C. C. Young, 2nd Vice-President; D. S. Sanders, Treasurer; and W. R. White, Secretary.

WILLIAM R. WHITE,
Secretary.

RESOLUTIONS OF RESPECT.

WHEREAS, The Supreme Ruler of the universe, in His infinite wisdom, has seen fit to remove from the scenes of earth Dr. J. O. Burge, after permitting him to live a useful and lovable life for a little more than three score and ten years; and

WHEREAS, We the members of the Nashville Drug Club and the Nashville Branch of the American Pharmaceutical Association by many years of intimate association with him had found him to be a most kind and courteous gentleman, a thoroughly trained pharmacist, a splendid organizer, a fair and capable presiding officer, a clear and forceful thinker and interesting writer, a true friend and a most loyal and devoted advocate of professional pharmacy, for which he labored unceasingly and sacrificed greatly; therefore be it

Resolved, That we recognize that in his death American Pharmacy has suffered an irreparable loss, Nashville a worthy citizen, his family a loving father and husband, and our associations one of its staunchest, most loyal and efficient members; be it further

Resolved, That a copy of these resolutions be spread upon our minutes and a copy be sent to his sorrowing family, to whom we extend our heartfelt sympathy in this their hour of bereavement.

(Signed) WILLIAM R. WHITE,
D. S. SANDERS,
M. E. HUTTON.
Committee.

NEW ENGLAND.

A joint meeting of the New England Branch of the A. Ph. A. and the Boston association of Retail Druggists was held at the new building of the Massachusetts College of Pharmacy on Thursday evening, March 20, 1919, at which there was a large attendance.

The subject under discussion at the meeting related to the recent changes in the Harrison law; representatives of the United States internal Revenue Office in Boston made addresses and answered many questions asked by members present.

A business meeting and election of officers was held by the Branch, before the joint meeting, and the following officers were elected for the ensuing year: *President*, William H. Glover of Lawrence, Mass.; *Vice-President*, Daniel O. Wolff of Boston, Mass.; *Secretary-Treasurer*, Florin J. Amrhein, Massachusetts College of Pharmacy, Boston, Mass.; and *Council Representative*, Elie H. La Pierre, Cambridge, Mass.

THEODORE J. BRADLEY,
Acting Secretary.

NEW YORK.

The March, 1919, meeting of the New York Branch of the American Pharmaceutical Association was called to order in the lecture hall of the New York College of Pharmacy Building, on Monday evening, the 10th, at 8.15 P.M. In the absence of the President and Vice-President, Dr. Jacob Diner took the chair.

Sixty-one members were present.

Minutes of the preceding meeting were read and approved.

Member of the Council.—Prof. Hostmann brought in no report.

Membership Committee.—The following two applications were received for membership in the Parent Organization:

Edwin C. Steinach, 776 Melrose Ave., N. Y. City.

Chalmers J. Zufall, 641 Washington St., N. Y. City.

Fraternal Relations.—Dr. Lascoff had no report to bring in.

Auditing Committee.—Dr. Diner reported that whatever bills were on hand were paid.

Education and Legislation.—Mr. Kennedy brought in no report.

Communications.—Two "three-minute" letters of the Committee on Local Branches were read by the Secretary. Owing to the general interest of these letters the Secretary was ordered to send copies of same to the other Local Organizations in New York City. Drs. Hostmann, Diner, Diekman and Mr. Rosenberger took part in the discussion.

Resignations were accepted from E. E. Chilson and B. L. Maltbie.

The death of Dr. Joseph Kahn was reported and a committee consisting of Messrs. Mayo, Sher and Blumenkranz was appointed to draw up suitable resolutions.

Scientific Session.

Report of the Committee on Progress of Pharmacy.—Dr. Diekman read a very lengthy report including abstracts on,

New Reaction of Pyramidon.

Oil of Rose Product.

Kelp Experiments.

Photo Developer.

Sulphur Commercial Varieties.

Sol. of Al_2O_3 in NH_3 .

Potassium in Nebraska.

Adult. of Neosalvarsan.

Storing of Sugar.

Bacterial Changes in Urine.

This was accepted with the thanks of the Association.

Dr. J. P. Snyder now gave a talk on the Standardization of Pharmaceuticals. A very interesting discussion followed and a vote of thanks was tendered the speaker.

Under regular procedure the meeting was declared adjourned.

HUGO H. SCHAEFER,
Secretary.

NORTHWESTERN.

The Winter Meeting of the Northwestern Branch of the American Pharmaceutical Association was held jointly with the scientific and practical section of the Minnesota State Pharmaceutical Association in the roof garden of the St. Paul Hotel, St. Paul, Minn., on the afternoon of February 25. Dean F. J. Wulling presided. The program of the meeting is printed on page 243 of the March issue of the JOURNAL A. PH. A.

CHARLES H. ROGERS, *Secretary.*

PHILADELPHIA.

The March meeting of the Philadelphia Branch of the American Pharmaceutical Association was held in The Philadelphia College of Pharmacy, Tuesday evening, March 25th, President McNeary occupying the chair.

The second of the series of "four-minute" papers was read by the secretary. It was written by Editor E. G. Eberle on the subject "Compulsory Health Insurance." The paper was discussed by Messrs. Cook, Boring, Stroup and Hessler. The points brought out were that the general public would derive no material benefit from such legislation but would rather be hindered by the additional taxes imposed and not receive as efficient medical attention because of the contract system of remuneration for physicians and pharmacists; also, the physician and pharmacist would be materially affected to his detriment by legislation of this type.

One new member was elected (Earl K. Eberly, of 1700 Mt. Vernon St.) No committee reports were received excepting that of the Nomination Committee, which was as follows: TO THE OFFICERS AND MEMBERS OF THE PHILADELPHIA BRANCH OF THE AMERICAN PHARMACEUTICAL ASSOCIATION:

Your Nominating Committee appointed at the February meeting have met and beg leave

to offer the following list of nominees for the ensuing year:

For *President*, Ivor Griffith.

For *First Vice-President*, J. W. Ehman.

For *Second Vice-President*, J. K. Thum.

For *Secretary and Treasurer*, Elmer H. Hessler.

Committee on Fraternal Relations, J. R. Minehart, F. E. Stewart, O. W. Osterlund.

Committee on Practical Pharmacy, E. Fullerton Cook, R. C. White, W. W. McNeary.

Committee on Membership, J. C. Peacock, R. Hendrickson, W. L. Cliffe.

We recommend for the ensuing year a Committee on Publicity be appointed, consisting of the President, the Secretary-Treasurer and one other member. This Committee shall prepare notices for all Philadelphia newspapers in advance of the meeting wherever possible and shall attend to the matter of interviewing reporters and other publicity matters of value to the profession and interest to the public.

(Signed) CHAS. H. LAWALL,
E. G. EBERLE,
R. HENDRICKSON.

The entire ticket was unanimously elected and on a motion made by E. G. Eberle, Prof. F. P. Stroup was elected the other member of the Pub-

licity Committee. The suggestion was made that this Committee immediately take steps to challenge distorted and false reports concerning pharmacists which appeared in the daily press. After the installation of the new officers the meeting was transferred to the Special Chemistry Lecture Room where we were given a most interesting lecture and demonstration on Physiological Assaying by Dr. Paul S. Pittenger of the Mulford Laboratories. Dr. Pittenger clearly defined the various terms and phases of the subject and then carried out practical demonstrations on guinea pigs and frogs for Digitalis and on a dog for the blood pressure test for suprarenal extract.

The subject was afterward discussed by Dr. W. A. Pearson and Prof. J. W. Sturmer. Dr. Pittenger was tendered a rising vote of thanks. A light lunch was served, after which the meeting adjourned.

This was the most successful meeting of the year, more than sixty being present. The increasing number of ladies present was noticeable and marks the trend of affairs in scientific matters where a few years ago men alone were concerned.

ELMER H. HESSLER,
Secretary.

COUNCIL BUSINESS

A. PH A. COUNCIL LETTER NO. 13.

PHILADELPHIA, PA., March 14, 1919.

To the Members of the Council:

John Uri Lloyd writes to the Secretary of the Council as follows:

"On my return from California I find your letter concerning the storage of the Proceedings, Year Books, etc., and immediately reply. It disturbed me mightily when the crush of the Influenza necessitated the ware-room space of the publications, but within a very few days we were forced by the increase in the stock of material necessary to care for our business, to utilize every available nook and corner of our ware-rooms and laboratory. Professor Day very kindly united with us, and it was decided that it would be cheaper for the Association to secure a storage place temporarily in Cincinnati, than for Lloyd Brothers to secure a storage place for their crude drugs, and be continually hauling them backwards and forwards to the mill and the laboratory. In this I take it you will also agree.

"Most reluctantly then did we find a disturbance to the very pleasant arrangements

that had been made in the past, but feel assured that the Proceedings are in hands where they will be even more available than with us, and in my opinion where they should be, at the close command of the Secretary.

"Let me hope that you are well, and let me thank you for your kindly letter expressing Professor LaWall's compliments, and let me hope that you will express to the Council our gratification at the kindly manner in which they united with us in the emergency that no one could have foreseen.

"The personal time necessary to the care and invoicing of these publications was most gladly contributed by me. No account was kept of expenses, which were as cheerfully donated."

The Committee on Program, consisting of the General Secretary, the Local Secretary and the Secretary of the Council, recommend that the time for holding the next annual meeting of the American Pharmaceutical Association be made the week beginning August 25, 1919. The Hotel Pennsylvania will be the headquarters.

Motion No. 17 (Time of Holding 57th Annual Meeting of the American Pharmaceutical Association). Moved by Hugo H. Schaefer, seconded by J. W. England, that the 57th annual meeting of the American Pharmaceutical Association be held during the week beginning August 25, 1919.

The Committee on Program present the following tentative program for the 57th annual meeting for the week beginning August 25, 1919:

TENTATIVE PROGRAM FOR 57TH ANNUAL MEETING.

Monday.

- 9.30 A.M. National Association Boards of Pharmacy.
- 2.00 P.M. National Association Boards of Pharmacy.
- American Conference of Pharmaceutical Faculties.
- 8.00 P.M. National Association Boards of Pharmacy.
- American Conference of Pharmaceutical Faculties.

Tuesday.

- 9.00 A.M. Council Meeting.
- National Association Boards of Pharmacy.
- American Conference of Pharmaceutical Faculties.
- 3.00 P.M. First General Session of Association.
- Committee on Nominations.
- 7.00 P.M. Joint Session of National Association Boards of Pharmacy.
- American Conference of Pharmaceutical Faculties and Section on Education and Legislation.

Wednesday.

- 9.30 A.M. Section on Education and Legislation, second session.

Section on Practical Pharmacy and Dispensing, first session.

- 10.30 A.M. House of Delegates, first session.
- Afternoon devoted to Entertainment.
- 7.30 P.M. Council meeting, second session.
- 9.30 P.M. President's Reception.

Thursday.

- 9.30 A.M. Commercial Section, first session.
- Historical Section, first session.
- Scientific Section, first session.
- 10.30 A.M. Women's Section, first session.
- 12.00 Noon Alumni Luncheon.
- 1.30 P.M. House of Delegates, second session.
- 2.30 P.M. Scientific Section, second session.
- Section on Practical Pharmacy and Dispensing, second session.
- 4.30 P.M. Council Meeting, third session.
- 8.00 P.M. Second General Session of Association.

Friday.

- 9.00 A.M. All day Boat Ride.
- 10.00 A.M. Scientific Section, third session (session on boat).
- Commercial Section, second session (session on boat).
- 11.00 A.M. Women's Section, second session (session on boat).
- 3.00 P.M. Historical Section. Address by Dr. Henry M. Whelpley.
- 7.00 P.M. Council Meeting, fourth session.
- 8.30 P.M. Banquet.

Saturday.

- 9.00 A.M. Council Meeting, fifth session.
- 10.00 A.M. Final General Session of Association.
- 1.30 P.M. Luncheon.
- 3.00 P.M. Seeing downtown New York.
- Comments and suggestions invited.

(To be continued).

CORRESPONDENCE

PHARMACISTS IN THE WAR.

Although pharmacists are an educated class and a large proportion of them are the equal in education, training and accomplishments of members of other educated groups and although by their training they are able to give a highly specialized and responsible medical service, their service as a profession organized into a corps was not employed as such in the Army, contrary to the recognized group or corps employment of physicians, dentists, veterinarians and others.

They were, nevertheless, unselfish and patriotic enough to give themselves unreservedly to their country in the time of its peril. As loyal American citizens they gave their service and many their lives as patriots. They were and are patriots first and this is as it should be. When the complete history of the great war will have been written, it will appear more clearly than even now that pharmacists in the army and in the navy gave not only unselfish and valuable, but heroic service.

In a most interesting and informative book just published by the house of Doubleday, Page & Company, entitled "With the Help of God and a Few Marines," and written by Brigadier General A. W. Catlin, U. S. M. C. (who commanded the Sixth Regiment of the Marines at Chateau Thierry), with the collaboration of Walter A. Dyer, and which gives the story of the great fight at Chateau Thierry when the U. S. Marines with American Infantry brought about the turning point in the war, prominent mention is made of the citations for valour in action in the battle of Belleau Wood of a number of pharmacists in the marine service. For the information of pharmacists at large, I quote the following from the book mentioned:

"CITED FOR VALOUR IN ACTION

HEADQUARTERS SECOND DIVISION,
AMERICAN EXPEDITIONARY FORCES,
FRANCE, July 5, 1918.

GENERAL ORDERS

No. 40.

1. The names of and the deeds performed by the following named officers and enlisted men of this division are published as being well worthy of emulation and praise:

(Page 356.) Pharmacist Mate Charles B. Roberts, U. S. N., 8th Company, Marines; showed extraordinary heroism under heavy machine gun fire, volunteering to cross open field to bring in wounded who were calling for help, on the night of June 7th, 1918.

(Page 366.) Hospital Apprentice Glenon, U. S. N., 18th Company, 5th Marines, displayed greatest zeal, bravery and efficiency in attending the wounded during the enemy attack of June 7-8-9, and when he worked continuously for two nights and days under heavy shellfire.

(Page 378.) Pharmacist Mate, 3rd Class, Oscar S. Goodwin, U. S. N., 6th Marines, at the imminent risk of his life, under shell and machine gun fire, was instrumental in removing the Regimental Commander when he was struck down by a sniper's bullet early in the operations which resulted in the capture and occupation of our objective on the 6th of June, 1918. This man helped to remove the Regimental Commander from further danger regardless of the fire sweeping the point where he fell, meeting a sudden crisis promptly and completely.

(Page 383.) Hospital Apprentice, 1st Class, John E. Justice, U. S. N., Hospital Corps, 6th Marines:

Pharmacist Mate, 3rd Class, John H. Balch, U. S. N., Hospital Corps, 6th Marines:

The two men above named were conspicuous for their coolness and the value of their work under shellfire, evacuating wounded men at the risk of their lives, during our attack upon the enemy on the night of the 6th of June.

(Page 398.) Pharmacist Mate, 2nd Class, Clifford Whistler, Hospital Corps, U. S. N., attached to Company E, 6th Marines, repeatedly gave aid to the wounded while under artillery fire. This between the 2nd and 9th of June, 1918.

(Page 400.) Pharmacist Mate, 1st Class, Percy V. Templeton, U. S. N., 6th Marines, during extremely heavy shellfire, this man carried wounded for several hours, loading them into ambulances, assuring their safety at the risk of death to himself. This on the 10th of June, 1918.

(Page 400.) Pharmacist Mate, 1st Class, Emmet C. Smith, U. S. N., 6th Marines. In the course of operations which resulted in the capture of a town from the enemy, this man dressed and evacuated wounded from a wheat field swept by heavy artillery and machine gun barrage. At a time when the losses threatened to prevent the success of the operation, the heroic conduct of this man steadied the line and spurred the attacking platoons on through the barrage fire. This on the 8th of June, 1918.

(Page 401.) Chief Pharmacist Mate, George G. Strott, U. S. N., 6th Marines, rendered valuable services as chief aid at the Regimental Aid Station in the care and evacuating of many wounded from the 1st to the 10th of June. Although at times under heavy bombardment he

performed his labours without faltering, and by rare fidelity to duty preserved accurate record of all officers and men of the various organizations which passed through the aid station. He showed himself a courageous and faithful man.

(Page 407.) Pharmacist Mate, 3rd Class, John Q. Williams, Hospital Corps, U. S. N., 3rd Battalion, 6th Marines, rendered conspicuous service in attending the wounded on the field under heavy machine gun fire. This on the 6th of June, 1918.

(Page 407.) Hospital Apprentice, 1st Class, William B. Evans, Hospital Corps, U. S. N., Company M, 6th Marines, showed rare devotion to duty and courage in caring for the wounded under fire in the capture of a town by our forces. This on the 6th of June, 1918.

(Page 421.) Hospital Apprentice, 1st Class, Hershel I. Converse, U. S. N., 6th Machine Gun Battalion:

Hospital Apprentice, 1st Class, Lloyd H. Fenno, U. S. N., 6th Machine Gun Battalion:

Hospital Apprentice, 1st Class, Charles W. Bateman, U. S. N., 6th Machine Gun Battalion:

Pharmacist Mate, 3rd Class, William C. Graham, U. S. N., 6th Machine Gun Battalion:

(Page 422.) Pharmacist Mate, 3rd Class, Milton C. Olson, U. S. N., 6th Machine Gun Battalion:

The five men above named showed commendable bravery and diligence under fire, particularly Private Converse, who completed the first aid treatment of a wounded man after being wounded himself."

It may be pardoned if the citations of the following are included in this quotation:

"1st Lieutenant Albert P. Baston, 17th Company, 5th Marines:" (A Minneapolis and University of Minnesota man of athletic fame.—F. J. W.)

"Although shot and wounded in both legs by machine gun fire, after leading his platoon through the woods on June 6th, he refused to go to the rear until after personally seeing that every man in his platoon was under cover and in good firing position.

"2nd Lieutenant Bernhardt Gissell, U. S. R., 17th Company, 5th Marines:" (My brother-in-law and one of Mrs. Wulling's three brothers in service.)

"He has shown high qualities of leadership and personal bravery in command of his platoon and led them under heavy shellfire in repulsing a counter-attack of the enemy, June 6th."

At the conclusion of the citations occurs the following on page 425 of the book mentioned:

"By Command of Major General Bundy:

Preston Brown,

Colonel, General Staff,

Chief of Staff.

OFFICIAL:

WILLIAM W. BESSELL,

Adjutant General,

Adjutant.

The above is an extract copy of G. O. 40, Second Division, A. E. F., in so far as it refers to Marine officers and Marines, and is reprinted by authority of Headquarters, Marine Corps."

The above citations refer to action in the battle of Belleau Woods, Chateau Thierry.

It may not be amiss to mention here, that although not cited, another pharmacist, Francis A. Tuttle, H. A. 1st Class, 6th Regiment, Marine Corps, of Minneapolis, and a sophomore pharmacy student in the four-year course of the College of Pharmacy, University of Minnesota, was engaged in the battle of Belleau Wood and was wounded in the forehead during action and gassed, necessitating his confinement for five months in Base Hospital No. 30, at Royat, France. Mr. Tuttle has wholly recovered his health and expects to be discharged soon and to resume his college work.

The following graduates of the College of Pharmacy of the University of Minnesota have made the supreme sacrifice: namely, Milton G. Giese, '14, Menomonie, Wis.; Lloyd H. Scott, '16, Eden Valley, Minn.; Hugh M. Watson, '13, St. Charles, Minn.; while I am not advised, doubtless there are others whose names should be included.

It is sincerely hoped that anyone who finds references similar to the above, relating to the heroic services of pharmacists in the army, will communicate them to the profession through the pharmaceutical press.

FREDERICK J. WULLING.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Committee on Publication: J. W. ENGLAND, *Chairman*; G. M. BERINGER, CASWELL A. MAYO, H. B. MASON, E. L. NEWCOMB, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on Progress of Pharmacy, *ex-officio*.

THE POSSIBILITIES AND OPPORTUNITIES OF AMERICAN PHARMACEUTICAL ASSOCIATION BRANCHES.

The opportunities of an association are seldom, if ever, fully comprehended by individuals. Organizations are formed, and not infrequently before they have passed the first year of existence the interest of the members lags, for some reason or other. This is generally due to the fact that the energy and enthusiasm are centered on the first few meetings instead of mapping out a program of action for a longer period.

There is lack of understanding of many laws that apply to the drug business. Discussion among the members is helpful, and there is the further opportunity of having a lawyer or official explain obscure points before an interested organization.

It is unfortunate that legislators seldom seek information of those they legislate for; they have their hobbies and their views of reforms and necessary legislation. Druggists do not often come into personal contact with legislators, unless they are members of legislative committees of their associations, and then they are usually included among lobbyists. The monthly meetings offer the opportunity of having legislators, or, better, prospective legislators, address the association and exchange viewpoints. By proper arrangement it is possible to have every member of the State Legislature meet druggists in their respective districts, whereby their attitude may be changed toward druggists and their business.

The thought of the foregoing paragraph is applicable to the relation with medical associations. Not infrequently the regard of competitors for one another is decidedly changed by acquaintance. "If I knew you and you knew me" has frequently been quoted. And knowing one another has often improved business relations and conditions. Not long ago a branch of the American Pharmaceutical Association was organized which brought about an agreement for shorter business hours, and this alone was considered worth the undertaking.

The revisions of the Pharmacopoeia and National Formulary now occupy the attention of the revisers, and will for a number of years to come. All pharmacists are interested in these standards, and their assistance is sought for the revisions. This offers subjects for each meeting, and it is this work aside from the duty of sharing in that of the American Pharmaceutical Association, which has prompted the superscription of this note. Pharmacists of the smaller cities may contend that branches are for the larger cities, but this is a misapprehension; it will be found that the members of the smaller branches derive as much or more benefit than those of the larger ones. There were a few members of the American Pharmaceutical Association in Wilkes-Barre before the Luzerne County Branch was organized; now this city has 100 percent membership. There are many other cities of like population that can do as well.

While local associations can accomplish much of that which has been suggested, the possibilities and opportunities are enlarged by national affiliation. The American Pharmaceutical Association seeks to aid the druggists, and in no sense confines its work solely to scientific subjects, as evidenced by its Scientific Section, and the Sections on Practical Pharmacy and Dispensing, Commercial Interests, Women's Section, Historical Pharmacy, Education and Legislation. The message is to enlist your interest in the organization of Local Branches of the American Pharmaceutical Association.

INCONSISTENCIES IN LEGISLATION AND PROMULGATION OF REGULATIONS.

The tendency toward paternalism, and legislation that is intended to enforce right living, is becoming more pronounced. Whether this will make better citizens remains a question for time to answer. The youth have been neglected in so far as impressing upon them their possibilities, limitations and tendencies, their deficiencies, weaknesses, and the results of transgression are concerned. Many pitfalls would have been avoided if these

matters had been understood by them in earlier years. Parents consider that they have done their duty without giving their children an understanding of why they should be moral, temperate, frugal, etc. True, they speak of these subjects but they fail to impress them sufficiently, and the superficial information is little more than an incentive to investigate, and then they pay for their experience, which experience, as H. Addington Bruce says, has again and again shown that a man may be an intellectual giant, yet fail as a member of society because of personal trends and desires which he has not been taught to control and overcome—which he has not even been taught to recognize as present in him.

Thus an uncontrolled trend to self-centeredness has made many a man of highly trained intellect a menace to his fellow beings. It has caused nervous wreckage in many another. It has led still other men through the gateway of insanity.

Moral cowardice, unchecked and unrecognized, is another prolific source of human failure and misery from which the intellectual are not exempt. The duty of parents, schools and colleges is to help the young to escape pitfalls like these no less than to attain mental vigor.

These remarks may seem distant from the subject but they are not; present laws are largely for the purpose of correcting the defects of training and attempts to make temptations impossible, and this can not be done; the thing is, the building of character. In this generation the children and students have too generally controlled the parents and directed the teachers.

With reference to the other subject, we cite recent attempts at rulings, decisions and statements by authorities. It has been under consideration by the Internal Revenue Department to tax the entire quantity of a preparation containing narcotics in exempted amount. Since the foregoing was written it has been decided that the exemptions of Section 6 of the Harrison law hold, but preparations containing narcotics in excess of such exemptions are taxed on the basis of 1 cent per ounce or fraction thereof. The stamp tax became effective February 25th and narcotic preparations of latter class must be stamped, unless in stock prior to that date. The latter must have a label affixed with the words, "In stock, inventory February 25th."

Relative to legislation on alcoholic prepara-

tions a comprehensive article would require many pages, but the purpose of this writing is to point out the arbitrariness of rulings. There is no definition of an intoxicating beverage in the war-time prohibition law. The Internal Revenue Bureau has assumed the power to make a definition of its own and it has ruled that a beverage containing more than one-half percent of alcohol is intoxicating. The question at issue is not whether a certain content makes a beverage intoxicating, but whether a bureau has the right to fix an arbitrary limit in the absence of any definite authority of law. In the Customs Department provision is made for an appeal from rulings but in some other departments officials set up their own judgment on the meaning of the law and have supplied out of their own consciousness all omissions made by Congress.

In Nashville, Judge J. D. B. DeBow has decided, and he is sustained by the Tennessee Supreme Court, that denatured alcohol can not be sold, unless "it is made so poisonous that to drink it means death." All, because some are able to withstand the immediate destructive effects of alcohol, denatured by the addition of methyl alcohol.

THE EFFECT OF THE DISCONTINUANCE OF THE SALE OF ALCOHOLIC BEVERAGES ON ILLEGAL DRUG TRAFFIC.

Louis Zeh, Secretary of the California State Board of Pharmacy, recently appeared before the sub-committee on legal service of the main legislative committee on efficiency and economy, and advised that the Board would need additional legal service when prohibition becomes effective. He showed that in the dry districts of California there is a steady increase in the number of prosecutions for the sale of narcotics, while the reverse is true in the districts where the licensed saloons are maintained. He produced figures to show that during the past nine years prosecutions of this kind had steadily decreased at San Francisco, notwithstanding an enormous increase in population; whereas in Los Angeles there has been a steady increase since saloons were eliminated there.—*Drug and Chemical Markets.*

THE QUESTION OF MILITARY RANK.

Pharmacists have been contending for rank for pharmacists in the Army and Navy. The need of this to assure best service has often

been denied. It is evident, however, to the unbiased that there can not be the most serviceable coöperation between medical men and pharmacists unless there is a degree of rank given to the latter, and the soldier is entitled to the best service; less is an injustice.

Prof. W. O. Stevens, U. S. Naval Academy, writing in a recent issue of the *Atlantic Monthly*, speaks of a British officer who was dismissed from service because of the "horrible crime" of having a sergeant dine with him. We quote in part: "The poor fellow (the officer) had grown so desperately lonely in that forsaken spot, that he summoned his sergeant and, after pledging the man to secrecy, asked him to dinner. Some time after, while in liquor, the sergeant boasted of his distinction. The matter was investigated, the subaltern was proved guilty of the horrible crime, and dismissed from the service. When I heard the story, I could not understand what there was so awful about the young officer's conduct, but was ashamed to betray the fact by asking questions. In later years, coming in contact with the military, I was given to understand that, while democracy may be all very well in politics, it has no place in the army or navy."

DRUG RESEARCH PLAN DISCUSSED IN ENGLAND.

The Chemist and Druggist, in discussing plans for drug research, states that there are distinct advantages attached to an independent institution which can work at drug problems apart from financial interests, and it is here

that the pharmaceutical institute would score. The field is, however, broad enough for both classes of research laboratories, and there are ample opportunities in the work to satisfy both the scientist and the investor. The work need not be confined, the article further states, to synthetic drugs; there is a vast field of study in plant substances upon which comparatively little modern work has been done. Many plants employed in medicine have not yielded up the secrets of their curative action. The study of drugs is a most promising one, and if it became the function of a research laboratory connected with pharmacy it would increase the reputation of pharmacy as a science.

ACACIA ADDED TO SALT SOLUTION TO GIVE GREATER VISCOSITY.

Professor Bayliss, the English physiologist, suggested the addition of acacia to salt solutions for injection in cases of shell-shock. Experience proved that the salt solution should have greater viscosity, and after considerable experimentation the selection was made of acacia, and has proven highly satisfactory. The *British Medical Journal* is convinced that many shell-shock patients of the war were saved who, without the injection of salt solution, with acacia, would certainly have died of the original injury or of the necessary subsequent operation, and comments "that medicine owes physiology a debt great beyond estimation. The debt mounts up, and this use of gum arabic is not, we think, the least of the items composing it."

OBITUARY.

JOHN FRANKLIN PATTON.

John F. Patton, president of the American Pharmaceutical Association, 1900, died March 17, 1919, after an illness of only a few hours.

The deceased was born in Lower Windsor Township, York County, Penna., December 15, 1839, the son of Ebenezer and Rebecca (Smith) Patton.

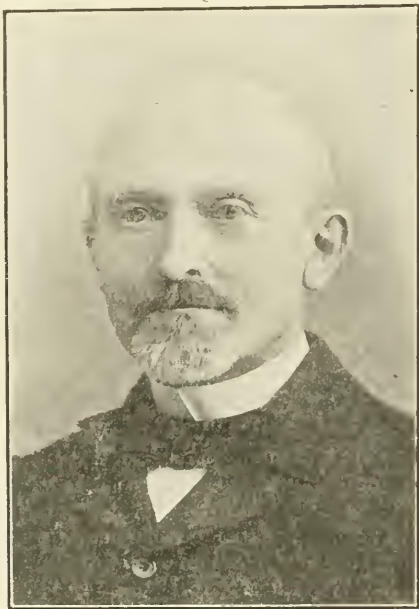
John F. Patton received his early education in the schools of York County. In 1853 he located in York and three years later entered the drug store of Dr. Jacob Hay, Sr. In 1859 he engaged with Thomsen and Block, wholesale druggists, in Baltimore, and remained with them until 1866.

In 1869 he engaged in the drug business in York, Pa., on his own account, in a building

on the site of his present store. In 1873 a flood destroyed the two drug stores owned by him. At this time Mr. Patton had already started the erection of a new building, still occupied by the City Drug Store, of which he was proprietor, and here he continued in business until the day of his death.

Mr. Patton was a frequent attendant at the annual conventions of the American Pharmaceutical Association. He endeared himself to all who knew him by his genial disposition and good fellowship, and was familiarly known to his friends as "Uncle John." He served as president of the Pennsylvania Pharmaceutical Association in 1891, and at various times held important offices in both this organization and the American Pharma-

ceutical Association, serving in the Council of the latter from 1902 to 1905.



JOHN F. PATTON

Mr. Patton never married. He is survived by two sisters, Mrs. Charles B. Allen, of York, Pa., and Mrs. Eliza Arnold, of Delta, Pa. He was a member of the Lutheran church. The interment was made in Fairview Cemetery at Wrightsville.

His was a ripe and mellow old age. He had not become decrepit or superannuated. Until his death he was quick and alert in action, of unimpaired intellect, hale, hearty and cheerful.

JOSEPH KAHN.

Joseph Kahn, Instructor in Chemistry at the Brooklyn College of Pharmacy for the past fifteen years, died March 3rd in the library of the college. Professor Kahn had been suffering from heart trouble for several years and his death, though sudden, was not wholly unexpected.

He was 47 years of age, and came to Brooklyn as a boy. After completing his common

school education he entered the Brooklyn College of Pharmacy, from which he graduated in 1897; thereafter he took a post-graduate course in chemistry, receiving the degree of Doctor of Pharmacy. He was elected instructor in chemistry in his Alma Mater, and later Professor of Pharmaceutical Chemistry.

Professor Kahn was held in high esteem by all with whom he came in contact, and was a frequent contributor to pharmaceutical literature. He was a member of the New York Pharmaceutical Association, and joined the American Pharmaceutical Association in 1915. He also held membership in a number of other chemical and pharmaceutical bodies.

He specialized in analytical chemistry and research work and his annual addresses at the meetings of the New York State Pharmaceutical Association were always most interesting and instructive and looked forward to by the members as a decided treat.



JOSEPH KAHN

Professor Kahn never married. He is survived by his parents and a brother, who reside in Russia.

SOCIETIES AND COLLEGES.

SECTION ON EDUCATION AND LEGISLATION, AMERICAN PHARMACEUTICAL ASSOCIATION.

Chairman Wortley F. Rudd, of the Section on Education and Legislation, A. Ph. A., is

actively at work with the other officers of the Section on the preparation of the program for the New York meeting. It is contemplated to devote one session of the Section to U. S. P. revision considerations, probably as

a symposium. It is hoped that these discussions will be helpful in planning for the work of the Pharmacopoeial Convention. This by no means will interfere with other subjects and contributors are requested to send in their papers as early as possible.

The other Section officers are likewise at work and contributions are solicited by them. The papers should be typewritten, double space between lines. An abstract should accompany all papers, especially those requiring more than ten minutes for reading. The names of the Section officers, with addresses, will be found on page 69 of the January issue of the *JOURNAL A. PH. A.* Papers should be in the hands of the chairman not later than July 15; when this is impossible, the title of the contribution and, if possible, an abstract of the paper, should be sent in. This will insure their inclusion in the program of the Section.

AMERICAN DRUG MANUFACTURERS' MEETING.

The annual meeting of the American Drug Manufacturers' Association was held at the Waldorf-Astoria, New York City, March 24-27. Monday was given over to the Committee on Standards; Tuesday to the Biological Section and an address in the afternoon by Chairman Charles H. LaWall of the U. S. P. Revision Committee. Wednesday and Thursday were devoted to business sessions, including a special trade-mark address on Wednesday by Henry Thompson, of Boston. The entertainments included luncheons; an address, Tuesday evening, by Signaler Tom Skeyhill, the soldier poet; a banquet on Thursday evening, on which occasion Hon. James W. Gerard, Hon. Job Hedges and Police Commissioner Richard Enright were the speakers.

The association strongly protested and passed a resolution against the persistent efforts being made to eliminate patent products and to effect the compulsory workings or the compulsory licensing of patents. In brief, the body reaffirmed its opposition against all patent, copyright or trade-mark legislation discriminating against inventors and discoverers in the fields of medicine, pharmacy and chemistry.

The officers elected for the ensuing year are: *President*, R. C. Stofer, Norwich, N. Y.; *Vice Presidents*, Dr. Frederick B. Kilmer, New Brunswick, N. J.; William Ohliger, Detroit, and Burton T. Bush, New York; *Treasurer*, Frank Black, New York; *Secretary*, W. J.

Woodruff, Detroit. W. A. Sailer, Baltimore, and James E. Bartlett, Detroit, were elected members of the Executive Committee, and Charles M. Woodruff, Detroit, chairman of the Legislative Committee.

NATIONAL WHOLESALE DRUGGISTS' ASSOCIATION CHANGES DATE OF ANNUAL CONVENTION.

The forty-fifth annual convention of the National Wholesale Druggists' Association will be held at New Orleans, beginning the week of November 3. The meeting will cover a period of four days, ending November 7.

This date is two weeks earlier than that originally announced, the change being necessitated by inability to secure adequate hotel accommodations for the time previously selected.

IOWA STATE PHARMACEUTICAL ASSOCIATION MEETING.

The mid-winter meeting of the Iowa Pharmaceutical Association, held at Des Moines, February 18-19, proved to be one of the most interesting as well as one of the best attended conventions in the history of the Association.

The president's message was in keeping with the record that President Watts established at the Ft. Dodge convention, and contained valuable recommendations for the future guidance of the association. Practically every one of the suggestions made in the address was adopted by the Advisory Board and later on by the convention.

George Judisch, of Ames, gave a talk on the future of pharmacy and also explained the work of the U. S. Pharmacopoeial Convention to be held in 1920.

Prof. Kuever gave a very interesting account of his experiences in the service and emphasized the necessity for all pharmacists to get behind the movement to secure proper recognition for pharmacy in the army.

The following officers were elected for the ensuing year: *President*, A. C. Phillip, Manchester; *First Vice-President*, H. F. Jones, Clarinda; *Second Vice-President*, George Judisch, Ames; *Third Vice-President*, M. B. Herrold, Boone; *Treasurer*, J. M. Lindly, Winfield; *Secretary*, A. Falkenhainer, Algona. T. M. Watts, of Holstein, was elected a member of the executive committee for three years.

The next meeting place of the convention will be in Cedar Rapids some time during the month of June in 1920.

THE PHARMACIST AND THE LAW.

MERCHANTS' ASSOCIATION OF NEW
YORK OPPOSES REGULATION
CALLING FOR ADDITIONAL
RECORDS IN THE SALE OF
ALCOHOL-CONTAINING
MEDICINES.

In accordance with the action taken upon the report made by its Committee on Commercial Law, the New York Merchants' Association has written to the public health committees of the Legislature opposing a bill compelling additional records to be kept by manufacturers of medical preparations, druggists and physicians.

The letter which was sent to Albany by the association sets forth the opposition to this bill is as follows:

SALE AND DISTRIBUTION OF PATENT MEDICINES.

Sen. Int. No. 372, Pr. 383

(Mr. Dowling)

Assem. Int. No. 552, Pr. 574

(E. A. Smith)

"The purpose of this bill is so to amend the public health law as to make subject to the provisions of the narcotic drugs act of 1918 all proprietary medicines containing alcohol in excess of one-half of one percent.

"The provisions of the narcotic drugs act are intentionally and properly very drastic in order that the unwarranted sale of harmful drugs shall be made very difficult. It cannot reasonably be contended that proprietary medicines containing a small percentage of alcohol are equally harmful to the community with such drugs as opium and its derivatives, cocaine, etc., and it is therefore unreasonable and unnecessary that such proprietary medicines be subjected to conditions which, in many instances, will exclude them from sale and thereby prevent their manufacture.

"While undoubtedly proprietary medicines which contain a large and harmful percentage of alcohol should be subjected to proper restriction, it is absurd to contend that the maximum alcohol content should be made so low as to exclude from use a wide range of very useful household remedies which cannot be compounded without a much greater content of alcohol than that limited by this proposed law.

"Under the terms of this proposed act the shelf sale of such medicines would be made impracticable and they could only be used under a physician's prescription with the attend-

ant complex and drastic restrictions as to registration and reporting.

"A very wide range of proprietary medicines find their chief outlet through drug stores, and being well known household remedies, are obtained without physicians' prescriptions. The sale of remedies of this class would almost entirely cease, as relatively few of their users would resort to them if a prescription were necessary. Very severe and, as we believe, unnecessary injury would be inflicted upon numerous manufacturers of proprietary medicines, in which class are to be found nearly all manufacturers of pharmaceutical products and many wholesale druggists.

"We believe that this bill should not become law and earnestly urge that it be disapproved by your committee."

REVENUE LAW OF 1918.

The authors of the new narcotic law declined coöperation with every branch of the drug trade. As a result, the terms are vague, ambiguous and in some instances contradictory. The Internal Revenue Bureau is actively at work in the promulgation of the provisions. However, the work involved will likely not permit them to issue the regulations until about May 1st. Dealers were instructed to register on or before March 25th and to render a complete inventory of narcotics; this was impossible in many instances, and it is stated that the collectors have been instructed to be lenient.

It may be that under a strict ruling of the law some dealers will be required to pay several registration taxes. The decision will be based on the interpretation of the following provisions of the law:

"Every person who sells or offers for sale any of said drugs in the original stamped packages" shall be deemed a wholesale dealer, and "Every person who sells or dispenses from original stamped packages" shall be deemed a retail dealer.

The same exemptions from the tax as provided in Section 6 of the Harrison Law are included in the new law, but a record of the sales must be kept in a manner prescribed by the Commissioner of Internal Revenue, and until these instructions have been given a record of all sales since February 25th must be made. Wholesalers and retailers will not be required to stamp stocks of goods on hand, but manufacturers must stamp all the goods

they sell hereafter. A confusion is liable to arise as the result of stamped and unstamped goods, but no authority has been found in the law for requiring the stamping of such stocks.

A provision of the law has been freely discussed, but no decision has been reached at this writing, which provides that there shall be levied, assessed, collected and paid a tax at the rate of 1 cent per ounce on narcotics or preparations thereof. One construction would require that a tax of 1 cent be paid on every ounce of preparation,* and another that the tax be collected on the amount of narcotic contained.

It is possible that under a rendition of the law the same goods may be taxed a number of times, first as the original package, then as sold by wholesalers, and again when sold at retail.

Deputy Commissioner B. C. Keith has ruled that when beef, wine and iron is sold that has been made in conformity with the National Formulary it need not bear the label indicating that it is made with non-beverage alcohol, as required for elixirs, etc., that are largely used as vehicles.

WILLARD HUNTINGDON WRIGHT SAYS DRUG ADDICTS NEED MEDICAL ATTENTION NOT MORAL INSTRUCTION.

Our attitude toward the victim of the drug-habit is still strongly modified by what Willard Huntingdon Wright calls "literary superstition." In an article contributed to *The Medical Review of Reviews*, Mr. Wright accuses even the medical profession of being actuated, in their treatment of those addicted to narcotics, by both "puritanism and imaginative literature."

Drug addiction is a disease, he states, and continues further, "that the fact of being self-imposed does not alter its status any more than self-imposed indigestion changes the character of dyspepsia. And until doctors so regard it there will be little success in its treatment. Just so long as the drug habit is approached socially or morally, just so long will it evade being conquered.

"A wholly impersonal and scientific attitude is indeed difficult under the present circumstances, and I do not wish these remarks

to be considered as malignantly critical of those men who are now working along this line. They are confronted by many obstacles and difficulties—by public opinion, by apathy in the very profession to which they should look for assistance, by generations of false conceptions, by a miasma of unreasoning puritanism which tends to obscure the unsentimental truth, by hasty and ex-cathedra legislation, by a colossal mass of literary superstitions, and by the contradicting and deceiving evidence which the subject itself presents."

The author regards the "tapering-off" method as the logical one for the cure of the habit, and he devotes several pages to his reasons for such conviction. He says here, among other things:

"It is essential in the treatment and cure of narcotic drug addicts that there should exist a conscientious and earnest desire to be free of the drug; and this desire can be and often is created in the patient by giving him a clear understanding of the fatal effects upon his body by his continuing to use the drug, and also by impressing upon him the fact that a cure is not painful. The average drug addict shrinks from a cure because of the suffering he imagines to be connected with it, and which actually does accompany it when the physician is ignorant of the proper methods."

INDIANA HAS A PREREQUISITE LAW.

Indiana is now among the states having a prerequisite law. In a letter Prof. C. B. Jordan, who has been active in bringing about this legislation, states that Section 4 was a compromise. The amendment was introduced and for Indiana pharmacists to oppose it might have brought about a defeat of the bill. A reading of the Section referred to does not indicate that many will avail themselves of its provision. The law reads:

Section 1. Be it enacted by the General Assembly of the State of Indiana, that on and after the first day of January, 1920, no person shall be eligible to take the examination to become a registered pharmacist until such person shall have produced and filed such evidence as is satisfactory to the board of pharmacy that he has graduated from a school of pharmacy of good standing, as herein provided.

* Since this writing the decision has been reached to tax the volume of preparation containing the narcotic.

Section 2. A school of pharmacy in good standing as provided for in this act is hereby defined as one that meets the following requirements:

1. No school of pharmacy shall be considered in good standing unless the students on entering such schools are required to present evidence of the satisfactory completion of two (2) full years' work in a commissioned high school, or its equivalent, to be determined to the satisfaction of the Indiana Board of Pharmacy.

2. The instruction in a school of pharmacy of good standing shall cover a period of not less than fifty weeks (50), occupying two (2) school years, and at least two (2) months shall elapse between these school years. Each school year shall cover at least two hundred fifty (250) hours of class room instruction and three hundred fifty (350) hours of laboratory practice, which shall include the work outlined in the latest edition of the Pharmaceutical Syllabus.

Section 3.—This act shall not apply to any person who is a registered assistant pharmacist or a registered apprentice pharmacist at the time that this bill shall become a law.

Section 4. Nothing in this act shall be construed to prevent persons from selling and compounding drugs who have been in con-

tinuous employment as unregistered assistant pharmacists, unregistered prescription clerks, or as owners of drug stores actively and continuously engaged as such, for ten years continuously, prior to July 1, 1919, and whose stores have been continuously located in a city, or town, or village of less than three thousand inhabitants for ten years prior to July 1, 1919, who have complied with the following requirements: Under such circumstances such clerks or owners shall certify before July 1, 1919, such facts to the State Board of Pharmacy and upon application the State Board of Pharmacy may, at its discretion, issue a permit for a fee of twenty-five dollars (\$25.00), which permit shall be renewed on the first day of July every second year from date thereof upon the payment of two dollars (\$2.00) for each renewal to such unregistered applicant as above mentioned to continue in such business. Provided that no permit shall be granted to any such person who may have been convicted during such period of any crime or unlawful act.

Section 5. If any provisions or section of this act shall be held void or unconstitutional, all other provisions and all other sections of the act, which are not expressly held to be void or unconstitutional, shall continue in full force and effect.

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JOHN CULLEY
OGDEN, UTAH

President National Association of Boards of Pharmacy, 1918-1919



JOHN CULLEY

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JOHN CULLEY.

President John Culley, of the National Association of Boards of Pharmacy, was born in England forty-seven years ago, but before he had reached his teens he gave promise of becoming a citizen of the United States. The vacation periods of his school years were displaced by work in a drug store of Ogden, Utah, the adopted home of the subject of this brief sketch. In due time he secured the graduation credentials of the Ogden High School, which strengthened his desire for a pharmaceutical education. When John Culley graduated from the Philadelphia College of Pharmacy, in 1894, two other students from Utah were members of this class, and the trio were successful in carrying off all, or nearly all, the prizes of that year. One of the associates was Herman Harms, now Utah State Chemist, and the other George W. Luft, of New York City; the three are members of the American Pharmaceutical Association.

For several years Mr. Culley was one of the teaching staff of the Philadelphia College of Pharmacy, as assistant; thereafter he spent two years in New York City, gaining practical experience. Before returning permanently to the city of his adoption he worked for two years in Denver, and until he engaged in business on his own account, 15 or 16 years ago, he had charge of the prescription department in T. H. Carr's drug store, Ogden, Utah.

In 1908 Mr. Culley was appointed a member of the Utah Board of Pharmacy, which position he still holds. Prior to his election as President of the National Association of Boards of Pharmacy he held appointments on important committees and was honored with the office of Vice-President. Mr. Culley was President of the Utah Pharmaceutical Association, 1911-1912; he joined the American Pharmaceutical Association in 1908, and has ever since participated actively in its proceedings, seldom absenting himself from the annual conventions. Mrs. Culley usually accompanies her husband to these meetings and joins in the work of the Women's Section, of which organization she was the second presiding officer, 1914-1915.

Locally, Mr. and Mrs. Culley take a lively interest in social and civic affairs. Mr. Culley is highly regarded as an organizer, and his fellow citizens recognize these qualities as well as his pharmaceutical ability. His aim has been to advance pharmacy and give it not only the support of the laws but, what is more important, strengthen its purposes by the sustaining and uplifting influences of organized pharmacy.

E. G. E.

EDITORIAL

E. G. EBERLE, Editor

253 Bourse Bldg., PHILADELPHIA

THE DOCTORS AND THE DRUG ADDICTS.

AN editorial under above caption appeared in the *Philadelphia Public Ledger* of April 11, 1919:

"If the estimates of the health commissioner of New York City are to be accepted as even approaching accuracy, there are between 100,000 and 200,000 drug addicts in that city, victims of the criminal cupidity of a handful of disreputable physicians and druggists. A number of the doctors said to have been engaged in this traffic have been arrested, and an earnest effort is to be made not only to root out the evil but to deal humanely with the victims deprived of their usual narcotic by the arrests.

"This action of the New York authorities, in conjunction with officers of the Internal Revenue Service, is a forerunner of what will have to be done all over the country when the national prohibition laws go into effect. There can be no doubt that the drug habit on the part of those deprived of alcoholic stimulants will be enormously increased and that new measures will have to be taken to meet and combat an evil quite as serious as that against which the prohibition movement is directed. The federal and state laws regulating the sale of narcotics have made it more difficult for addicts to obtain the drugs for which they crave; but they have also enormously increased the incentive to violate the regulations.

"An enormous responsibility is placed upon the medical profession by these regulations, for it is chiefly by the connivance of unscrupulous doctors that addicts can obtain access to the forbidden drugs. Under these circumstances, it is incumbent upon the medical societies of the country to render the fullest coöperation to the end that the honor of the profession may be protected and the nation preserved from a scourge more deadly even than the drink evil. They may find it expedient to make radical modifications in their code of ethics, and especially in those rules governing the secrecy of the relations between the doctor and the criminal patient, for it is under the cover of that secrecy that the worst forms of malpractice flourish. That the laws must be made more strict than at present is probable; but the strictest law is not self-enforcing. The medical profession and the drug trade must rid themselves of the reproach of being the vehicle for and of taking toll from the perpetuation of a practice ruinous to health and morals and a growing menace to public safety."

Every drug addict should receive medical treatment. Few of them persist in efforts for the riddance of the affliction and practically all of them are easily persuaded to follow advice that causes them little or no inconvenience, hence, they are easy prey for medicasters. The place for drug addicts is in State institutions for the cure of the addiction. The drug addict receives little sympathy; he is entitled to much, for not infrequently he is victim, not transgressor, and by the time he becomes aware of his unfortunate condition he has lost control over self, and should be in charge of the State.

The purpose of the comment on the editorial, however, is to affirm that "the medical profession and the drug trade must rid themselves of the reproach of being the vehicle for and of taking toll from perpetuation of a practice ruinous to health and morals and a growing menace to public safety." It is a matter of deep concern that a handful of disreputables should bring reproach on the professions of medicine and pharmacy. It is time for closer coöperation between these

professions; an attitude which hinders the members in giving the best service is not just to the public.

We quote the following from an editorial of a recent issue of *Medical Council*:

"The druggist has been obliged to cater to demand, and the demand has been a matter largely beyond his control. He could not afford to stock goods he could not sell, and he could sell little but that which has been persistently advertised or that catered to public convenience or appetite."

We add, that the demand has often been created by prescriptions. That this is recognized is evident from the same editorial, the closing paragraphs of which read: "Treat the druggist as you would have him treat you, and perhaps a great many drug store abuses will soon be quickly righted; for the druggist is commonly just as good a man as you are."

"Don't try to oblige the fellow who wants liquor by asking the druggist to fill pint prescriptions for it, for the reputable druggist does not want that sort of business."

If the increase in drug addiction which has been reported from states where prohibition laws have become effective is a criterion, then the seriousness of the situation after July 1 becomes apparent.

The public has a right to expect and investigate the coöperation of professions, and to determine whether they are giving it the best service and protection possible. There is not only a widening field of medical science before us in which medicine and pharmacy should find much to do, but there are growing responsibilities in which they jointly share. The application of the Golden Rule in genuine service is possible only when the value of human life and health is placed above class distinction and material gain.

E. G. E.

PENDING ASSOCIATION WORK FOR PHARMACISTS AND PHARMACY.

WAR conditions of last year interfered largely with association attendance; this year's conventions are to be Victory conclaves, the announcements for them are trumpet calls to duty. Never has there been so much legislation to discuss, so many radical changes in business affairs to consider, and important organization matters that demand attention.

Nineteen twenty is the centennial anniversary of the U. S. Pharmacopoeia; the first edition was published in 1820; the eleventh Pharmacopoeial convention will assemble in Washington in May of next year. While the Pharmacopoeia now in force is the ninth revision, it is the tenth edition; the title U. S. Pharmacopoeia X. would be correct and, perhaps, less confusing than the present designation.

State pharmaceutical associations should nominate their delegates to the Pharmacopoeial Convention this year as next year's meetings will, in most instances, be held after the first week of May. The selection of delegates is deserving of most

careful inquiry; there is much work to be done preparatory to a revision in which American drugs and chemicals will receive more consideration than heretofore. The chairman of the Revision Committee is Prof. Charles H. LaWall, whose address is 39 So. 10th Street, Philadelphia, Pa.. The president of the Pharmacopoeial Convention is Dr. Harvey W. Wiley, Washington, D C.

Preparations will be made for the fifth edition of the National Formulary, at the New York Convention of the American Pharmaceutical Association. The revisions of these standards are of great moment to pharmacy in its various divisions, but there are other significant promotions that demand serious deliberations; not the least among these is the closer affiliation of State associations with the American Pharmaceutical Association in the House of Delegates. The need of united endeavor has been impressed and to neglect the opportunity, with the lesson so fresh in our memories, can be viewed only as unmindfulness of our own duties to ourselves and pharmacy. Chairman H. V. Army, of the Federation Committee, has sent the messages of that active committee to the various associations; they should be given close study and made subjects for discussions and the conclusions reached should be conveyed to the House of Delegates by instructed representatives. The associations have also received printed copies of the transactions of the Chicago meeting of the House of Delegates, through Secretary Jeannot Hostmann.

The hopes of American men of science are for the establishment of a monumental research institute. The coöperation of the American Pharmaceutical Association and of the American Medical Association is essential in this work. The importance of pharmaceutical research is apparent to everyone and recently has been the subject of frequent editorial comments and papers in this JOURNAL. In this issue we reprint instead "A few comments on the proposed Institute for Drug Research" from the Chicago Chemical Bulletin for April:

A FEW COMMENTS ON THE PROPOSED INSTITUTE FOR DRUG RESEARCH.

"The proposed Institute for Drug Research has become current topic to readers of *The Journal of Industrial and Engineering Chemistry*. The proposal, as far as it embodies a happy compatibility between commercial and altruistic aims, is indeed worthy of the American Chemical Society. *The Bulletin* has refrained from taking a definite stand, but this in no way will hinder it from presenting its reflections. *The Bulletin* simply feels hesitant about recommending or condemning a project which has such potentialities either for good—or for harm.

"The chief agitators for the Institute for Drug Research appear to be influential members of the New York Section. Much praise is undoubtedly due them for endeavoring to create real work for real chemists. This must be the main object of the plan. Furthermore, the avowed intentions to keep Germany from regaining her former supremacy in synthetic drugs sold in America are accentuated by a practical form of patriotism. Increased American drug manufacture would also aid in more firmly re-entrenching the dye industry; by-products of the color works appeal to the investor as a legitimate means of necessary remunerative returns.

"Has the situation been handled in a manner productive of the best results? We grant the excellence of the above premises; we note carefully the post-war 'key' in this enterprise as in many other national undertakings; the open sesame that bares the objects of the Institute

to the glory of 'humanity.' With all these commendable expressions, why do the promoters not rise to a plane of true altruism and propose that the Institute be a coöperative agency, actually unifying the best elements of chemistry, pharmacy, and medicine? What good purpose or what logic is served in the insistence on keeping the Institute rigidly under the control of the American Chemical Society? The American Pharmaceutical Association admits that it has not been successful in fostering 'Pharmaceutical Research.' The American Medical Association seemingly has not deemed it wise of itself to promulgate a coöperative quasi-commercial proposition. Yet the views of organized chemistry as reflected through the national journal convey the impression that the Institute under the chemists' trusteeship will assuredly be a success—being chemists we are endowed with an exceptional acumen.

"The really big thing is to create a recognized research center not controlled by any one group or element; an institute whose policies are formulated by men of experience in the various affiliated branches of medico-chemical sciences and willingly seek the advice of all coöperative agencies. The American Pharmaceutical Association or the American Medical Association cannot by themselves create a successful research establishment, but their help is essential. Cannot the American Chemical Society fulfill the manifest need for a drug-investigating laboratory by magnanimously utilizing its organs as the means of crystallizing the movement, irrespective of whether the latter remains under its total jurisdiction. Public health demands that evidence of supreme bigness out of which will rise a recognized national seat for critical drug research stripped of all professional or commercial pettishness and not dominated by any one group of scientists.

"The practical weakness of the propaganda has been the utter disregard of the attitude of physicians. It is necessary to remind the Eastern chemists that the whole fabric will disintegrate if the doctors do not receive seriously the pronuncio of all organized chemists' agency. The medical viewpoint is more essential for success than the combined laboratory arguments. Test-tube and animal experiments are of undoubted merit, but the average physician wants to know the total results of accurately controlled clinical tests. These can only be obtained with the close coöperation of the medical profession. The *Bulletin* has been surprised at the seeming disregard of organized medicine in the several meetings which have been held to discuss this subject and in the published opinions. Organized pharmacy has been consulted in some slight measure; but the absence of an official representation of the American Medical Association is at least surprising. Yet it is no secret that that Association has maintained since 1905 a Council on Pharmacy and Chemistry whose primary purpose is 'gathering and disseminating such information as will protect the medical profession in the prescribing of proprietary medicinal articles.' Surely the Council on Pharmacy and Chemistry (whose personnel needs no introduction) has a much keener grasp of the synthetic drug situation than the Mellon Institute or even the Rockefeller Institute, although the aid of the latter institutions should be very welcome.

"Even before 1914 American physicians were gradually freeing therapeutic measures from the overburden of numerous German synthetics and their numberless modifications. The demand had been artificially stimulated by clever advertising, especially in days before the profession could call on such men as Stieglitz, Long, Sollman, Hatcher, Hunt, Howland, Puckner, and others, for unprejudiced opinions on the efficacy of so-claimed wonderful chemical 'discoveries.' As the war progressed, the stocks of German-made drugs were gradually diminished; the shortage was felt considerably in only a few instances. The medical profession, as a whole, is more than grateful to be rid of most of these unessential drugs. To-day apparently no shortage exists, although only about a dozen formerly German-made synthetics are being manufactured here on a commercial scale. Due recognition has undoubtedly been accorded the American chemists for achievements of preparing the needed remedies—no easy task. The American chemist can only retain his warm feeling toward him by refraining from flooding the market with semi-scientific medicaments. To follow the footsteps of the Germans is to be misled. The synthesizing of chemicals—actuated solely by a commercial desire to capitalize by-products at the expense of unfortunate victims of sickness—is to be deprecated by all sincere thinking chemists. On the other hand, the improvement of well-known drugs, the seeking of new means of alleviation of disease, the discarding of pseudo-scientific theories of drug action can be done only in an institute such as has been outlined by some of the promoters, and freed from factional or predatory influence.

"Congratulations are due the American Chemical Society for the high type of men appointed on the committee for this proposed institute. Dr. John Abel, of New York, has made many valuable contributions to pharmacology and is an earnest scholar. Dr. Raymond Bacon, of Pittsburgh, enjoys considerable popularity, largely because of his influential executive affiliation at the Mellon Institute. The chief of the scientific staff of Eli Lilly & Co., Dr. Eldred, represents a pioneer drug firm of the Middle West. The selection of Dr. Charles Herty, of New York, the editor of our industrial journal, as chairman, is logical. Dr. Reid Hunt, Boston, formerly director of the Hygienic Laboratory, U. S. Public Health Service, possesses both a thorough knowledge of chemo-therapeutics and a most excellently balanced mind. Professor Treat Johnson, New Haven, Conn., has created an enviable reputation in organic research. Dr. F. A. Levene, Rockefeller Institute, New York, is well known in the fields of physiologic-chemistry, not only as a result of his own investigations, but also those of his able collaborators. The eighth member, Mr. F. O. Taylor, Detroit, has published articles on pharmacy, and is connected with the house of Parke, Davis & Co. The personnel argues well for the success of the propaganda, and any criticism which might be offered is that there is a lack of well-known and recognized pharmaceutical chemists. The statements in favor of the Institute have been well brought out in the *Journal of Industrial and Engineering Chemistry*, and none should doubt the ultimate value to America of research stimulation. The wisdom, foresight, and courage which the committee possesses may be the means of finding a happy solution for the erection of a monumental research institute. Such are the hopes of American men of science."

PHARMACY, EDUCATION, AND SECTIONS IN PHARMACY.*

BY JOHN URI LLOYD, PHAR. M.

The Pharmacist.—According to the general definition of the word, a pharmacist is a maker or compounder of substances that are intended to be used as medicines. He may either delve deeply into the sciences that contribute to his art, or he may practically neglect them and still claim to be a pharmacist. He may either spend his spare time (for many pharmacists have leisure hours) in study or experimentation, or he may squander it in numerous directions that profit neither the mind nor the purse. In this article the term pharmacist is to be divorced from the lower of these connections and applied only to those persons who, as students, view their calling in the light of an exacting study, whether it be in immethodical experimentation or in systematic science research.

Natural Laws Dominate Pharmacy.—In this sense the conditions that control the physicist in his investigations concerning the various states of matter, become of vital importance to the thoughtful pharmacist as well. The investigations that have been made, and the studies yet to be made with liquids, solids, and gases, are a part of his heritage. The laws evolved by the study of chemistry, optics, physics, and especially physical chemistry, affiliate with the researches made and yet to be made in pharmacy fields.

It should not be forgotten, therefore, that in compounding pharmaceutical preparations, the laws that govern scientists generally must be considered, and that recondite phenomena in the broadest sense may be recognized if the operators

* At the request of Dr. Charles Rice, in the latter part of the last century (1894), I wrote the first volume of a treatise entitled "A Study in Pharmacy." This work, comprising two hundred and twelve pages, was put into type and presented in fascicles, privately, to a limited circle of friends likely to be interested in the problems embraced therein. Otherwise, publication was not ventured. May I not hope that after its twenty-five years of slumber, this fragment, seemingly yet pertinent, may not prove a cumberer to pharmaceutical literature? J. U. L.

so incline. The too often accepted opinion that a man of inferior mental abilities, who cannot become a scientist in a special section, may yet be a qualified pharmacist, is refuted by the fact that pharmacy proper demands of its thoughtful and conscientious followers an extended knowledge of the general phenomena of science, and that the energy dissipated by many pharmacists on general subjects, if applied in a restricted field, would have made them conspicuous scientific men.

Popular Definition of the Term Pharmacist.—Formerly pharmacists were compelled by circumstances to make their own boluses, electuaries, confections, and other similar crude preparations, that comprised the major portion of the medicaments of the past. This fact established the early definition of the word Pharmacist, which, regardless of our special qualifications in modern science fields, still makes us in popular usage simply mixers of medicine, which inadequate definition passes currently, unchallenged, from dictionary to cyclopedia, as shown by the following recent citations:

PHARMACY.—“The art or practice of preparing, preserving and compounding medicines, and of dispensing them according to the Formulæ or Prescriptions of Medical Practitioners.”—*Century*.

PHARMACY.—“The art or practice of preparing, preserving and compounding substances for the purposes of medicine; the occupation of an apothecary.”—*Webster*

PHARMACY.—“The art of preparing and preserving and compounding substances to be used as medicines; the occupation of a druggist.”—*Stormonth*.

In support of my opinion, such antiquated definitions as precede may be criticized as being true in substance but faulty in details. Those of our guild who appreciate the scope of our present labors and the depth to which our investigations may now often be carried, owe a duty to their comrades and themselves in the sense that a more comprehensive and broader definition of the term should be submitted to the revisers of these works. There are, now, branches in pharmacy; there has been an advancement in our art; and, regardless of the root or past meaning of the word, the foregoing expressions do not now correctly define our position.

“In Your Journey Look Not Backward.”—That the compilers of modern dictionary definitions have not heeded the advice of the poet quoted in the preceding sentence is evident to persons who take the trouble to compare the definitions of pharmacy of the past with those of the present. Phraseology has been altered somewhat from time to time, perhaps to escape copyright infringements, but I fail to see any attempt at modernization. One hundred years ago the pharmacist occupied a very different position from that of the present, but not according to the dictionary, as is shown by the following excerpts, which are practically identical with definitions most recent and already cited:

PHARMACY.—“The art or practice of preparing medicines.”—*Reed, 1845*.

PHARMACY.—“The art or practice of preparing medicines, the trade of an apothecary.”—*Johnson, London, 1824*.

PHARMACY.—“That part of physic which teaches the choice and preparation of medicines, the apothecaries’ art.”—*Bailey, 1763*.

If such men as Dr. Charles Rice, C. Lewis Diehl, and Dr. Frederick Hoffmann were to be consulted by the revisers of our dictionaries, more comprehensive definitions of the general term Pharmacist would result. Probably the ancient generalization would be allowed to stand, but distinctions would be drawn be-

tween—the “Pharmacist” who dispenses; the “Druggist” (pharmacist) who sells in quantities and also prepares medicines but does not dispense; the “Manufacturing Pharmacist” who neither retails nor dispenses, but who prepares medicines for dispensers and for physicians’ use, and the “Theoretical Pharmacist” who studies phenomena connected with our art (and which is chiefly embraced in manipulation) who instructs students, but who perhaps neither dispenses nor prepares medicines—for we have these well recognized subdivisions now, as a part of our fraternity.

Listen.—Largely through the labors of pharmacists the science of chemistry arose. Linked closely with chemistry is the science of botany and the study of microscopy, and all along the chain we find engraved conspicuously the names of prominent pharmacists. The toilers in all branches of applied science have ever included a large proportion of pharmacists, and this is the condition still. The drudgery of empiricism, in the early day that was the immediate forerunner of the classified and connected sciences, was performed largely in the apothecary shop. And the impulse to discoveries that enrich the circle of the sciences has been often furnished by the humble manipulator of the mortar and pestle, who perhaps in many instances has never received that just credit which would, if applied as merited, raise him from obscurity to fame. Many of the conspicuous scientific discoverers of the world have drawn their inspirations from the apothecary, whom all feel free to consult, who advises, suggests, assists, and then when humanity receives the return, is too often neither mentioned nor recognized.

These facts are self-evident, and recognized by all students, and it is pleasant to observe that most true scientists cover with charity the errors and revere the memory of those who, amid unpleasant surroundings, toil and struggle as pioneers, and who, in the laborious field of empiricism, collect the facts that serve as a ground work for the exact science that follows: There are, however, much to their discredit, persons indebted to empiricism for their scientific conspicuity, who sneer at those who adhere to experimental investigation, as there are children who hold in contempt the methods of their parents, whose toil, privations, and sufferings gave a heritage of luxury to their favored and too often snobbish offspring.

The True Pharmacist.—While it is true that too many of our members are content to rest quiescent and unprogressive in the lower plane of our calling, (and so far as most such medicaments as have been mentioned are concerned, the purely traditional, as well as mechanical), or even have retrograded and are looking altogether to superficial, material, and financial results as the only object of the art, it is also true that others, in performing legitimate work, constantly enjoy the pleasures of study and of experimental investigation that reach far into science fields, and which furnish to the sympathetic manipulator many enticing and alluring attractions. To the latter, who is necessarily a student worker, whether empirical or scientific, the days are all too short. The night that interrupts his study jars harshly upon such an enthusiastic searcher. He sees in every appreciable molecular change, not alone the final result (a money representative), in the form of a materialistic tincture of lifeless extract or proximate principle, but an experience enjoyable not only because it is valuable to humanity and the profession by reason of an evolved product that follows the end reaction, but as affording enjoyment to the investigator because of a healthful stimulus which the mind appreciates from

the consideration of the recurring phenomena, many phases of which are beautiful to contemplate. To him (the thoughtful apothecary) a finished product is not a merchantable commodity alone, but a something instinct with its own peculiar property and forces, which give to it a historic individuality. The path leading up to the final result becomes often to the manipulator the more important, for it has marked a course of pleasurable and recreative study and observation.

If any reader of this paper does not experience in his experimental work the keen satisfaction that comes to one who realizes that his own intellectual powers are vibrating in harmony with the Infinite Mind, and that the materials changing as dissolving views before his eyes are not inanimate, but upon the contrary are living and moving substances, teeming with enigmatical suggestions of possibilities in science fields—such a person will doubtless be content with the fallacious belief that the art of pharmacy possesses no attraction outside of business rivalries, and no incentive beyond the dollar. To him, absorbed only in the trade and traffic side of his art, the usual dictionary definition of the term "Pharmacist" will be entirely satisfactory.

I am convinced, however, that many are not content with such an imperfect and thoughtless estimate of the ideals of our membership. The under-current of pharmacy, whether considered as a science in itself or as an art, demands more appreciative attention than has as a rule been given to it heretofore, even by some authors after whom we read.

As the study of energy in modern science has at last dominated that of matter, so in pharmacy, material products may yet become subservient to a study of the forces that produce them. In the study of such phenomena comes a gratification to one's self, a credit to pharmacy, and a service to humanity.

VISION.

We only do the things that we see done at the start.

There is a great deal of difference between a dreamer and a man who sees visions. The dreamer awakes to the fact that he was asleep all the time, and the dream is soon forgotten; but the man who sees visions sees while awake, the workings of his mind and heart constantly building, formulating—bringing the thing to pass.

The man with vision is the man of understanding. He knows how to correlate experience with accomplishment. He can readily designate the real from the unreal.

No man or woman ever achieved anything who did not have vision.

There is a kind of silent mastery about the mind that can see visions. Visions are usually born in darkness, however. They are great lights that a man's brain sees, like some great star at night-time, that fascinates the eye above the billions of other, smaller stars. Vision is an attribute of character. Little men never have it.

You need no eyes to have vision—for the power of mindsight seems to melt into something very wonderful when it is ready for vision.

But vision isn't mysterious. It's very simple. It's the big in you that you know you can be. And it's the great outside of you that you know is able to come to pass.—George Matthew Adams.

JOURNAL OF THE

THE MANUFACTURE OF ACETPHENETIDIN.

BY WILLIAM A. KONANTZ.

(Continued from p. 290, April issue.)

PREPARATION OF INTERMEDIATES.

I. PREPARATION OF *p*-NITROPHENOL.

Para-nitrophenol is the initial intermediate in the processes of making acetphenetidin described by Hinsberg, Platt, Täuber and Paul. In the practical application of these processes the *p*-nitrophenol seems to have been always obtained from phenol by direct nitration, as no reference to any other source or method of preparation is to be found in the literature in connection with descriptions of these processes. Para-nitrophenol has, however, been made from phenol in several indirect ways, *viz.*, by the nitration and subsequent saponification of the esters of phenol with phosphoric acid,¹ benzene-sulphonic acid, toluene-sulphonic acid, etc.;² it has also been prepared from nitromalonaldehyde,³ aniline, *p*-nitroacetanilid, and *p*-chlornitrobenzene. The indirect methods from phenol, and also the preparation from nitromalonaldehyde, need not be considered further, as they are obviously not economical for the technical preparation of large quantities of *p*-nitrophenol. Of the other methods, starting with phenol, aniline, *p*-nitroacetanilid, and *p*-chlornitrobenzene, a comparative study has been made as follows:

Preparation of p-Nitrophenol from Aniline.

HISTORICAL.

Deninger⁴ was very successful in converting aniline into nitrophenol by the following method: 10 Gm. of aniline, 200 Cc. of concentrated sulphuric acid, and 800 Cc. of water were mixed and cooled below 15°. To this solution 300 Gm. of sodium nitrite, dissolved in 100 Cc. of water, were added, the first third slowly, with cooling, the remaining two-thirds rapidly, without cooling. The mixture was immediately heated on a boiling water-bath, and diluted sulphuric acid (50 Cc. of sulphuric acid and 50 Cc. of water) added as rapidly as the violent reaction permitted. When the reaction was complete the *o*-nitrophenol was distilled off with steam, and the *p*-nitrophenol obtained from the residue by crystallization from water or hydrochloric acid. The yield was reported as 4.7 Gm. of *o*-nitrophenol and 3.7 Gm. of *p*-nitrophenol, corresponding to 56 percent of the theoretical. The method is not suitable for technical use.

Nolting and Wild⁵ converted aniline into nitrophenol according to the following method: 93 Gm. of aniline, 150–200 Gm. of concentrated sulphuric acid, and 2 l. of water were mixed and cooled to 0°. To this solution 69 Gm. of sodium nitrite were added, and somewhat later 119 Gm. of nitric acid of s. g. 1.335 (= 63 Gm. of HNO₃) were run in. The mixture was then heated under reflux until the evolution of nitrogen ceased. The *o*-nitrophenol was then distilled off with steam, and the *p*-nitrophenol crystallized from the residue. The yields were not given. It was stated that the two isomers were obtained in approximately equal amounts.

EXPERIMENTAL.

The work of Nolting and Wild was repeated in three experiments. The chief product of the reaction was found to be phenol. Only about 5 Gm. of *o*-nitrophenol

¹ *Ann.*, 224, 156, 1884.

² *Gazz. chim. ital.*, 11, 76, 1881; *Société des Usines der Rhône*, D. R. P. No. 91,314; *Frdl.* IV, 39; *Brit. Pat.* No. 24,193, 1895; *J. Soc. Chem. Ind.*, 1897, 40.

³ *Ber.*, 28, 2598, 1895.

⁴ *J. prakt. Chem.*, [2] 40, 298.

⁵ *Ibid.*, [2] 17, 189.

and 4.5 Gm. of *p*-nitrophenol were obtained from 93 Gm. of aniline. Considerable tar was formed in each case. It is probable that phenol is first formed from the diazo compound, and this is then nitrated. As the solution contains but one mol of nitric acid in a strength of 2–3 percent it is evident that effective nitration can not take place.

Preparation of p-Nitrophenol from p-Nitroacetanilid.

HISTORICAL.

In 1874 Paul Wagner⁶ studied the effect of concentrated solutions of sodium hydroxide on *p*-nitroacetanilid in order to determine whether *p*-nitrophenol is formed. Wagner found his conjecture confirmed, and stated that "the change of the nitroacetanilid into nitrophenol is a complete one, provided the heating is continued sufficiently long." With regard to his method, Wagner says, "I heat the nitroacetanilid with a concentrated solution of caustic soda, when an abundant evolution of ammonia immediately results. I continue to heat until the evolution of ammonia ceases. On cooling, needle-like crystals separate, which it is not difficult to recognize as the sodium salt of nitrophenol. These are dried, and decomposed by means of boiling hydrochloric acid; from the strongly acid liquid, light yellow needles crystallize on cooling, which by repeated crystallization from very dilute alcohol are obtained pure. The melting point of the crystals lies at 114° C." Since *p*-nitroacetanilid can be obtained in yields of 95 percent⁷ by the nitration of acetanilid, this method seemed promising, and the work of Wagner was repeated, but the results were less satisfactory than he reported.

EXPERIMENTAL.

10 Gm. of *p*-nitroacetanilid were heated with varying amounts of sodium or potassium hydroxide and water, in a vessel provided with a reflux-condenser and surrounded by a paraffin-bath heated to 150°. The heating was continued until moist litmus-paper held at the upper end of the condenser-tube no longer turned blue; this required 20–24 hours. Water was then added, and the mixture made acid with hydrochloric. After boiling for 10 minutes with a small amount of animal charcoal, the mixture was filtered and the filtrate allowed to crystallize. Additional portions of crystals were obtained by evaporating the mother-liquor until the inorganic salt began to appear. Ten experiments were made as follows:

<i>p</i> -Nitroacetanilid. Gm.	Sodium hydroxide. Gm.	Water. Gm.	<i>p</i> -Nitrophenol. Gm.	Yield. Percent.
10	10	10	3.8	50
10	15	15	4.5	59
10	20	20	3.8	50
10	20	35	3.6	47
10	15	200	(<i>p</i> -nitraniline)	0
<i>p</i> -Nitroacetanilid. Gm.	Potassium hydroxide. Gm.	Water. Gm.	<i>p</i> -Nitrophenol. Gm.	Yield. Percent.
10	10	10	3.5	45
10	10	25	4.6	60
10	15	15	4.5	58
10	20	20	3.4	44
10	20	35	4.0	54

The average yield is 52 percent.

An experiment was also carried out in which 10 Gm. of *p*-nitroacetanilid were heated under the same conditions with 20 Gm. of exsiccated sodium carbonate

⁶ Ber., 7, 77, 1874.

⁷ Ibid., 17, 262, 1884.

and 25 Gm. of water. The *p*-nitroacetanilid was recovered unchanged. Calcium hydroxide likewise had no effect.

Two experiments were run in which the alkali was replaced by strong mineral acid, thinking that this might effect a similar hydrolysis of the *p*-nitroacetanilid. In the one experiment 10 Gm. of *p*-nitroacetanilid were heated under pressure for 12 hours with 50 Cc. of 50 percent sulphuric acid, and in the other experiment 50 Cc. of concentrated hydrochloric acid were used. In both cases the product was the corresponding salt of *p*-nitraniline.

Preparation of p-Nitrophenol from Phenol.

HISTORICAL.

The nitration of phenol appears to have been first studied by Hoffmann,⁸ in 1857. He reported two methods for the preparation of the mono-nitrophenols; first, by mixing small portions of phenol and concentrated nitric acid, both cooled in a freezing-mixture, and then pouring the mixture into water and distilling with steam; and second, by dissolving the phenol in a large amount of water, adding concentrated nitric acid and distilling with steam. The first method did not always prove successful on account of the violent reaction which occurs when the two substances are mixed in concentrated form. Hoffmann states, however, that it gave better yields when it was successfully carried out. The actual yields were not given.

Fritzsche,⁹ in 1859, described very fully the preparation and separation of the mono-nitrophenols, but, like Hoffmann, he failed to report the yields which he obtained. His method was to dissolve 25 Gm. of phenol in 1250 Gm. of water, heat the solution to boiling, and add slowly, with stirring, 37.5 Gm. of nitric acid. The *o*-nitrophenol was distilled off with steam, and the *p*-nitrophenol crystallized from the residue.

The yields obtained by the nitration of phenol were first mentioned by Cook and Schmitt.¹⁰ These investigators stated that by adding one part of crystallized phenol to two parts of nitric acid of s. g. 1.34 and four parts of water, 30 percent of the phenol is obtained as *o*-nitrophenol and 32 percent as *p*-nitrophenol. This is the method described by Platt (see page 288) in connection with the manufacture of acetphenetidin, and is also the method given in many textbooks on industrial chemistry.¹¹

In 1875 Weselsky¹² reported that when nitrogen trioxide, obtained from nitric acid and starch, is passed into an ethereal solution of phenol (200 Gm. in 1 l.) phenol-diazo-nitrate is precipitated, and the mother-liquor contains much ortho- and para-nitrophenol. However, he did not state in what quantities he obtained these mono-nitrophenols.

In 1880 Natanson¹³ treated phenol with ethyl nitrate and sulphuric acid and obtained an oil which was purified by converting it into the sodium compound and then decomposing it with hydrochloric acid. He states that 22 percent of ortho- and 0.5 percent of para-nitrophenol were obtained.

Schall,¹⁴ in 1883, suspended sodium phenolate in carbon disulphide and added, with cooling, liquid nitrogen tetroxide. After standing for some time the mixture was filtered, the carbon disulphide distilled off, and the residue treated with steam. The *o*-nitrophenol passed over with the steam, and the *p*-nitrophenol was extracted from the residue with ether. The yields were not stated. The author claimed that the *p*-nitrophenol was obtained in greater purity than by the usual methods of nitration.

⁸ *Ann.*, 103, 347, 1857.

⁹ *Ibid.*, 110, 150, 1859.

¹⁰ *Lehrb.* (Kekulé), III, 40.

¹¹ "Dyestuffs and Coal-Tar Products," Beacall, Challenger, Martiu and Sand, Appleton and Co., 1915.

¹² *Ber.*, 8, 98, 1875.

¹³ *Ibid.*, 13, 416, 1880.

¹⁴ *Ibid.*, 16, 1901, 1883.

In 1885 Neumann¹⁵ found that adding the diluted nitric acid to the phenol increases the proportion of *o*-nitrophenol. His method was to add gradually to one part of phenol a mixture of one part of nitric acid of s. g. 1.38 and six parts of water cooled to 0°. The brown oil which formed was subjected to steam distillation in a copper still. The wash-water was also distilled with steam after neutralization with sodium bicarbonate. The proportion of ortho- to para-nitrophenol was not stated.

Goldstein¹⁶ observed that the higher the temperature reached by the mixture of nitric acid and phenol the greater is the proportion of ortho-nitrophenol formed, low temperatures seeming to favor the formation of the para-compound.

In 1905 Martensen¹⁷ made a very thorough study of the reaction-kinetics of the nitration of phenol in aqueous solution. The work was divided into eight parts: preparation of the mono-nitrophenols, measurement of the reaction velocity, influence of the concentration of the nitric acid and the phenol, influence of the degree of dissociation of the nitric acid, influence of nitrous acid, determination of the mode of action of nitrous acid, relation between the nitration velocity and the formation of nitrous acid, and the influence of nitrosophenol. The work was carried out with solutions of phenol 0.05–0.2 *N* and of nitric acid 0.6–0.8 *N*. The results were expressed in terms of 0.1 *N* sodium hydroxide. Lacmoid was used as the indicator, but the color change was not distinct as the nitrophenols themselves give color changes. Martensen's conclusions were as follows: The nitration of phenol in aqueous solution is a very complicated autocatalyzed reaction, the velocity increasing with increasing concentration of the acid and decreasing with increasing concentration of the phenol. The velocity is increased by substances which have an ion in common with the nitric acid, potassium nitrate and sulphuric acid acting in harmony and a little stronger than sodium nitrate and strontium nitrate, which also act in harmony. Nitrous acid is a strong positive catalyst. During the nitration nitrous acid is formed, which explains the autocatalysis. The velocity of nitration and the speed with which the nitrous acid is formed run parallel. If the formation of nitrous acid is hindered (with urea) the nitration is hindered, but least with low concentrations of the nitric acid. Nitrosophenol increases the velocity of nitration, but the influence is not dependent on the concentration.

In 1906 Francis¹⁸ nitrated phenol in carbon tetrachloride with benzoyl nitrate, and found that a mixture of ortho- and para-nitrophenols is formed, the ortho-compound predominating.

In 1907 Pictet¹⁹ nitrated phenol with acetyl nitrate, prepared from acetic acid and nitrogen pentoxide, and obtained a mixture of ortho- and para-nitrophenol in the proportion of 52 percent ortho and 48 percent para. The exact yields were not given.

In 1910 Hart²⁰ reported that the production of tar is completely avoided and a yield of 18 percent of *p*-nitrophenol (13 Gm. from 50 Gm. of phenol) is uniformly obtainable if the nitric acid is vigorously stirred during the time that the phenol is being added and for about one-half hour afterward. About 30 Gm. of ortho-nitrophenol were said to be obtained at the same time. The temperature was found to have little influence on the yields of either isomer; the best yield, however, was obtained at 25°; below 4° nitration could not be effected.

In 1911 Pictet²¹ reported his experiments on the nitration of phenol at low temperatures. In two experiments, carried out respectively at 0° and at –20–30° about 6 Gm. of *p*-nitrophenol were obtained from 80 Gm. of phenol. At –50–60° no reaction occurred until an electric current was passed through the mixture when the reaction proceeded without increase of temperature and a yield of 15 Gm. of *p*-nitrophenol from 40 Gm. of phenol was obtained, practically five times as much as at normal temperatures.

¹⁵ *Ber.*, 18, 3320, 1885.

¹⁶ *J. russ. phys. chem. Ges.*, 10, 353; Beilstein, II, 681.

¹⁷ *Z. physik. Chem.*, 50, 385, 1905.

¹⁸ *Ber.*, 39, 3801, 1906.

¹⁹ *Ibid.*, 40, 1165, 1907.

²⁰ *J. Am. Chem. Soc.*, 32, 1105, 1910.

²¹ *J. Roy. Soc. Arts*, 56, 678–702, 1911; *J. Soc. Chem. Ind.*, 1911, 683.

EXPERIMENTAL.

Preparation of ortho- and para-nitrophenol by the method of Cook and Schmitt.—50 Gm. of crystallized phenol were added slowly, with vigorous stirring, to a mixture of 100 Gm. of nitric acid (s. g. 1.34) and 200 Gm. of water, the temperature being kept at about 20°. The mixture was stirred for one-half hour after the addition of the phenol was completed, and then allowed to stand one and one-half hours longer. Five hundred Cc. of water were then added, and the heavy oil separated, washed with water, and subjected to steam distillation. By this operation the *o*-nitrophenol distilled over. The residue was boiled with 20 Gm. of animal charcoal, filtered hot, and allowed to crystallize in the cold. The *p*-nitrophenol crystallized in long needles, mixed with some tar. The mother-liquor was evaporated until no more crystals were obtained. The *p*-nitrophenol was purified by recrystallization from water with the aid of a little hydrochloric acid and animal charcoal. The average yield of several experiments was 20 Gm. of *o*-nitrophenol and 12.5 Gm. of *p*-nitrophenol, corresponding to about 44 percent of the theoretical yield.

Preparation of ortho- and para-nitrophenol by the method of Hart.—50 Gm. of crystallized phenol, liquefied by the addition of 5 Gm. of alcohol, were added slowly, with vigorous stirring, to a solution of 80 Gm. of sodium nitrate and 100 Gm. of concentrated sulphuric acid in 200 Cc. of water, the temperature being kept at about 20°. The stirring was continued for one-half hour after the addition of the phenol was completed, the mixture was allowed to stand for an hour and one-half longer, and then treated with 500 Cc. of water. The separation of the products was effected as in the experiments above-described. The yield did not differ materially from those obtained by the method of Cook and Schmitt. The author was unable to obtain 30 Gm. of *o*-nitrophenol as reported by Hart. The formation of tar is not avoided by this method, and the *p*-nitrophenol could not be obtained pure without recrystallization as Hart claimed.

Treatment of the Spent-Acid and Wash Water.—The spent-acid and wash-water from the experiments above-described were treated with a concentrated solution of sodium carbonate until Congo Red paper was no longer turned blue, showing the absence of mineral acid. The solutions were then subjected to steam distillation and the residues evaporated to crystallization. 3-4 Gm. of *o*-nitrophenol and 4-5 Gm. of *p*-nitrophenol were obtained from the spent-liquors of each experiment. It is evident that a considerable loss of the nitrophenols is sustained by discarding these liquors as directed in the original methods. By neutralization in this way the yields may be increased to 56 percent.

Effect of the Mass and Concentration of the Nitric Acid.—In the experiments tabulated the following procedure was adopted:

50 Gm. of crystallized phenol, liquefied by warming with 5 Cc. of water, were added slowly, with vigorous stirring, to the acid solution, the temperature being kept at about 20°. The mixture was stirred for one-half hour after the addition of the phenol was completed, allowed to stand for four hours longer, and then treated with 500 Cc. of water. Sodium carbonate was then added until Congo Red paper was no longer turned blue. The *o*-nitrophenol was separated by steam distillation, and the residue boiled for thirty minutes with 20 Gm. of animal charcoal, filtered hot, and allowed to crystallize. Additional portions of *p*-nitrophenol were obtained by evaporating the mother-liquor until the inorganic salt began to appear. The *p*-nitrophenol was recrystallized from water with the aid of hydrochloric acid and animal charcoal.

Phenol. Gm.	Absolute nitric acid. Gm.	Molecular Ratio.	Water. Gm.	Strength of acid. Per cent.	o-Nitro- phenol. Gm.	p-Nitro- phenol. Gm.
50	33.5	1:1	250	11.81	5.8	0.6
50	67.0	1:2	250	21.13	23.2	16.9
50	100.5	1:3	250	28.67	26.2	18.9
50	134.0	1:4	250	34.89	26.8	19.1
50	167.5	1:5	250	40.11	25.3	13.4
50	67.0	1:2	125	34.89	26.7	19.7
50	50.0	1:1.5	125	28.67	26.8	18.1
50	67.0	1:2	500	11.81	17.3	7.4
50	50.0	1:1.5	95	34.89	23.9	20.8
50	50.0	1:1.5	40	55.00	25.5	15.3
50	40.0	1:1.2	80	34.89	23.1	17.0

From these experiments it appears that the best results are obtained when nitric acid of about 35 per cent is used, although there is no great difference in yield between 28 and 35 percent. The acid used by Cook and Schmitt and by Hart is about 20 percent. Nitric acid of about 30 percent has a maximum specific conductivity, and it is possible that some relation exists between this property and the nitrating power of the acid. In Martinsen's experiments the non-dissociated part of the acid seemed to be the more active in effecting nitration.

For the preparation of the mono-nitrophenols the proportions given in the sixth experiment are the most suitable, these being practically one part of phenol to four parts of nitric acid (s. g. 1.21, 25° Bé.). About 65 Gm. of crystallized sodium carbonate are required for the neutralization of the acid liquid. By using these proportions and the process outlined above, yields of about 63 percent of the theoretical can be obtained.

Effect of Nitrous Acid.—Martinsen found nitrous acid to be a strong positive catalyst. In the following experiments sodium nitrate was added to the acid solution, a sufficient excess of nitric acid being used to decompose the sodium nitrite and liberate the nitrous acid.

Phenol Gm.	Absolute nitric acid. Gm.	Molecular ratio.	Water. Gm.	Strength of acid. Per cent.	Sodium nitrite. Gm.	o-Nitro- phenol. Gm.	p-Nitro- phenol. Gm.
50	51	1:1.5	94	34.89	2	25.8	19.3
50	53	1:1.5	94	34.89	7	21.2	21.1
50	68	1:2	250	21.13	2	26.0	19.0

The yield of the nitrophenols does not seem to be greatly affected by the addition of sodium nitrite. In these experiments it was observed that the nitrophenols did not separate in the form of an oil as usual, but as a mass of yellowish white needles, until about two-thirds of the phenol had been added. An experiment was run identical with the first above-described except that the addition of phenol was stopped when two-thirds, or 33 Gm., had been added. The yields, calculated to 50 Gm. of phenol, were 25.4 Gm. of ortho and 21 Gm. of para. Evidently the formation of the oil is not detrimental.

Effect of Urea.—Martinsen found that when the formation of nitrous acid is prevented the nitration of phenol is hindered. A solution containing 67 Gm. of absolute nitric acid in 245 Cc. of water was boiled for one hour under a reflux with 5 Gm. of urea in order to destroy the nitrous acid. Fifty Gm. of phenol, liquefied with 5 Cc. of water, were then added as before. About 18 Gm. of

ortho- and 7 Gm. of para-nitrophenol were obtained. Considerable tar was formed.

Effect of Copper.—When copper reacts with nitric acid, nitrous acid is produced. As nitrous acid was said to be catalytic it was thought that the addition of copper might improve the yields. Acid of 55 percent was usually used as this nitric acid gives the largest amount of nitrous acid with copper. The copper was obtained by adding zinc dust to a solution of copper sulphate.

Phenol Gm.	Absolute nitric acid. Gm.	Molecular ratio.	Water Gm.	Strength of acid. Percent.	Copper Gm.	o-nitro- phenol. Gm.	p-nitro- phenol. Gm.
50	51.5	1:1.5	95	34.89	1	25.0	15.0
50	51.5	1:1.5	65	55.00	1	27.5	20.2
50	53.0	1:1.5	65	55.00	2	26.9	19.8

Effect of Sulphuric Acid.—A number of experiments were run in which sulphuric acid was added to the solution of nitric acid. Some dinitrophenol was invariably formed with a corresponding decrease in the yield of mono-nitrophenols.

Determination of the Velocity of Reaction.—In order to determine how long it was necessary to allow the nitration mixture to stand before separating the nitrophenols, experiments were run in which 5 Cc. of the acid solution were removed every hour and titrated with a solution of sodium hydroxide. Congo Red was found to be the best indicator for this purpose, and if the acid portion is diluted with 50 Cc. of water the color-change is fairly distinct. The following is typical of the results obtained, and shows that the reaction is complete in about four hours after the addition of the phenol.

Time in hours.	Cc. of alkali required.	Note.
0	28.8	Before phenol was added
1	15.1	All phenol just added
2	13.6	
3	13.1	
4	12.9	
5	12.8	
6	12.8	

Purification of p-Nitrophenol.—The p-nitrophenol obtained by the nitration of phenol is invariably accompanied by considerable tar which it is quite difficult to separate. For purifying the p-nitrophenol boiling with hydrochloric acid and precipitation of this with concentrated sodium hydroxide solution, conversion into the calcium and then into the sodium salt, and crystallization from naphtha, acetone and chloroform-ligroin have been recommended. The author obtained the best results by crystallizing from water with the aid of hydrochloric acid and animal charcoal. Solutions of p-nitrophenol in water are yellow but the addition of a slight amount of acid decolorizes them. Very large crystals may be obtained by crystallizing from benzene. The solubility of p-nitrophenol in benzene at 25° and at the boiling-point of the benzene was determined, and found to be as follows: at 25° one gramme of benzene dissolves about 0.02 Gm. of p-nitrophenol and at the boiling-point of benzene about 0.6 Gm. of p-nitrophenol. Para-nitrophenol is therefore about 30 times as soluble at the boiling-point as at 25°.

Preparation of p-Nitrophenol from p-Chloronitrobenzene.

HISTORICAL.

In 1862 Riche²² reported that mono-chlorbenzene is easily converted into chlornitrobenzene by means of concentrated nitric acid.

In 1866 Sokoloff²³ made a study of the chlornitrobenzenes. He stated that by the action of nitric acid on chlorbenzene two nitro-compounds are produced, the one a solid, the other a liquid, at ordinary temperatures. To obtain the mono-chlornitrobenzenes he heated chlorbenzene with nitric acid (s. g. 1.49), and poured the resulting mixture into cold water. Sokoloff states that by this treatment chlorbenzene made from benzene gave a crystalline mass, but chlorbenzene made from phenol gave a fluid product. Both products, however, were mixtures of two isomers, which he separated by crystallization and fractionation. In the case of chlorbenzene made from benzene the relative proportion of the liquid isomer to the solid isomer was 5:1; in the case of chlorbenzene made from phenol the proportion was 2:1. When nitric acid of a lower specific gravity than 1.49 was used the proportion of the solid to the liquid isomer was increased; in all cases, however, two isomers were formed. Sokoloff reports that he tried the action of alcoholic potassium hydroxide on the chlornitrobenzenes. In one part of his paper he states that a strongly alcoholic solution of potassium hydroxide acts very weakly on the chlornitrobenzenes; by long heating the solution is colored brown, but on cooling the greater part of the chlornitrobenzenes separates unchanged. In another part of his paper he states that alcoholic potash solution works energetically on these nitro-compounds, probably producing the corresponding azo-compounds.

In 1870 Engelhardt and Latschinow²⁴ reported that by heating the chlornitrobenzenes with a solution of sodium hydroxide three days at 130° the chlorine atom is replaced by the hydroxyl group, the solid chlornitrobenzene giving *p*-nitrophenol, the liquid chlornitrobenzene giving the volatile, or ortho-nitrophenol.

In 1900 Holleman and de Bruyn²⁵ made a study of the relative proportion in which the two chlornitrobenzenes are formed; they used the freezing-point method. At first they added 25 Gm. of chlorbenzene to 50 Cc. of nitric acid (s. g. 1.52) at 0°. The product was partially fluid at -5°, while the eutectic of the system ortho- + para-chlornitrobenzene is 14.7°. A study of the specific gravity and boiling-point of the mixture led them to believe that the mixture contained chlordinitrobenzene. In subsequent experiments a more dilute acid was used. 25 Gm. of chlorbenzene were added to a mixture of 50 Cc. of nitric acid (s. g. 1.48) and 10 Cc. of nitric acid (s. g. 1.52) at 0°. This product gave only a trace of oil at 15°. The freezing-point of the mixture was 58.9°, corresponding to 30.1 percent of ortho- and 69.9 percent of para-chlornitrobenzene. An experiment carried out at -30°, with a mixture of 40 Cc. of nitric acid (s. g. 1.48) and 10 Cc. of nitric acid (s. g. 1.52) gave a product with a freezing-point of 61.75°, corresponding to 26.9 percent of ortho- and 73.1 percent of para-chlornitrobenzene. They concluded that the temperature has only a slight effect on the relative proportion of the two isomers.

In 1917 Ellis, Rabinovitz and Wells²⁶ stated that "mono-nitrochlorbenzol is readily obtained by the action of a mixture of commercial sulphuric acid (66° Bé.) and nitric acid (39° Bé.) on mono-chlorbenzol." They described their method as follows:

"One part (by weight) of chlorbenzol was gradually added to three parts (by weight) of a mixture of equal parts (by volume) of sulphuric acid (s. g. 1.8) and nitric acid (s. g. 1.43). In order to check the violence of the reaction it was necessary to cool the reaction vessel by immersing it in cold water during the introduction of the chlorbenzol into the acid mixture. The oil was then separated from the spent acid, washed and dried. A yield of about 95 percent of the theoretical was obtained. By several crystallizations from alcohol it was found that the mixture was made up of about 48 percent of the para-compound, melting at 81° (melting point given in the literature is 83° C.) and 52 percent of the ortho-derivative, which melted at 28° C."

²² *Ann.*, 121, 357, 1862.

²³ *Bull. acad. St. Pétersb.*, 380; *Z. Chem.*, 1866, 621; *Chem. Zentr.*, 1866, 1089.

²⁴ *Z. Chem.*, VI, 2, 225.

²⁵ *Rec. trav. chim.*, 1900, 139.

²⁶ *Chem. Eng.*, 1917, XXV, 1, 22.

For the conversion of the chlornitrobenzenes into the corresponding nitrophenols these authors give the following directions:

"One part of the mixed nitrochlorbenzols was heated in an autoclave for 4 hours at 60 pounds' pressure, with one part of sodium hydroxide and 20 parts of water. The conversion of the nitrochlorbenzols into the sodium salts of the nitrophenols was practically quantitative. The amount of tar formed was slight, and the sodium salts crystallized out as well defined needles. The use of more concentrated solutions of sodium hydroxide in the hydrolysis is not advantageous, as they tend to form considerable amounts of tarry bodies.

"Milk of lime was used in several experiments in place of sodium hydroxide solution, but without success, the nitrochlorbenzols being recovered practically unchanged.

"Mono-nitrochlorbenzol was boiled at atmospheric pressure with a concentrated solution of sodium hydroxide. With the exception of a slight amount of resin formation, the action of the alkali was negligible."

"The liquid from the autoclave was filtered, acidified cautiously with dilute acid, cooled and treated with sodium chloride to saturation to separate the nitrophenols."

EXPERIMENTAL.

The following procedure was found most convenient for the laboratory separation of the nitrophenols from chlorbenzene, and was used in the experiments reported below:

A mixture of 132 Gm. of nitric acid, s. g. 1.42, and 168 Gm. of sulphuric acid, s. g. 1.84, is energetically stirred by means of a mechanical stirrer, and kept at about 20° by a stream of cold water surrounding the vessel. To this 100 Gm. of chlorbenzene are added, drop by drop, from a separatory funnel. The stirring is continued for several hours after the addition of the chlorbenzene is completed. The mixture is then poured upon 375 Gm. of crushed ice, and the nitrating-vessel washed out with 125 Cc. of ice-water, which are added to the ice-mixture. The temperature will fall to about -5°. When most of the ice has melted, the crystalline mass is broken up with a glass rod, filtered quickly at the pump, and washed with four portions of 50 Cc. each of ice-water. The chlornitrobenzenes, still wet, are then transferred to an autoclave containing 140 Gm. of sodium hydroxide dissolved in 2800 Cc. of water. The mixture is heated for four hours at 60 pounds' pressure. While still hot the solution of the sodium salts of the nitrophenols is transferred to an apparatus equipped for steam distillation, the mixture made acid to Congo Red test-paper with concentrated hydrochloric or sulphuric acid, and the *o*-nitrophenol then separated by passing a current of steam through the mixture. The residue is then filtered hot and allowed to crystallize in the cold. By evaporating the mother-liquor additional portions of crystals are obtained until the inorganic salt begins to appear.

The following results were obtained in three experiments:

<i>o</i> -Nitrophenol. Gm.	<i>p</i> -Nitrophenol. Gm.	Yield. Percent.
25.3	78.7	84.2
26.8	77.0	84.0
27.0	77.0	85.0

In order to determine whether the temperature has any effect on the relative proportion or yields of the isomers, two experiments were run, the first with the temperature of nitration at 50°, the second with the temperature at 5°, with the following results:

Temperature.	<i>o</i> -Nitrophenol. Gm.	<i>p</i> -Nitrophenol. Gm.	Yield. Per cent.
50	25.6	78.0	83.8
5	27.0	72.4	80.4

In the experiment carried out at the higher temperature about 0.3 Gm. of dinitrophenol was obtained. In the experiment at the lower temperature, it seems that the nitration was incomplete.

The quantity of alkali used in the preceding experiments is approximately that used by Ellis, Rabinovitz and Wells, and is about twice the quantity required by theory. The following experiments were run in which the amount of sodium hydroxide was reduced to about 1.15-1.25 times that required by theory.

Sodium hydroxide. Gm.	Water. Gm.	Pressure. Lb.	Hours.	<i>o</i> -Nitrophenol. Gm.	<i>p</i> -Nitrophenol. Gm.	Yield Per cent.
80	1600	60	4	22.8	63.0	69.4
80	1600	60	8	28.0	73.4	82.1
80	1600	80	8	30.8	81.2	90.7
80	1600	80	8	31.5	81.0	91.1
90	1800	80	8	31.2	84.0	93.2

From these experiments it appears that better results are obtained with 80-90 Gm. of sodium hydroxide at 80 lb. pressure for eight hours than with 140 Gm. of sodium hydroxide at a lower pressure and a shorter heating. The nitrophenols obtained in this way were very pure, and no tar whatever was formed during the reaction.

In the last experiment above-described 73 percent of the total yield is *p*-nitrophenol and 27 percent *o*-nitrophenol. These figures must also represent approximately the relative proportions of the two chlornitrobenzenes in the mixture from which the nitrophenols were made. The figures are practically identical with those obtained by Holleman and de Bruyn for the chlornitrobenzenes by means of the freezing-point method, *i. e.*, 73.1 percent and 26.9 percent. Ellis, Rabinovitz and Wells, who determined the relative proportion of the two isomers by means of fractional crystallization from alcohol, found the mixture to consist of 48 percent of the para- compound and 52 percent of the ortho-derivative. These investigators are undoubtedly in error.

CONCLUSION.

Para-nitrophenol is apparently most economically prepared by heating *p*-chlornitrobenzene under increased pressure with an aqueous solution of sodium hydroxide.

2. PREPARATION OF *p*-NITROPHENETOL.

The next intermediate to *p*-nitrophenol in the processes of making acetphenetidin described by Hinsberg, Platt and Paul is *p*-nitrophenetol, $C_2H_5.C_6H_4.NO_2$.

HISTORICAL.

Para-nitrophenetol was probably first made by Cahours²⁷ in 1849 by the action of fuming nitric acid on phenetol. He obtained a solid and a liquid; the former he called dinitrophenetol and the latter mono-nitrophenetol.

The discovery of *p*-nitrophenetol is, however, usually credited to Fritzsche,²⁸ who prepared it in 1859 by the action of ethyl iodide on the silver salt of *p*-nitrophenol. The *p*-nitrophenetol was extracted and purified by treating the mixture with ether, evaporating the solvent, and distilling the remaining reddish yellow liquid. The product thus obtained was a colorless crystalline solid melting at 57-58°.

²⁷ *Ann. chim. phys.*, [3] 27, 465, 1849.

²⁸ *Bull. classe phys.-math.*, 17, 145, 1859; *J. prakt. Chem.*, 175, 257; *Ann.*, 110, 155; *Jsb. Chem.*, 11, 407.

In 1879 Hallock²⁹ repeated the experiments of Cahours with somewhat different results. The dark red, viscous liquid which Hallock obtained by the action of fuming nitric acid on pure phenetol, or on a solution of phenetol in acetic acid, was distilled in a current of steam. The product consisted of a solid and a liquid in varying proportions according to the conditions of nitration. The solid when purified by repeated crystallization both from acid and from alcohol, was proved by an ultimate analysis to be a mono-nitrophenetol. Its melting point and other physical properties corresponded to those of *p*-nitrophenetol prepared by Fritzsche as above-described. Hallock also obtained the same body by the action of potassium ethyl sulphate and potassium hydroxide on *p*-nitrophenol in closed tubes at high temperatures. In this operation, however, a considerable quantity of the nitrophenol remained unchanged. Ethyl iodide and potassium hydroxide heated in a sealed tube with *p*-nitrophenol also yielded the same body, but quite impure. The method of direct nitration, Hallock states, yields the purest product but is quite tedious. When the nitration was performed with nitric acid from which the red fumes had been removed by previous boiling, or by means of hot concentrated acid, the product was mostly liquid and refused to crystallize, even at low temperatures. This liquid Hallock regarded as a mixture of *o*-nitrophenetol and unchanged phenetol, holding some *p*-nitrophenetol in solution. Hallock³⁰ found that these different methods gave very poor yields of the ether.

In 1881 Willgerodt³¹ found that when *p*-chloronitrobenzene is heated with an alcoholic solution of potassium hydroxide in a closed vessel at 100–130° *p*-nitrophenetol is one of the products; the yield, however, was very small, and the method unsuitable for the preparation of large quantities. In 1882 Willgerodt³² reported that a larger yield of the ether could be obtained if the alcohol were properly mixed with water, and the mixture refluxed for a long time (36 hours). The product, however, was a mixture of unchanged *p*-chloronitrobenzene, dichlorazoxybenzene, *p*-nitrophenol, and *p*-nitrophenetol, the separation of which was rather tedious.

In 1883 Kolbe and Kauder³³ attempted to prepare *p*-nitrophenetol by the action of potassium ethyl sulphate on the sodium salt of *p*-nitrophenol. A concentrated aqueous solution of equimolecular quantities of the two compounds was refluxed in an oil-bath at 160–170° and then distilled. Very little *p*-nitrophenetol was obtained. The addition of an excess of sodium hydroxide did not improve the yield. Attempts to carry out the experiments under increased pressure were unsuccessful as the sealed tubes exploded before the temperature of 150° was reached.

In 1886 Willgerodt and Ferko,³⁴ believing that Kolbe and Kauder's poor results were due to the presence of water, substituted alcohol as the solvent. They heated the sodium salt of *p*-nitrophenol with an excess of alkali ethyl sulphate and alcohol in a closed tube for three hours. At 150° only traces of *p*-nitrophenetol were formed, but at 200° they state that the sodium salt of *p*-nitrophenol was completely converted into the ether. Higher temperatures, they found, produced charring.

In 1886 Hinsberg discovered the medicinal action of acetphenetidin, and the method which he adopted in his process of manufacture for the preparation of the *p*-nitrophenetol was as follows:³⁵ 50 Kg. of the potassium salt of *p*-nitrophenol were mixed with 300 Kg. of alcohol and 40 Kg. of ethyl bromide. The mixture was heated in an autoclave at a pressure of 3–4 atmospheres for about 8 hours. In order to separate the *p*-nitrophenol which had not taken any part in the reaction from the ether formed, the solution was treated with steam. This caused the ether to distill over, leaving behind the unchanged *p*-nitrophenol.

In 1896 Paul,³⁶ describing the manufacture of acetphenetidin, stated that the *p*-nitrophenetol was made as follows: 480 Gm. of the pure sodium salt of *p*-nitrophenol, 3120 Gm. of denatured alcohol, 300 Gm. of ethyl bromide (crude) and 100 Gm. of sodium carbonate, were

²⁹ *Am. Chem. J.*, 1, 271, 1879.

³⁰ *Ber.*, 14, 37, 1881.

³¹ *Ibid.*, 14, 2636, 1881.

³² *Ibid.*, 15, 1002, 1882.

³³ *J. prakt. Chem.*, 28, 62, 1883; *Chem. Zentr.*, 1883, 521.

³⁴ *Ibid.*, 33, 152; *Chem. Zentr.*, 1886, 323.

³⁵ U. S. Pat. No. 400,086, Mar. 26, 1889.

³⁶ *Z. angew. Chem.*, 1896, 587.

heated under a reflux condenser for about ten hours. The contents of the vessel were then cooled, the solid *p*-nitrophenetol filtered off, and, in order to separate any unchanged *p*-nitrophenol it was washed with water until the washings were only faintly colored yellow. For complete purification the crude *p*-nitrophenetol was recrystallized from about three parts of alcohol.

In 1898³⁷ there was described a method of making *p*-nitrophenetol by treating the ester of *p*-nitrophenol and nitro-*p*-toluene-sulphonic acid with an alcoholic solution of sodium ethylate or with an alcoholic solution of sodium hydroxide when the following reaction was said to take place:



EXPERIMENTAL.

PREPARATION OF *p*-NITROPHENETOL FROM *p*-NITROACETANILID.

Para-nitroacetanilid when heated with concentrated aqueous solutions of sodium or potassium hydroxide is partially converted into *p*-nitrophenol, as has been stated. It was interesting to determine whether *p*-nitrophenetol would be produced if an alcoholic solution of the alkali were substituted for the aqueous solution. The reaction would then proceed thus: $\text{NO}_2.\text{C}_6\text{H}_4.\text{NH}.\text{OC}.\text{CH}_3 + \text{C}_2\text{H}_5\text{OH} + \text{NaOH} = \text{NO}_2.\text{C}_6\text{H}_4.\text{OC}_2\text{H}_5 + \text{NH}_3 + \text{CH}_3.\text{COONa}$. An experiment carried out by heating under a reflux for 24 hours a mixture of 18 Gm. of *p*-nitroacetanilid, 7 Gm. of potassium hydroxide, and 50 Gm. of absolute alcohol (commercial), gave *p*-nitraniline only. No ammonia was evolved. Sodium hydroxide gave the same results, and so did 90 percent alcohol.

PREPARATION OF *p*-NITROPHENETOL FROM *p*-NITROPHENOL.

Ethylation according to the method of Claisen and Eisleb.—Claisen and Eisleb³⁸ stated that alkylation could be easily and conveniently effected by heating together the substance to be alkylated, the proper alkyl halide, and potassium carbonate in acetone as the solvent. They worked with the allyl ethers only, but stated that other phenol-alkyl ethers could undoubtedly be made by the same method. In the case of the allyl ether of *p*-nitrophenol, these writers claim to have obtained a theoretical yield. The method was tried for the preparation of the ethyl ether of *p*-nitrophenol with the following results. 42 Gm. of *p*-nitrophenol and 45 Gm. of potassium carbonate, both dry and finely powdered, were refluxed with 36 Gm. of ethyl bromide and 100 Gm. of acetone for 8 hours. The acetone was then distilled off and the residue treated with steam. The *p*-nitrophenetol obtained from the steam-distillate amounted to 23.1 Gm. in one case and 23.4 Gm. in another, equivalent to 45.5 and 46.1 percent of the theoretical.

Since copper sometimes acts as a positive catalyst in the formation of ethers,³⁹ two experiments were run, identical with those above-described except that 0.5 Gm. of copper in one case, and 3 Gm. of copper in another, were added to the mixture. The copper was obtained by adding zinc dust to a solution of copper sulphate. The yield of ether was respectively 20.4 Gm. and 19.8 Gm., equivalent to 40.2 percent and 39 percent of the theoretical. From this it appears that copper has a detrimental effect.

³⁷ "Société chimique des Usines der Rhône anet Gilliard," P. Monnet and Cartier; *D. R. P.* No. 95,965; Lassar-Cohn, "Arbeitsmethoden," 4 Aufl., *Spez. Teil*, p. 289.

³⁸ *Ann.*, 401, 21, 1913.

³⁹ *Ber.*, 38, 2211 1905.

An experiment was also made in which the potassium salt of *p*-nitrophenol was first made by evaporating to dryness an aqueous solution of *p*-nitrophenol and potassium hydroxide in molecular proportions, drying the salt at 120°, and then refluxing with ethyl bromide in acetone solution as before. 42 Gm. of *p*-nitrophenol gave 19.8 Gm. of the ether, or 39 percent of the theoretical.

An experiment with 42 Gm. of *p*-nitrophenol, 45 Gm. of potassium carbonate, 36 Gm. of ethyl bromide, and 100 Gm. of acetone, heated under pressure at 100°, gave 42 Gm. of the ether, equivalent to 83.1 percent of the theoretical. An increase in pressure appears to be very favorable to the formation of the ether.

*Ethylation with Ethyl Bromide under increased pressure, (Method of Hinsberg).—*100 Gm. of the dry sodium salt of *p*-nitrophenol, 80 Gm. of ethyl bromide, and 500 Cc. of absolute ethyl alcohol (commercial), were heated in an autoclave at 50 pounds pressure for 8 hours. The alcohol was then distilled off, and the residue treated with steam to separate the ether. The yield was 84 Gm. equivalent to 81 percent of the theoretical.

Ethylation with potassium ethyl sulphate under increased pressure.—100 Gm. of the dry sodium salt of *p*-nitrophenol, 150 Gm. of potassium ethyl sulphate, and 500 Gm. of absolute alcohol (commercial), were heated in an autoclave at 150 pounds' pressure for 8 hours. After distilling off the alcohol, the residue was treated with steam in order to separate the ether. The yield of *p*-nitrophenetol was 80.5 Gm. equivalent to 77.5 percent of the theoretical.

Ethylation with sodium ethyl sulphate under increased pressure.—100 Gm. of the dry sodium salt of *p*-nitrophenol, 150 Gm. of sodium ethyl sulphate, and 500 Gm. of absolute alcohol (commercial), were treated as in the experiment with potassium ethyl sulphate. The yield of *p*-nitrophenetol was 56.5 Gm., equivalent to 54.5 percent of the theoretical. By increasing the quantity of sodium ethyl sulphate to 200 Gm., a yield of 72.2 percent of the theoretical was obtained. Pressures above 150 pounds produced large quantities of tar.

Ethylation with Ethyl Chloride under increased pressure.—100 Gm. of the sodium salt of *p*-nitrophenol, dried at 120°, 100 Gm. of ethyl chloride, and 500 Cc. of absolute alcohol (commercial) were heated in an autoclave at 100 pounds' pressure for six hours. The alcohol was then distilled off, and the residue steam-distilled. The yield of *p*-nitrophenetol was 79 Gm., equivalent to 76.1 percent of the theoretical. Two experiments carried out at 150 pounds pressure gave respectively 84.2 Gm. and 83.7 Gm. of *p*-nitrophenetol, equivalent to 81.2 and 80.7 percent of the theoretical.

CONCLUSION.

Para-nitrophenetol is apparently most economically prepared by heating sodium *p*-nitrophenolate under increased pressure with an alcoholic solution of ethyl chloride.

3. PREPARATION OF *p*-AMINOPHENETOL.

HISTORICAL.

Para-aminophenetol appears to have been first described in detail by E. J. Hallock⁴⁰ in 1879. Having obtained a considerable quantity of *p*-nitrophenetol, Hallock attempted to reduce it by means of tin and hydrochloric acid. The resulting salt, after the separation of the tin

⁴⁰ *Am. Chem. J.*, 1, 271, 1879.

disulphostilbene-diazo-diphenol.⁴⁷ Brilliant Yellow is prepared by coupling phenol with diazotized disulpho-diamino-stilbene. It will be seen that this method of preparing *p*-aminophenetol is perfectly analogous to that of Riedel (see above). The advantages, if any, which it possesses over that method are not stated.

According to Paul,⁴⁸ who described a technical process of manufacturing acetphenetidin in 1896, *p*-aminophenetol is made by reducing *p*-nitrophenetol with tin and hydrochloric acid, and precipitating the *p*-aminophenetol hydrochloride by means of concentrated hydrochloric acid, in which it is not very soluble. The details of this method are given on page 288.

In 1915 Hurst and Thorpe⁴⁹ reported that when *p*-nitrophenetol is reduced according to the method recommended by Hinsberg, in which tin and concentrated hydrochloric acid are used as the reducing agents, approximately equal quantities of *p*-aminophenetol and 3-chlor-4-aminophenetol are formed. It was found that pure *p*-aminophenetol could be obtained by using dilute acid, and that under proper conditions the chlorinated *p*-aminophenetol was the sole product with concentrated acid.

EXPERIMENTAL.

PREPARATION OF *p*-AMINOPHENETOL FROM *p*-AMINOPHENETOL (METHOD OF RIEDEL, MODIFIED BY THE PRESENT WRITER).

Ethyl-p-dihydroxy-azobenzene, ($C_2H_5O.C_6H_4.N = N.C_6H_4.OH$).—150 Gm. of *p*-aminophenetol were dissolved in a mixture of 380 Cc. of 20 percent hydrochloric acid and 2200 Cc. of water. Ice was added until the temperature fell to 5°. A solution of 76 Gm. (according to Riedel, 70 Gm.) of sodium nitrite in 550 Cc. of water was then added slowly with stirring. A slightly blue coloration was obtained with starch-iodide paper when all the sodium nitrite had been added. The solution of the diazo-compound was then slowly run into a solution of 104 Gm. of phenol and 220 Gm. of crystallized sodium carbonate in 400 Cc. of water. This solution was stirred by a mechanical stirrer, and the stirring continued for one hour after the addition of the diazo solution was completed. The precipitated ethyl-*p*-dihydroxy-azobenzene, which is only slightly soluble in water, and practically insoluble in the presence of alkali carbonates, was filtered off at the pump and dried. It forms a brownish yellow powder, melting at 124.5° (according to Riedel 104.5°, probably a typographical error). Four experiments were made, and the yield in each case was practically quantitative, 264–266 Gm. The theoretical yield is 265 Gm. but the weight of the powder obtained is sometimes slightly more than this on account of the presence of a little inorganic salt.

Diethyl-dihydroxy-azobenzene, ($C_2H_5O.C_6H_4.N = N.C_6H_4.OC_2H_5$).—100 Gm. of dry ethyl-*p*-dihydroxy-azobenzene and 17 Gm. of sodium hydroxide were dissolved in 500 Cc. of alcohol. To this solution 46 Gm. of ethyl bromide were added, and the whole heated in an autoclave ten hours at 150°. The alcohol was then distilled off, the residue washed with water to separate the sodium bromide, and then with a dilute solution of sodium hydroxide to separate any unchanged dihydroxy-azobenzene. The diethyl-*p*-dihydroxy-azobenzene is obtained in the form of brown plates, melting at 156°. The yield is about 100 Gm., or 90 percent of the theoretical.

Para-aminophenetol.—One hundred Gm. of diethyl-*p*-dihydroxy-azobenzene, 60 Gm. of granulated tin, and 500 Gm. of 20 percent hydrochloric acid, were heated

⁴⁷ Knecht, Rawson and Loewenthal, "A Manual of Dyeing," 2, 405–6, 1910.

⁴⁸ *Z. angew. Chem.*, 1896, 587.

⁴⁹ *J. Chem. Soc.*, 107, [2] 934, 1915.

on a water-bath till the azo-compound was completely dissolved; the heating was continued one hour longer. 1000 Cc. of water and 67 Gm. of zinc were then added to the cooled solution. After one hour the precipitated tin was filtered off, washed with water, 180 Gm. of sodium hydroxide, dissolved in water, added to the filtrate, and the mixture steam-distilled. The distillate was collected in 100 Gm. of concentrated hydrochloric acid (33.5 percent), diluted with a little water. The yield was 119 Gm. equivalent to 92.2 percent of the theoretical.

For this reduction Riedel directs the use of 170 Gm. of stannous chloride and 300 Cc. of concentrated hydrochloric acid. The use of tin, and its recovery by means of zinc, reduces the cost of this step considerably.

Theoretically one mol of *p*-aminophenetol yields two mols on treatment by the Riedel method. The foregoing experiments show, however, that only about one and two-thirds mols can be obtained in practice.

PREPARATION OF *p*-AMINOPHENETOL FROM *p*-NITROPHENETOL.

Reduction with stannous chloride and hydrochloric acid.—170 Gm. of crystallized stannous chloride were dissolved in 250 Cc. of 20 percent hydrochloric acid. To this solution 42.4 Gm. of *p*-nitrophenetol were added, and the mixture heated on a water-bath for two hours. To the cooled solution 300 Gm. of sodium hydroxide dissolved in water were added, and the mixture then distilled with steam. The distillate was collected in 30 Gm. of concentrated hydrochloric acid, diluted with a little water. On evaporating the distillate, 36.1 Gm. of *p*-aminophenetol hydrochloride were obtained, equivalent to 82.2 percent of the theoretical.

Reduction with Tin and Hydrochloric Acid.—33.4 Gm. of *p*-nitrophenetol, 47.6 Gm. of granulated tin, and 328.5 Gm. of 20 percent hydrochloric acid were heated on a water-bath for two hours. The solution was then diluted with water and 52.4 Gm. of zinc added. After one hour the tin was filtered off, washed, and the filtrates made alkaline with 144 Gm. of sodium hydroxide dissolved in water. The mixture was then distilled with steam, and the distillate collected in 25 Gm. of concentrated hydrochloric acid diluted with water. On evaporating the distillate, 29.8 Gm. of *p*-aminophenetol hydrochloride were obtained, equivalent to 86 percent of the theoretical.

Reduction with Iron and Hydrochloric Acid.—167 Gm. of *p*-nitrophenetol, 35 Gm. of concentrated hydrochloric acid, and 250 Cc. of water were placed in a flask provided with a condenser and mechanical agitator, and heated on the water-bath at a temperature from 70° to 80°. To this mixture 140 Gm. of iron powder were gradually added. The heating was continued for about two hours after the addition of the iron was completed. The mixture was then made alkaline with 25 Gm. of chalk and subjected to steam distillation. The distillate was collected in dilute hydrochloric acid. On evaporating the acid solution, 155 Gm. of *p*-aminophenetol hydrochloride were obtained, equivalent to 89.3 percent of the theoretical.

For this reduction Hinsberg directs the use of 250 Gm. of hydrochloric acid, 250 Gm. of water and 104 Gm. of iron. If concentrated hydrochloric acid is intended, this quantity is far in excess of that required, one-tenth of this quantity being sufficient. The amount of iron used is insufficient; theory (two reactions are possible) requires 112–168 Gm. In practice the mean is usually taken, which is 140 Gm.

The *p*-aminophenetol can also be absorbed in sulphuric acid, but the sulphate is more difficult to dry than the hydrochloride.

Reduction with Sodium Sulphide and Sulphur.—In the experiments tabulated below the following procedure was used: The crystallized sodium sulphide (33 percent), sulphur and water were boiled together under a reflux condenser for one hour. The *p*-nitrophenetol was added gradually to this solution, and the mixture boiled, with turbinizing, for several hours. The cooled mixture was then extracted with ether, and the ethereal solution shaken with diluted hydrochloric acid. On evaporating the acid solution *p*-aminophenetol hydrochloride is obtained, and on evaporating the ethereal solution the unchanged *p*-nitrophenetol is recovered.

Para-nitrophenetol. Gm.	Sodium sulphide. Gm.	Sulphur. Gm.	Water. Gm.	Para-aminophenetol. Gm.	Yield. Percent.
33.4	48	6.4	40.0	19.1	55.2
33.4	81	10.8	67.5	22.0	63.5
33.4	81	10.8	140.0	26.4	76.0
33.4	81	10.8	300.0	28.6	82.6
33.4	60	8.0	300.0	25.8	74.5
33.4	60	8.0	500.0	24.2	70.0

The proportions given in the first experiment are those required by theory. It is of interest to note that the yield is increased, up to a certain point, by an increase in the quantity of water.

The method above-described is very convenient for the preparation of small quantities of *p*-aminophenetol hydrochloride. On a large scale the reduction mixture is allowed to stand until two layers separate. The upper layer, consisting of *p*-aminophenetol and unchanged *p*-nitrophenetol, is then separated from the lower aqueous layer, and the *p*-aminophenetol and *p*-nitrophenetol separated by fractional distillation, preferably in vacuo.

CONCLUSION.

Para-aminophenetol is apparently most economically prepared by heating *p*-nitrophenetol with iron and dilute hydrochloric acid.

4. PREPARATION OF ACETYL-*p*-AMINOPHENOL.

HISTORICAL.

In 1878 Morse⁵⁰ reported that when *p*-nitrophenol is reduced with tin and glacial acetic acid acetyl-*p*-aminophenol is produced, reduction and acetylation occurring in one operation.

In 1907 Tingle and Williams⁵¹ published an article, from which it appears that many of the chemists who tried the method recommended by Morse failed to obtain the compound. In reply to a letter from these writers Morse stated that the best results would be obtained by the use of absolutely anhydrous acetic acid. These writers therefore used in their experiments glacial acetic acid to which acetic anhydride had been added in quantity exactly sufficient to raise the acid content to 100 percent. By means of this mixture and by carefully excluding moisture from the apparatus they were able to obtain a yield of 47 percent of the theoretical. Their method is described as follows:

"Para-nitrophenol (12 grammes, 1 mol.) was mixed in a capacious, round-bottomed flask with glacial acetic acid, 50 grammes = 10.5 mol., to which sufficient recently distilled acetic anhydride had been added to bring the acid content to 100 percent. The flask was attached to a long reversed condenser, suitably protected from the moisture of the atmosphere, and the

⁵⁰ *Ber.*, 11, 232, 1878.

⁵¹ *Am. Chem. J.*, 37, 51, 1907.

contents of the flask were heated until the nitrophenol had dissolved. To this solution granulated tin, 15 grammes, was added. The reduction commenced immediately and the reaction quickly became very vigorous. It is desirable to allow the reaction to proceed as rapidly as is possible without loss of substance. As soon as the reaction moderates, a second portion of tin, 15 grammes, is added, and, if necessary, external heat applied to bring practically all the metal into solution. The liquid is now poured into 2 liters of water, the mixture warmed and a current of hydrogen sulphide passed into it until no further precipitate of stannous sulphide takes place. Sometimes it is convenient to filter the liquid through cheese cloth before all the tin has been thrown down and then, later, to make a final filtration through paper. The clear filtrate is concentrated until crystals appear; after being cooled the crystals are drained and recrystallized twice from 95 percent alcohol."

These authors also obtained the compound by the action of tin amalgam on the nitrophenol, in the presence of acetic acid of 100 percent concentration. The experiments were carried out in an apparatus of special construction, in which the tin amalgam was produced continuously by means of an electric current. The yield by this method was about 40 percent of the theoretical.

In 1903 Dahl and Company,⁵² who were interested in the preparation of acetyl-*p*-aminophenol for use in the manufacture of dyestuffs, stated that the compound was best prepared by heating *p*-aminophenol with glacial acetic acid.

In 1905 Lumiere and Barbier⁵³ in the course of their work on acetylation in aqueous solution prepared it by shaking a solution of 10.9 Gm. of *p*-aminophenol in 100 Cc. of water and 7 Gm. of acetic acid with 12.3 Gm. of acetic anhydride.

CONCLUSION.

Acetyl-*p*-aminophenol is apparently a comparatively expensive intermediate, the use of which in the manufacture of acetphenetidin is not economical.

PREPARATION OF ACETPHENETIDIN.

HISTORICAL.

Hallock,⁵⁴ who first made acetphenetidin, prepared it by the action of acetyl chloride on *p*-aminophenetol, but apparently did not attempt the purification of the resulting crystalline solid.

In the technical process patented by Hinsberg,⁵⁵ the hydrochloride of *p*-aminophenetol is melted with fused sodium acetate and glacial acetic acid, the melted mass repeatedly boiled with water, and the acetphenetidin obtained from the filtrates after cooling. This product is crude and requires purification, but no method for this purification is described in the patent-specification.

The method described by Paul⁵⁶ is essentially the same as the preceding, but more details are given. The *p*-aminophenetol hydrochloride, sodium acetate, and glacial acetic acid are heated under a reflux condenser for three hours, the solution then dissolved in 10 parts of boiling water, and freed from resinous impurities by filtering. After cooling the acetphenetidin crystallizes out with a faint red color. By recrystallization from water with the aid of animal charcoal pure acetphenetidin is obtained.

For use in the laboratory Hinsberg⁵⁷ recommended acetylation by vigorously shaking *p*-aminophenetol in a separatory funnel with ice-water and an excess of acetic anhydride (about 1.5 molecular weights to 1 molecular weight of *p*-aminophenetol), filtering off the acetphenetidin after the disappearance of the anhydride, and crystallizing from dilute alcohol with the aid of animal charcoal.

⁵² *Chem. Zentr.*, 2, 1227, 1903.

⁵³ *Ibid.*, 2, 465, 1905.

⁵⁴ *Am. Chem. J.*, 1, 271, 1879.

⁵⁵ U. S. Pat. No. 400,086, 1889.

⁵⁶ *Z. angew. Chem.*, 1896, 587.

⁵⁷ *Ann.*, 305, 276, 1899.

In this same article Hinsberg states that *p*-aminophenetol may also be acetylated by boiling with glacial acetic acid. Platt⁵⁸ states that acetphenetidin is made commercially by treating *p*-aminophenetol with anhydrous acetic acid. In Klimmek's process⁵⁹ equimolecular quantities of *p*-aminophenetol and glacial acetic acid are heated together in a flask having a return condenser and maintained at a temperature of 100° in a water-bath for from 4 to 5 hours. This solution is then thrown into 80 parts of boiling water, a sufficient quantity of animal charcoal having been added to secure, on filtration, a perfectly clear liquid. The solution is filtered while hot and allowed to crystallize rapidly. It is stated that the large amount of water above-mentioned thoroughly dissolves the solids, so that all the impurities and coloring matter are absorbed by the charcoal. After separating the water and drying the solid, pure acetphenetidin is obtained.

To go from acetyl-*p*-aminophenol to acetphenetidin, Täuber⁶⁰ directs that acetyl-*p*-aminophenol, potassium ethyl sulphate, and sodium hydroxide, dissolved in 60 percent alcohol, be heated at 150° for several hours. On diluting the resulting solution with water, acetphenetidin separates out in fairly pure crystals. Hinsberg⁶¹ directs that acetyl-*p*-aminophenol and an equivalent part of sodium hydroxide and ethyl bromide or ethyl iodide, dissolved in sufficient alcohol to form a clear solution, be warmed on a water-bath for two or three hours under a reflux, and then diluted with water. In case pure acetyl-*p*-aminophenol is used, the purity of the acetphenetidin which separates out is said to be such that usually no further purification is required.

EXPERIMENTAL.

Acetylation of p-Aminophenetol.—68.5 Gm. of *p*-aminophenetol and 36 Gm. of glacial acetic acid were mixed in a flask fitted with an air-condenser, and boiled on a sand-bath for eight hours. The tube forming the air-condenser was of such a length that the water-vapor could escape, while the acetic acid and *p*-aminophenetol were condensed. The liquid was then poured into 300 Cc. of hot water containing 10 Cc. of hydrochloric acid, well stirred, and after cooling filtered at the pump and washed with a little cold water. The crude acetphenetidin obtained in this way has a lavender color. It was purified by dissolving in 80 parts of boiling water, adding 20 Gm. of animal charcoal, and boiling until the liquid was colorless. This operation is most satisfactorily carried out in the kind of apparatus used for steam distillation; the acetphenetidin dissolves more readily, the mixture is kept stirred by the steam, and the volume of water can be kept practically unchanged. When the liquid was decolorized the mixture was filtered at the pump, and the filtrate cooled rapidly with stirring. The pure acetphenetidin was then filtered off and dried. A yield of 69.6 Gm., equivalent to 77.8 percent of the theoretical, was obtained.

By using 50 Gm. of glacial acetic acid, a yield of 76 Gm. was obtained, equivalent to 85.8 percent of the theoretical.

Acetylation of p-Aminophenetol Hydrochloride.—83.5 Gm. of *p*-aminophenetol hydrochloride, 43.5 Gm. of fused sodium acetate, and 41.5 Gm. of glacial acetic acid, were treated exactly as described in the foregoing experiments. The yield was 72.8 Gm. equivalent to 84.3 percent of the theoretical.

With 36 Gm. of glacial acetic acid the yield was 68 Gm. equivalent to 76 percent of the theoretical.

Acetylation of p-Aminophenetol Sulphate.—93 Gm. of *p*-aminophenetol sulphate, 42.5 Gm. of fused sodium acetate, and 42.5 Gm. of glacial acetic acid, were

⁵⁸ *J. Anal. Appl. Chem.*, 7, 79, 1893.

⁵⁹ U. S. Pat. No. 006,288, 1898.

⁶⁰ *D. R. P.* No. 85,988, 1894.

⁶¹ *Ann.*, 305, 276, 1899.

treated exactly as above-described. The yield was 75.3 Gm. equivalent to 84.1 percent of the theoretical.

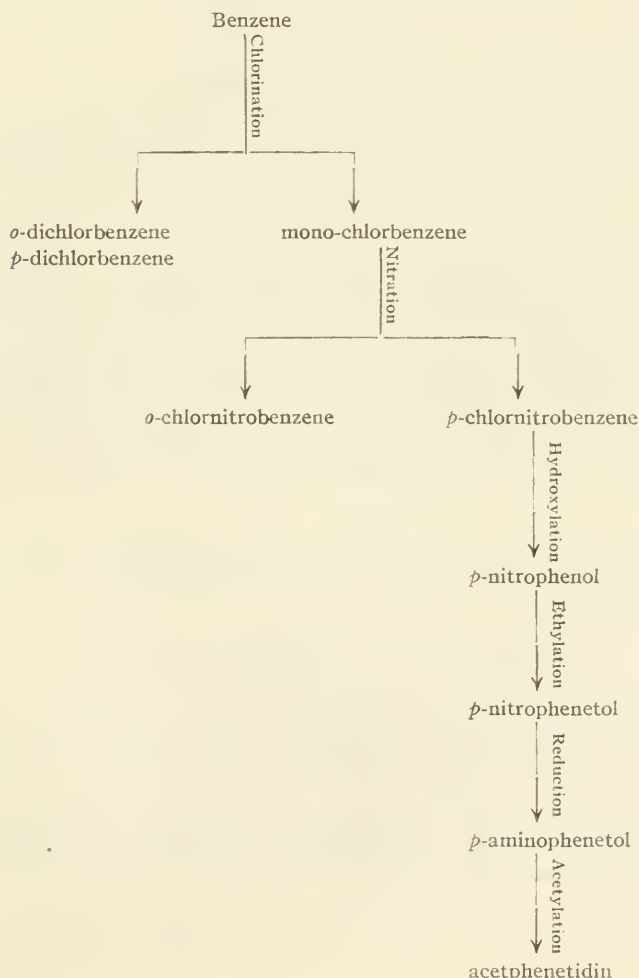
CONCLUSION.

Since *p*-aminophenetol hydrochloride is more readily obtained than the sulphate or the free base, acetphenetidín is apparently most economically prepared by heating the hydrochloride with fused sodium acetate and glacial acetic acid.

PROCESS RECOMMENDED FOR THE MANUFACTURE OF ACET-PHENETIDIN.

I. PLAN.

The studies of the preceding chapters have eliminated the methods of Riedel and Taüber, on account of their high cost of production, and have shown that the method of Hinsberg admits of substantial improvements. The process recommended, which includes these improvements, is based on the plan given below.



For completeness, the hydrocarbon benzene is here made the starting-point; it seems preferable, however, to regard the synthesis of acetphenetidin as beginning with *p*-chlornitrobenzene, since from this intermediate it follows a direct course, no by-products forming.

2. CRUDES AND APPARATUS.

The crudes which are required in carrying out the complete process as outlined above are benzene, chlorine, sodium hydroxide, nitric acid, sulphuric acid, hydrochloric acid, acetic acid, sodium acetate, ethyl chloride, and iron. Those manufacturers who chlorinate benzene obtain both chlorine and sodium hydroxide by the electrolysis of sodium chloride, and obtain hydrochloric acid as a by-product of the chlorination. By efficient operation, the sulphuric acid and acetic acid can be largely recovered, the latter as sodium acetate. Ethyl chloride is very easily and cheaply made from ethyl alcohol and hydrochloric acid by well-known methods.

No unusual apparatus is required in carrying out the operations of this process.

3. OPERATIONS.

PREPARATION OF CHLORBENZENE.⁶²

300 parts of benzene are mixed in a suitable vessel with 1 part of anhydrous ferric chloride and 1 part of powdered iron, and 150 parts of dry chlorine are led into the mixture. The hydrogen chloride which is evolved is absorbed in water. After all the chlorine has passed in, the mixture is fractionally distilled *in vacuo*. The first fraction consists chiefly of unchanged benzene, which is returned to the apparatus for further chlorination (requiring about 80 parts of chlorine). The second fraction consists chiefly of mono-chlorbenzene, and the third fraction of dichlorbenzene. On cooling the third fraction, pure *p*-dichlorbenzene crystallizes out, and is separated from the oily mother-liquor. The mother-liquor consists of approximately 75 percent of ortho- and 25 percent of para-dichlorbenzene. Yield, 335 parts of mono-chlorbenzene, 24 parts of *p*-dichlorbenzene, 13 parts of mixed ortho- and para-dichlorbenzene, and 115 parts of hydrochloric acid.

NOTES.

The catalysts, ferric chloride and iron, can be used indefinitely. The chlorination is interrupted before all the benzene is acted on, in order that the conditions may not favor the formation of *p*-dichlorbenzene.

PREPARATION OF CHLORNITROBENZENE.

A mixture of 100 parts of nitric acid (sp. gr. 1.42) and 150 parts of sulphuric acid (sp. gr. 1.84) is introduced into a suitable apparatus fitted with an agitator and a condenser. 100 parts of mono-chlorbenzene are slowly run in, while the agitator is kept in rapid movement and the temperature maintained around 125°. When the greater part of the chlorbenzene has been added, the temperature is raised by external heat to 70–80°. After all the chlorbenzene has been added, the stirring and heating are continued until there is no further reaction. The mixture

⁶² D. R. P. No. 219,242; *J. Soc. Chem. Ind.*, 1910, 617; *Chem. Zentr.*, 81, 1074, 1910; cf. *Chem. Eng.*, [1] 25, 22, 1917.

is allowed to stand until the chlornitrobenzene separates as an oil on the surface of the acid. The acid is drawn off at the bottom, and the chlornitrobenzene washed with warm water.

*Separation.*⁶³—The mixture of ortho- and para-chlornitrobenzene is cooled to about 16°, when the greater part of the para-isomer crystallizes out, and is separated from the oily mother-liquor. The oil is fractionated *in vacuo*; the para-isomer concentrates in the first fraction, and the ortho derivative in the second fraction. On cooling these fractions a portion of the pure isomer crystallizes out and is separated. The process of fractionation and crystallization is repeated until the separation is complete. Yield, 95–100 parts of *p*-chlornitrobenzene, and 35–37 parts of *o*-chlornitrobenzene.

NOTES.

The spent-acid may be “regenerated” by evaporating in the usual way, and used again for nitrating.

PREPARATION OF SODIUM *p*-NITROPHENOLATE.

Sixty-five parts of sodium hydroxide are dissolved in 1300 parts of water, and the solution introduced into an autoclave. One hundred parts of *p*-chlornitrobenzene are added, and the mixture heated for about eight hours at a pressure of 80 pounds. While still hot the solution is filtered, and evaporated to a small volume. After cooling the sodium *p*-nitrophenolate is separated from the mother-liquor and dried at 120°. Yield, 95–100 parts.

PREPARATION OF *p*-NITROPHENETOL.

One hundred parts of dry sodium *p*-nitrophenolate, 100 parts of ethyl chloride, and 500 parts of alcohol are mixed in an autoclave, and heated at a pressure of 150 pounds for about six hours. While still warm the solution is removed, the alcohol distilled off, and the residue washed with cold water. Yield, 95–100 parts of crude *p*-nitrophenetol, containing 85–90 percent of pure ether. For purification the crude ether is steam-distilled. Yield, about 85 parts.

NOTES.

The unchanged *p*-nitrophenol can be recovered from the wash-waters by acidifying and evaporating to crystallization.

For conversion into *p*-aminophenetol it is unnecessary to purify the *p*-nitrophenetol.

PREPARATION OF *p*-AMINOPHENETOL HYDROCHLORIDE.

One hundred parts of *p*-nitrophenetol (120 parts if crude), 150 parts of water, and 10 parts of hydrochloric acid, are mixed in a suitable vessel fitted with a condenser, an agitator and a direct-steam coil, and heated to 70°. Eighty-five parts of finely ground cast iron are added at such a rate that the temperature is maintained at about 70°, the mixture being stirred continuously. When all the iron has been added the heating is continued by steam until the reduction is complete. The contents are distilled with superheated steam, and the distillate collected in 65 parts of hydrochloric acid (s. g. 1.17). The distillate is evaporated to dryness. Yield, 90–95 parts.

⁶³ D. R. P. No. 97,013; *Frdl.* V, 48; *Chem. Zentr.*, 2, 238, 1898.

NOTES.

The reduction is complete when a portion of the distillate, acidified with hydrochloric acid, leaves no undissolved oil or solid.

The steam-distillation is complete when a portion of the distillate, treated with a solution of ferric chloride, gives no purple or violet coloration.

PREPARATION OF ACETPHENETIDIN.

One hundred parts of *p*-aminophenetol hydrochloride, 48 parts of fused sodium acetate, and 48 parts of glacial acetic acid, are mixed in a suitable vessel fitted with a condenser, and boiled for about eight hours. The excess of acetic acid is distilled off, and the residue washed with 500 parts of cold water containing 10 parts of hydrochloric acid. The crude acetphenetidin is dissolved in 8000 parts of boiling water, 25 parts of animal charcoal added, and the mixture boiled until the liquid is colorless. The mixture is filtered, and the filtrate cooled quickly with vigorous stirring. The pure acetphenetidin is filtered off and dried. Yield, 85–90 parts.

NOTES.

The distillate of acetic acid can be used to make sodium acetate for another acetylation by neutralizing with sodium carbonate, evaporating and fusing.

The wash-water, containing unchanged *p*-aminophenetol hydrochloride, and coloring-matter, can be treated with chalk, and the *p*-aminophenetol distilled over with steam.

The filtrate from the pure acetphenetidin contains about 6 parts of acetphenetidin in solution, which can be obtained by evaporating the liquid.

The animal charcoal can be revived by gentle ignition in closed tubes.

4. CONCLUSION.

The process above-described is capable of producing acetphenetidin at a very low cost compared with the older methods. The materials required are cheap and easily accessible; the operations involved are simple; and the yields at each step are good. Only subordinate quantities of by-products are formed, and these occur in the earlier and less important phases of the synthesis.

ABBREVIATIONS.

The following abbreviations have been used in the bibliographical references:

Am. Chem. J.—*American Chemical Journal*.

Ann.—*Justus Liebig's Annalen der Chemie*.

Ann. chim. phys.—*Annales de chimie et de physique*.

Arch. exp. Path. Pharm.—*Archiv für experimentelle Pathologie und Pharmakologie*.

Ber.—*Berichte der Deutschen chemischen Gesellschaft*.

Berl. klin. Wochschr.—*Berliner klinische Wochenschrift*.

Brit. Pat.—*British Patent*.

Bull. acad. St. Pétersb.—*Bulletin de l'Académie Impériale des Sciences de St. Pétersbourg*.

Bull. classe phys.-math.—*Bulletin de la classe physico-mathématique*.

Chem. Eng.—*Chemical Engineer*.

Chem. Zentr.—*Chemisches Zentralblatt*.

D. R. P.—*Patentschrift des Deutschen Reiches*.

Frdl.—*Friedlander's Fortschritte der Teerfarbenfabrikation*.

Gazz. chim. ital.—*Gazzetta chimica italiana*.

J. Am. Chem. Soc.—*Journal of the American Chemical Society*.

J. Anal. Appl. Chem.—*Journal of Analytical and Applied Chemistry*.

J. Chem. Soc.—*Journal of the Chemical Society*.

J. prakt. Chem.—*Journal für praktische Chemie.*

J. Roy. Soc. Arts.—*Journal of the Royal Society of Arts.*

J. russ. phys. chem. Ges.—*Journal der russischen physikalisch-chemischen Gesellschaft.*

J. Soc. Chem. Ind.—*Journal of the Society of Chemical Industry.*

Jsb. Chem.—*Jahresbericht der Chemie.*

Lehrb. (Kekulé).—*Lehrbuch der Organischen Chemie, by Aug. Kekulé.*

Rec. trav. chim.—*Recueil des travaux chimiques des Pays-Bas.*

U. S. Pat.—*United States Patent.*

Z. angew. Chem.—*Zeitschrift für angewandte Chemie.*

Z. Chem.—*Zeitschrift für Chemie.*

Z. klin. Med.—*Zentralblatt für klinische Medizin.*

Z. med. Wiss.—*Zentralblatt für medizinischen Wissenschaften.*

Z. physik. Chem.—*Zeitschrift für physikalische Chemie.*

With a few exceptions, the above abbreviations are those recommended and used in *Chemical Abstracts* (see *Chemical Abstracts*, 1908, Vol. 2).

CONIUM MACULATUM L., AND AETHUSA CYNAPIUM L., AN ADULTERANT.*

BY CLARE OLIN EWING, ERNEST E. STANFORD, AND JOSEPH F. CLEVINGER.

Conium maculatum L., the Greater or Poison Hemlock, was known in ages past as a poisonous plant. It is asserted to have been the state poison of the ancient Greeks, and its use in early medicine is reported by Dioscorides. The plant was introduced to more recent practice by Störck¹¹, who employed it in a wide variety of conditions. According to Henry⁷, *Conium* contains a series of six alkaloids, to whose action its medicinal properties have been commonly attributed. Coniine, the principal member of the series, was isolated by Giesecke in 1827. Other alkaloids occur only in minute amounts, and the mixture is usually known by the name of its most important representative—coniine. While hemlock enjoyed a considerable vogue for a time, the uncertainty of its preparations soon put it into disfavor. Harley⁵ investigating its physiological effects upon himself and others, considered the dried plant and its preparations therapeutically worthless. He extolled, however, the virtues of the juice expressed from the fresh plant. Farr and Wright³ investigated the alkaloidal content of different parts of the plant, and of plants of different ages. With respect to the herb, they found alkaloids to be chiefly produced during the flowering and fruiting period. Wide variations were apparent in the alkaloidal yield of different specimens of the same growth stage. They found the alkaloidal yield of the fruit to be much above that of the herb, to culminate just before maturity, and thereafter to diminish. Harley⁵ and others have reported little or no coniine at all in the dried herb. Both the seed and the herb, moreover, especially the latter, are said to deteriorate rapidly during storage, owing no doubt to the volatility of the alkaloids. Because of their uncertainty of composition *Conium* leaves have largely disappeared from prescriptive practice, and from the official standards. *Conium* seed is retained in the National Formulary IV but is not a drug of great importance.

Aethusa cynapium L., the so-called Lesser Hemlock or Fool's Parsley, has been

* Contribution from Pharmacognosy Laboratory, Bureau of Chemistry, Department of Agriculture, Washington, D. C.

frequently confused with *Conium*. Both the fetid odor and the poisonous properties usually ascribed to *Aethusa cynapium* have been held due to this confusion. Several deaths have been attributed to its confusion with parsley. Harley,⁶ who studied the green plant, has pronounced it to be non-toxic. Tanret¹² found neither alkaloid, glucoside, nor other body to which he could attribute toxic action, but Power and Tutin,¹⁰ whose chemical studies are the most detailed of any on the subject seen by the present writers, have asserted it to contain a minute amount of alkaloids resembling those of hemlock. Preparations of the plant made by Power and Tutin exerted a physiological action resembling that of hemlock. Other investigators, whose findings are discussed by Power and Tutin, have expressed a similar diversity of opinion as to the chemistry and toxicology of the plant. *Aethusa* is included in the homeopathic pharmacopoeias, but we understand is rarely, if ever, used. It has apparently found no favor with the allopathic or eclectic schools of medicine.

A recent importation of "Conium leaves" proved to consist chiefly, not of *Conium*, but of *Aethusa*. While the confusion of these plants has repeatedly received mention in the literature, the differential data usually given are but brief, and refer chiefly to the floral characters, especially to those of involucre and involucels. By these, when the flower is present, the two species may be distinguished with comparative ease. In the case in question, however, the sample was almost destitute of flowers, a condition not infrequently found in commercial specimens. The few flowers present were indeed chiefly those of *Aethusa*, but might easily have been furnished by a small accidental admixture of that species. The appended tabulation (Table 1) has been prepared by examination of the specimens in question, and of authentic herbarium material of the two species, and confirmed and extended by consultation of the texts of Gray,⁴ Britton and Brown,² Bentley and Trimen,¹ and Millspaugh,⁸ and, together with the figures, may be of value in the differentiation of *Conium* and *Aethusa*. The characters of the leaflets which, so far as we are aware, have not hitherto been accentuated for this purpose in the literature of drug adulteration, form the chief means of distinguishing the foliage as it occurs in the drug. Dr. Arno Viehoveer, of this laboratory, who has collected both plants in their native habitat, informs us that he also has observed these characteristics and has found them very serviceable in the differentiation of the species.

In further explanation it may be said that the foliage of *Conium*, as may be seen from Plate I, is much denser than that of *Aethusa* (Plate II), and this difference may readily be noted on comparison of the drug products. This density of foliage, and the characters of the leaflets (Fig. 1) are, except for the floral characters, the most apparent ready bases for distinguishing the products as they appear in commerce. The leaflets of the lower leaves of *Aethusa* (Fig. 1-b) resemble those of *Conium* (Fig. 1-c) much more closely than do those of the upper leaflets (Fig. 1-a). Modrakowski,⁹ whose original paper has not been available, uses the characters of the leafstalks for differentiation between *Conium* and several other adulterants. In the abstract seen the characters of the *Conium* leafstalks are not given. As for *Aethusa*, " the transverse section shows in its upper channeled surface a large central cell developed in the form of a trichome or hair from the central epidermal cell. " Sections of *Conium* and

Aethusa were made to test the value of this characteristic. In the material at hand the character seemed less well adapted to routine differentiation than those of the leaflets described.

TABLE 1.—DIFFERENTIAL CHARACTERISTICS OF *Conium maculatum* AND *Aethusa cynapium*.

	<i>Conium maculatum</i> L.	<i>Aethusa cynapium</i> L.
Duration of life	Biennial	Annual
Height	2 to 6 feet.	6 inches to 2 feet, rarely 4 feet.
Type of growth	Erect, coarse, much branched, branches corymbose above.	Erect, rather slender, much branched, branches ascending.
Stems	Large, hollow, striate, smooth, green, purple mottled or spotted.	Smaller, hollow, sometimes solid above, slightly swollen at the nodes, striate, smooth, sometimes tinged with red or purple, but not characteristically mottled or spotted.
Leaves	First and basal leaves very large, sometimes reaching length of 2 feet, usually alternate and rather long-petioled, deltoid, pinnate; upper leaves much smaller, short-petioled or sessile, sometimes opposite or three together, bi-pinnate or tri-pinnate; glabrous.	Basal leaves not pronouncedly larger than upper leaves, slender-petioled, bi- or tri-pinnate; upper leaves more nearly sessile, bi- or tri-pinnate, alternate glabrous.
Petiole-bases	Dilated, sometimes abruptly so, stem-clasping or sheathing.	Dilated, with membranous edges; usually sheathing an axillary branch.
Main petioles	Round, or slightly channeled.	Usually distinctly channeled.
Leaflets	Very numerous, usually nearly sessile, lanceolate-oblong, deeply incised, with dentate, quite sharply pointed segments, bases subacute, sessile, or narrowing abruptly to a very short-winged petiole.	Rhomboid-oval, deeply lobed, the segments sometimes further lobed, narrow to linear, abruptly pointed or blunt; bases acute, sometimes sessile, usually narrowing to a short-winged petiole.
Involucre	Present, of 4-8 bracts.	Usually absent, a single bract sometimes present.
Involucels	Of three or four small spreading bractlets.	Of 3 (sometimes 1 to 5) long, pendulous linear-awl-shaped stiff bracts hanging down prominently below the umbellet.
Flowers	Small, white, inner often barren, produced second year only.	Small, white.
Fruit	Broadly ovate, ribbed, ribs narrower than the intervals.	Globose ovate, prominently corky-ribbed, the ribs broader than the intervals.

Another character often cited as a test for hemlock consists in the "mousey" odor evolved on rubbing the leaves with a solution of caustic alkali. The odor of the fresh plant of *Aethusa* has been usually described as fetid and disagreeable, but according to Harley,⁶ whose statement is supported by Power and Tutin,¹⁰ it is merely faint and parsley-like. That the latter workers demonstrated the presence of a coniine-like mixture of alkaloids in *Aethusa* and that the test may be given by *Conium* with extremely low alkaloid content would indicate that *Aethusa* under some conditions at least, might also give it.

The sample in question, although containing only a small amount of *Conium*,

yielded the "mousey" odor distinctly. Separated leaves of *Aethusa* also gave it faintly, although it is not altogether improbable that this may have been due to their long association with the hemlock. A small amount of authentic botanical material of *Aethusa cynapium* yielded no coniine odor; this was, however, of considerable age, and it was impossible definitely to settle this question.



FIG. 1 —LEAFLETS OF CONIUM AND AETHUSA.

(a) Upper leaflet of *Aethusa*; (b) Lower leaflet of *Aethusa*; (c) Leaflet of *Conium*.
(For description, see Table 1.)



Conium maculatum L.



Aethusa cynapium L.

It was thought that alkaloidal assay might possibly furnish corroborative evidence regarding the identity of the suspected specimens. In carrying out these determinations it was found that the method of the National Formulary for *Conium* seed could not be followed exactly for the herb, since the larger volume occupied

by the specified weight of the sample (15 Gm.) retained too large a proportion of the solvent. The method was accordingly modified by using 30-gramme samples, macerating with 300 Cc. of petroleum ether, and decanting 200 Cc., representing 20 grammes of the drug, for analysis. The procedure, which furnished a 20-gramme sample as a working basis, was furthermore advantageous because the alkaloidal content of the herb is so extremely low. Analysis of a commercial specimen of an apparently good grade of *Conium* showed 0.013 percent of alkaloid; one sample in which *Conium* predominated contained 0.0008 percent; the analyses of two samples consisting chiefly of *Aethusa* showed 0.0013 and 0.0002 percent. These analytical results are of about the same order of magnitude as those of Power and Tutin,¹⁰ who reported 0.00023 percent in a fresh specimen of *Aethusa*, which would be equivalent to about four times that amount in the dried material. While, because of the lack of concordance in these figures, as well as the previously reported extreme variability in the alkaloidal content of *Conium*, the results obtained could not be considered as furnishing even corroborative evidence as to the identity of the samples, they are thought, nevertheless, to be worthy of record. It is a matter of conjecture whether the low yield of coniine by the sample consisting largely of *Conium* as well as by the commercial specimen, should be attributed to loss of the volatile alkaloid during storage and perhaps also to the fact that the material in both instances was collected before flowering.

As the clinical results of *Conium* administration are attributed to the alkaloids, the alkaloidal content of the material might well be taken into consideration. It would seem that *Conium* herb, because of its notorious variability and its previously reported rapid deterioration, might properly be entirely deleted from the materia medica; the more so as the fruit of the plant (*Conium* N. F.) contains the alkaloids of hemlock in very much larger amounts. If the herb is used at all, the flowering or fruiting plant should probably be preferred. Nothing in the literature, or the analytical results of the present writers or of Power and Tutin,¹⁰ indicates that *Aethusa* herb is of any practical therapeutic value.

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ATROPA BELLADONNA.*

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INTRODUCTION.†

In the last three years the cultivation of belladonna in the United States has been greatly stimulated by the high prices paid for the crude drug. The advance in price was due to the lack of shipping, hampering importations, and to the fact that foreign countries which previously supplied our markets were at war, and were utilizing their land and time in the production of human food.

Many plants are utilized for medicinal purposes, but the relative amounts are small when compared with staple crops, such as corn, wheat and potatoes. Stockberger¹⁴ states that in 1917 approximately 100 acres of belladonna were grown in the United States, and that the cultivation of more than 500 acres of this crop might cause over-production. Since the market price for belladonna is 500 to 600 percent higher now (September 1918) than it was before the war, we would infer that we had as yet not reached the point of over-production. Stockberger¹³ also summarizes drug plant culture, which may well apply to belladonna—"the problems presented by the cultivation of drug plants are not less difficult than those encountered in the production of many other crops. Drug plants are subject to the same diseases and risks as other crops, and are similarly affected by variations in soil and climatic conditions. They require a considerable outlay of labor, the same as other crops, and likewise require intelligent care and handling."

Scientific investigations dealing with the cultivation of belladonna, as with other medicinal plants, have been carried out principally by pharmaceutical houses, state experiment stations and universities, which maintain drug gardens. While published scientific investigations deal with all phases of belladonna culture, from a practical standpoint, much information is still necessary in order to be successful with this crop.

The author has studied various phases of belladonna culture with the thought of using the results in practice.

STUDY OF THE GERMINATION OF BELLADONNA SEEDS.

Belladonna seeds germinate very slowly and irregularly. Haynes and Newcomb⁶ state that a small part of the seed germinated in two or three weeks, while the remainder germinated in four to five weeks. Sievers¹¹ concluded that late fall sown seeds germinate much sooner in the spring than seeds sown in the spring.

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He also states the first seeds germinate in about three weeks while the bulk begin to germinate between the fourth and fifth week. Sievers¹¹ found that treating belladonna seeds with sulphuric acid was of no great value in hastening the germination. Treatment with hydrogen peroxide was found to be very beneficial. Moistening the seeds and then subjecting them to a temperature of -12° C. for five hours materially hastened germination.

To determine the length of time required for belladonna seeds to germinate, the following experiment was made: In each of two flats (12×20 ") of soil, one thousand viable belladonna seeds were planted at a depth of one-fourth inch. The number of seeds that germinated was counted after two, three and five weeks. The results are shown below.

TABLE 1.—TABLE SHOWING THE PERCENTAGE OF GERMINATION OF BELLADONNA SEEDS.

Flat No.	Percentage Germination.		
	2 Weeks.	3 Weeks.	5 Weeks.
1.....	3.7	7.6	10.4
2.....	3.0	6.6	9.0

The results show that very few belladonna seeds germinate in the first three weeks and only ten percent after five weeks.

Since Sievers¹¹ found that freezing belladonna seeds for a short time was effective in hastening germination, an experiment including this factor was carried out. About 25 grammes of belladonna seeds were moistened and then placed in a large test tube. After subjecting these seeds to a temperature of -12° C. for six hours they were dried at room temperature. One thousand of these seeds were planted in each of two flats.

TABLE 2.—TABLE SHOWING THE EFFECT OF FREEZING BELLADONNA SEEDS UPON THE PERCENT OF GERMINATION.

Flat No.	Treatment.	Percentage Germination.		
		2 Weeks.	3 Weeks.	5 Weeks.
1.....	not frozen	3.7	7.6	10.4
2.....	not frozen	3.0	6.6	9.0
3.....	frozen	3.4	10.8	12.7
6.....	frozen	3.6	6.0	9.8

The above results demonstrate that freezing this particular sample of belladonna seeds did not appreciably benefit the extent of germination.

The effect of increasing the humidity and preventing excessive evaporation from the surface of the soil during the germination of belladonna seeds was determined.

The same methods as followed in the previous experiments were carried out, with the exception that two flats were covered tightly with glass plates, thus preventing excessive evaporation.

TABLE 3.—TABLE SHOWING THE EFFECT OF INCREASED HUMIDITY UPON THE GERMINATION OF BELLADONNA SEEDS.

Flat No.	Treatment.	Percentage Germination.		
		2 Weeks.	3 Weeks.	5 Weeks.
1.....	None	3.7	7.6	10.4
2.....	None	3.0	6.6	9.0
3.....	Increased Humidity	7.0	10.4	9.0
4.....	Increased Humidity	7.3	10.2	12.5

Increasing the humidity appreciably hastened the germination of belladonna seeds during the second and third weeks. At the five-week period, however, there was no appreciable increase. By increasing the humidity another factor presented itself, namely, that of "damping-off" fungi. This factor was responsible for the low results in flats Nos. 3 and 4 at five weeks.

All soils contain organisms and spores and cysts of many different kinds, some of which, when the conditions are favorable, become destructive to higher plants. An example of this kind was shown above in the case of the "damping off" fungi. By destroying these factors by sterilization a much more suitable medium is obtained.

To determine the effect of sterilization of a soil upon the extent of germination, a series of four flats of soil were prepared. Two of these flats of moistened soil were carefully wrapped with heavy Manila paper and sterilized in the autoclave at 15 lbs. pressure for $2\frac{1}{2}$ hours on two successive days. The four flats (two sterilized and two unsterilized) were planted with one thousand belladonna seeds. They were all covered with glass plates to prevent excessive evaporation. After three, four and five weeks, the number of seeds that had germinated was recorded.

TABLE 4.—TABLE SHOWING THE EFFECT OF STERILIZATION OF SOIL UPON THE EXTENT OF GERMINATION OF BELLADONNA SEEDS.

Flat No.	Treatment.	Percentage Germination.		
		3 Weeks.	4 Weeks.	5 Weeks.
1.....	No treatment	6.5	9.9	10.5
2.....	No treatment	2.5	3.5	3.5
3.....	Sterilized	15.2	16.7	17.3
4.....	Sterilized	22.0	37.6	41.6

The above data shows conclusively that sterilizing the soil was effective in producing a larger germination of belladonna seeds.

STUDY OF THE PLANTING OF BELLADONNA.

Practically all authorities on belladonna culture conclude that, to be successful with this crop, the seed should be planted in the hot house or cold frame, and when the plants have attained a sufficient growth they should be potted into small pots and grown under these conditions until they are transplanted into the field. It is essential to know just how long a period elapses from the time when the seed is planted until the plants are large enough to be transplanted into the field, as under practical conditions the seeds must be sown long enough in advance so that the plants will be sufficiently large when the field planting season begins. To determine the length of time from the period when belladonna seeds are planted until the plants are ready for potting each of eight flats of soil was planted with one thousand belladonna seeds. The development of the small plants was carefully noted and the results recorded. The germination, as before noted, was very irregular, many not having germinated eight weeks after planting. In this experiment almost all of the plants were large enough to pot five weeks after the seeds were planted. Fifty percent had the fifth leaf formed. Many plants were large enough to transplant (having four leaves formed) four weeks after the seeds were planted.

To determine the approximate length of time after the plants were potted until they were large enough for planting in the field, forty-five $1\frac{1}{2}$ -inch pots were

filled with a light compost soil. Each pot was planted with a small belladonna plant, being careful that plants of about the same size were selected. Three months after potting, fifteen average sized plants were measured. The results were $4\frac{3}{4}$, 4, 4, 4, 5, 5, 5, 5, $3\frac{1}{2}$, $4\frac{1}{2}$, 5, 5, 5, 4 and $3\frac{1}{2}$ inches. The average height of these fifteen plants was $4\frac{1}{2}$ inches. It is apparent that three months after the small plants are potted they are large enough for transplanting into the field.

To ascertain to what extent added inorganic fertilizers hasten the growth of small belladonna plants when they are potted, at the same time that the above experiment was made, a series of pots having the same compost soil, with the addition of 3000 lbs. of sodium nitrate, 1200 lbs. of potassium sulphate and 2400 lbs. of calcium phosphate (mono-basic) per acre of 2,000,000 lbs., were planted. The measurements of fifteen average sized plants grown in the fertilized soil in three months were $7\frac{1}{2}$, 7, 7, 7, $6\frac{3}{4}$, $5\frac{1}{2}$, 6, 6, 8, $8\frac{1}{4}$, 8, 8, $7\frac{1}{2}$, $8\frac{1}{2}$, and $8\frac{3}{4}$ inches. The average height was $7\frac{1}{4}$ inches. Upon comparing the height of plants grown in fertilized and unfertilized soil ($7\frac{1}{4}$ vs. $4\frac{1}{2}$ inches), it is apparent that fertilization greatly stimulated the growth.

EFFECT OF FERTILIZATION UPON THE GROWTH OF BELLADONNA PLANTS.

In the northern parts of the United States the growing season in the field is comparatively short, hence where it is possible to control them, the cultural conditions should be as near the optimum as possible in order to get the greatest yield. In the cultivation of belladonna to what extent is fertilization necessary? Schneider¹⁰ states that the experiments with fertilizers were not successful, and that a fairly rich soil supplied with plenty of lime gave the best results. Carr⁴ found that cultivated plants contained little more alkaloid than wild belladonna. He² states that fertilizers lower the alkaloid content, especially where nitrogenous manures are applied, this being due to the larger leaf growth. Carr² finds, further, that if the soil is not already rich, manure as well as complete fertilizers increase the yield considerably.

As it has been found that to secure a successful crop of belladonna, in almost all sections of the United States, it is essential that the seeds be germinated and the plants developed under glass, what fertilizers and in what amounts is it necessary to apply to secure the largest yields and best plants in the shortest time? For information on this point, the following experiment was made: About 350 lbs. of a light manure compost soil was divided into seven lots of 50 lbs. each. Fertilizer applications were made to the various lots as shown in the table below. Forty-five $1\frac{3}{4}$ " pots were filled from each lot of soil. The pots were then planted with small belladonna plants. In order that the experimental error should be small, plants of as nearly the same size as possible were planted. After these had grown for three months, ten average sized plants of each lot were carefully taken from the pots. The adhering soil was washed from the roots and the moisture dried off by means of filter paper. The plants were weighed and the results are presented on following page.

Studying the results presented in Table 5, it is apparent that large applications of inorganic fertilizers greatly increased the size and weight of belladonna plants, since two and a half times as much growth was realized in series No. 5 as in Series 7. Smaller amounts of fertilizer, namely, one-third as much as

TABLE 5.—TABLE SHOWING THE EFFECT OF FERTILIZERS UPON SMALL BELLADONNA PLANTS GROWN IN POTS.

Series No.	Fertilizer. Lbs. per Acre of 2,000,000 Lbs.	Weight of Plants. Gms.		Average. Gms.
1.....	1000 NaNO_3	3.8	3.0	2.81
	400 K_2SO_4	2.3	3.7	
	800 $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot 2\text{H}_2\text{O}$	2.6	2.8	
	1000 CaCO_3	2.2	3.2	
		2.1	2.4	
2.....	1000 NaNO_3	3.9	3.4	2.82
	400 K_2SO_4	2.2	2.6	
		2.7	3.3	
	800 $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot 2\text{H}_2\text{O}$	2.7	2.7	
		1.5	3.2	
3.....	400 K_2SO_4	2.1	1.7	2.00
		2.2	1.7	
	800 $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot 2\text{H}_2\text{O}$	1.8	2.2	
		1.9	2.3	
	1000 CaCO_3	2.0	2.1	
4.....	3000 NaNO_3	4.4	4.6	4.65
	1200 K_2SO_4	4.7	5.0	
	2400 $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot 2\text{H}_2\text{O}$	4.7	4.7	
	3000 CaCO_3	4.8	4.1	
		5.5	4.0	
5.....	3000 NaNO_3	4.9	5.6	5.54
	1200 K_2SO_4	4.0	6.6	
		6.5	5.2	
	2400 $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot 2\text{H}_2\text{O}$	6.0	4.2	
		7.7	4.7	
6.....	1200 K_2SO_4	1.1	1.5	1.60
	2400 $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot 2\text{H}_2\text{O}$	1.6	2.1	
		2.0	1.3	
	3000 CaCO_3	1.6	1.3	
		1.8	1.7	
7.....	No Fertilizer	2.7	1.8	2.05
		1.8	1.9	
		2.3	1.6	
		1.4	1.7	
		1.5	2.8	

the largest, did not materially increase the yields. That sodium nitrate was very essential for the maximum development of small belladonna plants is seen on comparing the results of Series 4 with 6. About one-third as much growth was realized in the determinations when sodium nitrate was not added. Comparing the results of Series 4 and 5, we note that calcium carbonate was not an important factor for the largest yield of these small plants, as there was a slightly larger amount of growth in the series where calcium carbonate was not applied.

To more fully determine the absolute fertilizer requirements of belladonna plants, an experiment was made in which sand instead of soil was used. Nine series of pots, using different combinations and amounts of fertilizers, were made. As in the above experiment there were forty-five $1\frac{3}{4}$ -inch pots in each series. A small belladonna plant was planted in each pot, and after two and a half months

ten average size plants were selected. As before, these were washed and the moisture removed with filter paper.

TABLE 6.—SHOWING THE EFFECT OF INORGANIC SALTS UPON THE GROWTH OF BELLADONNA PLANTS WHEN GROWN IN SAND.

Series No.	Fertilizer applications per acre of 2,000,000 lbs. Lbs. per acre.	Development of small plants.		Development of plants to maturity.			†
		Wt. of plants.	Average wt. of plants. Gms.	Pots No.	Wt. of plants. Gms.	Average weight. Gms.	
				801	3.1		
21.....	776 (NH ₄) ₂ SO ₄	1.65	1.1				
	400 K ₂ SO ₄	1.3	1.2	1.24	802	2.9	2.8
	800 Ca(H ₂ PO ₄) ₂ ·2H ₂ O	1.3	1.1				
	1000 CaCO ₃	1.25	1.1		803	2.5	
		1.3	1.4				
22.....	1000 NaNO ₃	1.4	1.2		804	2.4	
	400 K ₂ SO ₄	1.2	1.1				
	800 Ca(H ₂ PO ₄) ₂ ·2H ₂ O	1.5	1.3	1.23	805	2.0	2.7
	1000 CaCO ₃	1.2	1.1				
		1.2	1.1		806	3.7	
23.....	400 K ₂ SO ₄	0.35	0.30		807	1.2	
	800 Ca(H ₂ PO ₄) ₂ ·2H ₂ O	0.33	0.35				
	1000 CaCO ₃	0.35	0.30	0.32	808	1.9	1.3
		0.31	0.30				
		0.32	0.32		809	0.9	
24.....	1000 NaNO ₃	3.3	2.1		810	4.2	
	400 K ₂ SO ₄	3.15	2.2				
	800 Ca(H ₂ PO ₄) ₂ ·2H ₂ O	2.40	2.15	2.36	811	2.3	2.9
		2.7	1.9				
		1.9	1.8		812	2.4	
25.....	2328 (NH ₄) ₂ SO ₄	4.4	2.0		821		
	1200 K ₂ SO ₄	4.2	2.4			4.9	
	2400 Ca(H ₂ PO ₄) ₂ ·2H ₂ O	3.3	1.3	2.58	822	4.1	4.5
	3000 CaCO ₃	2.6	2.0				
		1.8	1.8		823		
26.....	3000 NaNO ₃	2.7	1.7		824		
	1200 K ₂ SO ₄	2.0	1.8			4.4	
	2400 Ca(H ₂ PO ₄) ₂ ·2H ₂ O	2.0	1.8	1.95	825	5.1	5.3
	3000 CaCO ₃	1.8	2.1		826	6.5	
		2.0	1.6				
27.....	1200 K ₂ SO ₄	0.40	0.40		827	1.7	
	2400 Ca(H ₂ PO ₄) ₂ ·2H ₂ O	0.40	0.38				
	3000 CaCO ₃	0.42	0.39	0.39	828	1.2	1.5
		0.35	0.36				
		0.43	0.35		829	1.5	
28.....	3000 NaNO ₃	4.4	1.9		830	3.4	
	1200 K ₂ SO ₄	3.7	2.0				
	2400 Ca(H ₂ PO ₄) ₂ ·2H ₂ O	3.2	3.1	2.73	831	5.4	4.5
		2.7	1.9				
		2.0	2.4		832	4.7	
29.....	No Fertilizer	0.32	0.25		833	0.9	
		0.35	0.31				
		0.30	0.34	0.27	834	1.0	1.0
		0.20	0.21				
		0.23	0.24		835	1.1	

The effect of inorganic salts upon the growth of small belladonna plants is clearly demonstrated in the results presented above. In the determinations where a complete fertilizer was applied, as in Series 21, 22, 25 and 26, eight times as much growth was appreciated as was in the check (Series 29) where no fertilizers were added. Where complete fertilizers were applied, those receiving the largest applications made the largest yields. On comparing the results of Series 23 with 21 and 22, and 27 with 25 and 26, the importance of the nitrogen is appreciated, as only from one-fourth to one-sixth the growth was realized where no nitrogen was supplied. As in the previous experiments with soil, larger growths were realized where no calcium carbonate was applied than where it had been furnished.

To determine the effect of inorganic salts upon belladonna plants from the small plant stage to maturity, twenty-seven 6" pots were filled with sand and to each series of three pots inorganic salts were added in amounts (per acre), and in the same proportion, as in the nine series of small pots above described. For instance, as seen in Table 6, pots Nos. 801, 802 and 803 received the same amount of fertilizer in proportion as the forty-five small pots of Series 21. Nos. 804, 805 and 806 received the same as No. 22, etc. Each of the pots Nos. 801, 802 and 803 were planted with one representative plant of Series 21. Likewise Nos. 804, 805 and 806 were planted with plants from Series 22, and so on throughout the series. The moisture condition of each of these pots was carefully maintained at the physical optimum of the sand. When the plants had reached the blossoming stage they were harvested and dried for 48 hours at 90° C. The weight of each individual plant is shown in Table 6, Part 2. In the last column of figures is the average weight of the three plants. Upon studying the results in Table 6, it will be seen that in practically all cases the fertilizers produced increases in yield with mature plants corresponding to those produced with small plants in the first stage of growth. Again in all cases where the largest applications of fertilizer were made the yields were largest. As before, one-fourth to one-half the yield was realized in the determinations receiving no nitrogen.

Since we had found the effect of inorganic salts upon the growth of belladonna plants in a light compost and also in sand, it was desired to find how much inorganic fertilizers influenced belladonna when applied to field soils. A large sample of clay loam soil was taken from a cultivated field on the premises of the Mulford Biological laboratories. Into each of twenty-one 6" pots, 1,750 grammes of this soil was weighed. Fertilizer applications as shown in Table 7 were carefully made to each pot. The moisture conditions were made up to the physical optimum of the soil and maintained at this throughout the experiment by weighing the pots every day and restoring the loss due to evaporation and transpiration. Three small belladonna plants of the same size were planted in each pot. After they had grown for five weeks, two of the plants were pulled out. The remaining plants were allowed to grow until they had all reached the blossoming stage, when they were harvested and dried. The results are recorded on next page.

Inorganic fertilizers applied to this soil were effective in increasing the growth of belladonna. In every case where fertilizers were applied the yield was $2\frac{1}{2}$ to 3 times the growth of that in the control pots, where no fertilizers were applied. Comparing the results of pots Nos. 6, 7 and 8, with Nos. 31, 32 and 33, we found that where ammonium sulphate was the source of nitrogen, a slightly higher yield

TABLE 7.—TABLE SHOWING THE EFFECT OF INORGANIC FERTILIZER APPLIED TO A CLAY LOAM SOIL UPON THE GROWTH AND DEVELOPMENT OF BELLADONNA PLANTS.

Pot No.	Fertilizer Treatment. Lbs. per acre of 2,000,000 lbs.	Weight of stems and leaves. Gms.	Average. Gms.
1.....	No fertilizer	1.2	
2.....	No fertilizer	2.1	
3.....	No fertilizer	1.1	1.46
6.....	466 (NH ₄) ₂ SO ₄	3.8	
7.....	400 K ₂ SO ₄	5.0	
8.....	800 Ca(H ₂ PO ₄) ₂ ·H ₂ O		5.00
	1000 CaCO ₃	6.3	
	100 MgSO ₄		
	400 K ₂ SO ₄	4.3	
11.....	800 Ca(H ₂ PO ₄) ₂ ·H ₂ O	3.4	
12.....	1000 CaCO ₃		3.80
13.....	100 MgSO ₄	3.7	
	466 (NH ₄) ₂ SO ₄	3.8	
16.....	400 K ₂ SO ₄	4.2	3.80
17.....	1000 CaCO ₃	3.5	
18.....	100 MgSO ₄		
	466 (NH ₄) ₂ SO ₄		
21.....	400 K ₂ SO ₄	3.1	
22.....	800 Ca(H ₂ PO ₄) ₂ ·H ₂ O	3.6	3.60
23.....	100 MgSO ₄	4.3	
	466 (NH ₄) ₂ SO ₄	5.6	
26.....	800 Ca(H ₂ PO ₄) ₂ ·H ₂ O	3.0	4.60
27.....	1000 CaCO ₃	5.2	
28.....	100 MgSO ₄		
	600 NaNO ₃		
31.....	400 K ₂ SO ₄	3.6	
32.....	800 Ca(H ₂ PO ₄) ₂ ·H ₂ O	5.6	4.10
33.....	1000 CaCO ₃	3.1	
	100 MgSO ₄		

was realized than where sodium nitrate was employed. The results of pots Nos. 11, 12 and 13, 16, 17 and 18, and 21, 22 and 23, the series where nitrogen, phosphorus and lime were not supplied, respectively, were all about the same, namely, $2\frac{1}{2}$ times the results of the controls. These results show that there was a certain amount of available nitrogen, phosphorous and lime in this particular soil, and that while the plants did not make their maximum growth, they could utilize the other salts that were supplied.

EFFECT OF MOISTURE UPON THE GROWTH OF BELLADONNA PLANTS.

There is a very great difference in the amount of rainfall in various sections of the country and at different seasons. Likewise, in certain sections of the country irrigation is practiced, thus the moisture conditions can be controlled. Under controlled conditions, how much moisture do belladonna plants require? To gain some information upon the effect of conditions of moisture upon the growth and development of belladonna, the following experiment was made. Each of nine 6" pots was filled with 1750 grammes of the same clay loam soil as was used in the above experiment. In order that the lack of fertilizers would not be a factor, a complete fertilizer, equivalent to 1000 lbs. of CaCO₃, 800 lbs. of Ca(H₂PO₄)₂-

2H₂O, 400 lbs. of K₂SO₄, 600 lbs. of NaNO₃ and 100 lbs. of MgSO₄, per acre of 2,000,000 lbs., was added to each pot. To one series of three pots distilled water was added so that the conditions of moisture were made up to the physical optimum of the soil. The moisture in the soil of the second series of three pots was made up to one-half the physical optimum and that of the third series was made to one and a half of the optimum. One small belladonna plant was planted in each of the nine pots. Plants of nearly the same size were planted. In all cases the moisture was maintained in the above-mentioned conditions by carefully weighing the pots every day and restoring the loss due to evaporation and transpiration. After the plants had grown for three and a half months they were harvested. The plant of each pot was cut off even with the surface of the soil, placed in a Manila bag and dried at 60° C. for four days. The roots were also carefully harvested, washed and dried.

TABLE 8.—TABLE SHOWING THE INFLUENCE OF MOISTURE UPON THE GROWTH OF BELLADONNA PLANTS GROWN IN A CLAY LOAM SOIL.

Pot No.	Moisture conditions.	Weight of leaves and stems. Gms.	Average. Gms.	Wt. of roots. Gms.	Average. Gms.
101.....	optimum	6.0		1.2	
102.....	optimum	6.5	6.5	1.4	1.6
103.....	optimum	6.9		2.2	
104.....	1/2 optimum	4.3		1.6	
105.....	1/2 optimum	4.0	4.1	1.0	1.4
106.....	1/2 optimum	4.0		1.6	
107.....	1 1/2 optimum	2.6		0.5	
108.....	1 1/2 optimum	1.1	1.9	0.2	0.33
109.....	1 1/2 optimum	2.2		0.3	

The results presented in Table 8 demonstrate conclusively that the moisture conditions of the soil in which belladonna grows is a very important factor in influencing the yield of belladonna leaves, stems and roots. In the pots where moisture to the extent of one-half the physical optimum of the soil was applied, two-thirds the weight of leaves and stems was realized compared with the pots where moisture was at the physical optimum, while, where one and a half times the optimum was applied, the growth was less than one-third of that where the optimum moisture was maintained. The root growth of the optimum and one-half optimum series was practically the same, while that of the one and a half optimum series was only one-fifth as large.

EFFECT OF SHADE UPON THE GROWTH AND DEVELOPMENT OF BELLADONNA PLANTS.

In the case of certain medicinal plants, shade is essential for growing a successful crop. Some investigators are of the opinion that belladonna plants require a certain amount of shade for maximum growths and yields. Gordon⁵ states that belladonna plants did best when they were shaded part of the day. Carr,³ testing the effect of various colors upon the yield and alkaloid content of belladonna, found that a green shade reduced the amount of inflorescence and at the same time increased the alkaloid content.

The effect of shade upon the growth and development of belladonna plants was determined. At the time the above experiment, testing the effect of mois-

ture on the growth of belladonna, was made, three additional 6" pots were filled with soil. Fertilizers were added in the same amount as in the nine pots. The moisture was made up to the physical optimum, hence the conditions were identical with the optimal series of the moisture experiment, and that series served as a check for this shade experiment. After the pots were planted with the small plants, each of the three shade pots was covered with a frame 12 × 12 × 18 inches, which was covered with one thickness of the ordinary gauze cloth. These three pots received the same treatment as the optimal series of the moisture experiment, with the exception that they were shaded.

TABLE 9.—TABLE SHOWING THE EFFECTS OF SHADE UPON THE GROWTH AND DEVELOPMENT OF BELLADONNA PLANTS.

Pot No.	Treatment.	Weight of leaves and stems. Gms.	Average. Gms.	Wt. of roots. Gms.	Average. Gms.
101.....	Not shaded	6.0		1.2	
102.....	Not shaded	6.5	6.5	1.4	1.6
103.....	Not shaded	6.9		2.2	
201.....	Shaded	3.5		0.7	
202.....	Shaded	4.9	3.8	0.9	0.73
203.....	Shaded	3.0		0.6	

The effect of shade produced by the ordinary gauze cloth is readily seen by noting the results of Table 9. With all the conditions as to fertilizers, moisture, temperature and plants identical, shading the plants resulted in the production of about one-half of the yield of the unshaded series. From the practical standpoint, this is a very important factor. It is true, the alkaloid content of the shaded plants might have been higher than that in the unshaded series, as was found by Carr,³ but in this case the alkaloid content of the shaded plant would have to be about twice that of the unshaded, to yield a like amount of alkaloid. Alkaloid determinations were not made on account of the small amounts of leaves and stems obtained.

STUDY OF THE MEANS OF COMBATING INSECTS ON BELLADONNA PLANTS.

Probably the greatest difficulty in the cultivation of belladonna is the control of this plant against the attacks of insects. Practically all of the chewing and sucking insects that are injurious to the various truck crops are destructive to belladonna. The most destructive insects, however, are the Colorado potato beetle and the green and pink aphids. To keep young plants free from insects, Borneman¹ recommends lemon oil and whale oil soap, while, as the plant becomes stronger, a weak solution of lead arsenate is recommended. To control the chewing insects, both Paris green and lead arsenate are recommended. As there was very little data available which showed carefully outlined experiments on the control of insects, several experiments were made. Twenty-four belladonna plants that were grown in the field, and that were badly infested with Colorado potato beetle, were selected for experimental purposes. Six plants were sprayed with Paris green 1 : 100, six with Paris green 1 : 50, a like number with lead arsenate 5 lbs. to 100 gallons of water, and the remainder left as controls. A week later they were again sprayed, and two weeks later a third time.

TABLE 10.—SHOWING THE CONTROL OF THE DESTRUCTIVE EFFECTS OF THE COLORADO POTATO BEETLE ON BELLADONNA PLANTS BY MEANS OF VARIOUS SPRAYS.

Treatment.	Effect of spray on insects.	Effect of spray on plant.	Effect of insect on plants.
1. No treatment	..	..	plant destroyed
2. Paris green 1 : 100	destroyed	no injury	no injury
3. Paris green 1 : 50	destroyed	badly injured	no injury
4. Lead arsenate	destroyed	no injury	no injury

The results of the experiment given above demonstrate that belladonna plants cannot withstand the attack of potato beetles if they are not suitably protected by means of some poison. Both Paris green, of a concentration of 1 pound to 100 gallons of water, and lead arsenate 5 pounds to 100 gallons, proved effective in controlling the attacks of this insect. No spray injury was perceptible on the plants where these sprays were applied. Paris green, 1 pound to 50 gallons of water, proved too concentrated for belladonna plants, as all the plants which were sprayed with this solution were destroyed by the effects of the spray.

For controlling various aphids on the belladonna plants, several combinations of soap and kerosene and soap and tobacco extract were tried. The results with the first mixture (soap and kerosene) were unsatisfactory. Soap and tobacco combinations were only partially successful. The principal difficulty experienced in the latter case was controlling the concentration of the extract of tobacco.

Experiments using "nicotine sulphate" (Black Leaf 40) with soap proved very satisfactory in controlling the various forms of aphids. A field experiment was performed, in which case a series of 12 plants were sprayed with a nicotine soap solution made in the proportion of 4 pounds of soap, $\frac{1}{2}$ pint "nicotine sulphate" (Black Leaf 40) and 100 gallons of water; a second series of 12 plants with 4 pounds soap and $\frac{3}{4}$ pint of "nicotine sulphate;" a third series with 4 pounds of soap and 1 pint of "nicotine sulphate" to 100 gallons of water. A series of 12 plants were reserved as checks, receiving no spray treatment.

TABLE 11.—TABLE SHOWING THE CONTROL OF APHIDS ON BELLADONNA PLANTS.

Series No.	Treatment.	Effect on Insects.	Effect on plants.
1.	Soap + $\frac{1}{2}$ pt. "nicotine sulphate"	aphids 75% destroyed	no effect
2.	Soap + $\frac{3}{4}$ pt. "nicotine sulphate"	aphids 100% destroyed	no effect
3.	Soap + 1 pt. "nicotine sulphate"	aphids 100% destroyed	very slight injury
4.	No treatment		All plants badly damaged by aphids

The results of this experiment show conclusively that "nicotine sulphate" (Black Leaf 40) in combination with soap is very effective in destroying aphids on belladonna. "Nicotine sulphate" $\frac{1}{2}$ pint in combination with the soap was not as effective in controlling the aphids as the solution made with either the $\frac{3}{4}$ pt. or the 1 pint per 100 gallon. The latter solution, while very effective in destroying the aphids, produced slight spray injury.

STUDY OF THE EFFECT OF DRYING BELLADONNA LEAVES AT DIFFERENT TEMPERATURES UPON THE ALKALOID CONTENT.

Drying medicinal plants is a step in the practical phase of drug culture that requires a certain amount of consideration. No definite temperature at which this plant should be dried has been adopted. Sievers¹² after air drying his samples,

dried them to constant weight in a hot air oven at a maximum temperature of 60° C. Roberts⁹ reports results of experiments on drying fresh belladonna leaves, which show loss of 60% on drying in vacuum at 45° C.

To determine to what extent drying at various temperatures, and heating first and then drying, influences the alkaloid content of belladonna leaves and the color of the final product, an experiment covering this phase of the work was made.

A large sample of about 2000 Gm. of belladonna leaves was collected. In order to reduce the possibilities of errors incurred in sampling, these leaves were cut into small pieces. After this mass of small particles of leaves was very carefully mixed it was divided into five samples of about 400 Gm. each. One sample was dried under natural conditions in the greenhouse, at a temperature of 30° C.; one sample was dried in a large incubator where the temperature was maintained at 55–60° C. Another was dried at 100° C., a fourth sample was heated to 100° C., and then the drying completed at 55 to 60° C., and the other was placed in an autoclave, which was maintained at 15 lbs. pressure for 1½ hours. It was then dried at 55–60° C. The samples, when thoroughly dry, were submitted for analysis. The results were as follows:

TABLE 12.—TABLE SHOWING THE EFFECT OF DRYING AT VARIOUS TEMPERATURES UPON THE ALKALOID CONTENT AND CHARACTER OF BELLADONNA LEAVES.

Sample No.	Treatment.	Mydriatic Alkaloid.	Color of leaves.
401.....	Dried in greenhouse at 30° C.	0.327	fine green
402.....	Dried at 55–60° C.	0.345	green
403.....	Dried at 100° C.	0.369	brown
404.....	Heated to 100° C. then dried at 55–60° C.	0.366	brown
405.....	Autoclaved, then dried at 55–60° C.	0.264	brown

The results presented above show that the temperature at which belladonna leaves are dried is a very important factor. The samples dried at 55–60° C., 100° C. and heated to 100° C., then dried at 55–60° C., showed a slightly higher percent of mydriatic alkaloid than the sample dried at 30° C. When a higher temperature than 30° C. was employed, the fine green color of the leaves was somewhat lost. The sample dried at 55–60° C. was still green, but those dried at a temperature above this or heated at 100° C., or in the autoclave and then dried at 55–60° C., were of an undesirable brown color. By heating in the autoclave and then drying at 55–60° C., 20 percent of the total mydriatic alkaloid content was lost. From these results we would conclude that when artificial heat is employed in drying leaves of belladonna, it is not advisable to employ a temperature higher than 55–60° C.

STUDY OF THE PRODUCTION OF SEEDS BY BELLADONNA PLANTS.

One of the principal reasons for the lack of advance in cultivation of belladonna in the United States is because of the difficulty in securing good viable seed. Up to 1914 most of the belladonna seeds were obtained from abroad. Since that time individuals interested and engaged in the cultivation of belladonna have learned how to harvest their own seed.

Belladonna plants are very prolific seed producers, each plant yielding a very large number of seeds. As it was desirable to know how much seed belladonna plants produced, the seed from each of sixteen plants was collected at the time when

most of the seed-pods were black. The following are the weights in grammes of seeds harvested from the sixteen plants: 65.0, 32.0, 21.0, 20.0, 27.0, 18.0, 63.5, 28.5, 18.5, 9.0, 9.5, 29.7, 27.2, 26.2, 39.0, and 15.5. The average of these sixteen weights was 28.1 grammes. Under field conditions twenty-two pounds of good viable seeds of belladonna were harvested from one-tenth of an acre. Formerly when seeds were collected from belladonna plants, it was the custom not to molest the plant and utilize no portion of it other than the seeds. It has been found here, with belladonna plants, that if they are planted sufficiently early in the season, and the first growth of leaves harvested, a larger number of leaves and seed-pods will form than if the first crop of leaves is not picked. The above reported figures represent seed taken from plants, the first crop of leaves of which had been harvested.

INFLUENCE OF THE PRESENCE OF STEMS UPON THE ALKALOID CONTENT OF BELLADONNA LEAVES.

It is usually the custom to utilize only the leaves of the belladonna plants, as it is generally considered that the alkaloid content of the stems would be far below the U. S. Pharmacopoeia requirement. It has been previously shown by the writer⁷ in the case of stramonium that the stems can be used in conjunction with the leaves in the proportion in which they exist at harvesting time and the U. S. P. requirements still met. Similarly the writer⁸ has demonstrated the fact that stems and roots of hyoscyamus collected after harvesting the seed contain a relatively high percentage of alkaloid. As was stated before,⁷ if we can utilize the stems it will greatly reduce the cost of harvesting.

To secure information on the extent to which the presence of stems of belladonna influences the total alkaloid content of leaves, six representative belladonna plants were harvested. The leaves, stems and roots of each plant were separated, placed in separate Manila paper bags, and dried in the oven for four days at 55 to 60° C.

TABLE 14.—TABLE SHOWING THE PROPORTION OF STEMS TO LEAVES IN BELLADONNA PLANTS.

Plant No.	Part of plant.	Wt. of Material. Gms.	Proportion of leaves to stems. Percent.
1.....	Leaves	88.8	68.3
1.....	Stems	41.1	31.7
2.....	Leaves	47.8	65.8
2.....	Stems	24.8	34.2
3.....	Leaves	71.8	66.7
3.....	Stems	35.8	33.3
4.....	Leaves	49.8	65.0
4.....	Stems	26.8	35.0
5.....	Leaves	50.4	66.6
5.....	Stems	25.3	33.4
6.....	Leaves	63.8	63.6
6.....	Stems	36.5	36.4

The results with six plants, as presented in Table 14, show that under the ordinary field conditions the proportion of leaves to stems of belladonna is as 2 to 1.

To determine the effect of the presence of stems upon the total alkaloid content of belladonna, samples of the unground parts of the plants were made up

as shown in the following table. After each sample was ground and carefully mixed, mydriatic alkaloid determinations were made.

TABLE 15.—TABLE SHOWING THE EFFECT OF THE PRESENCE OF STEMS UPON THE TOTAL ALKALOID CONTENT OF BELLADONNA.

Sample No.	Kind of material.	Mydriatic alkaloids
1.....	Leaves of plants Nos. 1 and 2	0.466
2.....	Leaves of plants Nos. 3 and 4	0.488
3.....	Leaves of plants Nos. 5 and 6	0.434
4.....	Leaves of plants Nos. 1 and 2 + 10% ₀	0.508
	Stems of plants Nos. 1 and 2	
5.....	Leaves of plants Nos. 3 and 4 + 10% ₀	0.513
	Stems of plants Nos. 3 and 4	
6.....	Leaves of plants Nos. 5 and 6 + 10% ₀	0.459
	Stems of plants Nos. 5 and 6	
7.....	Leaves of plants Nos. 1 and 2 +	
	Stems of plants Nos. 1 and 2	0.600
	in prop. 67.4 : 32.4	
8.....	Leaves of plants Nos. 3 and 4 +	
	Stems of plants Nos. 3 and 4	0.508
	in prop. 66.0 : 34.0	
9.....	Leaves of plants Nos. 5 and 6 +	
	Stems of plants Nos. 5 and 6	0.479
	in prop. 64.9 : 35.1	
10.....	Stems of plants Nos. 1 and 2	0.334
11.....	Stems of plants Nos. 3 and 4	0.291
12.....	Stems of plants Nos. 5 and 6	0.216

The results of the above experiment demonstrate the fact that all parts of these belladonna plants showed a high content of mydriatic alkaloid. The alkaloid determination of the stems in but one case showed a content of an appreciable amount below the U. S. P. requirement of 0.30 percent. It is seen that the results of samples Nos. 4, 5 and 6, which were made allowing the presence of the maximum amounts of stems which the U. S. P. requirement ordinarily permits (that is, if stems are considered as foreign matter), and Nos. 7, 8 and 9, in which cases there was 33% stems used, run as high or higher in mydriatic alkaloid than did the samples of leaves Nos. 1, 2 and 3. Theoretically it would seem that Samples 7, 8 and 9 should be considerably lower in alkaloid content than Nos. 1, 2 and 3, due to the presence of the stems, but practically, on taking samples for analysis, deviations of this kind would enter into such determinations, because of taking unground parts of the plants, conforming as nearly as possible to the practical condition. The results with these plants show conclusively that the stems can be harvested and used in conjunction directly with the leaves as they exist in the field without danger of the final product falling below the U. S. P. requirement.

SUMMARY.

The following is a brief summary of the results of experiments carried out in this work.

1. Under ordinary conditions, using good viable belladonna seeds in soil, about 7 percent will germinate in three weeks and 10 percent in five weeks.
2. Freezing belladonna seed at -12° C. for six hours does not appreciably hasten or increase the germination in soil.
3. Increasing the humidity of soil increased the germination of belladonna seed about 4 percent in 2 and 3 weeks, but it encouraged the development of "damping off" fungi in unsterilized soil.

4. Sterilizing the soil in the autoclave encouraged the germination of about twice the ordinary number of belladonna seeds and prevented the destructive effects of the "damping off" fungi.

5. Most of the plants resulting from the seeds which germinated in the first three weeks after the seed is planted will have reached a large enough height to transplant into small pots in five weeks.

6. When using ordinary compost soil, to which no inorganic salts are added, three months after potting the plants will be large enough to transplant into the field. When inorganic salts, such as NaNO_3 , K_2SO_4 and $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot 2\text{H}_2\text{O}$ are added to the same compost soils, it will not be necessary to grow them in the pots for as long a period as three months before planting in the field.

7. In forcing small belladonna plants, when growing them in the small pots, to secure suitable plants for the field, applying a combination of 3000 pounds NaNO_3 , 1200 pounds K_2SO_4 and 2400 pounds $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot 2\text{H}_2\text{O}$ on an acre basis of 2,000,000 pounds, gave the best results in cases where a clay-loam compost was used and also where sand was employed.

8. Growing belladonna in sand to which no nitrogen fertilizers were supplied resulted in one-half to one-third the yield which was obtained when nitrogen was supplied. There was little difference between the growth of belladonna when nitrogen was applied in the form of NaNO_3 or $(\text{NH}_4)_2\text{SO}_4$.

9. The application of CaCO_3 did not seem to be an effective factor in increasing the growth of the belladonna plant in sand.

10. Applying inorganic fertilizers to a clay loam soil was very effective in producing increased yield. Where the complete fertilizer was added there was $3\frac{1}{2}$ times as much growth as where no fertilizers were applied.

11. Two-thirds as much weight, of leaves and stems, was harvested where moisture to the extent of one-half the physical optimum of the soil was applied as was produced where the conditions of moisture were at the optimum. Applying moisture of $1\frac{1}{2}$ times the optimum produced less than one-third of the growth where the optimum was employed.

12. Shading belladonna plants with gauze resulted in the growth of about one-half as much weight of leaves, stems and roots as was obtained in unshaded plants.

13. Colorado potato beetles were controlled on belladonna plants by applying Paris green 1 : 100, or lead arsenate 5 pounds to 100 gallons and no spray injury was realized.

14. "Nicotine sulphate" (Black Leaf 40), $\frac{3}{4}$ pint in addition to 4 pounds of soap per 100 gallons of water was effective in destroying and controlling aphids on belladonna.

15. To secure the most desirable product, leaves of belladonna should not be dried at a temperature higher than $55\text{--}60^\circ\text{C}$.

16. An ordinary belladonna plant will easily yield 28.0 Gm. (approximately 1 ounce) of viable seed, if collected at the proper time.

17. Under field conditions the proportion of leaves to stems of belladonna is about 2 : 1.

18. Alkaloid determinations of samples of belladonna made with 90 percent leaves and 10 percent stems, which is the largest amount of stems that the U. S. P. permits, were not any lower in mydriatic alkaloid than samples of leaves. Likewise, samples containing $33\frac{1}{3}$ percent stems and $66\frac{2}{3}$ percent leaves were no lower in alkaloid than the samples made of leaves.

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SUBJECTS.

- Study of the Germination of Belladonna Seeds.
- Study of the Planting of Belladonna.
- Effect of Fertilization upon the Growth of Belladonna Plants.
- Effect of Moisture upon the Growth of Belladonna Plants.
- Effect of Shade upon the Growth and Development of Belladonna Plants.
- Study of the Means of Combating Insects on Belladonna Plants.
- Study of the Effect of Drying Belladonna Leaves at Different Temperatures upon the Alkaloid Content.
- Study of the Production of Seeds by Belladonna Plants.
- Influence of the Presence of Stems upon the Alkaloid Content of Belladonna Leaves.
- Summary.
- Bibliography.

A STUDY OF VARIOUS PNEUMOCOCCIDAL SOLUTIONS FOR MOUTH WASHES.*

BY S. SOLIS COHEN, M.D., AND EDWARD STEINFELD, M.D.

Dochez and Avery,¹ Stillman² and Sydenstricker and Sutton³ have demonstrated that infection in pneumonia occurs by way of the upper respiratory tract, through contact with pneumonia patients, convalescents or carriers, harboring virulent fixed strains of pneumococci in the mouth.

At the request of one of us (S. S. C.) Kolmer and Steinfield⁴ investigated the use of specific pneumococcidal substances such as ethylhydrocuprein hydrochloride, quinine and urea hydrochloride, quinine bisulphate and other cinchonics incorporated in a mouth wash. They found that ethylhydrocuprein was effective as a pneumococcicide in solution so dilute as 1 : 160,000, and the quinine salts in solutions of about 1 : 20,000. The strongest solution they could induce patients to use was 1 : 10,000. They recommend, accordingly, the use of quinine hydrochloride 1 : 10,000 in the "Liquor Thymolis" of the House Pharmacopoeia of the Philadelphia Polyclinic, as a means of diminishing the chances of infection in nurses and physicians and minimizing the dangers of spread by carriers. In their experiments, however, this solution could not keep the mouth and throat secretions continuously sterile.

* From the Clinical Laboratories of the Jewish Hospital, Philadelphia.

It seemed probable that the use of the cinchonics in greater concentration might prove more uniformly effective under varied conditions; but to make this practicable the solutions must be rendered palatable, or, at least, not unpalatable.

To test this, a number of solutions were made up for us by Professor E. Fullerton Cook, with various flavoring vehicles. They contained quinine and urea hydrochloride—chosen because of its high solubility—in various strengths up to as high as $\frac{1}{2}$ and 1 percent, in which it develops anesthetic power. Some contained phenol in addition to the quinine. Honey, syrup, glycerin or acacia was used to give the mixture an adhesive quality that would retain it in contact with the mucous membranes for some time after rinsing or gargling.

These mixtures were tested by cultural methods both upon pure cultures of Type I, II and III pneumococcus, and upon sputum containing virulent pneumococci.

The method of study was as follows:

In a series of sterile test-tubes were placed 0.5 Cc. of a cinchonic solution and 0.5 Cc. of a suitable dilution of pneumococcus culture (usually 1 : 2) or 0.5 of sputum of a pneumonia patient. These were mixed and incubated at 37.5° C. for one-half hour. At the expiration of this period a platinum loopful from each tube was plated into 10 Cc. of glucose agar or blood agar. The virulence of the cultures used was such that 0.000001 Cc. was fatal to white mice in from 24 to 48 hours after intraperitoneal injection.

Two points were to be determined: 1. Do the vehicles used for palatability interfere with the quinine action? 2. Do these vehicles enhance the effect—in other words, have they germicidal qualities of their own?

In the tables giving the results of the experiments the various solutions are represented by the numerals which designate them in the following list (with brief parenthetic memoranda):

FORMULAS OF SOLUTIONS USED.

No. 1.		No. 6.	
Vehicle Control—5% Infusion of Coca.		Quinine and Urea Hydrochloride.....	1
No. 2.		Compound Gargle of Guaiac to make..	100
Quinine and Urea Hydrochloride.....	1	No. 7.	
Infusion of Coca.....	100	Quinine and Urea Hydrochloride.....	1
No. 3.		Acacia.....	10
COMPOUND GARGLE OF GUAIAIC (N. F.).		Compound Gargle of Guaiac to make..	100
Ammoniated Tincture of Guaiac.....	100	No. 8.	
Compound Tincture of Cinchona.....	100	Quinine and Urea Hydrochloride.....	1
Clarified Honey.....	200	Acacia.....	5
Potassium Chlorate.....	40	Compound Gargle of Guaiac to make..	100
Oil of Peppermint.....	2	No. 9.	
Water to make.....	1000	Compound Gargle of Guaiac, with substitution of Quinine and Urea Hydrochloride.....	10
No. 4.		Water to make.....	100
Compound Gargle of Guaiac with Coca—		—for the 100 mls of Compound Tincture of Cinchona	
Replace water of N. F. with 5% Infusion of Coca.			
No. 5.			
Quinine and Urea Hydrochloride.....	1		
Compound Gargle of Guaiac to make	1000		

No. 10.		No. 13.	
Quinine and Urea Hydrochloride.....	0.5	Quinine and Urea Hydrochloride.....	1
Phenol.....	0.5	Phenol.....	1
Glycerin.....	20.0	Oil of Peppermint.....	2 drops
Oil of Peppermint.....	2 drops	Water.....	100
Water to make.....	100.0		
No. 11.		No. 14.	
Quinine and Urea Hydrochloride.....	1	Quinine Phenolate.....	1
Phenol.....	1	Menthol.....	1
Acacia.....	1	Expressed Oil of Almond.....	100
Compound Gargle of Guaiac.....	100		
No. 12.		No. 15.	
Quinine and Urea Hydrochloride.....	0.5	Phenol 1% (Control.)	
Phenol.....	0.5		
Syrup of Tolu.....	20.0	No. 16.	
Water to make.....	100.0	Quinine and Urea Hydrochloride 1% (Control.)	

TABLE 1.—RESULTS OF BACTERICIDAL TESTS UPON TYPES I AND II PNEUMOCOCCUS CULTURES AND UPON SPUTUM OF A TYPE II PNEUMONIA.

No.	Formula.	Colonies per Plate after 48 hours.—		
		Type I.	Type II.	Sputum, Type II.
1.	Infusion Coca.....	810	480	3,660
2.	Infusion Coca with 1 percent Quinine and Urea Hydrochloride.....	3	5	10
3.	Compound Gargle of Guaiac.....	17	25	182
4.	Compound Gargle of Guaiac with Infusion of Coca.....	21	71	1,260
5.	Compound Gargle of Guaiac with 0.1 percent Quinine and Urea Hydrochloride.....	22	9	31
6.	Compound Gargle of Guaiac with 1 percent Quinine and Urea Hydrochloride.....	3	Sterile	Sterile
7.	Same as No. 6 with 10 percent Acacia.....	16	51	720
8.	Same as No. 6 with 5 percent Acacia.....	8	81	8
9.	Compound Gargle of Guaiac with 1 percent Quinine and Urea Hydrochloride—Replacing Compound Tincture of Cinchona.....	Sterile	Sterile	Sterile
10.	Quinine and Urea Hydrochloride and Phenol each 1/2 percent, Glycerin, Oil of Peppermint and Water.....	Sterile	Sterile	Sterile
11.	Acacia, Phenol and Quinine and Urea Hydrochloride each 1 percent in Compound Gargle of Guaiac.....	Sterile	Sterile	Sterile
12.	Phenol and Quinine and Urea Hydrochloride each 1/2 percent in Syrup of Tolu and Water...	Sterile	Sterile	Sterile
13.	Phenol and Quinine and Urea Hydrochloride each 1 percent in Peppermint Water.....	Sterile	Sterile	Sterile
14.	Quinine phenolate and Menthol each 1 percent in Expressed Oil of Almond.....	Sterile	Sterile	Sterile
15.	Phenol 1 percent.....	Sterile	Sterile	Sterile
16.	Quinine and Urea Hydrochloride 1 percent.....	Sterile	Sterile	Sterile
	Control (Sputum and Salt Solution).....	1,150	540	4,860

The results as indicated in Table 1 showed but little interference of the vehicles with the germicidal action of the quinine except in those solutions containing acacia. In such solutions a constant and definite lessening of activity was ob-

served, which may possibly be due to a mechanical action. Mixtures made with Infusion of Coca are more palatable than those made with plain water, but show slightly lessened germicidal power and some precipitation of the quinine. Solution No. 10 (phenol, quinine and urea hydrochloride, glycerin, oil of peppermint and water) was chosen as being on the whole most palatable of those made without coca. This solution with other controls was therefore used against Type III pneumococci. The results of these tests are shown in Table 2.

TABLE 2.—RESULTS OF BACTERICIDAL TESTS UPON TYPE III PNEUMOCOCCI,—WITH SOLUTION NO. 10 AND VARIOUS COMPARISONS.

Solution.	Colonies per plate after 48 hours.
10.....	Sterile
Quinine Hydrobromide.....	Sterile
1 : 200	
Quinine Bisulphate.....	Sterile
1 : 200	
Ethylhydrocuprein Hydrochloride.....	Sterile
1 : 200	
Control.....	6,280

The results recorded in Table 2 showed that the same activity was noted against Type III as against the other types.

SUMMARY.

These experiments show that cinchonic solutions of high concentration may be made up with various vehicles of even thick consistency without materially altering the bactericidal power. The solution marked No. 10 is, however, water clear with no tendency to produce precipitates or sediments. Phenol has been included as a good reinforcing agent and suitable for its effects upon other pathogenic organisms such as streptococci. This is desirable in view of recent observations upon atypical pneumonias believed by Cole and McCallum⁵ to be due to hemolytic streptococci invading respiratory tracts of susceptible individuals such as patients suffering from measles.

CONCLUSIONS.

1. A number of quinine solutions in different flavoring vehicles have been made up with the purpose of determining palatability and germicidal activity against pneumococci.

2. These solutions have all been found capable of destroying pneumococci of Types I and II *in vitro*. Those containing acacia have been less efficacious than others. Neither glycerin, syrup nor honey seems to interfere materially with the action of the germicide.

3. A solution containing quinine and urea hydrochloride and phenol, each in a dilution of 1 : 200, made up with 20 percent of glycerin and flavored with oil of peppermint, is fairly palatable. This was tested against Type III pneumococci also and found effective. It exhibits, likewise, penetrative ability in sputum.

4. The solution mentioned in paragraph 3 may readily be associated with the compound guaiac gargle which has been found so effective against tonsillitis and other throat infections, and which of itself shows considerable germicidal ac-

tivity against pneumococci. To do this one simply substitutes compound gargle of guaiac (N. F.) for the water of formula No. 10.*

5. Infusion of coca may be substituted for water in all the formulas with advantage as to palatability, but owing to the tannin it contains, it precipitates some of the quinine. This may, perhaps, lessen slightly the germicidal activity, but it has been shown elsewhere⁶ that even insoluble quinine tannate in small proportions will inhibit the growth of pneumococci in test-tube cultures.

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A PLEA FOR A CLOSER STUDY OF PHARMACEUTICAL PREPARATIONS IN THE LIGHT OF THE CRITICISMS OF THE MEDICAL PROFESSION.†

BY L. E. SAYRE.

In the Epitome of the U. S. P. and N. F., published by the American Medical Association, these words occur in the introduction: "Both the Pharmacopoeia and the National Formulary include many drugs and preparations which are irrational, superfluous or worthless."

As these works are supposed to be largely the creation of the medical and pharmaceutical professions it has occurred to the writer that special coöperative effort might lead to some constructive scheme of elimination and possibly to a better feeling and understanding as to: Where lies the responsibility for these drugs and preparations—who stands sponsor for them and why? As it is, a small, uninformed number of the medical profession believes that pharmacists are responsible for the so-called irrational preparations, and some members of the pharmaceutical profession believe that they were brought into existence principally by physicians. Neither view is tenable. As a member of the Committee on Miscellaneous Formulae I have never considered it my province to pass judgment on the therapeutical merit of any preparation, but to prepare a pharmaceutical product of the indicated ingredients. The same attitude has been taken with formulas sent to the laboratory by individual physicians, merely extracting the

* Clinically I have obtained excellent results by simply adding phenol, menthol, and quinine and urea hydrochloride, each one grain to the fluidounce (1 : 500) and glycerin one fluidrachm to the fluidounce (1 : 8) to the guaiac gargle. This, however, can be bettered by getting rid of the tannin, which tends to precipitate some of the quinine. As a general disinfectant for all pathogenic organisms the addition of formaldehyde solution, 1 drop to the ounce, improves it further and the taste is not made worse.—S. S. C.

† Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting 1918.

drugs indicated in the formula and blending them into an acceptable preparation. Not long ago such a formula (of ten ingredients) was received; many of the ingredients would have, perhaps, been considered as superfluous. It would have been discourteous, to say the least, to pronounce upon the therapeutic status of the finished product. Pharmaceutical manufacturers frequently receive private formulas of the same character, such as would not pass censorship, but they likewise do not pass upon their clinical value—whether certain ingredients are superfluous, irrational or useless.

We have had some able and constructive criticisms of existing pharmaceuticals by eminent physicians and some very caustic ones by medical critics.

Dr. H. C. Wood's able criticisms were published in the *American Journal of Pharmacy* a few months ago; in the *Journal of the American Medical Association* for March, 1918, a rather caustic one appeared. Quoting the author of the latter: "It is safe to say that there is not a physician in one of the Army posts, who, if the question were put to him frankly, would admit that the Compound Syrup of Hypophosphites belonged to the armamentarium of a scientific physician, yet 6000 pounds of this relic of the past generation are called for, are to be paid for and are to occupy valuable freight space in shipping to the various Army posts. What utter waste! and what a reflection!" This caused me to refer to the Epitome. On page 49 it states: "This preparation is an antiquated, complex and irrational tonic." It has taken many years since Churchill's time to find this preparation so valueless that its shipping needlessly occupies valuable freight space. Who is party to the crime for its existence?

As a member of the pharmaceutical profession I have always held that the pharmacist, through his experience, his training, his contact with physicians and his access to medical literature, was not incapable of judging as to what is irrational and useless. It may be said in passing that one of our eminent pharmacists is director of the chemical laboratory of the American Medical Association and many of our State pharmaceutical chemists have assisted him in the work of eliminating misbranded and worthless material.

However, neither the pharmacist nor the physician can wholly regulate what physicians may employ in their practice. I told a medical friend that pharmacological investigation seemed to show that tincture of cactus had no virtue as a cardiac tonic; he replied "to accept such a statement would drive me to drink." Another medical friend was told that Echinacea was not regarded as a valuable drug by the American Medical Association; he replied: "I am only sorry for the association." Whether it is scientific or not, physicians as a rule will use drugs and preparations in which their clinical experience has led them to have confidence. The practice of medicine, they say, is not all theory. The pharmacist's attitude is a neutral one by virtue of his position. He supplies what is demanded and, if he uses his business and pharmaceutical skill, will create and improve preparations to meet his patrons' wants. He will promote his branch of medicine to the extent of his business and scientific ability. He risks the fate of his efforts which he knows may be unremunerative and unappreciated. His products may be even regarded as unworthy of freight space. As pharmacists we are obliged to face the fact that, as medical science progresses, new points of view arise and agents which to-day are scientific and rational may to-morrow be relegated to the

scrap pile, by medical authority. Still, if the demand keeps up, the medical profession should not unwillingly bear part of the responsibility of their continuance. Physicians continue to prescribe Syrup of Sarsaparilla Compound (denounced as irrational, etc.) as a vehicle. Compound Syrup of Hypophosphites—a physician said to me only recently, “It is absurd to denounce this preparation.”

In order that a better feeling may prevail regarding the continuance of these so-called unworthy remedial agents and promote their replacement or elimination, would it not be a wise move for this Section to consider a plan of coöperation leading to a closer scrutiny and oversight of questionable agents and preparations, helpful to physicians and pharmacists alike? Incidentally it might remove, to some extent, the prejudice referred to, which retards or restrains efficient coöperative work and coördination.

The American Medical Association has opened the way and made progress in the direction indicated, having pronounced its own point of view, which should be duly recognized. It is natural that the point of view of the American Pharmaceutical Association differs from that of the former association, and the pharmacists' views should be respectfully considered.

If the plan suggested would more rapidly bring about coördination in necessary reforms and elimination of useless or needless materia medica, it certainly would be worth while. I realize that in making this suggestion I am only emphasizing what has been said before, in another form, by others of this Association. One of the results of this coöperation would, I feel sure, be to promulgate the idea which the Pharmacopoeia expresses: Because certain drugs and preparations are admitted into our standard works, they are not thereby necessarily recommended therapeutically. We should understand that the admission of an article does not imply a recommendation. But its recognition means a frequently used or prescribed drug or preparation, and, as far as possible, a standard has been supplied so that a uniform product is made available.

Clinical Evidence: Rule 5 of the Council on Pharmacy and Chemistry of the A. M. A. states: “To be acceptable, the clinical evidence must offer objective data with such citation of authority as will enable the Council to confirm the facts and establish the scientific value of the conclusions drawn, etc. This rule would be helpful in the coöperative work.

As to unscientific and useless articles, Rule 10 of the Council should be expanded and made more definite. A basis might be discovered whereby one could more definitely determine whether an article or preparation is unscientific or useless.

Rule 10 reads as follows: The use of articles which are unessential modifications of official or established non-proprietary articles is unscientific and serves no useful purpose. * * * * *. This class includes mixtures containing an excessive number of ingredients; those which contain substances of no probable therapeutic assistance to each other; those of no therapeutic value. The combination of two or more remedies in a mixture must be considered contrary to scientific medicine unless a distinct reason exists for such a combination, etc.

In closing let me restate what was said in the beginning of this paper: Coöperative work of this Section with representative members of the medical profession would be productive of better feeling, would lead to a mutual under-

standing relative to the drugs and preparations complained of, and be helpful in their elimination, when desired. The result of the efforts in this special direction would also aid the revisers of the United States Pharmacopoeia and National Formulary.

DISCUSSION.

THE CHAIRMAN: I think that all of us, who are closely associated with the practice of pharmacy, realize that if physicians would tell us just what they want in scientific compounds they would relieve us of a great deal of responsibility in the matter of preparing remedies. It is to be regretted that we have so many unscientific compounds, but they exist because there is a demand for them, and unfortunately these are multiplied by others. The success of one proprietary is considered sufficient reason for trying to make another even more successful. Co-operation of physicians and pharmacists as outlined by Professor Sayre would, no doubt, accomplish a great deal of good.

BERNARD FANTUS: This is certainly one of the constructive moves that I believe should be made. It is only to be hoped that the physicians will meet the pharmacists as they ought to. You know doctors have quite a way of being autocrats in the sick-room, and they get to feel that they have a right to be autocratic in all respects, and many of us here, I suppose, including myself, are opinionated. The fact Hippocrates discovered and published, that experience is fallacious and judgment difficult, is so true of medical practice that the opinion of any one physician or any number of us, on such questions as the desirability of certain preparations, should not be regarded altogether too seriously. I am convinced that pharmacists could be of great help to physicians in their learning about the value of preparations. I believe that humanity is not so foolish as to use a certain material indefinitely unless there is some good in it. I am, perhaps, not a fit person to discuss the other view that has the upper hand with our medical editors, namely, the conservative view, as they see it. The trouble with our materia medica has been that nearly everything has been recommended for nearly everything. The scientific physician was, in the past, so helpless in handling this enormous mass of handed down material that he wanted to start with a clean slate. Let us remind you that five thousand remedies were at one time carried in the materia medica of the educated physician and he was supposed to know them. Professor Sayre's idea is an excellent one and one which should receive action. I hope, as I said before, the medical profession will coöperate as it should in arriving at a coöperative understanding. The perniciousness of having in the Pharmacopoeia endless preparations that are known to be unscientific is one the medical teacher can appreciate.

Others participated in the discussion, emphasizing the need of coöperation by physicians and pharmacists to bring about a reform and also in order to arrive at a better understanding relative to unnecessary and useless materia medica. The paper was referred to the Publication Committee.

PUBLICATION OF POTENT CONTENT ON ALL READY-MADE MEDICINES. IS IT DESIRABLE?*

BY OSCAR DOWLING.¹

The topic for discussion, selected from the list sent me by your Committee, is one in which you and your confreres, health officers and physicians are vitally concerned. The signs of the times are clear—the patent “cure-all” with its flaring, sensational, lying appeal is doomed. A few years more and these will be known only as the relics and antiquities of the patent medicines' lurid and dishonorable past. This is not a prophecy; it is a conclusion borne out by the history of recent legislation.

* Read before Section on Education and Legislation, A. Ph. A., Chicago meeting, 1918.

¹ President Louisiana State Board of Health.

The Federal Food and Drugs Act, and the subsequent Sherley Amendment, are evidences of a nation-wide awakening to the evils of the disreputable, deplorable traffic which flourished by the exploitation of human weakness and human agony.

The Food and Drugs Act, as you know, makes mandatory a specific statement as to the amount of certain habit-forming drugs; the Sherley Amendment prohibits statements concerning therapeutic effect on the label, carton or other literature. These laws were passed in spite of opposition, open and secret—mostly secret—and I do not believe any one now would dare to say they are other than wisely protective.

We can recall the popularity of the multitudinous family of "bitters;" we remember the "Spring Tonics," and we know now, if we didn't then, that the basis of these and many so-called remedies was alcohol. With the enforcement of the Food and Drugs Act there was a very great change in content, and there was a passing of many of these alcoholics.

The publication of the habit-forming drugs contained in patent preparations had also a marked effect. Nearly every one is more or less afraid of morphine, opium or cocaine; when it became known that these drugs were contained in certain preparations, even the careless sufferer passed up the bottle or tablets thus labeled. The manufacturer was forced to substitute other drugs not so widely known and generally distrusted. One of the soothing syrups in 1908 contained 0.4 grain of morphine to the fluidounce; to-day we have the manufacturer's word that it is made up of senna, rhubarb, sodium citrate, anise, fennel, some other simple substances and sugar syrup. Which is likely to do the babies less harm?

The Food and Drugs Act was the initial step. It warned the public as to content, and, through the public, forced the manufacturer to lessen the quantity of habit-forming constituents. The Sherley Amendment forced him to drop or to substitute carefully guarded statements of curative qualities for the old blatantly false assertion of "instant or certain cure."

While the effect of these legislative Acts has been helpful in revealing the dangers of many nostrums, unfortunately they do not go far enough. Arsenic, lead acetate, strychnine, methyl alcohol and other dangerous drugs and substances are used in preparations now on the market. These, too, should be so labeled that the public may know the contents.

The Sherley Amendment makes no provision for control of newspaper advertising, with the logical result of columns of suggestive copy which deceive those who can least afford the experiment and the exorbitant charges.

That the American Pharmaceutical Association opposes fraudulent medical advertising is encouraging and gratifying, and its power for good is evident.

The effect of the publicity as to content, and restrictions as to effect, has lessened the sales of many patent nostrums—happily so for the consumers. Further publicity would no doubt lessen the demand for many worthless preparations more or less popular. In the light of the past, we must concede the necessity which existed for the protection of the ignorant, and not a few of the educated. We must also concede that the same need exists to-day.

I believe the opposition to publication of the formula is based on a misconception of what might occur, not what actually will happen. The manufacturer

thinks his preparation will be or can be duplicated by any one who has a mind to do so. This may be granted—but will they do so? The ingredients of medicines have been carried on the labels of some for years. How many individuals or companies have tried duplication, either for sale or use? It is true the list of ingredients is not sufficient; the proportions are necessary, but even if these also are given, how many would deliberately go into the business of re-duplicating? If this should be done, a different name must be given, and the preparation widely advertised before its sale can hurt the original. I believe the publication of the ingredients or formula should be required. It would give the public an idea of the content; it would make the manufacturer answerable for the results of his medication; it would tend to eliminate fake remedies; it would give the druggist and physician an intelligent idea of the preparation; it would foster confidence in the honesty of the manufacturer.

It seems very apparent that if any manufacturing establishment refuses to state the ingredients of a mixture, ointment, pill or solution, the indications are that it has good reasons for not wanting them to be known. Either the ingredients are worthless, and the advertisement the driving force behind the demand, or the effective ingredients are so minute in quantity or so inferior in quality as to constitute a swindle. Whichever way the matter is approached the result is the same; the public pay heavily for what they get—except in suggestion. You are familiar with examples of this kind. The cost of manufacture must be infinitesimal in comparison to the retail price; and the medicinal value small compared to the claims. It cannot be said that they are actually devoid of value; but vaseline or borax bought for one-fifth the amount charged for the advertised articles in most instances would be equally effective.

A firm that puts up a good remedy, one which is efficient and otherwise acceptable, need have no fear of losing trade by competition so long as the name or trademark is registered. But the day will come, if it has not already arrived, when the public will demand to know what they are paying out their money for. Time was when some of the one-time popular nostrums were to be found in every family medicine chest. Their decline in sale and popularity has been such that, as one druggist expressed it, they have literally become "drugs on the market" which are seldom called for. Possibly this is due to lack of advertisement; it is more likely, however, that years of trial have demonstrated how valueless they actually are.

From our office we recently conducted some investigations which gave interesting results. Our chemist was sent to interview all the druggists in New Orleans and other cities of the State. In New Orleans, and the towns adjoining, 208 retail druggists were visited. In reply to the questions formulated, the demand for the ten leading proprietaries was tabulated.

In relation to percent of business, approximate gross profits, percentage of patent preparations in prescriptions, and the attitude toward the proprietaries, we find the records show:

25.8 percent is the average percent of total business derived from patent and proprietary medicines.

19.3 percent is the average gross profit on patent and proprietary medicines.

23.3 percent is the average percentage of all prescriptions containing patent and proprietary medicines.

As to whether or not a drug store can exist without patent and proprietary medicines:

61.52 percent of the pharmacists expressed an unqualified "affirmative."

1.93 percent inclined toward "affirmative."

33.65 percent gave an unqualified negative.

Whether a drug store could, or could not, exist on U. S. P. and N. F. basis:

56.25 percent of pharmacists thought it possible.

10.27 in doubt, while 22.60 percent think it is not possible.

It is interesting and pertinent that our summary shows the majority of the retail druggists opposed to patents and proprietaries; although only 74.5 percent expressed themselves as being absolutely opposed, at least 5 percent more seemed to incline toward opposition.

In expressing a definite stand against patents and proprietaries a large number were moved by ethical reasons; that is, they believe that they are selling remedies, the value of which is doubtful and are accessories to what in many cases they consider absolute swindles. Still others regard the handling of patent and proprietary medicines as distinctly degrading to the profession, and would like to see them abolished with the hope that, with the elimination, pharmacy and pharmacists would gain in prestige and standing in the community. Many deplored a commercialized profession, which requires a certain amount of study and training, and this relegates them to a position equivalent in many respects to that of an ordinary untrained clerk.

It is conceivable that the printing of the ingredients or formula of a proprietary on the carton or bottle might possibly harm the manufacturer to a limited extent; it cannot, however, be clearly demonstrated in what way the retail man, the pharmacist, can be injured. In accumulating evidence for the Drug Store Report, the regret was frequently expressed by the pharmacist that he did not know what he was selling and wished that the firm would at least state what was contained in the bottle. The fact that 74.52 percent of all pharmacists of New Orleans expressed themselves as opposed to patents and proprietaries is significant, and it is also worthy of note that not one of the least important of their reasons for objecting was the fact that the public demand, and the struggle for self-preservation, made it necessary for them to act contrary to their personal convictions.

Most of the pharmacists are honest and honorable men and try to discharge their obligation to the public to the best of their knowledge and ability. It is to be assumed from their statements that they heartily approve of the printing of at least the ingredients on the label. Why should they not? They cannot lose by it and are bound to gain, if in nothing else than self-esteem, for it is more to the credit of the pharmacist to sell some remedy, the value of which he can vouch for, than a quack remedy of the composition of which he has not the remotest knowledge. He calls the latter the "fakes," but he does not place in this category those remedies of whose utility he is practically assured, even though their composition is not clear. He would certainly feel more assured in recommending the latter were their ingredients known to him.

There are, however, druggists and pharmacists who make, sell and advertise

their own "Just-as-good" or "Just as-bad" preparations. Whether they think so or not, they are "manufacturers" of "fake" or of reputable preparations, as the case may be. There are druggists also who lend their names to questionable "remedies." Equally with the physician, the druggist who makes or exploits a patent preparation is responsible—it may be culpable. As he knows drugs, he is the more culpable should his preparation be worthless or ineffective.

One of our convictions, based on investigations, is that the percentage of patents and proprietaries does not justify their maintenance. If there is a sudden slump in the demand, the druggist is left with a large stock for which there is no sale. Whether or not a condition of this kind is due to lack of business foresight is not a matter for discussion, but it is certain the sale of patent medicines is a business proposition and the benefit they may possibly confer on the public is a secondary consideration to the manufacturer. It is apparent to us that opposition to legitimate control of the manufacture and sale of proprietaries arises from persons or firms whose money is invested, or who have made contracts to handle a certain quantity of different preparations. It is natural that they should look out for their own interests, and it is also apparent in some cases that the manufacturer has the small dealer by the throat. We are not unaware of the tremendous power of these interests. With \$71,000,000 invested it means that those having the business in hand will do their utmost to head off interference. It means that money and influence will be used to the benefit of the Company, and it is logical that they do not consider the small dealer or the public.

It is urged that the average physician does not know the pharmacologic action of drugs, and that he does not utilize the Pharmacopoeia and the National Formulary. That he does use the proprietaries. Undoubtedly there are physicians who are guilty as charged. But if a reputable physician uses the proprietary, there is a reason. He finds that many proprietaries are better acting and more reliable productions when manufactured by large drug firms than a similar preparation put up by a pharmacist according to the National Formulary. The reason here is clear also. The pharmacist has not had the same experience in compounding as those of the large wholesale houses, and the result is inferior. This alone is sufficient to cause doubt as to the ability of the pharmacist, and we know in all too many instances it is borne out by the facts. Every reputable and conscientious physician would welcome the publication of the formula; he would be glad to have the opportunity to acquire a knowledge of the constituents of the preparation he thinks superior to the compound which the pharmacist would put up for him, and that it would add to his confidence in it there can be little doubt. The physician, in common with the druggist, is a victim of circumstances; for both the line of least resistance is the easier.

We know, however, some doctors are not afraid to speak their minds on the subject of proprietaries which make false therapeutic claims. A few months ago we sent the formulas of four preparations, with a set of questions, based on the advertisements of each, to 174 noted physicians. One hundred and eleven replied to the first, and 63 of these answered "NO" to all of the eight assertions appended to that formula. A number answered "possibly" to one or more of the questions, or made other qualifying answers, such as "inferior," "not good," or "don't know." A large number replied to all, and voluntarily offered com-

ments. From the opinions expressed, I have selected a few that are typical:

"An unscientific preparation without value."

"A peculiar shotgun combination, with neither scientific nor pharmaceutical reasons."

"Its one virtue seems to be that it is harmless."

"This formula, in my humble opinion, is the limit. I am constrained to believe that the tablet form would—if small enough—make its exit as its entrance as hard as a steel ball."

"I have never been an advocate of shotgun prescriptions."

Our investigations among the druggists of Louisiana, and the summarized replies to our questions, give ample proof that the publication of the patent drug content is desirable. Many druggists, not burdened with contracts, are frankly opposed to the handling of patent preparations, the formula or ingredients of which are secret. Others, among them some who buy large quantities of these medicines, realize the demand is precarious and the results of sale unsatisfactory. Therefore, preparations bearing on their face their content would be more acceptable to the retailer.

The physician's use of the proprietary is largely habit, induced by ignorance, indolence, or the circumstances which force him to choose between the manufactured article and a poorly prepared substitute. The conscientious man wants to know the composition of everything he gives his patient, and rightly. He can be relied on to commend any movement which would give him definite information. It goes without saying the prepared medicines, with few exceptions, are not satisfactory to the skilled physician and can not ever meet his requirements. It is likewise true that if these became unprofitable to the manufacturer, the competent pharmacist would come into his own and the profession would grow in usefulness and prestige.

The patent and proprietary have been called the "poor man's medicines." Observations indicate laxatives and cathartics, liniments and cough syrups, have a wide sale. The physician knows even these should not be used without advice and direction, but until the public is likewise convinced, too drastic criticism or action would be futile. We concede at present there is a legitimate field for some proprietaries, but these are not in the class that would be put out of business by the printed formula.

The uncritical public is the great factor in this problem. It is they who have been exploited by the unscrupulous multi-millionaire manufacturer and his equally unscrupulous agents. You will agree that the manufacturer without medical, ethical or moral standards has utilized brains and money to swindle the credulous; you will agree that to deceive with false hopes the ignorant and the sick is a crime even if it is not so listed in the statutes. The attitude has been, the public is legitimate prey to be fleeced; "they need not buy if they don't want to, but every device and every suggestion will be used to make them buy." The "secret" formula was the strongest asset of the business; the mystery appealed and it was made to do full duty. Loaded with stock, the retailer was forced often to devise ways and means to sell, hence the flaring windows with a fifty-foot tapeworm, a dozen rusty rattle snakes, or the living automaton pointing out the merits of the wonderful "Cure-all."

On the back of the carton of a recently analyzed preparation there is a statement by the manufacturers to physicians and the general public which sets forth the reasons why the preparation is efficient, and adds—"but knowing the proper prejudice of many against using any medicine prepared from concealed formulas, and to protect the public from many nostrums and worthless preparations with which the market is flooded, we have concluded—on the request of a number of physicians—to indicate on each bottle of what the medicines are composed."

This Company recognized the changing psychology of the public mind. They believe publicity good business. They have accepted and made use of the new attitude. This is common sense. There are still those who will buy to their own undoing, but the demand that all remedies possess merit is becoming more and more insistent. The day of general acceptance of the flaring label, the Almanac and the fraudulent testimonial is past. The more intelligent are on guard. This points to an educated public which, in time, will refuse to buy the secret preparation.

The example given is positive evidence that secrecy is no longer desirable.

I do not doubt that the publication of ingredients or formulas will awaken intelligent discrimination; it will lead to a transfer of approval from remedies now popular to others. This will mean loss to the manufacturer, and to the retailer who is stocked with old medicines. But the financial loss will be temporary; and is unimportant in comparison with the benefit which will result to the public. The honest manufacturer and those handling his products would have nothing to fear, for they, too, would benefit by the increase in public confidence. The maker of worthless preparations would go to the wall, which in time would be to the advantage of those who placed on the market only an honest product.

To summarize, the protective effect of the Federal Law is so apparent, no one would have the temerity to suggest its repeal; the druggists—many of them—are tired of the uncertainty connected with the sale of secret patent remedies; the pharmacist, if the patents were dropped, could hope for better pay and deserved recognition; the honest physician could use with confidence a preparation bearing the formula; the manufacturer would have nothing to lose if his medicine was effective; finally, the secret patent preparation is on the run and it is common sense to accept the situation and to join the ranks of those who live and act in the belief that there are some things which have a greater value than just money.

Is it desirable to protect from themselves the credulous and the ignorant? Is it desirable to condemn a dishonest business standard? Is it desirable to lift the retail drug business to a higher plane? Is it desirable to warn and teach suffering humanity? I leave with you the answer.

THE DRUGGIST AS NOTARY PUBLIC.*

BY EMIL ROLLER.

The vocation of the American Pharmacist being partly scientific and partly commercial compels him to pay just as much attention to the commercial side

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.

of his business as to the ethical, and often more to the former than to the latter. He therefore has to carry a great many side-lines not pertaining to pharmacy at all, in order to earn a livelihood. Now instead of reaching out for more side-lines, I should like to call the attention of my colleagues to a vocation entirely compatible with their professional standing, I mean that of Notary Public.

Since it is required by the Pharmaceutical Syllabus that each college of pharmacy of acknowledged good standing must include in its curriculum seventy-five hours of lectures in Commercial Law and Business Practice, the young pharmacist, having attended such a course, is by reason of the training he has acquired at these lectures able to perform the duties of a Notary Public a great deal better than many of the persons in whom this office of public trust is now vested. The general duty of a Notary Public consists mostly in taking affidavits and acknowledgments of signatures on legal papers, protesting of notes, executing of bills of sale, leases, mortgages, powers of attorneys, etc., etc. The income from these sources ranges from twenty-five cents for common acknowledgments, to two dollars and fifty cents for protesting notes, and then to between five dollars and twenty-five dollars for executing leases, bills of sale and other more involved documents. The receipts from the execution of these papers and similar ones is clear profit involving only the time consumed in drawing them up.

The wording of these papers is not as difficult as it seems at first sight, because printed forms are obtainable with the proper phraseology and it necessitates only the filling in of names and other stipulations agreed upon between the interested parties to complete the document.

The holding of the office of Notary Public will add greatly to the standing of the pharmacist in his community. To be appointed to the office it is best to procure the services of a lawyer or of your congressman. After the appointment, it is always advisable to see a lawyer and get instructions on essential points in making out documents to conform with the law of the State where the instrument is executed.

Nearly all official documents must either be acknowledged or sworn to before a Notary Public. His services therefore are required frequently.

I strongly recommend to my fellow pharmacists to either have themselves appointed, or procure an appointment for one of their clerks. This suggestion, if followed, will bring a great many people into the appointee's place of business who would otherwise not have come, and my experience has proven that they will ultimately become regular customers.

The druggist as a Notary is a public convenience.

HISTORY OF GLASS, ANCIENT AND MODERN.*

BY W. W. FIGGIS.

Among the first discoveries due to chance, and perfected by man's intellect, glass is certainly one of the most important.

Although glass satisfies a considerable number of our most ordinary wants, it is also to *it* that we must attribute, to a large degree, the ever progressive march

* Read before Section on Historical Pharmacy, A. Ph. A., Chicago meeting, 1918.

of science. Indeed it is by multiplying the strength of man's organ of sight that glass lays bare the most hidden works of creation to his investigation, and by degrees everything is seen, studied, explained and analyzed, including the infinitely great, as well as the imperceptibly small. Few questions have been more discussed than that of the origin of glass.

Tubal-Cain, son of Lamech and Zillah, who was the eighth man from Adam, was born 3870 B. C., which would carry us back over five thousand years of this world's history; it is stated that on the coast of Palestine, near the mouth of the River Belus, he, with others, was preparing for their repast, and not finding any stones on which to place their pots, took some cakes of nitre for that purpose. The nitre being subjected to the action of fire with the sand of the shore, produced transparent streams of an unknown fluid, and such was the origin of glass. Pliny tells us that sand suitable for glass-making is found at the mouth of this river Belus, which flows into the Sea of Judea. This opinion is reported with some variations on the authority of Flavius Josephus by Palisey, but this account has found and still finds many doubters among chemists, who claim it impossible to qualify substances in the open air, which in our day with our improved processes can only be fused by means of furnaces constructed expressly for that purpose, but of this there is no doubt, that glass was made centuries before furnaces were thought of, and the question remains, HOW? If this be doubted we cannot place in chronological order the productions found in great numbers in our museums. While dating back to an extremely early epoch, many of these articles bear no indication of the place, or date of their manufacture; at the same time there is no doubt that to remote antiquity belong the Theban glass makers, who are represented in paintings on the tombs of Ben Hassen 3500 B. C. These paintings represent a Theban using a blow-pipe, very similar in all respects to those used at the present day (Wilkinson, Vol. III, 89).

Signor Drovetti found at Thebes a dark blue piece of glass, which is now in the British Museum, and according to Lepsius's chronology establishes the date, because this piece contained the name of Nuantif IV. Martial alludes to the importation of Egyptian glass into Rome, and it is mentioned in an ordinance of Aurelian, also of this period. About this time, Hadrian in a letter addressed to the Consul Servianus mentions glass-blowing as one of the chief industrial occupations of the inhabitants of Alexandria. The Phoenicians probably derived their knowledge of glass from Egypt. Many towns in Egypt practiced the art of glass manufacture, for Pliny boasts of the glass manufacturers of Sidon, and Herodotus and Theophrastus sing praises of the marvelous productions of the Tyrians.

The fame of these different manufacturers of glass could not remain unknown, and later the Romans under Caesar Augustus subdued Egypt and ordered that glass should form part of the tribute to be imposed on the conquered. Then Rome developed the art of making glass in a most remarkable manner, and in some respects has never been excelled or, perhaps, even equaled. (Pliny Nat. Hist., XXXVI, 26-27). Theodosius II, Roman Emperor A. D. 408, desiring to encourage glass industries, exempted all glass workers from personal taxes.

In the middle ages Assyria was making glass, and a vase of transparent greenish hue was found in the north-west palace of Ninevah, and is now in the British

Museum; on one side was engraved a lion, on the other the name of Sargon, King of Assyria (722 B. C.).

The Greeks of the shores of the Mediterranean excelled in the art of making glass at a very early period, some centuries before the Christian era.

Constantine I, surnamed the Great, born A. D. 274, whose seat of Empire was Byzantium (Constantinople), hastened to attract glass makers from the West. In spite of all these successes in the East, the time came when the West excelled in its old industry; Venice reclaimed it, and in the 14th Century nearly monopolized the industry, according to Italian writers Carlo Marin and Count Filiasi, who also state that some families fleeing from war took refuge on the islands of the lagoons. Venice endeavored to hold this trade and issued strict statutes that if a workman carries his art into a foreign country an order to return will be sent and, if not obeyed, his nearest relatives will be put in prison, and if he persists in staying away an emissary will be sent to kill him. Several instances of the carrying out of this threat are recorded, but even with this threat, it was not sufficient to stop the spread of the glass industry into Germany, Bohemia, France, England and Belgium.

It is interesting to note the historical point made about gentlemen glass workers, showing that the mere trade of glass-making carried with it that every one of them was ennobled by the fact of the nature of his trade.

At this juncture a reasonable question is—Did the ancients employ glass bottles? Yes. Egypt has left us bottles made of simple glass and others covered with wicker work or papyrus stalks. The latter offer the greatest resemblance to those now used for Florence oil, and are still used by the Egyptians under the name of "damadjan."

Documents prove that glass bottle factories were run in France, 1290, by a man called "Macy." Also, in 1469, John Petit Fay was commissioned by the Court of Louis XI to manage a bottle factory.

The first industrial enterprise established in the United States was in Virginia, soon after 1607, near Jamestown. In 1639 coarse bottles were made in Salem Mass., in 1683 in Philadelphia; two factories were operated in New York City in 1732. In 1747 one factory was operated in Connecticut, one in Brooklyn, N. Y., in 1754, and one in Germantown, Mass., in 1760. In 1738 the first factory was started in New Jersey in Allowaystown, Salem County, by Casper Wistar, who brought over four skilled workmen from Rotterdam. In 1795 the first factory was started in Pittsburgh, Pa., and in 1813 there were five factories in operation in that town.

The appearance of the neck of an old bottle is the surest test of its age; the mouths of our first bottles were cut with shears while in a plastic condition, which explains the irregular edge, entirely devoid of any rim; the base invariably possesses a rough circular scar, formed by breaking the bottle from the punty rod, which holds it while the workman finishes the neck. Now of course, a snap tool is used.

Between the years 1840 and 1850 there seems to have been remarkable progress in glass bottle making in the Eastern states, and Pennsylvania in particular. Old shapes can still be found in nearly every farm-house, of curious designs—patriotic, political and masonic.

One of the first successful glass works in the United States was at Nauheim,

Lancaster, Pa., conducted by Baron William Henry Stiegel, about 1769. In 1771 a glass factory was started in Philadelphia, Pa. (Kensington), by Robert Towars and James Leacock and taken over in 1783 by Thomas Leiper, then, in 1803, by James Rowland & Co., afterward owned for about four years by Thos. W. Dyott; in 1842 by Henry Seybert; in 1844 by H. B. Benners, S. Decatur Smith and Quinton Campbell, Jr.

In 1775 the Stanger Bros. erected a glass factory in Gloucester Co., New Jersey, at a point afterwards known as Glassboro. In 1813 Rink, Stanger & Co. established new works, and one of the most remarkable old bottles made in the United States came from this factory during the presidential campaign of 1840, in the form of a log cabin for an enterprising liquor merchant in Philadelphia. Another one of the most characteristic shapes was what is known as the "Jenny Lind," with a globular body and a long, slender neck, in 1850, when the great singer came to America under the direction of P. T. Barnum. The original metal mould in which these bottles were blown is still in existence in the oldest glass factory in the United States, known as the Whitney Glass Co., which has been absorbed by other interests, and now forms a part of the Owens Bottle Machine Co.

In 1806 James Lee and others started a glass plant on the banks of the river where Glasstown is now situated; it passed into the hands of Gideon Scull, then Nathaniel Solomon managed it for a company of blowers, but made a failure. In 1829 Burgin and Wood took over the plant; in 1830 the name was changed to Burgin, Wood & Pearsall; in 1833 to Burgin & Pearsall; in 1836 to Scattergood and Booth Co.; in 1838 to Scattergood, Haverstick & Co.; in 1844 to Scattergood & Whitall; in 1845 to Whitall & Bro.; in 1850 to Whitall Bro. & Co.; in 1857 to Whitall Tatum & Co., and in 1901 to Whitall Tatum Company, Incorporated.

Finally as a matter of interest you may wish to know the probable inception of the druggist's show bottle:

When Julius Caesar invaded Ireland, a boat was sent ashore from the offing to locate the most advantageous landing-place. A spot was selected on a shelving shore directly opposite a certain apothecary's shop, in the windows of which were certain large bottles containing drugs which were in process of maceration, and the contents showed different colored liquids. On a promise of immunity as a reward, the arrangement was made that this apothecary would place lanterns behind these bottles to guide the landing of troops, which was made that night. The undertaking was successful and, to commemorate the same, an edict was issued by Julius Caesar that thereafter all apothecaries would be honored by being allowed to use colored carboys to identify their establishments.

"The Pharmaceutical profession being one which demands knowledge, skill and integrity on the part of those engaged in it, and being associated with the medical profession in the responsible duties of preserving the health and dispensing the useful though often dangerous agents adapted to the cure of disease, its members should be united on the ethical principles to be observed in their relations to each other, to the medical profession and to the public."

THE ADMINISTRATION OF CERTAIN DELIQUESCENT AND LIQUID DRUGS IN CAPSULES.

N. S. DAVIS, M.D., CHICAGO.

It is so much pleasanter to take medicine in capsules than in other ways that it has been my habit when I can do so to administer it in them. Pharmacists find it impossible to dispense extemporaneously in capsules many deliquescent substances and most liquids. A dozen or more years ago my attention was called to the possibility of dispensing many such substances in a capsule by using a wax mass. In this way potassium iodide and similar drugs can be given, also guaiacol, oil of sandalwood and many other liquids which one wishes to prescribe in doses of from 5 to 10 minims. The iodides can be given in doses of 10 or 12 grains (from 0.5 to 0.8 Gm.), and the pill will be readily absorbed, as is shown by finding iodine in the saliva in three minutes or less after such a capsule is swallowed.

The capsules are permanent, keeping for weeks ordinarily and in the hottest, dampest weather, if placed in a corked bottle.

For the making of a pill to be placed in a capsule containing sodium or potassium iodide in doses of 10 or 12 grains (from 0.5 to 0.8 Gm.), about $1\frac{1}{2}$ grains (0.1 or 0.15 Gm.) of the wax mass is needed. Red mercuric iodide and other drugs can be incorporated in the same mass if they are required.

To make a pill containing guaiacol, oil of sandalwood or similar liquids in doses of 5 minims or thereabouts, the same quantity of mass is needed.

I have often given iodine incorporated with this mass, and have obtained from it as prompt and as good results as when it was given in solution. But I have found it possible to give it, without discomfort to patients, in larger doses. For instance, from 2 to 4 grains (from 0.15 to 0.25 Gm.) can be given in this way, though I rarely have given more than $2\frac{1}{2}$ grains at a time. I have made it a practice to dilute the iodine well with the mass in order that the pill may not cause gastric discomfort, and possibly I use more of the mass than is necessary for this purpose. I usually prescribe at first 1 or 2 grains (0.05 or 0.10 Gm.) with 5 grains (0.3 Gm.) of wax mass. Undoubtedly, the oil in the mass is responsible for carrying the iodine and for diluting it and releasing it so as not to cause gastric discomfort. When administered in this way, iodine appears with its usual promptness in the saliva. Cascara, aloes, codeine and many other drugs can be incorporated with it when they are needed.

The wax mass is made of one part beeswax and three parts of castor oil. These ingredients are melted and mixed by heating them gently. When liquefied and thoroughly mixed, the mass is allowed to cool. It makes a somewhat granular pill. I do not know who invented the mass, and I have rarely found a pharmacist who knew of it.

I have never seen the castor oil produce looseness of the bowels, and we would not expect it to, so little of it is administered at a time.

Guaiacol and oil of sandalwood and similar substances can be readily mixed with from one-half to equal parts of beeswax and made by gently heating into a mass. Such a one, however, is needed only when a prescriber is using these substances with frequency.—*Journal A. M. A*

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

CHICAGO.

The one hundred and first meeting of the Chicago Branch of the American Pharmaceutical Association was held at the hotel LaSalle Friday evening March 28, 1919, President A. H. Clark presiding. A large number of members and friends was present.

The subject of the meeting was "Pharmacopoeial Revision," and the discussion was very ably opened by Dr. Carl Alsberg, of Washington, D. C. Dr. Alsberg was followed by Dr. Henry Kraemer, of the University of Michigan, and other notable speakers were: Dr. Bernard Fantus, Prof. C. M. Snow, Secretary Samuel C. Henry, of the N. A. R. D., Chas. Falkenhainer, of Dubuque, Iowa, Secretary H. C. Christensen, of the N. A. B. P., Prof. W. B. Day and Wm. Gray.

The discussion was very profitable and the principal conclusions could perhaps be summarized as follows:

First, While the standards of the U. S. P. and N. F. could possibly be improved upon and made much more definite in many instances, these two books are an invaluable aid to all those intent upon maintaining a high standard of drugs. It is greatly to be desired that standards as good as these be devised for many drugs and medicines not included in these works but which have a wide use and enter commerce in large quantities.

Second, Purity and standardization rubrics in the definition or the text of the monographs can be extensively used to advantage though there may be a question as to the value of the description of tests and assays for determining these standards. However, wherever test and assay processes are included in the U. S. P. and N. F. they should be strictly followed.

Third, A maximum-minimum standard for drugs and chemicals, and especially for the finished preparations of drugs, should be discontinued and a single standard adopted in-

stead. A sufficient tolerance from the standard is always allowed by courts and authorities anyway.

Fourth, The nomenclature and spelling of the U. S. P. and N. F. should, perhaps, not be accepted with the same idea of standard and legality as the statements made in these books, yet such a weight of opinion should lie back of the nomenclature and spelling used in these works that they should be considered standard in these respects. Certainly faddy changes in spelling or nomenclature backed by the opinion of one or a few persons should not be considered.

Fifth, The use of alcohol in the preparation of medicines, both as an extractive and preservative, should receive the most careful investigation. The introduction into the U. S. P. and N. F. of more classes of medicines in which alcohol is not present should be considered.

E. N. GATHERCOAL,

Secretary.

The one hundred and second meeting of the Chicago Branch of the American Pharmaceutical Association was held at the LaSalle Hotel, Friday evening, April 25, 1919, with President A. H. Clark in the chair and a good attendance of members and visitors.

Samuel C. Henry, General Secretary of the National Association of Retail Druggists, led the discussion on the subject: "Recent Rulings Regarding Narcotics and Alcohol." Others who took part in the discussion were: Wm. Gray, C. M. Snow, J. H. Wells, Chas. Caspari, Jr., of St. Louis, F. W. Metzger, of Springfield, W. S. Denton, of Beardstown, Robt. W. Sterling, of Dixon, H. C. Christensen and W. B. Day.

Many interesting points regarding the application of the new amendments to the narcotic law, and the new taxes on proprietary medicines and soda fountain sales, were made.

Thus especial emphasis was laid on the fact that the retailer of narcotics can in no way act as a wholesaler and can dispose of narcotics only by prescription or in exempted preparations. The question arose as to how a 5 percent solution of cocaine could be sold to a physician for office practice and Mr. Henry stated that such a solution could not legally be sold, though the government officials probably would make a ruling covering such cases and making provision for such sales.

Special attention was called to the stamp taxes to be collected upon all proprietary medicines, toilet articles, etc.; anything in which any kind of a proprietary right was claimed must bear the stamp. Such items as Bayer Aspirin Tablets, Lilly Coco-Quinine, Adrenalin solution, were mentioned as taxable. The tax stamps should be used whether the article is sold in original packages, in broken packages or in prescriptions. The exception among toilet articles was toilet soap, including soaps in any form for shaving, such as shaving creams and powders. Any soap, however, which claims medicinal properties is taxable.

Mr. Henry called special attention to the necessity of placing and cancelling the stamp at the time the sale is made and when the customer is called upon to pay for it. This leaves no question in the customer's mind that he is really paying the tax to the government.

Also, in collecting the tax on sales at the soda fountain the customer should pay the tax direct, rather than by increasing the price of the drink, even though the cost of collecting the tax may be an added burden.

E. N. GATHERCOAL,
Secretary.

NASHVILLE.

The regular meeting of the Nashville Branch of the American Pharmaceutical Association and the Nashville Drug Club was held Thursday, April 24. D. J. Kuhn presided.

The main feature of the afternoon was the discussion of the new Tennessee Pharmacy Law, which embraces the following features:

The Board of Pharmacy shall consist of five members, three of whom shall be graduates in pharmacy; they shall serve for five years, but not be permitted to succeed themselves. The Governor is authorized to appoint one member of the Board annually from a list of five names submitted to him, these to be selected by ballot by the Tennessee Pharmaceu-

tical Association. The registration fees are \$2.00 and \$1.00, and the Board is to pay \$1.00 for each member to the State Association, which makes them automatically members of the Tennessee Pharmaceutical Association. One meeting of the Board must be held each year in Nashville. The applicants for registration must have educational requirements equal to 14 High School units. Examinations are provided, but persons who have had five years' experience in a drug store may register as assistants, and after serving five additional years may be registered as pharmacists upon the recommendation of their preceptor and the endorsement of two physicians. Permits may be granted in small towns. Reciprocal registration is provided for with other States.

Persons convicted of a felony or addicted to the liquor or drug habit may have their certificates revoked.

The latest copies of the United States Pharmacopoeia and National Formulary are required to be kept in each pharmacy.

No establishment can use the name of drug store unless under the charge of a registered pharmacist. Proprietors are required to pay an annual registration fee of \$1.00.

The provision allowing physicians to register as pharmacists is repealed.

S. C. Davis read and explained the provisions of the new narcotic law recently passed and which is now in effect. It provides for the supply of a specified amount of narcotics to addicts for thirty days. The maximum quantity of the different narcotics which can be prescribed in a day's time to patients other than addicts is specified. Such order or prescription must have the endorsement of both the attending physician and the health officer. Registration of purchase and sale are required.

The passage of a new insecticide law was also reported. This is similar to the federal law.

The subject of shorter hours was discussed by Messrs. Kuhn, Snow, Wilson and others, who expressed their opinion that the hours of pharmacists should be shortened and this be put into effect by legislation.

This was one of the most interesting meetings of the two Associations.

WILLIAM R. WHITE,
Secretary.

NEW YORK.

The April 1919, meeting of the New York Branch of the American Pharmaceutical As-

sociation was called to order by President Lehman in the Lecture Hall of the New York College of Pharmacy Building on Monday evening, the 14th, at 8.15 P.M. Twenty-two members were present.

The Treasurer's report was received and showed a balance on hand of \$122.20.

Member of the Council: Professor Jeannot Hostmann brought in no report.

Membership Committee: An application was received from Edwin C. Steinach, 776 Melrose Ave., New York City, for membership in the parent organization.

Fraternal Relations: Dr. Leon Lascoff being absent, no report was received.

Audit Committee: Dr. Jacob Diner reported that there were no bills on hand.

Legislation and Education: In the absence of E. J. Kennedy, Hugo Kantrowitz made a brief report, which was received with the thanks of the members.

Resolutions on the death of Professor Joseph Kahn, drawn up by Dr. Joseph L. Mayer, were adopted, and the committee was discharged with the thanks of the Association.

SCIENTIFIC SESSION.

The third "three-minute letter" of the Committee on Local Branches was received by the Secretary. Messrs. Caswell A. Mayo, Hugo H. Schaefer, Jeannot Hostmann, Jacob Diner, H. V. Arny, and Joseph L. Mayer took part in a discussion with regard to this letter.

Progress of Pharmacy: Dr. George Diekmann brought in a lengthy report and abstracts on the following topics:

Japanese Black Mint.

Substitutes Used in War.

Industrial Development of Acetic Acid and Acetone.

Disinfectant Properties of Alcohol.

Potash from Kelp.

Considerable discussion followed the reading of this report, which was accepted with thanks by the Branch.

A paper written by Miss Adelaide Rudolph on "Pharmaceutical Medals" was read by Caswell A. Mayo.

Arthur C. Wyman, a Fellow of the American Numismatic Society, then gave a very interesting talk on the early history of medals, also reviewing some of the work of his Society.

Under regular procedure the meeting was declared adjourned.

HUGO H. SCHAEFER,

Secretary.

NORTHWESTERN.

The Northwestern Branch of the American Pharmaceutical Association at its April meeting held its annual election, and the following were elected to office for the year 1919:

President, Charles Huhn, Minneapolis.

Vice-President, Robert L. Morland, Worthington.

Secretary and Treasurer, F. A. U. Smith, St. Paul.

Members of the Executive Committee, Stewart Gamble, Minneapolis; W. A. Abbett, Duluth.

CHARLES H. ROGERS,

Secretary.

PHILADELPHIA.

The April meeting of the Philadelphia Branch of the American Pharmaceutical Association was held Tuesday evening, April 22, 1919, President Griffith occupying the chair.

The Auditing Committee, Prof. F. P. Stroup, Chairman, reported the accounts of the previous Treasurer correct. The President announced that twenty-four members of the Senior Class of the Philadelphia College of Pharmacy so far had become members of the parent body, all of whom he hoped might become members of our branch.

The third of the series of "Four Minute Papers" was read by the Secretary. The paper was written by Editor Caswell A. Mayo, of the American Druggist on "Prohibition Fraught with Danger to Pharmacy."

There was a motion made that the discussion of this subject be deferred to a future meeting, when the subject could be the basis of several interesting papers.

There being no other business, the speaker of the evening was introduced. Mr. Theodore A. Seraphin, Inspector of Weights and Measures, presented the subject: "Prescription Scales and Weights." The subject was a timely one, having been chosen because of an article in one of the Philadelphia newspapers claiming that many deaths were resulting from faulty prescription scales and weights. Mr. Seraphin stated that the inspection of pharmacists' scales and weights was yet in its infancy. Out of Philadelphia's 1200 pharmacies only 44 have been inspected. Out of 71 scales inspected in these 44 pharmacies, 66 percent were found incorrect. Out of 1126 weights inspected 37 percent were found incorrect. This is, however, no fair estimate of the scales and weights in all Philadelphia pharmacies on account of the small part inspected and

especially because such inspection was made in the foreign quarters of the city.

The paper was followed by an interesting discussion by Messrs. Friedman, Glass, Hahn, Kraus, Lowe Reese, Hendrickson, Hunsberger, Ehman, Gershenfeld and Cliffe. A motion for a rising vote of thanks to Mr. Seraphin was made and adopted.

Mr. W. L. Cliffe then referred to the Leslie Bill, No. 732, introduced in the Pennsylvania State Senate, and explained the ridiculous provisions of the bill which, if passed, would prevent the sale and use of volatile anodynes and anesthetics and synthetic hypnotics and anodynes without a physician's prescription. The following resolution was made and adopted with instructions to forward a copy to the Committee on Health and Sanitation of the Pennsylvania State Senate.

"WHEREAS, There has been introduced into the Pennsylvania State Senate a bill called the Leslie Bill, No. 732, intended to regulate the sale and use of narcotics, volatile anodynes and anesthetics, and synthetic hypnotics and analgesics, and

"WHEREAS, The Philadelphia Branch of the American Pharmaceutical Association is anxious to coöperate with legislation intended for the

public good and especially so with legislation relative to public health and the sale of medicines, and

"WHEREAS, There are now on our statute books laws which, if properly enforced, would amply regulate the use and sale of narcotics; therefore be it

"Resolved, That the Philadelphia Branch of the American Pharmaceutical Association vigorously protests against and oppose the passage of any such bill which cannot possibly benefit the public but which would be a distinct disadvantage as the bill would prevent the use and sale of many ordinary remedies for trifling ailments except on a physician's prescription; be it further

"Resolved, That such a bill should receive no favorable report from the Committee on Health and Sanitation of the Senate of the Commonwealth of Pennsylvania."

IVOR GRIFFITH, *President*.

ELMER H. HESSLER, *Secretary*.

There were about thirty-five persons present and the meeting was indeed an interesting and profitable one.

ELMER H. HESSLER,
Secretary.

CORRESPONDENCE

SOLDIER AND SAILOR PHARMACISTS.

WORK OF THE A. PH. A. ADVISORY COMMITTEE.

The re-establishment of soldier and sailor pharmacists is steadily progressing. Indications are that the discharge of pharmacists from the Service has not been in proportion to the total discharges which have taken place to this time, and this seems to be explained by the fact that many of the pharmacists are retained at Base and Camp Hospitals. The next few months are likely to bring discharges for a greater number, and the A. Ph. A. Advisory Committee is making every effort to have openings for all of them. A great many of the returned soldiers have found good positions, through the Committee, and at present in many sections of the country there are still many good positions to be had.

The Committee has also endeavored to aid in the re-establishment of chemists, and has been able to help some of them, but the demand for chemists seems very limited, and many who have their discharge from the Service are still without positions. It is requested that chemical and pharmaceutical houses which have openings for chemists list such openings with the A. Ph. A. Committee, which is anxious to give every possible assistance.

President LaWall, of the A. Ph. A., has just issued the following message:

To the Pharmacists Who have Served their Country in the Army and Navy of the United States of America:

It is my privilege, as President of the American Pharmaceutical Association, to thank you collectively, on behalf of organized professional pharmacy, for the service you have rendered your profession during the war and since the signing of the armistice. You have upheld the best traditions of your calling and that, too, in the face of adverse conditions and lack of official recognition of the importance of your work by being given commissioned rank in a distinctive pharmaceutical corps.

The excellence of your service has been attested by many who were your immediate superiors, and glowing tributes have been unofficially paid to the character and efficiency of the service rendered by the pharmacists in the field and in the many hospitals. Some will remain forever in Flanders' fields, others have been gassed, wounded and shell shocked. All who have come back or are intending to come back will doubtless do so with new viewpoints, new aims and ambitions and new ideals.

Much of your experience must have impressed upon you the fact, first, that it is efficiency that counts, and, second, that pharmacy has possibilities of greater development along professional lines than it has shown in recent years. We look to you to come back and "carry on" in your former calling with renewed ambition to serve along the higher avenues of your capabilities.

One of the things you must have realized is the value of organization. Organized effort accomplishes things which are impossible without it. Organization carried to the nth power won the war. Organization has given to the medical profession all for which it asked. Lack of organization has been the cause of pharmacy failing to gain even its minimum deserts, and this in the face of the fact that pharmaceutical societies similar to the medical societies exist, but which fail of their highest goal through lack of support.

Your experience and observations should make you hasten, upon your return, to ally yourselves with every organization of your fellows that makes for progress, and more especially the American Pharmaceutical Association. This is the organization broadest in its scope, highest in its ideals, the organization which has kept alive the spark of professionalism which shall eventually kindle pharmacy throughout and neutralize that ultra-commercialism which is a poison to professional progress.

And when you do come back and join these pharmaceutical organizations that are waiting with open arms to welcome you to their ranks, we want you to bring your enthusiasm, energy, and activity to bear in helping to solve the problems which confront pharmacy. It is to you, the young men of the present, that we look for the progress of the future. From among your ranks will come the leaders of to-morrow.

To you who are still in the earlier stages of your professional work, we feel that no arguments will be needed to convince you of the advisability, nay, the necessity, of completing your pharmaceutical education, if it has been interrupted by your service; or if you have never been to college, of beginning such a systematic education as soon as possible after your discharge. The successes of the future will be the successes of educated men. Pharmacy is no exception to the rule. Pharmacy needs you and can offer rewards commensurate with the energy and interest expended. It has greater possibilities than ever, and you can transform those possibilities into realities if you devote the same energy to developing your future that you have shown in your work in the Service.

Pharmacists of the Army and Navy, we want you to help us and we want to help you. You will find organizations waiting to help you find positions, if your former ones are not available. You will find your Alma Mater (if you are a college man) will do everything needed to make the completion of your education possible in the shortest time consistent with thoroughness and adherence to legal requirements. You will find a warm welcome awaiting you in every community. Every college will throw open its doors to receive you and give you some kind of assistance if you desire it.

American pharmacy is proud of you and welcomes you back to your profession with sincerity and good wishes for your future success.

CHARLES H. LAWALL.

(President of the American Pharmaceutical Association.)

The Committee has found its greatest difficulty in reaching the men in the service, and this is particularly true of those who are overseas. Publicity has been sought in every possible direction, but for some unexplained reason every effort which concerned the work across the water has encountered an insurmountable barrier. In that respect the Government Departments seemed ready to extend any aid, and while the Committee had been promised much help in that direction by the Y. M. C. A., it also failed in the end.

GOVERNMENTAL COÖPERATION.

Failing in every direction to secure the needed publicity for this work overseas, the Chairman again appealed to the Secretary of War, with the result that he finally secured a promise of

Governmental coöperation. The work of the A. Ph. A. Advisory Committee will now be brought to the attention of every man in the Service, by means of a booklet which is being published under the direction of Colonel Woods, entitled "Where Do We Go From Here?" A copy of this booklet will be handed every man in the Service. In addition it is also contemplated to give information regarding the Committee's work to the men in the Service by means of a War Department Circular. Captain Hammond, of the office of the Special Assistant to the Secretary of War, has taken a special interest in the work of the Committee, and is extending further aid through reference to the more important bodies engaged in war activities. It is realized that the larger part of the Committee work remains to be done, but with the active coöperation of the War Department there is now further assurance that it can be done. There will soon be many men looking for positions in drug stores, and a scarcity of drug clerks will then be a thing of the past. With the assistance of State Boards of Pharmacy and State Pharmaceutical Associations the Committee is enabled to continuously list positions that are open in all sections of the country, and hopes to take care of every man in need of a place.

FRANK H. FREERICKS, *Chairman.*

VOCATIONAL TRAINING FOR DISABLED SOLDIERS AND SAILORS.

To the Editor Journal A. Ph. A.:

The great difficulty encountered by the Government in re-educating disabled soldiers and sailors is to get information of the opportunity to them. There is an astonishing number of these men out in civil life badly handicapped by their injuries, but endeavoring, nevertheless, to work. It is most amazing the ignorance of the average man and woman about what the government stands ready to do and is doing for these men.

This Board is endeavoring to spread this information as widely as possible in the hope of alleviating the miserable condition of some of these disabled soldiers, and I am asking you if you will not print the enclosed, or as much as you can find space for, in any way which seems to you likely to attract attention? It is a little piece of patriotic service, whose object is most laudable.

Very sincerely yours,

CHARLES H. WINSLOW,
Chief, Division of Research.

EVERY DISABLED SOLDIER AND SAILOR SHOULD KNOW

That the Government is resolved to do its best to restore him to health, strength, and self-supporting activity.

That until his discharge from hospital care the medical and surgical treatment necessary to restore him to health and strength is under the jurisdiction of the Military or Naval authorities.

That the vocational training which may be afterwards necessary to restore his self-supporting activity is under the jurisdiction of the Federal Board for Vocational Education.

That if he needs an artificial limb or other orthopedic or mechanical appliance the Bureau of War-Risk Insurance supplies it free upon his discharge and renews it when considered necessary.

That if, after his discharge, he again needs medical treatment on account of his disability, the Bureau of War-Risk Insurance supplies it free.

That any man whose disability entitles him to compensation under the War-Risk Insurance Act may be provided by the Federal Board with a course of vocational training for a new occupation.

That the Government strongly recommends each man who needs it to undertake vocational training and put himself under the care of the Federal Board, but the decision to do so is optional with each man.

That if his disability does prevent him from returning to employment without training and he elects to follow a course of vocational training provided by the Federal Board, the course will be furnished free of cost, and he will also be paid as long as the training lasts a monthly compensation equal to the sum to which he is entitled under the War-Risk Insurance Act or a sum equal to the pay of his last month of active service, whichever is the greater, but in no case will

a single man or a man required by his course of instruction to live apart from his dependents receive less than \$65 per month, exclusive of the sum paid dependents; nor will a man living with his dependents receive less than \$75 per month, inclusive of the sum paid to dependents.

That if his disability does not prevent him from returning to employment without training and he elects to follow a course of vocational training provided by the Federal Board, the course will be furnished free of cost to him, and the compensation provided by the War-Risk Insurance Act will be paid to him, but no allowance will be paid to his family.

That in addition to the above the family or dependents of each disabled man will receive from the Government during his period of training the same monthly allotment and allowance as that paid prior to his discharge from the Army or the Navy.

That upon completion of his course of training he will continue to receive the compensation prescribed by the War-Risk Insurance Act so long as his disability continues.

That in nearly every case, by following the advice and suggestions of the Federal Board, he can either get rid of the handicap caused by his disability or acquire new powers to replace any that may have been lost.

That if he is willing to learn and to take advantage of the opportunities to increase his skill offered him by the Federal Board he can usually get a better position than he had before entering the Service.

That if he fails to take advantage of these opportunities he will find himself badly handicapped when he is obliged to compete with the able-bodied men who come back to work after the war.

That the Federal Board, through its vocational experts, will study his particular disability and advise him as to the proper course to pursue and give him free training for the occupation best suited to him.

That on the satisfactory completion of his training the Federal Board, through its employment service, will assist him to secure a position.

That public authorities and other large employers will in many cases, at least, give the disabled soldiers and sailors preference when filling vacant positions, provided they possess the training necessary to fill them.

All disabled soldiers, whether in or out of the hospital, should address their communications either to the Federal Board for Vocational Education, Washington, D. C., or to the district office of the Federal Board of the district in which he is located. The district offices of the Board are located at the following points, respectively:

District No. 1: Maine, New Hampshire, Vermont, Massachusetts, and Rhode Island. Office: Room 433, Tremont Building, Boston, Mass.

District No. 2: Connecticut, New York, and New Jersey. Office: Room 711, 280 Broadway, New York.

District No. 3: Pennsylvania and Delaware. Office: 1000 Penn Square Building, Philadelphia, Pa.

District No. 4: District of Columbia, Maryland, Virginia, and West Virginia. Office: 606 F Street, N. W., Washington, D. C.

District No. 5: North Carolina, South Carolina, Georgia, Florida, and Tennessee. Office: Room 1404 Candler Building, Atlanta, Ga.

District No. 6: Alabama, Mississippi, and Louisiana. Office: 822 Maison Blanche Annex, New Orleans, La.

District No. 7: Ohio, Indiana, and Kentucky. Office: 906 Mercantile Library Building, Cincinnati, Ohio.

District No. 8: Michigan, Illinois, and Wisconsin. Office: 1600 the Westminster, 110 South Dearborn Street, Chicago, Ill.

District No. 9: Iowa, Nebraska, Kansas, and Missouri. Office: 517 Chemical Building, St. Louis, Mo.

District No. 10: Minnesota, North Dakota, and South Dakota. Office: Room 742 Metropolitan Bank Building, Minneapolis, Minn.

District No. 11: Wyoming, Colorado, New Mexico, and Utah. Office: 909 Seventeenth Street, Denver, Colo.

District No. 12: California, Nevada, and Arizona. Office: 997 Monadnock Building, San Francisco, Calif.

District No. 13: Montana, Idaho, Oregon, and Washington. Office: Room 539 Central Building, Seattle, Wash.

District No. 14: Arkansas, Oklahoma, and Texas. Office: 810 Western Indemnity Building, 1000 Main Street, Dallas, Texas.

COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 13.

(Concluded from p. 340, April issue.)

The following communication has been received from Julius A. Koch, Chairman of Committee on Finance:

"The account for printing, postage and stationery, and that of the JOURNAL, have been overdrawn. I wish to submit a motion to the Council that additional appropriations for \$118.03 for printing, postage and stationery, and for \$80.06 for the JOURNAL be authorized."

Motion No. 18 (Additional Appropriations for Printing, Postage and Stationery, etc.). Moved by J. A. Koch, seconded by W. B. Day, that an additional appropriation of \$118.03 for printing, postage and stationery and for \$80.06 for the JOURNAL be authorized.

Motion No. 19 (Election of Members). You are requested to vote on the following applications for membership:

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| <p>No. 70. Paul Edward Nielsen, Railroad and Washington Aves., Hillsdale, N. J. rec. by W. H. McNeil and H. M. Whelpley.</p> <p>No. 71. Werner F. Wilhelm, 244 W. 73rd St., Chicago, Ill., rec. by E. N. Gathercoal and Wm. B. Day.</p> <p>No. 72. Miss Margaret Ritchie, 77$\frac{1}{2}$ So. 10th St., Newark, N. J., rec. by Edward A. Wickham and Edward A. Sayre.</p> <p>No. 73. Howard Andrew Krumwiede, 620 Decatur St., Brooklyn, N. Y., rec. by Edward A. Wickham and Edward A. Sayre.</p> <p>No. 74. Stephen C. Hartman, 126 Gaylor Ave., Plymouth, Pa., rec. by J. D. Morgan and J. W. England.</p> <p>No. 75. William Edwards, 390 So. River Street, Wilkes-Barre, Pa., rec. by J. D. Morgan and J. W. England.</p> <p>No. 76. C. H. Ahrendts, 30 Metcalf Street, Wilkes-Barre, Pa., rec. by J. D. Morgan and J. W. England.</p> <p>No. 77. Arno William Fritschel, 5740 S. Carpenter St., Chicago, Ill., rec. by Wm. B. Day and E. N. Gathercoal.</p> | <p>No. 78. P. Ellsworth Johnson, 404 So. Ashland Blvd., Apt. 2, Chicago, Ill., rec. by E. N. Gathercoal and Wm. B. Day.</p> <p>No. 79. Gerald Litton McDaniel, 1625 W. Van Buren St., Chicago, Ill., rec. by E. N. Gathercoal and Wm. B. Day.</p> <p>No. 80. Maurice B. Skelton, 4545 Michigan Ave., Chicago, Ill., rec. by Wm. B. Day and E. N. Gathercoal.</p> <p>No. 81. Harold V. Jones, Cowden, Ill., rec. by Wm. B. Day and E. N. Gathercoal.</p> <p>No. 82. Robert Lyle Bane, 701 South Wood Street, Chicago, Ill., rec. by Wm. B. Day and E. N. Gathercoal.</p> <p>No. 83. Henry Morris, Michigan Ave. at Grand, Lansing, Mich., rec. by Charles H. LaWall and Wm. B. Day.</p> <p>No. 84. Raphael Glass, 35 Poplar Street, Philadelphia, Pa., rec. by Ivor Griffith and J. W. England.</p> <p>No. 85. Howard Wells Bangert, 1901 Belmont Ave., Chicago, Ill., rec. by Wm. B. Day and E. N. Gathercoal.</p> <p>No. 86. Miss Libbey Dedic, 3519 W. 26th Street, Chicago, Ill., rec. by E. N. Gathercoal and Wm. B. Day.</p> <p>No. 87. Sister Mary Wilhelmina, c/o St. Mary of Nazareth Hosp., 1120 No. Leavitt St., Chicago, Ill., rec. by Wm. B. Day and E. N. Gathercoal.</p> <p>No. 88. Quintus Elton Carter, Bellville, Texas, rec. by R. H. Walker and E. G. Eberle.</p> <p>No. 89. Charles Vail Netz, 321 12th Ave., S. E., Minneapolis, Minn., rec. by Charles H. Rogers and F. J. Wulling.</p> <p>No. 90. Margaret O'Connell, 1009 University Ave., S. E., Minneapolis, Minn., rec. by Charles H. Rogers and F. J. Wulling.</p> <p>No. 91. Victor Alfred Elliott, 2908 Arthington St., Chicago, Ill., rec. by E. N. Gathercoal and Wm. B. Day.</p> |
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- No. 92. Minot E. Gray, 23 N. Main Street, Wilkes-Barre, Pa., rec. by J. D. Morgan and J. W. England.
- No. 93. Mark Burke, 19 So. Washington St., Wilkes-Barre, Pa., rec. by J. D. Morgan and J. W. England.
- No. 94. Dr. Aston H. Morgan, 361 E. Market St., Wilkes-Barre, Pa., rec. by J. D. Morgan and J. W. England.
- No. 95. R. Ramsay Mebane, 308 E. Northampton St., Wilkes-Barre, Pa., rec. by J. D. Morgan and J. W. England.
- No. 96. W. S. Durbin, 805 Wyoming Ave. Dorranceton, Pa., rec. by J. D. Morgan and J. W. England.
- No. 97. James P. Rooney, 355 So. River St., Wilkes-Barre, Pa., rec. by J. D. Morgan and J. W. England.
- No. 98. Henry C. Tuck, 10 W. Market St., Wilkes-Barre, Pa., rec. by J. D. Morgan and J. W. England.
- No. 99. Howard Dinsel, 32 Main Street Kingston, Pa., rec. by J. D. Morgan and J. W. England.
- No. 100. H. L. Gillespie, 407 N. Main Street, Wilkes-Barre, Pa., rec. by J. D. Morgan and J. W. England.
- No. 101. Leo Kijanski, 114 N. Main Street, Wilkes-Barre, Pa., rec. by J. D. Morgan and J. W. England.
- No. 102. Edw. C. Mazanaski, 439 Main Street, Kingston, Pa., rec. by J. D. Morgan and J. W. England.
- No. 103. Theodore Meyers, 674 Wyoming Ave., Dorranceton, Pa., rec. by J. D. Morgan and J. W. England.
- No. 104. E. Arthur Aston, 453 No. Main St., Wilkes-Barre, Pa., rec. by J. D. Morgan and J. W. England.
- No. 105. Harold G. Baird, 523 W. 120th St., Chicago, Ill., rec. by E. N. Gathercoal and Wm. B. Day.
- No. 106. Maurice Axe McClure, 501 E. Girard Ave., Phila., Pa., rec. by Charles H. LaWall and E. G. Eberle.
- No. 107. August Calderaro, 541 Bermuda St., Algiers, New Orleans, La., rec. by R. F. Grace and Adam Wirth.
- No. 108. John B. Murphy, Pelican and Pacific Aves., Algiers, New Orleans, La., rec. by R. F. Grace and Martial B. Casteaux.
- No. 109. Louis Clarence Smith, 600 Elmira Ave., Algiers, New Orleans, La., rec. by Robert F. Grace and Frank J. Muccio.
- No. 110. Albert N. Nutter, 2300 Marengo St., New Orleans, La., rec. by Robert F. Grace and Frank Calderon.
- No. 111. Frank M. Callaghan, 600 Pelican Ave., Algiers, New Orleans, La., rec. by Robert F. Grace and Henry Welsh.
- No. 112. Joseph Allen Swanson, 5259 N. Clark Street, Chicago, Ill., rec. by C. A. Storer and Wm. B. Day.
- No. 113. R. M. Plummer, 260 Third Street, Portland, Oregon, rec. by H. C. Christensen and Wm. B. Day.
- No. 114. Lewis Paul Brockhoff, 1269 W. 73rd Street, Chicago, Ill., rec. by E. N. Gathercoal and Wm. B. Day.
- No. 115. Karl W. Frase, 2118 So. Halsted Street, Chicago, Ill., rec. by E. N. Gathercoal and Wm. B. Day.
- No. 116. Frank Prassel, 902 Nolan Street, San Antonio, Texas, rec. by Wm. B. Day and J. W. England.
- No. 117. Edmund Bodinus, 2520 Cedar St., Milwaukee, Wis., rec. by E. N. Gathercoal and Wm. B. Day.
- No. 118. Cyrus L. Cox, Science Hall, Valparaiso, Ind., rec. by Mrs. H. S. Carpenter and E. H. Wisner.
- No. 119. Benjamin Steinhardt, 561 Ingraham Ave., Hammond, Ind., rec. by Mrs. H. S. Carpenter and E. H. Wisner.
- No. 120. Nathan Kartman, 1840 S. Kedzie Ave., Chicago, Ill., rec. by E. N. Gathercoal and Wm. B. Day.
- No. 121. James Bernard Humma, 513 Girard Ave., Metropolis, Ill., rec. by E. N. Gathercoal and Wm. B. Day.
- No. 122. Ray M. Parker, 2521 Floyd Avenue, Richmond, Va., rec. by Charles F. Walker and W. F. Rudd.
- No. 123. Eugene C. Wilson, c/o Medical College of Virginia, Richmond, Va., rec. by Charles F. Walker and W. F. Rudd.
- No. 124. Thomas Fairfax Martin, Tazewell, Virginia, rec. by C. F. Walker and W. F. Rudd.
- No. 125. Hypolite E. Capdau, Cor. 8th and Howard Sts., New Orleans, La., rec. by Robert F. Grace and F. C. Godbold.
- No. 126. Lucius C. Baudin, R. R. Avenue, Donaldsonville, La., rec. by Robert F. Grace and Joseph A. Legendre.

J. W. ENGLAND, *Secretary*.

415 N. 33RD STREET.

A. PH. A. COUNCIL LETTER NO. 14.

PHILADELPHIA, PA., March 17, 1919.

To the Members of the Council:

The following motion has been presented:

Motion No. 20 (Investment of Ebert Prize Fund). Moved by J. A. Koch, seconded by H. M. Whelpley, that the Ebert Prize Fund, now amounting to \$1,200.00, and on deposit in the Boston Penny Savings Bank, be invested in the Fourth Liberty $\frac{1}{4}$ percent U. S. Bonds, to be purchased in the market at current price.

Early action on this motion will be appreciated so that if the purchase is to be made it can be done during the present low current price of these bonds.

J. W. ENGLAND,

415 NORTH 33RD STREET.

Secretary.

A. PH. A. COUNCIL LETTER NO. 15.

PHILADELPHIA, PA., April 2, 1919.

To the Members of the Council:

Motion No. 17 (Time of Holding 57th Annual Meeting of the American Pharmaceutical Association), Motion No. 18 (Additional Appropriations for Printing, Postage and Stationery, etc.), Motion No. 19 (Election of Members; Applications Nos. 70 to 126, inclusive), and Motion No. 20 (Investment of Ebert Prize Fund), have each received a majority of affirmative votes.

President Charles H. LaWall writes to the Secretary of the Council as follows:

"Please place the following motion before the Council in the interest of making our meetings of greater value and to bring our procedure into harmony with that of other scientific associations:

"That at the Section meetings of the Association no paper or address be permitted to occupy more than 10 minutes, except by unanimous consent, and that discussion be limited to not over five minutes for each participant, and that no person be permitted to speak twice upon a given subject except by unanimous consent."

One has but to attend the meetings or read the discussions of some of the other associations to note the vim and snap which follows the adoption of such rules. If we once start this practice we shall find ourselves accomplishing much more than we have ever been able to accomplish before."

The above motion was made by C. H. LaWall and seconded by E. G. Eberle. It will be known as *Motion No. 21 (Time of Paper and Address at Section Meetings)*. If passed

it will be regarded as a general rule and will be General Rule No. 17.

E. G. Eberle moves and E. N. Gathercoal seconds that the General Secretary be authorized to make the following disposition of the Association property received by him from Professor Lloyd and listed in Council Letter No. 12, pages 24 and 25:

1. Retain 50 copies of *each issue* of the Proceedings up to and including 1910 (so far as this number is available).

2. Retain 100 copies of the 1911 Proceedings (practically a year book) and 200 copies of *each issue* of the Year Book.

3. Retain the 80 bound copies of the 50-year Index.

4. Retain all stock of the N. F. III.

5. Retain all *bound* volumes of the Bulletin and Journal.

6. Retain the unbound copies of the Bulletin and Journal listed in the tabulations in Council Letter No. 12.

7. Retain all *bound* volumes among the exchanges.

8. Supply the unbound drug journals among the exchanges to such colleges of pharmacy as may need them to complete their files.

9. That such parts of the historical material as can be stored by the historian be turned over to him and the remainder be stored with the publications.

10. That the old electros be sold for their value as metal.

11. Dispose of the remainder for its value as paper.

12. Offer sets of the 5 Year Books, 1912-1916, inclusive, at a reduced price of \$10.00 for the set.

The above motion will be known as *Motion No. 22 (Authorization of General Secretary to Dispose of Association Property, etc.)*.

Motion No. 23 (Election of Members). You are requested to vote on the following applications for membership:

No. 127. Lee Otis Donald, 500 North Ewing St., Dallas, Texas, rec. by J. M. Fletcher and R. H. Walker.

No. 128. Eugene Hughes Long, 117 North Adams St., Dallas, Texas, rec. by J. M. Fletcher and R. H. Walker.

No. 129. Eldridge Columbus Harrell, Dallas, Texas (present address U. S. S. Louisiana), rec. by J. M. Fletcher and R. H. Walker.

No. 130. Robert Smith Hopkins, Johnson's Pharmacy, East Radford, Va., rec. by Chas. F. Walker and W. F. Rudd.

- No. 131. Fred W. Smith, Pres. Miss. State Board of Pharm., Poplarville, Miss., rec. by Robert F. Grace and J. N. Shirley.
- No. 132. August Schoenenberger, 1123 Centre Street, Ashland, Pa., rec. by Charles H. LaWall and J. W. England.
- No. 133. Harold Morgan Lyon, 602 S. Chestnut St., Ravenna, Ohio, rec. by Azor Thurston and Edward D. Davy.
- No. 134. William Watts Schollenberger, 2124 Cliftwood Avenue, Baltimore, Md., rec. by S. L. Hilton and Redmond Mayo.
- No. 135. Rupert Richard Townsend, Glenwood, Pike Co., Ark., rec. by M. H. Potter and Frank Schachleiter.
- No. 136. James O'Brien Condra, 148 W. Spring St., Titusville, Pa., rec. by C. H. LaWall and J. W. England.
- No. 137. Earl K. Eberly, 1700 Mt. Vernon St., Philadelphia, Pa., rec. by W. W. McNeary and E. G. Eberle.
- No. 138. John Hoskins Kennedy, 2935 Utah St., San Diego, Cal., rec. by J. W. England and E. G. Eberle.
- No. 139. John Noble Lawrence, Hospital Corps Training School, Naval Operating Base, Hampton Roads, Va. rec. by J. W. England and E. G. Eberle.
- No. 140. Maur George Gold, 1902 South 5th St., Philadelphia, Pa., rec. by C. H. LaWall and J. W. England.
- No. 141. Benjamin Baker, 520 Delancey St., Philadelphia, Pa., rec. by William L. Friedman and C. H. LaWall.
- No. 142. Michael Pachuta, 204 East Ave., Mt. Carmel, Pa., rec. by William L. Friedman and Charles H. LaWall.
- No. 143. Otto L. Koenig, Jr., 4819 N. Merivine Street, Philadelphia, Pa., rec. by William L. Friedman and Charles H. LaWall.
- No. 144. John C. Helmsderfer, 35 Louis Ave., Cincinnati, Ohio, rec. by Charles A. Apmeyer and Louis Werner.
- No. 145. Ernst Stahlhuth, 522 N. New Jersey St., Indianapolis, Ind., rec. by Frank H. Carter and Francis E. Bibbins.

J. W. ENGLAND,

415 NORTH 33RD STREET.

Secretary.

A. PH. A. COUNCIL LETTER NO. 16.

PHILADELPHIA, PA., April 22, 1919.

To the Members of the Council:

Motion No. 21 (Time of Papers and Addresses at Meetings) has been withdrawn, as the by-laws of the Association (Chapter X, Article II), and of the Scientific Section (Section IX) cover the subject matter of the Motion.

Motions No. 22 (Authorization of General Secretary to Dispose of Association Property, etc.) and Motion No. 23, (Election of Members; Applications Nos. 127 to 145, inclusive), have each received a majority of affirmative votes.

General Secretary Day writes:

"The National Association of Boards of Pharmacy now has permanent quarters and is establishing a library.

Secretary Christensen has called my attention to the fact that the following numbers of the Proceedings of the A. Ph. A. are needed to complete their set: All prior to 1906, 1907 and 1908, Year Books for 1914 and 1916.

I desire to offer a motion before the Council that the Association present with its compliments these proceedings to the National Association of Boards of Pharmacy so far as we are able to supply them without breaking the complete set of proceedings which I am holding for the Association itself."

The above motion will be regarded as *Motion No. 24 (Presentation of Proceedings to N. A. B. P.)*; it is seconded by E. G. Eberle.

H. V. Army writes as follows:

"In voting 'yes' on Motion No. 22, I desire to file a supplementary motion, which is seconded by W. B. Day, as follows:

Moved that the General Secretary retain 20 copies of bound Year Books, I to V, and that as soon as conditions permit, sets of these five volumes be sent to leading pharmaceutical journals with the compliments of the American Pharmaceutical Association, the preparation of the list to be left to the General Secretary, the Editor and the Reporter.

As already explained in private letters to the Committee on Publication, my object in making this motion is to pave the way for a possible enlargement of the exchange list of the JOURNAL, at the same time bringing to the Reporter on the Progress of Pharmacy more journals for abstracting. Whether we should include Teuton journals in our complimentary list is a matter regarding which I am not decided, but I think the matter can be safely left to those making up this list of journals."

The above motion will be regarded as *Motion No. 25 (Presentation of Complimentary Volumes of Year Books to Foreign Journals)*.

Motion No. 26 (Election of Members). You are requested to vote on the following applications for membership:

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|----------|--|----------|---|
| No. 146. | Edwin C. Steinach, 776 Melrose Ave., New York, N. Y., rec. by J. L. Lascoff and A. Henning. | No. 152. | Charles J. Klitsch, 129 Sunbury St., Minersville, Pa., rec. by Charles H. LaWall and J. W. England. |
| No. 147. | Stephen Wierzicki, U. S. Naval Hospital, 263 Flushing Ave., Brooklyn, N. Y., rec. by P. J. Waldner and C. Schaffer. | No. 153. | Samuel Green, 6140 Lansdowne Ave., Philadelphia, Pa., rec. by Wm. L. Friedman and C. H. LaWall. |
| No. 148. | William Mayze Benton, 246 75th Street, Brooklyn, N. Y., rec. by P. J. Waldner and C. Schaffer. | No. 154. | Rose Moran, 5450 Angora Terrace, Philadelphia, Pa., rec. by Wm. L. Friedman and C. H. LaWall. |
| No. 149. | Edward G. Dennis (Lieut. M. C., U. S. Navy), Naval Training Station, Naval Operating Base, Hampton Roads, Va., rec. by J. W. England and E. G. Eberle. | No. 155. | Allen Hornberger Fasnacht, 1321 Ruby St., Philadelphia, Pa., rec. by Wm. L. Friedman and C. H. LaWall. |
| No. 150. | Harry M. Sorowitz, 1703 Washington Ave., New York, N. Y., rec. by Hugo H. Schaefer and Jacob Diner. | No. 156. | Hyman Jaffe, 3212 W. Dauphin St., Philadelphia, Pa., rec. by Wm. L. Friedman and C. H. LaWall. |
| No. 151. | C. J. Zufall, 641 Washington St., New York, N. Y., rec. by H. M. Whelpley and J. W. England. | No. 157. | Andrew Edward Roedel, 312 N. 17th St., Cheyenne, Wyo., rec. by O. A. Beath and Wm. B. Day. |
| | | No. 158. | Harry O. Mayer, Box 133, Sheffield, Pa., rec. by Charles H. LaWall and Wm. L. Friedman. |
| | | No. 159. | Ralph Richard Foran, 145 N. 10th St., Philadelphia, Pa., rec. by Charles H. LaWall and Freeman P. Stroup. |

J. W. ENGLAND,

415 NORTH 33RD STREET.

Secretary.

"UP TO THE CUSTOMER" AGAIN.

The government, of course, will frown upon any extortion practiced in connection with the luxury tax, which became operative on May 1. Dealers who base profiteering on a misrepresentation of the new impost burden will be subject to a fine of \$1000 or a year's imprisonment.

But the measure of protection thus afforded the public is somewhat more apparent than real. "It is up to the customer," declares Congressman Moore, "to see that he or she is not deceived." And therein lies the weakness of this irritating law. It was "up to the customer" in the first instance to see that food prices during the war were not exorbitant. Yet they were so, for it was no easy matter for the ordinary layman to tell whether or not, considering all the conditions of labor and transportation, he was being cheated.

He will be no wiser when the luxury vendor grows imperious. The fact that the law provides punishment if guilt is proved will not be helpful unless the average citizen is competent to bring the initial charge.

Theoretically, a tax on luxuries has a foundation of justice. Practically, the administration of the impost is bound to be complicated, with inequities hard to unravel. A tax on bank checks would have involved none of these difficulties. Obviously the labyrinthine congressional mind which rejected that plan was awed by the very simplicity of so fair and easy an expedient for raising money.—Editorial, *Philadelphia Public Ledger*.

OPTIMISM.

"It is just as easy to go through life looking for the good and the beautiful, instead of the ugly; for the noble instead of the ignoble; for the bright and cheerful instead of the dark and gloomy; the hopeful instead of the despairing; to see the bright side instead of the dark side. To set your face always toward the sunlight is just as easy as to see always the shadows, and it makes all the difference in your character between content and discontent, between happiness and misery, and in your life, between prosperity and adversity, between success and failure."—Orison Sweet Marden.

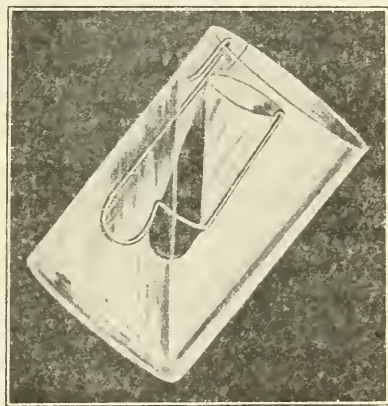
EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Committee on Publication: J. W. ENGLAND, *Chairman*; G. M. BERINGER, CASWELL A. MAYO, H. B. MASON, E. L. NEWCOMB, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on the Progress of Pharmacy, *ex-officio*.

DEGLUTITORY CUP.

A deglutitory cup is described in a recent issue of the *Scientific American*. It is an arrangement whereby it is possible to swallow medicines without experiencing any disagreeable taste. A small cup is provided which is held in a wire clip that may be attached to the rim of a tumbler in the manner shown in the accompanying illustration. The tumbler is



first partly filled with water and then the cup with the medicine in it is fitted to the tumbler. The patient merely drinks the water in the glass and at the same time the medicine flows out and, floating on the film of water, is kept from coming into contact with the tongue. Not only liquid medicines, but capsules, pills and powders can be taken in this way.

WATER-ABSORBING CAPACITY OF DUSTING POWDERS.*

By TORALD SOLLMANN, M.D., Cleveland.

The value of dusting powders is determined partly by their capacity for absorbing or retaining excessive fluid, for example, from the

skin, from open wounds, from the intestine in dysentery, etc.

RELATIVE WATER CAPACITY OF DUSTING POWDERS. ARRANGED IN ORDER OF EFFECTIVENESS.

Powder Tested.	Weight of Water Held by 3 Gm. of Powder.	Retained Water as Percent of the Powder
Starch (corn).....	2.39	80
Kaolin.....	2.19	73
Fullers' earth.....	2.09	70
Precipitated calcium carbonate .	1.94	65
Talcum.....	1.84	61
Prepared chalk.....	1.59	53

PHARMACEUTICAL EDUCATION IN GERMANY.

According to Dr. H. Zoernig, Basel, Switzerland, pharmaceutical education in Germany will, in all probability, be arranged as follows: After passing a school-leaving examination (which may or may not be matriculation) the student will spend an apprenticeship of two years in a pharmacy and then pass to a three years' course of study at a University. This course will be divided into two parts; first a year and a half devoted to general science, followed by an examination in the same, and succeeded by a year and a half devoted to special pharmaceutical study, and followed by the State pharmaceutical examination. The general science course will be similar to that followed by students of medicine and natural science, though there may be variation in the subjects taken. The special pharmaceutical course will include pharmaceutical chemistry, chemical toxicology, urine analysis, the chemical examination of foods, pharmacognosy, hygiene, and bacteriology. After the State examination has been passed, several years will be spent as an assistant in a pharmacy, and the assistant will then be approved as fully qualified.—Abstracted by *Pharmaceutical Journal* from *Pharm. Ztg.*, Vol. 63, p. 382.

* From the Pharmacological Laboratory of the Western Reserve University School of Medicine, through *Journal A. M. A.*

FELLOWSHIPS FOR PHYSICS AND CHEMISTRY.

"The Rockefeller Foundation has undertaken to cooperate with the National Research Council in the promotion of fundamental research on physics and chemistry, the Foundation to appropriate \$500,000 to support over a five-year period research fellowships, the administration of the funds and details of the plan to be in the hands of the National Research Council.

"Among the important results which are expected to follow from the execution of the plan may be mentioned:

"(1) Opening of a scientific career to a larger number of able investigators and their more thorough training in research, thus meeting an urgent need of our universities and industries.

"(2) Increase of knowledge relating to the fundamental principles of physics and chemistry, upon which the progress of all the sciences and the development of industry depend.

"(3) Creation of more favorable conditions for research in the educational institutions of this country."

SIR WILLIAM CROOKES.

Sir William Crookes was born June 17, 1832; he died in London, the city of his birth, April 4, 1919. While not associated with pharmacy, his work in science suggests this record. He was an honorary member of the British Pharmaceutical Society.

In 1861, while examining the residue from the manufacture of sulphuric acid, he discovered by means of spectrum observations and chemical reaction a new element, the metal thallium. He also determined the new metal's position among the elements, and produced a series of analytical notes on the new metal. In 1866 he was appointed by the British government to report upon the application of disinfectants in arresting the spread of the cattle plague, which in that year excited much alarm in England. In June, 1872, he laid before the Royal Society laborious researches on the atomic weight of thallium, and in the same year he began his experiments on "repulsion resulting from radiation," the first paper on which subject he read before the Royal Society on December 11, 1873.

During the period between 1873 and 1880 Crookes conducted a series of investigations of the subject of radiation and invented two

valuable instruments, the radiometer and the otheoscope. In a paper read by him before the Royal Society in 1877, he reported that he had succeeded in obtaining a vacuum so nearly approaching perfection that the pressure in it was only four-tenths of the millionth part of one atmosphere. He found that in such an extreme vacuum gases pass into an ultra-gaseous state and form "radiant matter." It was his invention of producing extreme vacua which made possible the incandescent lamp and led to the discovery of the Roentgen rays and the X-ray methods of examination of living tissue, and later to the treatment of certain diseases by means of cathode rays. Since 1883 Mr. Crookes confined himself almost exclusively to the investigation of the nature and constitution of rare earths.

NATIONAL CAMPAIGN EDUCATION OF THRIFT.

The Treasury Department has inaugurated a national campaign of education in thrift. This campaign is being developed through the occupational and social groups of this country.

The campaign has as its main objective to make thrift a national habit and thus benefit every individual in the country and the nation at large. When thrift becomes a habit, business will be stabilized as never before. The aid of organizations is asked in this work on a purely business basis, as well as from the standpoint of practical patriotism.

THE FUTURE OF ALCOHOL.

In the opinion of the Deputy Commissioner of Internal Revenue, when the people of the United States stop drinking alcohol, it will come into its own as a chemical, industrial and fuel agent. Germany, prior to the war, had reached a production of approximately 200,000,000 gallons of grain alcohol a year, while the maximum production in the United States at that time had barely reached 35,000,000 gallons, and even in the stimulated demand of the war the figures were not quite 100,000,000 gallons. With the impetus given to chemical industry in this country, together with the normal increase of consumption in a score or more producing industries, the Internal Revenue official is confident that the distilleries need not be scrapped, but can be converted to useful and profitable service.

There are doubtless great possibilities in the industrial alcohol business but the Government must give encouragement. It is ques-

tionable whether the use can be greatly extended under present taxation. Alcohol used for manufacturing purposes should be tax-

free or nearly so, and the use of such alcohol extended to the manufacture of pharmaceuticals.

SOCIETIES AND COLLEGES.

THE NINETEEN NINETEEN MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The sixty-seventh annual convention of the American Pharmaceutical Association will be held in New York City during the week of August 25, headquarters in Hotel Pennsylvania; the address of Local Secretary Hugo H. Schaefer is 115 W. 68th St., New York.

The American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy will convene August 25, holding further sessions during the week.

The tentative program of these conventions is printed in the April issue of the JOURNAL A. PH. A., p. 340. Your attention is also again directed to the announcements under Societies and Colleges, p. 346 of the same number.

This is to be the "Victory Meeting" of the American Pharmaceutical Association; the conditions which reduced the attendance during the past few years no longer obtain. Preparations are to be made for the revision of the U. S. Pharmacopoeia and the National Formulary; the new edition of the Pharmaceutical Syllabus is well under way; the aim to bring about closer relations with State Associations and the House of Delegates, and extend the possibilities of the National Drug Trade Conference, is being activated.

Contributors of papers should notify the chairmen of the respective Sections of the titles, and send in their papers as early as possible, so that the programs can be prepared in advance of the meeting. Every member can help to make this the most successful meeting in the history of the American Pharmaceutical Association.

CONFERENCE OF WEIGHTS AND MEASURES OFFICIALS.

Weights and measures officials from all over the United States are to hold a conference from May 21 to May 25 at the U. S. Bureau of Standards.

The objects of these conferences are to bring about an exchange of views between the officials engaged in inspecting and measuring apparatus

throughout the country and thereby obtain greater efficiency and uniformity in the work.

The coming conference will be presided over by Dr. S. W. Stratton, director of the U. S. Bureau of Standards, who is president of the Association. Maj. L. A. Fisher, chief of the weights and measures section of the Bureau of Standards, is secretary of the Association; Leo S. Schoenthal, chief inspector of the District of Columbia, is a member of the Executive Committee.

THE FUTURE OF ALCOHOL MEDICALS.

Secretary W. J. Woodruff, of the American Drug Manufacturers' Association, spoke on the above subject during the recent convention and said in part as follows:

"So far as alcohol is concerned, of course it is absolutely *sine qua non* in the production of most chemicals and most isolated substances in solid or powdered form; while without it fluidextracts and tinctures could not be produced.

"On the other hand, there are many mixtures for which substitutes in the way of syrups, glyceroles and other pharmaceutical forms can be, and in many cases are, provided.

"Respecting these features, legislators need enlightenment. If prohibition is to remain the policy of the country at large—and it appears we must proceed upon this calculation—then the sale of some medicinal preparations certainly must be regulated. As manufacturers, we cannot shut our eyes to the fact that certain preparations, even those recognized in the United States and other accepted Pharmacopoeias, are being perverted to satisfy the appetite for alcohol. There are fellow-members present here to-day who can tell you of having offended valuable customers by refusing them Beef, Iron and Wine, Hoffmann's Drops, Godfrey's Cordial and other similar preparations in abnormal quantities.

"Manufacturing pharmacists are between the devil and the deep blue sea. The proprietary medicine man selling his products for self-medication and depending upon a demand he has created or can create is free to choose

what form of preparation he will offer to the public for self-medication; the retail druggist, while necessarily obliged to fill physicians' prescriptions written in good faith, is not obliged to sell an alcoholic medicinal preparation for purposes of self-medication. There are many such products of equal value which do not contain alcohol and which do not contain habit-forming narcotic drugs which will afford him just as much profit; but with the manufacturing pharmacist it is different. He offers nothing to the public for self-medication and he cannot put himself in the presumptuous position of dictating to the medical practitioner what shall be prescribed in a particular case. We have a letter written within the last ten days from one of the foremost therapeutists of the country, pointing out the fact that very many of the most reputable physicians in the country recognize the therapeutic value of alcohol. Manufacturing Pharmacy must take a broad stand. It cannot confine its operations to the views of a narrow-minded faction of physicians; and it must be free to supply those alcoholic medicinal preparations which a considerable number of reputable physicians prescribe in good faith. This situation is recognized in what is now the fundamental law of the United States of America upon the subject of prohibition. It is recognized at the present time in the laws of most of the states and it should be recognized by our legislatures and our courts.

"At the same time Manufacturing Pharmacy cannot go to the extreme which some interests would like to have us go to; it must not put itself in the position of antagonizing reasonable measures to control the sale of alcoholic medicinal preparations so as to prevent the use of such preparations for beverage purposes; especially when the necessity of such regulation has been demonstrated, as it has since prohibition laws went into general effect.

"Our work must therefore be constructive and with the sole end in view of saving to medical practitioners, whose servitors we really are, the right to prescribe and administer those therapeutic agents which their observation and experience and their knowledge of particular cases under treatment convince them are indicated. It is hoped this discussion will be along these lines and will result in some concrete action which will tend to a just conclusion of the whole matter and set the question at rest for all time."

STATE PHARMACEUTICAL ASSOCIATION MEETINGS.

The Arizona Pharmaceutical Association met in Phoenix April 9-10.

The California Pharmaceutical Association will meet in May. The Kansas Pharmaceutical Association will convene May 13, for a three days' session. The Louisiana Association will meet May 14.

The New Jersey and Texas Associations will open their sessions on June 10; the Florida Association June 11. The Illinois, Kentucky, Massachusetts and Nebraska Associations will meet on June 17. The Alabama Association convenes June 18. The New York Association meets on June 23, and the North Carolina, Pennsylvania and Wisconsin Associations on June 24.

ANNUAL MEETING OF PROPRIETARY ASSOCIATION OF AMERICA.

The thirty-seventh annual meeting of the Proprietary Association of America was held at the Hotel Astor, New York City, April 8 and 9.

The Committee on Requirements for membership of this Association has its existence and authority under an amendment to the constitution adopted at the annual meeting in 1915. These requirements demand that preparations must come within the definition of the law as to alcohol and narcotic content. The paragraph relating to alcohol reads:

"If the preparation contains alcohol, the amount shall not be greater than is properly necessary to hold in solution in permanently active condition the essential constituents of the preparation and to protect against freezing, fermentation or other deleterious change, and the medication shall be sufficient to render the preparation unsuitable as an intoxicating beverage."

The following resolution was adopted:

"Such bills as may be introduced for the enforcement of the prohibition of the sale of intoxicating liquors shall provide that alcoholic preparations which are unsuitable for use as beverages may be sold without permits, registration or other restriction."

All the officers were re-elected; they are:

President, Frank A. Blair, of Chicago.

First Vice-President, W. H. Gove, of Lynn, Mass.

Second Vice-President, Allen F. Moore, of Monticello, Ill.

Secretary-Treasurer, Charles P. Tyrrell, of Syracuse, N. Y.

General Counsel, H. B. Thompson, of Chicago.

OFFICERS RHODE ISLAND PHARMACEUTICAL ASSOCIATION.

The officers for 1919-1920 of Rhode Island Pharmaceutical Association are:

President, M. H. Corrigan, of Providence.

Vice-President, Earl H. Mason, Ph.D.

Secretary, C. E. Barrett, of Providence.

Treasurer, Frank M. Keighley.

Committees appointed are:

Entertainment: J. A. Kiernan, Paul C. Broderick and Wallace R. Fenner.

Executive: J. P. McDonald, Walter J. Batchelder and B. A. Smith, Jr.

OFFICERS OKLAHOMA PHARMACEUTICAL ASSOCIATION.

The newly elected officers of the Oklahoma Pharmaceutical Association are:

President, Lee Drummond, Dewar.

First Vice-President, Don Friday, Cushing.

Second Vice-President, E. E. Cowan, Sapulpa.

Secretary, A. L. Shackelford, Wynnewood.

Assistant Secretary, F. B. Lillie, Guthrie.

The next meeting will be held at Muskogee, the second week of April 1920.

OFFICERS OF THE MICHIGAN PHARMACEUTICAL ASSOCIATION.

The officers of the Michigan Pharmaceutical Association for 1919-1920, are:

President, C. E. Wilkinson, Lansing.

First Vice-President, Arthur G. Lyons, Coldwater.

Second Vice-President, P. J. Mattson, Grand Rapids.

Treasurer, Carl H. Wheeler, Grand Rapids.

Secretary, F. J. Wheaton, Jackson.

Executive Committee, E. W. Austin, Midland; G. H. Grommet, Detroit; D. D. Alton, Fremont; J. G. Steketee, Grand Rapids; D. G. Look, Lowell; J. A. Skinner, Cedar Springs; J. H. Webster, Detroit.

THE YEAR OF ALL YEARS FOR THE MISSOURI PHARMACEUTICAL ASSOCIATION.

Yes, and for the pharmacists of Missouri, whether or not they are members.

The entire world of human affairs is in the re-making. Pharmacy cannot escape the current of widespread events. Four decades of usefulness are on record for the Missouri

Pharmaceutical Association, but an organization cannot live long on tradition.

It is the passing day that must be considered and utilized. The World War has emphasized the value of efficiency. It will no longer do to measure the success of an annual meeting by the size of the attendance, the nature of the entertainment, nor the amount of discussion. The accomplishments must be an existent fact, and demonstrate that the Mo. Ph. A. is helpful to the citizens and useful for the pharmacists of Missouri.

First of all, awaken a realization of the responsibility of being a pharmacist. Then better profits for the proprietor and higher salaries for the clerk will result.

Also raise the minimum of preliminary education in Missouri, so that the pharmacists themselves, as well as the public, will feel the dignity of the calling. The United States Army would have had a pharmaceutical corps before now if the rank and file engaged in compounding medicines measured up to the educational standard that the calling deserves.

And, lastly, emulate the example of trade organizations and give the members business talks, papers and discussions of problems immediately vital. Let each retailer return home feeling that the trip was a profitable one.

HENRY M. WHELPLEY,

April 28, 1919.

Secretary.

ADVANCED ENTRANCE REQUIREMENTS FOR PENNSYLVANIA PHARMACY SCHOOLS.

At a meeting held recently in Philadelphia of the Deans of the three colleges of Pharmacy located in this State, it was unanimously decided that the entrance requirements for pharmacy should be advanced in accordance with the agreement of the colleges belonging to the American Conference of Pharmaceutical Faculties.

The following advances in entrance requirements were therefore agreed upon:

For the seasons of 1919-20 and 1920-21, not less than two years of high school or its equivalent.

For the sessions of 1921-22 and 1922-23, not less than three years of high school or its equivalent.

For the sessions of 1923-24 and thereafter, not less than four years of high school or its equivalent.

It is deemed advisable to give advance notice

of this step to the Pennsylvania Board of Pharmacy and to the pharmaceutical journals, in order that pharmacists may prepare for these changes by giving intelligent advice to young men and women contemplating the study of pharmacy so that they may be properly prepared when these advances go into effect.

J. A. KOCH,

Dean of the Pittsburgh College of Pharmacy.

JOHN R. MINEHART,

Dean of Dept. of Pharmacy, Temple Univ.

CHARLES H. LAWALL,

Dean of the Philadelphia College of Pharmacy.

THE PHARMACIST AND THE LAW.

REVENUE LAW OF 1918.

TENTATIVE REGULATIONS GOVERNING AMENDED HARRISON NARCOTIC LAW.

(See also April Issue, p. 340.)

Hospitals, educational institutions and similar organizations, as well as physicians, are required to register and pay a special tax at the rate of \$3.00 a year. Institutions of the character named herein are permitted to dispense articles not specifically exempted by Section 6 only to persons being treated therein. Any dealings in packages or dispensing from packages to other persons will render the institution liable as either a wholesale or retail dealer, or both, as the case may be, and subject to the special tax governing those classes.

Physicians are permitted to dispense only to bona fide patients, and any sale or administration other than that provided will render the physician liable either as a wholesale dealer or as a retail dealer, or both, as the case may be, and subject to the special tax for those classes.

Manufacturers having branch houses and firms, or corporations operating more than one store, are required to take out a special license and pay special tax for each branch or each store.

General stores dealing only in preparations or remedies specifically exempted under Section 6 are required to register and pay a special tax at the rate of \$1.00 a year.

RECORDS, ETC.

Records showing purchases and sales will be required of each class of registrant, and *records must not be combined if person is registered in more than one class.*

All persons manufacturing or selling any of the articles exempted from the tax by the terms of Section 6 are required to keep a record of their transactions in those articles. These records must show the name and quantity of the preparation or remedy purchased and

sold; the name of person from whom purchased; the name and address of the person to whom sold, and the date of purchase and sale.

GOODS ON HAND FEBRUARY 25TH.

Wholesalers and retailers, as well as physicians, hospitals and educational institutions, should affix to every broken or unbroken individual bottle or other container of unstamped narcotic drugs and preparations not specifically exempted under Section 6, now in stock, their own label or pasters with the words "In Stock—Inventory as of February 25, 1919" thereon, and the initials of the owner. This action is necessary to avoid possible seizure of the narcotic drugs and preparations which were on hand on that date. Collectors of Internal Revenue, in some districts have held that revenue stamps must be placed on stocks on hand as of February 25, but this was an error.

ADHESIVE STAMPS FOR NARCOTIC PACKAGES.

The amended narcotic law imposes an internal revenue tax at the rate of 1 c. per ounce, and prescribes that any fraction of an ounce in a package shall be taxed as an ounce, such tax to be paid by the IMPORTER, MANUFACTURER, PRODUCER or COMPOUNDER, and to be represented by appropriate *stamps* which are to be affixed to the bottle or other container so as to securely seal the stopper, covering or wrapper thereof.

Adhesive stamps to be affixed to taxable narcotic packages have been issued by the Bureau to meet the requirements of the Harrison Narcotic Law, as amended. The initial supply consisted of documentary stamps overprinted with the word "Narcotic." These overprinted stamps will be in denominations of 1 c., 2 c., 4 c., 8 c. and 10 c. A combination of two or more such stamps may be made where necessary or expedient in stamping packages, until such time as new strip stamps are prepared and distributed.

RETAIL DEALERS—WHEN LIABLE AS MANUFACTURERS.

A retail dealer who compounds preparations containing more than an amount of narcotic drug specifically exempted under Section 6 of the law, as amended, does not incur liability as a manufacturer when, as a convenience, he compounds what may be termed "Stock Solutions" containing narcotic drugs which he intends to use solely in filling prescriptions. If a retail dealer removes from the container any quantity of the narcotic stock solution originally prepared for dispensing on prescriptions and places it in another container to sell on an order form, he incurs liability to tax as a manufacturer, producer, or compounder, and must pay the special tax at the rate of \$24.00 a year, and affix to each container sold on order form a stamp denoting payment of tax of 1 c. on each ounce or fraction of an ounce of the narcotic solution.

RETAIL DEALERS—WHEN LIABLE AS WHOLE- SALERS.

The description "Wholesale Dealers" as those who sell in the original stamped packages and of "Retail Dealers" as those who sell from such packages, involves the question as to whether or not a retail dealer is liable to payment of tax both as a wholesale and retail dealer. If a retail druggist fills a prescription covering a large quantity of narcotic drugs by furnishing an original stamped package of it or to accommodate another dealer he furnishes one or more original stamped packages upon receipt of an order form, he would be liable to tax as a wholesale dealer. A retail dealer, therefore, may not sell original stamped packages unless he is also registered as a wholesale dealer.

PAYMENT OF TAX ON NON-EXEMPTED NARCOTIC DRUGS AND PREPARATIONS.

No matter how many times the narcotic drug or preparation may have been taxed, if it is used in the further manufacture of another preparation, which, in its finished state, does not come within the exemptions of Section 6, it is taxable every time a new product is manufactured. The tax of one cent for each ounce or for any fraction of an ounce in an individual container applies to the volume of any narcotic preparation or remedy not specifically exempted, and not on the narcotic

drug alone contained in the preparation or remedy.

REVISED RULES AND REGULATIONS FOR FEDERAL FOOD AND DRUGS ACT TO BE DISCUSSED MAY 19.

A public hearing will be held by the officials in charge of the enforcement of the Federal Food and Drugs Act on Monday, May 19, 1919, at 10 A.M., in the Bureau of Chemistry, United States Department of Agriculture, Washington, to discuss a proposed revision of the rules and regulations for the enforcement of that act. All interested persons are invited to attend and present their views either orally or in writing.

Tentative revised rules and regulations have been prepared by the United States Department of Agriculture, which will form a basis for discussion. Views of the trade and other persons interested are desired in reference especially to the proposed changes, but recommendations for additional amendments or changes will be considered.

No drastic changes in the present regulations are contemplated, say the officials. Most of the proposed changes in wording are for the purpose of clarifying or making more specific regulations now in effect. Some minor modifications in the rulings have been made.

Copies of the tentative rules and regulations may be obtained by interested parties upon application to the Bureau of Chemistry, United States Department of Agriculture, Washington, D. C. Recommendations or suggestions may be made in writing on or before the date of the hearing.

"ADDICT" DEFINED UNDER NEW YORK STATE NARCOTIC LAW.

Dr. Royal S. Copeland, New York Commissioner of Health, has announced the following definition for drug addiction:

For administrative purposes, a person who requires or demands the daily administration of a narcotic drug for a longer period than three weeks shall be considered a drug addict; provided, however, that the attending physician may file with the New York Department of Drug Control a statement that the patient has an incurable disease or gives other sufficient professional reason for the continued use of the drug. In such a case the patient shall not be considered an addict.

ALCOHOL PROVISION OF NEW YORK ENFORCEMENT BILL REVISED TO MEET NEW YORK DRUG TRADE OBJECTIONS.

Revision by the New York anti-saloon league of its "enforcement" bill has materially changed the section affecting the drug trade.

Provision is made for the appointment by the commissioner of a committee of three physicians and two druggists who shall decide upon the basis of analysis made by the Department of Health, of suspected liquids, whether the same are in fact so medicated as to be incapable of beverage use. The druggist provisions are put into a separate section, likewise the provisions respecting physicians. The fee for a retail druggist in a place of 5,000 or less is reduced to \$5, and in other places \$10, while the fee for manufacturers or wholesale druggists remains at \$10.

Several matters of detail that are already sufficiently covered by the general laws of the State have been omitted. Provision has been made to protect bona fide manufacturers of de-alcoholized wines. The cider feature has been made more explicit to permit pasteurization of apple juice or de-alcoholization.

The section authorizing possession of standard remedies has been recast in accordance with the suggestions of the Druggists' Associations.

OHIO PROPRIETARY RESTRICTIONS OFF.

Restriction on the sale of proprietary medicines and other remedies and commodities

containing alcohol, as far as they affect the retail druggist in Ohio, have been removed. This is the announcement of Professor Edward Spease, chairman of the legislative committees of the Ohio State Pharmaceutical Association and the Northern Ohio Druggists' Association of Cleveland. The permit system which was to have regulated the sale of these goods was stricken from the prohibition measure by the house committee at Columbus this week. However, the permit system will apply to manufacturers.

NEW TEXAS LAW REGULATING ADVERTISEMENTS AND SALES OF "PATENT" MEDICINES.

Governor Hobby, of Texas, has signed the bill regulating sales of medicines. Section 3 of the law reads:

"It shall be unlawful to manufacture for sale, offer or expose for sale, sell or exchange, any drug, medicine or device advocated for the cure of diseases, if the package or label or any representation pertaining to same shall bear or contain any statement, design or device regarding the curative or therapeutic effect of such article or any of the ingredients or substances contained therein, which is misleading, false and fraudulent."

Section 5 of the bill vests the Food and Drug Commissioner and his inspectors with powers of a peace officer to enter into any factory, store, salesroom, drug store or laboratory, or place where he has reason to believe drugs are made, prepared, sold or offered for sale or exchange, and to examine the files and books of such places.

BOOK NOTICES AND REVIEWS.

Essentials of Pharmacy. By L. E. Sayre, PhG., Ph.M., Dean of the School of Pharmacy of the University of Kansas, and Professor of Pharmacy and Materia Medica, and L. D. Havenhill, Ph.C., Phar.M., Professor of Pharmaceutical Chemistry in the School of Pharmacy of the University of Kansas. 12mo. of 495 pages. Philadelphia and London: W. B. Saunders Company, 1918. Cloth, \$2.75 net.

The authors of "Essentials of Pharmacy" state in the Preface that the object of the book is not to furnish an exhaustive treatise on pharmacy, but rather to give a simple, brief outline of the important pharmaceutical data in convenient arrangement, and to inspire the

student to make free use of the U. S. Pharmacopoeia and National Formulary and other works of reference.

The subjects are discussed under six chapter headings: I, Introductory pharmacy, as general definitions, metrology, specific gravity, heat, thermometry, pharmaceutical processes and terms; II, Medicinal substances, chiefly inorganic chemicals; III, Organic chemicals; IV, Pharmaceutical preparations of the U. S. P. and N. F.; V, Incompatibility; VI, Toxicology. The arrangement under each division is alphabetic, for easy reference, and an Index is provided.

The vegetable materia medica has not been touched upon, mainly, the authors state, be-

cause it would increase the size of the volume beyond their desire, and because it constitutes a separate subject of sufficient importance to be treated independently.

A list of the U. S. P. and N. F. drugs, with brief definitions, would be of value in this reference book. It is questioned whether such abbreviations as g/m, m/m and m/g, as signifying, respectively, grammes per 100 mils of preparation, mils per 100 mils of preparation and mils per 100 grammes of preparation, should have been introduced. An abbreviation should not confuse, and in these instances the indication is not for 100 but for 1, also, these abbreviations are not so very different from abbreviations otherwise applied. The book is intended for students who are to be taught exactness. In the main, however, the authors have accomplished their purpose, and the book is useful for students and is convenient for reference. The definitions, though concise, are clear and instructive, and as a successor to the former Compend, the revision presents a marked improvement. The book is well bound and the typography and paper are good.

Squibb's Atlas of Official Drugs, including all the drugs official in the last revision of the U. S. Pharmacopoeia and National Formulary, with photographic cuts of each drug from original material, comprising 300 illustrations, average size $3\frac{1}{2} \times 5$ inches. The title of each drug, abbreviation, English name, synonyms, botanical origin, part or parts used, permissible limits of impurities, assay, habitat, description and official preparations (if any) are given. Prepared by William Mansfield, A.M., Phar.D., dean and professor of Pharmacognosy and Botany, Albany College of Pharmacy. Published by E. R. Squibb & Sons, New York; 700 pages. Price, \$2.00.

In the publication of this Atlas of Official Drugs a valuable service has been rendered and it will be welcomed by all who deal in, handle or study drugs. The engravings were made from photographs taken of selected market specimens, thus serving the purpose of a pictorial description of the drugs under consideration. The work involved in preparing these illustrations will be appreciated; they are all good, but in a series of photographs like these some, quite naturally, depict the subject better than others—some might have been improved if they had been

retouched or lightened so as to better bring out characteristics. On a few of the plates, exhibiting seeds and fruits, the attempt has been made to show too many specimens. In a number of instances the cross sections indicate little more than outline.

While the illustrations with the descriptive matter of the drugs constitute the greater value and major part of the volume, other portions of the text matter are well presented and in such a way that it not only serves for reference but also as a pharmacognosy handbook.

The drugs are considered in groups, according to the part or parts used, roots, barks, etc., and the introduction to each chapter contains an explanation of the terms used in describing each class of drugs. Under each drug are given its title, abbreviation, English name, synonyms, botanical origin, habitat, part or parts used, description, assay, when provided, and official preparations, if any.

The publishers are to be commended for fixing a price for the Atlas which will insure a well-deserved large sale and use of the book.

PUBLICATIONS RECEIVED.

The Supplement to the United States Naval Medical Bulletin, published for the information of the Hospital Corps of the Navy. Issued by the Bureau of Medicine and Surgery, Navy Department, Division of Publications, Captain J. S. Taylor, Medical Corps, United States Navy, in charge. Edited by Lieutenant Commander G. F. Cottle, Med. Corps United States Navy. January, 1919 (Number 8).

Proceedings of the Nineteenth Annual Meeting of the American Conference of Pharmaceutical Faculties, held in Chicago, Ill., August 12-13, 1918.

Proceedings of the Forty-eighth Annual Convention of the New Jersey Pharmaceutical Association, held at Spring Lake, N. J., June 18-21, 1918.

Proceedings of the Thirty-fourth Annual Convention of the Minnesota Pharmaceutical Association, held at Minneapolis, February 6 to 8, 1918.

Proceedings of the Thirty-ninth Annual Convention of the Texas Pharmaceutical Association, held at Waco, May 21 to 23, 1918.

Fifty-eighth Annual Report of the Philadelphia Drug Exchange, for 1918.

Proceedings of the Forty-fourth Annual Meeting of the National Wholesale Druggists' Association, held in New York City, October

7-11, 1918. Contains also the reports of their committees and other data of interest and value. 600 pages, bound in cloth.

CHANGES OF ADDRESS.

All changes of address of members should be sent to the General Secretary promptly

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of the change of address is received before shipment or mailing.

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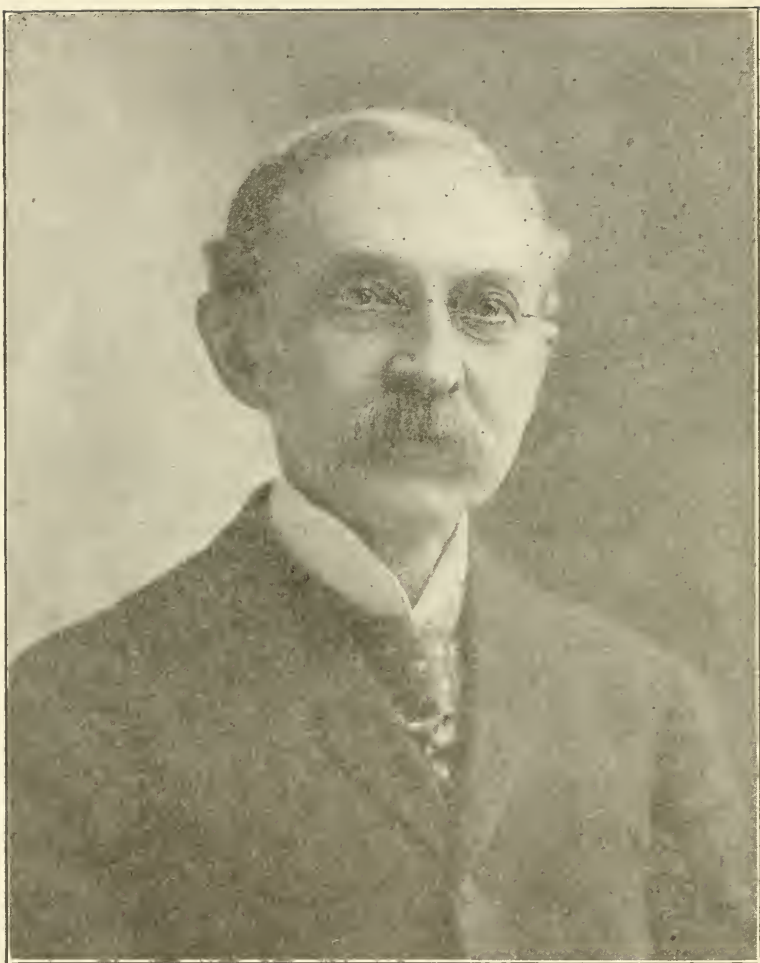
JAMES M. GOOD

ST. LOUIS, MO.

1842-1919

President of the American Pharmaceutical Association in 1895;

Chairman of the Council from 1888 to 1894; Chairman
of the Section on Education and Legislation
in 1894



JAMES M. GOOD

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

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NO. 6

JAMES MICHENER GOOD.

James M. Good, president of the American Pharmaceutical Association in 1895, died in St. Louis, May 15. The deceased was born in Bucks County, Pennsylvania, January 12, 1842. He received his early education in the local schools and, thereafter, taught in them for a number of years. In 1867-68 he attended the Philadelphia College of Pharmacy. Soon after the conclusion of the session he came to St. Louis and opened a drug store at 22nd Street and Clark Avenue. Twelve years later he bought a store at the southeast corner of Jefferson Avenue and Olive Street. A number of years ago he moved to the southwest corner of the intersection of the same streets; here he continued in business until shortly before his demise when he sold the store to the Page-Chapman Drug Co.

Soon after locating in St. Louis Mr. Good became interested in the St. Louis College of Pharmacy, first as officer and later as professor of pharmacy. In 1916 he retired and became emeritus professor. He was dean of the faculty from 1880 to 1904.

The Missouri Medical College conferred the honorary degree of M.D. on him and the Philadelphia College of Pharmacy that of Ph.M. He was president of the Missouri Pharmaceutical Association in 1888 and its treasurer from 1883 to 1887. He was active in local pharmaceutical organizations and president of the Cinchona Club at the time of his death. Besides the presidency, Professor Good held other important offices in the American Pharmaceutical Association—chairman of the Council from 1888 to 1894. He was elected member of the U. S. P. Revision Committee in 1900 and re-elected in 1910.

Mrs. Good, nee Alice J. Wilson, of Chester County, Pa., died a few years ago. A sister and one daughter survive. The pall-bearers were former clerks, and officers and members of the faculty of the St. Louis College of Pharmacy. Professor Good joined the American Pharmaceutical Association in 1871. E. G. E.

A GRANT FOR RESEARCH.

The American Pharmaceutical Association has available a sum amounting to about \$240 which will be expended during 1919-1920 for encouragement of research. This amount, either in full or in fractions, will be awarded in such manner as will, in the judgment of the A. Ph. A. Research Committee, produce the greatest good to American Pharmaceutical research.

Investigators desiring financial aid in their work will communicate before August first with H. V. Arny, Chairman A. Ph. A. Research Committee, 115 W. 68th St., New York, giving their past record and outlining the particular line of work for which the grant is desired.

The committee will give each application its careful attention and will make recommendations to the American Pharmaceutical Association at its meeting in New York, August 25-29, 1919, when the award or awards will be made.



CHARLES HARRISON BASSETT
BOSTON, MASS.

Joined the American Pharmaceutical Association 1867—a Member for 52 Years

EDITORIAL

E. G. EBERLE, Editor

253 Bourse Bldg., PHILADELPHIA

LOOKING BACKWARD.

"Credit to Whom Credit is Due."

ONCE, only, in a lifetime, comes the opportunity of standing on the three-score-and-ten-year line. Comes then, naturally, a looking backward and a thinking forward. And amid these reflections come questionings as to the usefulness of the life that is past, as well as concerning one's relationship to the field occupied.

For more than half a century, the thought and action of the writer have been devoted to, and dominated by, what is known as the art of pharmacy. On this, his seventieth anniversary, he comprehends, more fully than ever before, that the opportunity of every moment has been dependent upon the works of others, some of whom have been to him companions in the passing along, while the majority have been afar, both in location and in time. But yet they are no less companions. They stand a legion, stretching back, back, to the mists of traditional times, their very shadows lost in the bloom of antiquity.

The manipulation of drugs and the uses of remedies have ever been man's great concern, but in the passing along, their study has ever been inextricably complicated with charm, astrology, folk-lore, astronomical formulas and alchemistic empiricism. Who, with the record of the past before him, would attempt to separate pharmacy from medicine, past or present, or medicine from surgery? Who would even attempt to subdivide the medicine of former times into such distinct sections as surgery, chemistry and pharmacy? Who would venture to draw a clear-cut line between their shadings, or between these and connected professions? And as regards the contributions of any one man, who can say, "This came from himself alone?"

"Credit to whom credit is due." Whatever may be one's part or his sphere of activity, surely his personal opportunity depends largely upon the service rendered by others, seen or unseen. In the labyrinth constituting the whole, the trifle each has to offer disappears, so far as his personality is concerned, as sinks a grain of sand in the ocean. His contribution of a life work is but a mite—the flashing of a shaving in the night.

Looking backward, with this thought in mind, let us venture to consider the wondrous Code of Hammurabi, who in ancient Babylonia, a thousand years before Moses was born, formulated the laws embracing medicine and surgery. Did not he, too, look backward? Thinks anyone that he *created* the necessity for those ideals? Did he not, by offering these rules of conduct, give evidence that, as a leader, he was thinking not alone of the past and present, but hopefully and help-

fully of the future? Marvelous is that precious first book on Egyptian medicine, so admirably described in the lectures of Dr. Zwick—the *Papyrus Ebers*, handed down to us from a civilization that had its day indefinite thousands of years before the hoary pyramids were built. Does not every feature show that pharmacy was even then important as a foundation for the healing of humanity's ailments? In the entrancing Oriental *Arabian Nights*, is not pharmacy exemplified by numberless references to drugs and processes, some of them speculatively seer-like, others purely pharmaceutical? Does not "*Charaka-Samhita*," the most ancient of all works on medicine in age-worn India, indicate, by reference to an older work, a part of the "*Atharvan*" (no trace of which can now be found in print), the existence of a pharmacy of even a long anterior date? Do not the Vedas, that strange poetic work on the Science of Life, touch pharmacy in ceremonial processes? Who knows the part pharmaceutical manipulations of that day took, outside the concocting of the intoxicating drink, *soma*, used in the sacred sacrifices? Turning now to our own sacred writings. Consider the tributes paid in the Old Testament to the uses of the herbs of the field, which could only by manipulative processes have been prepared. Turn then to the more modern New Testament, in which one might even argue that the great ethical Leader entered the field of pharmacy when, to compound an eye remedy, He made a mortar of the palm of His hand, and a pestle of a finger. Indeed we find that, in early church annals, Christ was portrayed as an apothecary.*

Follow briefly this line of thought, in its numberless radiations, not neglecting the mortar and pestle relics scattered over the lands of the dead to history, cliff-dwellers of western America. Consider the story as a whole. Let us ask: Do not the symbols of pharmacy to-day stand as a relic of service in every land and in every nation? The hand that held the pestle surely may claim to have a part in the old, old, and yet older civilizations that, born in times unknown, bred in misty eras near the prehistoric, to die before the *word* pharmacist existed, yet testify in their records that the *art* of pharmacy was of it all a factor.

With these reflections, let us pass from this entrancing field and center our thought on a few incidents of the nearer past. Think now of the men who delved and *found*, as well as those who delved and *failed* to find, in the nearby Middle Ages. Neglecting details of the times of alchemistic hallucinations, of those strange fanatics who floundered in a realm of mystery, let us pass to the nearby present. Uprise the names of hundreds who, both before and after the separation (very recent as time counts) of the practice of medicine and surgery from the art of pharmacy, have as pharmacists contributed to nearly every phase of modern human activity. Consider only a few of these apothecaries, comparatively re-

* "Christ as Apothecary." Prof. Edw. Kremers, in *Pharmaceutical Review*, 1899, pp. 338-341.

cent.¹ Think what the world would be to-day, but for their patient efforts, the results of which are voiced in their contributions.²

Consider the Swedish apothecary, Scheele, who discovered oxygen, contemporaneously with, but independently of Priestley, and thus laid the foundation for the new chemistry of Lavoisier. Did not Scheele, while making lead plaster in his little apothecary shop, also discover glycerin, and thus open to view the chemistry of fats and fatty oils, afterward worked out so admirably by Chevreul? Did he not, by isolating various acids from plants, lay the foundation for the study of organic acids? And yet,

"Scheele always remained the humble apothecary, dying from overwork, in the best of his years, in the little community of Koeping, in Sweden."

Consider the wonderful outcome of the work of the compounder of medicines, Trommsdorff, an apprentice to his father, whose father before him had been a pharmacist. From this pharmacy home, Trommsdorff became Professor of Chemistry in the University of Erfurt, and a companion of the celebrated Liebig, with whom he became closely associated editorially. Trommsdorff's *Annalen* was the fore-runner of the *Annalen der Chemie*, which to-day bears Liebig's name.

Think of Derosne, the Parisian apothecary, and Sertürner, the German apothecary, who simultaneously, but independently, isolated morphine, announced by Sertürner in his article on Morphine. To this discovery, linked with those by Scheele and other investigators, we owe the very beginning of the science of Pharmacology, now so important, in which isolated and definite chemical compounds from plants became subject to quantitative therapeutic treatment.

Turn next to Nicholas Lémery, the French "Court Apothecary" of the 17th century. Did not his great work on chemistry (possibly the first that was practically free from alchemistic complications) become a veritable text-book on the subject, thus opening the door to a new chemical literature? It has been recorded that,

"Every man of that date interested in any phase of chemical thought considered it necessary to possess one of the seventeen editions of the *Cours de Chimie* issued by Lémery during his lifetime, and repeatedly revised thereafter, being translated into the language of every European country."

Leans not co-laboring science, as a whole, on this pillar erected by a pharmacist?

Stands in Paris, to-day, a monument in honor of two Parisian apothecaries, Pelletier and Caventou, the discoverers of strychnine, who, following the dis-

¹ Before me lies a compiled list of nearly one hundred, whose avocational efforts touch practically every phase of life, from poetry and literature to materialism, personified. Very difficult is it, from this wealth of opportunity, to select a few names as a text.

² Admit that when time is ripe, the man appears. And yet, since the apothecary dominated the field, had not these men opened the door, the next nearest would naturally have been other apothecaries.

covery of morphine by preceding apothecaries, made to humanity the mighty gift that ushered in the systematic study of alkaloidal chemistry.

Prodigious was the work of the English authority, Pereira, whose *Materia Medica and Pharmacology* was the most complete publication on that subject in the English language, to that date. Very close came Hanbury, the talented searcher of the world for *materia medica* specimens and supplies, who exercised a marked influence upon the world's commerce. Flückiger, the celebrated Swiss pharmacist and chemist, made of him a companion. Together they produced the *Pharmacographia*, that marvelous hand-book, combining history, botany and descriptions of drugs, the greatest and best ever devoted, in the English language, to the science of that subject. Then, we should not omit G. C. Wittstein, the father of manipulative pharmacy, whose processes are standards to-day in the practice of pharmacy.

From the time of Galen, backward to the mists of antiquity, we find the pharmacist and the physician hand in hand, indeed they were *one*, so far as can be determined. Even to near our day we find the compounding of medicines inseparable from therapy in its various forms and transformations; the dealer in drugs and medicines a prescriber, the physician a compounder, and the barber a surgeon.

May not this writer, who is presumably nearing the close of his activity in pharmaceutical lines, offer this tribute to his co-laboring companions, afar off in home settings, as well as in time? And, may not this record of the past give him the privilege of turning toward the future, and thinking forward? J. U. L.

THE FORMER PRESIDENTS AS AN ADVISORY COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

THE proposition to form an Advisory Council of the former Presidents of the American Pharmaceutical Association is not new. In fact at the Detroit meeting in 1914 this was presented in the presidential address, in the following manner: "No man has yet been honored with the high office of President of this Association who has not concentrated his thought toward the betterment of the Association. The duties of the office have given him opportunities for observation and the obtaining of knowledge of men and affairs relating to pharmacy. The question has arisen, 'What are we doing to profit the Association by their special knowledge and ability? What shall we do with our ex-Presidents?' I would advise that they be constituted an Advisory Council to which certain questions calling for wise consideration and mature judgment may be referred by the Association or the Council."

It is a matter of record that the Committee on President's Address "regarded favorably" this proposition and that the Association "adopted" the recommendation. Although nearly five years have elapsed since this action was taken, noth-

ing whatever appears to have been done toward making the *adoption* effective or of the least value to the Association.

It is not an unusual procedure for organizations such as the American Pharmaceutical Association to have an advisory body similar to that proposed as the Advisory Council of the A. Ph. A., and such a plan has been found to be of great value to industrial managements. What business organization would think of adopting a plan by which it would annually appoint a specialist to give careful study to the particular problems of its industry, at the end of that short period listen *attentively* to his report and suggestions for betterment and progress, and then after approving the recommendations cast them into the discard?

It is the principle of ACTION that assures the success of any enterprise, whether applied to the activities of an industry or of an association. What the Association has lost in the way of progress by thus neglecting to utilize the valuable assets available, namely, the special knowledge of the needs of the Association, the realization of the possibilities of its service, the clearer insight into its affairs and the love of the Association and desire to advance its standing, can not now be measured. It certainly has not been to the best interests of pharmacy that our retiring Presidents have been shelved with such scant consideration of their labors and their concern for the welfare and progress of the Association.

It is believed that the present is an opportune time to revive this project, and that no further time should be lost in crystallizing into action the expressed will of the Association, which has a firmer foundation in its practicability and usefulness than merely in the sentiment associated therewith.

G. M. B.

THE PROPOSED RESEARCH INSTITUTE.*

BY H. V. ARNY.

That the proposition of Dr. C. H. Herty regarding the establishment of an institute for research in the chemistry and pharmacology of medicinal substances is attractive goes without saying; that the creation of such an institute is desirable is equally true. These basic principles being accepted, the remaining questions are largely matters of detail, such as scope, ideals and management. Up to now the proposition has been so vaguely outlined that much discussion and considerable difference of opinion have obtained and until some definite plans are evolved this confusion will continue.

SCOPE.

The original proposition seemed limited to the synthesis and manufacture of organic chemicals and pharmacological investigations as to their possible medicinal effect. From this simple start, the discussion has extended to the widest ranges of drug study. Certain representatives of drug manufacturers have seemed to assume that the main function of the institute would be to pass on pharmaceu-

* Presented before Philadelphia Section, American Chemical Society, May meeting, 1919.

tical products and to give such official approval not merely of the institute, but indirectly of the American Chemical Society itself. Others have suggested lines of phyto-chemical research; others have urged work on pharmacopoeial revision. A definite statement of scope is highly desirable for there are in many of the suggested fields of endeavor pitfalls that might lead our great Society into extremely embarrassing situations. There is a particular danger in the original idea of synthesizing new remedies and then setting upon them the seal of approval of the institute and of its official backers. Those of us who are familiar with pharmacy know full well the remarkable propaganda conducted in this country from the early nineties until 1914 by Germans in behalf of the medicinal products of their chemical laboratories. I, myself, an alumnus of a German university, had my first revelation of Hunnish activity in the methods pursued in conducting the propaganda in question. Medical America would be told that the latest product of the tar barrel—let us call it “Nirvana”—was the only simon-pure hypnotic absolutely devoid of habit-forming qualities and this fact would be attested to by Herr Geheimrath Doktor This and by Herr Professor Doktor That, until the recommendation of a German medical man for any German product produced incredulity among those in America who knew, until the statements were confirmed by American medical authorities. Let those who are planning the institute beware lest similar commercial influences creep in and ruin the fair edifice about to be erected.

IDEALS.

The foregoing paragraph naturally leads to the thought that a prompt enunciation of the ideals of the proposed institute is imperative. While not positively stated, it is assumed that a considerable amount of the proposed fund is expected to come from the pharmaceutical manufacturers of this country and the writer has positive knowledge that the interest manifested in the institute by certain manufacturers is not entirely altruistic. As was well pointed out by Dr. Weidlein, of the Mellon Institute, at the meeting held in New York on November 8, 1918, any research institute founded upon the principle that donors to its endowment will secure commercial advantages out of their philanthropy is from the start destined to failure. Of vital importance is it that from the beginning of the campaign for funds for such an institute, the altruistic nature of the services of the institute be emphasized in order to impress upon prospective donors the fact that no *quid pro quo* need be expected.

MANAGEMENT.

A widely expressed criticism of the plans for the institute so far offered is the fact that while medicine is frequently spoken of in connection with the institute it is evidently the intention of its proposers to make it primarily a creature of the American Chemical Society. A greater blunder than this can hardly be imagined. It seemed singular to many that no mention was made at the meeting of November 8 of the remarkable work done by the Council on Pharmacy and Chemistry of the American Medical Association. The writer holds no brief for that body and in fact has objected emphatically to certain of its findings which he has considered arbitrary, but the fact still remains that no one factor has done more during the past fifteen years to purify *materia medica* than the A. M. A.

and its Council on Pharmacy and Chemistry. It may be that it is too much feared for the enemies that it has made to be acceptable to those planning the institute, but if this is so, it is patent that at least the more highly specialized medical organizations such as the Society of Pharmacology and Experimental Therapeutics or the American Therapeutic Society should be invited to participate in the organization of the institution. Another blunder is the apparent omission, by the proposers, of the American Pharmaceutical Association as a factor in organizing the institute. I am well aware that among certain chemists pharmacy is considered merely as the keeping of retail drug stores, but it is at least inconsistent to expect to interest drug manufacturers in a project from which their mother organization is excluded. When the present leaders of the American Chemical Society were infants in arms, the American Pharmaceutical Association was a lusty organization. Age, and merely age, may mean dotage, but in the case of the A. Ph. A., now in the sixty-seventh year of its existence, it numbers almost three thousand men and women including all of us who not only preach but also practice professional pharmacy. If challenged to show the professional side of pharmacy, we need only refer the critic to the fifty-nine volumes of Proceedings of the A. Ph. A. (1852-1910) and to the volumes of its JOURNAL since 1911. In these are found the results of the researches of Procter, the Father of American Pharmacy; Squibb and Diehl whose work on drug extraction placed them among the pioneers in the field of capillarity; John Uri Lloyd, whose work on capillarity and adsorption is known to all of us; Power, the greatness of whose work on phytochemistry is scarcely appreciated; Schlotterbeck, the investigator of papaveraceous alkaloids; Kremers, the painstaking delver in the field of terpene chemistry; Maisch, the winner of the Hanbury medal; Rusby, the botanical explorer; Kraemer, the pharmacognosist; to say nothing of scores of others fully deserving a place in the pharmaceutical Hall of Fame. American pharmacy always has had and always will have a group of investigators the peers of any other department of knowledge and the rallying point of this group is the American Pharmaceutical Association.

FINAL SUGGESTIONS.

Up to this point, this paper may appear critical rather than constructive. It is critical as to the vagueness of the proposals made thus far by those behind the movement. May the present writer be permitted to make a few suggestions, attempting at the same time to point out how more enthusiasm may be aroused in the institute plan? In making the suggestions, I am speaking solely as an individual member of the American Chemical Society. As chairman of the Research Committee of the American Pharmaceutical Association I must be extremely careful to avoid any impression that either the research committee or the parent association approve or know of the crudely outlined plan I am about to propose.

To make the institute a real success, the money raised must be given without any conditions whatsoever beyond the bare statement that the institute is to be conducted in the interest of research in medicinal substances and that under a competent directorate.

Its work should be conducted under the joint auspices of the American Chemical Society, the American Pharmaceutical Association, and such national med-

ical associations as may hereafter be decided upon. From its inception, the work of the institute should be divided into at least four departments, each with a departmental head of equal power and voice; the four departments being (a) chemistry, (b) pharmacy, (c) pharmacology, (d) practical therapeutics; over these four responsible officials there being a director, whose duties shall be largely executive.

Of course, as the institute grows, other departments may be necessary, but from the beginning the four enumerated above are essential, if the institute is to do work worthy of its proposers.

This summary of my thoughts is presented for discussion this evening, with the full appreciation that the suggestions offered are fragmentary. But there is at least something tangible in them, no matter how you may chance to view them; which is more than can be said of most of the discussion of the institute up to the present time.

LOCAL ANESTHETICS—NITRIC ACID COLOR TEST.*

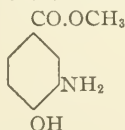
BY TORALD SOLLMANN.

This investigation started with the observation that an American sample of procaine gave a deep rose color with nitric acid. Further comparisons showed that this was due to a rare impurity, all other samples of procaine being only very slightly colored. The nitric acid test therefore appears to be a rapid method of assuring the absence of this unknown impurity. Although the pharmacology of this impurity is not known, official requirements should be framed so as to exclude it.

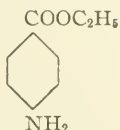
The nitric test was then applied to other local anesthetics. With the exception of orthoform-new, these remained colorless, even on drying. Orthoform-new gave a well-defined color reaction, and can therefore be easily differentiated from all the other local anesthetics. The test is positive even when applied directly to very complex mixtures, f. i., to orthoform lozenges.

A glance at the structural formula of orthoform, which gives the test, and the related anesthetics that do not give it, indicates that its reaction depends either on the introduction of the OH group, or on the different position of the NH_2 group—presumably the former.

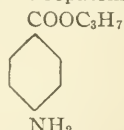
Orthoform-new.



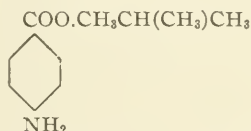
Anesthesin.



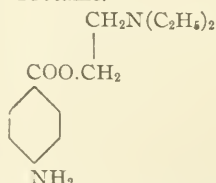
Propaesin.



Cycloform.



Procaine.



* From the Department of Pharmacology of the Medical School of Western Reserve University, Cleveland.

The nitric acid test consists simply in adding a drop of concentrated, colorless nitric acid to a little of the dry powder, on a white plate. The results with procaine are shown in Table I, those with other local anesthetics in Table II. The melting points of the procaine samples were furnished by the Chemical Laboratory of the American Medical Association. It is noteworthy that the sample giving the color-reaction also had a melting point below that of all the other samples, viz., 152-152.5 as against 153-155 degrees.

The positive reaction of orthoform and the negative result with all of the others, agree with the statement of Gadamer, *Lehrb. d. chem. Tokikologie*, Goettingen, 1919, page 490. He also examined a few further anesthetics that are not available at this time, and which are added to the table on his authority.

TABLE I.
RESPONSE OF PROCAINE SAMPLES TO NITRIC ACID TEST.

Sample (code).	Color.	Melting point (° C.)
Novocaine, Hoechst, powder	Practically colorless	.....
Novocaine-epinephrin tablets	Practically colorless	.....
Novocaine, Koechl, tablets	Practically colorless	.....
Procaine, R 121817	Practically colorless	153-154.5
Procaine, M 82318	Light yellow	154-154
Procaine, H	Light yellow	153-154.5
Procaine, A 89997	Very slight brown	153-154
Procaine, A 12918	Very slight brown	153.5-154.5
Procaine, R 82018	Slight brown	153-155
Procaine, R 82318	Slight brown	.....
Procaine, R 121817	Practically colorless	153-154.5
Procaine, R 82018	Slight pinkish	154-155
	Brown	
Procaine, R 82318	Slight pinkish	153-154.5
	Brown	
Procaine, R 5218 (three samples)	Deep rose pink	152-152.5

TABLE II.—RESPONSE OF LOCAL ANESTHETICS TO NITRIC ACID TEST.

The following remained colorless, even on drying with the acid:

Anesthesin (2 samples)	Cycloform (2 samples)
Alypin (tablet)	Euphthalmin
Apothesin	Holocaine (Gadamer)
Beta-eucaine lactate (2 samples) and hydrochloride	Propaesin
Cocaine	Stovaine (Gadamer)

The following give color-reactions:

Nirvanin: yellow (Gadamer)

Orthoform-new: faint pink, changing rapidly to violet and finally red (distinction from other local anesthetics).

SOME EFFECTS OF THE WAR UPON CRUDE DRUG IMPORTATIONS.*

BY CARL L. ALSBERG, ARNO VIEHOEVER, AND CLARE OLIN EWING.¹

Few industries derive their raw materials from such varied sources as does the drug industry. Camphor from Formosa, cloves from Zanzibar, asafoetida

* Based upon an illustrated lecture delivered by C. O. Ewing before Scientific Section A. Ph. A., Chicago meeting, 1918.

¹ A contribution from Bureau of Chemistry, Department of Agriculture, Washington, D. C.

TABLE I.—SOME EFFECTS OF THE WAR UPON

		1913.			1914.		
Commodity.	Grade to which wholesale prices apply.	Imports in 1000's. Lbs.	Declared value per lb.	Average wholesale price for grade quoted.	Imports in 1000's. Lbs.	Declared value per lb.	Average wholesale price for grade quoted.
Aloes	Curacao	909	0.086	0.101	918	0.071	0.084
Buchu	Short	105	1.086	1.555	125	1.030	1.375
Cinchona	Yellow quill	3330	0.106	0.23	3655	0.127	0.23
Coca	Truxcillo	1176	0.118	0.285	712	0.128	0.241
Ergot	Spanish	224	0.931	1.556	186	0.529	0.956
Gentian	.....	1797	0.049	0.069	2182	0.050	0.066
Ipecac	Cartagena	55	1.576	2.094	79	1.403	1.702
Jalap	.....	277	0.161	0.225	209	0.115	0.169
Licorice	Selected	105033	0.017	0.099	86754	0.018	0.092
Nux vomica	.....	2307	0.017	0.028	1891	0.017	0.037
Opium, crude	.....	441	4.83	6.51	441	3.92	6.27
Opium, powdered, etc.	Powdered	49	7.94	7.79	32	6.42	7.64
Orris	Verona	358	0.104	0.129	580	0.124	0.146
Rhubarb	High-dried	122	0.136	0.211	181	0.123	0.161
Sarsaparilla	Mexican	301	0.136	0.157	225	0.165	0.263
Senna	Tinnevelly	2634	0.057	0.085	2455	0.070	0.080
Tragacanth	Aleppo seconds	1402	0.354	0.702	1302	0.354	0.90
Vanilla	Mex. cuts	1050	2.52	3.278	695	2.43	3.203
Total.....		121570	20.224	25.104	102622	17.094	23.615
Add for increased duty.....		....	....	....	....	3.048	....
Total.....		....	20.224	25.104	....	20.142	23.615
Percentage comparison of declared price plus increased duty, 1913, as base.....		....	100.0	....	....	99.5	....
Percentage comparison of wholesale price of grades quoted, 1913, as base.....		....	....	100.0	....	....	90.1
Annual percentage comparison between de- clared value plus increased duty and whole- sale grade price.....		....	100.0	143.4	....	100.00	112.2
Percentage comparison of imports, 1913, as base		100.0	....	....	84.4	....	....
Percentage comparison of imports, 1914, as base		....	....	....	100.0	....	....

* Compiled by E. E. Stanford from "Foreign Commerce and Navigation of the United States," and "Oil, Paint, and Drug Reporter."

from Persia, rhubarb from China, sarsaparilla from Mexico, musk from Thibet, opium from Turkey, ergot from Russia and Spain, chamomiles from Germany, tragacanth from Asiatic Turkey, ipecac from Colombia and Brazil, cinchona from Java, senna from Egypt and India, ginger from Jamaica, benzoin from Siam and Sumatra, Peru balsam from Salvador, saffron from Spain and Italy, eucalyptus from Australia, lavender from France, attar of roses from Bulgaria, valerian from England—the list could be long extended. From sources so diverse as these, freedom of the seas is essential that each land may contribute its quota of supplies. Small wonder, then, that a world-embracing war, affecting so seriously the ordinary channels of trade, should have a far-reaching influence upon the amount and character of our imported crude botanicals.

At the outbreak of the war, with the first scurrying of ships to the protection of neutral harbors, for a short time imports almost ceased. Soon, however, the promise of a golden harvest brought forth the ships again, and the brief lull in importation passed. While imports of crude drugs decreased considerably, the actual tonnage decrease has probably been less than usually imagined. Some products have been cut off entirely; others have hardly been affected, and imports of some have even increased.

CRUDE DRUG IMPORTATIONS AND PRICES.

1915.			1916.			1917.			1918.		
Imports in 1000's. Lbs.	Declared value per lb.	Average wholesale price for grade quoted.	Imports in 1000's. Lbs.	Declared value per lb.	Average wholesale price for grade quoted.	Imports in 1000's. Lbs.	Declared value per lb.	Average wholesale price for grade quoted.	Imports in 1000's. Lbs.	Declared value per lb.	Average wholesale price for grade quoted.
953	0.095	0.130	1598	0.095	0.129	1236	0.079	0.094	1231	0.077	0.095
121	0.959	1.450	95	0.900	1.218	101	0.851	1.257	51	0.837	1.275
3951	0.142	0.271	3967	0.196	0.287	2531	0.271	0.375	3132	0.248	0.55
1048	0.090	0.400	948	0.113	0.375	635	0.142	0.375	1059	0.169	Nominal
142	0.651	1.340	123	0.600	0.825	166	0.487	0.730	140	0.578	0.606
1022	0.054	0.081	788	0.080	0.202	1780	0.122	0.162	413	0.112	0.151
138	1.802	2.019	204	2.380	2.581	85	1.730	2.193	61	2.005	2.937
176	0.105	0.107	201	0.067	0.106	169	0.117	0.123	127	0.271	0.509
82289	0.019	0.125	52784	0.034	0.202	59399	0.037	0.245	27051	0.068	0.257
2245	0.023	0.063	4356	0.031	0.067	2446	0.035	0.100	2740	0.041	0.127
353	4.81	7.68	117	4.54	10.47	43	7.69	19.30	21	12.430	26.812
39	7.93	9.53	44	5.52	11.69	78	8.21	22.05	98	15.372	28.187
554	0.095	0.129	602	0.103	0.113	528	0.116	0.133	466	0.119	0.183
234	0.105	0.158	156	0.113	0.175	239	0.079	0.209	191	0.109	0.377
250	0.104	0.166	291	0.142	0.126	146	0.130	0.174	111	0.284	0.587
2180	0.096	0.159	2974	0.130	0.258	5161	0.167	0.215	3575	0.215	0.175
1025	0.346	1.669	1130	0.522	2.069	474	0.720	2.025	525	0.531	2.069
749	2.45	3.206	797	1.85	2.641	733	2.16	3.833	759	1.584	3.612
97469	19.876	28.683	71175	17.416	32.534	75950	23.143	53.593	41751	34.881 ¹	68.509 ¹
...	4.065	...	...	4.065	...	...	4.071	...	...	4.018 ¹	...
...	23.941	28.683	...	21.481	32.534	...	27.214	53.593	...	38.899 ¹	68.509 ¹
...	118.4	...	...	106.2	...	...	134.6	...	...	193.5 ¹	...
...	...	114.3	...	...	133.6	...	...	213.5	...	...	285.2 ¹
...	100.00	119.8	...	100.0	156.1	...	100.0	196.9	...	100.0 ¹	176.1 ¹
80.2	...	...	58.5	...	...	62.5	...	...	34.3	...	...
95.0	...	...	69.4	...	...	74.2	...	...	40.7	...	...

¹ Coca leaves not included in 1918 price computations.

With the object of indicating in a comparative way the effect of war conditions on drug imports and prices, a table (Table I) has been prepared showing the imports (in thousands of pounds), declared value per pound, and wholesale price of selected grades (from averaged quarterly quotations in the *Oil, Paint and Drug Reporter* for the fiscal years 1913, 1914, 1915, 1916, 1917 and 1918), of eighteen well-known drug products—aloes, buchu, cinchona, coca, ergot, gentian, ipecac, jalap, licorice, nux vomica, opium (crude), opium (powdered, etc.), orris, rhubarb, sarsaparilla, senna, tragacanth, and vanilla. These products have been selected as the most important items on which import statistics are available; it is unfortunate that no Commerce and Navigation statistics are available for most other products, or even, in amount, for drugs or crude drugs as a whole. Amount of imports of these commodities for the years 1914–1918 are shown to be, respectively, 84.4%, 80.2%, 58.5%, 62.5% and 34.3% of those for 1913. During three-quarters of the last pre-war year, 1914, increased or new tariff duties were in effect upon buchu, coca, ergot, gentian, licorice, opium, sarsaparilla, and vanilla. Imports of these commodities, with the exception of buchu, gentian, and crude opium, showed a marked falling off from the figures of 1913, as did, indeed, several other products not affected by the tariff.

If 1914 be taken as a base, the percentages shown by the four war years are 95%, 69.4%, 74%, and 40.7%, respectively.

The total average cost of a pound each of these widely varying items since 1913 has shown increases only in two years, 1917 and 1918, of 14.4 percent and 72.5 percent, respectively. To the buyer's cost, however, must be added new and increased duties on several of the products effective October 1, 1913. Without enumerating these specifically, it may be said, for the dutiable products listed, the total increase over the tariff of 1909 amounts to a trifle over \$4.00. As these duties applied during only a portion of the year 1914, an amount proportionate to that period of the year has been added in making up the buyer's total. As this tabulation is chiefly concerned with recent factors affecting trade, previous tariff rates (Act of 1909) have not been included.

These increases bring the cost of 1913 and 1914 to virtual equality. Other increased costs are represented by increased freight rates, insurance, cost of labor, etc. Unfortunately, these cannot be included in this tabulation.

It would be interesting to compare the cost price, in so far as it is represented by the invoice cost plus increased duty, with the wholesale price, but this cannot be done exactly, as two or more grades of these commodities are usually quoted. An approximation may, however, be made by using for this purpose the most common grade or, in the case of widely variable items, like vanilla, one which seems to represent an approximate mean of the prices of the chief varieties. An increase of wholesale price on selected grades over the 1913 price is noted in every year save 1914; in 1917 the wholesale price is 113.1 percent above that of 1913, while the invoice cost plus increased duty for the commodities as a whole has increased but 34.6 percent. For that year (1917) wholesale prices on several grades are 96.9% above the invoice cost plus duty, while in 1913 the difference was but 24.1 percent and in 1914 only 17.2 percent.

The year 1918 witnessed a further drastic cut of imports, which amounted to only 34.3 percent of those of 1913. While all commodities showed the effects of the war, this large percentage decrease is chiefly due to import restrictions and other adverse conditions affecting the largest import of all—licorice root. During that year coca leaves remained strictly nominal on the American market; while imports were even larger than the average of previous years, presumably no supplies reached the open market. In the 1918 price computations, therefore, its commodity has not been included. Excluding coca leaves, the total price of the given grades was no less than 185.2 percent above that of 1913, and 76.1 percent above the invoice-plus-duty price, the latter being, however, 93.5 percent above 1913.

The shortage of certain supplies of crude drugs has proved a considerable stimulus to drug cultivation, both in America and elsewhere. Numerous publications regarding drug cultivation have appeared in various journals, and the subject may be here only briefly referred to. The principal drugs now cultivated in America include belladonna, digitalis, cannabis, hyoscyamus, and others. Of foreign nations, Japan has perhaps most rapidly taken up drug cultivation. Japan now furnishes us considerable supplies of matricaria, castor beans, mustard seed, and valerian. Most striking, however, is her rapid increase in exports of insect flowers. Prior to the war, this product entered the United States chiefly from

Europe, in amounts insufficient to receive mention in Commerce and Navigation statistics. In 1917, over 1,500,000 pounds were imported, mostly from Japan.

War conditions, of course, soon made themselves felt in sources and routing of supplies. Where formerly the major portions were transshipped through the drug markets of Hamburg, London, Amsterdam, Antwerp, and Marseilles, now much of the dealing was direct. Shipments began to arrive from little-known ports of or near the country where the materials were gathered and importers were forced to adjust their business methods to the changed conditions. As existing stocks of the remaining accessible middlemen decreased, more and more new direct connections had to be established with dealers in small, oftentimes, remote places. Goods began to be received in smaller lots, partly because small dealers at difficultly accessible points could not accumulate larger amounts before filling orders, and partly because the ever-widening influence of the war and the insistent demands of war-born industries called labor, especially agricultural labor, to other tasks more remunerative than the gathering of drugs. The collection of such products, frequently in the hands of ignorant or uneducated persons, naturally has suffered. Many of the collectors in the older collecting regions no doubt are unused to such pursuits, and in their inexperience they are apt to collect material carelessly or to dry it improperly. Such conditions are even more apt to obtain in regions where crude drugs have not hitherto been collected. Other errors may probably be attributed to the fact that merchants unfamiliar with and unequipped to handle drug products have undertaken to supply much desired articles.

Adulteration has taken chiefly two forms—the collection of authentic material of poor quality and the collection or addition of spurious material. In general, we are of the opinion that intentional sophistication is comparatively rare, although cases do occur occasionally. It is hard to believe, for instance, that decorticated cardamon seed, containing pebbles which simulate the appearance of the seeds themselves, is not an example of intentional adulteration, although the seeds of certain closely related *Amomum* species, which have also been observed in small amounts, are very possibly accidental. As a further example of unquestionable wilful adulteration may be mentioned “aniseseed” containing up to 75 percent of exhausted fruits; but most surprising of all was a shipment of aspidium, the bales of which contained alternate layers of old worthless material and fresh, newly-gathered material of strictly U. S. P. quality. The exporter had of course taken the precaution to place some of the latter at both ends of the bales.

The low quality of some material offered for entry is no doubt due to careless collection; instances of this type are insufficiently washed roots—sarsaparilla, dandelion, valerian; leaves containing excessive stems—buchu, sage, senna, thyme; seeds containing chaff, stems and other foreign material—mustard, poppy, staves-acre, etc. Under this class also must be placed moldy goods; it is hard to find shipments of areca nuts and nutmegs free from mold. African ginger is another bad offender, and the same is true of ergot and orris root.

With regard to the offering of wholly spurious material, we are of the opinion that this also may be accidental, as well as intentional. Oftentimes medicinally unlike drugs have a somewhat similar appearance and may be mistaken for the true material by an ignorant collector, a case in point being *Eupatorium glutinosum* Lamarck, which has been offered as matico. In some instances, where the ap-

pearance of the adulterant is so unlike that of the true material that no confusion could possibly arise, it would seem that the collector had found something apparently as valuable for similar purposes as the true material and offered it as such; *Macrotonia cephalotes* D. C., which has been offered as alkanet is an example of this type. Thus it happens that spurious material which arrives may not be without value. Oftentimes, however, it is worthless, and the importer who may perhaps have been compelled to accept a sight draft with the bill of lading, is unfortunately subjected to an unpreventable loss.

These rapidly appearing new products are a source of never-ending interest and oftentimes joy to one interested in the botany and chemistry of drug plants and new sources of drug supplies, and it is chiefly to some of these products that we wish to call your attention in somewhat greater detail, perhaps, than can be accorded them in the more impersonal Service and Regulatory Announcements of the Bureau of Chemistry.^{2,3} Judging from data at present available, these products may be divided into five classes, as follows:

- I. Material containing toxic foreign matter.
- II. Material of value as substitutes for recognized products.
- III. Material unsuitable for use as substitutes for recognized products, but valuable for other purposes.
- IV. Material of uncertain value, requiring further study.
- V. Material of no known value.

Class I.

Caraway.—Several shipments of caraway have been offered for importation which contained a considerable number of fruits infected with a fungus-like growth resembling ergot. Although no information was available as to whether this type of fungus was as poisonous as the common ergot occurring on rye, the Bureau considered it of such a character that the importation of the shipment was not permitted until the objectionable material was removed.

Cumin.—One shipment of cumin, offered for importation, also contained fruits more or less attacked by the same fungus.

This ergotlike fungus can be readily detected, even in fruits only slightly infected, with the chitin test described in considerable detail by one⁴ of the writers.

Marjoram.—In quite a number of instances the leaves of *Coriaria myrtifolia* have been found in shipments of marjoram, some samples containing as high as 8 percent. The leaves of the *Coriaria* had been so finely cut as to destroy any resemblance to their original form, which leaves no doubt that the adulteration was intentional. According to Kobert⁵ and Schmiedeberg,⁶ the adulterant mentioned contains a poisonous principle, *coriamyrtin*, which is similar in action to picrotoxin. A fatal case of poisoning as a result of eating omelets garnished with *Coriaria* sprouts is reported in *Bull. de Pharm. de Sud-Est*, 1910, 29 (through *Apoth. Ztg.*, 1910, 455).

A quick, rough test to detect this adulterant in marjoram follows: Place about a gram of the sample in a 6-inch porcelain dish, add about 200 cc. of water, and finally add about 5 drops of a 10 percent iron chloride (FeCl₃) solution. A light yellowish green color of the liquid is produced by pure marjoram, but when *Coriaria* is present the color becomes a decidedly darker dirty green, the intensity naturally depending upon the amount of *Coriaria* present and the time

² S. R. A., *Chem. Index*, (1-22), 1918; S. R. A., *Chem.*, 23, 1918.

³ The botanical work herein reported was largely done by or with the help of Mr. J. F. Clevenger.

⁴ A. Viehoever, "On the Detection of Mold in Drugs, Foods, and Spices, with Special Reference to a Specific Stain," *THIS JOURNAL*, 6, 518-24 (521), 1917.

⁵ *Lehrbuch der Intoxikationen*, 1906, 1095.

⁶ *Pharmakologie*, 1909, 286.

of standing. The coloration is due to the presence of a large amount of soluble tannin. After standing a few minutes the edge of the particles of *Coriaria* leaves become conspicuously blackened and can be picked out readily. These particles are entirely flat, distinctly thicker than the leaves of marjoram, somewhat glabrous, and have a brighter green color. Of especial importance in distinguishing them from marjoram is the absence of hairs and the fact that surface sections of these leaf particles show striations of the epidermal cells, this latter characteristic being especially pronounced in those cells immediately surrounding the stomata.

Senna.—An adulteration of senna which was reported in literature as long ago as 1836⁷ is *Tephrosia appolinea*. Of late years, however, its use for this purpose appears to have been discontinued and no mention is made of it in recent literature. We were very much surprised, therefore, to find it again in several importations of senna leaves. The leaves are obovate, often obcordate, and may, furthermore, be distinguished from senna by their smaller size and pinnate venation. The fruit pods, which are 2 to 3 cm. long and about 3 mm. wide, are also of service in detecting this adulterant. A number of *Tephrosia* species have been reported to contain a toxic glucoside, *tephrosin*, and to have been used as fish poisons. Senna containing this adulterant was denied admission.

Class II.

Aconite.—The most important product which has been imported for aconite is the so-called Japanese aconite (*Aconitum fischeri* Reich). The material which generally consists of mother tubers (with stem bases) and daughter tubers (with buds) may be distinguished macroscopically from the official aconite (*Aconitum napellus* L.) by their much smaller size and weight, less wrinkled and not twisted appearance, more or less short, conical shape, generally more mealy condition, and microscopically by the different arrangement of the fibro-vascular bundles, which are usually not so markedly star-shaped. According to Makoshi⁸ they contain no aconitine but either japaconitine, possibly an isomer of aconitine, or jesaconitine. He reports both alkaloids to have a physiological action similar to that of aconitine and that they may, in fact, be even more active.

Since the daughter tubers are considered by some authors to be more desirable, and are specified by the Swiss, German and Belgian pharmacopoeias, an examination was made of the Japanese aconite to determine the relative amounts of ether-soluble alkaloids in both mother and daughter tubers. The following results were obtained:⁹

Sample.	Composition.		Alkaloids present.		
	Mother.	Daughter.	Mother.	Daughter.	Whole sample (calculated).
1.	72%	28%	0.41%	0.46%	
			0.40%	0.45%	
			Av. 0.405%	Av. 0.455%	Av. 0.42%
2.	59%	41%	0.32%	0.49%	
			0.33%	0.49%	
			Av. 0.325%	Av. 0.049%	Av. 0.39%

The analyses showed that while in general the daughter tuber was superior to the mother tuber, the alkaloidal content of both was below the U. S. P. requirement for *Aconitum napellus*. In connection with this product the interesting statement is made by Zörnig¹⁰ that Japanese aconite has been favored by manufacturers of extracts of aconite, since it contains very little resinous matter. *Aconitum napellus*, however, is the only species of aconite official in any country so far as we can find, including Japan.

Another species recently substituted for aconite is *Aconitum chasmanthum* Stapf., an Indian species.¹¹ We feel, however, that the name Indian aconite should not be applied to it since the principal variety of Indian aconite is *Aconitum ferox* Wall., to which the term is generally

⁷ *Annalen der Pharm.*, 1836, 94-8.

⁸ *Archiv. de Pharm.*, 1881, 3, 47, 177.

⁹ *Analyst*, M. G. Mastin.

¹⁰ *Die Arzneidrogen*, 1909, I, 659.

¹¹ Identified by C. J. Zufall.

referred. *Aconitum chasmanthum* is generally smaller than the official aconite, being about 2 cm. long and about 0.75 cm. in diameter; it is less wrinkled and the rootlet stubs are usually clustered at the basal end. Its fracture is lighter in color and its texture less tough and resinous.

With regard to the alkaloidal content, Dunstan and Andrews¹² state that it "contains indaconitine, an alkaloidal intermediate between aconitine and pseudaconitine." Cash and Dunstan¹³ have pointed out that its physiological action differs in degree only, and not in kind, from these alkaloids. They state "Indaconitine . . . may therefore be substituted for aconitine and pseudaconitine for internal use, indaconitine being administrable in the same dose as aconitine." The sample in question contained about 0.7 percent of ether-soluble alkaloids.¹⁴ Of interest are also the results of Frazer's experiments, who compared the action of official aconite with that of other aconites native to India.¹⁵

Alkanet.—A specimen offered for entry as "Alkanet" proved, upon examination, to be the root of *Macrotomia cephalotes* D. C., so-called "Syrian Alkanet." It is much larger than the genuine alkanet, *Alkanna tinctoria* Tausch.; it occurs in pieces from 20 to 40 cm. long and from 2 to 5 cm. thick, whereas alkanet is about 1 to 1.5 cm. in diameter and is usually 10 to 15 cm. in length. It is black-violet in color and somewhat metallic in appearance, whereas alkanet is of a dull maroon color. It has a distinctly spiral twist, resembling a twist of tobacco, whereas alkanet is only slightly twisted.

Chemical examination showed it to contain about 9 percent of an extract very similar to that of true alkanet, which is considerably more than is generally reported in true alkanet (5 or 6 percent). The coloring extract, as is also true in the case of alkanet, consists of at least two chemical individuals, and both extracts appear to be very similar in nature. In view of the fact that in the so-called "Syrian Alkanet" the extract was much larger in amount than in true alkanet, and possessed equivalent tinctorial strength, it would appear to be a valuable substitute for the latter. An extract prepared with 95 percent alcohol, diluted with water to about 50 percent concentration of alcohol, gave very satisfactory results in the Pharmacognosy laboratory and in the Microbiological laboratory of the Bureau of Chemistry in the staining for microscopic observation of sections containing fats (soya beans, castor beans, yellow mustard seed, etc.) and resins (podyphyllum rhizome and white bryony root).

Further details regarding this interesting product have recently appeared in the Journal of this Association.¹⁶

Buchu.—The official species of buchu are commonly known as "Long" buchu (*Barosma serratifolia* (Curtis) Willdenow), and "Short" buchu (*Barosma betulina* (Thunberg) Bartling and Wendland). A non-official species which has recently appeared on the market is the so-called "Oval" buchu (*Barosma crenulata* Hook. var. *latifolia*). The odor of the leaves is strong and even more agreeable than that of certain samples of the official species that we have examined. It is of interest in this connection that the Japanese Pharmacopoeia recognizes the leaves of *Barosma crenulata* as buchu leaves. While data obtained by Schimmel & Company¹⁷ indicate that the volatile oil separated from *Barosma crenulata* contains small amounts of diosphenol (buchu camphor), it is different from those of the official species.

Two other adulterants which, however, do not appear to be of value as substitutes for buchu are *Empleurum serratulatum* Sol. and Ait., offered as "Long buchu," and *Barosma pulchellum* Bartl. and Wendl., offered as "Short buchu." The sizes of the leaves are distinctly different from those of the official species. The aroma of *Empleurum serratulatum* and *Barosma pulchellum* is distinctly different from that of the official species. We have as yet been unable to make any extended examination of the volatile oil of *Barosma crenulata* Hook var. *latifolia*, which appears to be the most promising of the three products.

¹² "Contribution to Knowledge of Aconite Alkaloids," *Trans. Chem. Soc.*, 87, 1620-36, 1905.

¹³ *Proc. Roy. Soc.*, 1905), 468.

¹⁴ *Analyst*, S. Ginsburg.

¹⁵ "A Contribution to the Pharmacology of *Aconitum heterophyloides*, *A. nigrum* and *A. napellus*," *J. Pharmacol. and Exp. Therap.*, 9, 43-56, 1917.

¹⁶ Ewing and Clevenger, "So-called 'Syrian Alkanet,' *Macrotomia cephalotes* D. C.," *THIS JOURNAL*, 7, 191-4, 1918.

¹⁷ *Semi-Annual Report*, October 1911, 23.

Coriander.—Some importations of coriander seed have consisted of fruits differing in physical appearance from the Pharmacopoeial description. They are larger, have a more oval appearance, and in general yield less volatile oil than the pharmacopoeial article. Growing experiments are being carried on to determine their botanical source. At present we are unable to state whether they belong to a distinct species or are merely a variety of the official *Coriandrum sativum* L. The product appears in the trade as Bombay or Indian coriander and appears to have value. One sample yielded about 0.2% of a volatile oil having a specific gravity at 25°/25° of 0.8726, optical rotation (100 mm. 23°), 12.73°. The oil contained over 50 percent of coriandrol, and also a very small amount of citral. No pinene was detected with the small amount of oil available. The oil complied with the U. S. P. requirements for oil of coriander, and is apparently somewhat similar in composition.

Horehound.—In quite a number of instances the young herb of *Ballota hirsuta* Benth. has been substituted for true horehound, *Marrubium vulgare* L. The material is very closely related to horehound and resembles it so closely in appearance that it is difficult to point out striking macroscopical distinguishing characteristics. With the hand-lens or microscope, however, the following characteristics are noted:¹⁹

(1) The tufted hairs of the leaves of *Marrubium vulgare* are usually curved or bent and almost sessile; those of the leaves of *Ballota hirsuta* are usually straight and are somewhat elevated by a multicellular basal stalk.

(2) The calyx of *Marrubium vulgare* has long, recurved, subulate teeth, while that of *Ballota hirsuta* has shorter, acute or obtuse teeth.

(3) The hairs of the inner surface of the calyx of *Ballota hirsuta* contain crystals probably consisting of calcium oxalate; those of *Marrubium vulgare* do not.

We have been unable to find any chemical data regarding *Ballota hirsuta* and have as yet not found an opportunity to study it ourselves. However, the similarity of the two species was so striking that a small amount of candy was made from an infusion of the material. The flavor was not at all unpleasant, and very closely resembled that of horehound. When larger amounts of the material are available it will be interesting to determine the nature of the volatile oil and to ascertain whether or not the bitter substance which is present consists of marrubiin, the bitter principle of horehound.¹⁹

Hyoscyamus.—Within the past two years there have been increased offerings of *Hyoscyamus muticus* which, although unsuitable for use as a substitute for *Hyoscyamus niger*, appear nevertheless to have considerable commercial value. It appears that this species, especially plants grown in Egypt, contain considerable amounts of hyoscyamin in a form which can easily be obtained in the crystalline state. It is reported not to contain scopolamine, the other active principle of the official *Hyoscyamus niger* L. It may be distinguished from *Hyoscyamus* by its characteristic branching non-glandular hairs, which occur on both stems and leaves.

Jalap.—A very interesting product which has lately appeared on the market is *Piptostegia* root (*Piptostegia pisonis* Mart.), sometimes called "Brazilian Jalap" The material is related to true Jalap, *Exogonium purga* (Wenderoth) Benth. It may readily be distinguished from true jalap in that it occurs in commerce in the form of transverse circular or oval sections, varying from about 3 to 8 cm. in diameter and from about 0.3 to 0.8 cm. in thickness. The pieces are marked with several concentric rings, and aside from the pale grayish brown tint and the presence of numerous dots of translucent, pale resin on the surface, bear considerable resemblance to commercial white bryony root. True jalap tubers generally occur in the whole state. The material contains up to 20 percent or more of an active purgative resin which, however, is unlike the resin obtained from true jalap. This product has been recently described at somewhat greater length in the journal of this Association.²⁰

Licorice Root.—One of the crude drugs in largest demand at the present time, the supplies of which have been very adversely affected by the war, is licorice. This product has heretofore

¹⁸ Analyst, J. F. Darling.

¹⁹ For further details see Ewing and Clevenger, "Ballota hirsuta, an Adulterant of Horehound," THIS JOURNAL, 8, 273-275 (1919).

²⁰ Ewing and Clevenger, "Piptostegia Root (*Piptostegia pisonis* Mart., So-called 'Brazilian Jalap),' " THIS JOURNAL, 1918, 855-95.

been largely supplied through Spain and Russia. At the present time, however, supplies of a new species are also being received from Asia. The material was obtained from *Glycyrrhiza uralensis* Fischer, known as "Asiatic Licorice" (Chuntschir licorice). According to the literature, it contains about the same amount of glycyrrhizic acid as Spanish and Russian licorice. When tested by the U. S. P. method it yielded 27 percent of extractive to hot water, which is considerably in excess of the U. S. P. requirement of 20 percent. The samples that we have observed were for the most part of good quality, and the material appears to be a valuable commercial product.

Sage.—The foreign supplies of true sage, *Salvia officinalis* L., have been very largely shut off and the material now being offered consists of Greek sage, *Salvia triloba* L., and Spanish Sage, *Salvia lavandulaefolia* Vahl. *Salvia lavandulaefolia* is official in the Spanish pharmacopoeia, as well as *Salvia officinalis*. Tschirch²¹ expresses the opinion that it may be only a variety of *Salvia officinalis*, namely, *Salvia officinalis* var. *hispanica* Boiss. It has an agreeable odor but is somewhat camphoraceous, and for that reason will probably find less commercial demand than Greek sage, which resembles in flavor very much the true sage.

These forms, while very closely related to true sage, differ in appearance and flavor and are well recognized by the trade as distinct forms. Greek sage may be distinguished from true sage by the usually broader, shorter, thicker, entire leaves, short petioles, and by its more wooly appearance. Spanish sage may be distinguished by its smoother, considerably smaller, entire leaves and relatively long petioles; neither Greek sage nor Spanish sage possesses the crenulate edge and the strong venation characteristic of true sage.

Scammony.—True Scammony, *Convolvulus scammonia* L., appears to be no longer available in commercial quantities, and it seems probable that the product now listed as scammony in the trade journals is really Orizaba root, *Ipomoea orizabensis* Ledanois, sometimes improperly called "Mexican Scammony." This product contains an active purgative resin in larger amounts than true scammony, and has of late been imported from Mexico in large quantities. It appears to be a valuable product and no doubt will secure for itself an important place in our materia medica.

Heinrich²² has recently shown that the active portions of Orizaba-resin, Jalapin, and of Jalap-resin, Convolvulin, are glucosidic substances with saponin character. Of the two, Jalapin was more strongly hemolytic.

Tragacanth.—A material which has come upon the market in considerable quantity within the last few years is Karaya gum, sometimes invoiced as Kaday, Maura, Shiraz, or Indian gum. The last name, however, has been applied to other gums of India, and we do not consider it a proper name for this material. Karaya gum is obtained chiefly from *Sterculia urens* Roxb. and *Cochlospermum gossypium* D. C., and also from other closely related species of *Sterculia* or *Cochlospermum*. It occurs in irregular, rounded, translucent lumps of a pale buff color; it is said never to occur in the ribbon-like, whitish or light brown bands characteristic of true tragacanth. Its presence may be detected by U. S. P. IX tests for the purity of gum tragacanth, where it is referred to in a number of tests as Indian gum. It appears to have certain valuable properties²³ and has already found application in a number of ways as a substitute for tragacanth, although there is no doubt but that it is inferior to the official drug.

Class III.

Belladonna.—A notable feature about a shipment of 3 bales of belladonna leaves recently offered for entry was that two bales consisted of genuine material, while the other consisted of the leaves of *Solanum nigrum* L. The substitution of this plant for belladonna may be due to the fact that the common names of the plants are similar, belladonna being called Deadly Night Shade, and *Solanum*, Black Night Shade, and sometimes, erroneously, Deadly Night Shade. Since this species contains solanine, and not atropine, it is not a suitable substitute for the official drug.

Mustard.—The mustard situation since the cutting off of European supplies has been exceedingly acute and has resulted in great stimulation of the importation of Oriental and Indian

²¹ *Handbuch der Pharmakognosie*, 1913, II, 1024.

²² Heinrich, "Biological Behaviour of Convolvulin and Jalapin," *Biochem. Zeitschr.*, 38, 13-34, 1918.

²³ Ewing, "Karaya Gum, an Adulterant of Tragacanth," *THIS JOURNAL*, 7, 787-90, 1918.

species. A number of these have proven of value, but others appear to be unsuited for use as mustard substitutes. Of the latter, the most noteworthy has been Chinese colza, *Brassica campestris* var., *sativa annua chinensis* Lund and Kiaerskou, *Brassica chinensis* L.²⁴ and Indian tori, *Brassica napus* var. *dichotoma*. An examination of Chinese colza showed it to contain on the average about 0.4 to 0.5 percent of a volatile oil of different character than that obtained from the official species, *Brassica nigra*. It had an odor more nearly resembling that of cabbage and did not have the typical mustard oil effect upon the eyes and nose, nor did it blister the skin. In general, the Chinese colza more nearly resembled the rapes than the mustards; this was also true of the Indian tori. The former is of value as greens and both are valuable as forage and oil seed crops. Two products, however, have proven to be of value as mustards—Chinese mustard, *Brassica juncea* L., and Japanese mustard, *Brassica cernua* Thunberg, a variety of *Brassica juncea*; both of these have properties similar to the official *Brassica nigra* L. Koch. Studies of these products are at present under way.

Class IV.

Chamomile.—A crude drug product which is generally imported in large amount is German chamomile flowers (*Matricaria chamomilla* L.). The usual sources of supply having been largely shut off, this product has been subjected to considerable adulteration, the most noteworthy adulterant perhaps being flowers of dog fennel, *Anthemis cotula* L. This adulterant has been found in amounts as high as 25 percent, or more. It is fairly closely related to *Matricaria* and some of the chemical data in the literature suggest that it possibly might have somewhat similar properties. As a matter of fact, it was recognized in the U. S. Pharmacopoeia from 1820 to 1880. It is possible, then, that it may not be without value, but appears to be inferior to German chamomile, and it is obvious that it is improperly offered and sold as such.

Another adulterant of German chamomile which has been offered for importation is the flower heads of wild Roman chamomile, *Anthemis nobilis* L. This adulterant also resembles somewhat German chamomile. The flowers which are said to have been obtained from wild growing plants have only one row of ligulate florets, the whole of the disk florets being yellow and tubular. Flowers of this type are called single chamomiles; double chamomiles, which are the familiar form, are the cultivated flowers in which all or nearly all of the yellow tubular florets have become converted into ligulate ones. The latter were official in the U. S. P. VIII. They are larger and whiter and are commonly preferred by the trade, although the tubular florets of the wild plants are more odorous and somewhat more bitter than the ligulate ones, and are said to have the most powerful medicinal properties.²⁵

It appears that this substitute also may not be without value, inasmuch as it seems, from the information available, that the material contains the same active constituents as the cultivated variety formerly official. It is obvious, however, that if used it should be offered and sold as "Wild Roman Chamomile." The flowers of both adulterants have solid chaffy receptacles, whereas those of *Matricaria chamomilla* have naked, hollow receptacles. Both substitutes may be readily detected by these means.

Couchgrass.—Bermuda grass (*Cynodon dactylon* L.), has been substituted quite frequently of late for true Couchgrass (*Agropyron repens*). Considerable work has been done on the chemical properties of *Agropyron repens*, and two glucosides, one a vanillin glucoside, and the carbohydrate *tritacin*, have been isolated. In an early work²⁶ *cynodon* is reported as an active substance, occurring in the rootstock of *Cynodon dactylon*. Tschirch²⁷ considers *cynodon* as identical or similar to asparagin. We understand that Bermuda grass has been used in the southern part of Europe for similar purposes as couchgrass in central Europe, and it is reported as occurring in the trade under the names *Rhizoma cynodontis*, *Rhizoma Graminis italici*, or *Rhizoma Graminis dactyli*. The lack of starch and the considerable size of the endodermis cells characterize the rootstock of *Agropyron repens*, while the rootstock of *Cynodon dactylon* contains considerable

²⁴ Viehoveer, Ewing and Clevenger, "Studies on Brassicas I. Chinese Colza (*Brassica campestris* var. *chinensis* Toleifera m. f.)" (unpublished manuscript).

²⁵ Bentley and Tridelemen, 3, 154, 1880.

²⁶ Semmola, *Chem. Jahrsb.*, 1845, 535.

²⁷ *Handbuch der Pharmakognosie*, 2, 223, 1, 1912.

starch and smaller endodermis cells. Comparison with *Agropyron repens* rootstocks furthermore shows that the rootstocks of *Cynodon dactylon* have thinner, longer scales, often, or usually pubescent.

Digitalis.—In a number of instances *Digitalis thapsi* L. has been offered for *Digitalis purpurea* L. This substitute grows wild in Spain, as does also *Digitalis purpurea*, which is quite similar to it. It may be distinguished by the hairs, which are of one sort, glandular, long, stalk. several-celled, with 1- or 2-celled glandular head, whereas the hairs of *Digitalis purpurea* are of two sorts, usually long, simple, 2-8 celled, some cells frequently collapsed, glandular hairs few, much shorter, with 1- or 2-celled stalk and 1- or 2-celled glandular head. A notable fact regarding the samples we observed was the somewhat yellowish tint, due perhaps to faulty curing or storage.

So far as we are aware, *Digitalis thapsi* is not recognized in any pharmacopoeia. Experiments reported in the literature^{28,29} indicate that it has considerable activity, but it has also been intimated that the pharmacological action is not identical with that of *Digitalis purpurea*. Since, however, the drug appeared to be worthy of further investigation, plants for this purpose were planted in March, 1917.

Class V.

Arnica flowers.—A large number of samples offered for import as "Arnica flowers" have been found to consist of the flower heads of *Inula britannica* L. The ligulate flowers are considerably smaller in length and width than those of the true arnica flowers, *Arnica montana* L. The veins in the ligulate flowers of *Inula britannica* number 4, while 7 to 12 are reported in the literature for arnica flowers. The young achene (undeveloped fruit) is 1 mm. long, whereas that of arnica is 5 to 7 mm. in length. The receptacle is smooth in *Inula britannica* but hairy in true arnica. An abundant pappus is developed in both species, which is the cause of a somewhat similar appearance of the two products.

Nothing appears to be known as to the chemical constituents of this product. It is not official in any pharmacopoeia, and its medicinal value is not known.

Dandelion Root.—In several instances, a root, possibly that of a species of *Lactuca* or *Sonchus*, has been substituted for the root of *Taraxacum officinale* L. The adulterant is characterized by its tracheae, which are arranged in radial rays usually one cell wide, alternating with medullary rays two or three cells wide. We have been unable to find any data regarding the chemistry of this adulterant, and, as far as we are aware, it does not appear to be a suitable substitute for dandelion root.

Fennel.—Several shipments of fennel seed have proven, upon examination, to be the fruits of wild fennel, *Foeniculum piperitum* Sweet. The fruits are small and their flavor is distinctly inferior to the official fennel *Foeniculum vulgare* Miller. This species is not cultivated and may be distinguished from *Foeniculum vulgare* by its very much smaller size and the decidedly bitter taste and flavor of its volatile oil. The inferior quality is especially noticeable when an examination is made of the distilled volatile oil.³⁰ From the data available, this product appears to be an unworthy substitute for the U. S. P. article.

Ipecac.—The increased demand for ipecac has resulted in the offering of quite a number of other materials under this label. Among these are *Heteropteris pauciflora* Juss., *Ipecacuanha fibrosa* and an *Ionidium* species. True ipecac has calcium oxalate raphides, numerous starch grains and contains no groups of bast fibers in the cortex. *Heteropteris pauciflora* contains no starch and has a normal wood structure; stone cells and calcium oxalate rosettes are present in the bark. The *Ionidium* species contains no starch; small stone cells, when present, occur in the bark, as do also prismatic crystals of calcium oxalate. *Ipecacuanha fibrosa* may be differentiated by the presence of groups of bast fibers arranged tangentially. None of these adulterants, as far as we are aware, are mentioned in any pharmacopoeias, nor do they contain the active principles of the official drug.

Matico.—*Piper angustifolium* Ruiz et Pavon. is another product which has been much adulterated. In some instances the leaves of a closely related *Piper* species, *Piper bredemeyri*

²⁸ Holmes, "Spanish Digitalis," *Pharm. Jour. and Pharm.*, (ser. 4), 1917, 351, 399.

²⁹ Farwell and Hamilton, "*Digitalis thapsi* L.," *Am. Journ. Pharm.*, 1917, 147-154.

³⁰ *Analyst*, H. B. Mead.

Jacq.,³¹ have been substituted, and these, no doubt, may have a limited application as a substitute for matico. One shipment, however, upon examination, proved to be obtained from an altogether unrelated species, *Eupatorium glutinosum* Lam. At first glance the adulterant has an appearance somewhat resembling matico, due to the fact that both species have leaves glabrous and coarsely bullate on the upper surface, but comparison with authentic material readily discloses obvious differences. The leaves of *Eupatorium glutinosum* pack together in rather a gummy, spongy fashion, and are much less brittle than those of the recognized matico. The leaves of matico are alternate, entire, mostly sessile, and are pubescent on the lower surface, whereas those of the adulterant are opposite, serrate, have a petiole one-half to one inch long, and are very wooly on the lower surface. The flowers, a few of which are generally present, offer further means of identification; those of matico occur in long spikes, while those of the adulterant occur in cymosepaniculate composite heads. The material yielded about 0.15 percent of a volatile oil resembling that of boneset, *Eupatorium perfoliatum* of the National Formulary. This adulterant has previously been described in somewhat greater detail in THIS JOURNAL.³²

Stramonium.—In a number of instances importations of "Stramonium leaves" have been found to consist of the leaves of cockle bur, *Xanthium strumarium* L.³³ The leaves have about the same size and appearance as stramonium leaves, and the fruit also is covered with small thorns which simulate somewhat the fruit of stramonium. They differ, however, from stramonium leaves in that they are dentate and pubescent at the margin; under the microscope they show short tricellular hairs which enclose calcium carbonate crystals, as well as other small 7-celled hairs. Calcium oxalate crystals are absent in the leaves of the cockle bur, whereas they are abundant in stramonium leaves. Examination of the material showed the absence of the alkaloids characteristic of the genuine drug. The material therefore is not a suitable substitute for stramonium.

The foregoing³⁴ represent only a portion of the many interesting products which have come to our attention during the past several years, but will, we hope, serve to give an idea of the influence of the war upon the character of drug importations, and also an idea as to the nature of the work involved in the supervision of crude drug importations.

³¹ Viehoveer and Mastin, "On *Piper bredemeyeri* Jacq. and its Value as a Source for Matico" (unpublished manuscript).

³² Ewing and Clevenger, "*Eupatorium glutinosum* L. an Adulterant of True Matico (*Piper angustifolium* Ruiz et Pavon)," THIS JOURNAL, 7, 510-12, 1918.

³³ Identified by C. J. Zufall.

³⁴ Some of the substitutes to which we referred have within recent months been subject to further study:

Chamomile: Ballard, "Wild Anthemis—A Possible Matricaria Adulterant," THIS JOURNAL, 7, 952-54, 1918.

Couchgrass: Gathercoal, "Couch Grass versus Bermuda Grass," THIS JOURNAL, 8, 26-32, 1919.

Horehound: Youngken, "*Ballota hirsuta*, A Recent Adulterant of *Marrubium vulgare*," Am. Journ. Pharm., 90, 147-56, 1919.

Jalap: Farwell, "Brazilian Jalap and Some Allied Drugs," THIS JOURNAL, 7, 852-55, 1918.

Marjoram: Beringer, "*Coriaria myrtifolia* as an Adulterant of Marjoram," Am. Journ. Pharm., 90, 555-65, 1918.

Scammony: Scoville, "Scammony and Its Substitutes," Journ. Ind. Eng. Chem., 11, 335-336, 1919.

Stramonium: Guérin, "Substitution of *Xanthium macrocapum*—for Stramonium Leaves," Jour. pharm. chim., (7 ser.), 7, 102-5, 1919.

THE STRUCTURE OF BERMUDA GRASS COMPARED WITH THAT OF TRITICUM.

BY C. J. ZUFALL.

Because of the scarcity of European Triticum, a substitute, Bermuda grass has been imported in considerable quantities, although genuine Triticum is found growing abundantly in many sections of America, as well as in Europe. If the trade would realize that Triticum is Triticum whether gathered in Europe or in America, there would be less difficulty in securing enough for its needs. As in many other instances, we should declare our independence of Europe in obtaining our supply of this drug.

The substitute, imported under the name "Bermuda Grass," has been found mixed with Triticum and offered for sale as U. S. P. Triticum. Bermuda grass grows in Northern Africa and Southern Europe, where it is used in much the same way as Triticum.¹ It is also found naturalized in America, scattered through the fields and waste places from Massachusetts and Southern New York to Missouri, Florida, and Mexico, as well as in the West Indies and South America. In some places it is cultivated in pastures.²

The botanical origin of this adulterant is *Capriola Dactylon* (L.) Kuntze (*Cynodon Dactylon* Pers.; *Panicum Dactylon* (L.); *Digitaria stolonifera* Schrad; *Dactylon Officinalis* Vill.) The generic name, Capriola, comes from the mediaeval Latin name for the wild goat that feeds on this grass in rocky places. There are only four species in the genus, of which three are Australian, while *C. Dactylon* is widely distributed.

Some of the common names for *Capriola Dactylon* (L.) are Scotch grass, Scutch grass, Dog's-tooth grass, Indian couch grass, Bahama grass, Hundzahn, Gros Chiendent, or Chiendent pied-de-poule (French).

Capriola Dactylon is a perennial grass with short, flat leaf-blades, one to two inches long, and one to two lines wide. The blades are rigid, smooth beneath, and scabrous above. The smooth, glabrous culms are four to twelve inches tall, and erect, originating from long, creeping and branching stolons. The sheaths are glabrous or somewhat hairy, and crowded at the bases of the culms and along the stolons. The spikes are four to five in number, one-half to two inches in length, and digitate. The rachis is flat. The spikelets are one line long, one-flowered and secund.²

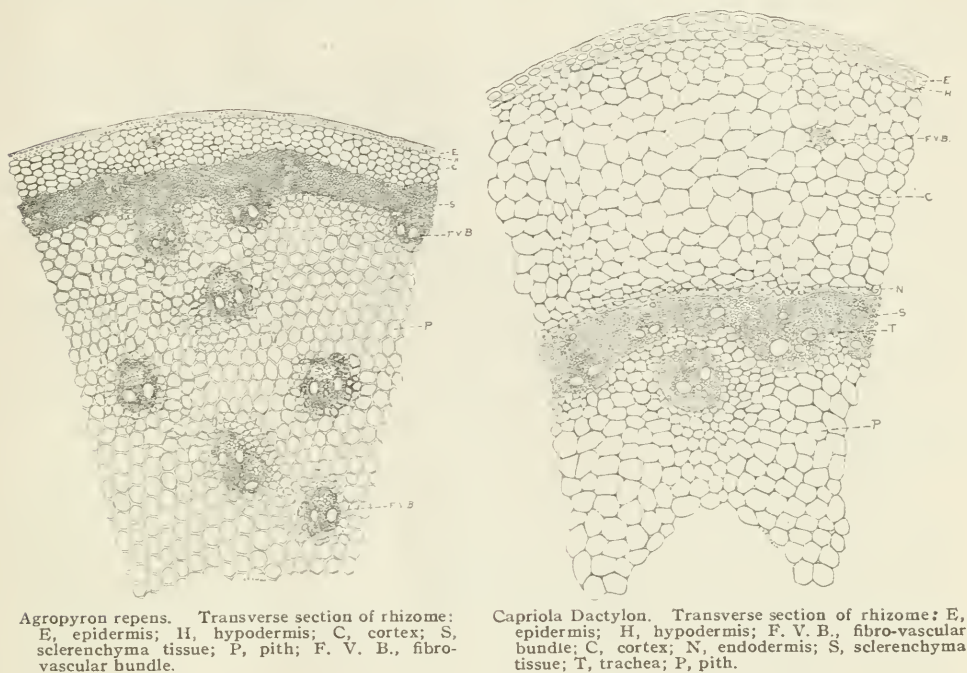
The dried rhizome of *Capriola Dactylon* is seldom less than two, and usually three millimeters or more in diameter, whereas the rhizome of Triticum is seldom more than two millimeters. The adulterant is generally hard and brittle, whereas Triticum usually is soft and pliable. Bermuda grass lacks the sweet taste of Triticum, and contains much starch.

In transverse section a hand lens or microscope shows that the structures of these two rhizomes are quite different. The epidermi beneath which are similar layers of hypodermal cells are similar. A marked difference is found in the cortex, that of Bermuda grass being about one-fourth as broad as that of Triticum. The cortex of Bermuda grass contains only one or two vascular bundles, whereas Triti-

¹ Dragendorff, "*Die Heilpflanzen*," p. 85.

² Britton and Brown, "*Illustrated Flora of the United States and Canada*." Vol. I, p. 222.

cum contains six or seven. Bermuda grass has no endodermis, while in *Triticum* this layer is quite prominent, with the inner and lateral walls much thickened. The circle of bundles and the individual bundles of the one are much like those of the other. The pith of the Bermuda grass is from four to five times as broad as that of *Triticum*, and the walls of the pith cells, as well as the walls of the cells in the cortical parenchyma, are decidedly thicker than those of *Triticum*.



Scattered through the pith of Bermuda grass are from thirty to thirty-five fibro-vascular bundles, while in the pith of *Triticum* there are only ten or twelve, and these are attached to the circle of sclerenchymatous fibres and bundles. In Bermuda grass the central hollow area is twice as broad as that of *Triticum*.

The powdered Bermuda grass may be identified by the presence of a large amount of starch, the thick-walled parenchyma cells and the absence of endodermal cells with the peculiar thick walls.

LIME, LIME WATER, AND LIME WATER TABLETS.*

BY ROBERT WOOD TERRY.

Lime water is not usually regarded as an important pharmaceutical preparation, but after serious thought it is seen to be one of the most important in the pharmacopoeia. Lime water is used pharmaceutically in preparing black wash and yellow wash, in the preparation of carron oil and, formerly, for preserving mucilage of acacia. If lime water is very deficient in its content of calcium hy-

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.

dioxide, which is not at all rare, serious injury may occur from the resulting yellow wash, as free mercuric chloride remains in the preparation.

Lime water is used internally as an antacid and to check nausea. Its principal use, however, is in infant feeding to modify the physical character of the paracasein curds from cows' milk, making the curds simulate the physical character of the paracasein curds of human milk. What pharmaceutical preparation should be purer than that which is given to infants in daily doses of from one to five ounces?

It is regrettable that lime water is so unstable and so little understood, since it is really so important. A few extracts from pharmaceutical literature will give a fair idea of the quality of lime water that is generally sold.

"Geo. E. Thum makes some practical observations on the preparation and preservation of lime water, operations which are usually conducted in the imperfect manner in which they have been conducted from time immemorial."¹

"Pierce P. Bear, in view of the statement that not one sample in ten of lime water answers the pharmacopoeial requirements, examined fifteen samples obtained from different pharmacies. He found that not one of them answered all the requirements. Some were fairly good, but the majority were very poor, some containing scarcely any calcium hydrate and others considerable quantities of other soluble alkali. The results are shown in a table which may be consulted in the original paper."²

"Notwithstanding its cheapness and ease of preparation, much of the lime water dispensed by druggists is of inferior quality, due either to the use of a poor sample of lime or to insufficient care in preserving the liquid."³

The writer can see no objection to the use of lime water which has a small amount of calcium carbonate in it, the only difference being the formation of a small amount of carbon dioxide in the stomach. The practice of some druggists who dispense lime water containing undissolved calcium hydroxide is reprehensible and one that should be immediately stopped. Dispensing such lime water is chargeable to laziness, as lime water may rapidly be filtered. Small particles of calcium hydroxide are very liable to set up an irritation in baby's stomach. Calcium hydroxide is a caustic irritant.⁴

It is pleasing to note that in the last few years, since a high quality of lime has been marketed by certain manufacturers, the quality of lime water sold has improved. Unfortunately, not all druggists use this lime; some still cling to the old procedure of slaking builders' lime with ordinary tap water. This is so unethical and so great an injustice to the public that it need not be further discussed here. About twenty-five percent of the lime water sold to-day does not meet the pharmacopoeial requirements.

Lime water at its best is a poor pharmaceutical; its strength is seriously affected by temperature since it is a saturated solution. It is readily decomposed and reduced in strength by the action of air. It is a weak preparation, therefore, bulky.

TABLE A1.—COMMERCIAL AND PREPARED CALCIUM OXIDE.

No.	Directions.	Condition.	Carbonates.	Insoluble matter.	Chlorides.	Iron.
1	20 grammes to gallon	Good	Trace	Trace	None	Trace
2	.....¹	Poor	Trace	Trace	None	Present
3	4 drachms to gallon	Good	None	Minute trace	None	None
4	Bulk CaO ²	....	....	.....	....	....

¹ Sample No. 4 purified by U. S. P. IX process.

² Quicklime sold by wholesale druggist.

TABLE A2.—COMMERCIAL AND PREPARED CALCIUM OXIDE.—*Continued.*

No.	Heavy metals.	Arsenic.	Calcium oxide.	Alkalinity of 118 mls. ³	Possible amt. ⁴	Remarks.
1	None	Minute trace	99.28%	22.1 mls N/1 V. S.	585.7 mls	C. P. CaO
2	None	Minute trace	81.87%	18.3 mls N/1 V. S.	482.8 mls	
3	None	None	74.82% ⁵	17.25 mls N/1 V. S.	346.3 mls	C. P. Ca(OH) ₂
4	....	0.002%	....	....	....	1 to 50,000 As ₂ O ₃

Table "A1" shows results of a chemical analysis of two prepared limes, one bulk quicklime sold by a wholesale druggist for the preparation of lime water, and this same quicklime purified by the U. S. P. IX process. One of these prepared limes is a chemically pure calcium oxide, assaying 99.28 percent absolute CaO. The other is chemically pure calcium hydroxide assaying 99.83 percent absolute Ca(OH)₂. It seems more feasible to market these preparations in the form of hydroxide since, upon mixing with water, solution will be sure to be effected, as is not entirely the case if the oxide does not slake. Another argument is that of safety; it has been reported that one of these tubes, containing calcium oxide, exploded spontaneously, causing serious injury to the drug clerk who was handling it.

Chlorides and iron were tested for, not because they are toxic substances but they are an index to the degree of purity of the product and the care used in the manufacture. The quicklime sold by the wholesaler, Sample No 4, in Table A, contained 0.002 percent As₂O₃ or 1 part in 50,000 of lime, but fortunately the arsenic present is not in a water-soluble state. The prepared limes contained only minute traces of arsenic.

The manufacturer's directions as to the use of these tubes insure a saturated solution as they will theoretically make about five times the directed quantity. The bulk quicklime, Sample No. 4, purified by the U. S. P. IX process, after purification contained no arsenic and made a lime water slightly below standard, showing that the rapidity of solution is dependent on the fineness of the powder and upon the amount of lime used in excess. This shows that pharmacists following the U. S. P. IX process should be sure to titrate the finished product.

TABLE B.—LIME WATER FROM COMMERCIAL AND PREPARED CALCIUM OXIDE.

No.	Foreign alk.	Chlorides.	Heat test.	50.0 mls expressed in mls N/10 V. S.				Ca(OH) ₂ .	Remarks.
				18 Hrs.	36 Hrs.	54 Hrs.	72 Hrs.		
1	Trace	None	Cloudy	21.6	23.2	23.2	....	0.171%	U. S. P.
2	None	None	Cloudy	15.4	17.2	18.4	18.4	0.136%	Not U. S. P.
3	None	None	Cloudy	....	22.4	....	....	0.166%	U. S. P.
4	....	....	....	....	....	....	....	....	....

The U. S. P. VIII directed that Calx be prepared from marble or the purest varieties of native calcium carbonate and to assay at least 90 percent CaO. The U. S. P. IX does not restrict the course but the lime should assay 95 percent CaO. Calx, from marble and oyster shells, are the purest varieties, being almost pure white and containing very little foreign alkalinity, while that from dolomites and limestones is gray in color, and contains iron, silica, aluminum, magnesium, occasionally manganese, and the foreign alkalinity sometimes is excessive.

The U. S. P. IX purification process under Liquor Calcis removes all the soluble objectionable substances, and those that do not dissolve in the purification process naturally will not dissolve in the lime water, insuring a pure product. An improvement in the procedure would be by several washings with cold water which would be imitating the conditions under which the lime water is to be made. One objection to the official purification process is, that each time lime water is to be

³ Total alkalinity of quantity directed for 118 mls.

⁴ Possible amount of 0.14% Ca(OH)₂ solution from quantity directed for 118 mls—ratio of excess.

⁵ Equivalent to 99.83% Ca(OH)₂.

prepared the procedure must be gone through with. It would be far better to prepare a large quantity of the magma at one time as suggested by F. W. Nitardy,⁵ or, still better, to dry the magma over a direct flame and then use the dry calcium hydroxide as needed.

Table B shows that the prepared limes make an official lime water on the first separation in about 18 hours.

TABLE C1.—LIME WATER TABLETS.

No.	Average weight.	Carbonates.	Chlorides.	Talcum.	Starch.	Sucrose.
1	0.722 gramme	Trace	None	0.0601 gramme	Present	None
2	0.320 gramme	Trace	None	0.0124 gramme	Present	None
3	0.419 gramme	Trace	None	0.0214 gramme	Present	None
4	0.442 gramme	Trace	None	0.003 gramme	None	0.134 gramme
5	0.755 gramme	Present	None	Present	Present	None

TABLE C2.—LIME WATER TABLETS.—Continued.

No.	Iron.	Heavy metals.	Arsenic as As ₂ O ₃ .	Ca(OH) ₂ .	Alkalinity of 118 mls. ¹	Possible amt. ²
1	Present	None	0.0012%	0.477 gramme	12.9 mls N/1 V. S.	339.4 mls
2	Present	None	0.0010%	0.726 gramme	19.6 mls N/1 V. S.	515.8 mls
3	Present	None	Minute trace	0.670 gramme	18.1 mls N/1 V. S.	476.3 mls
4	Present	None	None	0.781 gramme	21.1 mls N/1 V. S.	555.2 mls
5	Present	Minute trace	None	0.566 gramme	15.25 mls N/1 V. S.	404.3 mls

Table C1 and C2 show the analyses of lime water tablets. Starch is present in four of the five tablets; it is present to assist the disintegration of the tablet so that a maximum surface of the lime is exposed to the solvent action of the water. One tablet contained sucrose to increase the solubility of the lime. This is a poor procedure here since the percentage of calcium hydroxide in solution fluctuates to quite a degree so that the lime water from these tablets is liable to a greater variation than the official lime water. One tablet contained 0.0012 percent As₂O₃ and one contained 0.001 percent As₂O₃. The ratio of the excess of calcium hydroxide to the required amount varies between three to five times.

The lime water prepared from these tablets meets the pharmacopoeial requirements, except the lime water from the tablet containing sucrose, which makes a lime water that is too strong. But, the lime waters do not meet the pharmacopoeial requirement as to strength as soon as the manufacturers state. These tablets are intended for the extemporaneous preparation of lime water but it requires, in most cases, fifty-four hours' contact to saturate the water; therefore, lime water prepared from the tablets should not be used for at least three days. One manufacturer advertises to the druggist that his tablets may be used in the prescription department to make lime water extemporaneously. That manufacturer's tablets are sample No. 3 in Table C1 and Table C2 and the lime water from these tablets is sample No. 3 in Table D1 and D2.

TABLE D1.—LIME WATER FROM LIME WATER TABLETS.

No.	Foreign alk.	Chlorides.	Starch.	Sucrose.	Heat test.	Heavy metals.	Arsenic.
1	None	None	None	None	Cloudy	None	None
2	Trace	None	None	None	Cloudy	....	....
3	Trace	None	None	None	Cloudy	....	....
4	None	None	None	Trace	Cloudy	....	....
5	None	None	None	None	Cloudy	....	....

TABLE D2.—LIME WATER FROM LIME WATER TABLETS.—Continued.

50.0 mls expressed in mls N/10 V. S.

No.	18 Hrs.	36 Hrs.	54 Hrs.	72 Hrs.	250 Hrs.	Ca(OH) ₂ .	Remarks.
1	12.2	19.0	19.4	....	....	0.143%	U. S. P.
2	12.4	18.2	19.2	....	....	0.142%	U. S. P.
3	13.4	17.2	20.2	....	....	0.150%	U. S. P.
4	19.0	28.6	25.6	....	....	0.211%	Not U. S. P.
5	7.0	11.2	14.8	....	22.4	0.166%	U. S. P.

¹ See footnote 3, Table A2.² See footnote 4, Table A2.

Table E is the same as Table D², only the lime waters in this case were made one year after the lime waters in Table D². The bottles containing the tablets were opened once a month and then recorded. This table shows that the older the tablets are, the slower will be the saturation of the water.

TABLE E.—SAME AS TABLE D², MADE ONE YEAR LATER.
50.0 mls expressed in mls N/10 V. S.

No.	18 Hrs.	36 Hrs.	54 Hrs.	72 Hrs.	250 Hrs.	Ca(OH) ₂ .	Remarks.
1	7.6	12.6	17.0	....	21.0	0.155%	U. S. P.
2	15.3	17.4	20.6	....	23.0	0.170%	U. S. P.
3	3.4	7.8	12.0	....	21.5	0.159%	U. S. P.
4	14.8	25.2	25.8	....	21.8	0.161%	Not U. S. P. (54 hrs.)
5	....	....	....	....	....	....	Not re-run

Table F shows analyses of four lime waters purchased from retail drug stores, three of which meet the pharmacopoeial requirements. This is a small number of samples from which to form any idea as to the general quality of lime water sold, but since these samples were obtained from the best drug stores the results may be considered as being the average of the best.

TABLE F.—LIME WATERS PURCHASED AT RETAIL.

No.	Foreign alk.	Sucrose.	Chlorides.	Heat tests.	Heavy metals.	Arsenic.	Titration 50.0 mls in N/10.	Ca(OH) ₂ .	Remarks.
1	None	None	None	Cloudy	None	None	22.2	0.164%	U. S. P.
2	None	None	None	Cloudy	None	....	22.6	0.167%	U. S. P.
3	None	None	None	Cloudy	None	....	18.3	0.135%	Not U. S. P.
4	None	None	None	Cloudy	None	....	22.7	0.168%	U. S. P.

There are several methods of dispensing lime water that are noteworthy. One is Nitardy's double siphon method,⁶ which ensures a constant supply of lime water. The author modifies Nitardy's method by placing a test tube by the use of a one-hole rubber stopper over the delivery tip which prevents the formation of carbonate, thus preventing clouding the next portion of lime water drawn through. Another method is to use a tubulated bottle, drawing the lime water from directly above the lime. Another method is to have two stock bottles; the object is that while the lime water in one bottle is being allowed to settle, the lime water may be dispensed from the other bottle. One pharmacist filters lime water through a white filter into pint and quart bottles and then these are sold as required. Although this procedure is not countenanced by the Pharmacopoeia, it is not a bad method provided the lime water is sold before it begins to show traces of calcium carbonate. To determine how much lime was lost in standing after ten days off the lime, the following test was made:⁴

1. Filtered off lime and titrated — 44.85 mls = 0.1649 percent Ca(OH)₂w/v.
2. Filtered off lime and titrated after ten days — 43.90 mls = 0.1614 percent Ca(OH)₂w/v or a loss of 0.0035 gramme Ca(OH)₂ or 2.12 percent of the total amount present. The U. S. P. IX permits a variation of 17 percent of the total amount of calcium hydroxide merely through a change of temperature between 15 to 25 degrees C.

Rubber tubing on lime water siphons should be watched as the lime water will corrode the rubber tubing in about three months. Only pure gum tubing should be used, as the antimony in red rubber tubing is soluble in lime water.⁷

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COLUMBUS, OHIO,

August 10, 1918.

THE COMMERCIAL GROWING OF SOME EUROPEAN DRUGS IN MICHIGAN.*

BY E. L. WOODHAMS.¹

In farming operations, as in other lines, the unusual attracts attention. People from other parts of the country who pass through our farms remark that "they didn't suppose peppermint was raised on a farm—they supposed it 'just grew' somewhere." Yet to the local resident, city man or farmer, there is nothing unusual in mint farms—he has seen or heard of them all his life. Climate and opportunity have united to make Southern Michigan and Northern Indiana the home of mint culture. Yet we receive many letters every year from farmers all over the country, inquiring about mint raising; the unusual evidently appeals to them, too.

We presume that it was partly for the same reason that we were favorably inclined toward commercial drug growing, when our Assistant Superintendent, who had had several years of experience growing drugs in England, imported some belladonna and henbane seed and urged that we attempt the culture of these European drugs. We began work in the spring of 1911, so that we had had four seasons' experience with their culture in the Michigan climate before a scarcity appeared and stimulated interest in the domestic growing of these heretofore imported drugs. This experience was invaluable.

There would be but little interest in a report of the culture of these drug plants if all were clear sailing. The cultivation of belladonna and henbane on a commercial scale is, however, new to this locality, and we have found that factors enter into their culture here in Michigan which are unknown in England. Hence it occurred to us that mention of some of the difficulties encountered might be of interest.

The first trouble appeared when we attempted to secure seed of high purity and germination. What little could be supplied by American seedsmen was almost without exception worthless as regarded germination. We decided to raise our own seed, and after two or three seasons' experimentation we found we were able to produce seed of 100 percent purity and over 90 percent germination. This involved the careful selection of parent seed plants and the subsequent propagation of these particular strains, but it was well worth the trouble.

Considering the plant in the order of growth, we fully agree with other investigators that belladonna and henbane are even more subject to the attack of the

* Read before Scientific Section, A. Ph. A., Chicago Meeting, 1918.

¹ Superintendent "Mentha Plantation," A. M. Todd Company, Kalamazoo, Mich.

Colorado potato beetle than is their near relative, the potato plant itself. The beetle can be fought when the plants are young by means of the ordinary poisons, but poisons surely must not be used when the plant is approaching harvest. Then it becomes necessary to resort to the old-fashioned pan containing a little kerosene, and a stick. This is a rather tiresome procedure on a hot day. The potato beetle is unknown in the drug districts of England, unless it has been introduced very recently.

Another insect enemy is a tiny black "jumping flea beetle"—its scientific name I do not know—which voraciously attacks the plants almost under ground. If present in sufficient numbers a planting will be destroyed over night, and one might think the seed had failed to germinate, whereas it had sprouted and been eaten. It is very difficult to combat this pest, the use of new fields being the best remedy.

The newest insect to trouble the drug plants is the aphid, or potato louse, which according to our observations generally attacks the plants only in the greenhouse. But this year the Michigan Agricultural College has issued warning against this insect, as it is working on the potatoes throughout the State and it has troubled our drug plantations to some extent. Nicotine and "Black leaf 40" sprays are recommended by the College to control this pest, but we have not had any experience in killing it outdoors.

So much for the insect enemies of these drug plants—we have found that the proper use of insecticides, extremely heavy fertilization and clean fields in good tilth all help to give the plant a "running start" which aids greatly in the successful production of the drugs in question.

Another problem that confronted us was that of sufficient drying capacity to handle a commercial area. The first year that we had a large acreage of belladonna we were forced to use all the available shed room on our farm to dry the herb. The time consumed was over a month, as the weather was cool and rainy in the fall, consequently the color of many of the leaves was brown instead of green. We then planned and erected a steam-heated, electrically-lighted dry kiln, which consisted of four rooms or separate kilns which could be filled in rotation. This kiln had a drying area of over 40,000 sq. ft., and has since been extended. The temperature is kept constant by pressure regulators, and a system of ventilation is provided so that fresh hot air is passed through the herb continuously. The result is that the herb is in the kiln and the drying process begun before the plant has even wilted; and the finished product can be baled and enclosed in heavy cardboard cartons within 48 hours or less from the time it is growing in the field. The color is as perfect as it was in the field, and we feel sure that the darkness during drying, as well as the rapidity with which the material is handled, prevents the enzyme action which is supposed to cause the discoloration of the herb so noticeable in slowly dried leaves.

There is one other difficulty which we have encountered, of as much interest to the consumer as to ourselves. We refer to the extreme difficulty of securing comparable analyses, which are necessary if the buyer and seller are to agree. We have endeavored to investigate this matter very thoroughly, both for the protection of our customers and for our own satisfaction, and we may briefly summarize our findings as follows:

We believe that the prime cause of the discrepancies in analyses, which seem to occur even when the very best chemists are employed, is *not* in the slight difference in methods, nor in the technique of the analysts, but almost wholly in the method of selection of the sample from the bulk goods which it is to represent.

First taking the case of foreign drugs—they are imported in large bales of about 400 pounds, I believe; these are *for the most part not* cultivated plants, but are “weeds” as we would say in this country. The peasants in certain districts gather them and sell to dealers, who in turn may resell them, so that when the bale is finally exported from Europe it may contain leaves in all stages of growth from thousands of different individual plants grown under various soil and climatic conditions. Add to these the usual amount of chicken feathers, sunflower seeds, dirt, weeds and even adulterants found in the foreign drugs, and you will have some idea of the difficulty of securing a fair sample. The very thorough work of Dr. W. W. Stockberger and Mr. Arthur Sievers, of the Department of Agriculture, has shown that each belladonna plant has an alkaloidal content peculiar to that plant and that this peculiarity is largely transmitted to its descendants, so that the individual plants may vary from 0.10 percent to over 1.00 percent alkaloids. So it may readily be seen that the analyst, although trying as honestly as he can to secure a fair sample, may secure four different results from as many parts of a bale. In fact, one of the largest drug firms in the United States recently told us of having exactly this experience. The only fair way to do is to mill the whole bale, which is hardly practicable unless the bale has been purchased.

Turning to the domestic product, we find the problem much easier. In the first place, all plants are grown in one place at the same time, so that the stage of growth is practically uniform. In our work the seed that we use has been bred up from a very few plants of known origin in which the alkaloidal content is equal to or higher than the U. S. P. requirements. As regards dirt and foreign matter in the product, we try to keep our fields absolutely clean and free from weeds, and in addition the plants are cut singly by hand, thus eliminating any weeds that are hidden under the plants. When the herb arrives at the kiln from the field it is inspected and all dirty or discolored leaves sorted out.

Then you may inquire, “If all the factors which make the foreign bale variable have been taken care of, why not take a sample at random, say 4 ounces, from the 50-pound bale and assume that this will be the average of the bale?”

There is, however, one other factor present in both the foreign and domestic product which we did not mention in the discussion of the foreign bale, as in that case it was overshadowed by the other variables; but in our domestic product, which may be homogeneous in other ways, it assumes a position of paramount importance in the selection of a fair sample. This factor is the variation in the percentage of alkaloid present in various parts of any individual plant.

We have the analysis of a complete henbane plant as follows:

The flowering tops comprising 8% of the weight of the plant.....	0.135% alk.
Large leaves on main stem comprising 18½% of the weight of the plant....	0.113% alk.
Small branchlets and leaves comprising 41% of the weight of the plant....	0.123% alk.
Stalks and coarse leaves comprising 32½% of the weight of the plant.....	0.102% alk.

This particular plant was almost double the U. S. P. requirements, but still greater differences have been found between the various parts of plants in other instances, but this instance shows the possibility of inaccurate results should a small sample be taken from a large bale, in case the chemist selected more than the correct proportion of any part of the plant.

We have adopted the following method as giving the fairest result and have used it satisfactorily during the past year: Suppose 1000 pounds from one field is harvested at one time; this is dried and placed in bins where it is thoroughly and carefully mixed until it is uniform. Next, 20 bales of 50 pounds each are pressed; a whole bale is then taken at random from the 20, milled and analyzed. This analysis is then rightfully assumed to show the content of the 1000-pound lot in question. This method is the only one that we have been able to devise which is fair to buyer and seller and which will allow comparable assays.

As to the future of the commercial drug growing industry in this country, we believe one man's guess is as good as another's. There are so many factors entering into the proposition, due to and arising from war conditions, that we really do not have a very firm opinion as to the outcome. We do not believe the small farmer will ever go into the drug business extensively—it requires too much capital for dry kilns and equipment, much more of an investment, for instance, than is required to distil mint. The small farmer is loath to enter a new field. As regards the small "back yard" grower, we do not believe he will ever grow enough to affect the market. The supply then, if raised in this country after conditions are normal, must come from the farms of pharmaceutical houses that are vitally interested in the production of good drugs or from the farms of the large growers who have sufficient land and equipment to warrant the continuance of the industry.

This brings us to the question of whether, after the war, the American drug houses will be content to go back to the pre-war quality of European shipments or whether they will demand the high quality drugs that they themselves have been raising on their experimental farms and such as the American growers have shown them can be successfully produced in this country under laboratory control. If American drug houses want "quality," the American drug industry will, we believe, survive after the war.

Addenda—June, 1919.

Since the above paper was submitted, the war has ended and a slight extension may be considered in order.

The European drugs which were imported previous to 1914, were, according to our best information, largely gathered by the peasants in Austria and Russia in a very crude way. Very little was done in Europe in the way of scientific cultivation except in England where several firms maintained small acreages of belladonna and henbane. These two drugs also grew wild in England and were gathered. England seldom, if ever, had a surplus to export—in fact, continental herb was sold in large amounts in England.

We firmly believe that the United States could compete in cost of production with their European competitors, despite the lower standard of living, if the competition were on an equality basis. However it is not possible to compete if

the European product is, in the future as in the past, to be simply "gathered" from waste places where there is no more production expense than there would be in this country in the gathering of rag-weed along the roadside.

Drug houses of the highest class, who aim to use the very best raw materials that the market affords, will doubtless be as anxious to continue the use of the higher grade American products as the American growers are to supply them. Other firms who desire the foreign drugs because they are cheaper, may not be interested in seeing the American industry protected. It is certain that the cultivated drug cannot be raised in this country as cheaply as the foreign wild drug can be gathered.

The Senate Committee is at present holding hearings covering this phase of the question, and it is the writer's opinion that if a moderate duty is placed on the importation of foreign drugs, sufficient to allow the high grade American *cultivated* herb to withstand the competition of the *wild, uncultivated* European herb, then the American drug industry can survive.

AN EXPERIMENT WITH COMPOUND TINCTURE OF BENZOIN.*

BY J. C. AND B. L. DEG. PEACOCK.

This paper is entitled "An Experiment on Compound Tincture of Benzoin" because it does not essay to be an exhaustive study. The experiment is limited to a single use of this renowned remedy. Indeed a study of any one of its ingredients must appear to be a life's work to those who read the descriptions of these drugs and the tables of their contents. There is, however, an aspect of similarity between the constituents of two of the ingredients, tolu and storax, which, although not the reason for this paper, did tend to make the subject more worthy of consideration. The report that no true storax was to be had at any price suggested the experiment; and as the pharmaceutical use of storax is chiefly for preparing Compound Tincture of Benzoin, the idea occurred to compare it with tolu under the conditions to be described.

The addition of compound tincture of benzoin to boiling water and the use of the vapor therefrom to treat the throat in certain conditions is the circumstance under which we experiment. This matter perhaps seems too well known to even bear mention. But, strange to say, like so many of the simple things, the exact products of this process do not appear to have been reported in the pharmaceutical lore of this "old-timer." Instead it appears to have been presumed that he who knows what is in the ingredients infers from their nature that certain substances pass off with the steam, and being carried by it to the throat have their effect. The writers have been unable to find any reference to the vapor having been examined, and realizing that it would be of interest to learn more of the matter, especially as regarded the necessity for storax, they sought to examine the vapor, by imitating the conditions under which the treatment is applied, through the use of a retort and condenser.

Accordingly, a half teaspoonful of Compound Tincture of Benzoin was poured into a pint retort half full of boiling water, and as would be expected, an intense

* Read before the Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.

demonstration of activity, due to the dissipation of the alcohol, immediately took place. The retort was closed without delay and the boiling continued. The distillate was collected in fractions of about one ounce, in order to observe the progress of the process. Seven such fractions were thus taken. The fractions were all colorless, although they displayed a slight turbidity due to an oily scum which floated throughout. The fractions remained turbid upon standing for several days. The distillate in all its parts showed an acid reaction to litmus, but the cause of the turbidity was also an interference with the effect on litmus paper, retarding it very perceptibly. The degree of acidity did not exceed in indications one-sixth grain of benzoic acid per fluidounce of distillate. The proportion of acidity appeared to be uniform throughout the series of fractions. The odor of the fractions varied to some extent but were true to their source. The taste of the fractions was likewise suggestive of the origin.

Although the residue in the retort is not a specific object of the experiments, attention to it at this stage was believed to be warranted. The marked acidity of this fluid established the fact that the total acidity of the ingredients is by no means wholly volatilized by the process, even in the time required to conduct this distillation—a period much longer than the most faithful patient would consent to devote to a single treatment. Thus are the commonly directed proportions of “one teaspoonful to be added to a pint of boiling water” shown to be sufficient and more but a waste of the tincture.

In order now to get a better knowledge of what would be obtained from a considerable volume of the compound tincture of benzoin so distilled with water, the solid ingredients required for 100 mils were placed in a retort with 250 mils of water and a distillation conducted as before. The fractions had odors which varied but always reminding of the ingredients. They all had warm pungent tastes. They were without exception colorless and transparent; acid to litmus, apparently uniformly so as to strength; and in each floated small droplets of a fluid substance, or flattened areas of the same appeared upon the surface. The amount of the total yield of this substance from the quantities representing 100 mils was approximated at less than 0.5 mil (8 minims). The proportion of this substance to the condensed liquid ran the same in all of the fractions.

Attempts at separating it from the aqueous portion by inducing coalescence of the droplets failed, it is believed, only because of the small amount of the substance, so recourse was had to the use of ether with the hope that this substance and any benzoic and cinnamic acids present in the aqueous portions of the distillates might all be removed and made available for further examination. Upon evaporation the ether solution left a residue which was recrystallized from alcohol, in which it was found to be readily soluble. This treatment yielded a mixture composed of the pale amber-colored oily substance and small, white, granular crystals. The odor of the distillates was still recognizable in this residue. The first portion of ether so applied carried the oily liquid into solution to a certain extent, dependent upon a selective solvent effect which it exercised, but not in its entirety, a fact proven by the presence of numerous droplets which remained as the undissolved portion of the original droplets, even after a second treatment with ether, while the residue from the second ether showed white, granular crystals and but little other substance.

Chloroform had the same solvent effect upon this residue of the droplets as did ether. The mixture of the oily and granular substances was treated with very dilute solution of sodium hydroxide to remove any benzoic acid which might be present. The effect of this solvent on the oily portion of the residue was to cause it to assume a buttery consistency. Cold water produced the same effect and warmth restored the oily globules. When this buttery material was heated with a five percent solution of sodium hydroxide it became fluid but did not dissolve.

The granular crystals gave reactions for both benzoic and cinnamic acids; the former seemed to be present in larger quantity.

Attention was now turned to the ingredients as individuals, and each of them was distilled with 250 mls of water, using the quantity of drug which would be needed to make 100 mls of compound tincture of benzoin, this plan serving to compare them not only with the latter but also with each other. Again, to observe any irregularity in the progress of the treatment, the distillates were collected in fractions, and it is noteworthy that the fractions from the same ingredients were invariably uniform throughout the series. Likewise, the distillates were all colorless, while the odors and tastes were characteristic of the sources.

Ten grammes of benzoin, when distilled as described, gave a distillate having a whitish opalescence when first received, but after a few hours showed a slight sediment of white, dust-like powder. The liquid reddened litmus; and after one of the fractions had been neutralized with solution of sodium hydroxide it showed benzoic acid in slight amount compared to reasonable expectation.

Two grammes of aloes treated in the same manner gave a transparent distillate in which floated a trifling amount of scum. The substance of which it was composed seemed to agglutinate upon agitation, but the quantity was too minute for further examination. The distillate remained clear upon standing. Litmus was not affected by it.

When 4 grammes of tolu were subjected to the same process a distillate with a milky opalescence was obtained, the cause of which was the presence of a substance that in the main floated upon the surface of the liquid in distended droplets, although upon standing it became transparent through the coalescence of the minute droplets into globules of sufficient size to admit of this result. These globules were colorless or very pale amber-colored. Warmth and quiet did not promote coalescence, but tended to increase the layer floating upon the surface, while contact with ice clouded the distillate made transparent by standing, presumably through excluding some or all of the substance with which the water was saturated. The reaction of this distillate was acid to litmus. The test for benzoic acid showed but a faint indication of its presence.

Eight grammes of storax were next distilled. The distillate as received from the cool condenser showed a small quantity of a white, tissue-like scum which upon the slightest agitation broke up into feathery forms, and immediately passed into droplets of an oily substance, mainly floating upon the surface. The properties of these droplets were strikingly similar to those from tolu except in odor. The quantity of them in this experiment was approximately the same as that from the tolu, although in percentage quantity it was but half what tolu yielded. The effect of heat and cold on this distillate resembled in all respects the behavior shown by the distillate from tolu. Except for the scum this distillate was trans-

parent when obtained, and it remained so upon standing, as did the distillate from tolu. It was neutral to litmus, and tests showed no benzoic acid.

These experiments demonstrate in a practical manner, for the valuation of the idea being considered, that there is a remarkable similarity (identity is not asserted) in the products of a steam vapor from tolu and storax; also that tolu yields twice as much of these products as does storax. Again, steam volatilizes a certain proportion of the constituents of both substances, as well as of benzoin, but does not nearly exhaust any of them in the time that would be devoted to the treatment. The final result must be essentially the same whether the tincture is added to boiling water or to cold water, and this brought to boiling.

And let us add just a few words here as to actual requirements of temperature for the mixture of tincture and water, regardless of utensils, of which there are many kinds. It is necessary to have at least a slight ebullition observable in the mixture to insure sufficient velocity in the ascending vapor to properly carry it back into the throat. Less than that affords but warmth, and not the reassuring impact of vapor which is had from a boiling liquid. Nor is there any position quite so favorable as that of bending over a column of vapor, rising vertically, so as to bring it into right angled contact with the back wall of the throat.

In drawing conclusions it will be well to review the findings. As will be recalled, the ingredients of 100 mils of compound tincture of benzoin (twenty times the quantity usually prescribed for the purpose) gave but minute amounts of any or all of these volatile substances. The aloes, having supplied but its odor, and nothing of worth, may surely be omitted without loss of activity. Benzoin, under the conditions, furnishes little, if anything, besides a very small amount of benzoic acid; storax yields no benzoic acid but does supply the oily substance hereinbefore described; tolu gives but a trace of benzoic acid, but twice as much of a similar oily substance as does storax. Except for the fact that benzoin furnishes a larger proportion of benzoic acid than does tolu it might also be omitted. Consequently, though this treatment be used for the medication contained in the vapor, as well as for the avowed effect of the steam, it would now seem unnecessary to include the storax; and even if there is the necessity for conserving it, which arises because of its scarcity in the market, such does not appear to be the only reason it may be permanently left out of this treatment, and compound tincture of benzoin reserved for other uses.

The following formulas are capable of furnishing products similar to those obtained from compound tincture of benzoin:

Tincture of benzoin.....	2.5 mils
Tincture tolu.....	2.0 mils
Alcohol.....	0.5 mils

Mix them to make.....5.0 mils

to be used in place of the same volume of Compound Tincture of Benzoin. This formula, in the accustomed quantity, seems worthy of trial.

Another formula that will suggest itself, because it is the same as the foregoing, but minus the alcohol, is:

Benzoin, in coarse powder.....	0.5 gramme
Tolu, in small fragments.....	0.4 gramme

Mix. Use as the equivalent of 5 mils of the tincture of benzoin and tolu just described.

At first sight it might seem wasteful to use the alcohol which, from observation, is volatilized the instant it touches the boiling water. But the alcohol serves a purpose in distributing the materials upon the water that must not be overlooked; for when the solids are used without previous solution the benzoin and tolu soon become adherent to the sides of the vessel, and, to appearances at least, are protected to a large extent from the action of the boiling water.

Following thought through the channels which lead to the use of active principles in place of simples, we find ourselves confronted by the possibilities in the combination of:

Benzoic acid.....	0.63 gramme
Tolu.....	4.00 grammes

Mix and use as equivalent of either formula.

The amount of benzoic acid is based on the official requirements of 12.5 percent in benzoin from any source.

And as a final alternative, tincture of tolu in quantity equal to the commonly used compound tincture of benzoin is believed by the writers to be quite as suitable for the purpose, for it supplies a sufficiency of the oily substance, and being a 20 percent tincture, in this proportion very likely furnishes as much benzoic acid as would the 10 percent of benzoin in an equal volume of the compound tincture.

THE STATUS OF ALCOHOL LEGISLATION.

The exemptions named under the Volstead (Internal Revenue) bill relate to:

Denatured alcohol or denatured rum produced and used as provided by existing laws and regulations.

Medicinal preparations manufactured in accordance with formulas prescribed by the United States Pharmacopoeia or National Formulary or the American Institute of Homeopathy that are non-potable and incapable of being used for beverage purposes.

Patented and proprietary medicines that are non-potable and incapable of being used for beverage purposes.

Toilet, medicinal and antiseptic preparations and solutions that are non-potable and incapable of being used for beverage purposes, contained in bottles or packages, upon which are printed conspicuously and legibly in English the quantity by volume of alcohol in such preparation.

Flavoring extracts for use only in cooking and for culinary purposes that are non-potable and incapable of being used for beverage purposes.

The Oil, Paint and Drug Reporter draws these deductions from the hearings and expressions:

That despite the surety that insofar as it relates to the manufacture and use of intoxicating liquors the prohibition law will be enforced, every provision will be made for the protection of the legitimate user of industrial alcohol, and for the punishment of the illicit user and nostrum faker.

That the enforcing officers, the Internal Revenue Bureau, not only stands ready to assist the industries of the country in securing supplies of industrial alcohol, but in enlarging the scope of its present uses.

Deputy Commissioner Gaylord voiced the attitude of his associates when, in closing the hearing, he said:

"I do not think anybody can foresee how great is the importance of providing an unlimited supply of cheap alcohol for the industries of the United States. There has already been made an alcohol fuel which, if it can be made sufficiently cheap, will provide an adequate substitute for gasoline, for coal, and for any other fuel. The problem is, 'What can American chemists do with alcohol?' They have already done much, and either have developed or are developing such new things in connection with alcohol that I do not think it is overoptimistic to expect that almost anything may be developed either in the line of fuel or as a material for an almost unlimited variety of industries."

Mr. Crounse epitomized the importance of alcohol when he said: "Alcohol occupies a tremendously important position in the industries of the country. If I were to say that it is as important industrially as pig iron I do not think the statement would be extravagant."

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

THE NARCOTIC LAW TROUBLE.

BY DR. A. R. L. DOHME, Baltimore.

Contribution of Committee on Local Branches for reading and discussion at the May meetings. Ivor Griffith, *Chairman*.

The abuse of narcotics commonly known as the "Drug Habit" has been for many years, and is to-day, the most insidious and dangerous vice existing in the world. Immorality, alcoholism and cigarettes are all three very bad vices and habits and have caused and are causing much domestic trouble and unhappiness and, as well, undermining the health of the people, but none of these three destroy moral fibre and destroy character to the extent that does the abuse of narcotics.

Immorality, or vice, as it is commonly called, breaks up homes and spreads disease; alcoholism disturbs the peace of communities and causes want and suffering and sorrow in homes; cigarettes cause early deaths and indolence, as well as inefficiency; but the narcotic habit destroys self-control, moral fibre and character, as well as undermines health. Those who have studied all these vices and bad habits will agree that the drug habit is the worst, both in its effect upon the individual and upon the community.

The move to enact the Harrison anti-narcotic law had its origin with the drug trade and its enactment into a federal law was made possible by the National Drug Trade Conference, who persisted for over two years and finally succeeded in securing its passage. Unfortunately, as we know now, its execution was placed in the wrong hands and that has been the cause of all the trouble with its success in preventing the continued securing of narcotic drugs by the unfortunate habitues who are slaves to these drugs such as morphine, opium, laudanum, cocaine, codeine, etc. Ample provision is made in the law to control the securing of these drugs and to plug up the

channels by which it gets through the meshes of the sieve intended to keep it from reaching the habitues. The trouble has been that the law has not been enforced by the Government, and the reason the law has not been enforced is that it was put into the hands of the Internal Revenue Department, when the law is not a revenue, but a health measure. Every one who imports, manufactures, jobs, retails or dispenses any narcotic drug must keep accurate and complete files of every order he receives for said goods, made on the numbered and registered order blanks issued for that purpose by the Federal Government. This accumulation of these order blanks has been going on for some years, but they are seldom made use of and inspected by the inspectors of the Internal Revenue Department and in consequence the users and buyers of abnormal quantities of narcotic drugs are not traced up and apprehended. This is in my opinion due to the fact that the anti-narcotic law produces no revenue to speak of and should not, since it is not a revenue measure. In consequence the Internal Revenue Department is not especially interested in the law or in its enforcement, because if properly enforced it would require the expenditure of much more money than it produces. This would produce a deficit in the Internal Revenue Department for this law and no collector of revenue feels justified in producing deficits and probably correctly and naturally so. The fault is hence not really his own, but should rather be put upon the shoulders of those that enacted the law, the joint responsibility for which would probably belong to Congress and the National Drug Trade Conference. There was, however, a condition at the time of the law's enactment which excuses this blame. We all realized at the time that there was grave doubt whether the law would be passed at all because it was not a revenue measure, although referred to the revenue department for en-

forcement. There was, however, no other agency of the Government at that time to which it could be referred and the analogy with the alcohol law caused it to be referred for enforcement to the revenue department. Alcohol regulation, while it is also a health measure, is, however, primarily a revenue measure; in fact, one of the largest revenue producers of the Federal Government. Since that time, however, another department of the Government has developed and grown into prominence—the Public Health Department, over which Surgeon General Blue presides. This department has the facilities and as well the interest to properly enforce the anti-narcotic law and besides these has obtained the prominence and importance to make it one of the important federal departments.

The solution of the narcotic trouble, therefore, appears to be the amendment of the Harrison anti-Narcotic Act, known as the Act of Congress approved December 17, 1914, to the effect that its enforcement shall be placed in the hands of the Public Health Department and taken from the hands of the Internal Revenue Department. Then the study and following up of the record of sales of these narcotic drugs would be thoroughly and continuously done and the loop-holes through which the narcotic drugs now escape detection and reach the habitue would be gradually and effectively closed and eliminated.

CINCINNATI.

The Cincinnati Branch of the American Pharmaceutical Association held its monthly meeting in connection with the Ohio Branch of the National Pharmaceutical Association at the new Y. M. C. A. building, Tuesday evening, April 22nd. About sixty covers were laid, and the members and friends spent a very enjoyable and instructive evening.

After Secretary Charles A. Apmeyer had given a résumé of the activities of the Association for the previous year, which report was duly approved, President Louis Werner introduced the speakers of the evening.

Professor E. Fullerton Cook, of Philadelphia, who was to have spoken on "Pharmaceutical Service," was unable to be present; he had, however, telegraphed his regrets and mailed his paper, which was read by Dr. Frank Cain.

The next speaker, Dr. Charles T. Souther, M. C., U. S. A., with Evacuation Hospital at

St. Mihiel Sector, France, and Base Hospital 25, Allevey, France, Hospital Center with 20,000 beds, spoke on "Medical and Pharmaceutical Work in the Army and Navy," giving such a graphic and realistic account that his interested auditors could feel and almost see the splendid accomplishments performed by the medical and pharmaceutical forces in their dangerous positions.

Edward A. Lehr, Ph.G., of the 330th Division of the Medical Corps, U. S. A., chose as the title for his discourse, "The Druggist in the Army." He deplored the non-recognition of pharmacists in the service with regard to rank, and praised the uncomplaining sacrifices made in the performance of their duties on behalf of their country.

The Secretary of the Ohio State Pharmaceutical Association, Theodore D. Wetterstroem, told in a unique way of the activities of the Ohio legislative body, mentioning especially those measures affecting the drug trade which have become laws during this session. Over 713 bills were introduced—150 passed.

A message from President Charles H. LaWall, of the American Pharmaceutical Association, was read and also a contribution from President George M. Beringer, of the National Pharmaceutical Service Association.

We had the pleasure of the presence of Professor Edward Kremers, of the University of Wisconsin, who was the honored guest of Dr. John Uri Lloyd.

CHARLES A. APMEYER,
Secretary.

CUBA.

The Cuban Branch of the American Pharmaceutical Association held a meeting at the Academy of Sciences of Havana on Saturday, April 19th, at 2 o'clock.

Dr. Eduardo Garcia Faundo, as provisional President, called the meeting to order. Dr. José P. Alacán, Secretary, read the minutes of the last meeting, which were approved.

This being the meeting for the election of officers, the following were elected:

President, Dr. José P. Alacán.

First Vice-President, Dr. Gerardo Fernandez Abreu.

Second Vice-President, Dr. Rogelio H. Ramirez.

Third Vice-President, Dr. Alvaro Porro.

Secretary and Treasurer, Dr. Felipe de Pazos.

The following members were present: Dr. Garcia Faundo, Dr. Goltz, Dr. Luisa Calonge, Dr. Sylvia C. Alacán, Dr. Ortiz, Dr. Herrera, Dr. Varela and Dr. José P. Alacán, Secretary.

JOSÉ P. ALACÁN,
Secretary.

PHILADELPHIA.

The regular monthly meeting of the Philadelphia Branch of the American Pharmaceutical Association was held at the Philadelphia College of Pharmacy, Tuesday evening, May 27, 1919, President Griffith occupying the chair.

The business of the meeting was dispensed with until after the end of the principal address on account of the other engagements of the speaker. The subject of the address was "Conditions on the Italian Front," by Lt. Colonel C. P. Franklin, of the U. S. Ambulance Service, with the Italian Army. Colonel Franklin gave a very comprehensive résumé of the activities on the Italian front, emphasizing the wonderful fighting qualities of the Italians. He contributed a number of the unfavorable impressions concerning the Italians as a part of clever German propaganda. Dr. Franklin illustrated the Italian problems in an entirely different light, and all present were well repaid after listening to the story of the wonderful achievements in the Alpine battlefields.

Before leaving for another engagement Colonel Franklin was given a rising vote of thanks. The business of the meeting then proceeded with the reading of the minutes of the last meeting, which were approved. The names of fourteen new members were proposed and were duly elected. The "Four-Minute Paper" was read by the Secretary and was contributed by Dr. A. R. L. Dohme, of Baltimore, on the subject, "The Narcotic Law Trouble." Dr. Dohme called attention to the mistake in having the Harrison Narcotic Law enforcement in the hands of the Revenue Department instead of the Public Health Service. Upon the suggestion of Mr. Hunsberger, the Secretary was instructed to communicate with Dr. Dohme, asking for some definite plan by which to overcome the present difficulties in getting proper police powers for the Federal Government when interstate commerce was not actually concerned.

A "Prescription Clinic" followed. The discussion was led by Adley Nichols, P. D., who presented several interesting incompatibilities. Further discussion followed by Messrs. Hunsberger, Cliffe, Lowe, Griffith, Harrison, Apple, Ehman, Glass and Friedman.

A motion of adjournment was made to meet again in September. There were approximately fifty persons present.

ELMER H. HESSLER,
Secretary.

CORRESPONDENCE

UNITED STATES PHARMACOPOEIAL CONVENTION OF 1920.

Article VIII, Chapter I of the By-Laws of the United States Pharmacopoeial Convention provides that the President:

"Shall issue, on or about the first of May of the year immediately preceding that of the decennial meeting, a notice inviting the several bodies, entitled under the Constitution to representation therein, to send delegates to the next meeting. He shall repeat the notification, eight months later, and shall request the medical and pharmaceutical journals of the United States to publish the call for said meeting."

Article II of the Constitution provides:

"The members of the United States Pharmacopoeial Convention, in addition to the Incorporators and their associates, shall be delegates elected by the following organizations in the manner they shall respectively provide: Incorporated Medical Colleges, and Medical Schools connected with Incorporated Colleges and Universities; Incorporated Colleges of Pharmacy, and Pharmaceutical Schools connected with Incorporated Universities; Incorporated State Medical Associations; Incorporated State Pharmaceutical Associations; the American Medical Association, and the American Chemical Society; provided that no such organization shall be entitled to representation unless it shall have been incorporated within and shall have been in continuous operation in the United States for at least five years before the time fixed for the decennial meeting of this corporation."

Section II of the Constitution provides:

"Delegates appointed by the Surgeon General of the United States Army, the Surgeon General of the United States Navy, and the Surgeon General of the United States Marine-Hos-

pital Service, the Secretary of Agriculture, the Secretary of Commerce and Labor, the Association of Official Agricultural Chemists, the Association of State and National Food and Dairy Departments, the National Wholesale Druggists' Association, and the National Dental Association, and by the organizations not hereinbefore named which were admitted to representation in the Convention of 1900, shall also be members of the corporation. Each body and each branch of the United States Government above mentioned shall be entitled to send three delegates to the meetings of this corporation. But no such delegates as are provided for in this article shall be members until their credentials shall have been examined and acted upon as provided for by the By-Laws."

In the discharge of the above required duties, I hereby ask all competent and designated bodies and authorities to name and issue credentials to the fixed number of delegates to the tenth decennial Convention to meet in Washington, D. C., on the second Tuesday of May, 1920, at 10 o'clock A.M. at a hall to be designated hereafter. The appointed delegates are requested to promptly forward their credentials to Noble P. Barnes, M.D., The Arlington Hotel, Washington, D. C., assistant Secretary of the Convention, who will file them for consideration of the Committee on Credentials which will be appointed by the President not later than March first, 1920, according to the requirements Chapter VII, Article I of the By-Laws.

Done at Washington, D. C., May 5, 1919.

HARVEY W. WILEY,

President of the United States Pharmacopoeial Convention.

FEDERATION OF AMERICAN PHARMACY.

The Federation Committee of the American Pharmaceutical Association, H. V. Army, chairman, has issued the following bulletins during the year. All of the State Pharmaceutical Associations have received copies and they have been made subjects for discussions at the annual conventions.

BULLETIN NO. 1.

The foremost topic of discussion at the Chicago meeting of the American Pharmaceutical Association was Pharmaceutical federation. This idea, first enunciated by H. P. Hynson, elaborated by F. J. Wulling in his presidential address of 1917, and presented in a tangible form by President Dohme, was the subject of careful consideration, and the decision arrived at, while not as comprehensive as the more sanguine friends of federation desired, is at least a long step forward and gives promise of greater progress in the future.

The Dohme plan, it will be recalled, included a federation of national pharmaceutical bodies and of State associations in a reorganized house of delegates and a council of the American Pharmaceutical Association. In addition there was planned a central board of control of three salaried officers to look after (a) editorial, (b) legislative, and (c) chemical research activities that the new greater body would conduct for the good of American pharmacy, a term meant to include every phase of pharmaceutical activity.

On August tenth a conference of the national drug associations was held to consider federation, and at this meeting a decision was reached that at this time and as far as national drug associations were concerned federated pharmacy could be best accomplished by extending the scope of the National Drug Trade Conference even to the extent of admitting the National Association of Boards of Pharmacy and the American Conference of Pharmaceutical Faculties. This tangible federation of national drug bodies was immediately followed by an agreement on the part of all delegates present that another federation conference should be held on the Saturday prior to the 1919 meeting of the American Pharmaceutical Association.

BULLETIN NO. 2.

The idea of federation of State pharmaceutical associations was pushed forward at the Chicago meeting of the American Pharmaceutical Association by the enlargement of the scope and functions of the A. Ph. A. house of delegates, which, as now agreed upon, is to consist of delegates from State associations, who can vote, however, only if members of the American Pharmaceutical Association. An important forward step was the formulation of an arrangement whereby a combined State and A. Ph. A. membership may be obtained for one fee.

As the federation plan now stands, two of the three principles of union as enunciated by former President Dohme are now well along the way of accomplishment. The two, however, need a connecting link in the shape of service features, a bond that will bind together the common

interests of national and State associations. The Dohme idea of a board of control was held in abeyance chiefly because the magnitude of the task is such as calls for careful rather than hasty consideration. That some sort of service features should obtain is, however, apparent to all, and the choice of kinds will be the task of the A. Ph. A. federation committee during the coming year.

BULLETIN NO. 3.

How can American Pharmacy be federated along the lines of mutual service? What simple type of federated service might be brought into being with the least disturbance of existing organizations? One type should deal with legislation. The Drug Trade Conference should appoint as an advisory committee the chairmen of the legislative committees of each State pharmaceutical association.

Another type of coöperation should be the federation of the research committees of the national associations, possibly with an advisory committee consisting of the chairmen of the committees on papers and queries of each State pharmaceutical association. And lastly there should be a federated committee on publicity. This is the most crying need of American pharmacy. We have talked a great deal about the remarkable influence of the American Medical Association, and on analysis we find that the cause of its power is publicity. We have wondered at the remarkable achievement of the American Chemical Society in developing public opinion to the extent of establishing a chemical corps in the Army, and when we seek the main factor of success we find publicity.

We pharmacists ask ourselves why the Edmonds' bill does not pass; why the will of one man in the Medical Corps thwarts the efforts of thousands of pharmacists; why the chemical corps gets credit for pharmaceutical work done by a pharmacist in the corps, and our answer is lack of publicity.

A federated committee with funds sufficient to conduct the work of furnishing the daily press with news items relating to pharmaceutical progress is essential if American pharmacy is to come into its own, and the creation of such a committee would be the most practical step toward the federation of pharmaceutical bodies.

BULLETIN NO. 4.

In the preceding talk on Federation, mention was made of the possible formulation of an arrangement whereby a combined State Association and A. Ph. A. membership could be obtained for one fee. This will be accomplished if the individual associations approve of the advantageous plan suggested at the Chicago meeting of the American Pharmaceutical Association and which, after discussion, was referred to the State Associations for discussion at their annual meetings of 1919. The idea is embodied in a proposed amendment to an A. Ph. A. by-law, which, if adopted, will offer membership in the A. Ph. A. at \$3.00 per annum, to State Association members, "if the number of members of the American Pharmaceutical Association, who are members in good standing of any State Association shall equal 100 per centum of the actual number of members of such a State Association." (See JOURNAL OF THE A. PH. A., October 1919, pages 883 and 909.)

This proposition is worthy of the careful consideration of every pharmacist having the welfare of his State Association close at heart.

BULLETIN NO. 5.

The proposition outlined in the preceding "Federation Talk" offers State Associations club rates in American Pharmaceutical Association membership. It means that if the plan is carried out, the association will furnish its two great publications, the JOURNAL of about 1100 pages and the Year Book of about 500 pages, to State Association members at a remarkably low figure. To non-members, each of these publications costs \$4.00 a year, making a total cost of \$8.00; to its present regular membership, the two are furnished for the annual dues of \$5.00; and now the proposition is to furnish these volumes to members of State Associations (on a 100 per cent. membership basis) for \$3.00 a year.

In the average State Association, the annual dues are \$2.00. For this, the member gets the splendid legislative protection offered by all live State Associations; the opportunity for exchange of views at the annual conventions and the annual Proceedings, constituting an attractive volume filled with good material.

If the "club rate" suggested by the American Pharmaceutical Association goes into effect, for \$5.00 a year the State Association member will obtain all of the advantages gained at present from his \$2.00 dues, and in addition the two publications, the JOURNAL and the Year Book of

the A. Ph. A., representing a retail value of \$8.00. Ten dollars for five is surely a striking offer, but it is only a fraction of the advantages offered by A. Ph. A. membership. Of even greater value than the material offer suggested above are the intangible but very real advantages that any pharmacist gains from being a part of the American Pharmaceutical Association.

BULLETIN NO. 6.

What are the abstract advantages of A. Ph. A. membership? To those of us who are active in its affairs, the greatest pleasure comes from the privilege of carrying on the work, so wisely planned and conducted by the great men of American Pharmacy of twenty, or forty, or even sixty years ago. For sixty-six years, the American Pharmaceutical Association has stood for the best in Pharmacy and to-day it is still living up to its traditions. The influence of the A. Ph. A. upon our calling in this country is immeasurable. Practically every State Association was founded upon its initiative. The Associations of pharmacy colleges and of State boards were organized at meetings of the A. Ph. A. and still hold their meetings at the same place as and just prior to the A. Ph. A. convention. That potent influence in national legislation, the Drug Trade Conference, was the outcome of a discussion at an A. Ph. A. meeting; in its council the A. Ph. A. wields much influence. Unsatisfactorily slow though it may be, whatever progress has been made in improving the status of pharmacists in the United States Army and Navy has been largely due to the efforts of the A. Ph. A. Committee created for that purpose in 1894.

That standard of pharmaceutical practice, the National Formulary, is a child of the A. Ph. A.; the A. Ph. A. model pharmacy laws have been of great service in framing legislation in the several States of our Union; and now, always alert to the needs of the day, the interests of our returning warrior pharmacists are being finely served by the Association's Advisory Committee for soldier and sailor pharmacists.

This shows, sketchily and incompletely, what the American Pharmaceutical Association has done in the past and is doing in the present. How much more can it do in the future, if federation with national organizations and with State Associations is brought to pass?

COÖPERATION OF THE WAR SERVICE COMMITTEE OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The War Service Committee of the American Pharmaceutical Association, S. L. Hilton, chairman, supplied the French Ministry with quite a number of American pharmaceutical textbooks and standards. The American Society of Mechanical Engineers took the initiative in this work and the shipment was made by them. A letter acknowledging the contribution through Chairman S. L. Hilton follows:

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS,
No. 29 West Thirty-ninth Street,

New York, May 9, 1919.

MR. S. L. HILTON. *Chairman,*

War Service Committee, American Pharmaceutical Association,
Hutton & Hilton,

22nd & L Sts., N. W., Washington, D. C.

My Dear Sir:

To-day we are forwarding to the French Ministry via the American Embassy our third and probably our last shipment of United States Standards material which we have been collecting for the last two or three months.

The box containing the very generous contribution which was collected for us by your Committee forms a very large part of this shipment, and we desire to thank you very heartily for the very complete way in which you responded to our request for assistance in securing standard publications of this country.

Our delay in acknowledging your generous contribution has been due to two causes—first, we were desirous of examining this material personally, and second, we were desirous of delaying our shipment until all the material which we expected to receive had come to us. As our days at the office are very crowded these two conditions did not synchronize until a day or so ago.

Thanking you again for your assistance in this matter, we remain,

Yours very truly,

(Signed)

C. B. LePAGE, *Secretary,*
Standards and Technical Committees.

COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 17.

PHILADELPHIA, PA., May 17, 1919.

To the Members of the Council:

Motion No. 24 (Presentation of Proceedings to N. A. B. P.), Motion No. 25 (Presentation of Complimentary Volumes of Year Books to Foreign Journals) and Motion No. 26 (Election of Members; Applications Nos. 146 to 159, inclusive), have each received a majority of affirmative votes.

In Council Letter No. 13 a tentative program for the Sixty-seventh annual meeting of the American Pharmaceutical Association to be held at New York during the week of August 25, 1919, was submitted by the Committee on Program and suggestions invited.

The program as finally revised is now submitted, as follows:

PROGRAM FOR 67TH ANNUAL MEETING.

Monday, August 25.

- 9.30 A.M. National Association Boards of Pharmacy.
- 2.00 P.M. National Association Boards of Pharmacy.
American Conference of Pharmaceutical Faculties.
- 8.00 P.M. National Association Boards of Pharmacy.
American Conference of Pharmaceutical Faculties.

Tuesday, August 26.

- 9.00 A.M. Council Meeting.
National Association Boards of Pharmacy.
American Conference of Pharmaceutical Faculties.
- 3.00 P.M. First General Session of Association.
Committee on Nominations.
- 4.30 P.M. Scientific Section, first session.

Wednesday, August 27.

- 9.30 A.M. Section on Education and Legislation, first session.
Section on Practical Pharmacy and Dispensing, first session.
- 10.30 A.M. House of Delegates, first session.
Afternoon for Entertainment.
- 7.30 P.M. Council Meeting.
- 9.30 P.M. President's Reception.

Thursday, August 28.

- 9.30 A.M. Commercial Section, first session.

Historical Section, first session.

Scientific Section, second session.

10.30 A.M. Women's Section first session.

12.00 Noon Alumni Luncheon.

1.30 P.M. House of Delegates, second session.

2.30 P.M. Section on Education and Legislation, second session.

Section on Practical Pharmacy and Dispensing, second session.

4.00 P.M. Joint session of American Conference of Pharmaceutical Faculties and Section on Education and Legislation and Boards of Pharmacy.

4.30 P.M. Council Meeting.

8.00 P.M. Second General Session of Association.

Friday, August 29.

- 9.00 A.M. All-day Boat Ride.
- 10.00 A.M. Scientific Section, third session.
Commercial Section, second session.
- 11.00 A.M. Women's Section, second session.
(Three last named Sections will hold sessions on boat.)
- 3.00 P.M. Historical Section, Address by Dr. Henry Milton Whelpley.
- 7.00 P.M. Council Meeting (Reorganization Meeting).
- 8.30 P.M. Banquet.

Saturday, August 30.

- 9.00 A.M. Council Meeting.
- 10.00 A.M. Final General Session of Association.
- 1.30 P.M. Luncheon.
- 3.00 P.M. Seeing down-town New York.

Do you approve the above program? This will be regarded as *Motion No. 27 (Approval of Program for 1919 Annual Meeting)*.

Motion No. 28 (Election of Members). You are requested to vote on the following applications for membership:

No. 160. Harold Russell Waidelich, 142 N. 10th Street, Allentown, Pa., rec. by Ivor Griffith and Charles H. LaWall.

No. 161. Benjamin Franklin Merkle, 1724 North 16th Street, Phila., Pa., rec. by Ivor Griffith and Charles H. LaWall.

- No. 162. Joseph A. Eppley, 1916 N. Marvine St., Philadelphia, Pa., rec. by Ivor Griffith and Charles H. LaWall.
- No. 163. Maurice Weinberg, 1723 South 4th Street, Philadelphia, Pa., rec. by Ivor Griffith and Charles H. LaWall.
- No. 164. Samuel Howard Price, 216 North 5th Street, Camden, N. J., rec. by Ivor Griffith and Charles H. LaWall.
- No. 165. Lillian R. Stam, 110 S. 19th St., Philadelphia, Pa., rec. by Ivor Griffith and Charles H. LaWall.
- No. 166. Russell S. Trumbower, 618 Columbia Ave., Lansdale, Pa., rec. by Ivor Griffith and Charles H. LaWall.
- No. 167. A. Herbert Smith, Jr., 118 Main Street, Colwyn, Pa., rec. by Ivor Griffith and Charles H. LaWall.
- No. 168. Joseph Pincus Seltzer, 2307 S. 7th Street, Phila., Pa., rec. by Ivor Griffith and Charles H. LaWall.
- No. 169. Wesley Worrall, 143 Lancaster Ave., E. Downingtown, Pa., rec. by Ivor Griffith and Charles H. LaWall.
- No. 170. J. Harry McCormick, The Drugcraft Co., Ann Arbor, Mich., rec. by C. H. Stocking and E. J. Kennedy.
- No. 171. John J. Hughes, 79 McLean St., Wilkes-Barre, Pa., rec. by Ivor Griffith and Charles H. LaWall.
- No. 172. Daniel T. Williams, 226 Blackman St., Wilkes-Barre, Pa., rec. by Ivor Griffith and Charles H. LaWall.
- No. 173. Louis V. Middleton, 921 Ottawa Ave., N. W., Grand Rapids, Mich., rec. by Wm. Kirchgessner and Peter Vellema.
- No. 174. Lt. Edward Roy McColl (MC), U. S. Naval Hospital, Gulfport, Miss., rec. by S. Wierzbiecki and W. M. Benton.
- No. 175. A. Richard Bliss, Jr., 94 N. Butler St., Atlanta, Ga., rec. by E. G. Eberle and Charles H. LaWall.
- No. 176. David Krancer, 114 Floyd St., Brooklyn, N. Y., rec. by F. S. Hereth and K. A. Bartlett.
- No. 177. Robert Watson Crabb, 145 Pierce St., W. Lafayette, Ind., rec. by C. B. Jordan and Chas. O. Lee.
- No. 178. Hugh Hastings Hedgcock, Murdock Apts. No. 1, W. Lafayette, Ind., rec. by C. B. Jordan and Chas. O. Lee.
- No. 179. Alfredo Sanchez Catala, General Gomez No. 49, Camaguey, Cuba., rec. by J. G. Diaz and José P. Alacán.
- No. 180. Tholman C. Moss, 6th and Main Sts., Darby, Pa., rec. by Charles H. LaWall and J. W. Sturmer.
- No. 181. John R. Randolph, 718 Penn St., Camden, N. J., rec. by Charles H. LaWall and Wm. L. Friedman.
- No. 182. I. S. Weidman, 202 S. State St., Ephrata, Pa., rec. by Charles H. LaWall and J. W. Sturmer.
- No. 183. John L. Baker, 84 S. Pine St., Hazleton, Pa., rec. by Wm. L. Friedman and Charles H. LaWall.
- No. 184. William S. Kollor, Main St. and Butler Ave., Ambler, Pa., rec. by Charles H. LaWall and J. W. Sturmer.
- No. 185. William Barton Graham, 44 Genard St., E., Toronto, Ont., rec. by Charles F. Heebner and R. O. Hurst.
- No. 186. Marvin M. McCord, 106 W. Rand St., Enid, Okla., rec. by J. C. Burton and Wm. B. Day.
- No. 187. William F. Dodd, Caddo, Okla., rec. by J. C. Burton and Wm. B. Day.
- No. 188. Clifford H. Beach, Occoquan, Va., rec. by C. F. Walker and Wortley F. Rudd.
- No. 189. Edward Claudius Wilson, 1635 Willoughby Ave., Norfolk, Va., rec. by Chas. F. Walker and W. F. Rudd.
- No. 190. J. W. Williamson, Harrisonburg, Va., rec. by Wortley F. Rudd and Albert Bolenbaugh.
- No. 191. Samuel L. Baker, 1300 So. Lawndale Ave., Chicago, Ill., rec. by Wm. Gray and Wm. B. Day.
- No. 192. Bernardo Restrepo, Sorin Hall, Notre Dame, Ind., rec. by R. L. Greene and Joseph Maguire.
- No. 193. William Benjamin Moody, Boston, Ga., rec. by R. Thomas and H. H. Melton.
- No. 194. H. Lawrence Barnes, The Rexall Store, Waukegan, Ill., rec. by H. C. Christensen and Wm. B. Day.
- No. 195. William A. Kaminski, 1135 McDougall Ave., Detroit, Mich., rec. by F. F. Ingram, Jr., and Leonard A. Seltzer.
- No. 196. William H. Gesell, 235 Christopher St., Montclair, N. J., rec. by J. W. England and E. G. Eberle.

J. W. ENGLAND,

415 N. 33RD STREET.

Secretary.

COMMITTEE REPORTS

MINUTES OF THE JOINT MEETING OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES WITH THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY, CHICAGO, ILLINOIS, AUGUST 13, 1918.

The joint meeting of the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy was called to order at 2.40 o'clock P.M., Tuesday, August 13, 1918, by President W. P. Porterfield, of the National Association of Boards of Pharmacy.

The first report was that of the Joint Committee on Examination Questions, which was submitted by the Chairman, Prof. C. B. Jordan; it follows:

REPORT OF THE COMMITTEE ON EXAMINATION QUESTIONS.

For a number of years the work of this committee has been in charge of Dr. Henry Kraemer and he perfected a good organization and would have accomplished a great deal if he had continued in the work. Unfortunately, he felt that as President he could not give the work of the Committee his attention and, therefore, turned it over to us, and we have endeavored to carry out his ideas.

The Committee was organized into six sub-sections, as follows: 1. Pharmacy and Dispensing; 2. Commercial and Legal Pharmacy; 3. Physics and Chemistry; 4. Botany and Pharmacognosy; 5. Physiology and Pharmacology; 6. Bacteriology and Immunology.

Each sub-section elected its own sub-chairman as follows: 1. Pharmacy and Dispensing, E. A. Ruddiman. 2. Commercial and Legal Pharmacy, C. O. Lee. 3. Physics and Chemistry, C. B. Jordan. 4. Botany and Pharmacognosy, E. L. Newcomb. 5. Physiology and Pharmacology, Dr. Bernard Fantus. 6. Bacteriology and Immunology, E. N. Gathercoal.

Each sub-chairman received the following statement regarding the scope of the work to be covered:

"Questions are the best index of what is being taught in the Colleges of Pharmacy. We are interested in a study of what might be called fundamentals, leaving it to the teachers, individually, to develop their courses as they may deem proper. There are other subjects that could be handled, as, the discussion of the value of lecture, laboratory work, methods of teaching, methods of examination, rating of questions and anything else which would add to the efficiency of the teacher."

The members of each sub-section have been studying the problems involved in their special branch of the work. The report of this Committee consists of the reports of the several sub-committees, together with criticisms of questions that were submitted to the General Committee before it was divided into sections. Dr. W. C. Anderson will criticize the questions on Pharmacy; Dr. C. A. Dye those on Botany, Materia Medica, Pharmacognosy and Bacteriology, and I will criticize those on Chemistry.

(Signed)

C. B. JORDAN.

Prof. C. A. Dye presented his criticisms as follows:

On going over the various groups of questions one cannot fail to notice a marked difference in the degree of detail with which the lists are covered. Some are evidently based on the general idea of thoroughly covering the subject in a very practical manner, leaving out the non-essentials. Others evidently followed the Syllabus very closely, going into all the minute details of the subject. It therefore seems to me that we should decide whether or not the questions should be based on the Syllabus in its entirety or simply a thorough practical covering of the subject. The Syllabus, as I understand it, attempts to cover a given subject in a thorough manner, giving, as it were, a synopsis upon which the lectures may be based, the degree to which this shall be followed depending upon the judgment of the instructor and the time allotted.

This in itself is all well and good, but I should like to know how many schools are able to go into any given subject as exhaustively as the Syllabus would indicate in the time allotted each subject. Then when we take into consideration the fact that many schools only put in three days a week on the work, I fail to see how they can hope to discuss the details very thoroughly. At best they can hardly hope that the students will do more than learn a lot of defini-

tions which will be forgotten as soon as they leave school or in many cases by the time they are out of the classroom. For this reason I fail to see any practical use in burdening the list with a lot of questions dealing with theoretical details and having little practical value. We all know that the time we have is entirely too short to even master the essentials.

There appears to be an overlapping of some of the lists, especially the botany and materia medica, the botany and pharmacognosy and the pharmacognosy and materia medica. This, however, is to be expected in those schools where these subjects are more or less closely associated. Neither of these features is serious, however, and can easily be remedied when the questions are gone over for the final assignment.

Another point that occurs to me is that there is a large number of questions devoted to little used and non-essential drugs. This appears to be due to the desire to develop questions, cover everything, and give the impression that all such are thoroughly discussed. If these are discussed, the study and discussion must be very superficial and elementary, since the time assigned to such subjects is not sufficient to permit of a very thorough discussion. And here again the thought comes, is this necessary, or could we not better occupy our time with things more fundamental? I know this idea does not find favor with some of the members, and we may differ very materially in our ideas as to what drugs should be considered as essential, but the fact remains that many of them find little use and others purely local use.

Again it would seem that entirely too much ground is covered by the questions in botany. So much detail is of course quite necessary if botany is to be made a major subject, but as it is, and the way things are going, it seems hardly necessary. Many of the questions must simply be covered by "set definitions," and as such are meaningless to the candidate and only serve to burden him with a lot of non-essentials. No wonder the schools are criticized by the Boards for turning out men ignorant of the simplest essentials in pharmacy, chemistry and other branches when we take their time in trying to fill them with a lot of stock definitions. It surely is time that we awaken to a realization of the fact that the tree of pharmaceutical instruction has a great many branches that need sharp pruning if it is to continue producing fine fruit.

It also seems unfortunate that so little time and so few questions are devoted to physiology. It is of course possible that the list I received was not representative. But even so, the questions that appeared apparently were not formulated with the idea of creating much thought or enthusiasm on the part of the student as to the real value and application of physiology to everyday life or its value in explaining the action of drugs. Indeed, one of the subjects that is of vital interest and concern to us all, and without a knowledge of which we cannot explain the action of many agents, is dismissed with little or no ceremony. If we are to judge from the questions, it is a great deal more important to know whether the calyx is "cad-u-cous" or "deciduous" than to know the normal body temperature or heart rate and how these are affected.

While I may have some very decided views on certain groups or individual questions, and the importance apparently attached to one group as compared with another, I believe as a whole they are well worth while. The idea is a good one in that it will tend to bring about uniformity, and will undoubtedly have a tendency to raise the standard of the Boards, and with these raised the schools must follow with higher standards and better teaching facilities. The first set of questions will no doubt be severely criticized, and most of us will probably think we could have prepared a better one; nevertheless, out of all this effort must eventually come something well worth while.

Dr. W. C. Anderson presented the following:

REPORT OF THE SECTION ON PHARMACY AND DISPENSING.

Prepared by Edsel A. Ruddiman, Chairman.

As temporary Chairman the writer sent out letters asking for nominations for permanent Chairman; the vote resulted in the election of the writer.

Letters making some suggestions and asking for others were sent to each member of the Committee. As a result, a list of six topics for discussion was made out, which list with a summary of the discussions is given below:

Subject 1.—"To what extent should students be required to memorize formulas and methods of making U. S. P. and N. F. preparations? What is to be gained by memorizing them? What information should the student have about each preparation made in the laboratory?"

The summary of the discussions represents the opinion of the majority of those who took part, though there was naturally some disagreement.

It is the general opinion that the student should remember type processes; that he should remember the presence in a formula of such agents as are likely to cause incompatibility when preparations are mixed; that he should remember the percents or amounts of potent ingredients, but that he should not be required to learn the complete formula with the idea of making up preparations from memory, in fact he should be discouraged from doing so; that he should know the chemical reactions, if any; and particular stress should be placed on the reasons for the different steps in the methods of making.

In regard to preparations made in the laboratory, the student should know the official name and synonyms, the official definition, the ingredients and the percent of the active ones, the reasons for each step, the reactions if any, the best way of preserving and any change that may take place on long storing, and the dose. In other words, he should know everything that is to be known. It is also suggested that he should know the cost of the home-made product compared with the purchased one.

Subject 2.—"How may we get greater uniformity in questions asked?"

Several members of the Committee suggest that the instructors send to the Chairman the questions which are actually asked in examinations, that these be classified and a copy of all questions returned to each member of the Committee for study and comment. It is also suggested that the Chairman send out a list of certain classes of preparations and ask that each member of the Committee write out questions on these preparations, that these questions be published, and then other classes be taken up, going through the U. S. P. and N. F.

With perhaps the exception of one set of questions, all those sent to the Chairman were evidently questions which had actually been used in examinations.

It was the intention of the Chairman, when he sent out the requests for examinations, to get questions on both pharmacy and dispensing. Most of the members responding sent questions on pharmacy, but only a few questions which would come directly under the head of dispensing. In this first effort to classify the questions, the Chairman decided to incorporate only those which have a direct bearing on the U. S. P. and N. F. preparations, and chiefly those preparations for which a formula is given, leaving out, for the present at least, the questions which bear on assay processes, doses, uses, physical properties of chemicals and drugs, incompatibilities, and prescriptions. In grouping these questions the wording was slightly changed in a few minor cases, but so far as possible the original wording of the examiner is given.

Subject 3.—"Should we in our daily work strive to encourage the student to prepare himself so that he may be able to manufacture a limited number of proprietaries of his own? If so, what lines do you suggest?"

The members of the Committee are practically unanimous in advising that the student should be capable of making a limited number of proprietaries and that these remedies should be limited to toilet articles, cough preparations, corn remedies, cleansers and polishes, flavoring extracts, veterinary remedies and dips, and preparations of a similar nature. A few members advise the making of any or all kinds of proprietaries, and one objects to the making of any proprietaries.

Subject 4.—"Please give a list of those U. S. P. and N. F. preparations which each student is generally required to make in the laboratory."

The number of preparations made in the schools varies greatly. The only way to remedy this is to get a greater uniformity in the length of the course given. The U. S. P. and N. F. preparations selected for making in the laboratory also shows variation, there not being any one preparation that is made by all of the schools reporting.

Subject 5.—"a. What is the best method you have found for teaching students how to compound prescriptions? This included incompatibilities. b. Approximately how many prescriptions is each student expected to fill? c. In case of incompatibility, is the student taught how to determine experimentally what the trouble is—what the precipitate is if one is formed? d. Is an examination given on reading poorly written prescriptions?"

It is difficult to summarize the discussion on this subject.

Subject 6.—A discussion of the underlying principles which should govern Boards of Pharmacy in framing questions.

The majority of those discussing this subject are of the opinion that the Boards of Pharmacy should so word the questions that the answers may be comparatively short and yet will require some reasoning on the part of the applicant for registration; that questions asking for the whys and wherefores are particularly good; that it is not advisable to use questions which can be answered by Yes or No; that it is not advisable to word questions in a way that will admit of long or rambling discussion; and that the questions should cover a wide range. In the discussions varying phases are brought out, and members of Boards of Pharmacy may find some valuable suggestions.

Dr. E. L. Newcomb presented the following report of progress for the Section on Botany and Pharmacognosy:

TOPICS AND SUGGESTIONS PROPOSED BY THE SECTION ON BOTANY AND PHARMACOGNOSY.

General.

I. Discuss the need for comprehensive botanical and pharmacognostical training on the part of pharmacists in order that they may keep abreast of the rapid advances which are being made in organic, physical, and plant chemistry; pharmacology; clinical medicine, and other closely allied sciences.

II. Does not a logical and sequent consideration of pharmaceutical botany and pharmacognosy dictate that the plants most simple in form, structure and function should be taken up for study first? Is this scientific and logical system of study being generally adopted?

III. To what extent should the subject of Ecology be discussed with students in pharmacy? Should they be given any field work in this subject?

IV. How can the medicinal Plant Garden be made of greatest value in connection with the teaching of pharmaceutical botany and pharmacognosy? Give an outline of the use which may be made of the garden during the spring and fall. Discuss the value of the greenhouse as an adjunct to the teaching of these courses. Formulate five type questions relative to instruction given in the garden or greenhouse.

V. Give an outline of what you consider to be essential instruction on the compound microscope, its care and use. Why is it of fundamental importance that the student should become familiar with this instrument and early use the ocular micrometer in the study of plants? Should the use of microscopical accessories, such as the polariscope, warm stage, special eye pieces, microspectroscope, binocular, etc., be explained before work in which they are involved is introduced? Is the time not at hand when all students should be required to purchase a compound microscope as a part of their laboratory equipment?

Pharmaceutical Botany.

VI. *Thallophytes*.—Schizophyceae, Schizomycetes, Chlorophyceae, Phaeophyceae, Rhodophyceae, Diatoms, Lichens, Phycomycetes, Ascomycetes, Basidiomycetes, Fungi Imperfecti.

(1) How much didactic and laboratory time should be devoted to the study of this group? (2) Outline what you consider to be a satisfactory course on this group, and state what illustrative and demonstrative material to use. (3) Formulate a set of questions which will illustrate what you consider to be the most essential parts of the subject. (4) Discuss the different values which a thorough understanding of this group of plants has for the pharmacist.

VII. *Archegoniates*.—Hepaticae, Musci, Filicales, Equisetales, Lycopodiales.

Discuss this group as indicated by the outline given under Thallophytes.

VIII. *Spermophytes*.—Gymnosperms, Angiosperms.

(1) Outline what you consider to be a satisfactory method for teaching the life history of this group. What illustrative material is used in connection with laboratory work? (2) Formulate a set of questions which will illustrate what you consider to be the most essential parts of the subject. (3) Discuss the scientific and practical value which the purely botanical study of the life histories of this group has for the pharmacist. (4) At what time should the following subjects be discussed with the pharmaceutical student: evolution, paleontology, environment, natural selection, mutation, Mendel's law, etc.?

The Study of Cell Contents.

IX. Should this instruction be given during the first year and does it logically follow the courses on plant groups?

X. How much time should be devoted to the study of protoplasmic cell contents—what material do you find well adapted for the laboratory work and what is the value to the pharmacist of a knowledge of this subject?

XI. Outline what you consider to be a sufficient amount of work on the starches and inulin. Name the starches and inulin-containing material to be used and formulate five questions on the same.

XII. Outline the instruction which you consider adequate and formulate questions on each of the following substances: sugars, alkaloids, glucosides, plant coloring principles, calcium oxalate, plant proteins. Enumerate the material used for the laboratory work.

XIII. Outline work and enumerate material to be used for study of: silica; tannin; fixed oils; fats and waxes; mucilages; gums; volatile oils and resins; latex, and ferments.

XIV. Discuss the fundamental importance to the pharmacist of a knowledge of the subjects mentioned in XI, XII, XIII.

The Study of Plant Cells.

XV. Discuss the work which you think should be given on the origin and composition of the cell wall. Present a list of the illustrative material to be used. Formulate five (5) questions on the work.

XVI. Outline the instruction which you give on parenchyma and mechanical cells. Enumerate the illustrative material used for laboratory work. Formulate ten questions on this subject.

XVII. Outline the instruction which you give on conducting and protecting cells. Enumerate material used and formulate ten questions on the same.

XVIII. Discuss the fundamental importance to the pharmacist of a thorough knowledge of the nature of plant cells and by example illustrate this importance.

Outer Morphology and Inner Structure.

XIX. (1) Is the study of the structure of plants along with outer morphology the best plan? (2) Enumerate the illustrative material which you have used for giving laboratory instruction on the outer morphology of the following: root, stem, leaf, flower, fruit, and seed. (3) Enumerate illustrated material most suitable for the study of the inner structure of the above named plant parts. (4) Formulate a set of ten questions on outer morphology and ten on the inner structure of plant parts.

Plant Classification and Physiology.

XX. (1) How much work should be done on plant identification and classification? (2) What is your plan of procedure with this work? (3) Discuss the value to the retail pharmacist of ability to identify plant specimens. (4) Formulate a set of ten questions on this subject.

XXI. Outline what you consider to be the proper amount of didactic and laboratory work on—root pressure, photosynthesis, transpiration, geotropism, heliotropism, factors influencing growth, organic and inorganic soil constituents, etc. Prepare ten questions on this subject.

PHARMACOGNOSY.

XXII. *Drug Identification.*—(1) What method of instruction have you found most valuable in teaching the student how to identify crude vegetable drugs? (2) How many vegetable drugs in addition to those included in the U. S. P. and N. F. should the student be expected to know by sight? (3) Do you give each student a sample of every U. S. P. and N. F. drug? (4) Should the following concerning each drug be taken up in connection with the work on identification when the student has the drug specimen in hand: Latin title, English title, synonyms, name of plant yielding the drug, family to which the plant belongs, etymology, part of the plant represented by the drug, habitat and general character of the plant, commercial source of the drug and constituents? (5) What kind of an examination do you conduct to determine the students' ability to identify drugs and give the facts enumerated in (4)?

XXIII. *Extended Pharmacognostic Study*—(1) Would it be advisable for all colleges to devote the time for this extended study to the same drugs; if so, should this committee enumerate a list of the drugs to be taken up in this more comprehensive way? (2) Enumerate the drugs

which you feel should be studied in great detail. (3) What suggestions can you offer for improvement in the following outline for the comprehensive study of a vegetable drug: (a) Official title of drug—U. S. P. definition—synonyms—etymology. (b) Latin and English names of the plant—synonyms—etymology. (c) Systematic botanical position of the plant. (d) Systematic morphological description of the plant, including drawings from living plants from the garden or greenhouse of parts used for the preparation of the drug. (e) Occurrence and propagation of the plant—culture of the plant—effect of cultivation—production of the drug—collection and preparation (the greenhouse, garden and drug drying laboratory used extensively for this work.) (f) Commercial channels through which drug is marketed—commercial varieties—methods of packing. (g) Description of the commercial drug including, when possible, a comparison with the material from the garden—morphological description—anatomical description—powder description—odor and taste—application of micro-chemical tests, pyro-analytical methods, microscopical accessories, etc., where applicable. (h) Detection of admixture and adulteration—pharmacognostic valuation. (i) Similar or parallel drugs. (j) History (if time permits). (k) Examination of important powdered drugs from previous lessons as unknowns. (l) Review, consisting of a set of home study questions. (4) Would it be advisable for Boards of Pharmacy to adopt a uniform list of the more important drugs upon which questions and microscopical work involving study as outlined above might be asked? (5) Formulate ten questions suitable for use following the intensive study of what you consider to be five important drugs.

XXIV. *Advanced Pharmacognosy*.—(1) Discuss the teaching of this subject—outline what you believe should be included in the course. (2) Discuss the value of this work to the retail pharmacist. (3) Formulate ten questions on advanced pharmacognosy.

XXV. *Field Work*.—(1) Outline the method which you use for instructing students while on field trips. (2) Discuss the value which such trips have for the practising pharmacist. (3) Formulate ten questions on field trip work. (4) How many field trips do you consider advisable? (5) Should herbarium work be a part of this course?

XXVI. *Equipment for Pharmacognosy*.—(1) Discuss the equipment you consider necessary for the proper teaching of pharmacognosy and pharmaceutical botany.

In response to a request of Professor Henry Kraemer, Dr. Newcomb also gave a synopsis of a paper which he had prepared on the subject of *Digitalis*.

REPORT OF THE SECTION ON PHYSIOLOGY AND PHARMACOLOGY (INCLUDING BIO-ASSAY) OF COMMITTEE ON QUESTIONS AND EXAMINATIONS OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES.

By Dr. Bernard Fantus.

This report has been prepared after correspondence with the various members of the committee, a canvass of the custom prevailing in the schools of pharmacy of the United States, and consultation with many teachers regarding ideal courses to be aimed at. Twenty-two schools responded to the Questionnaire sent out.

All these schools, with one exception (the University of Wisconsin), teach physiology, though two schools teach physiology only in the four-year course. The remaining nineteen schools give an average of 35 hours in lectures, and 15 hours in recitations. Laboratory work in physiology is given by only five institutions, the hours devoted to it ranging from 32 in three schools to 108 hours at the University of Nebraska. Only one school mentions demonstrations. We may conclude that practically all the schools recognize the desirability of teaching physiology, at least in the form of didactic work.

It is impossible to analyze satisfactorily the replies regarding the teaching of pharmacodynamics. This term, which covers the study of the action of drugs, was purposely selected in this inquiry to differentiate this study from that of pharmacology, which might include anything pertaining to drugs. Eight schools among the twenty-two give no work in pharmacodynamics. Most of the others reported that from 48 to 60 hours are devoted to this study. However, it is evident from the reports that, in most cases, the instruction is given as part of the course on materia medica, which, as we all know, merely means the enumeration of the therapeutic uses of the drug. Four schools give laboratory work in pharmacodynamics, with the time devoted to it ranging from 18 to 108 hours. One school in addition speaks of 15 hours' demonstration. Real instruction in pharmacodynamics is, therefore, given in only very few of the schools of pharmacy in this country.

Work in bio-assay is carried on in six of the schools that have responded. In the two-year course, from 12 to 15 hours of laboratory work or demonstrations are allotted it in three of these schools. Three schools give more extensive laboratory courses, ranging from 45 to 108 hours in the three- and four-year courses. Mere lectures are evidently considered undesirable in the teaching of bio-assay.

DISCUSSION.

From the returns of this inquiry it is evident that the greatest possible divergence of custom in the teaching of the branches of instruction investigated by this committee prevails among the various schools of pharmacy: from none given at the University of Wisconsin to 252 hours each in physiology and pharmacodynamics at the University of Nebraska. Similarly does opinion vary regarding the ideal courses for schools of pharmacy in these branches. Thus, while Professor Kremers, of the University of Wisconsin, says: "We have no right to take the time necessary for satisfactory courses, in each of these branches, from the studies now given in our two-year course," Professor Sayre believes that, "to meet the demands of future pharmacists, an ideal course will certainly approximate, if not actually equal, the courses now given in these subjects in our best medical schools. So far as bio-assay is concerned," he says, "we should give far more attention to this than medical schools do."

The only manner in which these conflicting opinions of the experts consulted can be reconciled is by assuming that they look upon the aims of pharmaceutical education from diametrically opposite standpoints. Obviously, those who believe that no instruction in these branches should be offered have in mind the present-day druggist, whose work is chiefly commercial, and hardly at all scientific. Those, on the other hand, who advocate thorough and complete courses in these branches, have in mind the higher professional training of pharmacists, which seems to be the general trend of the majority of the schools.

It may well be questioned what this trend towards higher pharmaceutical education is leading us to, for upon the desirability or the undesirability of this depends in a large measure the final disposition that will and ought to be made of the branches under discussion. An unbiased observer, noting the kind of work that practically all the graduates of pharmacy are called upon to do in the drug store, cannot but deplore the fact that the present-day training does not really fit them for their life's work. Courses in bookkeeping and business methods, and the studies of the numerous sundries and other articles besides drugs that constitute the chief bulk of the business are hardly touched upon in the schools. On the other hand, drug assay, detection of adulterations, the making of complicated galenicals, the preparation of chemicals, etc., upon which most of the time of the student in present-day schools of pharmacy is spent, are practically useless to ordinary druggists. It must also be admitted that the strictly professional pharmacist, he who limits his practise exclusively to prescription work, belongs to an almost extinct species and this for a good reason, namely, that his chances for making a livelihood in the struggle for existence are admittedly rather poor. It would seem, therefore, that the above-mentioned trend toward higher pharmaceutical education is a mistake, unless it contemplates and distinctly recognizes the great change that has taken place in medical practise. We may as well admit that doctors are writing fewer and simpler prescriptions, and that this tendency is bound to become increasingly manifest as the older doctors leave the field of practise to the products of modern medical schools. This means that professional pharmacy is on the down-grade, unless the pharmacist is willing to equip himself to serve as a complete laboratory-man in medicine, that is, unless he is prepared to combine diagnostic-laboratory technic with the therapeutic-laboratory methods he now practises in the compounding of prescriptions.

Inasmuch as the modern trend of medical practise is in the direction of requiring more of diagnostic than of therapeutic laboratory work, the field of practise for a pharmacist equipped to do all this work is great and bound to become increasingly greater. That this is so may, for example, be gathered from the following quotation from E. P. Joslin's "Diabetic Manual," (Lea and Febiger, 1918): "Examination of the urine should cost the patient little. Formerly, I deprecated the routine examinations made in drug stores, but now I welcome them. The druggist is a trained chemist. He is constantly doing quantitative work, and it is far easier and cheaper for him to examine a urine than for a doctor. Druggists will undoubtedly undertake such work with satisfaction. It will be an agreeable relief from the many activities in a drug

store which have nothing to do with the profession of a pharmacologist." And, it might be added, it would also be an agreeable relief to the doctor.

While it may be admitted that there are at present practically no individuals who do such work, it must also be pointed out that such individuals are not available. The medical laboratory work is at the present time done by medical practitioners, many of whom, when they first undertook this work, were not as well equipped for it as would be the average graduate of a good school of pharmacy. For pharmacists to become recognized as competent in this field of work, and to obtain and merit the confidence of the medical profession, short courses in urinalysis, etc., would not suffice; but a training would have to be required no less extensive than that which fits for medical practise, though it ought to be, to a certain extent, of a different type. With a preliminary and a theoretic training exactly like that of the physician, which would include two years of university work in chemistry, physics, biology and language, and the first two years of a medical course, excepting anatomy, a pharmacist who aims to become a medical laboratory man ought to have the opportunity of devoting the other two years of study entirely to perfecting himself in laboratory technic in its various branches, including microscopic and chemical diagnosis, bacteriologic manipulations and pathologic and immunologic technic, in addition to a thorough understanding of pharmaceutical principles and practise. Such a man would, of course, get as thorough a training in physiology and in pharmacodynamics as the medical student, and a much more extensive training than he in pharmacy, materia medica, and bio-assay. The drug merchant, on the other hand, needs little or none of this training. For him, very brief courses, at most, in these subjects are all that are justifiable.

It is therefore the opinion of this committee that, before it can arrive at a serious recommendation regarding the teaching of the branches under discussion, it is necessary that it be instructed what the aim of pharmaceutical education is; for, while the present-day druggist needs but a minimum of instruction in these branches, the pharmacist of the future would require elaborate courses. It is, however, evident to the committee, that even the present-day druggist should have a certain amount of intelligence in regard to the teachings of modern pharmacodynamics. To merely mention the uses of drugs in connection with the study of materia medica, as is done at the present time, leads the student to the erroneous opinion that drugs in general have specific actions and uses. The fact that drugs are merely natural resources, capable of harming or helping according to the manner in which they are used, cannot be appreciated by anyone who does not have at least a smattering of pharmacodynamics. Hence, a brief course on elementary pharmacodynamics should be introduced into all schools of pharmacy. Such course might possibly be combined with that of physiology, where conditions are favorable for such a merger. A brief study of bio-assay might be included in the course on pharmacodynamics, preferably in the form of demonstrations.

L. E. SAYRE: I have believed for many years that we should have training along this line of pharmacology and have tried to introduce that work in the University of Kansas. We know from practical experience that in many cases it has resulted in not only a success professionally, but financially. A young man came to me some years ago and said: "I am tired of the soda water, cigars and lunch counter business. I will go out of the drug business rather than go into that kind of business." I said to him, "Cut loose; equip a good laboratory, and go into this work as a business."

This young man located in a city of about 250,000 inhabitants; two years afterwards I visited him and was surprised to find him located on one of the business corners of the town; he had a very large store, beautifully equipped; no soda fountain or cigar counter. He had a large laboratory and was making a wonderful success.

THE REPORT OF THE SECTION ON COMMERCIAL AND LEGAL PHARMACY.

By Prof. C. O. Lee.

The work of the sub-section was organized as follows:

1. Each member of the committee was asked: (a) to discuss seven general topics bearing upon the teaching of Commercial and Legal Pharmacy; (b) to discuss any other topics pertaining to Commercial and Legal Pharmacy not incorporated in the topics suggested.
2. Each member was asked: (a) to submit 24 copies of twenty questions representative of the work covered in Commercial Pharmacy in his school; (b) to submit 24 copies of ten questions representative of the work covered in Legal Pharmacy in his school.

The chairman received no reply of any kind from eight of the twenty-four members of this sub-section. Of those replying, four sent only letters, eleven replied by discussing the seven general topics suggested. Of these five submitted the questions on Commercial Pharmacy, but only four submitted 24 copies of their questions. Of these also four submitted questions on Legal Pharmacy, but only two furnished 24 copies of their questions. One furnished an unselected lot of questions, that had been used in examinations.

The seven general topics, as previously suggested, will be submitted together with a summary of the discussion on each.

1. (a) Should our committee recommend how much time should be given to the study of Commercial Pharmacy? (b) How much time shall we recommend to be given to this course?

To (a) above, seven favored a recommendation from this committee; two favored the time recommended in the *Syllabus*; one was doubtful, and one was opposed to such a recommendation.

To (b) above one recommended 30 hours; one 60 hours; one 120 hours; one 150 hours to 200 hours; one 480 hours; one 75 hours; two that no time should be given to this course; three doubtful as to the number of hours that should be given to this subject.

2. What subjects should be taught in a course in Commercial Pharmacy? How much time should be given to the teaching of such course?

To this, two suggested following the *Syllabus*; one suggested that only commercial arithmetic be offered; one made no reply; one suggested 30 hours to store management, 10 hours to legal pharmacy, 30 hours to commercial arithmetic, and 50 hours to various phases of salesmanship, total of 120 hours; one suggested 6 hours to economics, 6 hours to accounting, and 6 hours to business law, 3 hours to business organization, and 2 hours each to marketing and advertising; one suggested 3 hours per week for one semester for each of the following subjects: accounting, salesmanship, advertising, principles of economics, commercial geography, principles of psychology and principles of sociology, and 2 hours per week for one semester on each, commercial law and office organization; five were doubtful.

3. Should the teaching of Commercial and Legal Pharmacy be anything more than theoretical? Should there be laboratory or practice work; if so, how much time should be given to each?

In reply, three would make the course wholly theoretical; four would make the course theoretical with some practical work, where possible; two were doubtful; two said *no*.

4. In order to fit out students to better understand society and the individual, should a course in Applied Psychology be a part of the course in Commercial Pharmacy?

To this five were favorable in various respects; one entirely opposed; five undecided.

5. Should Commercial Pharmacy be taught by a man engaged in business, or is a man of recent business experience sufficiently qualified to teach the subject, provided his educational qualifications are satisfactory? To this one was indifferent; ten preferred to have this subject taught by a man of business experience and a theoretical knowledge of the subject.

6. Should the State Boards of Pharmacy, in examining candidates for registration, ask questions upon the subjects of (a) Commercial Pharmacy, (b) Legal Pharmacy?

To this five were in favor of the Board asking questions on Commercial Pharmacy; six were opposed. As to Legal Pharmacy, seven favored the Board asking questions in examinations and three were opposed.

7. Should instruction in Legal Pharmacy be given by a man trained in law, or by a pharmacist, or by men from both professions in coöperation?

To this one did not reply; four favored lawyers only; six favored some form of coöperative work.

8. Copies of the questions as submitted on Commercial Pharmacy attached.

9. Copies of the questions as submitted on Legal Pharmacy attached.

SUMMARY.

In reviewing the results of the work of this Section, the chairman regrets that only about one-half the members responded to the efforts of the committee. Those responding confined their discussions largely to the topics as suggested in the letter from the chairman.

The time suggested for the course in Commercial Pharmacy ranges from no time at all

to 40 percent of the time of the pharmacy course. The subjects suggested range from commercial arithmetic to courses in accounting and economics, and most generally including a study of salesmanship, advertising and store management. It is largely agreed that such subjects should be taught theoretically with laboratory or practice work where the latter could be offered to advantage. Some emphasized the necessity of real practical work. As to applied psychology, many favored some phases of it, others were not clear as to the importance of the subject. It seemed to be a general opinion that men of experience and education should teach the subjects of Commercial and Legal Pharmacy.

As to Boards of Pharmacy asking questions on Commercial Pharmacy, more opposed the idea than favored it, but that the Board should ask questions of legal concern was generally favored.

It was the original plan of the chairman to submit copies of all questions received to each member of the committee, but so few submitted questions, and fewer submitted the required number of copies, that the plan was abandoned, and the copies submitted are attached to this report for general consideration.

CONCLUSIONS.

The limited amount of work that this committee has done reveals a very great lack of uniformity in presenting the subjects of Commercial and Legal Pharmacy in our schools, especially Commercial Pharmacy. There is a very great difference of opinion as to the number of hours that should be given to these subjects, as well as to the subject matter and the manner of presenting it.

If these courses are to be a part of our college curricula there is great need for their standardization. Some have suggested that the courses as outlined in the *Syllabus* are comprehensive enough. This may all be true but the *Syllabus* does not seem to serve as a guide to the teaching of these courses, where taught, and some schools have no Commercial Pharmacy courses.

A majority of the questions on Legal Pharmacy are comprehensive and present the subject fairly well, but the questions on Commercial Pharmacy are largely arithmetical. This may all be well and good, but the arithmetic or the system of bookkeeping is a small part in the making of an efficient pharmacist as compared with the more comprehensive fundamental principles that underlie good business methods, good salesmanship, good citizenship, and good professional service.

A clerk needs to know how to price goods and figure profits, but he needs more to know that good business is more than profits, in dollars and cents. He needs to know that a good salesman not only receives the customer's money but his confidence as well, and that he, a clerk, is a citizen, and as a professional man is expected to render honest expert service. We fail to teach our students that they are a certain part of a great complex society in which each individual has a definite moral, social and professional task to perform.

Your sub-section reports progress but does not feel that it can at this time make any recommendations. It is hoped that the work of this sub-section will be continued.

Dean Frederick J. Wulling then read a paper entitled *More Consistent Pharmaceutical Standards*, which was published in the September, 1918, number of the JOURNAL OF THE A. PH. A., pp. 795-799.

H. L. MEREDITH: I want to resent the statement that "the pharmacists are not fit to help this Government in this war."

DEAN WULLING: We all dissent from that. I did not make that statement.

H. L. MEREDITH: I understood that it was a quoted statement, but when I see boys taken into the army who are dead from their shoulders up, and commissioned lieutenants and captains, and whose duties are to look after the condition of tires on automobiles—when I see vehicular surgeons brought into the army as captains for the purpose of looking after the mules and horses which are built by Henry Ford—I resent the suggestion that our men are not intelligent enough to be called into consultation.

Down home we had a boy, the extent of whose knowledge and experience was to wash cars, who is a lieutenant in the army today. We have another man who was working in a shoe house and he is a captain; yet they say that pharmacists are not intelligent enough to help prosecute this war. I resent that.

The people of the United States are not opposed to pharmacists participating in this war. Tell the fathers and mothers of the boys who are enlisted what kind of service they are getting in the Army today and they will rise up as one man. In at least one camp a bartender has charge of the dispensary. Should the parents of the boys investigate they will want to know why, and the first answer is, that the pharmacist isn't patriotic enough. I know a man who is in a machine gun crew in France because he would not serve in Camp Meade under a bartender who knew nothing about pharmacy. It is time for us to speak out and assert ourselves. I don't believe in going only to the Surgeon-General, we should go to the public as our President does.

Dean Wulling says the Boards should establish the prerequisite requirements. The National Association of Boards of Pharmacy can hardly do that until the faculties standardize their own colleges. If the colleges don't do that, and the National Association of Boards of Pharmacy does establish a prerequisite requirement, the only alternative is for the National Association of Boards of Pharmacy to establish a standard for colleges of pharmacy which they will recognize. I think the colleges should cooperate in this work.

CHARLES W. HOLZHAUER: There is one statement in Dr. Wulling's paper which I should like to be informed about. I was under the impression that the ethical stores were on the decrease for the simple reason that a man can't make a living, in the East, anyway, by confining his business to the filling of prescriptions and laboratory work. I would like to be corrected, if I am wrong.

PROFESSOR KOCH: They have been on the increase in Pittsburgh.

H. C. CHRISTENSEN: Ethical stores are on the increase. I have travelled in nearly every State in the past year, and particularly in the Northwest, on which Dr. Wulling's statement is based.

L. E. SAYRE: I would like to ask Dean Wulling upon what basis the statement is made that the intelligence of the druggists, as the representatives at Washington see it, is insufficient to be of any service.

F. J. WULLING: I am sorry Doctor Sayre asked that question because everybody has answered it for himself. We do not need anyone to make a statement like that at all. Just take the action, and the action, or rather the lack of action, is sufficient, isn't it? We haven't been recognized, have we?

L. E. SAYRE: No, and what excuse is there for that?

DEAN WULLING: I would like to know myself. In matters relating to the Government we all have to be very careful what we say and do. You can all draw your own conclusions. I cannot quote any particular person, because no person has made that statement to me. I have had correspondence with heads of departments in Washington, and some of it has been very satisfactory indeed; in the beginning, it was not satisfactory at all. Now, it has been brought about that the War Department has established a military status for students of pharmacy, although they must be members of a collegiate institute.

L. E. SAYRE: Can you answer the question why it is there is a difference between the pharmacists in the Navy and the pharmacists in the Army?

F. J. WULLING: That is one of the riddles that I am not able to solve. It is considered that the marine is above the soldier. That is the reason given me a few years ago. Why, I don't know. There are a lot of things we know about but we should not talk about. I am perfectly willing to defend the Washington officials in large measures. I really haven't anything further to say except that I hope something constructive will come out of this discussion. If you gentlemen can agree with me in only part of what I said, possibly you can crystallize that into some action. It won't do simply to keep on talking; we have got to do something. We are all dressed up with nowhere to go; we have got to fix a time and get there; fix a time for the realization of some of these things and wake up to them.

L. E. SAYRE: Shall we go to the public rather than to Washington?

F. J. WULLING: I wouldn't want to embarrass the Government at this time; I have a grievance against the Government because they have not enacted a bill creating a pharmaceutical corps, but it doesn't mar my loyalty to my country. I wouldn't want to embarrass the Government at this time; if it wouldn't embarrass the Government I would be perfectly willing to take the case to the people. I think it might be a good plan to ask the Government if they would resent our going to the public.

WILLIAM C. ANDERSON: I do not feel that in going to the public on this question we would be embarrassing the Government, but rather helping the Government. I believe the Government ought to know; I believe the people in authority in Washington ought to know what the conditions are in our Army.

As to the pharmacists being denied positions in the Army because of lack of intelligence, I have very little regard for that assertion. I am sure that is not the reason why the pharmacists have not been given a position in the Army. One of the first reasons is that we have in Washington, and have had for years, an influence always working against pharmacists. That influence must be overcome before pharmacy can secure its rightful place.

I had the fortune to come to this meeting from Indianapolis with a soldier whom I heard speak at the Chamber of Commerce luncheon in Indianapolis the day before. I was impressed with his speech; he was a captain in the medical department of the Belgian army. I introduced myself and one of the questions we took up was this matter of pharmacists in the army. He was really horrified when I told him what the position was. He said: "Do you mean to tell me the American army has no pharmacists?" I said, "That is the actual fact." He said, "Who handles the medicines?" I said, "Why, men who have been horseshoers, bookkeepers and chauffeurs, etc., have positions higher than the pharmacists. We have pharmacists in the trenches and in the ranks, and we have in that same regiment men who formerly had been horseshoers and chauffeurs, who are handling the medicine." He said, "I can't understand it." He said, "In our armies, the pharmacists occupy a very important position, in Belgium, in France, and in England; we could not get along without them, and I can't see how the American army can get along without them; every ambulance has at least one pharmacist, and some of them two. If we want medicine we write for it, the same as if we were at home; if we wanted a five percent solution of phenol, we would write for it and the pharmacist compounds it. The pharmacist keeps the records." He stated that he was on his way back to France; that he was going to Washington and get his passports and he was to have an interview with General Gorgas and that he would speak of this matter very positively to General Gorgas, expressing his opinion with reference to it.

There were three gentlemen sitting near us and overheard the conversation, and they became interested; they began asking questions and, the situation being explained to them, one of them having a son and the other a brother and another a relative over in France, they said, "Why don't you bring this to us? Why don't we, who have our boys over in France, know of this condition and know that our boys are not getting the medical treatment they should have?"

One other reason why we have been denied this position, in my opinion, is that the distribution of medicine in the Army does not require the services of a pharmacist. Such distribution is wrong. It is not the treatment the boy would get at home. Physicians do not depend upon pills and tablets alone. The Medical Department of the Army seems to believe that the pills and tablets can be handed by the chauffeur to the patient as well as by the graduated pharmacists. Such a distribution is a relic of old-time. This Belgian officer expressed himself in that way when I told him they used pills and tablets; he said, "That is old-time; we don't treat that way today."

H. M. WHELPLEY: I want to say a few words, merely to give you the point of view of the Army, very briefly. I recently had a long talk on this subject with an army officer of extended experience in the army. From that conversation, I gathered two points that must be made before we get pharmaceutical service. First of all, we must convince the Army that pharmacists are needed. He claimed that they are not; next, we must show them that pharmacists are sufficiently educated to be deserving of a commission. He pointed out to his satisfaction that at the present time they are not.

These are the two points that were the burden of his talk of fully an hour. First of all, that they are getting along all right, and, second, that pharmacists should not complain about their non-recognition because they are not sufficiently educated to be deserving of commissions.

HENRY KRAEMER: When Dr. Anderson was talking to the captain of the Belgian Army, he was discussing one type of pharmacists and the captain was thinking of another. The pharmacists of France and the apothecary of Germany and the chemist of England are professional pharmacists and these are the men who are allied with the medical department. I heartily approve of Doctor Anderson's suggestion. But really, let us just think of the seriousness of the situa-

tion. I don't think we should be too hard on the American Medical Association. It was with Eberle I spent some time a year ago on this matter with Doctor Simmons. When I said to him that we had a sufficient number of professional pharmacists in this country, and that we were urging his support because these men could command the attention and interest of our boys at the front, the American Medical Association was willing to pick up this movement, but we have not, pardon me, I think, done all we could.

H. L. MEREDITH: I would like to ask Professor Kraemer whether a pharmacist he has turned out and on whose certificate he has put his name has less intelligence than the ordinary blacksmith or bartender.

WILLIS G. GREGORY: I wish to take this opportunity to express my appreciation of the value of these joint meetings of college men and board men. Perhaps I am somewhat better able to appreciate their value, because of the fact that I am a member of a State Board of Pharmacy and I am also a teacher in a college of pharmacy.

Now, we are enjoying our annual pastime of "passing the buck." Every year we come together and the Conference of Faculties with a great deal of seriousness and unlimited dignity unanimously resolves that it is time the Boards of Pharmacy should do something, and the Boards of Pharmacy with equal seriousness and surpassing dignity decide that it is time the Colleges of Pharmacy should do something. After we have passed these resolutions and transmitted them to each other, we adjourn, and next year we do the same thing over again.

Now, I have a notion, from having listened to this annual performance for a number of years, that conditions would be materially improved and progress would be made if we could be a little franker with each other and define some of our statements. We have, on the one hand, a group of college men that are constantly preaching higher standards and bemoaning and bewailing the fact that we haven't the proper standard, whereas the fact is we have standards in the American Conference of Pharmaceutical Faculties that are reasonably satisfactory at the present time to a large majority of the Conference. That is the reason they do not put up any higher ones because they are satisfied with things as they are, for the time being. I doubt not that the same condition exists in the Boards of Pharmacy. You have standards with which you are satisfied for the time being; if you were not satisfied you would create new ones. Why don't we get together on these standards and see how far apart we are? I don't think we are so very far apart. Our friend over here said the Boards of Pharmacy couldn't do anything until the colleges classified themselves or standardized themselves, and if they didn't do it, the boards would do it for us. Thank you, gentlemen. We are obliged to you for your good intentions, but so far as I understand the situation, the colleges of pharmacy have standardized themselves and are maintaining at the present time a standard which is reasonably satisfactory to the American Conference of Pharmaceutical Faculties, or else we would change it. Perhaps I don't know what the board men are talking about when they talk about standardizing the colleges of pharmacy. I presume I do not, and I want you to tell me what you mean, after I get through.

As I understand it, we have standardized colleges of pharmacy and that standard is satisfactory to us; if it is not satisfactory to the boards, I wish they would tell us wherein it is unsatisfactory; we would like to study that problem and we want all the light on it we can get. We are trying to get forward, but we can't go faster unless we are educated, and it is up to you gentlemen to post us.

In the first place, as I understand it, the Conference of Pharmaceutical Faculties has established this standard: First, that in order to matriculate a student, that student must be 17 years of age. That is a beginning standard. Second, that that student must have had two years of high school. That is another step in this standard. Next, that that student—perhaps I should have said this one first—must be of good moral character; we have to certify to that in our school. Fourth, this student must attend at least two years' instruction in this college of pharmacy. Fifth, that these years must include at least twenty-five weeks of instruction. That is the minimum; many give thirty or thirty-five and possibly thirty-eight in some cases. But there is the minimum per year, and each year must include a minimum of six hundred hours.

You know, this up and down business, this attitude in colleges of pharmacy interests me. I heard during the meetings of our Conference some talk about the "upper colleges" and the "lower colleges" and I wondered what it was that determined the attitude. As near as I can make it out it is in inverse proportion to the number of their students. If they have a few stu-

dents they are higher colleges of pharmacy and if they have a whole lot of students, they are a lower school of pharmacy. I am not sure that that definition is correct, but that is the impression I have gathered from listening to the discussion in our Conference.

We must have this two-year minimum amount of instruction and there must be a vacation period between them so the student will have a chance to digest what he gets one year and not be affected by mental dyspepsia when he gets ready for his second course. I suppose I have forgotten part of our standards because I didn't think to write them down.

If that is not the standard that the Boards think about and talk about and want, I wish they would tell us what standard they do want. I think that is quite a respectable standard, when you consider that only a few years ago we didn't have any at all.

I think the benefit to be derived from meetings of this kind is in being frank with one another. I think the colleges should tell the boards what they believe and want, and I think the boards should be equally frank in telling the colleges what they want. We are all trying to accomplish the same end and all of us want to serve the community not only in war times but in times of peace. Let us all boost, and we can do it.

The report of Chairman E. N. Gathercoal of the Section on Bacteriology and Immunology was read by title and passed for publication. It follows:

REPORT OF THE SECTION ON BACTERIOLOGY AND IMMUNOLOGY.

The Section on Bacteriology and Immunology of the Committee on Questions and Answers was organized in the fall of 1917 by the election of a chairman by ballot. The chairman and members have exchanged four series of letters in connection with the work of the committee.

The Section begs to submit its report under four headings, as follows:

First: Bacteriology, or better, perhaps, microbiology, is an essential in pharmaceutical education and should be a required part of the curriculum of pharmaceutical colleges, at least in the three-year and four-year courses.

Second: Adequate facilities for laboratory instruction should be provided and adequate time allotted for the proper teaching of the subject. From six to ten percent of the total curriculum hours should be assigned to bacteriology.

Third: Bacteriology as taught in colleges of pharmacy should not closely follow the subject as now taught in colleges of medicine. This science in pharmaceutical courses should embrace not only a study of pathogenic bacteria and their activities but also special work in sterilization, valuation of disinfectants, preparation of culture media and stains, diagnostic tests, sanitation work and a thorough knowledge of sera and vaccines as well as studies in Immunology, Zymology, Parasitology, etc.

Fourth: A summary of the information gathered by the members of the committee regarding the amount of time devoted to bacteriology in pharmaceutical courses and a list of questions indicating the scope of the work in colleges of pharmacy is also submitted.

COMMENT.

There has arisen within a few years a tendency to introduce "fads" among the subjects taught in pharmaceutical schools just as such a tendency has spread in our public schools and all other educational institutions. Ofttimes the fad becomes an established part of the curriculum and frequently develops into a very valuable part. Bacteriology in a pharmaceutical course is still frequently regarded as a fad and in the opinion of the conservatives its introduction into pharmaceutical curricula should be tabooed.

Bacteriology, however, has arrived at a well-established position in all educational courses having to do with medicine, sanitation and public health. The pharmacist is especially concerned in acquiring a knowledge of this science. Without question, the study of bacteriology should be included in what we now term the longer pharmaceutical courses, and these so-called longer courses should very soon become the predominant ones in pharmaceutical education. The one question that confronts us then is this: Shall the subject of bacteriology and immunology be included in the two-year or shorter pharmacy course and how much time shall be accorded to it?

Dr. Albert Schneider, of the California College of Pharmacy, says that the essential preparatory studies, namely, Physics, Biology and Human Physiology, should be presented in the first year of the two-year course and a lecture and recitation course of not less than 30 hours' class room work and six to ten laboratory periods should be given in the second year.

Dr. H. H. Waite, of the University of Nebraska College of Pharmacy, states that not less than 128 hours should be allotted to Bacteriology in the second year of the two-year course.

Dr. Francis Wenniger, of the University of Notre Dame, believes that at least 90 hours should be given to the teaching of Bacteriology in the shorter pharmacy courses and that the subject should not be omitted from any pharmaceutical course leading to a degree.

It is the general opinion of the committee members that the teaching of bacteriology by means of lectures and recitations only, without laboratory exercises, is not satisfactory, but some of the members, notably Dr. Gayfill Ellison, of the University of Oklahoma School of Pharmacy, hold that General Bacteriology should be presented to students of pharmacy even if laboratory work cannot be given.

As to the nature of the work presented in the bacteriological course in pharmacy, the Committee is practically unanimous on the point that such work should be founded on general bacteriology and that the scope of the work should be broad; much more so perhaps than the usual medical course in bacteriology.

The following is based on a résumé of the replies of the committee members regarding an ideal course in bacteriology. Two-year Pharmaceutical Course, one-half semester (eight weeks) of second year: Lectures and Recitations, 24 hours—General Bacteriology, Immunology and Serology, Pathogenic Bacteria, Hygiene and Sanitation. Laboratory, 48 hours—Sterilization and Disinfection Methods, Preparation and Preservation of Culture Media, Isolation of pure Cultures, Microscopic Study of Bacteria, Yeasts and Molds.

Three-year Pharmaceutical Course, one semester (sixteen weeks) of third year: Lectures and Recitations, 48 hours—General Bacteriology (more amplified than in the shorter course). Immunology and Serology, including illustrated lectures on the production of antitoxins and vaccines, Bacteria in Disease, Bacteria in the Arts—food preservation, butter and cheese production, soil bacteria, sewage disposal, water purification, etc. Laboratory, 96 hours—Sterilization and Disinfection Methods, Preparation and Preservation of Culture Media, Isolation of Pure Cultures, Cultivation and Study of Pathogenic Bacteria, Milk and Water Counts, Isolation of Sewage Bacteria, Valuation of Disinfectants, Preparation of Sterile Ampuls.

Four-year Pharmaceutical Course (after Dr. Schneider): First Year—Preparatory—The essential preparatory studies, Human Physiology, Physics and General Biology. Second Year—General Bacteriology—Lectures and Recitations, 30 hours; Study Preparation, 60 hours. Third Year—Laboratory Bacteriology—Laboratory, 120 hours. In addition to the usual laboratory course in general bacteriology, careful training in the exact technique of the preparation of the standard culture media and more important stains should be included. Fourth Year—Special Training.

At the University of Illinois School of Pharmacy we aim to teach the students especially all forms of sterilization and disinfection, apparatus being provided in the laboratory for such work. Likewise, the preparation of culture media receives much attention and every student is required to clean and sterilize all the glassware he uses and to prepare and preserve all the culture media he needs. Each student is required to isolate and, if possible, to identify and name at least one bacterial species. Such materials as hay, meat, feces, milk, water, sewage, air, pus, etc., are assigned for this purpose. Much attention is given also to the bacterial count of milk, water and food-stuffs and to the isolation of sewage bacteria. The valuation of disinfectants receives attention as also the sterilization of pharmaceutical solutions and the preparation of sterile ampuls. The students do not spend so much time on the pathogenic bacteria as do medical students, though they do make cultures and mounts of about 15 pathogenic bacteria. We have never done anything with animal inoculation, though in a complete course that certainly should be included. The recitations are based on assigned lessons in the text-book and thus the history and theory of the science are brought out. Especial attention is given to immunology and to the commercial preparation of antitoxins and vaccines.

Professor Jordan presented the report of the Section on Physics and Chemistry.

REPORT OF THE SECTION ON PHYSICS AND CHEMISTRY.

The work of this Section was organized as follows: 1st. Each member of the Committee was requested to prepare a set of 20 questions that he considered practical for State Board Examinations and that would also indicate, in a measure, the scope of the work that the members

were doing. 2nd. They were asked to submit any subjects that they considered of sufficient importance to merit discussion. 3rd. Complete sets of questions were later distributed and the members asked to criticize them. 4th. Subjects for discussion were submitted and opinions called for.

In general, the members of the Sub-Committee responded well to the requests for opinions, discussions, and questions, the only disappointing feature being that very few offered any criticisms of questions submitted. It is also to be regretted that a number of colleges of pharmacy had no representative on the Sub-Committee. The membership of the Committee was secured by Dr. Henry Kraemer and, as I understand, consisted of all those teachers of chemistry and physics in Conference colleges who volunteered to assist in the work.

The following subjects were discussed and the conclusions drawn by consensus of opinion:

Teaching of Physics.—The opinion was universal that Physics should be required of graduates in pharmacy. A majority of the Sub-committee considered that a year of High School Physics should be required for entrance to colleges of pharmacy, and this would satisfy the need for instruction in this branch. All agreed that if Physics was not required for entrance, a lecture and laboratory course should be given. If the curriculum does not permit this, as a last resort, physical facts should be taught in the Chemistry course, although this is not recommended as sufficient for the pharmacy graduate.

The following resolutions were presented and voted upon:

1st. *Resolved*, That Physics should be dropped from the Pharmacy curriculum, and that all necessary physical facts be taught in the Chemistry course. 7 No, 4 Yes.

2nd. *Resolved*, That the Pharmacy curriculum should require at least one-half year of Physics consisting of both lecture and laboratory work. 6 No, 5 Yes.

3d. *Resolved*, That the Pharmacy curriculum should require at least one year of Physics consisting of both lecture and laboratory work. 6 No, 5 Yes.

Many of the answers to these resolutions were modified by statements that are too lengthy for record here.

As a result of this study the Committee would recommend *That if Physics be not required for entrance to the College of Pharmacy, at least one-half year of Physics, consisting of both lecture and laboratory work, be required of all graduates in pharmacy.*

Another question that the Committee considered was the amount of time that should be devoted to theoretical chemistry in the General Chemistry Course. The Committee as a whole agreed that not enough theoretical discussion was given. The following resolution was presented: *Resolved*, That not less than one-half of the lecture time in General Chemistry should be devoted to theoretical discussion. Yes 8, left to instructor 3.

Your Committee recommends *That the National Pharmaceutical Syllabus require that more time be devoted to theoretical chemistry and that not less than one-half of the lecture time in General Chemistry be given to it.*

The subject of useless synonyms was discussed, and all agreed that too much time and effort are spent in memorizing synonyms, and that the number should be reduced to the minimum.

This resolution was submitted for consideration: *Resolved*, *That the American Conference of Pharmaceutical Faculties should recommend to the National Association of Boards of Pharmacy, and to the drug and chemical manufacturers and importers, that only official synonyms be used in examination questions and on containers of drugs and chemicals.*

This resolution was heartily endorsed and therefore your Committee recommends it for your consideration.

When the lists of questions were received, it was found that many of the teachers were asking for information that is usually considered unnecessary to remember, or can easily be found in reference books when needed, and has no value in the thorough understanding of the subject under discussion. In order to bring this to the attention of the members of the Committee, the following questions were submitted and the following answers received:

1st. Should students be expected to remember atomic weights? A hearty *NO!* in response, except a few that they will naturally remember by repetition.

2nd. Should students be expected to remember assay processes of the U. S. P.? Response—*NO!*

3rd. Should dose and therapeutic action of chemicals be taught in the Chemistry Courses? Response—"NO" in most cases. Some thought it should be left to the instructor's judgment.

4th. Is it important that students remember the number of assays of any particular type process? Response—"NO."

These questions and responses indicate that the teachers of physics and chemistry do not consider that it is necessary or valuable for students to remember data that, although necessary for the solution of problems, is of no value in understanding the processes involved, and can easily be obtained when wanted from any good reference book. Unfortunately, State Board Examiners do not always look at it in this light, but often place great weight on the ability to remember data. The Chairman of the Sub-Committee is of the opinion that this Conference should make a recommendation to the National Association of Boards of Pharmacy regarding this question, but the Sub-Committee has not as yet had time to consider the question in that connection, and is therefore not ready to offer a recommendation.

Many other subjects were discussed by the Sub-Committee, of which the following are representative:

1. Is opposition to chemical and physiological assaying by the average retail pharmacist who claims he never uses it and that it is for the most part impracticable, and belongs only to experts, justifiable? If so, why spend time teaching these things?

2. Is it really a "waste" of time for pharmaceutical students to take up courses outside the regular fixed curriculum, in order to be more polished and have a better understanding of others, and other sciences and arts, besides that of the circle of pharmacy?

3. Would not a year or two in Physics under good physicists pave the way for a better foundation to understand the physical phenomena met with in pharmacy?

4. Would not a year or two in mathematics, as higher algebra, trigonometry and calculus, help the pharmacy students in dealing with all mathematical calculations involved in the science of pharmacy?

5. Would not more time devoted to organic chemistry, physical chemistry, colloidal chemistry, and chemistry of synthetic drugs, aid more in establishing the pharmacist in his rightful place as an expert in his science and art of preparing, preserving, compounding and dispensing medicines?

6. Should the fundamentals of chemistry and physics be taught differently for pharmacy students?

7. Should a course in Food Analysis be included in the pharmacy curriculum, and how much time should be devoted to it?

8. Should a course in Physical Chemistry be included in the pharmacy curriculum? If so, should it be elective or required?

9. To what extent should Urinalysis and Toxicology be taught?

10. Should we not attempt to bring into the Course in Pharmacy laboratory work in chemistry that will tend to develop a desire on the part of the students for research problems?

11. I believe that the student derives the greatest amount of knowledge of his general chemistry by a great amount of time spent in qualitative analysis. Therefore, should not the student be given unknown mixtures of several bases and acids and allowed to work out his own salvation, giving him only sufficient instruction that he may not waste time or become discouraged?

Your Sub-Committee can only report progress on these subjects as time prevented the full discussion of them.

Miss Zada Cooper presented a report of the Committee to Investigate Short Term, Correspondence, Summer, and other Similar Courses in Pharmacy. This was published in the October, 1918, number of the JOURNAL OF THE A. PH. A., pp. 894-898.

WILLIAM MANSFIELD: Miss Cooper has shown us that there are a number of States in which there are schools which have no right to exist, and they are primarily in existence because the boards of pharmacy and the legislatures of those States have no pharmaceutical standards.

JACOB DINER: The paper of Miss Cooper deserves a great deal of discussion. On the one hand, we are talking about a four-year high school and a four-year pharmacy course, and, on the other hand, we have the six-weeks "fly-by-night" correspondence course. What are we going to do about it? Discussions are not going to solve this problem at all. It is up to the members of the boards of these States, where they have no prerequisite requirements, to insist that prerequisite requirements be introduced. In New York there was an avalanche of opposition

aroused when prerequisite was mentioned; today we have two years' high school and two years' college and we expect to have more soon.

HENRY P. HYNSON: I move, Mr. President, that this paper be referred to the two secretaries of the associations here assembled with the request and the authority that they have a large number of copies of this paper published. In my opinion the subject is presented in such an attractive way that it will be the most influential tract that could be circulated in the several States. I think the States could reimburse the faculties for this expense.

H. H. RUSBY: In seconding that motion, Mr. Chairman, I want to endorse what you yourself said a moment ago. I think it is not wholly up to the boards of pharmacy; I think if the boards of pharmacy do not have assistance from the schools of pharmacy in securing the necessary legislation, they are going to have a very hard time. I feel that the schools which have been insisting and clamoring so loudly for hasty work in elevating the standards of schools have been grossly negligent of their duties. Most of them have done nothing whatever, and some of them have said they did not care a thing about whether they got prerequisite laws in their States or not. Universities have a great deal of influence in their States; they are acquainted with legislative matters; they have attorneys and they could do an immense amount of work in securing prerequisite legislation. Why don't they do it? I, this morning, was going to offer in the Conference of Faculties a resolution directing the Executive Committee to ascertain what steps, if any, had been taken by the universities represented in the Conference looking to prerequisite legislation, and what success had attended their efforts, and to report at the next meeting. The secretary thought it might be misconstrued and be regarded as something aggressive and unfriendly, so I withheld it. It was not so intended.

While the boards of pharmacy must do their part, it is up to the schools of pharmacy to assist in securing this legislation, and if they don't do it, it is not likely to be secured at an early date.

R. A. LYMAN: I want to say a word with reference to the matter Dr. Rusby has just brought out. When we were in San Francisco, the Boards of Pharmacy passed a resolution recommending that we take steps to go to a four-year high school requirement in the year 1920. After that I felt perfectly at home with the Boards of Pharmacy, and I feel safer when I get up to discuss a problem which is concerned with the raising requirements in pharmacy when I am in the presence of board members than when I am in the Conference of Pharmaceutical Faculties. For three years the State universities have tried their very best to bring these requirements up to four-year high school requirements. They have done it in almost every State in the middle, northern, and western States, and have rejected the students who did not have such preliminary education. We have tried to get the Conference schools to come to the four-year high school requirements. Last year, in my presidential address, I put it up to the Conference. It had been put up to them by two presidents before me. It was put up by one president and reformed by the second one; in 1917 they begged these schools to put the adoption off until 1918. In 1918 they asked to put it off a little longer; we needed five years, so we put it to 1923, with an understanding among us all that in 1923 there would be no backsliding.

In the universities of my particular section, we are taking up the matter of prerequisite law; there is a committee, of which I am a member at the present time, working upon a prerequisite law for the State of Nebraska. I don't know whether it is a good thing for me to stand here and say so, or not; sometimes it is a good thing not to speak of activities, because opposition may be developed. I have always maintained, since I have been in the Conference, that it was the duty of the colleges to take the advanced standing. The colleges existed in America many, many years before the state boards were thought of, and the colleges have molded public opinion and made the organization of state boards possible. I have never been willing to say that I thought that the advancement should come from the boards, but I do say that the advancement has got to come from coöperation between the Conference and the Boards. I can assure you that in all the States where there are universities clamoring for a higher requirement, their faculties are not asleep in the legislative department of their States, and the time is not far distant when in every State in the Union, where there is a progressive university requiring the highest of ideals, you will find a prerequisite law.

W. F. RUDD: We have a prerequisite law in Virginia which was passed in February of this last year. I am sure that it is due entirely to the fact that the president of our board was

present in Indianapolis last year and got some fire in him which he carried down to Richmond and he sat there on his job. He lives three hundred miles away, but he went down to Richmond and stayed there all the time that was necessary during the session of the legislature, and he put over the prerequisite legislation in February of that year with not a negative vote in the Senate, and a large majority in the House. Now, if we, as Faculty people, and as Board people, can see this thing aright, we are certainly all going in the same direction. If we can carry home with us something of the spirit that Mr. John E. Jackson got from the meeting last year, then we will have prerequisite legislation coming up over and over again.

CHARLES FALKENHAINER: There has been something said here about universities not doing anything along the line of securing prerequisite legislation. To aid our efforts in that work, Dr. E. L. Newcomb came down to an Iowa legislative meeting, a year ago last winter, and addressed our association. His presentation virtually resulted in our getting a prerequisite law. There was contest, but the members were aroused and exerted their efforts until the fight was won. It requires persistent coöperative work.

H. M. WHELPLEY: I desire to amend the motion before the house to refer this matter to the secretaries of the two associations, by substituting that it be referred to the Editor of the Journal of the American Pharmaceutical Association with the request that the report by Miss Cooper be printed and that a supply of reprints be made of it for distribution to interested persons.

Prof. H. P. Hynson accepted the amendment, which was seconded by Dr. H. H. Rusby, put to a vote, and carried.

Professor C. A. Dye read the following report by title, which was accepted for publication:

REPORT OF THE COMMITTEE OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES ON
RELATIONS OF THE COLLEGES WITH THE BOARDS.

Those of us who were so fortunate as to be present at the joint session of the Colleges and the Boards last year, and heard the discussion which took place, will no doubt recall that a great many splendid suggestions were made relating to the establishment of closer relations between the two bodies. The ground was most thoroughly covered and there is little left, that is new, for your Committee to discuss or recommend. At most, therefore, we can but hope to emphasize more strongly some of the features suggested last year and perhaps present a few new questions for discussion.

Throughout the discussion there was uniformity of expression of the great desirability of the Schools and the Boards coming closer together and the wish for a closer coöperation in their work. We believe that with an earnest fostering of this spirit the grade and quality of the licentiates will be materially improved. This is certainly a condition greatly to be desired, if not actually demanded, at the present time, and one which we are sure all are trusting will be speedily brought about.

If, however, this view of coöperative work is to result in greatest influence and permanency there must be developed along with it a greater spirit of recognition of the value of the friendly criticism that may be offered by members of both organizations. Little can be accomplished if both sides come so far and then entrench themselves behind what they are pleased to call their line of personal privilege. Both are surely falling short of their duty to the students and the Commonwealth represented if personal ambitions are permitted to enter into the question of how far the best interests of pharmacy will coöperate. Personal ambition and personal privilege are both well worth while, in their proper places, and should be jealously guarded, but when they are permitted to influence every move and lead into political intrigues we are forgetting our duty as teachers and officers of the State we represent.

We believe that, as a rule, the Faculties are more willing to coöperate than are the Boards. The latter, if we may judge from various reports, are more or less inclined to stand on what they are pleased to call their prerogatives as State officials and resent any suggestions from impractical college professors. There was a time when the college professor might be looked upon as an impractical visionary, as devoid of real modern up-to-date, practical ideas as is possible to imagine, but that day has passed. That this is true we feel is more than evidenced by the way the Government is calling them into service. On the other hand, we unfortunately find a number of teachers who are unwilling to listen to suggestions and friendly criticisms from the Boards; they seem

to feel that they are omniscient and therefore can make no mistakes. That they should be so short-sighted and stand in the path of their own progress and the best interests of their students seems impossible.

Indeed we should think they would welcome such friendly criticism, for the members of the Boards are in position to judge better of the work we are doing as teachers than any other class of men.

It is to be regretted that we find such members in either organization for they surely stand in the way of any genuine and lasting progress. On the other hand, it is to enable these two groups to see their mistakes and profit by them that these joint conferences are held. That they are productive of good results is evidenced by the increasing number of Boards and schools that are seeking to identify themselves with the two organizations. This fact in itself is not enough; there must be something more behind the act of joining than the simple badge of membership. There should be an active participation, by representatives of both organizations, in not only their own meetings, but also the joint conferences. Colleges and boards that fail to maintain an active membership by representations should not be permitted to enjoy the rights and privileges, as well as the dignity and standing, that the membership carries with it.

As one member of the Committee states, "I should be glad to see more intimate connections between college faculties and the boards of pharmacy than exist on paper and by the annual meeting of representatives of both groups." In other words, the conference idea should not stop with our annual meetings, but should be carried back to our various states, there to be renewed. In this connection the member of the committee previously quoted says: "I would recommend that at meetings of the boards, representatives of the college faculties be occasionally invited to attend." The Chairman of your Committee believes even more enthusiastically in these joint conferences of the boards and the schools, and the benefits to be derived therefrom, and would therefore make the recommendation stronger, namely, that the boards should request that representatives from the various schools should meet with them at least once a year for a joint conference and discussion of the various problems of education and registration. Some may wonder what problems we might have either in common or individually wherein we could be of any service to each other in solving or, for that matter, any reason why we should wish to get any closer together. To suggest one or more such problems worthy of discussion, we might mention the question as to what extent we are using the *Syllabus* as a basis for our teaching and the Board examinations. It is of course to be assumed that we have some common basis, but even though we may, this must be used with care. With the *Syllabus* care and judgment must be exercised, even where it is used in a coöperative way, for if not, we will find some of the schools attempting to follow the outlines of the *Syllabus* to the letter and trying to cover all the details of a subject in a limited time. As a result their work is likely to be superficial and the students lack sufficient training in the fundamentals. On the other hand, as teachers, we may attempt to cover what we consider the fundamentals, and the Boards in their examinations assume that the subject has been completely covered. In either event the result is generally the same, failure for the student and embarrassment for the teacher. Such a condition could not arise if there were a closer relationship and coöperative spirit between the boards and colleges of the various states. At present the *Syllabus* is the only authoritative guide, which we have, that may be used by both the teachers and the boards as a definite basis for our work. It is a creation of representatives from both organizations constituting this joint conference, yet we wonder to what extent and by how many schools and boards it is followed. Surely we must have some basis and common ground for, and limitations to our work as teachers and examiners, if our work is to be efficient and the examinations are to be fair and consistent.

(To be concluded in next number.)

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Committee on Publication: J. W. ENGLAND, *Chairman*; G. M. BERINGER, CASWELL A MAYO, H. B. MASON, E. L. NEWCOMB, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on the Progress of Pharmacy, *ex-officio*.

DENOMINATIONS AND ABBREVIATIONS OF THE METRIC SYSTEM IN PHARMACY.

An effort should be made to bring about uniformity in the writing of metric denominations of weights and measures. So far as pharmacy is concerned there is no need for other denominations than milligramme, gramme and kilo for expressing weights, and mil and liter for cubic measures. The ending "me" should be dropped and the simplified spelling of "gram" adopted. The abbreviation "Cc." conforms better with "Mm.," however, the Pharmacopoeia uses the term "mil," so it may be advisable to follow the more general custom of writing "cc." The lack of uniform practice in writing metric terms is a hindrance to a more general adoption of the system. The least number of denominations possible is desirable. The subject is deserving of consideration by the next Pharmacopoeial Convention.

PHILADELPHIA DRUG EXCHANGE URGES THE DELETION OF UNNECESSARY NARCOTIC FORMULAS FROM PHARMACEUTICAL PRICE LISTS.

At the meeting of the Board of Directors of the Philadelphia Drug Exchange held on May 14, 1919, a motion was passed directing the Secretary to communicate with the American Drug Manufacturers' Association and other drug manufacturing bodies, calling attention to the apparently needless multiplication in the price lists of manufacturing pharmacists of narcotic drugs of many unnecessary strengths urging that the number be minimized to the fewest possible units, so that the burden of making out the Federal and State Narcotic Reports be reduced to the lowest possible limit.

In a letter issued by Secretary J. W. England it is pointed out that, for example, in the price-list of a prominent manufacturer there are of hypodermic tablets of morphine, plain and combined, 37 strengths; of heroine, 5 strengths;

of diacetylmorphine, 4 strengths; of codeine, 6 strengths; of cocaine, 8 strengths. There are 72 items in the list of hypodermic tablets subject to the Harrison law. In the same list, under tablet triturates there are 99 items; under compressed tablets, 43 items; under chocolate-coated tablets, 54 items; under dispensary tablets, 8 items; under pills, 49 items; a total in all of 385 items, and this does not include elixirs and other forms of galenicals, nor the items of the pricelists of other manufacturers not mentioned in the list referred to. Hence, it is apparent that druggists are compelled to stock and report upon hundreds of narcotic preparations, many of which could be eliminated from the list and the burden of the wholesaler and retailer lightened.

The coöperation of manufacturers and dealers is requested for standardizing the lists of the preparations referred to by minimizing the number of items of narcotic products, to the end that the details of keeping narcotic records may be simplified and time and work saved.

The letter concludes by stating that there are trade demands which necessitate the listing of many narcotic products but that there is a marked tendency in the medical profession towards the much-lessened use of narcotic drugs in the treatment of disease, and that the medical profession would not seriously object to the excision of many narcotic formulas from the lists, and they would not be denied the use of such narcotic drugs, as they could readily have them compounded extemporaneously.

RESEARCH AND REFERENCE WORK OF WISCONSIN PHARMACEUTICAL EXPERIMENT STATION.

Circulars up to No. 5 have been issued by the Wisconsin Pharmaceutical Experiment Station. Circular No. 3 deals with Medicinal Plants and Designs. The work of Miss Bernice Oehler shows the possibilities for beauty and attractiveness of designs from medicinal plants and suitable for decoration of the drug

PETROXOLIN (UM)

History: This is the Latinized form of the name suggested by M. I. Wilbert, and adopted by the N. F. IV, as a more convenient designation for the longer title *Petrolatum Saponatum* of the N. F. III. Whereas the earlier edition (1906) contained but the two basal preparations (See *Petrolatum saponatum liquidum* and *P. S. spissum*), the last edition (1916) contains as many as eighteen specific preparations in addition to the *Petrozolinum liquidum* and *P. spissum*.

Properties: *Petrozolinum liquidum* is a yellowish-brown liquid, miscible with ether, chloroform, petroleum, benzoin or acetone and produces an emulsion-like mixture when added to twice its weight of water.

Preparations:

Petrozolinum Betanapholis 10 per cent
Petrozolinum Cadini 25 per cent
Petrozolinum Chloroformi camphoratum
Petrozolinum Creosoti 20 per cent
Petrozolinum Eucalyptolis 20 per cent
Petrozolinum Guaiacolis 20 per cent
Petrozolinum Hydragryli 30 per cent
Petrozolinum Iodi 10 per cent
Petrozolinum Iodi dilutum 5 per cent
Petrozolinum Iodoformi 3 per cent
Petrozolinum liquidum
Petrozolinum Mentholis 17 per cent
Petrozolinum Methyl salicylatis 20 per cent
Petrozolinum Phenolis 5 per cent
Petrozolinum Phenolis camphoratum
Petrozolinum Picis 25 per cent
Petrozolinum spissum
Petrozolinum sulphuratum
Petrozolinum sulphuratum compositum
Petrozolinum terebinthinae larvis 20 per cent

Uses: Petrozolinus used for external application are found to be readily absorbed by the skin. They may be painted or rubbed into the skin or applied with cotton, etc. *Petrozolinum spissum* may be used in place of *P. liquidum* when ointment-like preparations are wanted.

store. The plants thus treated by the artist are hyoscyamus, digitalis and stramonium. Circular No. 4 relates to Volatile Oil of *Monarda fistulosa* L., by Emerson R. Miller. Several pages of an encyclopaedic pharmaceutical dictionary that is now being edited on the card system are included; these are concerned with the life and work of Dr. J. O. Schlotterbeck and a page of references to Solution of Potassium Arsenite. Circular No. 5 was prepared by H. A. Langenhan and G. J. Noel and is complete and comprehensive with information on N. F. Petrozolinus and Parallel Preparations. The thoroughness is evidenced by twenty-one cards of the dictionary to which reference has been made. Instead of going into detailed explanation of this card system, one of them has been reproduced in reduced form; the originals are 5 × 8 inches. (See top of this page.)

CLINICAL PHARMACOLOGY OF DIGITALIS.

The *Journal of the A. M. A.* abstracts a report by Wedd compiled from data on unselected cardiac and cardiorenal hospital patients to whom digitalis was given, including twenty-nine in whose cases electrocardiographic records were taken every twenty-four hours, or more frequently, during the period of administration of a standardized preparation of the drug. It was soon apparent that suc-

Parallel preparations: For further information concerning this type of preparations see:

Linogen; Linoiment; Linoval; Parogen; Penetrole; Petrogen; *Petrolatum saponatum*; Petroliment; Valsolol; Valsol; Vasapon; Vasosan; Vaselol; Vaseloxylene; Vaselol; Vasogen; Vaselol; Vasoliment; Vasopotent; Vasoval.

Literature: More detailed information may be found in the following journal articles arranged chronologically:

1901. Wilbert, M. I., *Oxygenated Petrolatum*. *Am. Jour. Pharm.*, 73, p. 220. [*Proc. A. Ph. A.*, 49, p. 646.]
 1906. H. E. B., *Solid Petroz.*, *Drug. Cir.*, 50, p. 646.
 1909. Diehl, C. L., *Report of the Committee on the National Formulary*. *Proc. A. Ph. A.*, 57, p. 1081.
 - Wilbert, M. I., *Ibid.*, p. 1081.
 - Fleuge, H., *N. F. Comment. N. A. R. D. Notes*, 9, p. 472.
 1911. Beringer, G. M., & G. M. Jr., *Petroz Preparations*. *Am. Jour. Pharm.*, 83, p. 213.
 - Raubenheimer, O., *Petrozolinum spissum*. *Am. Jour. Pharm.*, 83, p. 223.
 - McClurg, W. E., *Iodine Petroz.*, *Merck's Rep.*, 20, p. 287.
 1912. McElenie, F. D., *Proc. of N. Y. Branch. J. A. Ph. A.*, 1, p. 272.
 - Burge, J., *Proc. of the Nashville Branch. J. A. Ph. A.*, 1, p. 391.
 1912. ———, *Proposed Formulas for the N. F. J. A. Ph. A.*, 1, p. 176.
 - , *Proc. of City of Wash. Branch. J. A. Ph. A.*, 1, p. 394.
 - Newton, R. A., *Rep. of the New England Branch. J. A. Ph. A.*, 1, p. 87.
 - Saahbach, L., *Hints on Proposed N. F. Formulas. J. A. Ph. A.*, 1, p. 321.
 - De Jonge, C., *Proc. of the N. Y. Branch. J. A. Ph. A.*, 1, p. 517.
 - Thum, J. K., *A Note on the Proposed Formula for Petroz.*, *Am. Jour. Pharm.*, 84, p. 119.
 - Roemer, J., *The N. F. in the Making. Drug. Cir.*, 56, p. 250.
- General articles on the subject may be found in
1910. Wolf & Fleischer, *Nova Therapeutica*, p. 356.
 - , *Gehe's Codex*, p. 270.
 1908. Coblentz, *The Newer Remedies*, 4 ed., p. 98.
 1916. *The National Formulary*, IV, p. 159.
 - , *Squire's Companion to the British Pharmacopoeia*, 19 ed., p. 387.
 - , *Wis. Pharm. Ex. Sta.*, H. A. L., Form 15; 8-18.

cessive tinctures supplied to the hospital wards showed marked variation in their efficiency. Two biologically standardized tinctures of approximately theoretical strength were studied and it appeared that the inefficiency of one was due to failure of prompt absorption from the alimentary canal, as was indicated by the larger amount necessary to produce a change in the T wave, the earliest demonstrable digitalis effect. Daily doses averaging 10 Cc. were given and continued until alimentary disturbances or abnormalities in the cardiac mechanism appeared. In no case was there any ill effect attributable to digitalis and there were no evidences of the so-called cumulative action. The toxic dosage showed marked individual variation from 20 to 100 Cc. The earliest signs of toxicity were slight nausea and premature beats. It is believed to be a perfectly safe procedure and one which will promptly bring about the expected benefits of digitalis to begin with an initial dose of 5 Cc. of tincture and to continue with 8 or 10 Cc. daily until signs of toxicity appear or until clinical improvement warrants discontinuing the drug. In the series studied were cases with all possible valvular defects, all grades of decompensation, renal lesions of varying degrees of severity, systolic blood pressures ranging from 90 to 230 Mm. and almost all of the recognized types of myocardial involvement, including cases of intraven-

tricular block and complete dissociation, and there was not found any clinical entity which might be said to constitute a contra-indication to the use of digitalis.

PUBLIC SERVICE.

Every citizen owes a duty to the public. That duty is in direct proportion to the standing and influence of the individual citizen in the community. The duty of the mayor or member of the town commission is high in proportion to the duties charged against him. The duty of the professional man and merchant is high because of the wide influence of their words and acts.

The professional men of the community owe a peculiar duty to the community. They are the men who have been trained in broader things, as well as in a more intensive way. They are the men who look upon life from the vantage ground of educational advantages superior to those given the average man. They are looked to by the rest of the community to handle the extraordinary things of life, the things that are beyond the capabilities of the average man. Upon them rests a serious civic responsibility. The pharmacist must shoulder his share of this responsibility.

The pharmacist who fails to perform his duty toward the public is not performing his whole duty toward his profession. He must accept the responsibility for public service.

Now a community is rated among communities in regard to its prosperity. The community expert will tell you that the first thing to be done to determine "what is the matter with your community" is to find out if the people are paying their bills. If the community banks are struggling along with high interest rates, loans that are often renewed, and principal that frequently is lost, if your retail merchants and professional men are carrying the burden of a long line of extended credits, the community expert will tell you your community is living from hand to mouth, and is probably living in excess of its income. Living outside of income is just as bad for the community as it is for a business concern.

There is a remedy for this condition and the pharmacist with his own interests and his community's interests at heart can help apply it. It is the thrift movement which, as a result of the habit of saving acquired during the war period, is now sweeping the country.

It is axiomatic that the man who saves is the man who pays. If your community is

thrifty it will pay promptly. If your community will pay promptly, interest rates and prices generally in the community will go down. The community will eliminate the high prices incident to bad accounts and bad collections. Incidentally the pharmacist will eliminate the high costs incident to these unnecessary accounts and collections.

The thrift movement offers every professional man an opportunity to do his duty by himself and his community. He can lend his public influence to the campaign for thrift. In every community the thrift movement has a Savings Director, appointed through the Federal Reserve Bank System, who is directing the local thrift campaign. He needs help. He deserves the coöperation of every pharmacist in his efforts to foster the thrift spirit, and to make War Savings Stamps available everywhere as a means of systematic saving.

PERSONALS.

Dr. J. H. Beal, an ex-president of the American Pharmaceutical Association, first editor of the *JOURNAL A. PH. A.*, president of the National Drug Trade Conference, etc., is the first recipient of the Remington Honor Medal, awarded by the New York Branch of the American Pharmaceutical Association. The presentation is to be made during the New York Convention of the American Pharmaceutical Association, and for this reason further comment at this time is deferred.

Caswell A. Mayo, ex-president of the American Pharmaceutical Association, and for many years editor of the *American Druggist*, has accepted the management of the publicity department of William S. Merrell Chemical Company, of Cincinnati, Ohio. Mr. Mayo's activities in association circles are well and favorably known and also his achievements as a pharmaceutical editor. New York pharmacists regret Mr. Mayo's departure, while Cincinnati rejoices in this accession to her citizenship and number of her distinguished pharmacists. Charles W. Parsons, heretofore of the publicity department of E. R. Squibb & Sons, has succeeded Mr. Mayo as editor of the *American Druggist*.

F. B. Hays, editor of the *Druggists' Circular*, who was for a time in Manhattan Hospital, undergoing treatment of his eyes, has, we are glad to report, sufficiently recovered to permit resumption of his work.

William S. Glyn-Jones, Secretary of the British Pharmaceutical Society, has been knighted, hence is now Sir William. Michael Carteighe said of him in 1902, on his admission to the Bar, when a dinner was tendered to him, that he (Mr. Glyn-Jones) had received a training and undergone a discipline in the hard school of retail business in pharmacy, in organizing experience and activity for the promotion of pharmaceutical trade interests, and in the sphere of pharmaceutical politics, which served as the best of all preparations and endowments for any part he might be destined to play in the more spacious fields of legal practice or in public affairs.

The distinguished career has amply justified the speaker's judgment and foresight. American pharmacists join those of Great Britain in expressing their gratification at the well-deserved honor of knighthood which has been conferred upon Mr. Glyn-Jones in recognition of his distinguished parliamentary and public services.

SERVICE ROLL OF ILLINOIS PHARMACISTS.

At the suggestion of the Chicago Branch of the American Pharmaceutical Association, through the efforts of Superintendent Dodds, of the State Department of Registration and Education, and under the auspices of the Illinois Pharmaceutical Association, an effort is being made to prepare a complete list of all the pharmacists, assistant pharmacists and apprentices registered in Illinois who have

served in the Army or Navy of the United States during the present war.

A total of completed cards to date is 511. About 150 other names are on the list for which the data is not yet completed. Some interesting totals are obtained from the 511 cards, as follows:

Registered pharmacists, 278; assistant pharmacists, 90; apprentices, 143.

Enlisted, 386; drafted, 99.

Army, 420; navy, 76; marine corps, 1; merchant marine, 1; Polish army, 2; Canadian army, 2.

In the Army: General Staff, 1; medical corps, 9; medical department, 227; infantry, 128; (students' army training corps, 65; central officers' training school, 10); artillery, 19; (central officers' training school, 5); cavalry, 1; aero corps, 4; tank corps, 4; signal corps, 2; engineers corps, 1; ordnance corps, 6; quartermasters' corps, 2; motor transfer corps, 1; chemical warfare service, 13; bakers' school, 1; band, 2.

In the Navy: Medical corps, 1; hospital corps, 67; yeomen, 5; seaman, 1; aviation, 1; radio, 1.

Rank: Lieutenant colonel, 1; major, 2; captain, 3; lieutenant, 22; sergeant, 21.

In the American Expeditionary forces: 193.

Deceased: 4.

From Chicago, 239; other Illinois cities, 247; other states, 25.

Student or graduate of University of Illinois School of Pharmacy, 198.—*N. A. R. D. Journal.*

SOCIETIES AND COLLEGES.

THE NEW YORK MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Only two months more and the time for the annual convention of the American Pharmaceutical Association will be at hand. The programs of the Sections are assuming shape; however, for most of them further contributions are desired. Those who have not already done so should send in the titles of their papers to one of the Section officers. The roster of the Association is printed in the January issue of the *JOURNAL*, page 69. The program of the New York Convention will be found on page 493 of this issue of the *Journal*.

During this month many of the State Pharmaceutical Associations convene, and these meetings offer the opportunity for mem-

bers to discuss closer affiliation with the parent body and also to enlist the attendance of many who need just a little encouragement.

Pharmacy schools have either closed this year's session or will close during this month. It will be seen, by looking over the list of members who have continued their affiliation for twenty years or more, that these joined the Association soon after graduation from the school of pharmacy. This is a suggestion for members of the faculties. Their attention is also called to the date on which applications for the Fairchild Scholarship must be in the hands of Chairman H. C. Christensen, namely, June 25.

This is not only the Victory Convention but a Commencement meeting for a number of most important pharmaceutical undertakings.

EXHIBIT OF PHARMACEUTICAL
MEDALS FOR THE A. PH. A.
MEETING.

The New York College of Pharmacy, Columbia University, has undertaken the preparation of a loan collection of medals, tokens and jetons of pharmaceutical interest, to be shown at the sixty-seventh annual meeting of the American Pharmaceutical Association, which is to be held at the Pennsylvania Hotel, New York, during the week of August 25.

The college respectfully solicits the coöperation of pharmacists generally with a view to making this exhibit as interesting and complete as possible. The greatest care will be taken to insure the safekeeping and return of medals loaned, and full credit will be given at the exhibit of all courtesies extended.

The widest latitude will be exercised in making the collection, and everything in the shape of a medal, a token or a jeton will be welcome. This will include the commemorative medals struck in the cognate sciences, such as botany and chemistry, award medals, such as those given for exhibits of pharmaceutical preparations at international or similar expositions, or to distinguished pharmacists on special occasions, such as the Hanbury medal, or those awarded to students, such as the Bell medal of the British Pharmaceutical Society. The jetons struck by the College of Pharmacy of France and similar jetons would be welcomed. Tokens issued by pharmacists or druggists or by manufacturers of patent medicines are also within the scope of the collection.

The college is particularly desirous of obtaining a complete collection of the award medals offered by the various colleges, either by loan or purchase.

The college will also welcome essays or letters regarding pharmaceutical medals and should like any exhibit which may be sent to be accompanied by its history.

The library of the college is also making a permanent collection and has a fund for the purchase of such medals of general pharmaceutical interest as can be obtained at a moderate cost. All having such medals which they can give, lend or sell to the college are invited to correspond with the chairman of the committee, quoting prices on those offered for sale. Communications on this subject should be addressed to the chairman of the Medal Committee, New York College of Pharmacy, 115 West Sixty-eighth street, New York.

THE NATIONAL PHARMACEUTICAL
SERVICE ASSOCIATION.

The following letter has been sent out by Secretary E. Fullerton Cook, of the National Pharmaceutical Service Association:

Notwithstanding the efforts of pharmacists and others, who are aware of the unscientific methods of dispensing medicines in vogue in the United States Army, the passage of the Edmonds' Bill failed in the last session of Congress. This bill aimed to establish a Pharmaceutical Corps as a branch of the Medical Department and to assure to our soldiers dependable medicines, dispensed by educated pharmacists.

At this time, there seems to be no prospect that Surgeon-General Ireland will deviate from the attitude of opposition to pharmacy that was announced by his predecessor and it is evident that pharmacy will be compelled to follow the example of dentistry in its campaign for a "Dental Corps," the value of which to the Army has now been thoroughly demonstrated. A further educational campaign is necessary to convince Congress and the officials of the War Department that they are negligent in not likewise providing for educated pharmaceutical service for our soldiers.

The National Pharmaceutical Service Association is convinced that in the advocacy of the Edmonds' Bill considerable progress was made in the needed campaign of education and it is the purpose of this organization to continue the propaganda thus inaugurated until pharmacy receives the merited consideration. With that end in view, it is the intent to reintroduce the Edmonds' Bill at the next session of Congress with such modifications as it is decided are necessary. The Executive Committee have been charged with the duty of obtaining the views of leading pharmacists and pharmaceutical societies as well as of others interested in this question. Hence we are addressing you and request that you submit any criticisms of the wording of the old Bill H. R. 5531, or, if you prefer, send a new draft, expressing your views on a "Pharmaceutical Corps" enactment.

It is imperative that, in all efforts to secure proper recognition for pharmacy, all pharmacists present a united front and unanimously support our earnest endeavors and that this include the coöperation of every pharmaceutical society that has been especially charged with the responsibility of furthering pharmaceutical interests.

We are pleased to report that a bill will be introduced into the next Congress providing for a reorganization of the Hospital Corps of the Navy and the granting of advanced rating and higher commissions to the pharmacists in that Corps. This will be favored by many of the Naval officials, and we as pharmacists must give it our heartiest support.

Will you kindly give the matter of suggestions for a redrafted Army Pharmaceutical Corps Bill your early attention and send your views to the Secretary. If at all possible, it is intended to have the redraft prepared in time for presentation and discussion at the New York Meeting of the A. Ph. A.

For the Executive Committee,

E. FULLERTON COOK, *Secretary*,
145 North Tenth Street,
Philadelphia, Pa.

(Signed) GEORGE M. BERINGER, *President*.

STATE PHARMACEUTICAL ASSOCIATION MEETINGS OF JUNE AND JULY.

DURING 2ND WEEK OF JUNE:

Alabama at Huntsville. President, C. W. Walker, Ensley; Secretary, W. E. Bingham, Tuscaloosa.

Florida at Tampa. President, M. A. Bize, Tampa; Secretary, J. H. Haughton, Palatka.

Georgia at Tybee Island. President, T. F. Burbank, Cedartown; Secretary, T. A. Cheatham, Atlanta.

Mississippi at Vicksburg. President, C. L. Anding, Flora; Secretary, A. S. Coody, Jackson.

Missouri at Excelsior Springs. President, Mrs. Minnie M. Whitney; Secretary, H. M. Whelpley, St. Louis.

New Jersey at Atlantic City. President, George M. Beringer, Jr., Camden; Secretary, Jeannot Hostmann, Hoboken.

DURING 3RD WEEK OF JUNE:

Colorado at Denver. President, C. W. Gilbert, Greeley; Secretary, Chas. J. Clayton, Denver.

Idaho at Twin Falls. President, A. E. Sutton, Caldwell; Secretary, Norman C. Beckley, Boise.

Illinois at Peoria. President, Frank J. Dubsky, Chicago; Secretary, Wm. B. Day, Chicago.

Kentucky at Harrodsburg. President, R. S. Berryman, Versailles; Secretary, J. W. Gayle, Frankfort.

Massachusetts at Boston. President, Clifford P. Thompson, Springfield; Secretary, James F. Guerin, Worcester.

Nebraska at York. President, J. E. Harper, Spencer; Secretary, J. G. McBride, University Place.

DURING 4TH WEEK OF JUNE:

Indiana at Culver. President, E. W. Stucky, Indianapolis; Secretary, Wm. F. Werner, Indianapolis.

New York at Saratoga Springs. President, H. B. Smith, Brooklyn; Secretary, E. S. Dawson, Syracuse.

North Carolina at Wrightsville Beach. President, S. E. Welfare, Winston-Salem; Secretary, J. G. Beard, Chapel Hill.

North Dakota at Fargo. President, Peter Mergins, Fairmount; Secretary, W. S. Parker, Lisbon.

Pennsylvania at Buena Vista Springs. President, Charles R. Rhodes, Hyndman; Secretary, R. P. Fischelis, Philadelphia.

Texas at Galveston. President, Tom J. Snell, Paris; Secretary, W. H. Cousins, Dallas.

Utah at Ogden. President, John L. Boyden, Coalville; Secretary, Eugene L. Wade, Salt Lake City.

Wisconsin at Elkhart Lake. President, H. F. Wussow, Milwaukee; Secretary, E. G. Raeuber, Milwaukee.

JULY MEETINGS:

Connecticut at New Haven, July 1-2. President, Carl R. Ramsey, New Britain; Secretary, P. J. Garvin, Bethel.

Maine at Kineo, July 12. President, Fred H. Neal, Garvin; Secretary, M. L. Porter, Danforth.

Ohio at Cedar Point, July 22-25. President, J. W. Dysle, Marietta; Secretary, Theo. D. Wetterstroem, Cincinnati.

Oregon at Portland, July 8-11. President, H. F. Brandon, Portland; Secretary, A. W. Allen, Portland.

South Carolina at Greenville, July 15-16. President, D. T. Riley, Florence; Secretary, F. M. Smith, Charleston.

South Dakota at Lead, July 29 or August 5. President, Fred Vilas, Pierre; Secretary, E. C. Bent, Dell Rapids.

Virginia at Natural Bridge, July 8-10. President, G. E. Thompson, Chatham; Secretary, F. L. Brandis, Richmond.

REPORT OF COMMITTEE ON PATENTS
AND TRADE-MARKS OF AMERICAN
DRUG MANUFACTURERS'
ASSOCIATION. FAVORS
PRODUCT PATENTS.

The report of Dr. J. M. Francis, Chairman of the Committee on Patents and Trade-marks of the American Drug Manufacturers' Association is a protest against the movement supported by some pharmaceutical associations and certain factions of the medical profession to eliminate the product patent insofar as it pertains to discoveries in medicine, pharmacy, and chemistry.

"Having spent months and perhaps years in scientific research," Dr. Francis said, "and having poured out money like water for materials, the designing of apparatus, and, finally, for the proper testing and the introduction of a therapeutic agent, according to the ethical code which the medical profession seeks to impose upon pharmaceutical manufacturers, the results are to be made absolutely free for the appropriation of every piratical opportunist who may see a chance to reap where he has not sown. This is certainly sacrificing the substance for the ideal with a vengeance, though one cannot, of course, but admire the altruistic spirit involved."

"For some inscrutable reason," Dr. Francis continued, "the gentlemen responsible for this proposed legislation forget the broad American principle of fair play and propose to indulge in class legislation of the most pronounced kind. A man who discovers a new toy or similar device may have as complete protection as the generous spirit of the American law can provide him. The man who devotes his brains and time and perhaps his entire fortune to the laborious development of a newly conceived therapeutic agent for the curing of some grave disease, is to be deprived of such protection."

Frank G. Ryan, President of Parke, Davis & Co., calls attention to the fact that the elimination of the product patent would defeat its own end. "No process patent," he said, "however well drawn, can be protected. You can get no evidence, except through a detective system put into the infringer's laboratory, to prove that he is using your process. There is no practical way of defending a process patent. If you do away with a product patent, there can be only one result: Every inventor that gets up a new medicinal product will manufacture it in secret. It will be a perpetual monopoly as long as he can keep it

secret and the public will never get the benefit of its free use. Instead of being for seventeen years, it will be for seventy-seven years or one hundred and seventeen years; just so long as the manufacturer can keep his process secret."

ANNUAL MEETING OF CHICAGO
VETERAN DRUGGISTS'
ASSOCIATION.

The Annual Meeting of the Chicago Veteran Druggists' Association was held Thursday, May 15. President Frank Schrage and Secretary Wilhelm Bodemann presented their annual reports, both of which indicated that the association's work has progressed during the year just closed, the membership being up to the maximum and finances in excellent shape.

The Honorary President, O. F. Fuller, extended congratulations to the members upon the completion of another year in the association's history and concluded by invoking the richest blessing of Almighty God upon the organization throughout the coming year.

During the year the association has lost by death four of its honored members: F. M. Schmidt, Charles Fuller, Fred W. Blocki and Herman Weber.

The election of officers resulted as follows:

President, Frank Schrage.

Vice-President, E. von Hermann.

Sergeant-at-Arms, Iver Quales.

MINNESOTA "PREREQUISITE"
DINNER.

Representative H. C. Trowbridge, of the Minnesota Legislature; J. P. Jelinek, Chairman of the Minnesota State Pharmaceutical Association's Legislative Committee, and Dr. E. L. Newcomb, Secretary of the Association, were the honored guests at a complimentary dinner given at the Saint Paul Hotel, St. Paul, Minn., the night of May 6, by fellow-druggists in tribute to their work toward the passage by the recent Minnesota Legislature of the long-sought "prerequisite" law.

Representative Trowbridge, who introduced the measure in the Legislature, is a druggist at Austin, Minn. Fifty guests attended the dinner.

Dr. Newcomb was presented with a gold watch, the gift of his assembled colleagues of the pharmaceutical profession. Mr. Jelinek made the presentation speech.

Dean Frederick J. Wulling, of the University of Minnesota, spoke enthusiastically of the benefits that will accrue to Minnesota pharmacists through the passage of the prerequisite bill.

OBITUARY.

F. W. R. PERRY.

F. W. R. Perry, President of Detroit Drug Company, Michigan, died of pneumonia April 22. Mr. Perry graduated from the University of Michigan, Class of 1880; he retained his interest in the school and was always one of the leading spirits among the alumni of his Alma Mater. He was widely known as an Association worker and as a successful business man, the company of which he was the head owning ten or more retail drug stores in Detroit. Mr. Perry was for a number of years a member of the Michigan Board of Pharmacy, and President of the Detroit Retail Druggists' Association, and for a term President of the Michigan State Pharmaceutical Association. He was Local Secretary for the Mackinac meeting of the American Pharmaceutical Association and quite a regular attendant of the annual conventions of the A. Ph. A.



F. W. R. PERRY.

Mr. Perry was sixty years of age; he joined the Association in 1895. Mrs. Perry and a sister survive the deceased.

CLARENCE G. STONE.

Clarence G. Stone, late of Mt. Vernon, N. Y., was born in Detroit, Mich., July 3, 1859. After attending the public schools of the latter city he graduated from Detroit High School in 1875, and then attended the School of Pharmacy of the University of Michigan, where he

earned the degree of pharmaceutical chemist. After graduation, Mr. Stone was engaged in the retail drug business for three years.

His first experience in the wholesale business was as a traveling salesman in Michigan territory and the Northwest for the firm of McKesson & Robbins, of New York, and he remained with them for seven years. In 1888 he decided to re-enter the retail business and bought a fourth interest in H. J. Milbourn & Co., of Detroit, by whom he had formerly been employed as a clerk, but after a year he again went on the road as a traveling salesman for the Mellin's Food Company. From 1889 to 1902 he held this position, traveling in Missouri, Michigan, Illinois, Nebraska and Minnesota, and later in New York State. He came to New York City in 1896, and left the company to go with the Lambert Pharmaceutical Company as New York manager of their eastern branch, which position he held until his death.

While Mr. Stone was frequently in attendance at the annual conventions of the American Pharmaceutical Association, his interests were largely with those of the National Wholesale Druggists' Association. He joined the A. Ph. A. in 1901.

The deceased was a member of quite a number of social and fraternal organizations, among the latter the Detroit Masonic bodies.

Mr. Stone married Miss Alice J. Evans, a sister of the late William J. Evans, of McKesson & Robbins, at Hamilton, Canada, in 1887. She died in 1902. He leaves a sister, Miss Edith May Stone, and two sons, Clarence G. Stone, Jr., and Evans F. A. Stone, both of Mt. Vernon.

Burial services were held in Detroit, Mich.

EDGAR R. THOME.

Edgar R. Thome died at his home, Jackson, Mich., March 22, 1919, of bronchial pneumonia. Mr. Thome was born October 11, 1885, at West Hanover, Pa. He was a graduate of the University of Maryland, Class of 1906. He was associated with Dr. Engelhardt, of Sharp & Dohme, Baltimore, Md., for three years, then accepted a position as chemist for the Tilden Company, New Lebanon, N. Y. At the time of his death he was chemist for the O. F. Schmid Chemical Co., Jackson, Mich., which position he had held for seven years; he was highly esteemed by the Company.

He is survived by his wife and two children,

also his mother and one brother who is a pharmacist in the Navy at Brest, France.

Funeral services were conducted by Rev. John Wall, of St. John's Catholic Church. Interment was made in St. John's cemetery at Jackson.

ROSE P. SCHMID.

Miss Rose P. Schmid died in Los Angeles, May 7, where she had gone about a year ago, seeking to improve her health.

Miss Schmid graduated from the Pharmacy Department of the University of Illinois in

1910. She was employed in the drug store of her brother, Louis Schmid, Chicago, and also for a time as pharmacist in the Chicago Hahneman Hospital.

The funeral ceremonies were held in Chicago and under the auspices of the Eastern Star. Many students and members of the faculty of the University of Illinois and representatives of the Chicago Retail Druggists' Association attended the burial services.

Miss Schmid joined the American Pharmaceutical Association in 1911.

THE PHARMACIST AND THE LAW.

Reports from Washington indicate that many Senators and Congressmen are heartily in favor of the repeal of the soda water and ice cream tax and also of the "luxury tax." The latter, in the opinion of the majority, will be repealed and it is believed by many that the soda water tax will be eliminated along with luxury levies. President Wilson in his message stated:

"Many of the minor taxes provided for in the revenue legislation of 1917 and 1918, though no doubt made necessary by the pressing necessities of the war time, could hardly find sufficient justification under the easier circumstances of peace, and can now happily be got rid of. Among these, I hope you will agree, are the excises upon various manufactures and the taxes upon retail sales. They are unequal in the incidence on different industries and on different individuals. Their collection is difficult and expensive. Those which are levied upon articles sold at retail are largely evaded by the readjustment of retail prices.

ALCOHOL LEGISLATION.

The Revenue Department is evidently desirous of handling the alcohol question without unreasonable restrictions, that may be permissible under the law. The officials realize the conditions and are willing to credit pharmacists with a desire to conform to the regulations. Common sense and necessity demand that no legislation be enacted that would prevent the manufacture and sale of bonafide medicinal preparations containing alcohol. Druggists should interest themselves more in the questions involved. President Charles H. LaWall, of the A. Ph. A., and other members of the Association, recently had a very satisfactory interview with the officials of the Revenue Department. They also

attended the hearing of the Food Officials of the U. S. Department of Agriculture when proposed revision of the rules and regulations for the enforcement of the Food and Drugs Act was discussed, May 19.

EXCISE TAXES ON TOILET AND MEDICINAL PREPARATIONS.

IMPOSITION OF TAX.

SEC. 907. (a) That on and after May 1, 1919, there shall be levied, assessed, collected and paid (in lieu of the taxes imposed by subdivisions (g) and (h) of section 600 of the Revenue Act of 1917) a tax of 1 cent for each 25 cents or fraction thereof of the amount paid for any of the following articles when sold by or for a dealer or his estate on or after such date for consumption or use.

ARTICLE 1. *Effective date.*—The tax is effective as to all sales made on and after May 1, 1919, superseding the manufacturers' tax imposed by subdivisions (g) and (h) of section 600 of the Revenue Act of 1917, which tax remains in force until and including April 30, 1919.

ART. 2. *Basis of tax.*—The tax is measured by the price for which the article is sold. It is on the actual sales price and not on the list price, where that differs from the sales price. The tax is payable in respect to a sale made, whether or not the purchase price is actually collected. * * *

ART. 4. *Giving of premiums.*—The giving of so-called "premiums" in return for wrappers, labels, coupons, trading stamps, or other scrip delivered or sold in connection with the sale of a commodity is a sale by a dealer within the meaning of this section if the premium is within the class of enumerated articles. In such cases the tax attaches at the time title

in the premium passes to the person receiving it in exchange for such scrip and is to be computed on the fair market value of the premium at such time.

ART. 7. *Amount of the tax.*—The amount of the tax is 1 cent of each 25 cents or fraction thereof of the amount paid by the purchaser for the articles; and the dealer, after exactly determining the selling price of the article, must affix thereto stamp or stamps of the proper denomination denoting the correct amount of the tax; and these two amounts, being distinct separate entities, must be clearly shown to the purchaser to be the price of the article sold and the amount of the tax due thereon.

TOILET PREPARATIONS.

(1) Perfumes, essences, extracts, toilet waters, cosmetics, petroleum jellies, hair oils, pomades, hair dressings, hair restoratives, hair dyes, tooth and mouth washes, dentifrices, tooth pastes, aromatic cachous, toilet powders (other than soap powders), or any similar substance, article, or preparation by whatsoever name known or distinguished, any of the above which are used or applied or intended to be used or applied for toilet purposes.

ART. 9. *Toilet preparations.*—Section 907 includes concentrated extracts or essences sold to the user to be used in connection with the toilet, bath, or the care of the body, or upon the clothing as a perfume or toilet article. However, concentrated essences sold for the purpose of making toilet articles, but not for use as such, are not subject to the tax.

Toilet soap powders are expressly exempted by the act. Toilet soaps are not taxable under section 907, but they, as well as toilet soap powders, are taxable under section 900 when sold by the manufacturer, producer, or importer.

ART. 10. *Containers.*—The tax is upon the combined price of the container and its contents. The containers of taxable articles constitute a part of the article sold when sold filled with the taxable preparation.

MEDICINAL PREPARATIONS.

(2) Pills, tablets, powders, tinctures, troches or lozenges, sirups, medicinal cordials or bitters, anodynes, tonics, plasters, liniments, salves, ointments, pastes, drops, waters (except those taxed under section 628 of this act), essences, spirits, oils, and other medicinal

preparations, compounds, or compositions (not including serums and antitoxins), upon the amount paid for any of the above as to which the manufacturer or producer claims to have any private formula, secret, or occult art for making or preparing the same, or has or claims to have any exclusive right or title to the making or preparing the same, or which are prepared, uttered, vended, or exposed for sale under any letters patent, or trade-mark, or which (if prepared by any formula, published or unpublished) are held out or recommended to the public by the makers, vendors, or proprietors thereof as proprietary medicines or medicinal proprietary articles or preparations, or as remedies or specifics for any disease, diseases, or affection whatever affecting the human or animal body: *Provided*, That the provisions of this section shall not apply to the sale of vaccines and bacterines which are not advertised to the general lay public, nor to the sale by a physician in personal attendance upon a patient of medicinal preparations not so advertised.

ART. 11. *Medicinal preparations: Articles included.*—A medicine, medicinal preparation, or specific is a preparation of any substance whatever intended to be applied for the prevention, cure, or mitigation of pain or disease in the human or animal body. Medicinal preparations for beasts, when the same would be taxable if used by man, are taxable; thus, for example, Arona, National Corn Remover, and Criswell's Jimson Weed Plasters are taxable. But sprays to be applied to cows, horses and other animals, to keep off flies, vermin, etc., are not taxable. (See Art. 17.)

PREPARATIONS NOT TAXABLE.

ART. 17. *Preparations not taxable.*—(a) Preparations made in accordance with formulas contained in the United States Pharmacopoeia and National Formulary by pharmaceutical manufacturers, when not held out or recommended as proprietary medicines or medicinal proprietary articles or preparations, or as remedies or specifics, are not subject to the tax, but if so held out or recommended they are taxable, although not identified by any name, trade-mark, or otherwise.

(b) Food preparations as distinguished from medicinal preparations are not taxable; thus products recommended as food for the sick (other than as remedies or specifics for an ailment), such as Thompson's malted milk,

malted beef peptone, or Horlick's malted milk, are not taxable. So, too, articles and preparations commonly known as stock foods, avianous carbolineum, mixed feeds, chicken feeds, etc., not recommended or held out as remedies or specifics for affections or diseases, but as feed only, and other food preparations, whether for man or beast, unless held out or recommended as remedies or specifics for diseases of the human or animal body, are not taxable.

(c) Poisons and exterminators of rodents and insects, insecticides, disinfectants (other than those manufactured and sold for use in the

treatment of wounds or as cleansers of any portion of the human or animal body), are not medicines or medicinal preparations, compounds, or compositions within the meaning of this section, and are not taxable.

(d) Vaccines and bacterines which are not advertised to the general lay public, and all serums and antitoxins, are specifically exempted from taxation.

(e) Natural mineral waters and table waters, and artificial mineral waters (whether carbonated or not), and other carbonated waters, are not taxable under section 907 if intended for use solely as beverages.

BOOK NOTICES AND REVIEWS.

Sex and Sex Worship. (Phallic Worship.) A scientific treatise on sex, its nature and function, and its influence on art, science, architecture, literature and religion—with special reference to sex worship and symbolism. By O. A. Wall, M.D., Ph.G., Ph.M. 625 pages, $6\frac{3}{4} \times 9\frac{3}{4}$, with 375 beautiful illustrations, including halftones and line drawings, from one of the largest collections in the world on the subject. Beautifully printed on special sepia paper and bound in blue silk cloth with gold stamping on front cover and backbone. Price, postpaid, \$7.50.

Professor Wall has written the first book that treats of phallic worship in connection with the evolution of the human body and mind. He has been an ardent student of the subject for more than a third of a century and only recently consented to the publication of his material. The book is authoritative. It explains the nature of sex and the ideas associated with it from primitive times to the present day; its influence on achievements of the human race in developing its religions, arts, architecture, literature, science and social relationships. The whole study is profusely illustrated with examples of ancient, medieval and modern art and ornamentation, Pagan as well as Christian.

Some of the subjects covered: Sex; Modern Religions; Other Beliefs; How Old is Mankind? Nature of Sex; Nature of Reproduction; Status of Woman; Cosmogonies; Gemetria; Bible of the Greeks; In Animals and Mankind; Light on a Dark Subject; Social Relations of Men and Women; Gratification of the Senses; Art and Ethics; Sculpture; Art Anatomy; Credulity; Lycanthropy; Origin of Religious Ideas; Primitive Beliefs; Sexual Relationships

of the Gods; Gods Lived Like Men; Monogamy, Polygamy; Phallic Worship; Plant Worship; Animal Worship; Some Gods; Eternal Feminine; Virgin Worship; About Goddesses; Mere Mortal Women; Sexual Union among Deities; Serpent Worship; Worship of Heavenly Bodies; Phallic Festivals; Water; Is There an Immortal Soul?

Sex and Sex Worship has more or less interest for every student; however, few have given sufficient study thereto to attempt a critical review, hence this writing must be in the form of a notice. The name of the author and his extensive library on related subjects speak for the thoroughness with which the text has been prepared, and the publishers, C. V. Mosby Company, of St. Louis, have produced a work of art. The book is beautifully printed on tinted paper and handsomely bound in blue silk cloth with gold stamping on front cover and backbone.

Manual of Laboratory Practice for Students of Pharmacy. By George B. Kauffman, B.Sc., Phr.D., James H. Beal, D.Sc., Phr.D., and Julius A. Koch, Ph.D., Phr.D. Third edition, 92 pages, interleaved. Published by The Midland Publishing Company, Columbus, Ohio. Price, \$1.50 plus postage.

This is the third edition of the Manual; the arrangement follows preceding editions. There are five parts and these are concerned with Physical Operations; Galenical Preparations; Preparation and Purification of Chemicals; Prescription Practice; Volumetric Analysis; Gravimetric Analysis and Pharmaceutical Assaying.

The purpose of the Manual is to serve as a guide for students in the laboratory work con-

cerned with the preparations, manipulations and processes dealt with. Types of these have been selected so that the experience gained with them enables the students to make further application. On the whole the selections have been carefully made; however, under Prescription Practice we fail to find prescriptions for liquids in capsules and ampuls. Also, in the revision, the preparation of Dakin's solution of Dichloramin T., etc. and paraffin films should have been added. Some of the galenicals might have been omitted, and others that are extensively used, like Solution of Magnesium Citrate, included.

While the Manual is primarily intended for students in colleges of pharmacy, it is adapted for home study.

PUBLICATIONS RECEIVED.

Proceedings of the Eighteenth Annual Session of the State Library and Historical Society of North Carolina, 1917. E. Vernon Howell, well-known member of the American Pharmaceutical Association, contributes to these pages (pp. 72-103) "Medical and Pharmaceutical Conditions in the Confederacy." The article, which is replete with statistics, was prepared from material in his extensive library. Aside from reports of the Medical Department relating to the Surgeon General's office, the hospitals, etc., an interesting table

is given enumerating the indigenous drugs used, purpose and dose, that replaced unobtainable medicines. There is also a schedule of prices obtaining during these trying times

Proceedings of the Nineteenth Annual Meeting of the American Conference of Pharmaceutical Faculties, Chicago, August 12-13, 1918. Secretary Theodore J. Bradley has done good work in the preparation of this report. Halftone engravings of Professors Joseph P. Remington, Charles E. Caspari, Jr., and Alfred Birch Huested are included.

The Supplement to the United States Medical Bulletin. Published for the information of the Hospital Corps of the Navy.—Issued by The Bureau of Medicine and Surgery, Navy Department, Division of Publications, Captain J. S. Taylor, Medical Corps, United States Navy, in charge. Edited by Lieutenant Commander G. F. Cottle, Medical Corps United States Navy, April, 1919.

Copies of the Supplement may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., by inclosing 5 cents in cash.

This number of the Supplement contains papers 9 and 11 of the Correspondence Course for naval pharmacists. The first relates to the furnishing of a dispensary and the latter to the selection and purchase of X-ray equipment.

OFFICERS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION 1918-1919.

President—Charles H. LaWall, 39 South 10th St., Philadelphia, Pa.

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Reporter on the Progress of Pharmacy—H. V. Arny, 115 West 68th St., New York, N. Y.

Editor of the Journal—E. G. Eberle, 253 Bourse Bldg., Philadelphia, Pa.

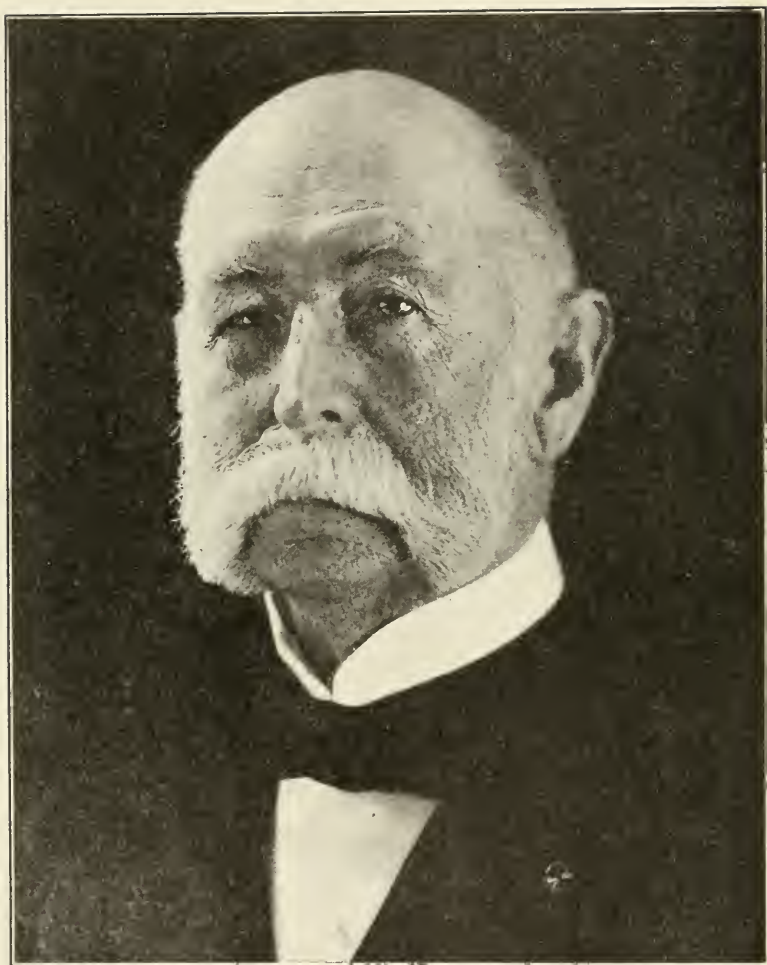
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JAMES VERNOR
DETROIT, MICH.

Member of the American Pharmaceutical Association since 1866.



JAMES VERNOR.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

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JAMES VERNOR.

James Vernor, when six years old, left Albany, New York, with his parents and went West. This was in 1849, the same year that the wild and frantic rush to the California gold fields began. The Vernors, however, didn't follow the crowd; not all the way. They journeyed to Detroit, which was then a mere trading post, and there they stayed.

It was right in this city that James Vernor went to school, played "mibs," flew kites, swapped knives, toiled as a druggist's apprentice, ran a drug store, and built up a gigantic business on a single drug-store product—ginger ale; a product originated in his little drug store.

James Vernor was sixteen years old when he rounded out his common-school education. He then went to work as apprentice in the firm of Higbee & Stearns, retail and wholesale druggist. At the end of three years, he was placed in charge of the pharmaceutical laboratory of the firm. His business career was temporarily interrupted when the Civil War broke out. He enlisted with the Fourth Michigan Cavalry, serving for two years as a hospital steward. He was then promoted to a lieutenancy and officiated in that capacity up to the expiration of the war. He then went back to Detroit and resumed his connection with Higbee & Stearns. He was placed in charge of the retail store and remained in that position for about a year. In 1866, Mr. Vernor opened a retail drug store in partnership with Charles L'Hommedieu. Two years later, Mr. L'Hommedieu retired from the firm and James Vernor continued the business until 1896, when he disposed of his store so that he could devote all of his time to the ginger ale business, which had grown to one of big proportions.

During Mr. Vernor's life as a druggist, he served for eight years as a member of the Michigan State Board of Pharmacy. In civic affairs of Detroit, also, he has been and still continues an active worker. He has been city alderman for eighteen years. Mr. Vernor has the added distinction of being a life member of the A. Ph. A.; he joined the Association in 1866.

F. G. EBNER.

EDITORIAL

E. G. EBERLE, Editor

253 Bourse Bldg., PHILADELPHIA

THE EFFECT OF PROHIBITION LEGISLATION ON PHARMACY AND THE INDUSTRIES.

IT is unfortunate that it is possible to use a product of such great utility as alcohol as an intoxicant. However desirous the legislators and the Revenue Department may be to provide regulations which will properly control the sale, without interfering with the legitimate use in medicine and the industries, their task is not an easy one.

In regulating the sale of narcotics only their use in medicine needs consideration; beyond this the sales are largely illegal. It is quite different with regulations applying to alcohol; there is a need for it in the preparation of medicine; no other solvent and preservative has been found which will take its place; when commercially considered its value in the arts and industries, and usefulness as fuel, for motor power, illumination, etc., is even greater. The development of the dye and medicinal chemical industries in Germany was largely on account of cheap alcohol and the aid given to industries using alcohol in manufacturing. Our Government is, therefore, confronted not only with the necessity of regulating the sale of alcohol, its use in pharmaceutical and chemical manufacturing, but with the phase of great commercial importance, the possibilities of which under encouragement can hardly be predetermined. As was stated at the hearing in Congress, "Alcohol occupies a tremendously important position in the industries of the country, as important industrially as pig iron would not be an extravagant statement." In the manufacture of pharmaceuticals and medicinal chemicals it is absolutely essential, and the regulations should not seriously hamper their manufacture, increase the cost of medicines, or seriously interfere with the dispensing of it or with legitimate sales. Legislation which will meet all immediate requirements seems almost impossible, so that the Secretary of the Treasury and the Secretary of Agriculture, in conjunction with the Revenue Department, should be given authority to issue regulations that will meet exigencies. In providing these regulations conferences should be held with representatives of interested activities. It must be accepted that the great majority of our citizens, though engaged in lines regulated by law, are sincerely desirous of complying with the wishes of the Government. With the conclusion of peace the United States enters into more intense commercial competition with other countries than ever before, and the prosperity of business and the industries is dependent upon coöperation of our Government with its citizens. There is need for enterprise; the unscrupulous must be given to understand that clean methods of business only will be permitted; that sharp practices

are hurtful not only to those who apply them but to those engaged in the same activities, and to the nation also.

The prohibition bills before Congress, at this writing, have what to us seem serious defects, namely, the great power given to an individual, his deputies or agents, and authorizing this Federal Prohibition Commissioner to issue additional rules and regulations which shall have all the force and effect of the Act itself, the unlimited right of search, and the very severe penalties, which may absolutely destroy a business and ruin an individual although there has been no intentional violation. Many druggists have in the past suffered because of the officious and malicious acts of some inspectors. There is evidence during the past decade of the Federal Government gathering to itself power which has affected every citizen. During the war it was necessary to give unlimited authority to the Government, but the time has now come when there is no need of these extraordinary powers which may endanger democracy.

With the advent of prohibition it would seem that the Retail Liquor Dealer's license goes out of existence. The majority of druggists will meet the conditions of the prohibition laws with careful thought and sincere patriotism, and loyalty to pharmacy. They, practically alone, will have the right to dispense alcoholics for defined purposes, and there is no question but that every scheme and device known to the ingenuity of man will be set in motion to tempt them to violate their obligations. As with narcotic legislation, and probably to a greater extent, there will be transgressors, but we feel assured that the great majority will be faithful. Further watchfulness will be necessary in taking care of physicians who will write prescriptions for those who seek to obtain alcoholic stimulants; in fact, the greatest danger is in such illegal coöperation between disreputable doctors and druggists, just as in narcotic sales.

Druggists are not opposing prohibition, and there is no sound reason why the legitimate sale and use of alcohol should be interfered with. Utmost vigilance should be observed, and it is hoped that the good judgment of legislators will prevail in perfecting legislation and regulations that will work no serious injury to the drug and allied trades, and encourage the manufacture of industrial alcohol for the promotion of American industries.

E. G. E.

COÖPERATION AS WELL AS ORGANIZATION.*

BY J. W. ENGLAND.

What is most needed to-day in American pharmacy is unity of effort—not only better national organization, not only better state organization, but also, better national and state coöperation.

* Presented at annual meeting of Pennsylvania Pharmaceutical Association, June, 1919.

The state bodies can and do take care of state interests, and successfully, but there are many questions of state interest that are of national importance, and many of national importance that are of state interest. In other words, the interests of each are the interests of both; they are interdependent.

The wonderful success of the American Medical Association as the spokesman of American Medicine has been due to its recognition of the vital importance of national and state affiliation, and to its campaigns of publicity, both professionally and to the general public; and American pharmacy may well profit by its example.

The main-spring of pharmacy is the profession of pharmacy. Eliminate this from the drug store and it becomes a drugless drug store.

During the past fifty years, the American drug store has undergone a radical change, and, rightly or wrongly, commercial pharmacy has become its dominant feature.

But there are two kinds of commercial pharmacy—a legitimate kind which consists in the buying and selling of drugs and such side lines as reasonably relate to pharmacy, and an illegitimate kind which consists in the buying and selling of almost any class of merchandise that brings money into the till, the pharmacy end of the business being simply incidental.

It is this trend toward illegitimate commercial pharmacy—towards commercialism, pure and simple—that is rapidly becoming a menace to the existence of drug stores. There is a real public need for legitimate commercial pharmacy; in fact, the service of the American drug store in this respect is of the greatest public convenience, but this is a far cry from the illegitimate commercialism that is masquerading in the name of pharmacy, and which is injuring the professional character and standing of retail drug stores with the American public, particularly with the medical profession.

It is hardly worth while discussing the responsibility for this condition. It is here and the problem is how best to meet it. But it may be said in passing that the medical profession is primarily responsible because it has been indifferent to the profession of pharmacy *as a profession*, failing to give it that support and co-operation that was essential for its proper functioning, ignoring the fact that there is a very vital relationship between therapeutics and pharmacy and what affects one will affect the other. The responsibility is due, also, to the economic conditions that have forced retail druggists to depend more and more upon commercialism to eke out a livelihood.

The solution of such a problem—the betterment of the conditions of pharmaceutical practice, is not a state problem merely, it is one that is of interest to the retail druggists of the whole country, and the way to solve it successfully is by state and national coöperation.

There are many other questions of like import. We need, for example, better relations with the medical profession. We want physicians to recognize the importance and usefulness of pharmacy to medicine. We don't want tolerance, but we do want and need the sympathetic support and coöperation of the medical profession with the profession of pharmacy, and the way to get this is by affiliation of the state associations with the American Pharmaceutical Association, which stands preëminently for professional pharmacy, and by the latter with medical organizations.

There are many ways in which such coöperation could be made mutually helpful. For example, there is needed to-day, in the cities and towns of the country, laboratory technicians—experts in bacteriology, biology, radiography, microscopy, clinical chemistry, etc. Pharmacists could readily train as such and be of real service to the medical profession in helping to confirm or solve problems of diagnosis. But such a service would not be used unless it had the endorsement of the medical profession.

Furthermore, the problem of compulsory health insurance legislation, national and state, is looming large on the political horizon, and unless pharmacists and physicians work together for the protection of medicine and pharmacy both will suffer seriously.

The subject of closer affiliation between the state pharmaceutical associations and the American Pharmaceutical Association should have the fullest and freest consideration from every angle. There should be no hasty action. But it does seem to me that the possibilities of closer affiliation are so obvious that it would be entirely safe, first, for every state pharmaceutical association to approve the general principle of closer affiliation, and second, to appoint the three delegates from the state association (who will represent it in the House of Delegates of the American Pharmaceutical Association) as a Committee on Ways and Means to consider the question fully and report their findings and recommendations at next year's meetings of the State Associations; and, if in order, I would suggest such an action by the Pennsylvania Pharmaceutical Association.

The following resolution was unanimously adopted:

That we re-approve (The Pennsylvania Pharmaceutical Association) the general principle of federation as promulgated by the American Pharmaceutical Association, that we appoint our three delegates to attend the annual convention at New York in August, 1919, and instruct these delegates to state to the convention that the plan of combining the dues (A. Ph. A. and State Pharmaceutical Associations) on the basis of 100 percent membership is not feasible, but that if some feasible plan can be devised for combining the dues and giving State members the publications of the American Pharmaceutical Association, we would approve of the plan.

A GRANT FOR RESEARCH.

The American Pharmaceutical Association has available a sum amounting to about \$240 which will be expended during 1919-1920 for encouragement of research. This amount, either in full or in fractions, will be awarded in such manner as will, in the judgment of the A. Ph. A. Research Committee, produce the greatest good to American Pharmaceutical research.

Investigators desiring financial aid in their work will communicate before August first with H. V. Arny, Chairman A. Ph. A. Research Committee, 115 W. 68th St., New York, giving their past record and outlining the particular line of work for which the grant is desired.

The committee will give each application its careful attention and will make recommendations to the American Pharmaceutical Association at its meeting in New York, August 25-29, 1919, when the award or awards will be made.

IODINE TINCTURES, WATER-SOLUBLE.*

BY TORALD SOLLMANN.¹

Water-soluble tincture of iodine, devoid of potassium or sodium iodide, have been widely advertised as superior to the U. S. P. tincture, under the claim that potassium iodide "produces a localized irritation." It is, of course, highly improbable that potassium iodide should be more irritant than the hydriodic acid that is present in these preparations; in fact, a substance would need to be a fairly powerful irritant to modify the irritation of the free iodine to a noticeable degree. However, it appeared advisable to subject the claim to direct tests, using the secret "Burnham's Iodine" and "Surgodine," and comparing them with analogous non-secret preparations, as well as with the official tinctures. The results of the physiologic tests, which are reported elsewhere, confirmed that the claims of superiority are untenable. However, the formulas that were devised for the non-secret preparations may have some pharmaceutic interest.

Effect of Hydriodic Acid on the Solubility of Iodine.—Preliminary assays of Burnham's Iodine and of Surgodine showed that they contain from 2.2 to 3.2 percent of free iodine, and a variable amount of combined iodine in a volatile form, chiefly hydriodic acid (1.2 to 2.6 percent). It is quite probable that the hydriodic acid is not added as such, but is formed in secret processes of preparing these mixtures. In any case, however, it seemed probable that it represents the solvent agent, and it was therefore planned to add it directly to the alcoholic iodine solutions.

The specimen of concentrated hydriodic acid was obtained from the Central Scientific Company, Chicago, and marked Specific Gravity 1.70. It assayed 0.95 Gm. of HI per Cc.

Increasing quantities of this acid were added to 7 percent and to 3 percent alcoholic solutions of iodine, until the mixtures could be poured into water without turbidity. 100 Cc. of the 7 percent iodine required 1 Cc. of the HI (specific gravity 1.7); 100 Cc. of 3 percent iodine required 0.1 Cc. of the HI (specific gravity 1.7).

It is noteworthy that the more dilute solutions of iodine require an even smaller ratio of hydriodic acid. Furthermore, the 7 percent solution, when made up with the minimum of HI, is not miscible in all proportions. It is therefore safer to increase the hydriodic acid.

I therefore used the two following formulas, which I found miscible with water in all proportions tried; in fact forming clearer solutions than Burnham's or Surgodine:

<i>Tinctura Iodi Hydriodica.</i>	7%.	3%.
Iodine.....	7 Gm.	3 Gm.
Hydriodic Acid, sp. gr. 1.7.....	2.2 Cc.	1 Cc.
Distilled Water.....	5 Cc.	
Alcohol, q. s.....	100 Cc.	100 Cc.

* This investigation was supported by a grant from the Therapeutic Research Committee of the Council on Pharmacy and Chemistry of the American Medical Association.

¹ From the Department of Pharmacology of the Medical School of Western Reserve University, Cleveland.

The 3 percent solution is practically the equivalent of the secret products and seems to be identical with Surgodine.

Other Solvents.—A few attempts were made with other substances that suggested themselves during the course of the work. They were unsuccessful, but may be briefly recorded.

Ethyl Iodide.—This is a good solvent for iodine, but is insoluble in water. For instance, a mixture of 1 volume of 3 percent alcoholic iodine solution and 2 volumes of ethyl iodide, when poured into water, separates into two layers, of which the watery layer is colorless.

Glycerin.—This mixes freely with 7 percent alcoholic iodine, but the iodine precipitates on the addition of water, even when large quantities of glycerin are used.

Lactic Acid.—Concentrated lactic acid mixes freely with 7 percent alcoholic iodine, but precipitates on dilution with water. A fairly high concentration of the acid is required to maintain solution.

Analytic Results.—The various preparations were examined for *free iodine* by titration with thiosulphate by the U. S. P. method, using 5 Cc. of the 7 percent preparations and 10 Cc. of the 3 percent solutions. The *acidity* was determined in this with N/10 NaOH. The *total iodine* was liberated by nitrite and acid, extracted with chloroform, and titrated with thiosulphate.

The assays were carried out by Miss J. R. Collacott.

The results are shown in Table I.

TABLE I.—ANALYSES OF IODINE PREPARATIONS (GM. PER 100 CC.).

Nature of the preparation.	Free iodine.	Acidity as HI.	Total iodine.	Combined iodine (inclusive of HI).
Burnham's soluble iodine.....	2.2-2.8	1.4	5.5	2.7
Surgodine.....	3.0	1.2	4.7	1.7
7% Hydriodic tincture.....	5.7	2.1	7.8	2.1
Iodine	7 Gm.			
Hydriodic acid (1.7)	2.2 Cc.			
Distilled water	5 Cc.			
Alcohol q. s.	100 Cc.			
3% Hydriodic tincture.....	3.1-3.2	0.8-1.0	4.0-4.2	0.8-1.1
Iodine	3 Gm.			
Hydriodic acid (1.7)	1 Cc.			
Alcohol q. s.	100 Cc.			

CONCLUSIONS.

The paper presents formulas for water-miscible *Hydriodic Tinctures of Iodine*, containing 7 percent and 3 percent of free iodine.

These are comparable to the secret "soluble iodines."

None of these, however, present any material therapeutic advantage over the U. S. P. tincture, or the simple alcoholic iodine solutions, in their respective fields.

SANTOLINA CHAMAECYPARISSUS L., AN ADULTERANT OF MATRICARIA CHAMOMILLA L.

BY JOSEPH F. CLEVINGER AND CLARE OLIN EWING.

Matricaria chamomilla L., commonly known as German Chamomile, is a crude drug product which is normally imported in considerable quantities. In the ante-bellum days instances of sophistication of this product were comparatively rare. During the recent war, however, the usual source of supply (Germany) having been shut off, the product has been subjected to considerable adulteration. Instances of adulteration with the flowers of dog fennel, *Anthemis cotula* L.,¹ and wild Roman chamomile, *Anthemis nobilis* L., have previously been observed in this laboratory.² Both of these adulterants have been described in some detail in the literature, the latter especially being discussed recently in considerable detail by Ballard.³

We have recently observed a new adulterant, not hitherto reported in the literature of drug adulteration, namely, *Santolina chamaecyparissus* L. A recent shipment invoiced as "Chamomile flowers," labeled in Spanish "La Manzanilla Aroma," consisted entirely of the flower heads of this species.

The Spanish name for chamomile is "Manzanilla." Under that title the flowers of the following species are recognized in the present Spanish Pharmacopoeia:⁴ "*Anthemis nobilis* L. (Manzanilla Romana), *Matricaria chamomilla* L. (Manzanilla ordinaria), y *Cotula aurea* L. (Manzanilla fina)." Whether or not

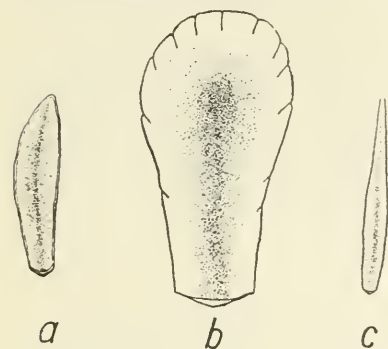


Fig. 1.—Chaffy scales of the receptacles of (a) *Santolina chamaecyparissus*, (b) *Anthemis nobilis*, and (c) *Anthemis cotula*, $\times 5$.

the name "La Manzanilla Aroma" was intended to convey the impression that the product was "La Manzanilla Romana" is a matter of conjecture, but since it was invoiced as "Chamomile flowers" and since *Matricaria chamomilla* is the only chamomile official, it must, of course, be considered as an adulterant of that product.

The genus *Santolina* of the family *Compositae* comprises only some six or eight species, of which *Santolina chamaecyparissus* is one of the more important. It is an erect branching bristly plant about one or two feet high, which is quite widespread in southern Europe, especially in Spain, where the present shipment originated. It is said to be the *Abrotanum foemina* of the ancients, their *Abrotanum mas* being our better known southernwood, *Artemisia abrotanum* L. More modern common names are garden cypress, ground cypress, and lavender cotton.⁵

¹ Service and Regulatory Announcements, Chemistry 22, 1918, item 257.

² Alsberg, Viehoever and Ewing, "Some Effects of the War upon Crude Drug Importations," J. A. Ph. A., 6, 459-471, 1919.

³ Ballard, "Wild Anthemis—A Possible Matricaria Adulterant," J. A. Ph. A., 9, 952, 1918.

⁴ Farmacopoea Espanola, VII, 411, 1905.

⁵ Van Wijk, Dictionary of Plant Names, I, 1207, 1911.

The flowers of *Santolina chamaecyparissus* have several characteristics which differentiate them from *Matricaria*. They, in common with certain *Anthemis* species which have been used as adulterants of *Matricaria*, have a solid⁶ chaffy receptacle, whereas that of *Matricaria* is hollow and without scales. The chaffy scales (Fig. 1-a) of the receptacle of *Santolina chamaecyparissus* resemble somewhat the well known glume of wheat and are different from the broad membranous scales of *Anthemis nobilis* (Fig. 1-b) and the bristly acuminate scales of *Anthemis cotula* (Fig. 1-c). By far the most notable characteristics of *Santolina* flowerheads, however, are the total absence of ray florets and the recurving of the disk florets (Fig. 2-a, b, d) which gives an appearance so different and so striking that even a novice should be able to distinguish them at first glance.

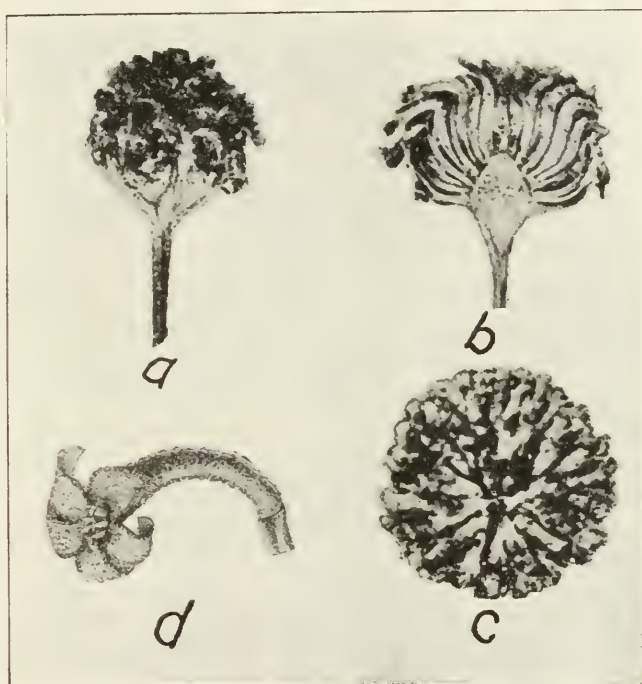


Fig. 2.—Flower head of *Santolina chamaecyparissus* L.

- a. Side view, $\times 4$.
- b. Cross section showing solid receptacle and recurved disk florets, $\times 4$.
- c. Top view, $\times 4$.
- d. Individual floret, $\times 10$. After Hoffman.

Although Rusby⁷ states that "several species of *Santolina* are used similarly" [to *Matricaria*], we have not found the flowers of this or any other species specifically noted or described in the literature as an adulterant of *Matricaria*. Hager,⁸ however, records the use of the leaves to adulterate rosemary leaves.

⁶ Most authorities on botany and pharmacognosy agree that *Anthemis nobilis* has a solid receptacle, although Kraemer (Scientific and Applied Pharmacognosy, 1915, 774) states it is "occasionally hollow."

⁷ Nat. Stand. Dispensatory, 1916, 1008.

⁸ Hager, *Handbuch der Pharmaceutischen Praxis*, II, 821, 1907.

With regard to the chemistry of the flowers themselves, little information is available in the literature. Maben⁹ reports a partial but non-illuminating proximate analysis of the "herb," which he speaks well of as an anthelmintic. His statement that the odor is due to a volatile oil is no doubt correct, although he reports no analysis to determine this. His conclusion that "the bitter principle which is probably of an alkaloidal nature, * * * seems to be the active portion of the drug * * *," is also without foundation so far as his recorded data show. The flowers of our sample were more aromatic than those of either German or Roman chamomile; the aroma, however, was somewhat camphoraceous and lacked the sweetness and suggestion of amyl acetate¹⁰ which is especially pronounced in the flowers of Roman chamomile. The taste was strongly camphoraceous and was less bitter than that of Roman chamomile; in the latter respect it more nearly resembled the German. Whatever the real medicinal qualities of the flowers may be, their appearance, flavor and taste make it unlikely that the product will be accepted by the trade as a substitute for either German or Roman chamomile.

PHARMACOGNOSY LABORATORY,
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POTENTIAL ACIDITY OF MILK AND A STANDARD METHOD FOR ITS DETERMINATION.

BY ROBERT WOOD TERRY.

Recently, during an investigation of the effect produced by the addition of the various alkalis to cows' milk, as practiced in infant feeding, a very peculiar phenomenon was noticed; namely, the acidity of milk is not proportionately reduced by the addition of water.

CHART A.—QUANTITY OF $\frac{N}{10}$ NaOH V.S. REQUIRED TO NEUTRALIZE FIFTEEN MILS OF MILK AT DIFFERENT DILUTIONS.

Percent milk.	Mils $\frac{N}{10}$ NaOH.				Blank.	Average.	Acidity.
	1.	2.	3.	4.			
100	2.64	2.62	2.65	2.63	0.03	2.605	17.36
75	2.50	2.47	2.49	2.49	0.03	2.460	16.40
50	2.25 ²	2.31	2.33	2.34	0.03	2.300	15.33
33.3	2.12 ²	2.18	2.21	2.24	0.04	2.170	14.46
25	2.06 ²	2.14	2.14	2.14	0.04	2.100	14.00
20	1.97 ²	2.07	2.02	2.06	0.05	2.000	13.33
10	1.91 ²	1.96	1.95	1.97	0.12	1.840	12.26
5 ¹	0.85	0.85	0.89	0.88	0.12	0.750	10.00

¹ Half Quantity.

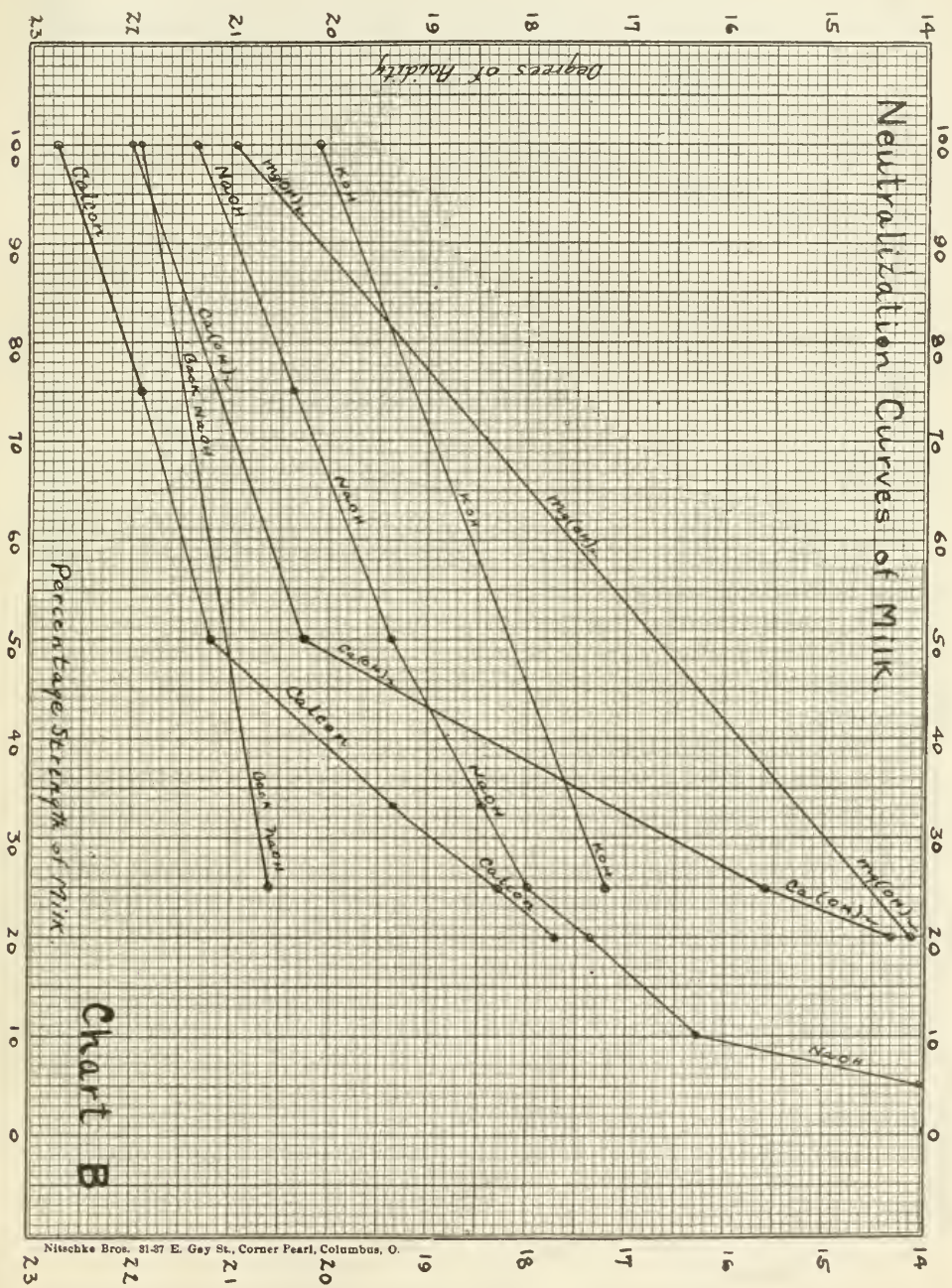
² Not an Average.

In one case, fifteen mils of milk required 2.60 mils of $\frac{N}{10}$ NaOH for neutralization, whereas, fifteen mils of milk and fifteen mils of water only required

⁹ Maben, "Note of Santolina chamaecyparissus," *Pharm. J.*, 3, 16, 301, 1885.

¹⁰ The suggestion of amyl acetate, which has also been noted by Ballard (Loc. cit.) is probably not due to this substance, which has not been reported in the literature of Roman chamomile, but may probably be attributed to combinations of esters of angelic acid which are said to occur in the oil of *Anthemis nobilis* combined with butyl-, isoamyl-, isohexyl-alcohol, and anthemol. (Blaise, E. E., *Bull. soc. chim.*, 29, 327, 1903, and Semmler, F. W., *Die Atherischen Öle*, I, 830-31, 1905.)

2.30 mls of $\frac{N}{10}$ NaOH. This phenomenon can be quickly demonstrated by titrating about ten mls of milk with lime water and phenolphthalein to a faint pink and then filling up the flask with carbon dioxide free water. Immediately the mixture assumes quite a deep shade of red. This effect on a titration is clearly shown in Chart "A."



At first it was thought that this effect might be due to the obscurity of the end-point, because of the opaqueness of the whole milk covering the pink phenolphthalein color. Titration in a dark room over an illuminated base gave practically identical results. A weak aqueous solution of red aniline was prepared and slowly added to ten mls of whole milk until the pink color was noticeable and this was repeated with ten mls of milk largely diluted. The amount required to produce a pink color was practically the same as with the whole milk, the difference being so small as to be negligible. Furthermore, the addition of water to whole milk and the aniline failed to increase the pink color as with milk and phenolphthalein. This shows that the phenomenon is not an optical one, such as end-point obscurity or the effect of complementary colors, especially so, since this same effect can be produced on colorless filtered whey, obtained by the action of rennin.

Although there are quite a few articles on milk acidity, a search of the literature revealed but two that mention or deal with this phenomenon and both of these were written about twenty-five years ago. No explanation of this phenomenon was offered by either investigator.¹

Upon experimentation, the following facts were noticed:

1. No indicator except phenolphthalein is useful for determining milk acidity.
2. Titrations with normal and tenth-normal solutions do not give identical results.
3. Titrations with $\frac{N}{10}$ NaOH and $\frac{N}{10}$ Ca(OH)₂^a do not give identical results.
4. A milk showing 18.75 degrees acidity with $\frac{N}{10}$ NaOH, gave by back titration 21.80 degrees acidity.
5. By direct titration twenty mls of milk (18.75 degrees acid) and 0.10 gramme CaCl₂·2H₂O showed 26.50 degrees acidity; back titration of same milk containing 0.10 gramme CaCl₂·2H₂O in twenty mls milk showed 27.55 degrees acidity.
6. Sodium citrate added to milk decreases its acidity.
7. Sodium oxalate acts in the same manner. A completely oxalated milk does not exhibit this phenomenon showing that calcium salts are either directly or indirectly responsible.

Chart "B" shows neutralization curves of the different alkalies at different dilutions of milk. The origin of each curve is correct except that of KOH and of NaOH; these were raised so that all curves might be put on the one chart; the true origin of both of these is 18 degrees acidity.

Most of these curves have only several determinations along the line because of the slowness of the work. The personal equation in milk titration is a large factor, so all titrations have to be performed by one operator, and each point must be the average of three or four closely agreeing results. Of course, this could be overcome by the use of a preserved milk, but it was thought best not to alter the milk in any form. The object of these curves was to furnish acidity factors for diluted milk feeding formulas, for which purpose they are more accurate than necessary.

^a Sucrose solution.

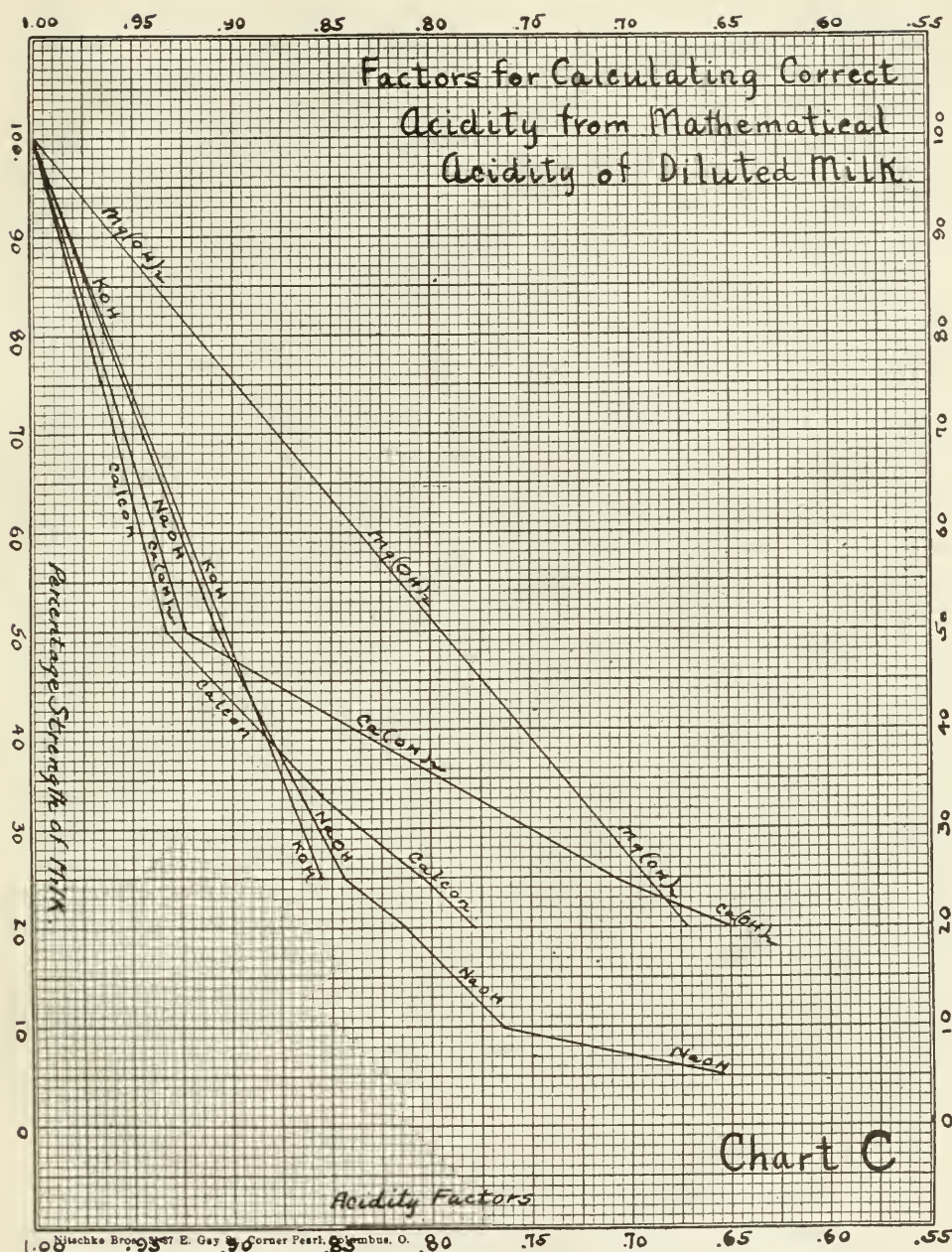


Chart "C" gives the factors for calculating the correct acidity of diluted milk mixtures by the use of the different alkalis. All that is necessary is to multiply the mathematical acidity by the factor for that strength milk.

Example: A physician desires to feed an infant a neutral milk mixture, consisting of

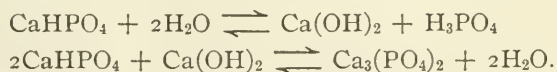
Milk.....	10 OZS.
Water.....	20 OZS.

the mixture to be neutralized with milk of magnesia.

The milk occupies 33.3% of the volume, therefore its original potential acidity has been mathematically reduced to 6 degrees (whole milk 18 degrees), but by consulting the factor table "Chart C," we find that the factor for milk of magnesia at 33.3% is 0.725; hence, the correct acidity of the mixture is 6×0.725 , or 4.35 degrees. The physician then will add only the quantity of milk of magnesia required to neutralize 4.35 degrees instead of 6 degrees. The use of these factors is probably too complicated for every day use, but physicians usually have a set of pet formulas for which these factors could be calculated. The use of these tables would be essential in any clinical work upon the subject.

A large number of eliminative experiments were performed and numerous artificial wheys were made and finally it was determined that this phenomenon is due to the freshly precipitated tertiary calcium phosphate ($\text{Ca}_3(\text{PO}_4)_2$) or possibly a mixture of the secondary salt (CaHPO_4) and the tertiary salt, but for convenience of expression it will be considered as being due to $\text{Ca}_3(\text{PO}_4)_2$ only. During a titration this substance is precipitated in a fine, almost colloidal state. Although this substance is but slightly soluble in water, its physical condition is such that it immediately saturates the fluid in which it is formed or any fluid which is added to it; especially is this so in the presence of citrates (normal constituents of milk), since it appears to be noticeably soluble in their presence. This phosphate hydrolyzes in water to produce an alkaline solution just as does its corresponding sodium salt, and of course only that which is in true solution can hydrolyze; hence, if one has a large volume of liquid in his titrating flask, naturally one will have more of the calcium phosphate in solution and therefore a larger amount of hydrolysis. This is the reason the end-point comes sooner in a diluted mixture. This theory can be demonstrated by titrating primary calcium phosphate ($\text{Ca}(\text{H}_2\text{PO}_4)_2$) with lime water and phenolphthalein to a faint pink and rapidly adding a large volume of distilled water (CO_2 free); the resulting solution will be a fairly deep red. Add a few milligrammes of normal sodium citrate and immediately an intense red color results, showing that the corresponding sodium salt hydrolyzes to a larger extent than does the calcium salt or, that the citrate renders the calcium salt more soluble so that more hydrolysis takes place. The concentration of the primary calcium phosphate solution should be about that of milk—ten mils requiring about five mils of lime water. This may also be demonstrated by actual titration of this solution at different dilutions.

Solutions or suspensions of secondary calcium phosphate gradually become acid on standing.



This action is very slow because it has been shown that it requires many days to establish an equilibrium between a solid calcium phosphate and the solution with which it is in contact.² That these equations are reversible may easily be demonstrated by titrating primary calcium phosphate to a faint pink with lime water and then adding boiling carbon dioxide free water; immediately the pink color disappears and the phosphates agglutinate in small floccules. Stopper the flask securely and place in cold water with occasional agitation; as soon as cool the solution will assume a fairly deep red color.

NOTE.—Calcon is a proprietary preparation.

Primary calcium phosphate was titrated with lime water to a faint pink and the proportions noted. Another lot was mixed in the same proportion but without the indicator. The proportions required fell between the theoretical amounts to produce CaHPO_4 and $\text{Ca}_3(\text{PO}_4)_2$. The hydrogen-ion concentration of this solution and a one in five dilution of it were determined by Clark & Lubs Colorimetric Method as described in the *Journal of Bacteriology*, January 1917.

The results are as follows:

FILTERED IMMEDIATELY.

100 percent Solution P_H	7.2	} Phenol red.
20 percent Solution P_H	8.0	

FILTERED AFTER 22 HOURS.

100 percent Solution P_H	6.0	} Brom-cresol-purple.
20 percent Solution P_H	6.4	

FILTERED AFTER 45 HOURS.

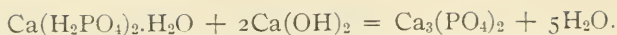
100 percent Solution P_H	5.6	} Brom-cresol-purple.
20 percent Solution P_H	6.2	

From the above data it will be seen that the result of a milk acidity determination is entirely dependent upon conditions that do not affect other titrations, so that results of one chemist may not be comparable with those of another. One authority recommends diluting twenty-five mils of milk to half a liter and then titrating so that the end-point may be more clearly noticed! Another recommends boiling to drive out carbon dioxide!

Van Slyke and Bosworth³ have suggested a method of determining milk acidity by precipitating the calcium salts by the use of neutral potassium oxalate. This reduces the titratable acidity about one-half, eliminates the error due to dilution and produces a somewhat sharper end-point. Notwithstanding these advantages, the writer does not believe that it is exactly proper to denaturize the milk in this manner and then titrate. This method may be a good analytical procedure, but it does not give actual titratable acidity. If the soluble or suspended calcium salts play a rôle in the titration, then that factor should be considered in the titration. Particularly is this so in calculating milk acidity in infant feeding for the correct addition of alkalies. Although the feasibility of adding alkalies to cows' milk in infant feeding has been questioned by some authorities, it can be proven that it has a scientific as well as a practical basis.

Cows' milk has about six times the potential acidity of human milk. Bosworth⁴ has claimed that the addition of lime water to cows' milk is not necessary because the titratable acidity of oxalated cows' milk and human milk are about the same. If we will analyze titrations by $\frac{N}{10}$ NaOH , $\frac{N}{10}$ $\text{Ca}(\text{OH})_2$ and of a completely oxalated solution, these points will be more understandable.

First—Titration of $\text{Ca}(\text{H}_2\text{PO}_4)_2$ with $\frac{N}{10}$ $\text{Ca}(\text{OH})_2$.—As the calcium hydroxide is added the $\text{Ca}_3(\text{PO}_4)_2$ is precipitated. This is so slightly soluble in water that but little hydrolysis takes place. The deviation from the end-point as expressed by the following equation is probably due to the alkaline hydrolysis of the $\text{Ca}_3(\text{PO}_4)_2$ in solution.



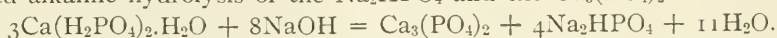
Mol. $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O}$ requires 40 liters $\frac{N}{10}$ V. S. $\text{Ca}(\text{OH})_2$.

Theoretically.—25 mls Mol./20 $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O}$ requires 50.00 mls $\frac{N}{10}$ $\text{Ca}(\text{OH})_2$.

Actually.—25 mls Mol./20 $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O}$ requires 45.75 mls $\frac{N}{10}$ $\text{Ca}(\text{OH})_2$.

Here it will be seen that the end-point comes before the above equation is completed, but long after the completion of an equation for the production of CaHPO_4 (theoretically 25 mls). It will be noted that the end-point falls very near the $\text{Ca}_3(\text{PO}_4)_2$ end-point, but quite a distance from the CaHPO_4 end-point. From this the writer believes that the $\text{Ca}_3(\text{PO}_4)_2$ end-point is the correct one and that any deviation from this is due to the alkaline hydrolysis of the $\text{Ca}_3(\text{PO}_4)_2$ rather than due to an acid hydrolysis from the CaHPO_4 end-point; especially since this acid hydrolysis is very slow as compared with the almost instantaneous alkaline hydrolysis. Citric acid, a tribasic acid, produces an end-point with phenolphthalein at the formation of the normal salt. In the above equation practically all the (PO_4) is precipitated and incapable of hydrolysis.

Second—Titration of $\text{Ca}(\text{H}_2\text{PO}_4)_2$ with $\frac{N}{10}$ NaOH .—In this case the deviation from the end-point as expressed by the following equation is due to the combined alkaline hydrolysis of the Na_2HPO_4 and the $\text{Ca}_3(\text{PO}_4)_2$.



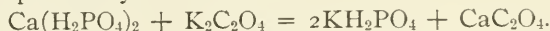
Here practically one-third of the (PO_4) is incapable of hydrolysis.

3 Mols. $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O}$ requires 80 liters of $\frac{N}{10}$ V. S. NaOH .

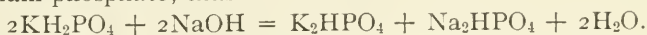
Theoretically.—25 mls Mol./20 $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O}$ requires 33.33 mls $\frac{N}{10}$ NaOH . (K_2HPO_4 and Na_2HPO_4 are slightly alkaline to phenolphthalein)

Actually.—25 mls Mol./20 $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O}$ requires 31.35 mls $\frac{N}{10}$ NaOH .

Third—Oxalated $\text{Ca}(\text{H}_2\text{PO}_4)_2$ Titrated with $\frac{N}{10}$ NaOH .—All the calcium salt has been precipitated by the oxalate—



Hence, one is now titrating primary potassium phosphate (KH_2PO_4) instead of the primary calcium phosphate; thus:



Mol. $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O}$ requires 20 liters $\frac{N}{10}$ V. S. NaOH .

Theoretically.—25 mls Mol./20 $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O} + \text{K}_2\text{C}_2\text{O}_4$ requires 25.00 mls $\frac{N}{10}$ NaOH .

(minus)

Actually.—25 mls Mol./20 $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O} + \text{K}_2\text{C}_2\text{O}_4$ requires 25.35 mls $\frac{N}{10}$ NaOH .

All the (PO_4) is in solution in this case. It will now be seen that the effect of the addition of potassium oxalate to milk before titration is that of converting insoluble compounds to soluble hydrolyzable compounds. This procedure does not seem logical to the writer.

Theoretically from these equations the volumes of alkali required are

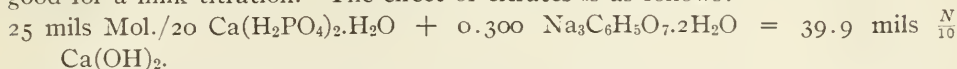
$\text{Ca}(\text{OH})_2$.	NaOH .	$\text{NaOH} + \text{K}_2\text{C}_2\text{O}_4$.
120	80	60

Actually they are

109.8	75.2	60.8
-------	------	------

or raising the actual value of $\text{Ca}(\text{OH})_2$ (109.8) to 120, the value of NaOH (75.2) is raised to 82.2.

Due to the presence of citrates the relations of these two alkalies do not hold good for a milk titration. The effect of citrates is as follows:



Raising the value of $\text{Ca}(\text{OH})_2$ (39.9) to 120 then the value of NaOH (30.05) is 90.3.

As before stated, the writer believes, in any titration of milk, the effect of the calcium salts and citrates on the alkali used should be measured; this is, however, not possible on an oxalated milk. By doubling the value of an oxalated milk titration one is given correct theoretical results; but here again it is not actual potential acidity. Direct titration with $\frac{N}{10}$ $\text{Ca}(\text{OH})_2$ gives results that are close to the theoretical results but it is thought not wise to adopt this alkali in a standard method as it is difficult to make and is not available as is the sodium solution. Results of any milk titration are only comparable with those of the same titration technic. Practically all the books, when referring to the degree of milk acidity, refer to that acidity which has been determined by sodium or potassium hydroxide so that the adoption of a calcium standard would raise these figures and probably cause some confusion.

Clark⁵ has based his deductions on the inadvisability of adding lime water to cows' milk, on electrometric measurements of hydrogen-ion concentrations of cows' milk, human milk, and cows' milk and lime water, as follows:

Davidsohn.⁶—

$$\left. \begin{array}{l} \text{Cows' milk } P_H = 6.57 \text{ or } C_H 2.69 \times 10^{-7} \\ \text{Human milk } P_H = 6.97 \text{ or } C_H 1.07 \times 10^{-7} \end{array} \right\} 18 \text{ degrees C.}$$

Clark.⁵—

$$\left. \begin{array}{l} \text{Cows' milk } P_H = 6.58 \text{ or } C_H 2.60 \times 10^{-7} \\ \text{Human milk } P_H = 7.22 \text{ or } C_H 0.60 \times 10^{-7} \end{array} \right\} 30 \text{ degrees C.}$$

Clark finds that when cows' milk is modified under certain conditions with distilled water, the values are

$$P_H = 6.90 \text{ or } C_H 1.2 \times 10^{-7}.$$

While modified under the same conditions plus 5% of lime water, the values are

$$P_H = 7.36 \text{ or } C_H 0.43 \times 10^{-7}.$$

The hydrogen-ion concentration of milk or milk mixtures may, to a limited extent, influence the velocity of the function of rennin, that is, the conversion of caseinogen to paracasein, but this has little, if anything, to do with the conversion of paracasein to calcium paracaseinate (true milk curds). The velocity of this change is a function of potential calcium ionization and potential calcium ionization is a function of *potential acidity*. Upon the rate of formation of the calcium paracaseinate depends its physical condition; the more rapidly it is formed, the more tough, impenetrable and indigestible it is. By the proper reduction of potential acidity, the curd (calcium paracaseinate) of cows' milk is precipitated

in a physical condition resembling the curd of human milk—soft, flocculent and readily digestible. This is the desideratum in adding alkalies to cows' milk in artificial infant feeding.

The above theory regarding milk coagulation and its alteration by alkalies has been worked out by the writer during some research work on this subject and this theory will be explained in detail in an article now in preparation.

From the above it will be apparent that a correct and uniform method of determining potential milk acidity and its proper reduction is of value, particularly in infant feeding.

For the sake of uniformity, the writer suggests the following method for determining milk acidity, which, if followed, will produce results that are comparable with other laboratories or chemists. It is hoped that this will be adopted as a standard method.

STANDARD METHOD FOR DETERMINING MILK ACIDITY.

Pipette 10 mls of milk into an Erlenmeyer flask of about 100 mls total capacity and add 5 drops of a 1 percent alcoholic solution of phenolphthalein. Titrate slowly to the first noticeable pink tint that is permanent for one minute. This is to be determined by comparing with a flask of the same shape and capacity and containing the same amount of milk; $\frac{N}{10}$ NaOH V.S. is to be used in the titration. One ml of $\frac{N}{10}$ NaOH represents 10 degrees of acidity. The titration is to be performed only in daylight. No water should be added before or during the titration.

NOTES ON THE PROCESS.

1. The titrating flask should be dry or containing, at the most, only a couple drops of water.

2. Exactly 5 drops of the indicator should be used as it has been shown by Hopkins and Powers¹ that this also affects the end-point.

3. The NaOH solution should be $\frac{N}{10}$ and should be as free from carbonates as possible but should not be prepared by using barium hydroxide. It is preferably standardized against purified potassium bitartrate as described in the United States Pharmacopoeia IX.

4. This concentration of alkali and milk and the conditions named give the best end-point excepting oxalated milk, so that nothing is gained by using a larger volume of milk. Some writers recommend 50 or 100 mls of milk as a sample and titrate with $\frac{N}{10}$ V. S. This large volume of milk renders the color changes so sluggish that a definite end-point cannot be noticed. This same drop-wise effect can be produced by using 25 mls of milk and $\frac{N}{4}$ alkali or 100 mls of milk and $\frac{N}{1}$ alkali, but the results are not the same as with 10 mls of milk and $\frac{N}{10}$ alkali which is shown as follows:

a. 10 mls and $\frac{N}{10}$ alkali—milk occupies 84.75 percent of volume in flask at end-point—acidity 18 degrees.

b. 25 mls of milk and $\frac{N}{4}$ alkali—milk occupies 93.3 percent of volume in flask at end-point—acidity 18.3 degrees.^a

c. 100 mls milk and $\frac{N}{1}$ alkali—milk occupies 98.4 percent of volume in flask at end-point—acidity 18.5 degrees.^a

^a Calculated.

This shows how necessary it is that the above method should be followed in detail to obtain correct results.

5. The writer uses for these determinations an especially constructed burette of 5 mils' capacity; the graduated part of the burette is about 230 millimeters in length so that a reading of 0.02 mils can be made with accuracy. The burette delivers 5 drops to the 0.1 mil. This type of burette is strongly recommended and it may be constructed from a graduated pipette. It is filled from the bottom by applying suction to a rubber tube attached to the top.

6. One must not confuse an acidity degree as determined by this method with the Soxhlet-Henkel degree, referred to principally in German literature. This German degree is two and a half times as great. Quite often dairymen determine milk acidity as lactic acid—ten mils milk titrated with $\frac{N}{10}$ NaOH and the result multiplied by 0.9. As the acidity of fresh milk is not due to lactic acid, but principally to acid phosphates, this degree is confusing and should be discontinued.

COLUMBUS, OHIO,
363 KING AVE.,
JUNE 6, 1919.

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A COMPARISON OF METHODS FOR THE DETERMINATION OF ETHYL ALCOHOL IN FERMENTED LIQUORS.*

BY CHARLES H. ROGERS.

Four methods have been recommended for the determination of the percentage of ethyl alcohol by weight and by volume in fermented liquors.

METHOD 1. *By Evaporation.*—Determine the specific gravity of the sample at $\frac{15.6^{\circ}}{15.6^{\circ}}$ C. Carefully pour 50 or, preferably, 100 mils of the sample to be examined into a porcelain evaporating dish and evaporate to about one-fourth of the original bulk. Make up to the original volume with distilled water and determine the specific gravity at $\frac{15.6^{\circ}}{15.6^{\circ}}$ C. of this second or de-alcoholized portion. Add the figure 1 to the original specific gravity, and from this subtract the second specific gravity. The difference will be the specific gravity corresponding to the alcohol in the sample. The percentage is found by consulting the specific gravity and percentage alcohol table in the Pharmacopoeia.

* Read before Northwestern Branch A. Ph. A. and Scientific Section Minnesota Pharmaceutical Association.

METHOD 2. *By Distillation.*—Determine the specific gravity of the sample at $\frac{15.6^\circ}{15.6^\circ}$ C. Into a distilling flask of 200 to 400 mls, capacity introduce a convenient quantity of the liquor, the quantity used depending on the nature of the sample. Dilute the liquid with distilled water and distil about 95 mls into a standard 100 ml volumetric flask. Make up to volume with distilled water at 15.6° C. Take the specific gravity and by means of the alcohol tables interpolate for the percentage of alcohol by volume and the percentage by weight in the distillate. Multiply the percentage by volume in the distillate by the volume of distillate divided by the volume of original liquid used, this giving the percentage by volume in the original. If percentage of alcohol by weight in the original is desired, multiply the percentage by weight in the distillate by the weight of the distillate divided by the weight of the original sample taken. It is sometimes necessary to subject the original sample to special treatment before a distillation can be run, *viz.*: where essential oils, iodine, volatile acids, etc., are present.

METHOD 3. *By Refractometer.*—Determine the specific gravity of the sample at $\frac{20^\circ}{4}$ C. and proceed as in Method 2. Make up to volume at 20° C. Read the scale divisions on the instrument and, using the table which accompanies the instrument, convert them into percentage of alcohol by weight. The percentage by weight in the distillate may then be calculated to percentage by weight and volume in the original. This instrument is capable of great accuracy. It is, on the other hand, more limited in its range, giving indices of refraction between 1.32 and 1.36 only. The principle on which the immersion refractometer is based is the same as in the Abbe refractometer and depends upon the observation of the border line of total reflection.

METHOD 4. *By Vaporimeter* (Geissler).—This particular instrument is suitable for determining the percentage of alcohol in comparatively low concentrations. The vaporimeter readings depend upon the varying vapor pressures of mixtures of alcohol and water at 100° . Correction tables for various boiling points of water, at different atmospheric pressures, accompany the instrument. The readings are taken directly from the accompanying Tralle and Richter scales, the former giving percentage by volume, the latter by weight.

TABLE I.

	Evaporation.		Distillation.		Refractometer.		As read from Vaporimeter.	
	Wt.	Vol.	Wt.	Vol.	Wt.	Vol.	Wt	Vol.
"A"			1.65	2.120	1.832	2.34	1.90	2.336-c
			2.10	2.691	2.100	2.69	2.00	2.476-c
			1.923	2.461	1.961	2.51	1.96	2.412-s
			1.945	2.441	1.918	2.455		2.401-s
Aver.			1.904	2.428	1.952	2.499	1.95	2.406
"B"			2.782	3.486	2.795	3.571	2.97	3.71
			2.699	3.449	2.815	3.595	2.73	3.40
Aver.			2.713	3.467	2.80	3.583	2.85	3.55
"C"			2.330	2.922	2.360	3.010	2.40	2.973
			2.404	2.890	2.431	3.048	2.35	2.917
Aver.			2.367	2.906	2.396	3.029	2.37	2.945

The aforementioned four methods of procedure were applied to the examination of eight fermented liquors for the purpose of determining their relative accuracy as well as their limits of precision in the estimation of alcohol in fermented liquors. In Table I is given the results of the analyses of the three beers, A, B and C. It will be noted that Method 1 (evaporation) cannot be used in the case of beers which do not run over 4 percent of alcohol by volume. It was found that after evaporating the original liquor and then making up to the original volume with distilled water, the resulting solution gave a specific gravity greater than one. It is quite apparent, therefore, that this process cannot be used with success with fermented liquors and preparations containing appreciable quantities of extractives and in which the alcohol does not exceed 5 percent.

TABLE II.

	Evaporation.		Distillation.		Refractometer.		As read from Vaporimeter.	
	Wt.	Vol.	Wt.	Vol.	Wt.	Vol.	Wt.	Vol.
Sherry "A"	18.250	22.381	15.630	19.54	15.730	19.610	15.45	18.97
	18.221	22.346	15.370	19.24	15.530	19.440	15.75	19.35
							15.50	19.02
							16.10	19.80
							16.20	19.91
							16.21	19.95
Aver.	18.235	22.364	15.500	19.39	15.63	19.525	15.87	19.50
Sherry "B"	18.130	22.237	16.821	20.813	17.18	21.096	18.60	22.85
	18.138	22.246	17.180	21.096	17.609	21.611	18.55	22.90
			17.029	20.834	17.962	22.030		22.76
					17.702	21.703		
Aver.	18.134	22.241	17.010	20.914	17.613	21.610	18.575	22.84
Port	14.815	18.245	14.397	18.540	14.388	18.530	18.70	22.90
	14.853	18.291	14.453	18.618	14.451	18.610	16.45	20.22
							17.10	21.09
							16.35	21.12
Aver.	14.834	18.268	14.425	18.579	14.419	18.570	17.15	21.082
Tokay "A"	10.171	12.601	11.080	13.710	11.308	13.988	14.15	17.43
	10.046	12.449	11.130	13.775	11.320	14.002	13.58	16.80
	10.171	12.601	11.190	13.860	10.970	13.600	14.02	17.32
	10.200	12.637	10.860	13.443	11.104	13.735	13.85	17.15
			10.908	13.490	11.355	14.040	14.30	17.66
							14.20	17.56
Aver.	10.147	12.572	11.033	13.655	11.211	13.873	14.017	17.32
Tokay "B"	11.392	14.08	11.034	13.654	11.160	13.808	15.00	18.47
	11.200	13.87	11.069	13.686	11.250	13.913	14.25	17.43
							13.75	17.045
							13.40	16.57
Aver.	11.296	13.975	11.051	13.670	11.205	13.860	14.10	17.379

When using the vaporimeter to determine the percentage of alcohol in beers and other fermented liquors containing free carbon dioxide, it is directed to treat the liquid in question with an appreciable quantity (1 teaspoonful to the fluid-ounce) of finely powdered, freshly calcined lime and then to filter. After repeated trials on the beers examined it was found that the readings were invariably lower than in the distillation and refractometer methods, ranging from 0.3 to 0.5 of 1 percent. No mention was made in the directions for using the vaporimeter for

making the liquor up to original volume by washing the lime on the filter with distilled water. However, when this was done the percentage of alcohol was reduced by approximately the same amount as the dilution with water would lead one to expect. It was concluded that a certain quantity of alcohol was held on the filter by the hydrated lime, in such a way that it could not be washed out. Beers that were freed of their carbon dioxide by agitation and with which no lime was used checked within 0.1 of one percent with the determinations made by distillation and also with those made by the refractometer. Vaporimeter determinations were made on the beers in question, using freshly SLAKED lime instead of freshly CALCINED lime. The results checked quite closely with the determinations in which the calcined lime was employed. The only difference was a slightly greater variation.

Determinations by distillation and refractometer methods gave an average check of about 0.05 of 1 percent, although the variations sometimes amounted to as much as 0.15 of 1 percent. Attention should be called at this point to the importance of having the liquid of which the refractometer readings are being taken at exactly 20° C.

CONCLUSIONS (Beers).—It is impractical to use the process of evaporation for the determination of alcohol in beers or preparations high in extractives and containing less than 5 percent of alcohol. It is concluded that the best way to free a fermented liquor of CO₂ for use in the vaporimeter is by agitation, the use of freshly calcined lime and also freshly slaked lime giving low results.

The alcoholic analyses of five wines was then undertaken for the purposes aforementioned. By the evaporation method it was noted that in every sample (excepting Tokayi A) the percentage ran higher than by the distillation method.

These differences appear greater as the concentration of alcohol increases. It was noted that Tokayi A was higher in solids than Tokayi B, which may account for this exception. Higher results obtained by the evaporation method on wines may be attributed to the variation in the volatile constituents present. It appears that samples showing approximately the same percentages of alcohol by distillation will vary when run by evaporation; the sample having the larger amount of solids running the lower of the two in alcohol. The vaporimeter determinations invariably gave higher results. As in the case of beers, wines freed from their carbon dioxide by agitation invariably ran higher than those in which freshly calcined or slaked lime had been used. It should be remembered that in the case of wines the extractive materials are much more in evidence than in beers, and as the vapor pressure of the wine would be the sum of the vapor pressures of all its constituents it is in no way unusual that the percentage as read from this instrument will be too high. Therefore, while the results obtained by the vaporimeter method in the case of beers have been the more satisfactory, it is questionable whether this instrument can be used with any degree of accuracy with wines, the distillation method when corroborated by the refractometer method is much to be preferred.

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VOLUMETRIC DETERMINATION OF SUGAR IN MILK.*

BY JOSEPH L. MAYER.

Shortly after Benedict published his "The Detection and Estimation of Glucose in Urine," I read a paper before the New York State Pharmaceutical Association, "Quantitative Estimation of Glucose in Urine." (Proc. N. Y. State Pharm. Assoc., 1914, page 298) in which I submitted the results of estimating glucose in urine volumetrically by means of Benedict's solution and gravimetrically by means of the method of Defren-O'Sullivan in which it was shown that both methods gave practically identical results, and since the volumetric method is shorter, attention was called to this advantage over the other method.

It then appeared to me that it would be a good plan to employ Benedict's solution for the quantitative determination of sugar in milk and to determine the accuracy of the method the following work was undertaken:

Twenty-five grammes of the milk (24.2 Cc.) were transferred to a 250-Cc. flask, 0.5 Cc. of a 30% solution of acetic acid were added and the contents well shaken. After standing for a few minutes, about 100 Cc. of boiling water was run in, the contents again shaken, 25 Cc. of alumina cream was next added, the flask shaken once more, and set aside for at least ten minutes. The supernatant liquid was then poured upon a previously wetted ribbed filter, and finally the whole contents of the flask were brought thereon, and the filtrate and washings made up to 250 Cc.

The alumina cream was prepared by dividing a cold, saturated, aqueous solution of alum into two unequal portions, to the larger of which there was added a slight excess of ammonia, then adding by degrees the remaining portion to a faint acid reaction.

The sugar in the clear solution was then determined by employing the following modification of Benedict's method which I recommended in a paper read at the Annual Meeting of the American Pharmaceutical Association (J. A. Ph. A., May, 1914, page 687).

Into a 100-Cc. Erlenmeyer flask, with cord wrapped around the neck to prevent burning the fingers, there was added 25 Cc. of accurately measured Benedict's solution, a few grammes of cryst. sodium carbonate and the whole placed on the hot plate. When the solution was boiling the sugar solution was gradually added from a burette with sufficient slowness to allow the reaction to proceed, putting the flask back on the hot plate until the disappearance of color.

The sugar in this same solution was then determined gravimetrically by the following method of Defren-O'Sullivan (Leach, Food Inspection and Analysis, 2nd Edition, page 564):

Fifteen Cc. of Fehling's copper solution was mixed with 15 Cc. of the tartrate solution in a quarter liter Erlenmeyer flask and 50 Cc. distilled water was added, the flask and its contents were then placed in a boiling water bath and allowed to remain there for five minutes; there was then run rapidly from a burette into the hot liquor in the flask, 25 Cc. of the sugar solution to be tested (which should contain not more than one-half percent of reducing sugar). The flask was allowed to remain in the boiling water bath just fifteen minutes after the addition of the sugar

* Read before New York State Pharmaceutical Association, June, 1919.

solution, removed, and with the aid of a vacuum, the contents were rapidly filtered in a porcelain Gooch crucible containing a layer of prepared asbestos fiber about 1 Cm. thick, the Gooch with the asbestos having been previously ignited, cooled, and weighed. The cuprous oxide precipitate was thoroughly washed with boiling distilled water till the water ceased to be alkaline.

(The asbestos was of the long-fibered variety and was especially prepared as follows: It was boiled first with nitric acid (specific gravity 1.05 to 1.70), washing out the acid with hot water, then boiled with a 25 percent solution of sodium hydroxide, and finally the alkali was washed out with hot water. The asbestos was kept in a wide-mouthed bottle and transferred to the Gooch by shaking it up in the water and pouring it quickly into the crucible while under suction.)

The Gooch with its contents was dried in the oven, and finally heated to dull redness for fifteen minutes, during which the red cuprous oxide was converted into the black cupric oxide. After oxidation as above, the crucible was transferred to a desiccator, cooled, and quickly weighed. From the milligrammes of cupric oxide, the milligrammes of lactose were calculated from table accompanying the method.

The results by both methods were as follows:

Gravimetric.....	3.31%
Volumetric.....	3.28%
<hr/>	
	0.03% Difference

These results clearly indicate that the volumetric method of Benedict modified as above while rapid and easily applied is capable of yielding just as accurate results as the longer gravimetric method.

The Benedict's solution was prepared as follows:

Copper sulphate (pure, crystallized).....	18 Gm.
Sodium carbonate (crystallized).....	200 Gm.
Sodium or potassium citrate.....	200 Gm.
Sodium sulphocyanate.....	105 Gm.
5% Potassium ferrocyanide solution.....	5 mls
Distilled water to make.....	1000 mls

With the aid of heat dissolve the carbonate (half the amount of anhydrous salt may be used), citrate and sulphocyanate in enough distilled water to make about 800 mls; filter if necessary. Dissolve the copper sulphate in about 100 mls of distilled water, and pour this solution slowly, with constant stirring, into the other solution. Add the ferrocyanide solution—cool and dilute to exactly 1000 mls.

A reference to Benedict's original formula will show that it calls for 125 grammes of potassium sulphocyanate but since the war it has practically been impossible to obtain this salt and I have, therefore, employed the sodium salt in the above amount. This lot of Benedict's solution as well as all others employed in our laboratory was standardized by the method of the U. S. P. (page 558), as follows:

To a solution of 0.95 Gm. of pure cane sugar in about 50 mls of distilled water, 2 mls of hydrochloric acid were added and the whole heated at 70° C. for ten minutes. After neutralizing with sodium carbonate, the solution was diluted to 1000 mls.

The number of Cc. of this solution required to completely reduce 25 Cc. of Benedict's solution gave the factor.

RESEARCH AND ANALYTICAL LABORATORIES
OF THE
LOUIS K. LIGGETT COMPANY.

A STANDARD DOSAGE MEASURE.*

BY GEORGE M. BERINGER.

Accuracy in the compounding of medicines is a first principle instilled into the mind of a pharmacist and so he realizes fully the importance of correct weights and measures. This is a matter that is now also receiving official attention in some of the States, where the scales, weights and measures of the pharmacists, the same as those of other merchants, are periodically inspected by a representative of the State or Municipal Department of Weights and Measures.

While in the past the apothecary may have used graduated measures of variable shapes and with indifferent and inaccurate markings, today he is supplied by the manufacturers with "standard graduates," the shapes and graduation of which have been standardized with the coöperation of the United States Bureau of Standards, and the use of which is already compulsory by statutes in some of the states.

Accuracy in the administration of medicines is equally as important as accuracy in their preparation. The physician calculates the amount of active medicament that he intends shall be given his patient in each dose of the prescription that he directs. To the trained physician the word dose has a well defined meaning, namely, the right amount to obtain the desired effect, no more and no less. So it is evident that if too much be given untoward effects or undesirable reactions may result and that if too little be given there may be expected a failure to produce such effect. In either case, the intent of the physician may be nullified with detriment to his patient. It is the height of inconsistency to invalidate the judgment, the professional knowledge and skill of the physician and the pharmacist and to make these useless by the careless or inaccurate administration of the medicines.

The inaccuracy of the ordinary dose measures has been so frequently decried that the variability and uncertainty of these should be common knowledge. The almost universal custom is for the physician to direct as a dose of a liquid medicine, either a teaspoonful, a dessertspoonful, a tablespoonful, or possibly so many drops. Spoons of all sizes and shapes are marketed by the various manufacturers without any attempt to standardize the content of those bearing the same designation. In the same household one teaspoon may hold 55 minims and another as much as 80 minims and as great a range of variation may be shown by the dessertspoons and the tablespoons. Another source of error in measuring with the ordinary metal spoons is what may be termed the personal equation. One person does not hold the spoon level, another gauges the spoon as full when it is not en-

* Presented at the Annual Meeting of the New Jersey Pharmaceutical Association, Atlantic City, June 11, 1919.

tirely filled. Even more uncertain and unreliable is the measurement of the fractions of the teaspoonful that are not infrequently prescribed for children. Although it is very generally conceded that the metal spoon of the household use is too uncertain and unreliable for the administration of medicines it, nevertheless, even at the present time, is the most commonly employed measure for this purpose.

To overcome the unreliability of the spoon, the glass manufacturers have placed upon the market medicine tumblers and medicine goblets, of various shapes and sizes, marked for the measurement of teaspoonfuls, dessertspoonfuls, tablespoonfuls, etc. Unfortunately, the shapes selected have not been such as would permit of accurate measurement and in some cases the graduation has been very careless and inaccurate and the common medicine glass shows very little if any advantage in accuracy over the variable spoon. It is apparent that 60 minims of a liquid, distributed over the bottom of a broad tumbler or goblet shaped vessel, will make so little showing that it will be difficult to gauge and to properly graduate this, and it will be impracticable to indicate lesser amounts.

The commonly employed medicine dropper for measuring medicines directed to be given in doses of so many minims or drops is likewise far from accurate. This can be readily demonstrated by measuring accurately the same number of drops of the same liquid as dropped by a number of these.

The physician has in mind a definite amount of liquid as the equivalent of the dosage term he uses. It is almost an invariable rule, that to him a drop is one minim, a teaspoonful is one fluidrachm, a dessertspoonful is two fluidrachms, a tablespoonful is four fluidrachms or a half fluidounce. Upon these equivalents he bases his calculations for the intended doses of the medicaments in his prescriptions. Practically all of the formulas in use by physicians and published in the works on medicine and the treatment of diseases are based upon these commonly accepted equivalents, and these have also been generally employed in the "ready made medicines" so frequently dispensed.

The United States Pharmacopoeia IX recognized the seriousness of the prevailing inaccuracy in the administration of liquid medicines, and while not adopting the suggestion that a standard form for a dosage measure should be defined, the Committee of Revision compromised by making in the "Introductory Notices" the following statement on Page LI:

"Approximate Measures.

Physicians have hitherto very commonly prescribed liquid medicines in teaspoonful, dessertspoonful or tablespoonful doses. Inasmuch as spoons vary greatly in capacity, and from their form are unfit for use in the dosage of medicine, it is desirable that the more scientific practice should be always adopted, of prescribing doses in mils, fluidrachms or minims, to be measured with a suitable medicine measure. The following are the values conventionally attached to the several approximate measures above mentioned:

METRIC.

A teaspoonful	= 4 mils
A dessertspoonful	= 8 mils
A tablespoonful	= 15 mils

APOTHECARIES SYSTEM.

A teaspoonful	= 1 fluidrachm
A dessertspoonful	= 2 fluidrachms
A tablespoonful	= $\frac{1}{2}$ fluidounce"

The use of these equivalents as stated in the Pharmacopoeia has given entire satisfaction and their general acceptance indicates such a firm establishment that they should be permanently continued.



Measuring Glass.

Doubtless if the Pharmacopoeia had gone one step further and described "a suitable medicine measure," the manufacturers of such wares would have adopted this as a standard and the uncertainty of the dosage of liquid medicines and the use of the unreliable spoon and medicine glasses, before this time, would have been largely curtailed.

The necessity for standardizing the measure as well as the equivalents of the doses, in order that the uncertainty of the dosage of medicines may be terminated, is thus presented. It is not creditable to the medical profession and to the intelligence of this generation that the inaccuracy of the administration of liquid medicines has existed for so long a time and still less so that it be permitted to continue. The purpose of this communication is to present a study of this necessity that has led the writer to design a Standard Dosage Measure.

What are the essentials for such a measure? The *doses* that are commonly prescribed and which must necessarily be shown on the measure claim first consideration. Experience advises that there are certain numbers of standard drops or minims, such as 5, 10, 15, 20, 30; the teaspoonful and at times fractions thereof, such as one-fourth, one-half; the dessertspoonful; the tablespoonful, and occasionally the wineglassful. These with their metric equivalents it was concluded should be indicated upon the measure.

The *shape* must be such as will permit of the smallest of these named doses, 5 minims, occupying an appreciable space in the measure and also such that each of the doses named as necessary may be accurately measured and graduated. It must also be sightly and convenient to drink and to pour from. The inverted cone is the only shape that possesses all of these qualifications and so this form was adopted.

The *graduation* must be clear and accurate and indicate by distinct lines and lettering each denomination.

Stability is another essential so that the measure will not be easily upset. A relatively broad, flat, round base was decided upon with a short heavy stem just above and the weight of glass at this point adds materially to this important feature.

The glass designed, as a result of this study, as the standard dosage measure, is shown in actual size in the accompanying illustration and a sample is exhibited. It will be noted that it contains distinct graduations for 5, 10, 15, 20, 30, 45, 60 minims; the teaspoonful, and the one-quarter, one-half and three-quarter fractions thereof; the dessertspoonful; the tablespoonful; and the wineglassful along with their equivalents in mls. The denominations are arranged in three distinct columns under proper classifications. Each graduation is distinct and each dose, even down to the smallest indicated, 5 minims, can be accurately measured.

LABORATORY NOTES.

BY THOMAS D. McELHENIE.

In a paper presented by Mr. Thomas D. McElhenie, in the form of notes, he recommends the use of interleaved editions of the United States Pharmacopoeia and National Formulary. Notations made on these sheets are always accessible when preparations are to be made and for which improved manipulation has been discovered. He dates the notations.

The author has found that Acetic Turpentine Liniment can be prepared by shaking, in a bottle. A thorough shaking after the addition of each ingredient in the order named insures a perfect emulsion.

The addition of 8 gramines of citric acid is recommended as an improvement of the formula for Compound Elixir of Glycerophosphates. For Elixir Iron,

Quinine and Strychnine he suggests strychnine hydrochloride in place of sulphate.

The author deplors the omission of Compound Digestive Elixir from the National Formulary and recommends the use of 800 mils of concentrated syrup of raspberry in 8000 mils of preparation, to displace an equivalent volume of Aromatic Elixir. He states that the flavor blends nicely and improves with age.

In Elixir of Cinchona Alkaloids the use of hydrochlorides instead of sulphates is suggested, and this produces at once a clear preparation. He also advises an elixir of ten times the strength of the N. F., which may either be given in correspondingly smaller doses, or may be diluted as wanted. Codeine is often prescribed in cough mixtures with ammonium chloride and the corresponding salt of the alkaloid is suggested not only to conform but because the stomach contents contains hydrochloric acid.

The author refers to his paper read before the New Jersey Pharmaceutical Association in 1917, wherein he advised the addition of 1 percent hydrochloric acid to Tincture of Cinchona Compound; further experimentation proves the value, and the addition to a tincture made without the acid and which had precipitated produced, after standing, an entirely limpid preparation. He recommends the addition of hydrochloric acid for consideration by the U. S. P. Revision Committee. Percolation of ground Red Cinchona with chloroform water, acidulated with 1 percent hydrochloric acid, yields 25 percent of extract containing all the alkaloids.

The writer of the paper dispenses the ingredients of Cathartic Pills, powder form, in capsules; for "blue pills" he dispenses 5 grain capsules of powdered blue mass. For powder folders suitable beveled slides of walnut are an attachment of the prescription counter. As a convenience in keeping inventory of little used narcotic pills and tablets, Mr. McElhenie marks the contents on a bottle cap fixed over the container.

SOME PHARMACEUTICAL NOTES.

BY WILLIAM R. WHITE.

In a paper prepared for the Chicago meeting, A. Ph. A., the author presents some experiences in manufacturing and relates how he solved some of the problems he had to deal with during the year.

High temperature in preparing Oleate of Mercury resulted in a very dark product. The addition of a small amount of $\frac{N}{50}$ V.S. -KOH, under trituration, produced a beautiful white Oleate. This was washed with distilled water until the washings were neutral. A sample has kept without apparent change for six months.

The addition of tartaric acid to a darkened methyl salicylate restored the product to its natural color, after filtration.

When Unna's Soft Zinc Paste is made following N. F. directions a putty-like mass is produced with separation of lime water. If the linseed oil and lime water are thoroughly mixed and saponified and to this the mixed zinc oxide and calcium carbonate gradually added a permanent soft paste is obtained.

Milk of magnesia or magnesium oxide and water mixed with elixir of lactated pepsin, colored with Amaranth Red, will decolorize in a short time; calcium oxide

will also destroy the color; potassium hydroxide, sodium hydroxide and ammonia do not affect the color. The writer cannot explain the action.

Five pounds of collodion and 25 ounces of salicylic acid when mixed gelatinized. It required a large volume of alcohol and ether to dissolve the gel, but 5 percent of acetone brought it into perfect solution.

Essence of pepsin, containing 8 percent of alcohol, gave much trouble in filtering when talc was added, however, when allowed to stand a few days, and then a small amount of talc added to the decanted clear fluid, filtration proceeded quite rapidly.

What is Camphorated Oil? The U. S. Dispensatory says it is a German preparation, official as *Oleum Camphoratum*, composed of one part of camphor and nine parts of olive oil intended for hypodermatic use. The writer has always dispensed U. S. P. Camphor Liniment for it. The American Dispensatory and Standard Formulary give the latter as a synonym of Camphorated Oil.

When definite weights of oils, balsams, etc., are to be filled into bottles the work can be expedited by balancing 6 to 12 bottles on each scale pan, adding the required weights, one at a time, on one pan, and filling the bottles as the weights are consecutively added, until the bottles on one scale pan are filled. Then take off a weight at a time and fill the bottles consecutively on the opposite scale pan until all bottles are full, when both sides will balance.

A batch of syrup was made which when finished appeared dark. Investigation proved that the sugar had been partially caramelized in the process of manufacture. Though white in appearance, it had a molasses-like odor.

Solution of ferric chloride, labeled U. S. P., became turbid on the addition of alcohol and precipitated; oxychloride was present and a deficiency of hydrochloric acid shown. The solution assayed 10 percent iron, whereas a solution of the so-called neutral chloride of iron assayed 12.3 percent of iron.

Magnesium carbonate was used as a filtering medium for an extract of grape containing a large amount of grape juice. An inky black product resulted; the addition of a little citric acid restored the purplish red color.

Tincture of Iodine made from Denatured Alcohol No. 25, gave a light yellow precipitate when the additional iodine and potassium iodide were added. The presence of copper was proven and present in the denatured alcohol. A small amount of sodium thiosulphate added to the denatured alcohol decolorized the iodine and precipitated the copper so that it could be filtered out.

Sulphuric acid was used in an endeavor to remove some F. I. D. Amaranth Red No. 107 from a mortar. A deep green color developed which changed to red on the addition of water. It is supposed that a salt of the dye was formed, which is green, and the water dissociated it into the basic dye and acid radical.

ANIMAL AND VEGETABLE RENNETS.*

THEIR PROPERTIES, THEIR PREPARATION, AND THEIR MODE OF ACTION.

The coagulation of the casein of milk by rennet is one of the most singular problems in biological chemistry, and still imperfectly understood, though much studied by such men as Richard Peters, Duclaux, Chodat, Javillier, Gerber, etc.

* Translated for the *Scientific American Supplement* from *Larousse Mensuel*. Reprinted from *Scientific American Supplement*, May 3, 1919.

Animal Rennet.—Rennet is secreted by the gastric glands of young animals; it also appears in the stomach of adults when milk is taken. Rennet solidifies the casein into an unctuous mass very different from the crumbly mass produced by acids. Its active principle is an enzyme, *chymosine* or *lab*, always found mixed in the stomach with two other ferments, pepsin and trypsin or casease, whose function is the digestion of milk. Rennet is used in cheese making.

Cleaning the Rennets.—The rennet bags of calves, lambs or kids are prepared in abattoirs or even by gut workers. They are scraped to remove the clotted milk, tied by a string at one end, inflated with air and dried. After a few days they are deflated, packed in dozens and sent to the factories.

Industrial Preparation.—The rennets, cut in thin strips, are macerated in salt water at 35° C., 50 gr. of salt and 60 gr. of rennet to a little of water; after five days they are carefully filtered. The liquid thus obtained is the usual rennet, whose coagulating power = 10,000. Most manufacturers add 4 percent of boric acid to preserve it; others get the same result with a little glycerine or alcohol; some, finally, fraudulently add hydrochloric acid, which increases the coagulating power but gives a curd which is hard to work. By evaporating the liquid rennet, or precipitating it with alcohol, solid rennet is procured and sold in cakes whose coagulating power is 30 to 40 times as great as that of the liquid for an equal weight.

Determination of Coagulating Power.—Rennets offered in the market are stamped with a mark showing their degree of coagulating power. *Normal* rennet is that one volume of which ensures the total coagulation in 40 minutes of 10,000 vol. of milk kept in the water bath at a temperature of 35° C., or otherwise that one volume of which in the same conditions of temperature ensures the total coagulation of 10,000 vol. of milk in 4 minutes (240 seconds).

If a specimen of rennet, held at 35° C., coagulates 10,000 times its volume of milk in 160 seconds its coagulating power is equal to

$$\frac{240}{160} \times 10,000 = 15,000.$$

In practice the operation is as follows: One cubic centimeter of the rennet to be tested, diluted with 10 times as much distilled water, is poured into 100 Cc. of milk kept at 35° C.; the time required for complete coagulation is then noted. The power is obtained by multiplying 10,000 by a fraction whose numerator is 240 and whose denominator is the number of seconds required for complete coagulation.

Properties of Animal Rennet.—There are certainly slight differences in the composition of rennets coming from different species, which explains, for example, why sheep's milk is not coagulated well except by lamb's rennet; but these are so unimportant as to be negligible.

Animal rennet coagulates *raw* milk readily and *boiled* milk with difficulty. It acts only between 20° C. and 60° C., the optimum temperature being 40.5° C., *i. e.*, the one which acts most rapidly. The coagulation is accelerated by acids, by the neutral salts of calcium and of barium, and is retarded by the bases and neutral salts of potassium and of sodium, and by dilution with distilled water. The coagulation of the casein is always total, whatever the percentage of rennet used, but the time required is longer in proportion as the percentage is less and as the

temperature is lower. This is expressed in the law of Segelcke-Stork: The product of the mass of the ferment by the time required for the total coagulation of the milk operated upon by rennet is a constant number.

White cheeses, for immediate consumption, are obtained from milk held at a low temperature (18°C. to 20°C.) and with an amount of rennet calculated to produce complete coagulation in 20 to 24 hours; the curd thus formed becomes very unctuous. The cheeses fermented in a state of *soft paste* (Brie, Camembert) require a coagulation period of one to three hours, the temperature of the milk varying from 28°C. to 32°C. The *hard paste* cheeses (Dutch, Parmesan) require a rapid coagulation (15 to 60 min.), the temperature of the milk varying from 34°C. to 40°C.

Vegetable Rennets.—The researches of Gerber have shown that almost all plants contain a juice having the properties of rennet and which is specially abundant in the green organs (young stalks, buds, leaves), in the flower (especially the style), the young fruits and the seeds. The following may be noted as particularly rich in rennet: the wild or prickly artichoke, the yellow cheese-rennet, the common fig, the butterwort, the papaw, the *witania coagulans* of India, the paper mulberry, the darnil, the lucerne, the lupine, the euphorbias, the madder, etc.

Properties of Vegetable Rennets.—Many of their properties are identical with those of the animal rennets, but they act chiefly at high temperatures. The optimum temperature is about 75°C. ; it may go as high as 80°C. for the papaw rennet, 85°C. for that of the pastel or wood, and even 90°C. for that of the fig. These rennets act hardly at all on milk below 20°C. ; however, that of the papaw will coagulate milk even at 0°C. (32°F. , or freezing point).

The coagulation is always accelerated by increasing the percentage of rennet, by raising the temperature (up to the optimum peculiar to each species), or by increasing the percentage of mineral or of acid content. Bases retard or prevent the action of vegetable rennets.

According to Gerber these ferments may be divided into 2 classes: 1. The rennets of *boiled* milk, the most numerous, which coagulate boiled milk more readily than raw milk (fig, pastel or wood, etc.). 2. The rennets of raw milk, which have the inverse property; such are the wild artichoke and the paper mulberry.

Preparation of Vegetable Rennets.—There are several processes for extracting the rennet forming juices of plants. The method of Javillier furnishes juices exempt from microbes; the plant is crushed and the juice pressed out; the extracted juice is then saturated with chloroform, placed in a full flask and stoppered and kept in a dark place for 24 hours; it is then filtered through filter paper, neutralized by soda, and sterilized by filtering through a porous flask.

Chodat's method, which is simpler, consists in macerating for from 24 to 48 hours the active parts of the plants cut into small fragments in salt water (a 7 per cent solution) to which have been added a few drops of the essential oil of mustard. Finally, one may confine himself to precipitating the juice of the rennet-forming plants by alcohol. In practice it is the fresh plants alone that are employed. Hence their utilization is possible for a few months only each year: in the spring in the case of the rennet forming buds; in the summer with the flowers, etc. Herein lies an inferiority to the animal rennets.

Method of Employing Vegetable Rennets.—These ferments have been used from the most remote times to prepare curds of milk and cheeses. Homer speaks of them in the Iliad.

In the west and the middle of France it is customary to use flowers of the wild artichoke (*cynara cardunculus*), which looks like a large thistle, attaining a height of more than a meter. Two or three stalks of this plant, which usually grows in uncultivated places, are often raised in gardens for the purpose of making compressed curd or cottage cheese. A pinch of the flowers tied in a little muslin bag is placed in the heated mill; at a temperature of about 65° C. coagulation is very rapid.

The true cheese rennet (*galium verum*) is one of the madder tribe and is very common in our meadows. This perennial herb, half a meter tall, has leaves in whorls of 6 to 12. Its flowers are small and numerous, of a clear yellow and with the odor of honey; they appear from June to September. In the west of England the flower heads are employed for the preparation of cottage cheese. Mixed with calf rennet they are used in making Chester cheese, to which, moreover, they impart a yellow color.

In the Balearic Isles the peasants, who are very fond of clotted milk, prepare it as follows: The milk is boiled, and while still very hot it is stirred with the young branch of a fig tree, left crosswise. Almost at once the milk forms a homogeneous mass which is immediately eaten with a spoon. The fresh fig branches may be replaced by a rennet-forming solution procured by macerating young roots in salt water. This solution acts rapidly upon raw as well as upon boiled milk, at about 70° C.

In Lapland and in the villages of the Italian Alps the curd is prepared with the leaves of the common butterwort (*pinguicula vulgaris*). This little perennial herb dwells in the peat lands and the humid places of the extreme North and of mountainous regions. In the center of its foliage rosettes rise in May and August, its flower stalks of a height of 8 to 15 Cm. The flower, provided with a spur, is blue, violet, rose-pink or white.

In Japan the leaves of a very widely grown tree, the paper mulberry, are used (*broussonetia papyrifera*); in the warm regions the juice of the papaw (*carica papaya*), etc.

The seeds of the *puneeria* or *witania coagulans*, one of the *solanaeæ* of India, are very rich in rennet. When macerated in salt water to which 4 percent of alcohol has been added they yield a solution which keeps well and whose activity almost equals that of animal rennet.

EXPERIENCES OF A WOMAN PHARMACIST.*

BY MRS. MAY O'CONNOR DAVIS.

About seven years ago, upon the successful termination of five years at College, with a resulting Master's degree in botany in hand, I decided the nearest I could ever get to Medicine was Pharmacy, and planned forthwith to take the Pharmacy Course. My decision called forth much anger and sorrow from relatives, who

* Read before New York Branch, A. Ph. A., May meeting, 1919.

claimed that I would have to sell postage stamps, dispense soda, dress windows and hand out all kinds of advice. I have done all these things, and more.

Upon my completion of the university course in pharmacy, while I was patiently awaiting my state board examination, an offer came to me to substitute as teacher of chemistry in a medical college for women. At first I hesitated. I had taught botany from the baby grade right through to senior class in college, but chemistry! After much pleading I promised the dean of the college to be ready for the first lecture. I shall never forget that day! It resolved itself into a general quiz by and of the green teacher.

At the end of the hours spent with a freshman and sophomore class, however, I realized my first work would have to be a general survey of inorganic chemistry, with much stress upon the U. S. P. and N. F. tinctures, liquors, galenicals in general found under this group, for, would you believe it, these embryo medicos failed to have the slightest idea about the difference between tincture of iodine, U. S. P., a Lugol's or a Churchill's tincture of iodine. In the organic group, one student never associated phenol and carbolic acid, though she knew the graphic formula perfectly.

At the end of six weeks I gave a test. The results were more favorable than the first quizzes, yet I was not satisfied. Upon advice I called upon a professor of another medical college, and told him the quandary I was in and asked his advice about the whole situation, including the physiological and toxicological chemistry I was slated to give. His talk proved other than satisfactory, since I found he was having equally hard work with his students. It was at this time I was informed that I would have to stick at the post for the rest of the year, since the regular teacher could not return. I remained and I'll warrant you, though these students were training in a homeopathy institution, they will never forget the drilling and drilling they received in United States Pharmacopoeial and National Formulary products that I gave them during their first days in the medical college. Here at least I feel as if I had done some propaganda work for the U. S. P.

Very often when some of the doctors had queer prescriptions to be dispensed, or they were not satisfied with what was being sent their patients in the hospital connected with the college, they would come to my laboratory to seek an answer to their queries. One doctor had prescribed a lead water wash—he found that the patient could not tolerate the wash which was being used for a nipple wash. Upon questioning, I decided the doctor wanted a dilute lead subacetate solution instead of the Goulard's extract. This was made U. S. P. and as such caused no further trouble. One of the teachers was advised to use Dobell's solution as a gargle. She hemmed and hawed. Why should she use a preparation that was so weak in carbolic acid as N. F. Dobell's when she could get Dobell's tablets and make her own solution? I told her Dobell's was always the same, tablet or solution, 0.3% phenol, but, of course, if her doctor thought it wise we could readily increase the 0.3% to 0.5% in the original Dobell's solution. One day a doctor wrote a prescription thus, calcium sulphate, kali iodide, of each one drachm, mix and make into six powders; one every three hours. The pharmacist hesitated. We consulted and then called the doctor to the telephone. Yes, he knew what he wanted! He wanted calcium sulphate, and it was for boils. I recalled that oftentimes calcium sulphide is given for suppuration, but I hesitated to dispense plaster of Paris

and told the medico as much. He became indignant and refused to let us dispense at all; in fact, he took the prescription to a near-by druggist, who was also unwilling to compound. I never heard whether that doctor was able to make a mess of his patient's stomach.

One of the finest doctors came to me one day, and told me he wanted a liniment for his horse's legs—he had tried turpentine alone, also tincture of iodine; neither gave the desired results. Now he thought that if I would mix the two maybe the outcome would prove more beneficial. Immediately the incompatibilities I had tried so hard to master flashed across my mind. Iodine and turpentine! Never. To satisfy the old gentleman, since he was willing to take a chance, I mixed four ounces of tincture iodine U. S. P. with rectified spirit of turpentine. Nothing happened except that the oil tended to separate from the tincture. Not being satisfied, I told him I would add four ounces of turpentine to four ounces of iodine crystals. He was game. Placing the crystals of iodine in a mortar, which I had put in a laboratory desk sink for protection, I started to pour on the turpentine. There was just a little fizz-fizz, then a volume of the most wonderful violet-colored fumes which flew toward and hung around the ceiling of that laboratory for several days. Needless to say, the doctor was convinced. In passing it might be of interest to know that this same stunt made explosions in several moving picture chemical laboratories very real, as my brother, who is interested in the business, used it several times for Pearl White; it was also the supposed cause of the explosion scene in the "Hungry Heart."

Iodine furnished much material for research and thought. The ointment used generally in clinic and hospital was the U. S. P. ointment. To facilitate dispensing, a solution of the iodine and potassium iodide in glycerin was kept in a stock bottle; when prescriptions came in for the ointment the necessary amount was measured off and incorporated with required amount of benzoinated lard. The ointment as such was all right but, as one doctor said, he did not get full effect of the iodine on account of the base used. Was there no other way of administering the iodine? Following an idea which was being worked upon by the late John Roemer, a former member of this branch A. Ph. A., I suggested incorporating the iodine with a vegetable oil and oleic acid. I used sesame oil, oleic acid, iodine and sodium iodide. The resulting supernatant liquid, which resembled a very dark brown syrup, was applied as an ointment and seemed to bring fair results. I believe this idea of working iodine up with a vegetable base which can be readily absorbed by the body has been worked out by several large pharmaceutical firms.

These are a few of the many interesting things I have met with since I have been in pharmacy. In closing I might say that the woman pharmacist finds a large field to work in as a hospital and clinic pharmacist. Many times she has it in her power to suggest to the superintendent and the board of trustees many little things that may prove a big saving to the institution and which will also win many a doctor to become an admirer of the U. S. P. and N. F., rather than a scoffer. Her propaganda work would lie in suggestions, such as, that *Liquor Cresolis Compositus*, *Magma Magnesiae*, *Magma Bismuthi*, *Liquor Antisepticus Alkalinus* and *Linimentum Camphorae* be made up in $\frac{1}{2}$ and 1 gallon stock quantities, instead of ordering from the outside. This and the pleasant surroundings make the hospital work a fine field for the woman pharmacist.

ORIGIN OF SOME PHARMACEUTICAL ASSOCIATIONS.*

BY WILHELM BODEMANN.

Volumes have been written about the Origin of Species with the net result "All Theory."

I have some reminiscences about the origin of a few associations which I would like to store away in the archives of the A. Ph. A.—before my pen rusts and rests—and the facts I offer are bona fide, actual facts, and it will not take volumes to do so.

CHICAGO RETAIL DRUGGISTS' ASSOCIATION.

The C. R. D. A. was born on an Illinois Central Hyde Park train. We had in Chicago besides the \$25.00 U. S. Liquor License a \$25.00 City Permit for the privilege of selling liquor for medicinal purposes. This permit was about to be raised to \$100.00. This double license was obnoxious and induced some druggists to sell liquor by the drink in order to come out even with the heavy license. One day, in April 1885, I met G. P. Engelhard on the Illinois Central train, when we talked about the liquor permits and decided to call a mass meeting. George Engelhard got up "the call to arms," I signed it and added T. N. Jamieson's and two other names to the call without asking their permission, but knew that in the post-mortem I would have their consent. The mass meeting was a success and we organized, under the clever boss Engineer Jamieson's guidance, into ward clubs; each ward committee had charge of his alderman and the result was that our liquor permit was reduced to \$1.00 and druggists solemnly pledged to abstain from "Bar Practices." Out of this campaign was born the rejuvenated resurrected Chicago Retail Druggists' Association, now the largest, most influential, local organization in the United States.

THE NATIONAL ASSOCIATION OF RETAIL DRUGGISTS.

In the spring of 1898 T. V. Wooten, president of the C. R. D. A., issued a call for a National Retail Druggists' Association Convention by delegates from state and associations. G. P. Engelhard furnished the printer's ink and his expenses for this work are yet an open account. Leonard Tilletson furnished the brain—he was the man behind the scenes. Wooten called a meeting of the Chicago Druggists to appoint delegates to the St. Louis convention; he met with apathy and was about to throw up the sponge. At this critical moment Engelhard and Tilletson got me into a corner and urged me to make a bold bluff. I asked Wooten how many delegates he would require in order to make him stick. He said six, I pledged twelve and delivered that number. Thomas Nevin Jamieson paid the freight by furnishing the railroad transportation; Wooten stuck and the St. Louis Convention was pulled off. At that convention I happened to be chairman of the Committee on Organization. Such an avalanche of plans was offered that again the launching of the association was in doubt. As chairman of Committee on Organization, I ruled that the Chicago Association had called the meeting, and the Chicago plan, drawn up largely by that masterhand of "Quiet Bargaining," Leonard Tilletson, had to be discussed first. The convention got restless and called for a report from my committee, when we had not even begun to discuss

* Read before Section on Historical Pharmacy, A. Ph. A., Chicago meeting, 1918.

the 101 various offered plans, chief among which were the Nebraska and Baltimore plans. As soon as the Chicago plan was discussed I adjourned the committee and went before the convention with my report, and the N. A. R. D. was the result. Two or three years later there was a general upheaval; that ugly word, secession, was openly uttered by several states, and in open session of convention I made the motion to refer these grievances to a special committee. The chairman asked what kind of a committee I had in mind, and in a jocular vein I said, "Refer it to the Committee on Raising Hell." I was made chairman, we adjourned the convention with the whole bunch of rebels to a large restaurant with amber liquid privileges. I appointed John Straw official collector and Charles Huhn Sergeant at Arms. John collected a quarter for the jackpot twice, we stuck our feet under the social board, had sandwiches with liquid refreshments, and, when we adjourned we were reasonably full of amber liquid and brimful of harmony; the N. A. R. D. heard no more of rebellion and secession and is to-day the largest, most influential retail druggists' association in the world.

I have prepared a report of the origin of the C. V. D. A. for the Chicago Drug Club, which I take the liberty to attach, to round this reminiscence for your archives. (File Historical Section, A. Ph. A.)

I offer these reminiscences, at this time, when eye witnesses to the scenes narrated are still living, so my facts can be verified, corrected or challenged.

ILLINOIS ANTINARCOTIC LAW.

My friend, Kantrowitz, submitted my paper on C. V. D. A. to the Historical Section last year, and, as I am credibly informed, was penalized for this friendly turn by being elected Secretary of this Section. I herewith respond to his request for a brief paper, and trust that he will again be penalized if not promoted, for he is the best stirring rod in public affairs that I ever knew in any human laboratory.

I am going to file my recollections of how the first narcotic law in Illinois originated, and let this Section settle the question as to whether Illinois had the first narcotic law or not. Until successfully challenged, we, of Illinois, claim priority in narcotic legislation.

Before 1900 Illinois had a cocaine law. The then States Attorney for Chicago, C. S. Deneen, had been appealed to by relatives of dope fiends to turn on the law screw to save their kin from perdition. I happened to have charge of Board of Pharmacy prosecutions at that time. Mr. Deneen called me into his office and submitted those heart-rending pitiful appeals, and asked me to turn on the law screw. I informed him, as he did not seem to know, that prosecution of the then cocaine law was up to his office and not to the Board of Pharmacy. Mr. Deneen assured me that his office had no funds to procure the evidence. I stated that the Board of Pharmacy had no surplus funds either, but I agreed to furnish the evidence if he would agree to prosecute. I soon had evidence against thirty-six Chicago druggists, but being after results and not after prosecutions *per se* I sent those thirty-six violators registered letters, stating that I had evidence against them of the cocaine law violations, and, on repetition of the violations would prosecute, which I did, but, being familiar with pharmacy law prosecutions only, I had brought suit against the stores, and not as the cocaine law specified against the individual who made the sale, and the cases had to be "nolle prossed."

Walter H. Gale was president of the Illinois Pharmaceutical Association from 1900 to 1902, and in his two annual addresses he urgently recommended the enactment of a narcotic law under the jurisdiction of the Board of Pharmacy. This was adopted by the Association, and a committee appointed consisting of G. P. Engelhard, John Straw, Walter Gale and W. Bodemann.

The then Assistant States Attorney, Howard Sprogle, who had charge of Grand Jury work, a personal friend of mine, was called into coöperation. He cheerfully assisted us in drafting the act, and in 1903 Illinois passed, as I believe, the first narcotic law and the forerunner of the Federal so-called Harrison Bill, which worked most successfully, at least, to the end that I succeeded in driving the infamous Arch Sinners (whose names I withhold) out of business and out of town.

I am not going into the arguments we used, as you are familiar with the necessity of such legislation, but we put it up squarely to the legislature, showing the result of this nefarious traffic—murdering not only the bodies but the souls of the victims. At the start we had hard work to get our craft into ardent support of narcotic legislation, but, to their credit, the fact remains that the druggists of Illinois, and of the United States, were the instigators and originators of this most humane legislation. And now I again make the motion for adjudication. Did Illinois pass the first narcotic law or, if Illinois did not, which State did?

PURE FOOD AND DRUGS ACT.

While unloading my reminiscences about the origin of laws and organization I hope that I will not be misunderstood and put down as anxious to blow my own bugle. It just happened that I had a hand in a few of these origins (and I don't like to talk through the hat) and jot down facts as they happened.

In 1898 the first Pure Food Congress convened in Washington, made up of delegates from States, Government, Associations, Schools and Boards of Pharmacy. Ebert, Greene, F. M. Schmidt, Louis Lehman, J. N. Jamieson and the writer went down from Illinois. While in the lobby of the National Hotel a gentleman addressed me thus: "You are W. Bodemann; I am J. H. Beal; I believe that you can do Pharmacy some good by seeing that the U. S. P. and N. F. are recognized as standards." I believe that's the way my friendship of twenty years with J. H. Beal began. I told my delegation about this. Jamieson, the prince of organization and political manipulation, at once saw the point, and we hunted up the Congressman who had charge of this legislative measure; we called at his home, explained the matter to him, and the thing was fixed.

Ebert, the great dissenter and lover of spouting in conventions, remained at the convention and preached to deaf ears, but he enjoyed it. Jamieson, however, was after results and got them; when Ebert found that we had fixed the job on the quiet, he got raving mad, packed his grip, didn't say good-bye, and left for Chicago. But our friend Congressman saw the point, and the U. S. P. and N. F. were recognized in the Bill which is now called the Pure Food Act.

Our Illinois Jim Mann, when the bill was before Congress, had a regular research laboratory in the committee room, and I remember specimens of bottles labeled "honey" that contained about 90 percent glucose, but every bottle had a dead bee to make believe that the bees had done it. Jim Mann and Harvey Wiley called this crooked honey plain fraud; to-day it would be called camouflage.

PHARMACY IN THE FRENCH ARMY.

During the war the writer (M.D., L.P.S.I., in *Chemist and Druggist*, June 7, 1919) has served in close touch with the French Army, in France, Italy, and Russia, and has thus been able to make a study of its Medical Service. He has been impressed by the fact that one of the most striking differences between the French Medical Service and the British is the high position accorded to pharmacy. Whereas in the British Army the dispensing of medicines is performed by sergeants, corporals, and even privates—who may or may not possess pharmaceutical diplomas—and the charge of advanced and base depots of medical stores is entrusted to quartermasters, in the French Service these duties are in the hands of a special body of qualified pharmaceutical chemists who hold the same rank as medical officers. In addition to dispensing medicines and to being entrusted with the care and disposal of all stocks of drugs, dressings, and appliances, other important functions are performed by French pharmacist officers, *viz.*:

1. They act as analytical chemists and have charge of all laboratories, including those established in each division for the analysis of water, foods, etc.
2. They act as divisional gas defence officers, and have charge of all reserve supplies of *masques* and other defences against gas.
3. They have charge of all supplies of disinfectants, a duty which in the British Army is in the hands of the Royal Army Service Corps.
4. They act as staff officers and technical advisers to Directors of Medical Services of French armies.

In order to see how the pharmacist officer fits into the French military machine, a brief sketch of the organization of the French Medical Service, or *Service de Santé*, will be necessary.

THE SERVICE DE SANTÉ.

It consists of:

(A) Officers: (i) *Médecins* (Medical Officers); (ii) *Pharmaciens* (Pharmacists); (iii) *Officiers d'Administration* (Medical Quartermasters).

(B) *Personnel*: (i) *Infirmiers*; (ii) *Brancardiers*, who are the rank and file of the Medical Service.

The grades of *personnel* are:

Sous Aides Majors, *Médecins Auxiliaires* (Medical Students), *Pharmaciens Auxiliaires* (Pharmaceutical Students), and *Dentistes Militaires*.

Sous Officiers, *Adjudants-Chefs*, *Adjudants*, *Sergents* and *Caporaux* (as in the French infantry).

The grades in the French Medical Service are:

Médecin Inspecteur-Général, ranking as Major-General; *Médecin Inspecteur*, ranking as Major-General.

Médecin Principal de 1re Classe, ranking as Colonel; *Médecin Principal de 2me Classe*, ranking as Lieutenant-Colonel.

Médecin Major de 1re Classe, ranking as Major; *Médecin Major de 2me Classe*, ranking as Captain; *Médecin Aide Major de 1re Classe*, ranking as Lieutenant; *Médecin Aide Major de 2me Classe*, ranking as Second Lieutenant.

Pharmacien Inspecteur, ranking as Major-General; *Pharmacien Principal de 1re Classe*, ranking as Colonel; *Pharmacien Principal de 2me Classe*, ranking as Lieutenant-Colonel.

Pharmacien Major de 1re Classe, ranking as Major; *Pharmacien Major de 2me Classe*, ranking as Captain; *Pharmacien Aide-Major de 1re Classe*, ranking as Lieutenant; *Pharmacien Aide-Major de 2me Classe*, ranking as Second Lieutenant.

Officiers d'Administration are graded as first, second, and third class, and rank as Captain, Lieutenant, and Second Lieutenant. A few reach the grade of *Officier d'Administration Principal*, with the rank of Major.

In regard to the rank of Major-General mentioned above, it should be noted that in the British Army there are four grades of Generals: General, Lieutenant-General, Major-General, and Brigadier-General. The French have only two grades, viz.: *Général de Division*, corresponding to our Major-General, and *Général de Brigade*, corresponding to our Brigadier.

I have described the *Officiers d'Administration* as Medical Quartermasters, but they are much more. They correspond more closely to the Captains of Orderlies in the early days of the British Medical Service, as they carry out most of the executive work of a French military hospital.

The French medical and pharmacist officers control and organize the professional work of the hospital, but the purely military duties of command and non-technical administration are in the hands of this special body of purely administrative *non-medical* officers. The exclusion of French Army surgeons and pharmacists from the exercise of purely military functions results in a military inferiority to officers of the same rank in the combatant Services. A French friend put the position very concisely, as follows: "*Un médecin major ou un pharmacien major de deuxième classe n'est pas un capitaine. Un médecin ou pharmacien major de première classe n'est pas un commandant; il est un peu moins. L'officier combattant a toujours, avec égalité de galons, la préseance sur l'officier des services (Santé, Intendance, Vétérinaire, etc.).*"

The *Médecins* and *Pharmaciens Auxiliaires* have the rank of *Adjudant*, which corresponds roughly to our Warrant-Officer grade. They are junior medical and pharmaceutical students. The *Médecins Auxiliaires* are chiefly employed as regimental medical officers, but the *Pharmaciens Auxiliaires* are employed in a great variety of ways.

We have nothing at all resembling the "*Médecin Auxiliaire*" or "*Pharmacien Auxiliaire*" in the British Medical Service, as the "Apothecaries," or as they are now styled, "Assistant Surgeons," employed with the Army in India are Europeans or Eurasians who have been through a complete medical curriculum in a Government Medical College and have been granted diplomas as general medical practitioners in British India. They act as dispensers in military hospitals in India, but this is a minor part of their duties.

The field uniform of the French Medical Service is the same as that of other officers. The *Médecins* wear a gorget patch of cherry-colored velvet and the *Pharmaciens* a similar patch of green velvet. Both wear the snake of Aesculapius (*le caducée*) enclosed in an oval laurel wreath embroidered in gold on the velvet. "*Médecins Auxiliaires*" and "*Pharmaciens Auxiliaires*" wear the same gorget patch as their officers.

The "*Officiers d'Administration*" wear a ten-pointed golden star on a red velvet gorget patch.

Military dentists, as will be seen later, are not officers. They wear the uniform of *Adjutants* in the *Service de Santé*, with the snake and laurel-leaf accompanied by the letter "D" embroidered in silver on the collar. The badges of rank of both *Médecins* and *Pharmaciens* are of gold both on the sleeve and *képi*. Dentists wear no gold braid on their caps.

The rank and file of the French Medical Service is divided into two well-defined classes, *Infirmiers* or hospital orderlies and *Brancardiers* or stretcher-bearers. They are all elderly men drafted from infantry battalions. They continue to wear their regimental numbers—there are no regimental badges in the French Army—with the exception of specially trained men who always function as male nurses, assistants in the pharmacies, and laboratory attendants. These men are distinguished by wearing on their collar the snake and rod of Aesculapius in a laurel-wreath embroidered in white cotton on a dull red background.

The French Medical Service in the field is divided into two zones: 1. *Service de Santé de l'avant*. 2. *Service de Santé de l'arrière*.

SERVICE DE SANTÉ DE L'AVANT.

The direction of the Medical Service with the Field Army does not differ materially from the British except that which corresponds to the Director of Medical Services of an army has a *Pharmacien Principal* (ranking as a Colonel) serving on his staff. This pharmacist officer performs all the functions of a medical staff officer, such as carrying out inspections on behalf of his chief. So actively is he employed in this direction that the *Pharmacien Principal* of the particular French Army to which the writer belonged, during the second battle of the Marne, was actually captured by the Germans while proceeding with instructions to a hospital of evacuation during that very rapid retreat. *Pharmaciens* do not serve on the staff of lower formations than armies, but they play an important part in the *personnel* of the medical units which collect the wounded on the battlefield and in the field hospitals.

To understand their employment it is necessary to sketch the medical organizations of a French division as the division is the fighting formation in direct contact with the enemy. With a British division there are three field ambulances and a doctor with each battalion, but the organization in the French Army is more complicated, as there are the following formations:

- (1) The Regimental Medical Service.
- (2) The G. B. D., or *Groupe des Brancardiers Divisionnaires*—i. e., Divisional Bearer Company.
- (3) The S. S. A., or *Section Sanitaire Automobile*—i. e., the Divisional Motor Ambulance Convoy.
- (4) Ambulances or Field Hospitals (usually two).

In regard to the Regimental Medical Service, the first thing which the student of the organization of Continental military systems has to understand is that a "Regiment" corresponds to what we call a "Brigade" in the British Service. Prior to the introduction of the Territorial system in our Army, what are now known as "Battalions" were distinguished by numbers and styled "Regiments." Now, of course, the regiment embraces at least two Regular battalions, sometimes one or two special reserve battalions, several Territorial battalions, and an unlimited number of "Service" battalions. In our Army, four battalions, usually from four

different regiments, are grouped together during the war as a brigade. Each infantry regiment in the French Army has three battalions, which never change in peace or war. In medical charge of the regiment is the *Médecin Chef du Régiment*, who has, as his staff officer, a *Pharmacien du Régiment*. Each battalion has a medical officer and a medical subordinate—i. e., a *Médecin Auxiliaire* or junior medical student. These battalion medical officers serve under the orders of the *Médecin Chef du Régiment* and not directly under the A. D. M. S. of the division as in our Army. They organize battalion aid-posts, exactly similar to the formation wrongly called regimental aid-posts in our Army, but from these they send their wounded and sick, not to a field ambulance advanced dressing-station as in the British organization, but to a real regimental aid-post (*Poste de Secours régimentaire*), where they are dealt with by the *Médecin du Régiment* aided by the regimental pharmaceutical officer. Like the regimental *Médecin Chef* the *Pharmacien du Régiment* is on the staff of the *Colonel Commandant*, and is part and parcel of the regiment. He can only be changed by supreme Army authority.

The *Médecin Divisionnaire*, who corresponds to our Assistant Director of Medical Services, exercises technical supervision, but has no military command over the regimental pharmacist officers of his division. It will be seen that the French regiment is a complete medical and pharmaceutical organization in itself.

The next fighting formation in which the pharmacist officer is found is the *Groupe des Brancardiers Divisionnaire*, or divisional bearer company. A "Groupe" consists of the following *personnel*:

One *Médecin Chef*, who is a *Médecin Major*.

Two *Médecins Aide-Majors*.

One *Pharmacien*.

One *Officier d'Administration*.

One *Médecin Auxiliaire*.

Three *Pharmaciens Auxiliaires*, and

108 Bearers.

It will be seen that the unit has as many pharmacists as it has doctors. The "Groupe" is universally spoken of as the "G. B. D." The French are as fond of alphabetical titles for military formations as we are:

The system of working this unit is as follows:

I. *Poste de Secours*.—Detachments are, during battle, attached to the Battalion Aid Posts (*Postes de Secours de Bataillon*).

II. *Relais de G. B. D.*—Within reasonable distance of the Aid Posts are Relay Posts of Bearers.

III. *Poste de Recueil*.—This corresponds roughly with our advanced dressing-station, and is the point at which motor- and horsed-ambulance vehicles and wheeled stretchers are kept.

IV. *Post Centrale G. B. D.*—This is the Headquarters of the G. B. D., and has the following:

1. *Magasin de Matériel Anti-gaz*.

2. *Laboratoire de Toxicologie*.

3. *Dépôt de Désinfectants*.

These three formations are entirely in the hands of the pharmacists, who may in addition be stationed at any of the three previous points.

The next field medical unit with which the pharmacist is found is the *Ambulance*, and in the French Army this term is employed to describe a field hospital, not a mixture of bearer company and field ambulance as in the British Army.

The *personnel* of an ambulance consists of eight officers (five *Médecins*, one *Pharmacien*, two *Officiers d'Administration*) and thirty-two other ranks.

The strength of the rank and file roughly corresponds to one and a half "tent sub-divisions" of a British field ambulance. The number of ambulances attached to a division varies according to its needs. There are usually two. One is the *Ambulance de Triage*, which receives all wounded and sick. It distributes cases to various centers, and keeps patients not fit to travel and slightly wounded who will quickly recover. Except for the fact that it is a hospital and keeps cases, it corresponds to our divisional dressing station. The other ambulance is a small hospital, and takes sick, slightly wounded, and slight skin cases. There is accommodation for one hundred and fifty patients, and the period of their stay is usually limited to three weeks. It is obvious that, in both these varieties of field hospital, there is plenty of scope for the pharmacist, and one of the most important features of these formations is the pharmacy, which is invariably well equipped and stocked. In addition to these ambulances, each French division organizes what are called *Infirmes*, which have no analogue in the British Service. They provide for the treatment of very slight cases quite close to the firing-line. The patients are not shown as admissions to any medical formation. The establishment is the *Médecin Chef* of a regiment in reserve with his *Pharmacien du Régiment* and battalion medical establishments.

Here, again, the presence of a trained pharmaceutical officer makes itself felt by a very high standard of pharmaceutical service to the sick and wounded under treatment.

Behind the zone of the armies are the *Etapas*, which correspond roughly to our lines of communications. The *Etapas* include various hospitals established for medical and surgical work and for the various specialties of medicine and surgery. Each has its *Pharmacien* and a complete pharmaceutical as well as a medical staff and organization.

SERVICE DE SANTÉ DE L'ARRIÈRE.

Behind the *Etapas* we find the hospitals of evacuation, ambulance trains, and railway rest-stations, which convey the wounded and sick to the medical organization of the "Interior." The home territory, or "Interior," is the portion of France well outside the zone of the armies. Here, hospitals for the continuous treatment of wounds and sickness are established on similar lines to our stationary and general hospitals. There are twenty *Régions* corresponding to the twenty Territorial Corps of the French Army. Each *Région* has a *Directeur de Service de Santé de la Région*, who has a *Pharmacien Principal* on his staff. Throughout each region the pharmacist officers, their pharmacies, laboratories and stores are a special branch of the Medical Service supervised by an administrative pharmaceutical officer, who is expert adviser to the Medical Director.

DENTISTRY IN THE FRENCH ARMY.

An article dealing with the pharmaceutical profession would not be complete without some further reference to the sister profession of dentistry. In marked

contrast to the high position accorded to pharmacy is the comparatively low one held by dentists in the French Army. The pharmacist is the equal of his medical brother-in-arms in all respects, but the dentist is not an officer at all, but a *Sous-officier* like the *Médecins* and *Pharmaciens Auxiliaires*. The dentists have low rank in the French Army, but there are plenty of them. In the British Army dentists are few and far between. There is only one to each casualty clearing station, and only one or two with the stationary and general hospitals. In the French Army each division has three, each corps has an additional one, and there is a liberal supply to the hospitals on the lines of communication and at the base.

In the foregoing sketch the high position held by the pharmaceutical profession in the French Service has been established. Pharmacy has been described as the handmaiden of medicine. In the British Army she is little more than a drudge, but in the Army of the great French Republic she is accepted as a sister, enjoying equal rights and privileges.

QUANTITATIVE ESTIMATION OF MENTHOL IN ALCOHOLIC SOLUTION.*

BY JOSEPH L. MAYER.

Having occasion recently to make many quantitative determinations of menthol in alcoholic solution, and there being no method available, I adopted and have very successfully employed the following:

Into an accurately weighed Petri dish (a large watch glass will serve equally well) accurately measure 5 Cc. of the sample, then place in a desiccator over sulphuric acid and allow to remain over one night, after which weigh. The increase in weight is due to the menthol, the purity of which can easily be proved by making a melting point determination and other physical and chemical tests which may be needed.

A trial solution made to contain 14.6950 grammes of menthol with alcohol sufficient to make 50 Cc. when analyzed by the above method showed the presence of 14.460 grammes per 50 Cc., a shortage of 1.59% which is practically negligible in work of this kind, where the authorities who collect the samples are disposed to allow a variation of at least five percent and in some cases even more.

The method is so accurate, simple and easily applied that it should commend itself to pharmacists and others who have need to use it.

RESEARCH AND ANALYTICAL LABORATORIES
OF THE
LOUIS K. LIGGETT COMPANY.

* Read before New York State Pharmaceutical Association, June, 1919.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

CINCINNATI.

The sixth annual meeting of the Cincinnati Branch, A. Ph. A., resulted in the election of the following officers for the term 1919-20:

President, D. E. Murphy.

Vice-Presidents, Edw. Voss, Jr., and T. J. Widrig.

Secretary, Charles A. Apmeyer.

Treasurer, J. Harry Brucker.

Member of Executive Committee, Charles G. Merrell.

A dinner followed the business session, tendered by the William S. Merrell Company in honor of Mr. Caswell A. Mayo, recently Editor of "The American Druggist" and former president of the A. Ph. A., and a Trustee of the New York College of Pharmacy, who comes to Cincinnati to assume editorial direction of the Merrell publications, "The Therapeutic Digest" and the "Merrell Messenger," both of which reach physicians and druggists throughout the United States. Mr. Mayo will be a valuable addition to the pharmaceutical circles of the Queen City, and a warm welcome was given him by the pharmacists of this section.

CHARLES A. APMEYER,
Secretary.

NASHVILLE.

A joint meeting of the Nashville Branch, A. Ph. A., and the Nashville Drug Club was held at the Commercial Club on May 29th, D. J. Kuhn presiding.

After the reading of the minutes a communication from Dr. A. R. L. Dohme was read, on the subject of narcotic legislation; in this Dr. Dohme advocated the enforcement of the Harrison law by the Public Health Depart-

ment instead of the Internal Revenue Department. M. E. Hutton and Ira B. Clark spoke on this subject, strongly advocating such a change. In the general discussion which followed it was stated that a few doctors here were prescribing unusual amounts of narcotics to habitues, and that some local druggists were filling these prescriptions. It was also stated that a woman dressed as a nurse had been detected trying to obtain narcotics by forging the names of prominent local physicians. The provisions of the new State Law, allowing 8 grains morphine per day, was considered to conflict with the Harrison act. In order to reduce the sale of narcotics to legitimate channels, as far as possible, the following committee was appointed to confer with county and federal authorities and secure their cooperation: M. E. Hutton, Ira B. Clark and D. J. Kuhn.

M. E. Hutton then addressed the meeting on the subject, "How to Increase Your Business by the Use of Commercial Agency Reports." A plan for reorganizing the Club on a more healthy financial basis was adopted, and will be put into execution.

R. J. Kleiser was elected as a member of the Club and M. E. Hutton and Roy Mansfield members of the Branch.

The approaching meeting of the Tennessee Pharmaceutical Association in Nashville, July 15, 16 and 17, was announced, and the following committee appointed to arrange a program for entertaining them: R. J. Kleiser, M. E. Hutton, Ira B. Clark, D. J. Kuhn, Chas. Jennings and Mose Cook, after which the meeting adjourned.

WILLIAM R. WHITE,
Secretary.

COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 18.

PHILADELPHIA, PA., June 7, 1919.

To the Members of the Council:

Motion No. 27 (Approval of Program for 1919 Annual Meeting) and Motion No. 28 (Election of Members; applications Nos. 160 to 196, inclusive) have each received a majority of affirmative votes.

S. L. Hilton, Chairman of the War Service Committee, A. Ph. A., in response to a request of the French Ministry (forwarded by the American Society of Mechanical Engineers of New York, which has been collecting material exemplifying United States Standards) reports that he sent the following:

"United States Pharmacopoeia, Ninth Edition.
National Formulary, Fourth Edition.

United States Dispensatory, Last Edition.

National Standard Dispensatory, Last Edition.

Army's Principles of Pharmacy.

Remington's Practice of Pharmacy.

Treatise on Pharmacy, Caspari.

Organic Materia Medica and Pharmacognosy, Sayre.

Essentials of Pharmacy, Sayre & Havenhill.

Applied and Economic Botany, Kraemer.

Scientific and Applied Pharmacognosy, Kraemer.

Abstract of the Proceedings of the U. S. Pharmacopoeial Convention, 1910.

Public Health Service Publications.

Digest of Laws Relating to the Use, Sale and Manufacture of Poisons and Habit-Forming Drugs, Wilbert & Motter.

Digest of Comments U. S. P. & N. F., 1912, Motter & Wilbert.

A Study of Melting Point Determinations, Menge.

The Solubility of U. S. P. Organic Acids and their Salts, Seidell."

The following acknowledgment was received from C. B. LePage, Secretary, Standards and Technical Committees, American Society of Mechanical Engineers:

"To-day we are forwarding to the French Ministry *via* the American Embassy, our third and probably our last shipment of United States Standards material which we have been collecting for the last two or three months.

The box containing the very generous contribution which was collected for us by your Committee, forms a very large part of this shipment, and we desire to thank you very heartily for the very complete way in which you responded to our request for assistance in securing standards publications of this country.

Our delay in acknowledging your generous contribution has been due to two causes—first, we were desirous of examining this material personally, and second, we were desirous of delaying our shipment until all the material which we expected to receive had come to us. As our days at the office are very crowded—these two conditions did not synchronize until a day or so ago.

Thanking you again for your assistance in this matter, we remain."

Motion No. 29 (Election of Members). You are requested to vote on the following applications for membership:

No. 197. William McClurg Thomas, Raphine, Va., rec. by Charles F. Walker and W. F. Rudd.

No. 198. Joseph Harrison Holtzman, Edinburg, Va., rec. by C. F. Walker and Albert Bolenbaugh.

No. 199. Reuben E. Burrin, Advance, Ind., rec. by J. E. Seybert and P. L. Burrin.

No. 200. Edward Mann Hellerman, 144 N. Peach St., Philadelphia, Pa., rec. by William L. Friedman and Ivor Griffith.

No. 201. Israel S. Promisloff, 1700 S. 10th St., Philadelphia, Pa., rec. by Wm. L. Friedman and Ivor Griffith.

No. 202. William K. Stevenson, 3329 Spring Garden St., Philadelphia, Pa., rec. by William L. Friedman and Ivor Griffith.

No. 203. W. Erle Reighter, 2457 N. 5th St., Philadelphia, Pa., rec. by Wm. L. Friedman and Ivor Griffith.

No. 204. Philip Lincoln Aidenbaum, 473 N. 6th St., Philadelphia, Pa., rec. by Wm. L. Friedman and Ivor Griffith.

No. 205. William Aloysius McCauley, 1913 E. Orleans St., Philadelphia, Pa., rec. by Wm. L. Friedman and Ivor Griffith.

- No. 206. Max Rosen, 1846 Crotona Ave., New York, N. Y., rec. by Hugo H. Schaefer and Geo. T. Rieffein.
- No. 207. Charles Hermann, 244 2nd Street, Union Hill, N. J., rec. by Edward K. Wickham and Margaret Ritchie.
- No. 208. James Roy Mansfield, 1000 Jefferson St., Nashville, Tenn., rec. by William R. White and E. A. Ruddiman.
- No. 209. Major Ernest Hutton, 301 Wilburn St., Nashville, Tenn., rec. by E. A. Ruddiman and William R. White.
- No. 210. Alden Scott Boyer, 201 E. Chestnut St., Chicago, Ill., rec. by C. M. Snow and Wm. B. Day.
- No. 211. A. Wayne Kunkel, 703 E. Union Ave., Litchfield, Ill., rec. by Wm. B. Day and E. N. Gathercoal.
- No. 212. John Nicholas Washington Otto, 241-243 So. Rampart St., New Orleans, La., rec. by Robert F. Grace and Adam Wirth.
- No. 213. (Action postponed.)
- No. 214. (Action postponed.)
- No. 215. Charles B. Riegler, Hillsboro, Kansas, rec. by J. S. Chism and M. W. Friedenburgh.
- No. 216. William Whitmore Rolston, Mt. Clinton, Va., rec. by Albert Bolenbaugh and C. F. Walker.
- No. 217. Samuel Weinstein, 1608 W. Grace St., Richmond, Va., rec. by Albert Bolenbaugh and C. F. Walker.
- No. 218. Hjalmar O. Tiegen, 2638 No. Aldrich Ave., No., Minneapolis, Minn., rec. by Chas. H. Huhn and Edward A. Tupper.
- No. 219. Vilma Kleppner, 519 W. 147th St., New York, N. Y., rec. by H. V. Army and Hugo H. Schaefer.

J. W. ENGLAND,
415 N. 33RD ST. *Secretary.*

A. PH. A. COUNCIL LETTER NO. 19.

PHILADELPHIA, PA., June 24, 1919.

To the Members of the Council:

Motion No. 29 (Election of Members; applications Nos. 197 to 219, inclusive) has received a majority of affirmative votes.

The accompanying letter from Chairman Frank H. Freericks, of the A. Ph. A. Advisory Committee for Soldier and Sailor Pharmacists, has been received. It contains two recommendations: First, one authorizing membership *without dues for the first year* to those

who have been or are in the World War Service, and second, one authorizing the creation of a new section in the Association to be known as the World War Veterans' Section of the A. Ph. A.

What is the wish of the Council?

J. W. ENGLAND,
415 N. 33RD STREET. *Secretary.*

CINCINNATI, OHIO, June 20, 1919.

To the Chairman and Members of Council of the American Pharmaceutical Association:

GENTLEMEN:

In connection with our work, the Chairman has been requested, by the unanimous vote of the Committee Members, to submit for your consideration and early action, the feasibility of inviting the men connected with Pharmacy who are in the Service, or honorably discharged from the Service, to become members of the A. Ph. A., and to create within the A. Ph. A. a World War Veterans' Section. This invitation to be on the basis of offering them membership in the Association for the first year, without payment of dues, they, however, not to have the Journal, unless they separately subscribe for it. We are now in touch with several thousand pharmacists and drug clerks, who have been or are still in the Service. We have been able to render a good part of them real service. Without exception, they have been truly appreciative of the interest taken by the A. Ph. A.

It is the opinion of the Chairman that an invitation extended will result in several hundred applications for membership. The creation of such a Section of World War Veterans will attract a great many more who will not have learned of the original invitation. There are, or have been, about ten thousand pharmacists and drug clerks in the Service, ranking from Private to Major. These men are naturally drawn together. Doubtless, they will have their several Veteran Organizations, but it is reasonable to expect that they will delight particularly in having an organization which is made up exclusively of men from their own profession. Under proper direction, these men will constitute an enormous force for the good of American pharmacy. In matters of pharmaceutical concern, they are bound to accomplish, where others would fail. The desirable and rightful influences of their separate section would be by the individual members, carried into their local veteran societies. These men, if brought to-

gether in a common cause, will be a power for good during the next fifty years. It is submitted that they ought to be brought together; that the A. Ph. A. is the proper organization to bring them together; that they have, as a more or less separate entity, a proper place within the A. Ph. A.; and finally, it is believed, that the proposal need only be made to commence its realization, and to constitute a nucleus which eventually will attract every man who continues in pharmacy, and who has a right to belong. A great deal more might be said about this proposal recommended by your Committee, but we are sure that it would be expressive only of the thoughts which will naturally occur to every member of the Council. To sum up, your Committee requests your approval of the following:

1st. That it be authorized to extend an invitation to every man who has been, or is in the Service, and who has been connected with pharmacy, to become a member of the

A. Ph. A., offering membership without dues for the first year.

2nd. That it be authorized to propose to the men so becoming members of the A. Ph. A., the creation by them of a separate section, under their immediate control, subject to the general Association supervision of the A. Ph. A., and to be known as 'The World War Veterans' Section of the A. Ph. A., or by some other suitable name upon which they may decide.

The very early action of Council is earnestly solicited, because if this undertaking is to be carried through, it must be done while the conditions are right, and that means in time to have the organization take place at the next meeting of the A. Ph. A. in New York City.

Respectfully submitted.

THE A. PH. A. ADVISORY COMMITTEE
FOR SOLDIER AND SAILOR PHARMACISTS.

By FRANK H. FREERICKS,
Chairman.

CORRESPONDENCE

COÖPERATION OF SCHOOLS, HOSPITALS, ETC., IN VENEREAL DISEASE CONTROL.

The campaign for the control of venereal diseases in the United States by the Public Health Service makes it necessary for the medical, dental, and pharmaceutical schools, the hospitals, clinics, and the training schools for nurses, to coöperate to the utmost.

How may this be accomplished?

I. By calling a convocation of faculty, staff, and student body, at which:

(A) The dean will preside, state the object of the meeting (*viz.*, to indorse the propaganda undertaken by the U. S. Public Health Service, by direction, and under the authority, of Congress), and to appoint proper committees to put into effect the recommendations made by the chosen speakers, as to changes in curricula, etc.

(B) Selected speakers will deliver addresses on:

1. The sanitary attack upon the venereal diseases.
2. The better teaching of venereal diseases in schools, clinics, and hospitals.
3. The place of venereal diseases in our medical, dental, and pharmaceutical schools, in our hospitals, in our clinics, and in our training schools for nurses.
4. The importance of a proper knowledge of venereal diseases, not only to physicians, but also to dentists, druggists, and nurses, further, to college physical directors.

II. By giving exhibitions to faculty, staff, students, and nurses, of the official Public Health Service educational six-reel photo-drama films:

(A) "Fit to Win" for men, which will be furnished free on application to your State Board of Health, or to this Bureau.

(B) "The End of the Road" for girls and women, which will be furnished free on application to the Boards of Health in the states of Connecticut, Illinois, Louisiana, and Virginia, or which may be had under pay arrangement from Mr. Isaac Silverman, Room 211, 1493 Broadway, New York City.

III. By arranging meetings to be addressed by:

- (A) The president of the State Board of Health on the activities within the state, either by the state alone, or by the state in coöperation with the Public Health Service; the subjects explained being medical (the establishing of clinics), educational, legislative, social, law, enforcement.
- (B) By the local, municipal, or county health officer, who will detail the local activities on the same subjects.
- (C) By the Public Health Service representative appointed to your state to work in coöperation with your state board of health, who will speak on the same activities, especially the establishment, organization, and general policy of the free clinics for the treatment of venereal diseases.
- (D) By the U. S. Public Health Surgeons in charge of the clinics already established in your state, who will explain about location, staff, equipment, laboratory, treatment, records, etc.

IV. By complete, permanent Exhibits of official literature issued by:

- (A) The U. S. Public Health Service:
 - 1. Medical: reprints from U. S. Public Health Reports.
 - 2. Educational: miscellaneous publications issued by the Division of Venereal Diseases.

Public Health Service literature will be furnished free for distribution to faculty, staff, student body, and nurses, on individual application to the Surgeon General, indicating list and quantity desired.

(B) State Boards of Health:

These publications are generally miscellaneous and may be had free on application to the State Board. Some states issue a weekly or monthly bulletin.

The campaign among the medical, dental, pharmaceutical schools, hospitals, and training schools for nurses having been recently launched in Washington, and all the universities, both white and colored, in the District of Columbia having already adopted the program, for your guidance in the plan outlined above there is inclosed herewith the report of the proceedings of the Georgetown University convocation, including the recommendations made by Dean George M. Kober, of the Department of Medicine.

There is also enclosed herewith a list of articles which were published in the various leading dermatological and syphilological journals of the United States within the last two years, upon the subjects mentioned above, to facilitate the short addresses. (This list can be obtained by addressing the Surgeon General.)

A set of official literature consisting of (1) reprints from the "Public Health Reports," (weekly bulletin of the Public Health Service), and (2) miscellaneous publications issued by the Division of Venereal Diseases, is being mailed under separate cover.

In view of the foregoing exposition, what coöperation may the Public Health Service expect from your institution?

Your early reply with any suggestions you wish to make will be awaited with interest.

Respectfully,

RUPERT BLUE, *Surgeon General*.

Part of another communication from the Surgeon General, which reports progress in the work, follows:

When the Chamberlain-Kahn Act created the Division of Venereal Diseases in the United States Public Health Service and the great work of venereal disease control was inaugurated, the plan of procedure formulated was grouped under three headings, as follows:

- 1. Medical measures.
- 2. Law-enforcement measures.
- 3. Educational measures.

The Educational measures include the dissemination of information by leaflets, lectures, exhibits, moving pictures, stereopticon views, and other means, among industrial plants, commercial institutions, clubs, libraries, community centers, schools, churches, the home, and every walk of life.

The Law-Enforcement measures include encouragement of the closing of restricted districts; stimulating enforcement by State and municipal officials of laws and ordinances directed against prostitution in all its phases, the establishment and management of institutions for the rehabilitation of venereally infected persons, and the commitment to institutions of venereally infected feeble-minded persons; urging the adoption and enforcement of laws and ordinances compelling the reporting of the venereal diseases, the prohibiting of quack advertising, and the sale of venereal disease nostrums; and other measures designed to prevent the spread of the venereal diseases.

The Medical measures include the establishing of clinics; securing hospital facilities for venereally infected persons; making available laboratory facilities for the scientific diagnosis of venereal diseases; securing wide distribution of arsphenamine or similar products; obtaining the support of the entire medical profession by the reporting of their cases to the State Board of Health and the treating of venereally infected persons, in accordance with the best modern methods; securing the coöperation of druggists in refusing to dispense venereal nostrums and directing prospective purchasers of such remedies to venereal disease clinics, or reputable physicians; securing the coöperation of dentists and nurses in their respective fields of practice; and enlisting the interest and services of all medical, dental, and pharmaceutical schools, societies, and journals.

Under Medical measures, the campaign was begun with the advertising media of the country. The 20,000 newspapers and magazines carrying advertising were appealed to for coöperation, with the result that up to the present, according to agreement cards received, and clippings made, approximately 140 only, or less than one percent, are still carrying obnoxious advertising. In other words, more than 99 percent of the newspapers and magazines in the United States carrying advertising are coöperating.

The next step in the campaign was directed to the druggists of the country. Out of the 48,500 appealed to, results up to the present, by return agreement card, show the coöperation of approximately 28,000, or nearly 60 percent.

After the druggists, the 131,780 legally recognized physicians in the United States were appealed to, with the result that agreement cards of coöperation have been received, up to the present time, from approximately 60,000, or nearly 50 percent.

The campaign with the dental profession is just being launched; the campaign with the nursing profession and the training schools for nurses is under way.

NARCOTIC PRESCRIPTIONS SEIZED BY REVENUE AGENTS IN ST. LOUIS PHYSICIAN'S OFFICE.

United States revenue officers last month entered the office of a St. Louis physician and confiscated prescriptions and records which they say show that he has been writing morphine and cocaine prescriptions. They reported that he wrote prescriptions of this character for seventy-one persons in one day, and that he kept a filing case in which were prescriptions written in advance for certain of his regular patients. Printed affidavits which he requires each patient to sign, setting forth that "medicine" was prescribed in good faith and to be taken according to the doctor's

instructions, also were seized, the officers stated.

METRIC SYSTEM MAY BE ADOPTED SOON BY U. S. TO AID WORLD TRADE OPERATIONS.

Out of the war experiences, with the support of the United States Bureau of Standards, there is now strong prospect that the metric system will be adopted by the United States for general commercial use in order to facilitate trade operations throughout the world. Members of Congress have been appealed to by strong commercial interests and as soon as imperative legislation is out of the way it is proposed to give earnest consideration to the metric system.

COMMITTEE REPORTS

(Continued from p. 514, June issue.)

MINUTES OF THE JOINT MEETING OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES WITH THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY, CHICAGO, ILLINOIS. AUGUST 13, 1918.

Through a closer spirit of coöperation and adherence to some standards, such as the *Syllabus*, we will be able to bring about a greater uniformity, clearness and understanding in the forming of the board questions. The standardization of the questions is, we know, a much debated topic and will no doubt be thoroughly discussed when we hear the report of the Committee on "Uniform Questions and Examinations." We therefore do not wish to open the question other than to emphasize the value of the conference and coöperative idea and the great possibilities that may come therefrom in bringing about clearer and more uniform examinations. In this connection we wish to present, without comment, a few questions that have been submitted to us by various members of the Conference, in the hope that we might be able to use them in a plea for the need of a real conference and development of a closer coöperative spirit between the boards and the colleges. The following were selected at random from among those submitted: "Give the chemical formula for S and Hg." "How may we classify all matter?" "Name the most positive and most negative element." "Why is sodium cacodylate official?" "Name the sulphites found naturally," etc.

Last year, at the joint session, there was evident throughout the entire discussion a general expression of feeling that the boards, after all, were the ones who could best raise the standards of pharmacy by demanding higher educational requirements of candidates for registration. As, for example, by requiring at least as a minimum, high school graduation from all candidates seeking registration as pharmacists and where possible at least two years of college work. In reply to these suggestions the statement is frequently made that the boards have no authority to advance the standards. Such statements, however, are not always based on the actual facts in the case, but rather on personal opinion and preference. There are, of course, instances where the requirements for registration are specifically expressed in the law. In such cases they may usually be divided into two groups, one in which only a minimum requirement is specified and the other where the law is more specific and fixes a maximum and minimum requirement. In the first case the requirement may be raised by the board without conflicting in any way with the spirit of the law; the question is a matter of judgment of the board. In the second instance, if the requirements seem too low, and it is deemed advisable to change them, the standard of the examinations could be raised, thereby practically necessitating, on the part of the candidate, a secondary school or even college training.

Another reason why we believe the boards should take the lead in raising the standards, both for preliminary school training as well as their examinations, is found in the practice of reciprocity now generally adopted by the boards of most states. We believe in reciprocity and feel that it is an evidence of marked progress but, while we may, the question naturally arises, are the requirements and the standards of all boards the same? If not, how are they adjusted so as to make them equitable? Are the examinations of one board of the same pedagogic value and fairness as a test of a candidate's qualifications as those of other boards? We doubt this, if the general average of the examinations is taken into account, and believe our opinion will be sustained by the admissions made by various members in the discussions of the question that have taken place in our individual and joint sessions.

The prospective candidate soon learns where the "easy boards" are located and, barring the extreme distances sometimes necessary to reach them, he will usually seek out the examinations of least resistance. On the other hand, we may have states where there are practically no educational requirements other than the ability to pass the examination. In such instances we believe that it is fair to assume that the examinations given are not of the same standard as in those states where specific educational requirements are demanded.

Some insist that the colleges should lead the way in all educational advances and, we believe, we are safe in saying that most of them have. But even though they should raise their requirements to two years of collegiate work, before one could begin the study of pharmacy, such a requirement would have no influence on the requirements of the boards, or the educational training of the candidate, unless there was a prerequisite law back of it. It is, however, needless to argue the point at any length for we all know how it works out in actual practice. Most candidates for registration, barring law requirements, will seek out the board of least resistance for registration. This attitude of getting through with as little training as possible is well illustrated by an instance reported by a member of the Committee when a pharmacist remarked to him that he did not care to have his clerk know the difference between an atom and an atomizer. This is unfortunate and it is humiliating to have to admit that we have such men in the ranks of pharmacy. It is just this attitude, however, on the part of so many pharmacists that has prevented our obtaining our just rank and position in the Army. We must have respect for our calling and ourselves if we expect to command respect from others. We believe this can be done very largely by raising the standards and educational requirements. We believe further that the boards are in position to do this better and easier than any one else since all persons seeking registration must pass their investigation. As a further argument against the boards taking the initiative in raising standards, we are told that the medical boards have not raised their standards and that the present high standards for the practice of medicine are all due to the colleges. This is true, but in considering the case we should remember that while the Medical Boards did not go above high school graduation they had a prerequisite law back of them, thereby enabling the colleges, with the aid of aggressive associations, to bring standards up to where they now are.

We believe, therefore, that the boards should go on a high school graduation requirement as soon as possible, thereby demonstrating their belief in the fact that pharmacy does need trained men. If, however, through various limitations in the law this is impossible to do without legislative enactment, then, to demand at least high school graduation from all candidates seeking reciprocal registration. The simple announcement of this latter requirement would then put all boards on more nearly an equality, and do more for the advancement of pharmacy than any one step taken in years. The fact that the boards have gone on record as favoring the high school graduation requirement is a step, but why not take the next one and make it a reality. There never was a time when standards could be raised as easily as now. The people are seeing examples daily of what specialized training will do and they know that a technical training demands a high preliminary training and that both spell efficiency. They are therefore not only believing in this, but are demanding it on every hand.

Most of us, no doubt, are familiar with the fact that the American Medical Association, through its Educational Committee, last January raised the requirement for admission to medical colleges by requiring extra hours of English. This is to take effect at once and to be operative for entrance this fall. There was no postponing the action to some future date and then to another. What is more, it was done in the face of the great demands for medical men and the great effort to protect even pre-medical students. No exceptions were made even for those who had practically completed their pre-medical work. Every one who could not meet the new requirement was compelled to enter a summer school somewhere and make this up. Some of us may feel that this was arbitrary and unwarranted in the face of the present crisis.

The question naturally arises, what did we do in the same emergency, did we raise our standards or, even, make much of an effort in behalf of the men in the Service who were seeking some recognition of their training? From some sources there arose a cry to open the gates and make it as easy as possible for those who wished to enjoy the privileges of practising pharmacy. Others said by all means let us lower the standards thereby making it possible for an increase in the number of licensed men, for there is a great scarcity and we know not what to do. We have been told that some schools sent out letters to their alumni stating that owing to the great demand for men they would not put into effect certain advanced requirements for admission till later, or after the war. In other instances the boards have been more or less remiss in their enforcement of the law requiring a registered man to be in charge of the store, or in the sale of certain prohibited articles. We will admit that these are times when reason and judgment must temper action and we all know of instances where to have maintained standards or rigidly en-

forced laws would have worked incalculable hardships. On the other hand, there are many instances where young men, just starting out in business, with splendid prospects, have been compelled to either sell out or close their stores by reason of being drafted, and were unable to secure a registered man to take charge of their store. Have they objected or asked for lowered standards or special concessions? By no means—they have simply "done their bit" and expect to come back and start over again. In contrast to this we might ask if there have been any chain, syndicate, department stores, drug stores, or stores owned by non-pharmacists, as an investment, closed for the same reason? This is certainly a condition worth considering. To sum it all up in the language of the day, we have been brought face to face with a real emergency and have been stampeded and gassed by those who would have us believe that pharmacy is nothing but a business, therefore, does not need specially trained and qualified men.

In times like these we should bring our forces closer together and work more in harmony, for upon us rests the responsibility of what pharmacy will stand for and be in the future. As teachers, we should see to it that what few students we may have during the coming year are better prepared, not only as pharmacists, but as business men, and filled with the idea of "doing their bit" not alone for their community and their country, but also for pharmacy and the various organizations representing it. In short, we should attempt to prepare real pharmacists with ideals for the future.

As board members we should see to it that our standards are maintained and that the inefficient and incompetent are weeded out. There should be no place made for them now under the plea of an emergency measure. It will be a great deal better for them, for the community in which they work and pharmacy in general if they are kept out now, than to let them in and then have to carry them along in the future as representatives of pharmacy, as it should be.

One member of the Committee has suggested several pertinent questions which we feel may well be discussed with profit, not only at joint sessions like this, but also at conferences of the individual state boards with the colleges.

First, what should be the attitude of boards toward short courses designed simply for passing, or as the students sometimes express it, "getting by State Boards?" It is evident that something should be done to standardize these schools in some way. The question is how may it be done. Little, if anything, can be done by the American Conference. Their proprietors are satisfied with their standing; they know they could not meet the standards of the American Conference of Pharmaceutical Faculties, and, what is more, they do not care to do so, as long as they are able to have the boards recognize their students. The question is what should be done.

The second question submitted is somewhat more complicated and we present it for your consideration: "Should one State maintain rulings such as this—'experience before entering college, etc.,' so that this requirement would debar one from applying as a candidate for registration who had acquired his experience after graduation from college?" This raises a very complicated question which seems to be in substance as follows: Should experience obtained after graduation be such a detriment that the candidate who obtained his experience before entering college should be given the preference? In other words, the first man be penalized by not permitting him to take the examination simply because he obtained his experience after leaving school. In short, what is experience?

Lastly, there comes to us another contingency where we must work in harmony and where we must exercise the greatest judgment and discretion lest, in our zeal to adhere to academic and legal standards, we work a hardship. We have in mind here the solution of the problems that will arise after the war, when the students and those who were called into Service, before passing their state examinations, return. Many of these men will wish to continue their school work. Others who were working to get the experience necessary to meet the boards' requirement will wish to receive some time concessions. These men are serving in all capacities, in all branches of the Service. Most of them are no doubt in some branch of the hospital service where they are acting as pharmacists, as ward orderlies, nurses, etc. A great many are in the Sanitary Corps, and some of these have attended special training schools. Others are in chemical service, in some one of the many branches. Many are in the Navy, in some branches of pharmaceutical work, and most of these may be said to have had some special school training.

We, no doubt, are all agreed that some credit should be given for this work, but to what extent, we possibly have, as yet, not definitely decided. We believe that the question should be

settled early, so that when occasion arises we may be able to act intelligently and without delay. It certainly would be humiliating to such a man if he were to ask what could be done in his case, to have us quibble over technicalities and put him off from day to day. He has gotten used to action and will feel that we should be able to give him some answer without delay. Whatever is done we feel should be uniform, thus avoiding one standard in Ohio, another in Indiana, and still others in the various other states. Naturally, the question of individual state law limitations will be a deciding factor in the end, but even so, a wise and liberal policy should be our rule.

In conclusion, let us remember that we can no longer continue in this old each-for-himself-way we have been so long following. We must coöperate in the full meaning of the word, to bring about better results. The class of men we turn out and license to represent pharmacy must be better trained, more competent and efficient than they have been in the past. They must be men with ideals, who believe in their work and the profession they represent. The watchwords of the day are coöperation and efficiency and the world has never witnessed a greater exhibition of what may be done through their influence than we see today.

On motion duly seconded the Joint Meeting was adjourned.

FEDERATION OF AMERICAN PHARMACY.

BY H. V. ARNY, Chairman.

"Federation" has been the slogan during the past year and it is now common pharmaceutical knowledge that the American Pharmaceutical Association, through its Federation Committee, has been trying to stir up American Pharmacy to an understanding of the need of more coöperation.

Efforts along national lines are proceeding slowly but satisfactorily and it is hoped that at the New York meeting of the A. Ph. A., which will be held during August, definite plans of coöperation along the lines of publicity and research will be formulated.

Of even greater importance is the question of a closer bond between the State Associations and the American Pharmaceutical Association, and such coöperation received a distinct impetus at the Chicago meeting of the American Pharmaceutical Association by the enlargement of the scope and functions of the A. Ph. A. house of delegates, which, as now agreed upon, is to consist of delegates from State Associations, who can vote, however, only if members of the American Pharmaceutical Association. An important forward step was the formulation of an arrangement whereby a combined State and A. Ph. A. membership may be obtained for one fee.

This will be accomplished if the individual State Associations approve of the advantageous plan suggested at the Chicago meeting of the American Pharmaceutical Association and which, after discussion, was referred to the State Associations for discussion at their annual meetings of 1919. The idea is embodied in a proposed amendment to the A. Ph. A. by-law which, if adopted, will offer membership in the A. Ph. A. at \$3.00 per annum, to State Association members, "if the number of members of the American Pharmaceutical Association, who are members in good standing of any State Association, shall equal 100 per centum of the actual number of members of such a State Association." (See JOURNAL OF THE A. PH. A., October, 1918, pages 883 and 909.)

The foregoing proposition means that if the plan is carried out the Association will furnish its two great publications, the JOURNAL of about 1100 pages and the Year Book of about 500 pages, to State Association members at a remarkably low figure. To non-members, each of these publications costs \$4.00 a year, making a total cost of \$8.00; to its present regular membership, the two are furnished for the annual dues of \$5.00; and now the proposition is to furnish these volumes to members of State Associations (on a 100 percent membership basis) for \$3.00 a year.

In the average State Association, the annual dues are \$2.00. For this, the member gets the splendid legislative protection offered by all live State Associations, the opportunity for exchange of views at the annual conventions, and the annual Proceedings, constituting an attractive volume filled with good material.

If the "club rate" suggested by the American Pharmaceutical Association goes into effect, for \$5.00 a year the State Association member will obtain all of the advantages gained at

present from his \$2.00 dues and, in addition, the two publications, the JOURNAL and the Year Book of the A. Ph. A., representing a retail value of \$8.00. Ten dollars for five is surely a striking offer, but it is only a fraction of the advantages offered by A. Ph. A. membership. Of even greater value than the material offer suggested above are the intangible but very real advantages that any pharmacist gains from being a part of the American Pharmaceutical Association.

What are the abstract advantages of A. Ph. A. membership? To those of us who are active in its affairs the greatest pleasure comes from the privilege of carrying on the work, so wisely planned and conducted by the great men of American Pharmacy of twenty, or forty, or even sixty years ago. For sixty-six years the American Pharmaceutical Association has stood for the best in pharmacy and to-day it is still living up to its traditions. The influence of the A. Ph. A. upon our calling in this country is immeasurable. Practically every State Association was founded upon its initiative. The Associations of Pharmacy colleges and of State boards were organized at meetings of the A. Ph. A. and still hold their meetings at the same place as and just prior to the A. Ph. A. convention. That potent influence in national legislation, the Drug Trade Conference, was the outcome of a discussion at an A. Ph. A. meeting and in its councils the A. Ph. A. wields much influence. Unsatisfactorily slow though it may be, whatever progress has been made in improving the status of pharmacists in the United States Army and Navy has been largely due to the efforts of the A. Ph. A. Committee created for that purpose in 1894.

That standard of pharmaceutical practice, the National Formulary, is a child of the A. Ph. A.; the A. Ph. A. model pharmacy laws have been of great service in framing legislation in the several States of our Union; and now, always alert to the needs of the day, the interests of our return warrior pharmacists are being finely served by the Association's Advisory Committee for Soldier and Sailor Pharmacists.

This shows, sketchily and incompletely, what the American Pharmaceutical Association has done in the past and is doing in the present. How much more can it do in the future if federation with national organizations and with State Associations is brought to pass?

May not we of the A. Ph. A. Federation Committee ask your Association to give the proposition of combined dues your careful consideration at your 1919 meeting?

Bear in mind that the present status of the proposition is that we should take counsel together. The amendment to the A. Ph. A. by-law is at present merely proposed and it will not be acted upon until after the session of the house of delegates, at which the representatives of your Association will discuss the project with the delegates from other State Associations. So will you not at your approaching meeting study the proposition and then instruct the delegates you select to represent you at New York? And above all, select such delegates in order to beat the record of 1918, when 32 State Associations chose delegates to the A. Ph. A. meeting.

REPORT OF THE DELEGATES OF THE AMERICAN PHARMACEUTICAL ASSOCIATION TO THE AMERICAN ASSOCIATION OF PHARMACEUTICAL CHEMISTS.

To the American Association of Pharmaceutical Chemists:

Mr. E. G. Eberle and I have been appointed by the American Pharmaceutical Association to convey to you a message of fraternal regard and the wish that your meeting may prove successful. You will discuss many subjects of interest and importance, but probably none more so than the suggestion made by Dr. Charles Herty, editor of the *Journal of Industrial and Engineering Chemistry*, published by the American Chemical Society in regard to the establishment of a National Research Institute.

I was invited by Dr. Herty to attend the meeting of the New York branch of the American Chemical Society, where this subject was originally discussed. I was also invited by the editor of the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION to contribute a paper on the subject which appears in the April number under the title—"Proposed National Institute of Drug Research," and more recently I accepted an invitation to take part in a discussion of the plan by the Philadelphia branch of the American Chemical Society. In this discussion, Prof. H. V. Arny, of the New York College of Pharmacy, Prof. Charles H. LaWall, Chairman of the Revision Committee of the United States Pharmacopeia, and Dr. Herty himself, also

took part. I present this subject to you for further discussion on account of its great importance, and, as the views presented by the members of the American Pharmaceutical Association who have discussed it in print appear to harmonize, I can probably do no better than repeat what I said during the recent discussion in Philadelphia to which I have just referred.

"It goes without saying that the future of any nation depends in large measure upon the degree to which the principles developed by original research are applied to the solution of economic and industrial problems. Two classes of research institutions and research workers are required, one for the development of principles, and the other for promoting their application.

"Two general types of research institutions exist, namely, those having as their object the promotion of pure science without regard to its practical application, and those having the practical application of the knowledge evolved by the researches as a primary object.

"Belonging to the type of research institutions for the promotion of pure science are the university research laboratories, the Government research laboratories, and the foundation research laboratories, the latter illustrated by the laboratories fostered by the Carnegie Institution, the Rockefeller Institute for Medical Research, the Geophysical Laboratories, the Magnetic Laboratory and the Mt. Wilson Observatory. These institutions are notably free from financial domination, and the results of their research work are public property. The industrial research institutions may be classified under general and specific types, those devoted to the promotion of certain classes of industry belonging to the former, and the research laboratories of the various manufacturing houses belonging to the latter.

"Research institutions may also be classified according to their motive, as altruistic or egotistic. Government research laboratories illustrate the altruistic class. Research institutions of this class are and should be supported by the Government, representing the people at large. The results of their work are public property and therefore their support by the taxation of the people is eminently right and proper.

"Research institutions having as their motive the promotion of any one class of industry belong to the egotistic type, and it would be exceedingly unfair to tax the entire people for their support. Just to the extent that the industry is antagonistic to some other industry in its operation, it partakes of the character of an army at war with an opposing army. Such institutions cannot therefore be properly established under governmental auspices.

"Then we have research institutions that may be of a mixed character, such, for example, as the research laboratories established by manufacturers engaged in the legitimate pharmaceutical and pharmaco-chemical industries. Notable examples of this class of research laboratories exist. The research work done by this class of laboratories is sometimes altruistic, being donated to the public, and at other times the results are appropriated for individual commercial use by the house, in which case the motive is egotistic.

"We have before us for consideration a plan for establishing a Research Institute for promoting the chemical industries. To what class of research institutions will this institute belong? My analysis of the data in relation to the plan leads me to classify the proposed institution as belonging to the egotistic type of research institutions, having as its motive the promotion of the use of medicinal chemicals.

"According to the plan as outlined in various communications on the subject, the object of the proposed Institute is to test new chemical substances upon animals in chemical and physiological laboratories established for those purposes under the auspices of the proposed Institute, and then send them to the laboratories of the universities and to the public hospitals and dispensaries throughout the country, for clinical tests and reports.

"To carry out such a plan requires the coöperation of the medical profession and its educational institutions, including the medical societies and press and the teaching faculties of the medical schools and colleges. These educational institutions, according to this plan, are asked to coöperate with the chemical industries in promoting the use of new chemical substances as agents for the prevention and cure of disease.

"The question therefore arises: Are the results of this research to belong to the public or are they to be commercially controlled by the manufacturing houses engaged in the chemical industries? Is the manufacture and sale of these new chemical products to be monopolized by individual manufacturers by means of patents and alleged trademarks? If the results of researches are to belong to the public, so that all manufacturers may have equal right to make and sell the products, then the motive is altruistic, provided the products themselves are not limited to any

one class of medicinal products, but embrace all kinds of products used for the prevention of disease and the treatment of the sick.

"I have just stated that if the plan includes the investigation of the *materia medica* from all possible points of view, the motive is altruistic. However, this statement must also be modified because the question of altruism is dependent upon the kind of advertising propaganda permitted, endorsed or tolerated by the Research Institute, if established according to the plan under discussion.

"As stated in many papers I have written on this subject of propaganda for introducing alleged new remedies during the past thirty years, tens of thousands of alleged new remedies have been introduced by advertising, and not more than one-tenth of one percent of them have proved of any permanent therapeutic value. This commercial introduction of alleged new remedies by advertising represents hundreds of thousands of useless experiments upon the sick by physicians in private and hospital practice, and many times that number of the self-medicating public. No one has profited by this so-called new remedy business except the manufacturers and the press—medical, pharmaceutical, secular and religious. In relation to the medical profession and the public, this state of affairs has done much to foster therapeutic drug nihilism. The claims made for the products in advertising have not been realized in the majority of instances, and as a result, both physicians and patients have been losing faith in drugs as remedial agents. While this nostrum business has enriched the manufacturers of these products, it has impoverished the medical and pharmaceutical professions, and seriously injured their prestige in public esteem. Among other disastrous results, it has been the means of throwing open the field of medical and pharmaceutical practice to exploitation by persons without education or training as physicians, pharmacists or chemists, to the injury of the public health.

"The only way that we can ever know the true value of drugs as prophylactic and remedial agents is by their free and unbiased discussion by competent observers, and the free publication of the knowledge thus evolved for the benefit of all concerned. In other words, the remedy is to be found in standardizing the *materia medica* and rendering drugs instruments of precision, which cannot be done under any system by which the manufacture and sale of the drugs themselves are commercially controlled by the manufacturing houses and a fictitious demand is created for them by misleading advertising, published in the advertising columns of a subsidized press.

"It is therefore apparent that what we need is a Research Institute devoted to the investigation of the newer *materia medica*, which shall include in its work all fields of *materia medica* research—a research institution that shall also deal with the problem of introducing newer *materia medica* products, so that the institute may not be utilized for promoting the commercial welfare of the nostrum business as against the interests of the public. If the plan of the American Chemical Society for a Research Institute can be so formulated and administered as to secure these objects, there can be no question whatever in regard to its importance and value to the American people."

In closing, I can no better express the views of the American Pharmaceutical Association than to quote the following from an editorial appearing in the May number of the *JOURNAL OF THE A. PH. A.*, which statement is quoted from "A few comments on the proposed institute for drug research" appearing in the *Chicago Chemical Bulletin* for April:

"With all these commendable expressions, why do the promoters not rise to a plane of true altruism and propose that the Institute be a coöperative agency, actually unifying the best elements of chemistry, pharmacy and medicine? What good purpose or what logic is served in the insistence on keeping the Institute rigidly under the control of the American Chemical Society? * * * * * The really big thing is to create a recognized research center not controlled by any one group or element; an institute whose policies are formulated by men of experience in the various affiliated branches of medico-chemical sciences and willingly seek the advice of all coöperative agencies. * * * * * Public health demands that evidence of supreme bigness out of which will rise a recognized national seat for critical drug research stripped of all professional or commercial pettishness and not dominated by any one group of scientists."

For the Delegates from the A. Ph. A.,

F. E. STEWART, *Chairman.*

EDITORIAL NOTES

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Committee on Publication: J. W. ENGLAND, *Chairman*; G. M. BERINGER, CASWELL A MAYO, H. B. MASON, E. L. NEWCOMB, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on the Progress of Pharmacy, *ex-officio*.

ALKALOID ADSORPTION IN DRUGS AND ITS RÔLE IN PHARMACEU- TICAL PRACTICE.

H. Palme, University Stockholm, *Arch. Pharm.*, 256, 223-48, 1918; through *Chemical Abstracts*. In continuation of the investigations of Palme and Winberg several series of experiments were instituted to prove in the most convincing manner the presence of adsorptive properties between alkaloids and other drug constituents, and to determine whether such phenomena are quite general or otherwise. To this end investigation was made of powdered nux vomica, whereby the distribution of alkaloids was studied partly in a system of the powdered drug and dilute hydrochloric acid, partly in a system of the powdered drug, aqueous alkali and chloroform-ether. In addition, the alkaloids of ipecac were extracted with dilute hydrochloric acid, and in the same manner the extraction of the cinchona alkaloids with alcohol was effected. In order finally to prove that those drugs which contain alkaloids are not the only ones capable of adsorbing the latter, powdered licorice was treated with a solution of atropine. As a result of the experiments it appears certain that when an alkaloid-bearing drug is treated with a liquid, in which the alkaloid in question is soluble, a certain amount always remains undissolved, which compared with the weight of drug involved increases with the concentration of the solution. It is further shown that an alkaloid-free drug is capable of attracting the dissolved alkaloidal principle in solution. These phenomena indicate the necessity of giving greater heed to the methods employed in alkaloidal determinations.

A NEW FORM OF CALOMEL.

A new method of preparing calomel in a bulky and therapeutically highly active form has been devised by Duret, and particulars of the new form are given in the *Annales de l'Institut Pasteur*, and reported in the *Chemist and Druggist* of June 7, 1919. In view of the importance attached to the use of calomel in the shape of an ointment and also of hypo-

dermic injections, his process and conclusions are of particular interest. The method is based on the following reactions: Sodium bicarbonate reacts with magnesium chloride to form sodium chloride and magnesium bicarbonate. Hydrochloric acid (liberated by the reduction of mercuric chloride) reacts with the magnesium bicarbonate thus formed to yield, again, magnesium chloride; simultaneously, the mercuric chloride present is reduced to mercurous chloride. The details are as follows: A solution of

Sodium bicarbonate.....	6 grammes
Pure glucose.....	10 grammes
Distilled water.....	80 grammes

is added to a solution of crystalline magnesium chloride, 7.5 grammes, in 20 grammes of distilled water. This mixture is then added to the following solution, contained in a flask of 500 Cc. capacity:

Mercuric chloride.....	11.5 grammes
Hydrochloric acid (33.65 per cent).....	10 drops
Distilled water.....	100 grammes

Carbon dioxide is liberated, while mercurous chloride is precipitated in a very finely divided state. To complete the reaction, the flask is heated on a water bath, with constant agitation, until no more gas is evolved. It is then allowed to cool, filtered, and the precipitated mercurous chloride is washed with cold distilled water. This formula yields about 10 grammes of calomel, in a form three times bulkier than the ordinary preparation. The amounts given must be strictly adhered to, as an excess of magnesium bicarbonate would yield magnesium carbonate mixed with the calomel, while an insufficient amount of magnesium bicarbonate would result in leaving unchanged a portion of the mercuric chloride. Tests which were conducted by the author showed that the calomel obtained by this method is ionized in water to a greater extent than the ordinary product (tested with diphenylcarbazide and sodium monosulphide), and for this reason its therapeutic activity is also greater. Experiments showed that this finely divided calomel, in the presence of organic substances, was dissociated into metallic mercury in a state of extremely fine subdivision;

consequently by this method it is possible to employ mercury *in statu nascendi*, thus assuring its rapid absorption. For its application as calomel ointment the author gives the following formula:

Precipitated calomel (obtained by above process).....	10 grammes
Crystalline magnesium chloride.....	10 grammes
Sodium bicarbonate.....	7 grammes
Thymol.....	0.15 gramme
Camphor.....	0.35 gramme
Glycerin of starch.....	15 grammes
Arachis oil.....	15 grammes
Anhydrous lanolin.....	20 grammes
Distilled water.....	25 grammes

The magnesium chloride, sodium bicarbonate, and water are mixed in a mortar, the precipitated calomel added, and then the glycerin of starch. Melt by gentle heat the anhydrous lanolin in 10 grammes of arachis oil, add the thymol and camphor previously dissolved in 5 grammes of arachis oil, and while liquid add the whole to the first mixture, and heat until a homogeneous ointment is obtained.

For the hypodermic injection of calomel the following formula is given:

Mercuric chloride.....	5.75 grammes
Hydrochloric acid (33.65 percent).....	5 drops
Glucose.....	5 grammes
Sodium bicarbonate....	3 grammes
Crystalline magnesium chloride.....	3.75 grammes
Distilled water.....	20 grammes
Syrup to.....	100 Cc.

Dissolve in a flask of 200 Cc. capacity the mercuric chloride, by warming, in the distilled water to which the hydrochloric acid has been added, then add the glucose. Mix in a porcelain capsule the sodium bicarbonate with about 50 grammes of syrup, add the magnesium chloride and mix. Now add the mixture to the contents of the flask. The capsule is repeatedly rinsed with small amounts of syrup, which are added to the flask. Shake and warm on a water bath until the evolution of gas has almost ceased; allow to cool, and add sufficient syrup to produce 100 Cc. This yields 5 grammes of calomel (1 Cc. = 0.05 gramme of calomel) in extremely fine subdivision, which keeps for a long time in suspension.

To avoid the pain which follows the injection of calomel, and which is due to the libera-

tion of free hydrochloric acid, the following modification is employed:

Mercuric chloride.....	6.775 grammes
Hydrochloric acid (33.65 percent).....	5 drops
Glucose.....	5 grammes
Sodium bicarbonate.....	8.65 grammes
Cryst. magnesium chloride.	10.5 grammes
Distilled water.....	25 grammes
Syrup to.....	100 Cc.

Of the above 1 Cc. corresponds to 0.05 gramme of calomel.

Charles H. LaWall was awarded the degree of Doctor of Pharmacy by the University of Pittsburgh, June 15. The university celebrated its one hundredth anniversary at this commencement and the honorary degree of Doctor of Pharmacy awarded to Dean LaWall was the first award of its kind since 1914.

The degree of Master of Pharmacy, *Honoris Causa*, was conferred upon Harry Vin Army, William August Puckner and Heber Wilkinson Youngken by the Philadelphia College of Pharmacy, June 4.

A. B. Stevens, for many years dean of the College of Pharmacy, University of Michigan, has retired from active service and will make his home in California. Dr. Henry Kraemer succeeds as dean of the College. Dr. Stevens has been a member of the University faculty for thirty-three years. He was the guest of honor at a dinner on May 16, at the Detroit Athletic Club, given by friends of the retiring dean and professor.

William B. Day, General Secretary of the American Pharmaceutical Association, was presented by the Alumni of the Class 1894, Chicago College of Pharmacy, with a handsome watch and chain on the occasion of the recent Alumni banquet.

Dr. Edsel A. Ruddiman, has been elected Dean of Vanderbilt University School of Pharmacy vice Dr. J. T. McGill, resigned. While the latter has resigned the Deanship he will continue his connection with the School.

Journal de Pharmacie de Belgique is the name adopted for the Belgian Pharmaceutical Journal. The publication consolidates the former pharmaceutical journals of Belgium: *The Journal de Pharmacie d'Anvers*, the *Revue Internationale de Pharmacie*, the *Annales de Louvain*, the *Journal de Pharmacie de Liège*, the *Bulletin Pharmaceutique de Charleroi*, the *Revue Pharmaceutique de Flandres*, and the *Officine*.

JOURNAL OF THE SOCIETIES AND COLLEGES.

THE NEW YORK MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The Sixty-seventh Annual Convention of the American Pharmaceutical Association will be held in New York City the week of August 25th. The Committee has chosen as headquarters the Hotel Pennsylvania, the newest in the City and the largest in the world. The management of this hotel has assured the Committee the best of facilities and service that New York affords.

The entertainment will be such as will long be remembered by those who may attend. This is a Victory Year and a Peace Year and it is the intention of the Committee to make the 67th Annual Convention a fitting one for such an occasion.

A most hearty invitation is therefore extended to you to be present. Make arrangements now to visit New York the week of August 25th. Urge the ladies to come as special attention is being given to their entertainment.

This invitation is sent out somewhat early, for two reasons—to give you sufficient time to make all provisions which may enable you to be free from your business the week of the 25th and to ask you to **MAKE YOUR HOTEL RESERVATION NOW.**

This is important as the hotels in New York City are somewhat crowded.

Sincerely yours,

HUGO H. SCHAEFER,

Local Secretary.

The program of the Meeting is printed in Council Letter No. 17, p. 493, June issue of the JOURNAL A. PH. A.

Make your Reservations Now! Members should write to Charles Fischer, Chairman Hotel Committee, 262 Cornelia Street, Brooklyn, N. Y.

Room Rates Hotel Pennsylvania, New York—
At Seventh Avenue, 32d to 33rd Streets, opposite Pennsylvania Terminal:

Rooms with single bed (for one) \$3.00, \$3.50 and \$4.00.

Rooms with double bed (for one) \$4.00, \$5.00 and \$6.00.

Rooms with double bed (for two) \$5.00, \$6.00 and \$7.00.

Rooms with twin beds (for one or two) \$6.00, \$7.00 and \$8.00.

Parlor Suites: \$12.00 and up.

About Reservations:

Reservations should state kind of room accommodations desired, day and date, *and if possible the hour of arrival.* If a room at the rate requested is not available, a room nearest that rate will be reserved.

Hotel Pennsylvania (Roy Carruthers, Resident Manager) is under the management of Hotels Statler Co., Inc. (E. M. Statler, President), also owning and operating Hotels Statler in Buffalo, Cleveland, Detroit and St. Louis.

SCIENTIFIC SECTION OF THE A. PH. A.

During the Annual Convention of the A. Ph. A. to be held in New York the week beginning August 25, 1919, the Scientific Section will hold meetings on Thursday and Friday, August 28 and 29. Those desiring to read papers before this Section should submit them to the Secretary, Dr. A. G. Du Mez, Hygienic Laboratory, U. S. P. H. S., Washington, D. C., not later than August 10th.

A. G. D.

SECTION ON PRACTICAL PHARMACY AND DISPENSING, A. PH. A.

This section is still short quite a few papers to complete its program for the New York meeting. All those intending to contribute papers to this Section will please communicate immediately with one of the officers so that the title may be included in the program.

Part of the time of this Section will be devoted to constructive criticism of the N. F. IV. Any suggestions that will improve the book in its next revision are desirable. Please write your criticisms and suggestions and mail them to any of the officers of this Section. This is the best method of making the book practical and popular.

If time permits a discussion of the same character will be held on the Pharmacopoeia.

The United States Bureau of Standards has proposed standards for sifting screens and has sent copies of these standards to the various scientific bodies that they might interest, for discussion and approval. This will probably come before this Section.

ROBERT WOOD TERRY, *Chairman,*
363 King Avenue,
Columbus, Ohio.

KAPPA PSI DINNER.

The members of the Kappa Psi (medical and pharmaceutical) Fraternity who attend the Annual Convention of the A. Ph. A. in New York City this year will hold an informal dinner during the meeting. Place and date will be announced at the convention.

PRIZE MEMBERSHIPS IN THE AMERICAN PHARMACEUTICAL ASSOCIATION OFFERED BY COLLEGES OF PHARMACY.

The JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION is desirous of making acknowledgment of the prize memberships offered by Colleges of Pharmacy in the American Pharmaceutical Association. At this time we are in position to report a few, and will gladly make further report of other institutions, or should there be any incorrections, adjust them in a succeeding issue.

The Brooklyn College of Pharmacy awarded prize membership to Santi Ruisi.

The Cleveland School of Pharmacy offered, through Lewis C. Hopp, a prize membership to Fred Welton Herget.

A large percentage of the graduates of Fordham University joined the American Pharmaceutical Association.

The College of Pharmacy of the State University of Iowa awarded a prize membership for highest rank in Practical Pharmacy to L. W. March, of Hot Springs, S. D. Subscription to the JOURNAL OF THE A. Ph. A. was awarded as a prize by Prof. Kuever to the Junior attaining the highest rank in Practical Pharmacy, R. C. Lande, of Slater, Iowa. Dean W. J. Teeters awarded a prize membership for highest rank in Recognition and Description of Organic Drugs to Lena Richmond, of Elma, Iowa. Gus Scherling, of Sioux City, awarded a prize membership for the highest rank in Chemistry to Morris W. Webb, of Rolfe, Iowa.

The Massachusetts College of Pharmacy awarded a prize membership for best record in Pharmacy, through Prof. Elie H. LaPierre, to Cyriac P. Ricard; through Dean Theodore J. Bradley, for the best record in Analytical Chemistry, to Lloyd R. Wyman; for the best record in General Chemistry, by President C. Herbert Packard, to Alice L. Mugar; through Treasurer John G. Godding, for the best record in Organic Chemistry, to Seymour E. Woodward; and Prof. Howard H. Smith

awarded a prize membership, for the best record in Materia Medica, to Elizabeth Harding.

The Oklahoma School of Pharmacy awarded the John Barbour prize in Pharmacy, of membership in the American Pharmaceutical Association, to Miss Winifred McAdams, of Norman, Okla. The Howard S. Browne membership prize, for best record in Materia Medica, was awarded to John Sargent, of Norman, Okla.

A large percentage of the Senior Class of the Philadelphia College of Pharmacy joined the American Pharmaceutical Association, and the Pharmacy Review Prize, consisting of one year's membership in the American Pharmaceutical Association, offered by Ivor Griffith for the highest average in Theory and Practice of Pharmacy, was awarded to John Roanoke Randolph, of Tennessee.

The Pittsburgh College of Pharmacy awarded a membership prize, for best average in Materia Medica, to Miss Thelma Webber. Clarence G. Earlin was awarded a membership prize for highest average in Theoretical Pharmacy. Alexander Meyers was awarded membership for highest rank in Chemistry. Garrett E. Wagner was awarded the Pharmacy Products Prize of membership in the American Pharmaceutical Association. A Pharmacognosy prize, consisting of membership in the American Pharmaceutical Association, was awarded to Donald M. Mitchell.

Purdue University reports that all of this year's graduates joined the American Pharmaceutical Association.

The St. Louis College of Pharmacy awarded membership in the American Pharmaceutical Association to William Dixon Graves, of Mansfield, Ark., for high scholarship during the session of 1918-1919.

THE MEETING OF THE AMERICAN MEDICAL ASSOCIATION.

The Annual Meeting of the American Medical Association was held in Atlantic City during the week of June 9. The Chairman of the House of Delegates stated that the American Medical Association must either become a reminiscence or adapt itself to the requirements of modern medicine as the future may apply to arising conditions. The latter should be the vision of the House of Delegates. President Arthur Dean Bevan emphasized the importance of obtaining a closer contact between the activities of the National Association and the activities of the forty-eight State Associations.

In another part of his address, he said: "There has been more or less conflict between the drug houses and the Council on Pharmacy and Chemistry. I would suggest that in the future reputable drug houses of this country be called in conference with the Council on Pharmacy and Chemistry, in order that some plan may be devised by which there can be coöperation between this Association and the great drug houses of this country. Such a co-operation does not as yet exist. We can all see the difficulties in obtaining such a coöperation, and yet I believe that these difficulties can be overcome, and that it would be much more desirable to work in harmony and in co-operation with these drug houses.

"As to the stimulation of medical research, a great deal can be done by the Association in that line."

President-elect Alexander Lambert recommended the following resolutions to the House of Delegates:

WHEREAS, The abuse of narcotic drugs has become such a widespread evil that it has required action by the federal government.

WHEREAS, The situation can only be controlled by coöperation and concerted action by the medical profession, the pharmaceutical interests, and state and federal laws; therefore be it

Resolved, That the American Medical Association respectfully requests the Internal Revenue Department of the federal government to call together a conference composed of representatives of the medical profession, the wholesale and retail drug interests, and representatives from each state. And further, be it

Resolved, That the Speaker of the House of Delegates of the American Medical Association be instructed by the House of Delegates to appoint a committee of three to represent the American Medical Association at such a conference, if called.

We add that the dispensing of alcoholics is another matter in which both medicine and pharmacy are interested. Those adopting disreputable methods should be made to understand that their acts will be condemned and assistance rendered Government officials to stamp out illegal traffic.

We have on a number of occasions commented editorially on the need of coöperation between the American Medical Association and the American Pharmaceutical Association. There should be morale among professions; a

belief in one another. Coöperatively they can and will do better work. There should be the spirit of sacrifice and altruism, willingness to give a lift and a commendable approval of the success and advancement of others.

There is a widening field of medical science before us in which medicine and pharmacy should find great opportunities. There are also many important problems which require their coöperation and we are pleased with the remarks made in the addresses of the A. M. A. officials.

THE PRESIDENT-ELECT OF THE A. M. A.

SURGEON GENERAL WILLIAM C. BRAISTED.

The election of Dr. William C. Braisted, Surgeon General of the Medical Department of the Navy, as President of the American Medical Association was particularly appropriate to the Victory Meeting. Thus the Association not only honors the man it elects but is itself honored. Dr. Braisted's career represents a steady progress through many delicate tasks and difficult assignments. He was born in Toledo, Ohio, in 1864, and was graduated by the University of Michigan in 1883, and by the medical department of Columbia University in 1886. He served as interne in Bellevue Hospital, New York, for two and one-half years, entering civilian practice in Detroit in 1888 and continuing until 1890, when he entered the Navy as assistant surgeon. He was promoted in 1893 to passed assistant surgeon, then to surgeon, and 1913 to medical inspector. In the routine of a naval career he has served on a number of vessels and at many naval hospitals, and twice has been instructor in surgery in the naval medical school. In 1904 he fitted out and equipped the hospital ship *Relief*. During the Russo-Japanese War he went to Japan, as the representative of the Medical Department of the United States Navy, and his report on this assignment was considered by the Japanese officials to be the most accurate and complete published. Surgeon General Rixey appointed him assistant chief of the Bureau of Medicine and Surgery; he continued in this service for six years, from 1906 to 1912, serving also under Surgeon General Stokes. During 1906 and 1907 he was attending physician at the White House. He acted as fleet surgeon of the Atlantic Fleet from 1912 to 1914, when he became Surgeon General of the Navy with the rank of rear

admiral. He has been decorated twice by foreign governments—first by the emperor of Japan and later by the president of Venezuela. Admiral Braisted is especially noted for the interest he has taken in preventive medicine.



REAR ADMIRAL WILLIAM C. BRAISTED,

Surgeon General, U. S. Navy,

President-Elect of the American Medical Association.

He has given particular attention to the control of venereal diseases. Under his administration the Department of Medicine of the Navy has made a most enviable record, as indicated by the remarkably low mortality and morbidity records of the men in the naval service. The election of Admiral Braisted at this time is especially fitting; it recognizes the service without whose aid the winning of the war would not have been possible.—

Journal A. M. A.

AMERICAN ASSOCIATION OF PHARMACEUTICAL CHEMISTS.

The annual meeting of the American Association of Pharmaceutical Chemists was held at Atlantic City during the week of June 2.

Among the more important actions taken by the Association were those relative to the manufacture of heroin and the limitation of the alcoholic content of medicinal preparations.

The latter action was taken following the report of the Committee on Standard Merchandizing. The committee recommended, and it was the consensus of opinion of the Association, that the amount of alcoholic content should be reduced to the minimum, and that no more should be used than was absolutely necessary as a solvent or preservative; that no preparations should be marketed which did not contain a medicinal dose of some active drug in each fluidounce, and that the spirit as well as the letter of the law regarding the distribution of products containing alcohol that might be used for beverage purposes should be strictly complied with.

The heroin resolution follows:

Resolved, That this association reiterates its resolution adopted two years ago, that the narcotic drug, heroin, be eliminated from all medicinal preparations, and that legislation be enacted to require such elimination.

The officers elected for 1919-1920 are:

President, Harry Noonan, New York City; *First Vice-President*, G. D. Ellyson, Des Moines, Iowa; *Second Vice-President*, Ralph R. Patch, Boston, Mass.

OHIO BRANCH NATIONAL PHARMACEUTICAL SERVICE ASSOCIATION.

At the annual meeting of the Ohio Branch National Pharmaceutical Service Association the following officers were elected: *President*, Captain Charles T. Souther, M. C., U. S. A.; *Vice-President*, Theo. Rosenthal; Dr. Frank Cain, *Secretary* for Ohio; *Treasurer*, Prof. C. M. Diserens; Prof. John Uri Lloyd, *National representative*; Charles D. Anderson, Columbus, Ohio representative; Horace M. Sellards, Ashland, Kentucky representative; Jos. Sonnenberg, Northfork, West Virginia representative, and Galvin Swain, Wabash, Indiana representative. The Pharmaceutical Propaganda committee will be composed of Louis Werner, Sr., Chas. G. Merrell, O. B. Thuma, Milton Franken, H. J. Dusterberg, Louis Heister, R. H. Cox, Alfred DeLang, E. C. Widrig, Wm. L. B. Brittain and Henry B. Waltermann. Medical Propaganda Committee, Dr. E. W. Mitchell, Dr. E. O. Smith, Dr. B. Merrill Ricketts, Dr. A. W. Nelson and Dr. Clifford Sater. Legal Propaganda Committee, Judge Smith Hickenlooper, Max Levy, Chester R. Shook, Howard Ragland and Judge David Davis.

OFFICERS KANSAS PHARMACEUTICAL ASSOCIATION.

The officers elected for the ensuing year by the Kansas Pharmaceutical Association are:

President, Ellis W. Cookson, Wichita; *Secretary*, D. F. Deem, Stark; *Treasurer*, John Schmitter, Gypsum.

Legislative matters were important features of the discussions. Ottawa was selected for the next place of meeting.

OFFICERS OF THE MISSOURI PHARMACEUTICAL ASSOCIATION.

The officers of the Missouri Pharmaceutical Association for the ensuing year are:

President, A. C. Smith, Carrollton; *Honorary President*, Theodore J. Bolton, Calhoun; *First Vice-President*, C. H. McDonald, Rocky Comfort; *Second Vice-President*, Robert Lisch, Springfield; *Third Vice-President*, Murray Q. Williams, Warrensburg; *Permanent Secretary*, Henry M. Whelpley, St. Louis; *Treasurer*, William Mittelbach, Boonville; *Assistant Secretary*, J. A. Wilkerson, St. Louis; *Local Secretary*, H. C. Tindall, Excelsior Springs.



Photo taken at Excelsior Springs, 1919 meeting Missouri Pharmaceutical Association:—Left, H. M. Whelpley, St. Louis, 27 years secretary; right, William Mittelbach, Boonville, 23 years treasurer.

The Veterans' Club elected George T. Lynn, of Kansas City, as *President* and William

Mittelbach, of Boonville, *Secretary* and *Treasurer*. Seven of those who helped organize the Missouri Pharmaceutical Association forty-one years ago were in attendance.

The Association re-endorsed "Prerequisite" legislation, and a special committee was appointed to draw up a new Pharmacy Law. The proposition to make the Missouri Pharmaceutical Association 100% membership in the American Pharmaceutical Association was favorably discussed and a committee appointed on Ways and Means. The 1920 convention will be held at Excelsior Springs.

OFFICERS WEST VIRGINIA PHARMACEUTICAL ASSOCIATION.

The West Virginia Pharmaceutical Association elected the following officers for the ensuing year:

President, John C. Davis, Wheeling; *Vice-President*, James Tierney, Weston; *Secretary*, P. H. Kelly, Thurmond; *Treasurer*, G. A. Bergy, Morgantown; *Member of the State Council*, C. H. Goodykoontz, Bluefield.

Dr. J. H. Beal was present at the meeting, and in an address warned the members of the Association against hasty and unwise legislation, and urged greater coöperation between various pharmaceutical interests. Samuel C. Henry reviewed the new Revenue Act, and E. C. Brokmeyer pointed out how individual pharmacists and State Associations can aid in preventing the enactment of legislation detrimental to pharmacy. Huntington was selected as the place for the next annual meeting.

OFFICERS OF THE NATIONAL ASSOCIATION OF DRUG CLERKS.

The following National officers were elected for the ensuing year:

President, Henry J. Steining, LaFayette, Ind.; *First Vice-President*, James K. Wuench, Chicago, Ill.; *Second Vice-President*, Marvin E. Pate, Madisonville, Ky.; *Third Vice-President*, L. W. Coleman, Kansas City, Mo.; *Secretary-Treasurer*, P. A. Mandabach, Chicago, Ill.; *Editor-Director of Publicity*, Paul J. Mandabach, Chicago.

THE PHARMACIST AND THE LAW.

A BILL TO INSURE PERMANENT COMMISSIONS TO MEMBERS OF U. S. HOSPITAL CORPS.

H. R. 4760.

In the House of Representatives, June 4, 1919, Mr. Darrow introduced the following bill, which was referred to the Committee on

Naval Affairs and ordered to be printed. The purpose is to insure permanent commissions to members of the Hospital Corps of the U. S. Navy. The bill has received the endorsement of Surgeon General Braisted, U. S. N., and of the Bureau of Medicine and Surgery.

The temporary commissions now held by a

large number of men in the Hospital Corps have permitted this organization to prove its usefulness and it is known that the experience of line officers during the activities of the war have converted many of them to the enthusiastic support of this measure.

If the Bureau of Navigation and the Secretary of the Navy can be convinced that the increased responsibility and service of the Hospital Corps is justified, there is little doubt that the bill can be passed in Congress.

The support of druggists throughout the country is asked in behalf of this measure. The National Pharmaceutical Service Association has been active in the promotion of this desirable legislation and Secretary E. Fullerton Cook has sent out copies of the bill which should have the endorsement of every branch of pharmacy, for the advancement of those so engaged contributes to the progress of pharmacy.

A BILL.

To increase the efficiency of the Medical Department of the United States Navy and to improve the status and efficiency of the Hospital Corps of the United States Navy.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the President of the United States is hereby authorized to appoint a commission, by and with the advice and consent of the Senate, officers in the Hospital Corps of the Navy, in addition to chief pharmacists and pharmacists, at the rate of one for each two thousand of the total authorized number of officers and enlisted men of the Navy and Marine Corps, with ranks of lieutenant commander, lieutenant (junior grade), and ensign, which ranks are hereby established, who shall perform such duties in the Hospital Corps, as part of the Medical Department of the Navy, as may be prescribed by the Secretary of the Navy. Original appointments to fill vacancies shall be made in the rank of ensign, Hospital Corps, United States Navy, by selection from the total number of chief pharmacists and pharmacists, United States Navy, the board of selection for naval medical officers, whenever convened, to constitute a board for this purpose. Chief pharmacists and pharmacists, so selected, shall, prior to promotion, be required to successfully pass a physical, mental, moral, and professional examination before medical and

professional examining boards appointed by the Secretary of the Navy, and shall have been recommended for appointment by such board. Officers so appointed shall, after serving as ensign, Hospital Corps, United States Navy, for three years, be eligible for promotion to the rank of lieutenant (junior grade), Hospital Corps, United States Navy, and when so promoted shall take rank and precedence with officers of the Naval Medical Corps of the same rank according to the dates of their respective commissions, and such officers shall be eligible for advancement in rank in the same manner and under the same conditions as officers of the Naval Medical Corps with or next after whom they take precedence, and shall receive the same pay and allowances as officers of corresponding rank and length of service in the Naval Medical Corps up to and including the rank of lieutenant commander. Officers of the rank of ensign, Hospital Corps, United States Navy, shall receive the same pay and allowances as officers of the same rank and length of service in the line of the Navy; *Provided*, That lieutenant commanders, Hospital Corps, United States Navy, shall be eligible for selection by the board for selection of naval medical officers, for advancement in pay and allowances, but not in rank, to and including the pay and allowances of commander and captain, subject to such examinations before advancement as the Secretary of the Navy may prescribe, except that the number of lieutenant commanders with the pay and allowances of captain shall not exceed $4\frac{1}{2}$ per centum and the number of lieutenant commanders with the pay and allowances of commander shall not exceed 8 per centum of the total authorized number of officers in the Hospital Corps, exclusive of chief pharmacists and pharmacists: *Provided further*, That lieutenant commanders, Hospital Corps, United States Navy, shall be eligible for advancement to the pay and allowances of commander and captain when their total service as officers, exclusive of their service as chief pharmacists and pharmacists, in the Hospital Corps of the Navy is such that if rendered as officers of the Naval Medical Corps it would place them in the list of medical officers with pay and allowances of commander or captain, as the case may be: *And provided further*, That officers of the Hospital Corps of the Navy who shall have gained or lost numbers on the Navy list shall be considered to have gained or lost service accordingly. Ensigns, lieutenants (junior

grade), lieutenants, and lieutenant commanders, Hospital Corps, United States Navy, shall become eligible for retirement in the same manner and under the same conditions as now prescribed by law for officers of the Naval Medical Corps, except that section 1445, Revised Statutes of the United States, shall not be applicable to these officers and they shall not be entitled to rank above lieutenant commander on the retired list, or to retired pay above that of captain; *And provided further*, That chief pharmacists and pharmacists appointed assistant surgeons (temporary), United States Navy, pursuant to an act of Congress approved May 22, 1917, volume 40, Statutes at Large, page 84, entitled "An act to temporarily increase the commissioned and warrant and enlisted strength of the Navy and Marine Corps, and for other purposes," shall, upon the passage of this act, subject to passing such examinations as the Secretary of the Navy may prescribe, be immediately eligible for appointment as ensign, lieutenant (junior grade), lieutenant, or lieutenant commander, Hospital Corps, United States Navy, in the ranks held by them as temporary assistant surgeons: *And provided further*, That if any such officer in examination be found by the naval examining board not qualified for appointment in the rank held by him, such board will proceed with the examination and determine the rank, if any, for which such officer is qualified, and shall report its findings and recommendations to the Secretary of the Navy, and if it be found that any officer so examined is not qualified for appointment in the rank for which examined, or in any lower rank, the board shall so report, and if such officer be found not qualified for appointment, or shall refuse to accept appointment in the rank for which qualified and recommended, his temporary commission as assistant surgeon, United States Navy, if still in force, shall be revoked: *And provided further*, That officers so commissioned in the Hospital Corps of the Navy shall retain the precedence with officers of the Naval Medical Corps that they held as temporary assistant surgeons, except that officers found qualified for a lower rank than that held by them in the temporary Navy shall be given a date of precedence as determined by the Secretary of the Navy; *And provided further*, That nothing herein contained shall be construed to legislate out of the service any officer now in the Medical Department of the Navy or to reduce the rank, pay, or allowances now authorized by law for any officer of the Navy.

IOWA PHARMACY LEGISLATION.

The pharmacists of Iowa have been eminently successful in securing progressive legislation relating to pharmacy. The following enactments were passed during the last session of the Legislature:

RENEWAL FEE LAW.

Section 1. That section two thousand five hundred eighty-nine-d, supplement to the code, 1913, be and the same is hereby amended by striking out all thereof following the period in line nine and substituting in lieu thereof the following:

"After registration, an annual fee of two dollars for renewal certificate shall be paid on or before the twenty-second day of March by all pharmacists and assistants who continue in business, one dollar of which shall be paid into the state treasury, as provided in section two thousand five hundred eighty-six of the code, 1897, and one dollar of which shall be paid into the treasury of the Iowa Pharmaceutical Association, quarterly, on the first day of January, April, July and October of each year, to be used by said association for the advancement of the art and science of pharmacy, and the conduct of such business without such renewal shall be a misdemeanor."

RECIPROCAL LEGISLATION ACT.

Section 1. That section twenty-five hundred eighty-nine-b (2589-b), supplement to the code, 1913, be and the same is hereby amended by striking out the words, "ten dollars" in the last line of said section, and inserting in lieu thereof the following: "Not less than the fee charged for reciprocal registration by the state issuing the certificate upon which said application for reciprocal registration is made, but in no event shall the fee be less than ten dollars."

Representative Becker also introduced and secured the passage of a measure providing for the traveling expenses of the secretary and treasurer of the Iowa Commission of Pharmacy.

OHIO PHARMACY LEGISLATION.

The following legislation has become part of the pharmacy laws of Ohio:

AN ACT.

To enact supplementary sections 1306-1 and 1306-2 to aid the re-establishment of pharmacists and assistant pharmacists who during the war have served in the Army or Navy of the United States.

Be it enacted by the General Assembly of the State of Ohio.

Sec. 1306-1. That every person registered as a pharmacist or as an assistant pharmacist or under a corresponding title in any other state or territory of the United States of America, or in the District of Columbia, who has served in the Army or Navy of the United States while at war with Austria-Hungary and Germany, and who has been honorably discharged from the service of the United States Army or Navy, shall be permitted within six months after such honorable discharge, upon proof thereof, and upon proof of such registration above mentioned, to the satisfaction of the State Board of Pharmacy, to practice the profession as a pharmacist or assistant pharmacist, as the case may be, within the state for a period not to exceed six months. The State Board of Pharmacy shall issue a permit to that effect to all persons applying therefor and complying with the requirements of this section.

Sec. 1306-2. Any person who under the provision of section 1306-1, has received such permission for the period of six months to practice the profession as a pharmacist or assistant pharmacist, after having resided within this state for not less than three months, who upon oath declares an intention to permanently reside therein, may apply to the State Board of Pharmacy for registration as a pharmacist or assistant pharmacist, as the case may be, under the laws of this state, upon payment of the fees provided for in section 1311 of the General Code for issuing a certificate to a pharmacist or assistant pharmacist and proof of good character and reputation, subject to the rules and regulations for that purpose prescribed by the State Board of Pharmacy, and said board upon such application, satisfactory proof and payment of fees, shall issue a certificate of registration as pharmacist or assistant pharmacist, as the case may be, to such a person without requiring him to meet other provisions of law which may otherwise prevail for reciprocal registration within this state, subject, however, after registration, to all the other provisions of law which govern those who are registered within the state as pharmacist or assistant pharmacist.

AN ACT.

To amend sections 1302, 1303 and 1303-1 of the General Code, relating to the requirements for examination as a pharmacist or assistant pharmacist.

Be it enacted by the General Assembly of the State of Ohio.

Section 1. That sections 1302, 1303 and 1303-1 of the General Code be amended to read as follows:

Sec. 1302. An applicant for certificate as pharmacist shall be a citizen of the United States, shall not be less than twenty-one years of age, shall be a graduate from a school of pharmacy in good standing as defined in section 1303-2 of the General Code, shall have completed at least a two-years' course in such school as defined in section 1303-2 of the General Code and shall have had at least two years of practical experience in a drug store in charge of a registered pharmacist where physicians' prescriptions are compounded: provided, however, that if the applicant has taken a longer course in a school of pharmacy in good standing, each additional year successfully passed shall be counted as one year of practical experience.

Sec. 1303. An applicant for certificate as assistant pharmacist shall be a citizen of the United States, shall be not less than eighteen years of age, shall be a graduate from a two-years' course in pharmacy from a school in good standing as defined in section 1303-2 of the General Code, or shall have had at least one year of practical experience in a drug store in charge of a registered pharmacist in which physicians' prescriptions are compounded and one year successfully passed in a school of pharmacy in good standing as defined in section 1303-2 of the General Code.

Sec. 1303-1. The State Board of Pharmacy shall appoint an entrance examiner who shall not be directly or indirectly connected with a school of pharmacy and who shall have received the degree of B.A. or B.Sc., and who shall determine the sufficiency of the preliminary education of the applicants for admission to a school of pharmacy in good standing as defined in section 1303-2 of the General Code, and to whom all applicants shall submit credentials.

The following preliminary educational credentials shall be sufficient: The equivalent of eight units as given in a high school of the state of Ohio and on and after January 1, 1920, a diploma from a legally constituted high school, normal school or academy, issued after at least four years of study; provided, however, that in the absence of the foregoing qualifications, the entrance examiner shall examine the applicant in such branches as are

required to obtain them. Applicants desiring to enter a school of pharmacy in good standing as defined in section 1303-2 of the General Code must submit certificates to the entrance examiner from their school authorities describing in full the work completed: Provided, that in the absence of all or any part of the foregoing qualifications, the applicant must present himself before the entrance examiner for the scheduled examinations: Provided further, that the applicants upon presentation of certificates from their school authorities or in case of examination, must pay in advance to the board of pharmacy a fee of three dollars. If the entrance examiner finds that the preliminary education of the applicant is sufficient, he shall issue to the applicant a certificate therefor which shall be attested by the secretary of the State Board of Pharmacy. The compensation of the entrance examiner shall be fixed by the State Board of Pharmacy.

Section 2. That said original sections 1302, 1303 and 1303-1, of the General code be and the same are hereby repealed.

OPIUM TRUST EXPOSE.

Harry Patrick, alias Richard Spaulding, alleged "King of Opium Smugglers," has been arrested in Chicago. He described before District Attorney Charles E. Clyne the workings of the "opium trust," of which he is a member.

He located caches where many hundreds of pounds of opium are hidden, and named his aids.

The arrest of Patrick is regarded by officials as an important step in the process of cleaning up a very large and complicated system of traffic in drugs. William H. Sage, chief of the narcotic division, declared that through Patrick clues may be obtained sufficient to discover the important accomplices in the "opium trust."

BOOK NOTICES AND REVIEWS.

A Treatise on Prescription Incompatibilities, including Prescription Oddities and Curiosities. By W. J. Robinson, Ph.G., M.D., Editor of the Critic and Guide. First Edition. 263 pages. Published by the Critic and Guide Company, New York. \$3.00.

To one who is familiar with Dr. Robinson's literary technique and style there are no surprises in this *new* treatise on the *old* subject of prescription incompatibilities. He writes with his usual vigor and boldness and makes very interesting reading out of what would ordinarily be called monotonous and tiresome material. The one outstanding feature of the composition is its practicability, and this because of the sensible everyday way in which things are discussed. So often in a work of this kind there is much injected that is purely imaginative—the so-called analytical laboratory prescriptions—that are not encountered in actual practice and are just concocted to afford opportunity for discussion and possibly explanation. It is nevertheless often true that many physicians, because of their unfamiliarity with chemical facts, and sometimes with therapeutic properties, do actually write prescriptions that appear ridiculous to the physician who is a correct prescription writer and to the pharmacist who is up to date. Some such curiosities are exhibited and commented upon in this volume. Outside of

these few oddities the treatise is remarkably free from those superfluities that ordinarily abound in similar compositions.

The arrangement of the text, in common with other books on the subject, is not as desirable as it might be from an academic standpoint. The usual classification of incompatibilities is only casually referred to and no attempt made to group the prescriptions in their respective classes. Physical, chemical and therapeutic incompatibilities are served on the same pages and often there is no distinction made between them. Occasionally preventable incompatibility is passed by unremedied and such omissions disappoint the reader. Sometimes unwarranted comment is made, as in the case of the combination of quinine and aspirin, 413 (p. 196), where the alleged progressive but slow production of the poisonous "quinotoxin" by the action of the acetylsalicylic acid on quinine is ridiculed. As the prescription is written it is not incompatible, but if it is dispensed and allowed to stand around for a few months this change undoubtedly occurs. In 162 (p. 100) Dr. Robinson very caustically and properly denies the alleged dioxide and glycerin incompatibility.

A very interesting feature of the book is the list of prescriptions furnished without comment and merely to serve as practice material

for the reader. All of them are explained elsewhere in the text. An alphabetical summary of incompatibilities adds to the practical value of the volume and the complete cross-index gives it the finishing touch.

In a work of this kind it is apparently extremely difficult to avoid errors, not so much of commission as of omission. In that respect this book is not different from others of its kind. As examples of this we append the following instances taken at random from the text. In 9 (p. 20) attention is not called to the fact that tannin is not only incompatible with lime water but even with distilled water because of the hydrolytic reaction which occurs. In 58 (p. 43) no mention is made of the fact that the latest theory has it that the precipitated glycyrrhizin actually combines with the alkaloid forming a glycyrrhizinate of quinine. In 95 (p. 65) the statement is made that zinc sulphate is incompatible with borax but no statement is made

in regard to the inhibition of a precipitate by using boric acid in place of the borax, that is, in the absence of glycerin. In 341 (p. 171) the copious effervescence manifested when peroxide and formalin are mixed is not alluded to. In 372 (p. 179) the typographical error referred to could not have existed since the thymol would not be soluble in the prescribed menstruum. Lime water throughout the book is called aqua calcis, while the U. S. P. calls it liquor calcis.

These technicalities referred to are actually of not much significance and are overwhelmed by the excellent character of the book as a whole. The peculiarities of the newer remedies such as chlorazene, chloretone, etc., are also commented upon and this brings the volume well up to date. To the practicing pharmacist and physician and to the students of both professions the book will prove a very valuable companion.

IVOR GRIFFITH.

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CHARLES RICE
NEW YORK, N. Y.

1841-1901

First Vice-President American Pharmaceutical Association, 1883-1884
Chairman U. S. P. Revision Committee, 1880, 1890, 1900



CHARLES RICE

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CHARLES RICE, PH.D.

The New York conclave of the American Pharmaceutical Association and the approaching meeting of the U. S. Pharmacopoeial Convention prompted this writing. This sketch must, on account of the large amount of work achieved by Dr. Charles Rice, be incomplete, in fact the data of this article are taken from the memorial volume prepared for private circulation soon after his death.

Very little is known of the early life of Charles Rice. He was born in Munich, October 4, 1841, of Austrian parents, and educated in public and private schools and seminaries in Munich, Passau and Vienna. It was through one of his relatives, an accomplished classical scholar and master of several Oriental languages, that he developed a taste for linguistic studies, in which choice he was not only encouraged by several scholars of prominence, but special instruction was given him by Dr. Gaugengigl of Passau, Professor Marcus Joseph Mueller, and Abbot Hannaburg, of Munich.

Charles Rice came to the United States during the war between the States and soon thereafter received an appointment as surgeon's steward on the sloop-of-war "Jamestown," bound for a cruise around the world. While he had undoubtedly attended chemical lectures before leaving Europe, it was probably during these three years that he gained his first pharmaceutical experience. Everyone is to some extent directed by an unseen hand, but it is not always the case that the direction is so pronounced as in the life of Dr. Rice.

After the return of the "Jamestown" he proceeded to New York, where he was seized with malarial fever and taken to Bellevue Hospital, which from this time until the day of his death became the scene of his remarkable achievements. Recovering from the attack of the fever, and during his convalescence, he assisted John Frey, the apothecary of the Hospital and superintendent of the Drug Department. Thereafter he received a permanent appointment, and after Mr. Frey's death was elected chemist of the General Drug Department, and subsequently also of the Department of Public Charities and Corrections, and these offices he held until the day of his death.

It is very evident that Dr. Rice had planned for educational work. As a philologist he was honored and revered by scholars not only in his adopted country but abroad as well. It is said that he could read twenty languages and converse fluently in eight others. It was, however, in the Sanskrit that he became famous throughout the world.

The bibliography of his writings, related to pharmacy, would require a number of pages, but it was as chairman of the Pharmacopoeial Revision Committees of 1880, 1890 and 1900 that he became best known to pharmacists, not only as an investigator and worker but also as an efficient organizer. He was chairman of the Editing Committee of the New York and Brooklyn Formulary in 1884, and chairman of the Committee appointed by the American Pharmaceutical Association to convert this book into the National Formulary. He was associate editor of *New Remedies* and of its successor, *The American Druggist*, in 1876 to 1891.



Courtesy J. B. Lippincott Co., Philadelphia

A VIEW IN THE LIBRARY OF DR. CHARLES RICE, SHOWING HIS DICTIONARY RACKS

In 1867 he became a member of the New York College of Pharmacy, and in 1870 was elected a trustee and served as chairman of the Examination, Library and other committees, but declined to accept any other elective office. The New York University conferred on him, in 1879, the honorary degree of Doctor of Philosophy. He was also an honorary fellow of the New York Academy of Medicine and held honorary and active membership in many foreign and American scientific bodies. He joined the American Pharmaceutical Association in 1870; was its first vice-president in 1883 to 1884, and reported the progress of pharmacy from 1891 to 1892.

Dr. Rice died May 13, 1901; the funeral services were held in the chapel of the Hospital, near to the scene of his labors, and his body rests in Woodlawn Cemetery, New York City.

E. G. E.

EDITORIAL

E. G. EBERLE, Editor

253 Bourse Bldg., PHILADELPHIA

PROHIBITION LEGISLATION TO BE ENFORCEABLE MUST BE REASONABLE.

THE prohibition amendment would very likely have been adopted if submitted to a vote of the people; however, some legislators are endeavoring to go beyond what was popularly supposed to be contemplated by it. The constitutional amendment won popular sanction because of the general idea and representation that it was designed to destroy the liquor traffic, but State and Federal legislators have attempted, and successfully, to extend the prohibition so that many industries and businesses will be adversely affected, injured or disturbed, which portends that the people will, in turn, be inconvenienced and compelled to pay higher prices for articles containing alcohol, even if lawfully obtainable; further, that American commerce will be placed at a disadvantage in foreign competition, unless liberal and adequate provisions are made for the use of tax-free, industrial alcohol.

Congressman Pou, of North Carolina, a veteran and stalwart prohibitionist, declared in the House that the enforcement bill then under discussion never could be put into effective operation. Seemingly, if not in fact, the action of the House was in response to the demand of many influential and active constituents of the members, and it has been said that one of the functions of the House is to appease the constituency, relying on the Senate to shape the legislation, making it more conformable to reason and the Constitution. There is another assumption which has been occasionally, if not frequently, expressed in political circles, that there is no intention of eliminating the prohibition question, because it makes fine campaign material. Whether such assertion is the creation of faulty imagination or well-founded suspicion, the course in Congress and in some State Legislatures gives some color of plausibility to that charge. Unquestionably some campaigners have successfully and successively fought their way into legislative halls with such armament and ammunition of words and, perhaps, of action. There are limits of practicality to which prohibition laws can not be made to apply, and then they not only are non-enforceable but jeopardize the accomplishment of that which it is practical to attempt doing.

The prohibition enforcement bill is considerably more rational than it would have been if the intent of some of the prohibition leaders had been incorporated in the law by the legislators. The statement was reported of a demand "that search and seizure be authorized without a warrant, or that warrants be issued without requiring testimony in support of requests for them; that such inclusion was necessary for the enforcement of the amendment." To carry such extreme

provisions into effect would probably have necessitated further that trial by jury be done away with, for it is somewhat questionable whether the people of the United States are ready for such procedure. Under some of the prohibition legislation enacted and under consideration there is danger of a system of espionage being developed and encouraged which is apt to excite hostility, and "arouse a spirit of revulsion in the minds of that large class of citizens who are prohibitionists under the restraint of their sense of practicality."

In the excess of their zeal many prohibition advocates and some legislators proceed on the assumption that any liquid which they are pleased to pronounce intoxicating can be put under the ban. Hence we have the proposals in Federal and State legislation to forbid the manufacture of medicines, cosmetics, flavoring extracts, etc. A multiplicity of exacting details create possibilities of unintentional violations for which the severest penalties are imposed. The amendment may confer unlimited authority for any and all provisions that have been incorporated in state and national laws, but we question the moral right of the extreme use made of it in some of the enactments.

It is the duty of a physician to prescribe and administer medicines according to his judgment of the case under treatment, and of the pharmacist to prepare and dispense medicines, even though they contain alcohol. Unnecessary hardships should not be imposed upon them in this service. The public employs preparations containing alcohol for hygienic, culinary and other purposes, in the purchase of which the individuals should not be subjected to unreasonable investigation of their intent. There are needs for alcohol in the arts and industries, and hindrances in the use and application will interfere with trade to an extent that may make competition in foreign trade impossible or very difficult, whereas every possible encouragement should be given to extend the use of industrial alcohol.

It is to be hoped that the Senate will shape the enforcement legislation to conform with reason and the Constitution, giving proper and just consideration to the people. There should be uniformity in State laws applying to such legislation and the prohibition question should be removed as a subject of political and party contention.

There is no country in the world in which everything can be provided for by the laws, or in which political institutions can prove a substitute for common sense and public morality.—De Tocqueville.

E. G. E.

LOOKING BACKWARD—THINKING FORWARD.

LET him who today in pharmacy feels that pharmacy offers no pronounced opportunity for achievement, consider the problems that confronted his American predecessors, and then contemplate the prodigious outcome accomplished in many directions, in the face of resistance and discouragements unspeakable. Possibly an attempt to balance the opportunities of the future can be no better accomplished than by means of a preliminary synopsis of the records of a few of our pioneer pharmaceutical establishments.¹ Though in the face of so many who must for want of space remain unmentioned, it may be risky to include the names of persons yet living, the writer may be privileged, as recollection moves his pen, to include the names of one or two yet with us, closely connected with those who have passed away.

First among these pioneers in pharmacy may be mentioned Dr. Edward R. Squibb, the talented pharmacist-physician, who in his attempt to reconcile discordant conditions in the ethics of pharmacy and medicine, as applied to business, in the early annals of American pharmaceutical evolution, met with disappointments and disasters innumerable, but established a reputation for service unquestionable. His introduction to the pharmaceutical world was as Assistant Director of the Government Laboratory, New York City, 1855. When, after opening a business for himself, came the fire that destroyed his modest pharmaceutical establishment, scattered his moderate fortune and burned him so badly as nearly to destroy his life, he remained undiscouraged, and on his recovery turned his face to the future. With the encouragement of his admiring professional friends he built for himself a new establishment, in the conduct of which he endeavored to unite and affiliate the scientific, professional and commercial, in medicine and pharmacy. He established himself in the confidence of a host of pharmacist friends, and wrote his name, imperishably, in the annals of American pharmacy. For three-quarters of a century has the house of Edward R. Squibb and Company enjoyed the unqualified confidence of American physicians and apothecaries; to-day that establishment is immeasurably greater than its founder could ever have anticipated.

As a co-laborer in America's early records, especially as connected with American materia medica, rises to view the founder of the William S. Merrell Chemical Company, Cincinnati. Well does this writer remember him. Modest

¹ The incentive to pass beyond this list is almost irresistible, especially in connection with the great successes of the last quarter of a century. Every city, every section of the country, every phase of connected activity, bids for recognition. Indeed, these claims are, in some directions, more forcible than many of those to whom this text restricts the writer. To this it may be added that these pages are written "off hand," from memory only; no attempt has been made by anyone at verification or review. Faults, both of omission and commission, must be apparent, and for these the author is wholly to blame.

and unassuming to a degree, cordial to everyone, earnest in his efforts, the beginnings of which were in a circumscribed retail pharmacy that occupied a small corner-room in the building where these lines are now being written. The business, much expanded, was continued by his son, the late George S. Merrell, whose son, Charles G. Merrell is, with enlarged opportunities, fully maintaining the reputation of the family founder. Closely associated with the founder in companionship was Dr. T. L. A. Greve, his able clerk assistant, whom no incentive could lure from prescription life. To these two pioneers, both concerned in American plant pharmacy, we owe a debt of gratitude,—William S. Merrell, the genial, charming manufacturer, and Dr. Greve, the exceptionally gifted scientist-apothecary.

Co-laboring pioneers in the field of American plant pharmacy were the Tildens of New Lebanon, N. Y. (H. A. Tilden, founder), who conducted the first great Eastern laboratory devoted mainly to medicinal plant preparations. In connection with this was established perhaps the most extensive of all American medicinal plant gardens, past or present, and in the Tilden laboratory was first established and applied, vacuum apparatus, devoted to medicinal plant manipulations on a large scale. With the Tildens were associated the Shakers, of Lebanon, N. Y. Hand in hand did they work, their efforts uniting to the upbuilding and progress of the great Tilden establishment, described editorially by Professor Wm. Procter in the *American Journal of Pharmacy*, 1855, as an industry exhibiting wonderful pharmaceutical activity.

Contemporary with the Tildens was Frederick Stearns, of Detroit, one of the most enthusiastic contributors to botanical medicinal literature connected with early American pharmacy. His treatise on the Medicinal Plants of Michigan stands to-day as authority in the record of the American Pharmaceutical Association, to which his early contributions were voluminous, and of exceptional value. The establishment of Frederick Stearns and Company, founded by him, covers one of the choice squares of Detroit, and stands as a tribute alike to the foresight of the founder and the energy of his son and successors.

Well does this writer recall when, at the close of the Civil War, Col. Eli Lilly came from Lexington, Kentucky, to the young and growing city of Indianapolis, where, with Johnson, he engaged in the pharmaceutical efforts from which (after separation from the partner) grew the world-renowned house of Eli Lilly and Company. The founder of this exemplary establishment was not in lucrative circumstances. With his own hands he made the preparations bearing his label, which he bottled and packed himself, marking and shipping them personally, content and happy in the opportunity of so doing. We believe that all will now agree that the name of Lilly stands second to none other, past or present, connected with pharmaceutical activity. To this writer, the companionship of this family, dating

back to the pharmacist founder and extending to his successors, children and grandchildren, appeals as among his most cherished recollections.

Next uprises the face of Mr. Parke, of Detroit, who established what was destined to become the world renowned house of Parke, Davis and Company. To one of the first Cincinnati "Expositions," Mr. Parke brought personally, from Detroit, a modest assortment of pharmaceutical preparations, and himself attended to setting up and caring for the display. Came into the business soon thereafter, as a partner, George S. Davis, who united with the efforts of Mr. Parke, his personal magnetism and most remarkable business management. Most conspicuous and aggressive was he of all men to that date concerned in the manufacture of American pharmaceutical preparations. Indeed, in this writer's opinion, the systematic processes of George S. Davis instituted a new phase in the then developing pharmaceutical business processes of all American manufacturers. A phenomenal man was he, whose innovations in manufacturing pharmacy marked an epoch that this writer believes should be, and will be, conceded by everyone. The scholarly Professor Ryan and his corps of able co-laborers, on whose shoulders has fallen the responsibility of the great Parke, Davis establishment, will surely recognize that this tribute is not overdrawn.

Come now to view the faces of "Charlie and Louis" Dohme, of Baltimore. No fairer business men ever lived, no more charming companions, than the "Dohmes," and this applies also to their successor, A. R. L. Dohme, son of Charles, who now conducts the establishment, and is so fortunate in his exceptionally systematic, scientific education. No one could have foreseen, when this writer first visited the retail "apothecary shop" of "Sharp and Dohme," that within a very moderate time, as history counts time, preparations bearing their label, and valued by physicians throughout the length and breadth of the land, would be in every pharmacy in America.

In this connection one cannot neglect to mention the name of Professor Charles Caspari, Jr., the talented co-laborer with and adviser of the Dohmes, to whom the side of professional pharmacy, inherited from his no less talented father, appealed, rather than did manufacturing expansion. Scientific was he to the extreme. His son, Charles E. Caspari, a scientific chemist, now devotes his efforts to the interests of the best known chemical establishment of the Middle West, Mallinckrodt and Company, of St. Louis, where he maintains to a high degree the reputation of his forbears.

Possibly no manufacturing pharmacist of the early days in the Middle West was more endeared to his wide circle of admiring friends than was Harlow M. Merrell, nephew of William S. Merrell, with whom he was first associated, and whose successor he was in the Cincinnati business location. Indifferent to the business phases that appealed to many others, Harlow M. Merrell did well his

work as an apothecary, expanding therefrom into a specialty business, embracing the manufacture of preparations derived chiefly from America's medicinal plants. No man concerned in pharmacy had a more delightful personality than the affable, cultured and unconventional Harlow M. Merrell, the early partner of the writer of these lines. Their establishment, much expanded, still stands on the old corner, which since 1845 has been occupied as a pharmacy.

Phenomenal was the record of the brothers, W. J. M. and O. P. F. Gordon, in Cincinnati. Coming from Philadelphia in the early part of the last century, they opened a small apothecary shop on the corner of "Western Row" (now Central Avenue) and Eighth Street. Expanding into a "Physicians' Supply House," but yet retaining an increasing prescription business, they ultimately became "Wholesale Druggists" as well. Situated near the Eclectic Medical Institute, they naturally made a specialty of American botanicals. Neighbors to the soap and candle factory of Procter and Gamble, who ran their "sweet water" into the canal as a waste product, Gordon (W. J. M.) saw his opportunity, caught the "sweet water" daily in a box wagon, and began the manufacture of glycerin, then just coming into prominence as a commercial substance. A large factory became necessary for this industry, but it was not until many years afterward that Procter and Gamble, or other Cincinnati soap manufacturers, comprehended their opportunities in this direction. The Gordon brothers were not only active business men, but were excellent citizens, of decidedly attractive personality, as this writer, who was to them apprenticed (1863), can attest.

No article concerning early American pharmaceutical activities on a large scale would be complete without the name of George J. Seabury, veteran maker of medicinal plasters, of the firm of "Seabury and Johnson." Of all the members of the American Pharmaceutical Association, Seabury was the most cosmopolitan "mixer." No meeting of the Association was considered a success without the presence of the versatile George Seabury, who always came, accompanied by his two daughters, whom every one admired, from their very childhood. Very like George S. Davis in many respects, Seabury possessed one decided advantage over Davis, in that the latter seldom, if ever, took any personal part in pharmacists' gatherings, while Seabury was "always in evidence," making many friends, as well as a few antagonists. He took an active part in New York City politics, and was also an expert fisherman, writing a series of verses on the Black Bass, which, illustrated, he printed privately, presenting copies to his circle of friends. Finally came the rearrangement of the firm of Seabury and Johnson, the brothers Johnson retiring from the business to found the firm of "Johnson and Johnson," while the time-honored name of the old firm was retained by Mr. Seabury.

Half a century ago, B. F. Kilmer was an apothecary-apprentice, who passed successively from errand boy and clerk in a small "pharmacy" to the management

of one of the greatest of America's manufacturing pharmaceutical establishments, Johnson & Johnson, probably the most prodigious makers of sanitary products, such as absorbent cotton and medicated plasters, that the world has ever known. Like all others mentioned in this article, "Kilmer" is affable, generous, a delightful companion, and self-sacrificing to a degree. He keeps in touch with all the details of the huge establishment that is his charge, and is at home in its every department, from the chemical laboratory to the distribution of the products. His personal friendship is much cherished by the writer of these lines.

Before sugar-coated pills were made in America, at least before they were offered to the trade (so far as this writer is informed), came from France a line of cumbersome sugar-coated products labelled *Drages*. These were oval, and nearly as large as the first joint of the little finger, reminding one of the well known confections, "sugared almonds." They helped to make an opportunity for pharmacists, in which Wm. R. Warner, an apothecary of Philadelphia, took the initiative. Within a short time "Warner's Pills" were a standard, and were soon found in every drug store in America. His monopoly, however, did not long continue. Candy makers everywhere were expert sugar coaters. Little other apparatus was required for the product. But Mr. Warner, by his energy at the very start, founded a business that became national, and that has since expanded beyond anything its originator could possibly have anticipated. The writer remembers with pleasure many visits between Mr. Warner and himself, which occurred frequently at the meetings of the American Pharmaceutical Association.

Almost simultaneously with the sugar-coated pills, came the American "Elixir" crusade, the pioneer specimen having been introduced, 1839, under the label, "Sims' Cordial Elixir of Calisaya." This was an aromatized cordial, conspicuous for its lack of the bitterness of calisaya. It opened the "Elixir" door, and special advantage of the opportunity was taken by the apothecary firm, John Wyeth & Co., Philadelphia. The energetic manner in which their preparations were advertised and distributed made "Wyeth's Elixirs" as well known as were the "Fluid Extracts" of Burrough Brothers and Thayer, the pharmaceutical preparations and chemical apparatus of Bullock and Crenshaw, Philadelphia, the pressed herbs of B. O and G. C. Wilson, of Boston, or the "Resinoids" and "Concentrations" of Keith.

Among the wisest of manufacturing pharmacists, in our opinion, was Mr. C. B. Allaire, of Peoria, Illinois; wisest, because when came the opportunity, before he was either confronted with the cares of old age or weighted with an overgrown business, Mr. Allaire sold out his interest in the thriving business of Allaire, Woodward & Company, and retired to a life of serviceable ease in San Antonio, where mental activity was stimulated by helpful literature and intelligently applied efforts in economic research and its practical application. The establish-

ment he founded in Peoria, and which he so ably guided on the way to success, made a specialty at an early date of American botanic drugs, both pressed and powdered, and in this line, as well as in general pharmaceutical directions, it has maintained its leadership to the present day. Much pleasure would Mr. Allaire give to the membership of the American Pharmaceutical Association were he to attend another meeting.

Comes now to mind the name of another man, living to-day, founder and conductor of an exceptionally prosperous pharmaceutical establishment, Professor Edgar L. Patch, of Boston. A "professional" pharmacist was he, teacher in the Massachusetts College of Pharmacy. A partner in the firm of prescription apothecaries, Canning and Patch, he disproved the often made assertion, "A professional man is not a business man." (The same may also be said of Professor Frank Ryan, Business Manager of Parke, Davis & Company.) The preparations of the expanding Patch establishment stand second to none others, and the confidence of all who know him is extended to its exceptionally qualified founder, Professor Edgar L. Patch.

But, I despair. This fragmentary record cannot be made complete; the subject expands, hopelessly, as the words are being penned under recollection's touch. The aim, however, is not to make a complete record, either in number or as regards detail activities, but only to present the names of a sufficient number of American pharmaceutical manufacturing establishments, with reference to beginnings, to serve as an object lesson in connection with the title of this article. Many essential features, indeed very vital ones, must be neglected, in directions that would appeal to others than the writer. Enough has been said to answer the purpose of this paper.

If *success in business* be accepted as a feature of first importance, one must be indeed a pessimist or a pronounced cynic, to assert that pharmacy of the recent American past, as well as of the active present, offers no recognition to its devotees. Yet, one may say, "All this is true, but what of the thousands unmentioned?"

J. U. L.

IODINE IN LIQUID PETROLATUM.*

BY A. H. CLARK.

Of all the things used in medicine nothing seems to have attracted the attention of all classes of users as has iodine. Perhaps more romantic schemes for the cure of all the ills which afflict mankind have centered in iodine therapy than in any other one drug. Iodine is being used in every conceivable way from crystals to colloid; in vapor; combined as iodide, iodate and the like; organic, inorganic, simple and complex; internal, external and by injection, and yet there seems to be no end to the ingenious schemes for its exploitation.

One of these schemes, and one so simple that it seems at first sight to be hardly worth serious consideration, is that of a solution of iodine in liquid petrolatum. Solutions of this kind have frequently been offered to physicians and the laity. The thing of particular interest is the claim made as to the percent free iodine. Five percent is frequently claimed. Examination of some of these products in the Chemical Laboratory of the A. M. A.¹ revealed the fact that they did not contain the claimed amount of free iodine. These questions at once arose: Was the low free iodine content due to intentional fraud, the result of carelessness, or ignorance? Was it impossible to prepare a solution containing five percent, or did the iodine slowly combine with the oil and disappear?

The A. M. A. Chemical Laboratory² conducted some experiments on the solubility of iodine in liquid petrolatum, which indicated that a saturated solution would contain about 1.4 percent. These experiments did not show conclusively that no iodine was absorbed during the process of solution.

For this reason, further experiments were conducted with the view of determining both the solubility in and extent to which iodine is absorbed (disappears as free iodine), if at all, by liquid petrolatums of various kinds. Theoretically such hydrocarbons should not absorb iodine. The results of these experiments are here given.

A sample of iodine was prepared by sublimation from a mixture with potassium iodide. This sample when dried over sulphuric acid assayed 99.98 percent iodine. Portions of this sample were used in all the subsequent experiments.

To prepare solutions of definite concentrations, in all cases expressed as percent by weight, an accurately weighed quantity of iodine was placed in a glass-stoppered bottle and an accurately weighed quantity of liquid petrolatum added. The mixture was subjected to treatment as indicated in the various experiments and from the weights of iodine and petrolatum used the percent of iodine was calculated.

The method of assay employed was: A weighed quantity of the iodine solution was transferred to a bottle or flask by means of several small amounts of chloroform, about 50 Cc. in all. To this was added about 25 Cc. potassium iodide solution. The mixture was then titrated with tenth-normal sodium thiosulphate until on thorough shaking no iodine passed into the aqueous layer.

To 2.1248 Gm. iodine was added 199.3 Gm. liquid petrolatum. The mixture

* Contribution from the Chemical Laboratory of the American Medical Association.

¹ Annual Rep. of the Chem. Lab. A. M. A., 1915, p. 106; *Ibid.*, 1917, p. 87.

² *Ibid.*, 1910, p. 88.

was shaken frequently each day and after forty days there seemed to be still a few particles of iodine undissolved. The supernatant solution was assayed, however, and found to contain 1.038 percent iodine. The iodine added was 1.055 percent. Six months later 1.025 percent iodine was found.

To 5.1832 Gm. of iodine was added 199.5 Gm. liquid petrolatum. The mixture was heated to 100° C. for four hours shaking frequently. The iodine was in perfect solution. The percent iodine would then be 4.95. Upon cooling, iodine in abundance crystallized out. After standing a few hours, with frequent shaking, the iodine in solution was determined. This was found to be 1.425 percent.

These two experiments indicate: First, that the previous findings of the A. M. A. Chemical Laboratory are correct in that only about 1.4 percent free iodine is retained in solution in liquid petrolatum at room temperature. Second, that the quantity of iodine absorbed by liquid petrolatum at room temperature, in seven months at least, is practically none. Third, that iodine dissolves rather slowly in liquid petrolatum at room temperature.

In the experiments, the results of which are tabulated below, the iodine and liquid petrolatum were heated at 100° for about four hours, shaking frequently to hasten solution. After cooling they were assayed, and again assayed at intervals as indicated in the table.

Kind of liquid petrolatum used.	Date of manufacture and first assay.	Iodine weighed.	Petrolatum weighed.	Percent iodine used.	Percent iodine found.	Percent iodine Nov. 17, 1918.	Percent† iodine May 19, 1919.
Stanolind.....	10, 17, 18	2.089	188.4	1.096	1.085	1.068	1.067
Squibb.....	10, 14, 18	1.9569	186.78	1.0306	1.0232	1.013	1.009
Unknown, bulk*...	10, 28, 18	1.9497	158.2	1.225	1.133	1.075	1.095
Parke, Davis & Co.	10, 24, 18	2.0869	167.43	1.241	1.2488	1.191	1.180

* Considerable dark sediment formed in this sample during the heating process.

† It should be pointed out here that while every sample showed some absorption, the amount, with the exception of the unknown bulk, is so small that it might even be accounted for on the basis of "experimental error." Every ordinary precaution was taken to insure accuracy, but since about 15 Gm. of the solution was used for each determination, it is seen that an error of 0.3 Cc. in the titration would indicate a greater absorption of iodine than that noted.

Conclusions: These experiments show:

A solution of iodine in liquid petrolatum is saturated when it contains about 1.4 percent iodine.

The amount of iodine absorbed (disappearing as free iodine) by liquid petrolatum, when in contact at room temperature for as long as seven months, or in contact at 100° C. for four hours, or both, is relatively insignificant. Also all the absorption seems to take place during the heating and in the first month of contact.

DICHLORAMIN-T AND PETROLATUM DRESSING FOR BURNS.*

BY TORALD SOLLMANN, M.D.

Dichloramin-T as a wound antiseptic has the very real advantage of furnishing a continuous supply of the antiseptic agent, securing a continuous action over

* From the pharmacologic laboratory of the Western Reserve University School of Medicine. Reprinted from *Journal A. M. A.*, April 5, 1919.

† This investigation was supported by a grant from the Therapeutic Research Committee of the Council on Pharmacy and Chemistry of the American Medical Association.

long periods of time, and this with the simplest forms of dressings. A continuous supply of antiseptic is very important in the treatment of infected tissues when it is out of the question to kill all the bacteria at once. The simplest technic is at least an important convenience.

On the other hand, dichloramin-T has some material disadvantages. The solutions must be prepared with some care, and must be fairly fresh, or else tested for the presence of available chlorine. The application causes considerable smarting and burning. This, however, disappears promptly, and can generally be tolerated. On repeated application, it is liable to irritate the skin.

TABLE 1.—TWO PERCENT DICHLORAMIN-T IN LIQUID SOLVENTS: PERCENTAGE OF THE ADDED DICHLORAMIN-T THAT REMAINS UNDECOMPOSED AT THE TIMES STATED.

Solvent.	Carbon tetrachloride.	Chlor- cosane.	Liquid petrolatum.	Kerosene.	Olive oil.
No. of samples tried.....	1	2	4	1	1
Period after mixing:					
At once.....	98	100	50 to 100	47	48
1 hour.....	..	86	.....	..	..
1 day.....	97	81 to 94	50 to 78	13	25
3 days.....	..	85 to 96	.....	10	17
1 week.....	94	65 to 85	32 to 50	8	8
1 month.....	86	60	33	..	7
Later.....	7 weeks:79	2 mo.:34	2 mo.:29	..	4 mo.:4
		4 mo. : 16 to 19			

These disadvantages are rather minor, in most cases. Certain physical limitations are more serious in connection with burns. The large, open surfaces require protection against mechanical irritation and access of air, and this the dichloramin-T-chlorcosane solution fails to furnish. On the contrary, this solution is absorbed by the dressings, which are then glued by the wound secretions, producing pain and injury when the dressings are changed. Paraffined lace-mesh gauze does not avoid this effectively.

TABLE 2.—TWO PERCENT DICHLORAMIN-T IN PETROLATUM AND IN PARAFFIN OINTMENT: PERCENTAGE OF THE ADDED DICHLORAMIN-T THAT REMAINS UNDECOMPOSED AT THE TIMES STATED.

Color of petrolatum:	"Superla white."	"Ivory white."	"Onyx."	"Topaz "	"Amber."	"Yellow."	Paraffin ointment 3:7 (2 series).
Period after mixing:							
At once.....	15	16 : 12	10	12	13	20	61-71
1 day.....	10	11 : 8	5	6	7	13	68
1 week.....	7	8 : 4	3	6	6	7	50-61
1 month.....	..	....	..	..	..	5	....

These drawbacks were especially conspicuous in the case of the very painful and slowly healing "mustard gas" (dichlorethylsulphide) burns that came under my observation. When these burns reach the ulcerative stage, they become so sensitive that they have to be protected by thick petrolatum dressings, especially at night. These are undesirable, since they furnish protection to the bacteria as well as to the tissues. Superficial infection therefore flourishes, and the healing must be delayed. It was attempted to compromise the matter, either by alternating the antiseptic and protective dressings or by applying a petrolatum dress-

ing to the wound after it had been painted with dichloramin-T-chlorcosane solution (generally of 2 percent strength).

It was known, of course, that dichloramin-T is gradually destroyed by ordinary petrolatum; but it was hoped that the destruction would be slow enough so that some of the antiseptic would last from one dressing to the next. Subsequent chemical study of the problem showed that this expectation is not realized, and that the application of ordinary petrolatum over dichloramin-T really amounts merely to alternation of antiseptic and protective treatment.

This prompted a more detailed study of the destruction of dichloramin-T by petrolatum and various solvents. This resulted in the working out of a special petrolatum medium which was found to be sufficiently compatible with dichloramin-T for surgical purposes, so that it may be applied either mixed directly with the dichloramin-T or as a protective dressing over the dichloramin-T.

Attention may be called to the fact that liquid and semi-liquid mixtures of petrolatum with active drugs are not subject to the same limitations as is the incorporation of these drugs into solid paraffin. Solid paraffin prevents adequate contact of the mass of the antiseptic with the wound. On the other hand, the layers of liquid and semi-liquid mediums in contact with the wounds are continuously changed, so that good contact is secured.

RATE OF DESTRUCTION OF DICHLORAMIN-T IN VARIOUS SOLVENTS.

The deterioration was estimated by the changes in the "available chlorine," occurring at successive periods in solutions or mixtures containing originally 2 percent of dichloramin-T. I am indebted to Miss J. R. Collacott for these determinations.

Estimation of "Available Chlorine."—This was carried out essentially by the method described in New and Non-official Remedies, 1918, p. 158. To duplicate 5 Cc. or 5 Gm. samples of the mixtures to be tested, there are added 5 Cc. of glacial acetic acid, 10 Cc. of 10 percent potassium iodide, and sufficient carbon tetrachloride or chloroform to thin the material (usually about 5 Cc.); then a few drops of starch test-solution, and finally, from a buret, sufficient tenth-normal sodium thiosulphate solution to discharge the color.

Each cubic centimeter of tenth-normal sodium thiosulphate solution corresponds to 0.0177 Gm. of available chlorine.

The results are presented in terms of percentage of the amount of available chlorine that should have been liberated, according to the quantity of dichloramin-T originally added.

Three samples of dichloramin-T (Abbott and Squibb), two samples of chlorcosane (Abbott and Squibb) and two samples of liquid petrolatum (Squibb and Stanolind), and five samples of petrolatum (Stanolind) and one of unknown manufacture were used, with practically identical results for each instance.

Liquid Solvents.—The rate of deterioration is shown by Table 1. Carbon tetrachloride gives the most stable solutions. Chlorcosane solutions keep practically perfect for three days, and are fairly active for a month. Liquid petrolatum solutions show some loss at once, but would preserve a fair efficiency for a month. Kerosene is surprisingly destructive, even more so than olive oil.

Petrolatum.—Commercial petrolatums are highly destructive for dichloramin-T: so much so that the efficiency is at once practically completely destroyed.

This is equally true for a series of six samples representing different depth of colors, so that the coloring impurities are not concerned. This is shown in Table 2.

The last column contrasts this with a "paraffin ointment 3 : 7" prepared by mixing 30 parts of melted surgical paraffin wax with 70 parts of liquid petrolatum (the Stanolind brands were used). There is considerable deterioration in mixing, but a practical efficiency is maintained for a week.

The physical properties of the paraffin ointment are fairly satisfactory, although it is rather more solid and damp than the commercial petrolatums.

Chlorcosane Solution Overlaid with Petrolatum, Etc.—In order to imitate somewhat the application of a petrolatum dressing over a dichloramin-T dressing, 5 Cc. of chlorcosane containing 2 percent of dichloramin-T were placed in bottles with 20 Gm. of petrolatum, etc., without mixing. After definite periods, these mixtures were thinned with carbon tetrachloride or chloroform, and titrated.

TABLE 3.—TWO PERCENT DICHLORAMIN-T IN CHLORCOSANE, OVERLAID WITH 20 GM. OF PETROLATUM, ETC.: PERCENTAGE OF THE ADDED DICHLORAMIN-T THAT REMAINS UNDECOMPOSED AT THE TIMES STATED.

	Liquid petrolatum.	White petrolatum (2 brands).	Yellow petrolatum.	Paraffin ointment 3:7
At once.....	100	46-68	98	100
1 hour.....	95	13-62	42	99
1 day.....	101	38		
3 days.....	...	2-7	14	
1 week.....	87	3	8	60

The results, reproduced in Table 3, again show the inferiority of petrolatum, which may destroy most of the dichloramin-T in an hour. Both the paraffin ointment 3 : 7 and the liquid petrolatum were satisfactory.

CONCLUSIONS.

An ointment of 3 parts of surgical paraffin and 7 parts of liquid petrolatum has relatively little destructive action on dichloramin-T and can be used as a protective dressing on wounds (burns) treated with dichloramin-T-chlorcosane solution, and even as a basis for a dichloramin-T ointment.

Ordinary petrolatum, irrespective of its color, is very destructive of dichloramin-T, and cannot be used effectively in connection with it.

Liquid petrolatum can be used in emergencies as a vehicle for dichloramin-T, although it is inferior to chlorcosane.

Solutions of dichloramin-T in carbon tetrachloride are very stable, while those in kerosene or in olive oil deteriorate very rapidly.

NOTES FROM THE RESEARCH LABORATORY, GENERAL ELECTRIC COMPANY.*

X-RAY CHEMICAL ANALYSIS.

BY A. W. HULL.

The method of X-ray crystal analysis, developed in the Research Laboratory of the General Electric Company just before the war, is being further developed

* Communicated by the Director. Reprinted, by permission, from the *Journal of the Franklin Institute*.

as a method of chemical analysis which promises to have a very wide and new field of application in that it gives evidence which other methods do not supply, namely, the form of chemical combination of each of the elements present.

The method consists in reducing the substance to be examined to powder form, placing it in a small glass tube, sending a beam of monochromatic X-rays through it, and photographing the diffraction pattern produced. The only apparatus required is a source of voltage, an X-ray tube, and a photographic plate or film. The amount of material necessary for a determination is one cubic millimeter. The method is applicable to all chemical elements and compounds in so far as they are crystalline in form.

The rays from the X-ray tube pass through a filter, which absorbs all but a single wave length, then through two slits, which confine them to a narrow beam (about 1 mm. wide); then through the powdered material, which scatters or "reflects" a very small fraction of them; and thence to the center of the photographic film. An exposure of from one to twenty hours is required, according to the amount of information desired.

When the film is developed it shows, in addition to the over-exposed line in the center, where the direct beam strikes, a series of other lines on each side of the center. These lines are caused by the "reflections" of the X-rays from the tiny crystals in the powder. Their distance from the center of the film depends on the distance between the planes of atoms in the crystal, and there is one line for every important set of planes in the crystal. It is evident, therefore, that substances with different crystalline structures will give entirely different patterns of lines. Substances of similar chemical nature and therefore similar crystal structure give similar patterns, but the magnification or spread of the pattern is different for each one, being inversely proportional to the cube root of the molecular volume. Since no two similar substances have *exactly* the same molecular volume it is easy to distinguish them, as the difference is cumulative for lines far from the center. A further distinguishing mark is the relative intensity of the different lines which differs greatly even in the most closely related compounds, depending on the relative shapes and sizes of the atoms in the compound.

A knowledge of the theory of the production of these lines, and their relation to the crystalline structure of the substance, is not essential to their use for chemical analysis. All that one needs to use in a chemical analysis is the fact that every crystalline substance gives a pattern; that the same substance always gives the same pattern; that no two different substances give the same pattern; and that in a mixture of substances each produces its pattern independently of the others, so that the photograph obtained with a mixture is the super-imposed sum of the photographs that would be obtained by exposing each of the components separately for the same length of time. This law applies quantitatively to the intensities of the lines, as well as to their positions, so that the method is capable of development as a quantitative analysis.

As illustrations of the general type of photographs obtained with simple compounds and elements, Fig. 1 shows a series of isomorphic alkali halogens, illustrating their similarity of pattern and their differences in spacing and intensity; and Fig. 2 gives a series of dissimilar substances, illustrating their different types of pattern.

Several actual analyses have already been made which will be described in detail elsewhere.¹ It has been found very easy to recognize at a glance each component in a three component mixture and in the case of the simpler salts many more than this could certainly be identified. Accurate quantitative tests have

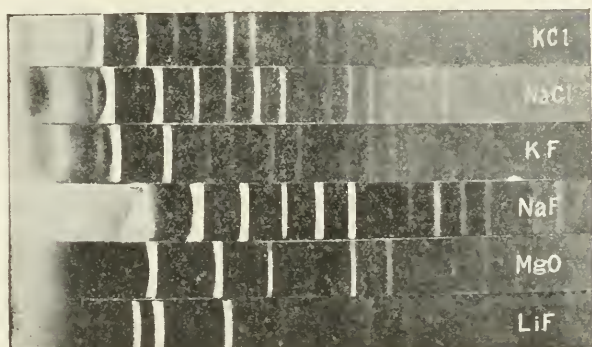


Fig. 1.

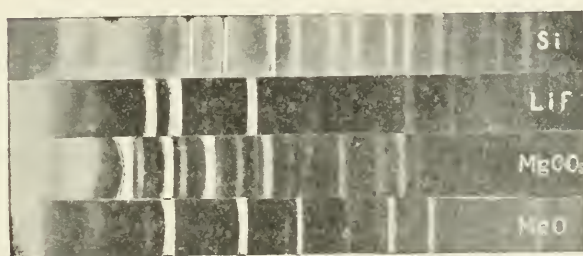


Fig. 2.

not yet been made, but it is anticipated that an accuracy of one percent will be easily obtainable, for components present to the extent of one percent or more of the whole sample.

THE RELATION OF LIGHT TO HEALTH.*

BY CHARLES E. DE M. SAJOUS, M.D., LL.D., SC.D.

The word "ferment" is steadily being replaced in medical phraseology by the word "enzyme." In the words of Professor Mendel, of Yale, "Enzymes are no longer thought of exclusively as agents of the digestive apparatus; they enter everywhere into the manifold activities of cells in almost every feature of metabolism." In other words, the same ferments, pepsin, trypsin and others which first prepare foodstuffs in the stomach and intestine, for assimilation by the tissues of the body at large, are the same agents which carry on certain functions in the intimacy of the tissues.

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* Abstract of a paper presented before the Philadelphia Section of the Illuminating Engineering Society, and published in the Transactions of the Society.—Through *Scientific American*.

Considerable evidence is available to show that these digestive ferments are carried from the alimentary canal to the tissue cells by certain white corpuscles of the blood, in which they are readily found. To these white corpuscles belong the phagocytes, which ingest and digest disease germs. We thus have digestive ferments taking part—along with the oxidizing ferment—not only in the vital processes of each tissue cell, but also in the defense of the body against disease.

Prevost's theory of mobile temperature equilibrium is now known to apply to radiant heat as well as to heat energy derived from other sources. It is simply that if two bodies of different temperature are placed close to each other, the warmest of the two will lose heat by emitting radiant heat which the colder body will take up until the temperature of both is equalized. Briefly, the skin absorbs radiant heat when the cutaneous temperature is lower than that of the radiations received, up to certain limits (influenced by the perspiration and other factors) and the temperature of the tissues of, and beneath, the skin is thus raised.

The penetration of radiant light through the tissues when long wave lengths characterize the rays is considerable, that of red rays, for instance, exceeding one inch. Careful experiments by Rollier showed that solar rays could penetrate the hand and forearm and also, under favorable circumstances, the entire chest.

How does light energy influence the vital processes of those tissues and contribute to the defense of the body against disease? Charcot, the French neurologist, as far back as 1859, urged that we should distinguish between the purely chemical effects and those produced by heat. In the present connection we probably are dealing with a process in which the chemico-physical effects credited to oxidizing ferment I have termed "adrenoxidase" and heat both take part, particularly near the surface.

There exists immediately under the superficial tissue a great system of small interwoven canals which, so to say, act as sewers of the tissue cells. They serve not only to carry off, but also to purify, the fluids received from these cells by breaking down, as far as possible, the wastes and detritus that they form while carrying on the process which constitutes their life. These channels are interspersed with glands that contain phagocytes, *i. e.*, cells of the type that destroy, by means of their digestive ferments, disease germs and other harmful substances that the small canals carry to them from every direction. This system of lymph channels and glands, known as the lymphatic system, is a prominent weapon of defense. Everyone has seen lymph, a whitish viscid fluid, collect on abrasions, and also enlarged glands on the necks of children. These latter are enlarged lymphatic glands trying to destroy bacteria from some source, the tonsils, adenoids, etc., thus preventing general infection.

The beneficial influence of sunlight is readily accounted for when we take the lymphatic system into consideration in addition to the tissue cells, in view of the effect of light energy as manifested by its radiated heat. Indeed—and this is the dominating factor in the process—the ferments of both kinds previously referred to, those which promote tissue oxidation and those that digest and destroy bacteria and organic poisons, become increasingly active as the heat to which they are exposed is increased, and we obtain as result an increase of both vital activity and defensive aggressiveness.

This increased efficiency of ferments under the influence of increased tempera-

ture is the method adopted by Nature, according to my own viewpoint. It explains the process we term "fever," long deemed an enemy, but in reality a defensive function calculated to destroy poisonous substances or germs that have found their way into the body fluids and cells from a focus somewhere, either in the superficial or deep tissues. In the course of fever, the germ destroyers, or phagocytes, are not alone at work in the blood streams, but the whole internal lining of the blood vessels themselves is made up of these germ-destroying cells. Again, the lymphatic vessels which act as drains for the tissue cells, we have seen, afford additional aid in the defensive process by means of the multitude of phagocyte-laden glands through which the serum obtained from the blood by the tissue cells must pass before it is returned to the circulation.

Of course, abnormally high fever, *i. e.*, fever above 104° F., for instance, may become dangerous in the sense that the very digestive ferments which have their purpose to defend, become too active and begin to digest not only the red blood corpuscles, a process physicians term "hemolysis," but also certain tissues, a process known as "autolysis." To offset these morbid effects of excessive radiation during hot weather, the skin protects the body by perspiring; the water which moistens the skin, by evaporating, keeps the surface temperature within normal limits. The cool baths physicians employ in the treatment of typhoid fever have the same end in view; they keep the fever within safe limits.

On the whole, the relation of light to health may be summarized, in view of the few data submitted, by the statement that it is intimately bound up with the perpetuation of life, whether the tissues be normal or diseased. It tends to sustain health by promoting, as radiant energy, the activity of the oxidizing ferment adrenoxidase, which sustains the oxidation of tissue cells, an essential function of their life. It tends to defend the cell, when endangered by certain germs and poisons, by enhancing through the heat energy developed the efficiency of the defensive ferments which submit these harmful agencies to digestive destruction.

PHARMACY FROM AN EDUCATOR'S VIEWPOINT.*

I cannot help associating in my mind the profession of the pharmacist with that of the physician. It seems to me as if they are inseparably connected with each other. There was a time, long ago, when it was difficult to distinguish between the pharmacist and the physician. In fact, in early times, the man who attempted to heal the ills of the human race was both physician and pharmacist. It was in these same early days of the professions that their practice and methods relied more upon the superstition and credulity of their patrons than upon any scientific knowledge. We may still read in some of the old books how healing recipes and medicines were compounded from dried bats. How live toads and mystical plants, plucked from a murderer's grave at midnight, would be efficacious in curing disease. We have long since passed out of that period into what might be called the scientific age of these professions in which they have made enormous strides. The last fifty years have seen scientific developments in every profession

* Parts of an address by Dr. W. E. Stone, President of Purdue University, before the Indiana Pharmaceutical Association.

but in none more than in medicine and pharmacy. But it is apparent that this association between medicine and pharmacy is not so close as it used to be; that the profession of pharmacy has not kept pace with the profession of medicine on its scientific side; at least this is my impression.

We cannot conceive of a profession of pharmacy which is not based primarily on science, and dependent upon scientific training for its growth. There was a time when a pharmacist could be trained for his duties by an apprenticeship in the druggist's shop just as the physician was trained by associating himself with the practicing physician and the lawyer was trained by working in the lawyer's office, but that time has now passed. One might say it is practically impossible to train a competent pharmacist simply by a drug store apprenticeship. It would be impracticable even if possible since it requires a long time to arrive at proficiency under such conditions and the average young man would not be persistent enough or have the ability to do it. It becomes necessary, therefore, in this as in all professions, to depend upon systematic instruction to fit men for practice. It is necessary because the art and science itself has advanced so far and embraces so much that the services of the professional teacher, supplemented by scientific equipment, are indispensable to the student who would prepare himself thoroughly without loss of time. The scientific field in any profession is unlimited and even the fundamental principles which have been discovered, and rest at the foundation, embody a vast amount of knowledge. This elementary body of knowledge it takes time to acquire.

For the profession of pharmacy, the biological, chemical and physical sciences are fundamental. Chemistry particularly, and with more recent developments in the production of serums and antitoxins and the various treatments for germ diseases, biological science, are of tremendous importance. There is no getting away from the fact that the pharmacist who is competently trained for his profession must have a thorough preliminary instruction in those sciences as well as the technical and practical phases of his practice. Recurring to the comparison of pharmacy with medicine. I call to your attention, how in recent years, the educational requirements for the practice of medicine have been steadily increasing until one cannot now enter a reputable medical college until he has had a certain amount of college training, and this preparatory education is strictly taken into account in licensing the practitioner. Even a college degree is required for entrance to some of the more advanced medical schools. We are, unfortunately, far short of any such requirements in the case of pharmacy. There is no recognized profession in which educational and technical requirements are so low as for pharmacy, if we except the anomalous and absurd provision for admission to the bar embodied in the Indiana State Constitution. As far as our state law is concerned, the requirements for licensing pharmacists are nominal and may be satisfied by a minimum of training which is a disgrace to the profession. I am unwilling to admit that pharmacy as a profession should remain on a plane inferior to medicine. From this standpoint it is indisputable that the educational standards of the profession of pharmacy are not where they ought to be.

Let us recognize that the pharmacist has to deal with the issues of life and death just as much as the physician. He is the physician's right hand man in the fight against disease and death; he must be competent to deal with those substances

and combinations which save life and prevent death, and if a mistake is made, responsible for fatal consequences. In such a profession, with such responsibilities, can any educational or professional standard be too high?

It is absolutely essential that a competent pharmacist have thorough scientific training of the broadest kind, not the sort of training given in a cram course in order to pass a nominal examination, but the training which can only be acquired by systematic study of elementary principles leading on step by step into the advanced phases of a science, with competent teachers and scientific facilities. Pharmaceutical practice should be based not on some rule of thumb, but on scientific knowledge. A ten year old boy can be taught how to make a chemical analysis or compound medicines by rule of thumb until he encounters some condition which he does not understand; then he is helpless or worse than that, dangerous, for the old adage, "a little knowledge is a dangerous thing," is nowhere so true as behind the prescription counter. The man who undertakes to do something based upon the application of scientific principles must know the *reasons why* it is done and what to do in any variations from the regular procedure. The pharmacist who is responsible for compounding medicines or preparing prescriptions ought to know the biological, physical, and chemical principles which underlie his processes; otherwise he is a public menace and a clog upon the profession. One cannot become such a pharmacist except by careful study and preparation; one cannot learn these things in a few days' time; it cannot be crammed into his head so that he knows it in a dependable, competent way. Therefore, my friends, if the profession of pharmacy is ever to advance as the profession of medicine has advanced, to a scientific basis and to a high plane in the confidence of the public, it will be through recognition of the absolute necessity of the thorough education and training of the prospective pharmacist.

I am not saying this to express the policy of our school of Pharmacy, which is standing squarely for higher education and technical standards for the profession. I am saying it because it is my conviction in the light of progress in all professions, and in the light of my experience as a scientific student and teacher. There is no calling, no occupation, even though it is not a scientific one, these days in which you can succeed without education, and the profession of pharmacy is no exception.

The pharmacist should also enjoy the benefits of a good general education in addition to this technical training, for professional as well as other reasons. Probably you would not dispute with me my claim that he must have thorough special and professional scientific training, but I submit he ought also to have a good general education besides. The pharmacist should stand on an equal footing with the physician in the community. He deals with all classes of people; deals with the best people. He ought to cultivate the acquaintance and patronage of the best class of people, and he ought to be so educated and so qualified that he can meet and deal with those classes of people in the same intimate way as the physician meets and deals with them—and that means he ought to have a special professional education and a good general education as well. As a good citizen, as a force in his community, as a leader in his profession, no educational advantages will come amiss.

A word about the relation of the State to the profession of pharmacy. Be-

cause the pharmacist deals with such vital issues, and because the results of his dealing may be of such importance, the State undertakes to protect the people from ignorance in this profession by setting standards and regulations for the practice of pharmacy. This is a very proper and very necessary thing to do. The Government regulates where it pleases these days. It says what preparation and training the physician shall have. It undertakes to tell the groceryman what he may sell and what he may not sell, and the farmer the price for which he may sell his wheat. Doubtless the state will more and more interpose its restriction between the public and the representatives of all kinds of callings dealing with the public. This is especially important in all things pertaining to public health and to such professions as those of the physician and pharmacist. So it is consistent with public progress and welfare for the State to say what preparations and what qualifications a man shall have who proposes to compound and distribute medicines to the people.

These regulations applying to physicians have become so standardized that they apply pretty generally and interchangeably between all states so that a physician who is qualified to practice in Ohio is automatically qualified to practice in Indiana. Practically all of the states now unite in a common standard for the practice of medicine. But I am sorry to say in this respect pharmacy lags behind medicine, and Indiana lags behind other states with which we like to rank.¹ An important aspect of such a situation is that the State maintaining a low standard becomes the refuge for those who cannot qualify in the states maintaining higher standards and this condition tends to perpetuate itself. The State which does not have its qualifications fixed at a high standard or at least as high as other states suffers immeasurably. As a first step to progress in pharmacy the states, or the Pharmacists' Association, should make earnest and persistent efforts to secure reasonably uniform standards, both educational and legal, in all states. I think this standard cannot be too high. In our own State it is very low, too low for the best interests of the public, too low for the best interests of the pharmacists themselves. I hope to see the time when these standards can be raised to a very decided degree in the State of Indiana.

I come to another matter in connection with the profession of pharmacy which to my mind is really one of the greatest obstacles to professional advancement. I hope you won't misunderstand me when I speak of this, referring to the business or trade conditions connected with pharmacy. What would be thought of a physician who combined with his medical practice a real estate or insurance business? But the pharmacist, as a general rule, does a general and miscellaneous business. Indeed it is extremely rare to find a pharmacist confining his activities to his profession. I understand very well that this condition arises out of a state of affairs which no individual can alter; it has simply grown to proportions which are inexcusable and intolerable from the professional standpoint. But I will venture to say that all of you gentlemen would very much prefer to conduct strictly professional pharmacies if by so doing you could make a living and succeed as well as you do when you combine a miscellaneous merchandising business with the profession. I think you would all like to see pharmacy on such a basis. This

¹ Indiana now has a "prerequisite" law.

situation is wholly anomalous and inconsistent. No profession is more strictly on a scientific basis than pharmacy; no business is more miscellaneous or nondescript from the merchandise standpoint than that of the ordinary drug store. The two are wholly incomparable. There will not be much chance for elevating the standard of the profession as long as it continues to be a mere adjunct of a general department store business. If it were possible to put pharmacy on a strictly professional basis it would assist immeasurably in the other steps necessary to progress, but so long as the practice of pharmacy is mixed with the business of general merchandising we cannot expect to advance very far beyond present conditions. I do not say this in any criticism of you men, who are probably doing the best you can in both business and professional ways, but a druggist who in a single business room is selling paint, soda water, dry goods, stationery, school books, and innumerable other wares, and incidentally compounding preparations, will naturally not place a high value upon extensive technical education and high professional qualifications. The further development and raising of the standards of pharmacy as a profession alongside the profession of medicine are dependent in no small degree upon business conditions. I do not see an immediate solution to this problem. I do not expect that you will be so unwise as to open an exclusively professional pharmacy at present. You would soon starve to death, so as a matter of business you have to go on in the old way. But I am confident eventually things will be different. It is inconceivable that the leaders in the profession and the public will not in the near future demand educational, legal and practical standards for pharmacists as high in Indiana as in any state of the Union. Therefore, the pharmacists of Indiana ought to think of these matters seriously. While you, perhaps, cannot accomplish much as individuals, yet when you are assembled in an association like this, you should, if you believe in progress, put yourselves on record as in favor of these forward steps in your profession so that gradually the professional side of the pharmacists' business may come out from its subordinate place onto a higher plane than at present.

I should like to go about making a crusade for this thing. I believe the people of the State, did they understand, would be very desirous that progress be made in this direction so that they would recognize in pharmacy a high profession, in the hands of well educated, thoroughly trained professional men, competent to perform all the duties of their important calling. I wish that this association might discuss such questions; that you might put yourselves on record as in favor of higher standards for the qualifications of pharmacists in the State; as in favor of more thorough training and education of pharmacists in order to meet those standards; and for a more strict administration of the laws regulating pharmaceutical practice. It is true that the professional side of pharmacy has been subordinated and neglected; that the general druggists' business with its presumably profitable aspects has led even our best pharmacists to overlook the claims of their profession. For the good of the profession, as well as for the welfare of the people of the State, pharmacy ought to keep pace with the progress that has been made in medicine and every other profession. The only way this can come about is by the working of a strong consciousness of the needs of the profession, from within its ranks. I cannot say anything here that will make you do what you do not desire to do, but if your deliberations and thought are centered on this subject certainly there

will be developed in your profession a strong desire to see things move forward and upward and nobody will profit by this more than the pharmacists themselves.

I will say, in closing, that my remarks have not been made in any sense of depreciation or criticism. I understand quite well that you have puzzling problems. The pharmacists of Indiana are a loyal and competent body of men, but just in proportion as they are such they should have the ambition and desire to see their profession and its place in our State stand out more prominently and more effectively as compared with other states. When you begin to take collective pride in your profession as such, then will be the dawn of growth and development.

PHARMACY AS A HOBBY AS WELL AS AN INTEREST.*

BY CHARLES H. LAWALL.

When Bryant said, "To him who in the love of nature holds communion with her visible forms she speaks a various language," he uttered a truth which has many applications, not the least of which is, Pharmacy.

Substituting the word Pharmacy for the word Nature, in the foregoing quotation, gives a clue to the real reason why Pharmacy holds its own in spite of commercialism and other handicaps.

There are various motives which impel a man to choose a profession; one, and probably the strongest one, is self-interest. This frequently changes in later life to a realization of opportunity for service and a desire to be helpful to one's fellow-man, motives, which, as a rule, have no place in the make-up of a young man.

By far the strongest and most valuable motive, from the standpoint of the development and progress of any profession, is the one which has to do with the desire for mental development through the acquisition of knowledge.

The answer to the eternal "Why?" has been sought by individuals in all ages and out of this quest has arisen all that we prize in the shape of knowledge. Those who have contributed most largely to the progress of the past are not necessarily the ones who stand out like beacon lights as having enunciated important axioms, or laws, or discovered valuable elements, but the real credit belongs to the silent, patient, plodding workers, who investigate from sheer love of the work and who, little caring whether results have any practical value at the time, store up the material which genius later arranges into that classified coherence which men call Science.

Much of the pioneer work of this kind in Chemistry and Medicine has been done by pharmacists, whose successors too frequently see themselves frowned upon and discredited by members of both the sister professions which have been founded and developed through her help.

Much has been written regarding these matters in order to bring pharmacists to a realization of their neglected opportunities. It is doubtful whether any change has been, or could be, effected in the habits of work and of thought of older pharmacists. It is the younger members of the profession with whom the hope of advancement lies, and the responsibility for their guidance is largely in the

* Read before Pennsylvania Pharmaceutical Association, Buena Vista meeting, 1919.

hands of the Colleges, for there no longer exists the preceptor of by-gone days who guided the neophyte for a period of three years or more. His disappearance is keenly felt.

One who has his mind so set upon the commercial side of Pharmacy as to be oblivious of its history, tradition and possibilities, is not to be swayed by, nor perhaps even interested in, the following, but it is hoped that it will be read by some of the younger generation and that some will be stimulated thereby to select and encourage such applicants for entrance into Pharmacy as betray an interest in the romance and sentiment which are so closely interwoven in its scientific possibilities.

Let us take a brief survey of some of the substances of which medicines are made, which the pharmacist has more or less frequently to handle.

The tales of adventure, of conquest, of romance, the experiences of intrepid explorers, of pioneers and colonizers of lands newly discovered, of fortunes gained and lost, of mystery, superstition and witchcraft, of comedy and of tragedy, which are associated with even some of our commonest drugs, would make even a reader who read only for entertainment and stimulation, not for improvement, forsake the most daring writers of fiction.

From the Babylonians, that ancient race of mystery and culture, come the names of some of our most important metals, named by them on account of their fancied association with, or influence derived from, the better known heavenly bodies. Most of these names are only encountered in little-used synonyms; as *crocus Martis* for ferric oxide; *saccharum Saturni* for sugar of lead; Lunar caustic for silver nitrate; but it is interesting to note that the planetary name Mercury still persists for this most commonly used name of one of our metals, whose compounds are of medicinal importance and value.

Passing along the shelves of any Pharmacy and picking out at random from the titles those of more than passing interest, we find one of our best known cosmetic creams, the ointment of Rosewater or Cold Cream, credited, as to its origin, to Galen, one of the fathers of Pharmacy, who lived at about the beginning of the Christian Era, and for centuries this preparation was called *Ceratum Galeni*.

Galen's influence upon Pharmacy and Medicine was greater than that of any other single human being who ever lived, or probably ever will live. His teachings held almost undisputed sway for more than 1500 years, during part of which time, in some parts of the world, pharmacists and physicians were required to pledge themselves to follow his teachings and practice blindly and implicitly.

The names of many others of the preparations and substances used in Pharmacy are of interest in their origin and development. *Hiera Picra* means "sacred bitters," evidencing the esteem in which it was once held. *Sal Ammoniac* derives its name from the fact that it was found in the sands of the Lybian Desert near the temple of Jupiter Ammon, resulting from the decomposition of camel urine due to the many caravans which stopped at that point. The influence of the Arabians upon Pharmacy may be traced through the nomenclature; the words beginning with *al* (and sometimes *el*) being of Arabic origin, as *alkali*, *elixir*, *alcohol*, etc. In the case of the name *Alcohol* the Arabic word means finely divided and was first applied to easily diffusible volatile liquids and finally to the specific substance *alcohol*.

It is of interest to note that this earlier and original meaning persists in the title "alcoholized iron," a form of metallic iron resembling reduced iron but prepared by mechanical and not by chemical methods; the word "alcoholized" in this title signifying simply, "finely divided," and having no reference whatever to alcohol, as is mistakenly supposed by many who have handled and used it.

The Latin title *Spiritus Vini Rectificatus*, so long used for alcohol, reminds us of the original source of the alcohol of commerce, which was wine. This title, still found on older shop furniture, is not correct as applied to modern alcohol, which is the product of fermentation of any saccharine material. That the abbreviation *S. V. R.*, which was frequently employed in former times, in hastily written prescriptions, to designate this substance, is no longer intelligible, was lately instanced by a student who rendered it, in answer to an examination question "Service very rapid."

Phosphorus (light bearer), corrupted into "foxfire" by country people who see the gleam of phosphorescent decayed wood in a forest on a dark night; Antimony (against monks); Vitriol (glass like); *Sal aeratus* (gas or air producing salt); each of these names alone might furnish material for an article, yet we use them without a thought of their underlying interest and origin.

Of the many synonyms of Compound Tincture of Benzoin, which have accumulated during the centuries in which it was esteemed and used as a vulnerary, Jesuits drops and Friars balsam give it a religious association which is distinctly different from the martial thoughts called up by Balsam of Maltha, although the Knights of Malta probably used it in the crusades.

Our common substance Sodium Sulphate, now almost exclusively used in veterinary practice, was discovered in the waters of a European spring by Glauber, a German chemist, whose name appears in its synonym (*Glauber's Salt*) and so highly was it esteemed as a remedy in the early years of its use that it was called "*Sal Mirabile*," or the admirable salt.

Red Oxide of Mercury (erroneously called Red Precipitate, for it is not made by precipitation) conjures up visions of Priestley working in his home in the Susquehanna Valley with the crude apparatus which he fashioned from glass bottles, kitchen utensils and an old gun barrel, for it was from this substance that oxygen was first evolved by him in amounts sufficient to identify it and study its properties.

Morphine brings to mind Sertürner in his little apothecary shop in Eimbeck, Germany, competing, all unawares, with the French pharmacist Derosne for the honor of discovering the first alkaloid, Morphine (called then vegetable alkali).

When we come to the drugs of vegetable origin we find the greatest opportunity for memory and imagination to run riot as our eyes glance over the list; Opium bringing to mind early morning in dew-kissed fields of snow-white blooms and nodding fruits and of the care that must be taken in incising the outer surface of the capsule so as not to lose the drop or two of milky juice that subsequently hardens and becomes what was formerly called meconium, now the opium of Medicine and Pharmacy; Conium with its mousey odor, reminding us of the death of Socrates and, through that association of ideas, of Plato and the other Greek philosophers who enriched our minds and thoughts for all time with their speculations and maxims.

Myrrh, Frankincense, Cinnamon, Cloves, Nutmegs, and their like; what thoughts of caravans plodding across sandy wastes; of odorous Eastern isles; of fleets of galleys and later of sailing ships, are brought to memory. The trade in spices and precious gums and balsams has been responsible for the establishment of kingdoms and republics of olden times and of commercial rivalries more fiercely waged than any of modern times, resulting in the overthrow of dynasties and in repeated changes in the world's map, and this chapter alone is well worth perusal. How many who handle and use nutmegs, with their white powdery coating of chalk, know that this coating is now a meaningless custom dating from the days when the Dutch, who controlled the Spice Islands, dipped the nutmegs in milk of lime to prevent their germination, thus assuring a monopoly in their growth and sale for centuries?

It is to the new world that we must turn, however, for some of our most interesting drug histories:

Cinchona, a drug of mysterious origin as to the discovery of its properties, for it is not to-day, nor has it ever been, used as a medicine by the natives of the Andean Slopes where it is indigenous.

Ipecac used as a secret remedy for dysentery by a celebrated European physician, whose successes were so great that a French monarch paid him a handsome sum to divulge the name and origin of the remedy.

Sarsaparilla, once vaunted to the skies as a remedy in many chronic affections, masquerading for years under false colors as to its real value, for both its alleged therapeutic properties and its flavor were due to other drugs used in its combinations, now almost entirely discredited as a remedy of any value.

Hydrastis and Sanguinaria, the yellow and red "Puccoon" of the aboriginal American who used them for pigments as well as for their medicinal value.

Boneset, Tansy, Pennyroyal, Hoarhound; all of these conjure up visions of old-fashioned attics with bunches of dried herbs suspended from the rafters.

Fucus and Chondrus bring with them the tang of the sea and of rockbound weed-strewn coasts where surging billows warn the mariner that Poseidon never sleeps.

With these thoughts singing through one's mind, how can anyone say that Pharmacy is decadent, or that it holds no interest for its devotees? There is much and great work yet to be done and discoveries will yet be made bringing to their authors fame and possibly fortune.

Each day's work becomes a miracle to him who looks with seeing eyes into the graduate or mortar, test tube or flask, and to him who with interested mind draws near to Nature's manifestations of her innumerable laws, immutable and sometimes inexplicable. Who is there that has not time to add his quota to the knowledge of his time and of his calling, be it ever so little? Each day some new fact may be learned and recorded; untrodden paths of experimentation lie waiting for generations of pharmacists yet to come. Shall we now pass them by and leave to those of the future our responsibilities in the present?

The studying of colloids, of the sera and vaccines with their fascinating theories and illimitable possibilities; these are subjects in which any pharmacist of the present generation may be as well posted as the foremost savant of the time, for they are of such recent development that one may easily start at the beginning.

If Pharmacy sleeps, and is not yet aroused to her possibilities, it is time for her to awake, and this awakening will come, when it does come, through a realization of the infinitely interesting possibilities for development along lines of combined scientific and practical value. Let us all join hands in building more strongly for the future, by inculcating in our younger workers that abiding love for and interest in Pharmacy which shall outlast all ephemeral considerations of expediency and commercialism, except as absolute necessities. Pharmacy as a hobby adds to the happiness of the individual and can be turned to profit.

OF THE ITINERANT PHYSICIAN AND THE DIVERS MEDICINES
THAT HE CRIED IN THE STREET.*

(*From the Hebrew of Rabbi Judah Alcharisi (1165-1225).*)

BY SOLOMON SOLIS COHEN, M.D.

Saith Heman the Ezrachite:

Once I journeyed from the brook Arnon to Ba'al Gad, which is in the Valley of Lebanon, and whilst I was strolling through the open places of the city, thinking to gather from the tongues of its sages pearls of discourse, I saw a great concourse of people running and gathering from every highway and byway, and they formed a ring.

And I saw in the midst of the crowd an old man, bent like a reed, and round about him the great throng was standing.

And he stood by the gate of the market place and before him were heaped up row upon row of jars and phials filled with divers medicines—elixirs and unguents and confections. Also were piled before him great stores of plaisters and bandages and lotions, and beside him were iron vessels and forceps and a three-tined flesh-hook, and instruments for bloodletting and for cauterizing, and blades for the cutting of flesh, sharp as a two-edged sword.

And he cried aloud to all that stood before him. And thus he spake:

"Hear me, ye peoples, and give ear unto me, O ye multitude of nations. I am he that cometh from the affrays of fate, that hath escaped from fearsome perils, from howling tempests and from raging waters. Over me have passed numberless dangers. Mine eyes have beheld wonders and mine ears have heard great and marvelous sayings.

"From the land of Elam did I set out aforetime and hither and thither have I journeyed, to and fro the ends of the earth, seeking out all the great sages of the world. Thus have I learned science from the mightiest of physicians. I have poured water over the hands of the wisest of the wise, and ever thirstily did I drink in their words. Mine instruction have I received from their living lips, not from their lifeless books. So have I attained unto their most cherished secrets and all their wisdom hath been revealed unto me.

"And now, with the help of God, I can heal wounds, I can repair breaches, I can bind sores, I can relieve distress; yea healing is to be found with me for every pain and burning that affects the body, and for the bites of vipers and wild beasts. In mine hand is a plaister for every fresh bruise and if a man hath been bitten by

* Reprinted from *The Medical Pickwick*.

any manner of serpent, let him come unto me and give heed unto my words; so shall I be for him like unto the brazen serpent of Moses, that whosoever hath been bitten and looketh upon it shall live!

"Here have I a powder that I have ground and pestled until it is passing fine, wherewith I can illuminate the darkened vision and open the unseeing eye. Behold now a remedy to make the barren woman fertile and to cause her to conceive. And I have a medicine to give warmth unto frigid women. Yea, I have a cure for every ill, and as to any pestilence that hath not been stayed and hath not been turned aside, lo, I am he that hath been raised up to give help against it. Through the power of God I can make the lame to walk, and can restore sight unto the blind, so that he that halted shall leap like the wild antelope, and he that was led shall go whithersoever he will.

"Also for every disease and every affliction that oppresses the heart, that weigheth a man down until he is crushed, I have a remedy. I can take it away and remove it, and put quiet and tranquility in its place.

"Behold now in mine hand is a pigment for all them whose tears overflow and for every eye that is turned over, to dry up its waters and to shut up its rains in its heavens.

"And I have a bandage and a rare liniment for every fast-bound foot, and for every broken bone; and if there be one upon whom cometh in the darkness of the night pain and sore distress so that he crieth out in his agony, but there is none to give him relief, in my hand is a remedy for his disease, so that all who see him shall say, 'But where is the sick man?'

"And for all those whose feet are turned under them so that they cannot stand, and for every man that hath a broken leg or a broken arm, or a painful twisting of his neck, or a cataract in his eye, or a scurvy or an itch, in my hand is their healing.

"I have medicines for every chronic ill, and for consumption and ague and for flaming fever burning in the joints, and for spreading leprosy and boils and ulcers and for falling of the hair, whether it be a baldness of the forehead or a baldness of the crown. As for toothache and harelip and trembling of the hands and running of the bowels, and weakness of the loins and shaking of the knees, through the help of Him that dwells in Heaven, I can cure them all.

"And if there be one who is demented and falleth upon his belly, and hath a strangling in his throat, so that his tongue hangs out from his mouth and his spittle runs down upon his beard, I can remove his madness.

"And I have cures for epilepsy and for melancholy, for the heart that is weak and cast down, and for sores of the mouth, and for the bites of spiders and of scorpions, and for jaundice or the green sickness, and for every wasting illness, for torn sinews and for broken limbs, and for the man whose thighs are crooked or who hath a palsy, so that his legs refuse to walk, and for the leper, and for him whom God hath smitten with strange evils.

"If any woman hath an issue, I can cleanse her from her impurity and purify her from her separation. Also for the man that hath an issue I have a remedy, and I can restore him and cause the straitness of his heart to depart from him.

"Verily as to all the diseases that I have named, and also those that I have not named, their cure is in my hands. And behold now my Witness is

in heaven, and my Attest is in the heights. If there be one that hath heard my words and believeth not, let him come and prove me; for as I have spoken so will he find me."

Saith he that telleth the tale:

And when the people heard his speech they were drawn to him by the honey of his words, and were caught like fishes in his net. And they surged about him in thousands and in myriads, and in great hosts, wave after wave, with all kinds of afflictions, and with severe and inveterate diseases. Eagerly they besought him, the great and the lowly, the rich and the poor; and slaves together with their masters. And among them were the blind and the lame, they that were bald of forehead and they that were bald of crown, and they that had spreading sores. This one sighed and groaned, and that one cried out in bitterness of spirit, and countless of them brought urine of strange kinds, red and black and of divers colors, and in all sorts of vessels. And folk came that were broken out with eruptions and spotted yellow and red. So they gathered before him, men and women, the young and the old, this one shrieking of his pain and that one crying out the anguish of his heart; this one telling of her weakness and her distress, and that one displaying her wounds and her bruises. And he gave ear unto all of them, and he distributed his medicines among them and spake unto them vain words, beguiling them with his false promises. And he spared not to take their money out of their hands until he had filled his pouch and his purse. Then much was his rejoicing and his weariness departed, for he had found a great market for his wares, and had exchanged for good money his worthless drugs.

Saith he that telleth the tale:

And I was not able to approach unto him until the crowd had departed from about him. Then I drew nigh unto him and regarded him carefully, and I said, "I adjure thee by the One God, beside Whom there is no other, art thou not Heber, the Kenite?" and he laughed at my words, and said unto me, "I am indeed thy dear friend, thy boon companion." Then, albeit my heart rejoiced in his company, I sat down before him and reprovéd him, saying, "How, now? Shall a man such as thou lower himself after this fashion—debasement his honor to play a rogue's game in the public street." But he waxed wroth at my words, and said unto me:

"O thou beloved of my soul, pure of heart and faithful,
Whose words are sweet unto my palate, as honey and as manna,
Truly I go about to seek a living,
Even as God in His mercy may provide it for me.
For the time¹ is evil; hard as a rock have I found it
And in its heart there is no pity for my poverty.
Therefore, when thou art minded unto chiding,
Chide not me, but chide the time."²

Then was I astonished in my heart at his wit and his cunning, and I found no answer to return unto him. And whilst I searched in my mind, hither and yon, to find fitting words, behold, he had vanished.

The foregoing forms the 30th "Gate" (*i. e.*, Chapter) of the author's "Tachkemoni," a Hebrew work upon the model of the Arabic "makame" and thus consisting of a series of narratives

¹ Or "fate is froward."

² Or "chide ill-fate."

in rhyming prose, embodying, or concluding with, one or more stanzas of rhymed and metrical verse. The translator has not attempted to reproduce the form of the original. A brief example of such a reproduction, taking only the ordinary liberties with the text, may be given for illustration. The exordium of the quack, for instance, goes somewhat thus:

"I am he that cometh from the days of old—that hath escaped from dangers dire and manifold—from howling tempest and raging wave—perils numberless to daunt the heart of the brave * * * From the land of Elam I set forth—to journey unto the very ends of the earth—seeking out all the sages of highest worth—" etc., etc.

Unlike most of the famous Hebrew writers of Moorish Spain and Africa, Charizi was not a physician, but purely a man of letters. There is no indication of any desire for technically accurate terminology in this "skit," and indeed there is no call for it. The peculiar groupings of diseases in the quack's discourse are apparently associations of rhyme, rather than reason.

UNTAXING INDUSTRY.*

BY CHAS. G. MERRELL.

I have often wondered why it was that when a machine is first invented, it is always complicated with cams, springs and numerous other parts that are afterwards eliminated in the improvements that follow.

Nearly every invention, when finally perfected, is simplicity itself as compared with the original complicated and cumbersome affair that constituted the original expression of the inventor's ideas.

Once in a while, a simple and really useful invention appears and everybody wonders why he did not think of it before. So it is with our taxation machine. Now that the new census is about to be taken, we are coming to realize that we have been using very cumbersome and expensive methods for collecting the decennial statistics of the progress and growth of our country. The simplicity of the draft machinery has thrown a new light on the possibilities of simplifying the census.

* * *

Our taxation machinery from the very beginning has been cumbersome, expensive and terribly wasteful and has been wrong in almost every particular, largely because the subject was not approached from the right point of view.

Taxation, according to the ability to pay, is wrong in principle, and strange as it may seem, it results in taxes falling heaviest upon those least able to pay and, at the same time, it penalizes industry and thrift and encourages idleness on the part of the wealthy, who find it more profitable under the present system to exploit the industry of others, and on the part of the poor, who become so discouraged with efforts to secure a competency by honest toil, that many throw up their hands and give up the fight with the exclamation "What's the use?"

Anyone who will consider the subject for a moment, without prejudice and out of the rut of old conceptions, will assent at once to the fundamental idea that taxes are necessary for the support of the Government and should, therefore, be

* From *Ohio Site Taxer*, June, 1919. See Mr. Merrell's letter under Correspondence in this issue of the JOURNAL.

paid out of the values created by the Government, in proportion as the individual citizen utilizes those values to the exclusion of his neighbor. But how different this simple formula of taxation from the complicated systems of the past or present.

* * *

In the last century they taxed windows in houses in England because windows were looked upon as luxuries, and it was supposed the people who could afford them could also afford taxation. The actual result was an increase of tuberculosis, because the poor who could not afford both windows and the taxes which went with them, had to do without them and they and their children suffered from lack of light and air; and so it is with other taxes of a similar kind and so it is with the taxes today in the drug trade.

Medicines which are sold by the druggist to those who are too poor to have a physician, are taxed; these represent the modern phase of household remedies, such as our grandparents used to such good purpose in treating the simple ailments, which even the physician of today regards as beneath his attention. Cosmetics for the toilet, to aid in the external appearance, which modern civilization has encouraged, are all taxed as though they were something that ought to be shunned, for we must not forget that taxation discourages use. This is recognized even by those who framed the present excise tax laws, where they have excluded inexpensive wearing apparel from taxation and have taxed the same articles when sold above a certain price, because of superior quality or added beauty.

We spend thousands of dollars every year for boards of health, sanitary measures, public health service, and yet the wisdom of our legislators at Washington can go no farther than to select the drug trade as a special object of taxation, as there have been imposed on articles handled by the druggist some nine or ten different taxes that do not apply to other lines of business.

* * *

The stifling effect on industry of any of the present forms of taxation is illustrated in a news item, which tells us that in the British empire it is now proposed to establish preferential rates on British goods. Japan is contemplating government subsidies and immunity from taxation on certain industries that are to be encouraged. If immunity from taxation encourages industry, the converse must be true—that taxation discourages industry, and I need not tell anyone that this is just the thing we do not want to do. The one thing above all others that is necessary at this time in this reconstruction period is to encourage industry. Therefore, let us take the taxes from industry.

* * *

But if we discard all of our present taxes, you ask where can we raise the revenue for supporting the Government? We come then to the simplified machinery of taxation (and it is simplicity itself) as outlined in the writings of Henry George. He proposed that instead of taxing industry or the products of industry, and it is the same thing, whichever way we do it, to levy one tax on land values and on these alone. Land is not the product of labor or industry. It is the common gift of the Creator to all mankind. But land has no value, except as it is made by the community and as we would preserve inviolate the products

of labor to the laborer so we would preserve to the community the values which it creates.

It is a remarkable fact that these community values or site values of land increase in proportion as the needs of the community develop and it would seem to be a provision of Providence that this site value or community value was created to meet the needs of a growing community, such as city government with its fire and police protection and multiplicity of other governmental functions.

Another advantage of this single tax on land values is that it does not increase the price of land to those who wish to use it as is the case when we tax any other commodity, but it decreases the cost of land, whether it be employed for farms, for homes or for business, because it brings more land into use instead of keeping more than half of it held out of use; it increases industrial opportunities and at the same time lowers prices on the basic needs of the people.

The drug trade has spent thousands of dollars and years of the time of its active members in trying to protect itself against the unjust taxation which has been levied upon this particular industry. In fact, the fight at Washington and often in our state legislatures has been to shift the burden of taxation from one point to another, affecting one industry after another in an adverse manner.

Why not let us all get together and work for a simplified, just and equitable form of taxation, which will free industry from the burden under which it has labored these many years, which will be of benefit to everyone in the community seeking to earn an honest livelihood by honest efforts and will affect no one but the land speculator, who is, after all, but an obstruction in the progress of our country and a burden upon industry as a whole?

* * *

It is significant that in the platform of four great labor parties is found practically the same plank, which is quoted below from one of the declarations of the so-called "Labor's fourteen points:"

"Payment of the current expenses of government by a system of taxation of land values which will stimulate rather than retard production."

The simple plan of Henry George, which, twenty years ago, was regarded as the theory of a dreamer, is now adopted as a principle by the leading representatives of labor in this country, and, on the other hand, is being recognized by an increasing number of manufacturers and merchants as the only way out of the difficulties that have hampered industry in the years gone by. Not only is the plan simple but its execution would be more economical than any other form of taxation and less subject to chicanery and bribery, because the records would be so simple and open any inequality would be obvious.

Every thinking citizen who wishes to be free of the eternal squabble over new forms of taxation should study the teachings of Henry George. If he does this with an open and intelligent mind, he will, I am convinced, become an ardent disciple of the single tax and should also become one of its apostles, preaching to others what he himself believes, that in the single tax will be the best solution of the problem of taxation.

REPORT OF THE DRUG MARKET FOR 1918.*

BY H. B. FRENCH.

The armistice in the latter part of 1918 was very unexpected and was certainly an abrupt ending of the war and, we think, surprised everyone. The certainty of peace made it immediately necessary to review the entire situation. The President and the Senate were called upon to negotiate terms of peace. The heads of the various governments were called upon to bring back the troops, to supply food and other necessities where they were most urgently needed, and the termination of slaughter and destruction is so great a blessing that it behooves everyone to grapple with the difficulties of reconstruction with determination, courage and, above all, with charity.

It is difficult, in considering the events that have taken place during the past four years, to divert the mind solely to economic results and economic possibilities, for the reason that the mind is fascinated by considerations of political and, more especially, of social changes.

Although the effect on business of the armistice is of secondary importance, it will be acknowledged by all that the situation should be carefully considered by business men; first, because it is a matter which involves the livelihood of thousands of workers whose happiness and welfare depend, to some extent, on the ability shown by their employers and on their policies, and, secondly, because the restoration of business to healthy conditions on a wise basis is largely the means by which the suffering people of Europe will be enabled to reestablish themselves.

America went into the war to "make the world safe for democracy." This work has still to be accomplished, as the fight for democracy against autocracy has, in certain parts of the world, assumed portentous dimensions. It is true that the autocracy which threatens the peace of the world is the autocracy of the gutter, but its object is the destruction of representative government, in which every citizen is protected in his right of individual expression and of concerted expression for translating those expressions into law so long as the citizen acts within the limits of the law.

This disturbance, which is political and economic, as well as social, is made more threatening because of the terrible condition of the people in Europe. Mr. Hoover recently made the statement that hundreds of thousands of people would starve to death during the next few months even if food is plentiful, owing to lack of transportation. This terrible condition renders the starving desperate and makes them resort to any means whatever that may give them relief. It encourages production as the worker is not selling his product, it reduces the morale so that the individual is not willing to work, and the results are cessation of work, of production and starvation. This situation will and must, in time, be overcome, and while we feel sure that a better world will be established on the suffering through which the present generation is going, yet we must recognize that these hoped-for results require patience, sacrifice and courage.

The immediate result on our own department of business, as in other depart-

* From Report of Committee on Trade Interests of Pennsylvania Pharmaceutical Association, presented at Annual Meeting, June, 1919.

ments, was that everyone ceased to buy except from hand to mouth. It was necessary to readjust contracts made by the Government, to readjust manufacturing establishments to new uses, and to dispose of huge accumulations of products then in the hands of the different governments.

It was recognized, of course, that chemicals would be the line of manufactured products that would be most quickly and severely affected by the termination of the war, and this has been evidenced by the course of prices since the armistice was signed. We, therefore, may dismiss chemicals by saying briefly that in a few cases they have already reached normal prices, but that the general tenor of the markets will for a long time to come, with an exception now and then, be downwards.

There is a very different story, however, with crude products. The production of these products is being affected by political disturbances all over the world, by difficulties of transportation which are gradually being removed and by financial conditions in various countries which are sources of supply for important products. Germany, Austria, the Balkan States, Russia, Turkey, Asia Minor, China and India all are suffering in one way or another. Indeed it is stated that the lives of many millions of people in India are threatened by famine and that it is possible that the loss of life because of the lack of the necessities of life may be greater in India this year than the entire destruction that has taken place on account of war.

American crude drugs are advancing owing largely to the lack of labor and the high cost of labor, which means that the labor customarily devoting itself to the collection of indigenous drugs is being employed in other occupations. There are, of course, some notable exceptions.

Opium was kept in storage in Asia Minor for several years and a very large stock has been accumulated. As soon as possible holders rushed as much of their product as they could ship to the El Dorado of America so that they might realize something to meet their present necessities; consequently, there has been a very important reduction in opium, although the manufacturers of the derivatives of opium have steadfastly maintained the prices of those products.

Glycerin is another notable exception, having fallen to about one-third of its highest price.

Castor Oil is another article manufactured from a crude product that has shown a decisive decline.

It must be remembered that as soon as peace is signed the markets of one hundred and fifty peoples will be opened. While the buyers are poverty-stricken, and on the verge of starvation, still to the utmost of their ability, they will supply themselves with those other necessities of life of which they have been so long deprived. This is certain to have a decided effect on prices.

Our readers, however, may reasonably base their action on the expectation that during the balance of this year the tendency of chemicals will be to lower prices and of crude drugs to remain as at present or to advance.

We send you some comparative prices which you may like to insert in your report. Please note that the prices in the first column are for 1914 and in the second column for 1919. Please note also that these prices are for large quantities.

	1914.		1919.
Agar agar No. 1 (Japanese Isinglass).....	\$.45		\$.80
Agaric, white.....	.10	(Nominal)	3.00
Areca Nuts.....	.05		.25
Balm of Gilead Buds.....	.25		1.25
Russian Cantharides.....	2.00		2.75
Spanish Ergot.....	.75		3.25
Grains of Paradise Seed.....	.15		1.10
Russian Isinglass.....	3.50		10.00
U. S. P. Lupulin.....	2.25		6.00
Cascara Sagrada.....	.08		.18
Cinchona Bark, red.....	.20		.55
Sassafras Bark, select.....	.16		.35
Crushed Soap Bark.....	.10		.23
Wild Cherry Bark, select.....	.08		.22
Cubeb Berries.....	.38		1.40
Fish Berries.....	.03 ¹ / ₂		1.25
Juniper Berries.....	.03		.12
Arnica Flowers.....	.12		.60
Insect Powder.....	.22		.50
Malva Flowers.....	.50		2.50
Short Buchu Leaves.....	1.40		2.00
Digitalis Leaves.....	.08		.30
Henbane Leaves.....	.08		.65
Henna Leaves.....	.13		.30
Horehound Leaves.....	.07		.16
Laurel Leaves.....	.03 ¹ / ₂		.10
Pulsatilla Leaves.....	.30		1.50
Alexandria Senna, whole leaf.....	.35		.70
Alexandria Senna, siftings.....	.13		.30
Tinnevelly Senna, No. 1.....	.11		.16
Stramonium Leaves.....	.08		.20
Uva Ursi Leaves.....	.04		.10
Aletris Root.....	.26		.60
Alkanet Root.....	.06		2.25
Althæa Root.....	.22		.80
St. Vincent Arrowroot.....	.08		.21
Blood Root.....	.09		.35
Burdock Root.....	.07		.18
Colchicum Root.....	.11		1.75
Calumba Root.....	.06		.30
Galangal Root.....	.08		.24
Gentian Root.....	.06 ¹ / ₂		.14
Hellebore Root.....	.10		.23
Ipecac Root.....	1.45		2.75
Jalap Root.....	.21		.50
Lady Slipper Root.....	.24		.90
Licorice Root, in bales.....	.04 ¹ / ₂		.18
Musk Root.....	.12		1.75
Anise Seed.....	.10		.22
Canary Seed.....	.06 ¹ / ₂		.13
Caraway Seed.....	.08		.30
Celery Seed.....	.18		.46
Colchicum Seed.....	.20		2.50
Foenugreek Seed.....	.03		.08
Poppy Seed, Russian.....	.06 ¹ / ₂		.75
Quince Seed.....	.50		1.15

	1914.	1919.
Strophanthus Seed, Kombe.....	.40	1.70
Sun Flower Seed.....	.04	.20
Worm Seed, Levant.....	.46	.70
Egg Albumen.....	.40	2.25
Potassium Bichromate.....	.07	.22
Citric Acid.....	.53	.98
Oxalic Acid.....	.07 ¹ / ₂	.27
Tannic Acid.....	.50	1.40
Ammonia Alum.....	.01 ³ / ₄	.04 ¹ / ₄
Ammonia Water, 26°.....	.04 ³ / ₄	.08
Sal Ammoniac, white, granulated.....	.06 ¹ / ₂	.13
Blue Vitriol.....	.04 ¹ / ₂	.07 ¹ / ₂
Copperas.....	.65 per 11 lbs.	.01 ¹ / ₂ per lb.
Cream of Tartar.....	.24	.55
African Ginger Root.....	.05	.16
Acetanilide.....	.22	.37
Acetphenetidin.....	.80	2.40
Alcohol.....	2.48	4.65
Antipyrine.....	.22	15.00
Bay Rum.....	1.55	2.35
Borax.....	.04	.08
Caffeine, alkaloid.....	3.65	7.00
Castile Soap, white.....	.12	.42
Castor Oil.....	.08 ¹ / ₂	.22
Chloroform.....	.21	.30
Chalk, precipitated.....	.04	.06
Cocaine Hydrochloride.....	2.60	9.50
Codeine Sulphate.....	5.50	9.00
Cod Liver Oil, Newfoundland.....	62.50 per bbl.	85.00
Epsom Salt.....	.01	.02 ¹ / ₄
Silver Gelatin.....	.26	1.05
Glycerin.....	.17 ¹ / ₄ (1918, \$.60)	.22 now
Magnesium Carbonate, Powdered.....	.04 ¹ / ₂	.14 ¹ / ₂
Menthol.....	2.95	6.50
Calomel.....	.60	1.59
Sugar of Milk.....	.11	.50
Morphine Sulphate.....	4.95	11.00
Silver Nitrate.....	.34	.72
Podophyllin.....	3.00	6.50
Potassium Permanganate.....	.10	.60
Quinine Sulphate.....	.26	.80
Russian White Paraffin Oil, medicinal.....	.45	1.00
Saccharin.....	1.15	3.75
Santonin.....	30.00	50.00
Sodium Benzoate.....	.24	.85
Thymol.....	3.00	7.00
Socotrine Aloes.....	.22	1.00
Asafetida, gum.....	.25	4.50
Camphor.....	.44 ¹ / ₂	1.50
Gamboge.....	.60	2.00
Guaiaac.....	.27	1.10
Mastic.....	.22	1.15
Myrrh.....	.16	.90
Olibanum, tears.....	.10	.20
Sandarac.....	.19	.50
Styrax, artificial.....	.18	1.65

	1914	1919
Tragacanth, gum.....	1.20	3.50
Oil of Clove.....	1.00	2.25
Oil Coriander Seed.....	7.00	60.00
Oil of Cassia.....	.85	2.10
Oil of Cubeb.....	2.75	8.25
Oil Lavender Flowers.....	3.75	7.50
Oil of Mustard, artificial.....	1.25	10.75
Oil of Peppermint.....	2.75	10.00
Oil of Rose.....	10.00	22.00
Oil Rosemary Flowers.....	.70	1.20
Oil Sandalwood.....	4.65	11.25
Oil Sassafras, natural.....	.55	1.95
Oil Sweet Birch.....	1.45	5.50
Bayberry Wax.....	.30	.42
White Beeswax.....	.48	.66
Japan Wax.....	.11	.19
Paraffin, 120°.....	.03 ¹ / ₂	.12 ¹ / ₂
Cocoonut Oil.....	.11	.20
Linseed Oil.....	.59	1.75
Turpentine.....		1.25

The above comparison will give a fair idea of the difference between the prices in 1914 and 1919.

AMERICAN CHEMICAL SOCIETY MEETING AT PHILADELPHIA.

The fifty-eighth meeting of the American Chemical Society, which convenes next month in Philadelphia, will be the most significant which has ever been held. Officers of the Chemical Warfare Service of the United States will be present to tell of developments which came under their personal observation and many new applications of new-found knowledge will be suggested.

The provisional program which has been issued from the office of the secretary contains many indications of the far-reaching interest of the discussions and papers.

The recently organized dye section will have its first meetings. The taking over of 4,500 patents by the Chemical Foundation, Inc., the development of new processes, and the general policy with regard to this industry will draw attention not only of the members of the profession but of all divisions of manufacturing and chemistry.

Prominent speakers will discuss reforms in our patent laws in a symposium which has been arranged in which the newly formed dye section and the pharmaceutical division will unite with the division of industrial chemists and chemical engineers.

An elaborate program is under consideration by the division of Agricultural and Food Chemistry, for the chemist in these days, when the high cost of living must be put down in some way, will be called upon for suggestions and advice.

PROVISIONAL PROGRAM FALL MEETING AMERICAN CHEMICAL SOCIETY, PHILADELPHIA, SEPTEMBER 2-6, 1919.

Tuesday, September 2.

4.00 P.M. Council meeting, Bellevue-Stratford. 6.30 P.M. Dinner to the Council at the Bellevue-Stratford, tendered by the Philadelphia Section.

Wednesday, September 3.

10.00 A.M. General meeting, Bellevue-Stratford ballroom. Address of welcome. Response. Business meeting. General addresses. 2.00 P.M. Divisional meetings.
8.00 P.M. Smoker, Scottish Rite Hall, Broad and Race Streets, Philadelphia.

Thursday, September 4.

Morning. Divisional meetings. Afternoon. Excursions. 8.30 P.M. President's address, Museum of the University of Pennsylvania.

Friday, September 5.

Morning and afternoon. Divisional meetings. 7.00 P.M. Banquet, Bellevue-Stratford ballroom.

Saturday, September 6.

Morning. Excursions. Afternoon. Automobile trip to Valley Forge.

AMERICAN PHARMACEUTICAL ASSOCIATION.

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<i>Honorary President</i> —OLIVER F. FULLER.....	310 W. Washington St., Chicago, Ill.
<i>First Vice-President</i> —F. W. NITARDY.....	66 Orange St., Brooklyn, N. Y.
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<i>Editor of the JOURNAL</i> —E. G. EBERLE.....	253 Bourse Building, Philadelphia, Pa.
<i>Local Secretary</i> —HUGO H. SCHAEFER.....	115 W. 68th St., New York, N. Y.

OFFICERS-ELECT FOR 1919-1920.

<i>President</i> —L. E. SAYRE.....	Lawrence, Kas.
<i>First Vice-President</i> —THEODORE J. BRADLEY.....	70 St. Botolph St., Boston, Mass.
<i>Second Vice-President</i> —HARRY WHITEHOUSE.....	Johnson City, Tenn.
<i>Third Vice-President</i> —E. FULLERTON COOK.....	145 No. 10th St., Philadelphia, Pa.
<i>Members of the Council</i> {	J. H. BEAL.....801 W. Nevada St., Urbana, Ill.
	CHARLES H. LAWALL.....39 So. 10th St., Philadelphia, Pa.
	S. L. HILTON.....1033 22nd St., N. W., Washington, D. C.

OFFICERS OF THE HOUSE OF DELEGATES.

<i>Chairman</i> —OTTO F. CLAUS.....	3513 Herbert St., St. Louis, Mo.
<i>First Vice-Chairman</i> —S. L. HILTON.....	1033 22nd St., N. W., Washington, D. C.
<i>Second Vice-Chairman</i> —E. F. KELLY.....	Lombard and Green Sts., Baltimore, Md.
<i>Recording Secretary</i> —JEANNOT HOSTMANN.....	115 W. 68th St., New York, N. Y.

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<i>Chairman</i> —LEWIS C. HOPP.....	1104 Euclid Ave., Cleveland, Ohio.
<i>Vice-Chairman</i> —SAMUEL L. HILTON.....	1033 22nd St., N. W., Washington, D. C.
<i>Secretary</i> —JOSEPH W. ENGLAND.....	415 No. Thirty-third St., Philadelphia, Pa.

PROGRAM FOR NEW YORK CITY MEETING.

Monday, August 25.

- 9.30 A.M. National Association Boards of Pharmacy.
 2.00 P.M. National Association Boards of Pharmacy.
 American Conference of Pharmaceutical Faculties.
 8.00 P.M. National Association Boards of Pharmacy.
 American Conference of Pharmaceutical Faculties.

Tuesday, August 26.

- 9.00 A.M. Council Meeting.
 National Association Boards of Pharmacy.
 American Conference of Pharmaceutical Faculties.
 3.00 P.M. First General Session of Association.
 4.30 P.M. Committee on Nominations.
 8.15 P.M. Adjourned First General Session of Association. Award of the Joseph P. Remington Honor Medal.
 9.15 P.M. Vaudeville Entertainment.

Wednesday, August 27.

- 9.00 A.M. Auto Ride to Botanical Garden and other points of interest.
 1.30 P.M. Scientific Section, first session.
 Section on Education and Legislation, first session.
 Section on Practical Pharmacy and Dispensing, first session.
 3.30 P.M. House of Delegates, first session.
 7.30 P.M. Council Meeting.
 9.30 P.M. President's Reception and Ball.

Thursday, August 28.

- 9.30 A.M. Commercial Section, first session.
Historical Section, first session.
Scientific Section, second session.
- 10.30 A.M. Women's Section, first session.
- 12.00 Noon Alumni Luncheon.
- 1.30 P.M. House of Delegates, second session.
- 2.30 P.M. Section on Education and Legislation, second session.
Section on Practical Pharmacy and Dispensing, second session.
- 4.00 P.M. Joint session of American Conference of Pharmaceutical Faculties and Section on
Education and Legislation and Boards of Pharmacy.
- 4.30 P.M. Council Meeting.
- 8.00 P.M. Second General Session of Association.

Friday, August 29.

- 9.30 A.M. Historical Section, second session.—Address by Dr. H. M. Whelpley.
Commercial Section, second session.
Scientific Section, third session.
- 10.30 A.M. Women's Section, second session.
- 1.30 P.M. Boat Ride up the Hudson and then to Coney Island.
- 2.00 P.M. Council Meeting (Reorganization Meeting). On Board of Boat.
- 8.30 P.M. Banquet at the Balconades, Luna Park, Coney Island.

Saturday, August 30.

- 9.00 A.M. Council Meeting.
- 10.00 A.M. Final General Session of Association.
- 1.30 P.M. Luncheon.
- 3.00 P.M. Seeing down-town New York.

ORDER OF BUSINESS FIRST GENERAL SESSION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Opening of the Convention by the President.

President's address may then be read, after which the Council shall report the list of properly accredited delegates.

Reports of Committees: Read by titles, synopsis, or in full, and laid on the table for future consideration. Reading of the minutes of the Council, in abstract.

Roll call of States, the Territories, District of Columbia, and the Province of Canada. Two members from each to be appointed on the Committee on Nominations. The President shall appoint five members from the Association-at-large to act with this Committee.

Incidental Business.

SECOND GENERAL SESSION.

Call to order by the President.

Reading of minutes of previous session by the Secretary.

Report of Committee on Nominations.

Reading of the Minutes of the Council.

Reading of Reports of Treasurer and General Secretary.

Reports of Standing Committees.

Reports of Special Committees.

Incidental Business.

Adjournment subject to the call of the President.

HEADQUARTERS—HOTEL PENNSYLVANIA.

Members should obtain information relative to train rates from their Local Railroad agent. The Pennsylvania R.R. depot in New York is directly connected with the Hotel Pennsylvania.

All meetings will be held on the Ballroom floor, Section meetings in Parlors, A, B, and C, and the General Sessions in the Banquet Hall. These rooms all adjoin each other and are very conveniently located.

The rates at the Hotel Pennsylvania are as follows:

ROOM RATES—HOTEL PENNSYLVANIA.

At Seventh Ave., 32d to 33rd Sts., Opposite Pennsylvania Terminal.

Rooms with Single Bed (for one) \$3.00, \$3.50 and \$4.00.

Rooms with Double Bed (for one) \$4.00, \$5.00 and \$6.00.

Rooms with Double Bed (for two) \$5.00, \$6.00 and \$7.00.

Rooms with Twin Beds (for one or two) \$6.00, \$7.00 and \$8.00.

Parlor Suites: \$12.00 and up.

Every room has private bath and circulating ice-water and other conveniences.

About Reservations:

Reservations should state kind of room accommodations desired, day and date, and if possible the hour of arrival. If a room at the rate requested is not available, a room nearest that rate will be reserved.

Local Committees.

Chairmen of Committees:

Local Secretary.....Hugo H. Schaefer, 115 West 68th St., N. Y. City.

Entertainment.....Jeannot Hostmann.

Registration.....Gustave Horstmann.

Reception.....Jacob Diner.

Publicity.....Ezra J. Kennedy.

Hotel.....Charles Fischer.

Ladies.....Mrs. Robert S. Lehman.

Finance.....Theodore R. L. Loud.

Treasurer.....Clarence O. Bigelow.

PROGRAMS OF THE SECTIONS.

The programs of the Sections are still incomplete; those that have been submitted are tentative; all of them will be completed prior to the Convention.

SCIENTIFIC SECTION.

Officers: *Chairman*, E. N. Gathercoal; *First Vice-Chairman*, C. B. Jordan; *Second Vice-Chairman*, C. O. Ewing; *Secretary*, A. G. DuMez.

Sessions: Wednesday, August 26, 1.30 P.M.; Thursday, August 28, 9.30 A.M.; Friday, August 29, 9.30 A.M.

ORDER OF BUSINESS OF FIRST SESSION.

1—Chairman's Address.

2—Secretary's Report.

3—Report of Standing Committees and Committees of the Association which report to this Section.

4—Nomination of Officers.

5—Miscellaneous Business.

6—Reading of Papers.

Wednesday, August 27, 1.30 p.m., First Session.

PAPERS.

1—The Keeping of Biological Products. John F. Anderson.

2—Some Observations Concerning the Origin and Evolution of Pharmacy and Drug Therapeutics. F. E. Stewart.

3—A Final Report of the Constituents of Gelsemium. Lucius E. Sayre.

4—Urorosein. J. Atlee Dean.

5—Oral Hygiene and Oral Antiseptics. Wm. F. Gidley.

6—Chloramine Products: Their Manufacture and Use. Isaac F. Harris.

7—The Germicidal Value of Mercuric Iodide Alone and Associated with Soap. H. C. Hamilton.

8—An Investigation of the Accuracy of the So-called Dispensing Tablets. K. F. Ehrmann and Jos. W. E. Harrison.

Thursday, August 28, 9.30 a.m., Second Session.

- 1—The Solubility of Some Soluble Oils in Weak Alcohol. Horatio C. Wood, Jr.
- 2—Oil of Sandalwood. Azor Thurston.
- 3—The Permanence of Alkaloidal Fluidextracts and Tinctures. W. L. Scoville.
- 4—The Permanency and Deterioration of Some Vegetable Drugs Twenty-five Years of Age. E. N. Gathercoal.
- 5—Deterioration of High Test American Digitalis. J. P. Snyder.
- 6—Pharmacodynamics in Schools and Colleges of Pharmacy. A. R. Bliss, Jr.
- 7—Preliminary Note on a New Pharmacodynamic Assay Method. Paul S. Pittenger.
- 8—Digitalis Standardization by the Cat Method with Some Suggested Modifications. L. W. Rowe.
- 9—Maintaining Frogs for Test Purposes. L. W. Rowe.
- 10—The Biologic Test of Digitalis. Robert A. Hatcher.
- 11—The Standardization of Blood Coagulants. H. C. Hamilton.
- 12—A Suggested Change in Technique of U. S. P. Assay of Opium. H. W. Jones.
- 13—Laboratory Notes. Geo. E. E'we.

Friday, August 29, 9.30 a.m., Third Session.

- 1—Why Does the Pharmacopoeia? Wilbur L. Scoville.
- 2—Symposium on U. S. P. Revision. C. L. Alsberg, Chas. H. LaWall, Henry Kraemer, A. R. L. Dohme, G. D. Rosengarten, *et al.*

SECTION ON EDUCATION AND LEGISLATION.

Officers: *Chairman*, W. F. Rudd; *Secretary*, C. A. Dye; *Associates*, William Mansfield, E. L. Newcomb and W. H. Ziegler.

Sessions: Wednesday, August 27, 1.30 P.M.; Thursday, August 28, 2.30 P.M. Joint Session with American Conference of Pharmaceutical Faculties and National Association of Boards of Pharmacy, 4.00 P.M.

PROGRAM.

The tentative program of the Section on Education and Legislation as arranged to date is as follows: One whole session will be devoted to a Symposium on U. S. P. Revision as follows:

- 1—Scope of the Revision. C. H. LaWall and Henry Kraemer.
- 2—Who Shall Do the Work and Why? Chas. E. Caspari and R. P. Fischelis.
- 3—Methods of Saving Time in Revision. W. G. Gregory, Jacob Diner and W. L. Scoville.
- 4—U. S. P. and N. F. Financing. A. R. L. Dohme, J. A. Koch and H. M. Whelpley.
- 5—Best Methods of Getting Cooperation among the Various Interests Taking Part in the Revision. E. Fullerton Cook and J. M. Francis.

Other papers to be presented are as follows:

- 1—President's Address.
- 2—Secretary's Address.
- 3—Pharmaceutical Education and Opportunities. H. J. Goeckel.
- 4—The Minnesota Pre-Requisite Law. E. L. Newcomb.
- 5—The Indiana Pre-Requisite Law. Burton Cassaday.
- 6—Where are College Graduates Ten Years After Leaving College? Miss Zada M. Cooper.

SECTION ON PRACTICAL PHARMACY AND DISPENSING.

(PHARMACOPOEIAS, FORMULARIES AND STANDARDS.)

Officers: *Chairman*, R. W. Terry; *Secretary*, Edward Davy; *Associates*, William Gray and Irwin A. Becker.

Sessions: Wednesday, August 27, 1.30 P.M.; Thursday, August 28, 2.30 P.M.

PROGRAM.

Wednesday, August 27, 1.30 p.m., First Session.

- 1—Chairman's Address.
- 2—Business of the Section.
- 3—Report of Committee on U. S. Pharmacopoeia.

- 4—Report of Committee on National Formulary.
- 5—Report of Committee on A. Ph. A. Recipe Book.
- 6—Prescription Clinic. Ivor Griffith and Adley B. Nichols.
- 7—Standardization of Dispensing Pharmacies. Lucius E. Sayre.
- 8—Practical Pharmacy and Dispensing in Relation to the Medical Profession. F. E. Stewart.
- 9—Some Profitable Professional Side-lines. C. B. Jordan.
- 10—Mercurial Ointment. E. D. Davy.
- 11—Criticisms and Suggestions of the National Formulary. Wilbur L. Scoville.
- 12—Constructive Criticism of the National Formulary. Open discussion.
- 13—Nomination of Officers. (Further nominations may be made prior to election of officers.)

Thursday, August 28, 2.30 p.m., Second Session.

- 1—One Thousand Consecutive Prescriptions in 1919 Compared with an Equal Number in 1859-1879-1899. Henry P. Hynson.
- 2—A Study of the Pendent Drop. John Uri Lloyd.
- 3—Notes on the Precipitation of Magnesium Hydroxide. Robert W. Terry and E. D. Davy.
- 4—The Abuse of the Shake Label. J. Leon Lascoff.
- 5—Ointment Difficulties. Wm. Gray.
- 6—A Suitable Non-Alcoholic Solvent for Acetyl Salicylic Acid. I. A. Becker.
- 7—Some Fundamental Considerations in Dispensing Photographic Formulas. A communication from the Chairman of the Sub-Committee on Photographic Formulas, A. Ph. A. Recipe Book. I. A. Becker.
- 8—A Standard Screen Scale for Testing Sieves. U. S. Bureau of Standards.
- 9—Constructive Criticism of the United States Pharmacopoeia. Open.
- 10—Open Discussion of any Subject.
- 11—Election and Installation of New Officers.
- 12—Adjournment.

SECTION ON COMMERCIAL INTERESTS.

Officers: *Chairman*, E. Fullerton Cook; *Secretary*, H. S. Noel; *Associates*, Hugo H. Schaefer, J. H. Reffuss and I. M. Light.

Sessions: Thursday, August 28, 9.30 A.M.; Friday, August 29, 9.30 A.M.

PAPERS.

Selling and the Professions. Dr. Herbert W. Hess, of the Wharton School of Business Science, University of Pennsylvania.

Insurance for Druggists. Dr. S. S. Hebner, of the Wharton School of Business Science, University of Pennsylvania.

Conservative Investments. Dr. Homer S. Pace, of New York.

The Essentials of Accounting. Dr. C. P. Couchman, of New York.

Records—A Key to Business Success. Prof. E. Fullerton Cook, of Philadelphia.

Capital and Its Relation to Pharmacy. H. S. Noel, Ph.G., of Indianapolis.

Drug Store Advertising. Prof. R. P. Fischelis, of Philadelphia.

Manufacturing Problems. George M. Beringer, Jr., of Camden, New Jersey.

A Workable Drug Store Policy that Will Bring Success. Dr. Henry P. Hynson, of Baltimore.

The Diagnostic Laboratory in the Pharmacy. Dr. Jacob Diner, of New York.

Buying for a Retail Drug Store. Chas. W. Holzhauer, of Newark, New Jersey.

Employing Drug Clerks. Earl H. Cone, of Atlanta, Georgia.

Closer and More Profitable Relations Between the Pharmacist and His Bank. Clarence O. Bigelow, New York.

Program of the Sessions and Abstracts of the papers have been prepared but too late for inclusion in this issue of the JOURNAL.

SECTION ON HISTORICAL PHARMACY.

Officers: *Chairman*, Hugo Kantrowitz; *Secretary*, W. O. Richtmann; *Historian*, E. G. Eberle.

Sessions: Thursday, August 28, 9.30 A.M.; Friday, August 29, 9.30 A.M.

PROGRAM.

- 1—Address of the Chairman. Hugo Kantrowitz.
 - 2—Report of the Historian. E. G. Eberle.
 - 3—Illustrated Lecture. Dr. H. M. Whelpley.
 - 4—"Boston Ether Monument," erected to the unnamed Discoverer of General Anesthesia, Illustrated Lecture. Charles M. Ford.
 - 5—Observations and Experiences in Pharmacy Since 1854. Dr. John F. Hancock.
 - 6—A Sketch of the Late Mr. J. O. Burge. Prof. E. A. Ruddiman.
 - 7—History of the Denver Branch, A. Ph. A. F. W. Nitardy.
 - 8—Collection of Medals. Exhibition arranged by Caswell A. Mayo.
 - 9—Pharmacy and the Cognate Sciences. Caswell A. Mayo.
 - 10—The Pioneer Drug Store of the Wisconsin Historical Museum. Edward Kremers.
- The order of papers and addresses will be re-arranged. Other papers are promised.

WOMEN'S SECTION.

Officers: *President*, Miss Anna G. Bagley; *First Vice-President*, Mrs. W. L. Dewoody; *Second Vice-President*, Mrs. F. J. Wulling; *Third Vice-President*, Mrs. F. W. Meissner; *Secretary-Treasurer*, Mrs. Jean McKee Kenaston; *Historian*, Miss Bertha Ott.

Sessions: Thursday, August 28, 10.30 A.M.; Friday, August 29, 10.30 A.M.

HOUSE OF DELEGATES, A. PH. A.

Officers: *Chairman*, Otto F. Claus; *First Vice-Chairman*, S. L. Hilton; *Second Vice-Chairman*, E. F. Kelly; *Recording Secretary*, Jeannot Hostmann.

Sessions: Wednesday, August 27, 3.30 P.M.; Thursday, August 28, 1.30 P.M.

ORDER OF BUSINESS.

- 1—Calling Roll of Delegates whose credentials have been approved by the Executive Committee.
- 2—Appointment of Committee on Resolutions.
- 3—Reading of communications from the Association, Sections and Council.
- 4—Calling Roll of Delegates for reports, resolutions and communications, all of which shall be in writing.
- 5—Miscellaneous Business.
- 6—Election and Installation of Officers.
- 7—Adjournment to a certain time.

PROGRAM.

First Session, Wednesday, August 27, 3.30 p.m.

- 1—Roll Call of Delegates.
- 2—Reception of Delegates from Departments of the U. S. Government.
The Army-Colonel Frederick M. Hartsock, M. C., U. S. A.
The Public Health Service, Dr. Andrew G. DuMez.
- 3—Appointment of Committees on Resolutions and Nominations.
- 4—Chairman's Address.
- 5—Report of Recording Secretary.
- 6—Reading of Communications.
- 7—Calling of Roll of Delegates for Reports or Resolutions.

Second Session, Thursday, August 28, 1.30 p.m.

- 8—Reading of Minutes of Previous Session.
- 9—Report of the Committee on Resolutions.

- 10—Miscellaneous Business.
- 11—Unfinished Business.
- 12—Report of the Committee on Nominations.
- 13—Election and Installment of Officers.
- 14—Adjournment.

TENTATIVE PROGRAM FOR THE TWENTIETH ANNUAL MEETING OF THE
AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES TO BE
HELD IN NEW YORK CITY.

New Pennsylvania Hotel, Monday and Tuesday August 25 and 26, 1919.

(The American Pharmaceutical Association will convene during the same week, beginning its sessions Tuesday afternoon, August 26).

The headquarters of the Conference will be at the Hotel Pennsylvania, the headquarters of the American Pharmaceutical Association. All meetings will be held there.

TENTATIVE PROGRAM.

First Session, Monday, August 25, 2 p.m.

- 1—Roll Call.
- 2—Address of the President.
- 3—Report of the Secretary.
- 4—Report of the Treasurer.
- 5—Appointment of Nominating Committees.
- 6—Reports of Standing Committees.
 - 1—Executive Committee.
 - 2—National Syllabus Committee.
 - 3—Committee on Higher Educational Standards, Prof. W. J. Teeters, *Chairman*.
 - 4—Committee on Faculties, Prof. Zada M. Cooper, *Chairman*.

Second Session, Monday Afternoon, August 25, 8 p.m.

- 6—Reports of Standing Committees:
- 5—Committee on Curriculum and Teaching Methods, Prof. J. W. Sturmer, *Chairman*.
- 6—Committee on Activities of Students and Alumni, Prof. William Mansfield, *Chairman*.
- 7—Committee on Uniform College Bulletins, Prof. R. A. Kuever, *Chairman*.
- 8—Committee on Relations of Pharmacy Schools and other Professional Schools, Prof. W. F. Rudd, *Chairman*.
- 9—Committee on Research, Prof. Henry Kraemer, *Chairman*.
- 7—Report of Special Committees.
 - Committee on Revision of Constitution and By-Laws, Dr. J. H. Beal, *Chairman*.
- 8—Unfinished Business.
- 9—Miscellaneous Business.

READING OF PAPERS.

- 10—Election of Officers.
- 11—New Business.
- 12—Executive Session, Election of New Members.

Tuesday, August 26th, will be devoted to Joint Sessions with the National Association of Boards of Pharmacy. Two sessions will be held, one at 10 A.M., and the other at 2 P.M. The following Committees will report at the Joint Sessions:

Joint Committee on Examination Questions, Prof. E. A. Ruddiman, *Chairman*.
Committee on Higher Educational Standards, Prof. R. A. Lyman, *Chairman*.

Committee on Relations of the Colleges with the Boards, Prof. Charles E. Caspari, *Chairman*.

A joint session with the Section on Education and Legislation of the American Pharmaceutical Association and the National Association of Boards of Pharmacy, will be held on Thursday, August 28th, at 4 P.M.

TENTATIVE PROGRAM FOR THE SIXTEENTH ANNUAL CONVENTION OF THE
NATIONAL ASSOCIATION OF BOARDS OF PHARMACY TO BE HELD IN
NEW YORK CITY

New Pennsylvania Hotel, Monday and Tuesday August 25 and 26, 1919.

(The American Pharmaceutical Association will convene during the same week, beginning its sessions Tuesday afternoon, August 26).

TENTATIVE PROGRAM.

First Session, Monday, August 25, 9.30 a.m.

- 1—Call to order by President John Culley.
- 2—Calling roll of member State Boards of Pharmacy.
- 3—Appointment of Credential Committee.
- 4—President's Address.
- 5—Appointment of Committee on President's Address.

Second Session, Monday Afternoon, August 25, 2.00 p.m.

- 1—Report of Secretary.
- 2—Report of Treasurer.
- 3—Report of Credential Committee.
- 4—Appointment of Nominating Committee.
- 5—Open for presentation of Papers and for General Discussion.

Third Session, Monday Evening, 8.00 p.m.

- 1—Report of Committee on President's Address.
- 2—Report of Executive Committee.
- 3—Report of Legislative Committee.
- 4—Report of Syllabus Committee.
- 5—General Discussion.

Fourth Session, Tuesday Morning, August 26, 9.30 a.m.

- 1—Report of Advisory Examination Committee.
- 2—Reports of Special Committees.
- 3—Unfinished Business.
- 4—New Business.
- 5—Report of Nominating Committee.
- 6—Election and Installation of Officers.

NOTE.—Final adjournment of the N. A. B. P. may be deferred until after Joint Session to be held Thursday afternoon (August 28) 4.00 P.M., of American Conference of Pharmaceutical Faculties, Section on Education and Legislation of the American Pharmaceutical Association and the National Association of Boards of Pharmacy.

COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 20.

PHILADELPHIA, PA., June 28, 1919.

To the Members of the Council:

The recommendations made by Chairman Frank H. Freericks, of the A. Ph. A. Advisory Committee for Soldier and Sailor pharmacists, in Council Letter No. 19, are in possible conflict with the By-laws of the Association, and motions, to be considered in connection with the requirements of Chapter VIII, Article II, and Chapter IX, Article II of the By-laws, and a statement, as follows, are submitted:

Motion No. 30 (Temporary Membership of Soldier and Sailor Pharmacists). Moved by Dr. F. E. Stewart, seconded by E. G. Eberle, that the Council authorize the Advisory Committee for Soldier and Sailor Pharmacists to invite all pharmacists serving as Soldiers, Sailors or Marines during the World War, either honorably discharged or now continuing in the Service, to become members of the American Pharmaceutical Association, and that in recognition of their services the Council appropriate, out of the general funds of the Association, an amount sufficient to pay the annual dues for the first year of \$5.00 for each such applicant to membership, it being understood that the new members who are exempted from the payment of dues for the first year shall not receive either the Journal or Year Book unless they care to pay for them.

Of course the proposed arrangement is simply a matter of taking the funds of the Association out of one pocket and putting them into another, but it meets the letter of the law, since Council, at least with the approval of the Finance Committee, is fully authorized to so make an appropriation of the funds.

Motion No. 31 (Approval of Proposal to Organize Section of World War Veterans at Next Annual Meeting). Moved by Dr. F. E. Stewart, seconded by E. G. Eberle, that the Council approve the proposal to organize at the New York 1919 Annual Meeting, by proper amendment to the By-laws of the Association, a Section of World War Veterans, on condition that sufficient interest be shown by the applications for membership in the Association of the pharmacists who have served in the World War as Soldiers, Sailors or Marines, with the view of organizing such a section and with the understanding that

such a section be authorized to adopt and have its own by-laws, subject to the Constitution and By-laws of the Association.

Of course, every one who is now a member of the Association and who has been in the Service, or is now in the Service, will be entitled to belong to the Section, and nothing submitted could possibly be construed to exclude them. If you raise the question of possible discrimination on account of the present members who have been in the Service paying their dues, while the men to be invited to membership will not pay their dues the first year, I would answer that those who are now members are getting the Journal and the Year Book and if the publications are to be excluded from the offer to those whom we would invite to membership, then the present members are also in a different situation because they get the publications. I do not believe that a single present member who has been in the Service would raise the question.

I am hopeful that the two motions submitted will appeal to the members of the Council as a basis for correctly handling the matter, and favor that a decision on the actual creation of the section be delayed until the next annual meeting when, if found finally advisable, the establishment of the Section may be accomplished by whatever method is most desirable, with the understanding, of course, that the advisability of creating the Section shall depend only upon a sufficient number of soldiers and sailors showing their interest by applying for membership."

Are there any objections to these motions?

J. W. ENGLAND,

415 N. 33RD ST.

Secretary.

A. PH. A. COUNCIL LETTER NO. 21.

PHILADELPHIA, PA., July 8, 1919.

To the Members of the Council:

Frederick H. Wulling writes:

"First. I would be willing to support Chairman Freerick's first recommendation providing it has the approval of the Treasurer and the Finance Committee.

Second. Concerning the creation of a World War Veteran Section, let me say that in general any step that would interest the Veterans in large numbers in the A. Ph. A. is advisable. We should encourage the Pharmacy

veterans in every consistent way. At this time, however, I do not see what relation the proposed Section would represent that is not already represented in the Association. The modern tendency is to specialize and diversify a tendency which is good only within certain limits. The proposed new section possibly may come properly within these limitations. I haven't thought the matter out sufficiently and would therefore be willing to accept the judgment of those who can give it more thought and consideration. Possibly the suggested Section might be merged with or made a part of the Historical Section."

Charles T. P. Fennel writes:

"In reference to letter from Chairman F. H. Freericks, I heartily endorse the formation of the Section, but I heartily believe that dues should be demanded, the initial dues—say three dollars. This would include the receipt of the Journal. It is a well-known fact that things gotten cheaply are not appreciated, furthermore pharmacists in the service of the Army and Navy do not seek charity. Every true American will respond to the call of American Pharmacy as to her needs, organization through publicity."

Wortley F. Rudd writes:

"I am heartily in favor of allowing Soldier Pharmacists membership without dues for the first year. I am not ready to vote on the second recommendation at the present time, as it is a matter of vital interest to the profession."

R. W. Terry writes:

"Replying to Council Letter No. 20, I must say that I am opposed to both of these motions.

"I can see no advantage in membership in our Association without receiving the Year Book, and particularly the Journal. Of course, our Association cannot financially, and I presume legally, give these expected new members these publications free.

"I am opposed to the establishment of the Veteran Section because I feel the Association should have no Section wherein membership should not be open to all members of the Association. This, I feel certain, would cause unpleasantness later on.

I am not endeavoring to belittle the glorious work done by our boys and I am opposed to these motions simply because I think them inimical to the welfare of our Association."

S. L. Hilton writes:

"I vote in the affirmative on the proposition of Mr. F. H. Freericks, as I feel that it is

at least worthy of a trial. If the men in the Service care enough for the profession of pharmacy and want to further elevate themselves they will jump at this opportunity, become members of the A. Ph. A., assist the organization by increasing the membership and at the same time help themselves far more than they can at present realize. I truly hope the movement will bring good results."

President C. H. LaWall writes:

"In voting yes to both of the motions brought up through Mr. Freericks' letter, I wish to express my approval of the plan as an opportunity to interest young men in the A. Ph. A.

"I wish it were possible to give such applicants the Journal for the first year, as I believe we could hold more of them later than under the present plan.

"I do not think there will be any conflict with regard to those who are in the Service and who are now members, for they are getting both Journal and Year Book for their money, and if these new members want the publications in addition to the honor of thus being elected to membership, they can obtain them upon payment of the \$5.

"So far as the Section of Veterans of the World War is concerned, as I understand it, this is simply a membership section and not one which will have meetings that must be provided for on the programme and at which papers will be read and business transacted, which might conflict with other section activities.

"The plan is well worth trying and I am sanguine as to its success."

Clyde M. Snow writes:

"In re Motions Nos. 30 and 31, experience discounts the value of such attempts to increase membership. The establishment of such precedents should be discouraged."

George M. Beringer writes:

"The propositions contained in Council Letters Nos. 19 and 20 are examples of a laudable intent to show our appreciation of the patriotism and services rendered by "our boys" in the Army and Navy. However, these also illustrate the necessity of balancing sentiment, at times, with good judgment. I am far from satisfied that those pharmacists who have been in the military service of the Nation will not resent the first proposition. Not infrequently have I listened to returning soldiers expressing their disapproval of well

meant attempts, as belittling of their independence and self-supporting ability and appearing to make them either seekers after or accepters of charity.

"Further, the motion as presented is faulty. The annual dues as fixed by Article III, Chap. VIII, of By-laws, are four dollars, and not *five dollars* as stated in the motion, when the member does not receive the Journal (and the motion distinctly says the new members who are exempt from payment of dues for the first year shall not receive either the Journal or Year Book unless they care to pay for them). The price stated in the motion, \$5.00, is actually the sum to be paid by a member for joint annual dues and subscription to the Journal and such a payment should guarantee his receiving the publications of the Association. Moreover, if I glean aright, there is an unexpressed thought in the idea, namely, that this action may interest all of such acquisitions to membership to become continuing and active members of the Association. Then why deprive them of the greatest inducement, the educational value of our publications?

"Again, we are, by the motion as presented, endeavoring to present to the Council for action a motion providing for an expenditure in excess of \$25.00 without previously obtaining the approval of the Committee on Finance as provided by Chapter V of By-Laws.

"The subject is of sufficient importance to merit our careful consideration and not a hasty action whose very validity may be questioned. Above all, if the American Pharmaceutical Association desires to do something that will show its appreciation of the great service and sacrifices made by those in the military service whom it desires to honor, then by all means let the action be characterized by generous, open-hearted motion withholding nothing whatever of the rights of full membership.

"Regarding Motion No. 31, I hesitate regarding adding any additional sections to the already cumbersome machinery of the Association and the difficulty experienced in arranging for the numerous meetings necessitated. Could not the anticipated work of such a section be merged with that of the Historical Section, perhaps as a sub-section or Committee? At any event, would it not be better to hold this matter in abeyance until the need of such a new section has been

actually shown. In that event there surely can be no opposition."

In reply to Mr. Beringer, it may be said that the statement of annual dues as given in Motion No. 30 (C. L. No. 20) was a typographical error. It was \$4.00 in the motion as originally submitted and will be so considered, if there be no objection.

Voting cards for Motions Nos. 30 and 31 were sent out only to gain time, Chairman Freericks stating that prompt action was essential if the men were to be reached before the annual meeting of the Association. Since objections have been raised, discussion is in order, and the old voting cards will be cancelled and new ones will be sent out later, if necessary.

Regarding the objection to expenditures in excess of \$25 without previously obtaining the approval of the Committee on Finance, as provided by Chapter V of By-Laws (of the Council), it may be said that the motion made did not provide for expenditure of cash, but was simply a matter of bookkeeping to square the proposed action with the requirements of the By-Laws for the payment of dues.

Motion No. 32 (Election of Members). You are requested to vote on the following applications for membership:

- No. 213. Marjorie A. Barr, Box 115, Kansas, Ill., rec. by C. B. Jordan and Charles O. Lee.
- No. 214. Clifford C. Barkdell, 3235 Glenmore Ave., Cincinnati, Ohio., rec. by C. B. Jordan and Charles O. Lee.
- No. 220. Francis F. Sorgatz, 136 W. 6th Street, Concordia, Kans., rec. by M. W. Friedenburg and J. S. Chism.
- No. 221. Otto H. Rommel, Waterville, Kans., rec. by M. W. Friedenburg and J. S. Chism.
- No. 222. Chase Winhood Brown, 111 East Main Street, Chanute, Kans., rec. by M. W. Friedenburg and J. S. Chism.
- No. 223. Booker Latimer, DeWitt, Ark., rec. by M. H. Potter and Frank Schachleiter.
- No. 224. John A. Wallace, 407 Grove St., Avoca, Pa., rec. by W. F. Friedman and O. L. Koenig, Jr.

- No. 225. David F. Deem, Stark, Kans., rec. by J. S. Chism and M. W. Frieden-burg.
- No. 226. George Albert Hurst, 1241 Arch Street, Phila., Pa., rec. by Charles H. LaWall and Ivor Griffith.
- No. 227. Aaron Harry Josephs, 4310 Germantown Ave., Phila., Pa., rec. by Charles H. LaWall and Ivor Griffith.
- No. 228. Herbert Martin Ewing, 861 N. 20th St., Phila., Pa., rec. by Charles H. LaWall and Ivor Griffith.
- No. 229. Luis Berguido, 4532 Chestnut St., Philadelphia, Pa., rec. by Ivor Griffith and C. H. LaWall.
- No. 230. Josephine Mary Weiss, 121 W. Jefferson St., Iowa City, Iowa, rec. by Zada M. Cooper and Wilber J. Teeters.
- No. 231. William Dixon Graves, Mansfield, Ark., rec. by H. M. Whelpley and J. W. England. Prize awarded by St. Louis College of Pharmacy.
- No. 232. Oscar Howard Florenzie, 942 Summit Avenue, Jersey City, N. J., rec. by Louise S. Suhr and Daniel Alfred Neu.
- No. 233. B. Frederick Richard, 203 Lyric Building, Cincinnati, Ohio., rec. by Frank Cain and Charles A. Apmeyer.
- No. 234. Lee Wiltsee, care Merrell Co., 5th & Pike Sts., Cincinnati, Ohio, rec. by Frank Cain and Charles A. Apmeyer.
- No. 235. Peachie Olga Ramsey, 214 East 15th Street, Covington, Ky., rec. by Frank Cain and Charles A. Apmeyer.
- No. 236. George Elmer Brown, N. 1429 Monroe Street, Spokane, Wash., rec. by Emily C. McRae and H. G. Dunfeldt.
- No. 237. Santi Ruisi, 139 Central Ave., Brooklyn, N. Y., rec. by N. C. Anderson and Wm. B. Day. Membership Prize, Brooklyn College of Pharmacy.
- No. 238. Philip Frank Monte, 701 Dauphine St., New Orleans, La., rec. by Robert F. Grace and Frank J. Nuccio.
- No. 239. Miss Winnifred McAdams, Norman, Okla., rec. by H. S. Browne and C. V. Nichols. Prize awarded by Oklahoma University.
- No. 240. J. F. Sargent, Norman, Okla., rec. by H. S. Browne and C. V. Nichols. Prize awarded by University of Oklahoma.
- No. 241. Frank Parker, 51 W. 37th St., New York, N. Y., rec. by E. G. Eberle and J. W. England.
- No. 242. Annetta Mildred Sanders, 1469 N. 59th St., Philadelphia, Pa., rec. by W. Wilson McNeary and Louis Gershenfeld.
- No. 243. Julius Charles Laegeler, Highwood, Ill., rec. by Wm. B. Day and E. N. Gathercoal. Prize awarded by University of Illinois School of Pharmacy.
- No. 244. Harold A. Grimm, 220 Security Bldg., Cedar Rapids, Iowa, rec. by Zada M. Cooper and Wilber J. Teeters.
- No. 245. John Roanoke Randolph, 810 Bailey St., Camden, N. J., rec. by Ivor Griffith and J. W. England. Ivor Griffith Prize, Philadelphia College of Pharmacy.
- No. 246. Samuel Cooperman, 312 East 8th St., New York, N. Y., rec. by J. Leon Lascoff and George C. Diekman. J. Leon Lascoff Prize, New York College of Pharmacy.
- No. 247. Meyer Greenberg, 56 East 103rd Street, New York, N. Y., rec. by J. Leon Lascoff and George C. Diekman. J. Leon Lascoff Prize, New York College of Pharmacy.
- No. 248. Sarah Levin, 1843 N. 8th Street, Philadelphia, Pa., rec. by W. F. Friedman and Otto L. Koenig, Jr.
- No. 249. Jacob Meserofsky, 709 Dudley Street, Philadelphia, Pa., rec. by Wm. L. Friedman and Otto L. Koenig, Jr.
- No. 250. Lena Elizabeth Richmond, Elma, Iowa., rec. by Zada M. Cooper and J. W. England. Wilber J. Teeters Prize, University of Iowa School of Pharmacy.
- No. 251. Leonard M. March, Hot Springs, S. Dak., rec. by Zada M. Cooper and Wilber J. Teeters. Miss Zada Cooper Prize, University of Iowa School of Pharmacy.
- No. 252. Fred W. Rauth, 6th and Capitol Ave., Springfield, Ill., rec. by F. W. Metzger and Wm. Gray.

- No. 253. Robert W. Sterling, 221 Dement Ave., Dixon, Ill., rec. by F. W. Metzger and Wm. Gray.
- No. 254. Telephore Coderre, Witt, Ill., rec. by Wm. Gray and Wm. B. Day.
- No. 255. George J. Kappus, 959 N. Western Ave., Chicago, Ill., rec. by Wm. Gray and Wm. B. Day.
- No. 256. Charles Louis Higgins, Neponset, Ill., rec. by Wm. Gray and Wm. B. Day.
- No. 257. Frank V. Kara, 1820 S. Halsted St., Chicago, Ill., rec. by Wm. Gray and S. L. Antanow.
- No. 258. Otto J. Haas, 1700 N. Wells St., Chicago, Ill., rec. by Wm. Gray and Wm. B. Day.
- No. 259. Ernest A. Schmid, 1226 N. Monroe Street, Peoria, Ill., rec. by Wm. Gray and Wm. B. Day.
- No. 260. Harry B. Smith, Brookville, Ohio, rec. by Frank H. Freericks and Wm. B. Day.
- No. 261. John Marion Duggan, Cuero, Texas, rec. by R. H. Walker and Wm. B. Day.
- No. 262. Martin E. Strand, 922 West 2nd Street, Ashland, Wisc., rec. by Wm. B. Day and J. W. England.
- No. 263. Morris W. Webb, Rolfe, Iowa, rec. by Wilber J. Teeters and G. Scherling. Scherling Prize in Chemistry, University of Iowa School of Pharmacy.
- No. 264. Burton Harold St. John, 500 N. Commercial St., St. Louis, Mo., rec. by H. M. Whelpley and J. Werner Noble.
- No. 265. Miss Helen L. Baltes, 2338 E. 71st Street, Chicago, Ill., rec. by Wm. Gray and Jean Gordon.
- No. 266. John Schwaba, 2801 N. Central Park Ave., Chicago, Ill., rec. by Wm. Gray and Wm. B. Day.
- No. 267. Frank C. Troutman, 3313 Monteith Ave., Cincinnati, Ohio, rec. by Frank Cain and Charles A. Apmeyer.
- No. 268. Frederick Welton Herget, 1829 Alvason Road, E. Cleveland, Ohio, rec. by Lewis C. Hopp and Wm. B. Day. Lewis C. Hopp Prize, Cleveland College of Pharmacy.
- No. 269. H. S. Caldwell, care Caldwell Drug Co., 330 N. Grand Ave., Oklahoma City, Okla., rec. by Wm. B. Day and J. W. England.

- No. 270. Eber E. Mahon, 2523 Burling St., Chicago, Ill., rec. by Wm. B. Day and Wm. Gray.

J. W. ENGLAND,
415 N. 33RD STREET. *Secretary.*

A. PH. A. COUNCIL LETTER NO. 22.

PHILADELPHIA, PA., July 14, 1919.

To the Members of the Council:

Enclosed please find letter received from Frank H. Freericks, Chairman A. Ph. A. Advisory Committee for Soldier and Sailor Pharmacists, in reference to Council Letter No. 21 of July 8, 1919.

The vote on Motions Nos. 30 and 31 will be called for on July 18.

Yours very truly.

J. W. ENGLAND,
415 N. 33RD ST. *Secretary.*

CINCINNATI, OHIO, July 10, '19.

MR. JOSEPH W. ENGLAND,
Secretary of Council,
Philadelphia, Pa.

DEAR SIR: Have read Council Letter No. 21 with very deep interest, and believe that a few words are not out of place:

1st. In its endeavor to serve soldier, sailor and marine pharmacists and drug clerks, The A. Ph. A. has been engaged in a humanitarian and unselfish work. In one form or another it has been brought to the notice of about ten thousand men who have been engaged in pharmacy in some way, and who, with but few exceptions, have never given thought to the Association. Of this number we have come into direct touch with thousands, hundreds of whom we have been able to render service. I have no doubt but that many would respond to the invitation to join the Association, and would gladly pay dues commencing with the first year, but personally, I have never found it possible to render service to some one else, and then ask him in return to do something which means for him an outlay of money.

2nd. Doubtless, it would better serve, if the invitation included the Year Book and Journal for the first year, as part of the membership privilege, but I am surprised to have it said that membership is of no value without them. It appears certain that our offer cannot be made to include them, but, nevertheless, I am hopeful that if there is sufficient response to the invitation, we may find a way to independently finance a proposition to furnish the Journal; however, this must be wholly dependent upon developments at the

Annual Meeting. I can foresee that there will be some one who will immediately say that they would prefer to pay dues commencing with the first year, in order to have the Year Book and Journal.

3rd. The thousands of young men who have been in the Service will constitute a vital force if brought together, which can splendidly serve the best interests of American pharmacy. If they are to be brought together, this is the opportune time, and possibly the only time. If they are brought together outside of the Association, it will not have the benefit which presumably will accrue from such an organization in many directions, and the young men will not have the benefit of the influence for higher ideals, which is a part of membership advantage. The need for centralization in pharmaceutical activities seems to be well established. The Association now maintains a House of Delegates, to which only selected members can belong. We have never had a Section which is not open to all members, and, also, we have never had a World War, in which fully ten thousand of those connected with pharmacy have taken a direct part. Presumably, there never again will be an occasion where ten thousand men connected with pharmacy have been engaged in a common enterprise apart from pharmacy, which tends to bind them together by ties of sentiment, and which, with proper leadership, can be made to do wonderful service for American pharmacy. If ever there be another so large a number of those interested in pharmacy, who are bound together by ties of sentiment outside of pharmacy, but who thus can constitute a vital force to serve pharmacy, it certainly would be a fortunate and happy occasion if they could be brought together under the A. Ph. A., and the creation of a special section for them should be the least of difficulties. I cannot conceive of this possible body of men constituting the tail end of the Historical Section, or any other Section. To me it seems, that for the benefit of American pharmacy, it should be like clearing the street from the sidewalk to sidewalk to make way for the World War Veterans of the A. Ph. A. It would be my thought that this Section should constitute the principal avenue through which pharmacy should secure from the public the things that it ought to have, for the benefit of the public, and the things which can be secured only through forceful influence, politically and otherwise. It should

be an important Section, working out its own salvation in matters of special interest to us, and also in carrying through such missions as might be especially referred to it by the General Association, or by the other Sections.

Very truly yours,

FRANK H. FREERICKS.

A. PH. A. COUNCIL LETTER NO. 23.

PHILADELPHIA, PA., July 18, 1919.

To the Members of the Council:

Motion No. 32 (Election of members, applications Nos. 213, 214 and 220 to 270, inclusive) has received a majority of affirmative votes.

The vote on Motions Nos. 30 and 31 is called for. Chairman Hopp states, "There is nothing in the By-Laws to prevent an immediate vote." The Council is empowered to transact business for the Association between the times of meeting, its acts, however, being subject to revision by the Association (Chapter VII, Article I, Section I of By-Laws of Association).

Motions No. 30 (as corrected by Council Letter No. 21, p. 47) and No. 31, are as follows:

Motion No. 30 (Temporary Membership of Soldier and Sailor Pharmacists). Moved by Dr. F. E. Stewart, seconded by E. G. Eberle, that the Council authorizes the Advisory Committee for Soldier and Sailor Pharmacists to invite all pharmacists serving as Soldiers, Sailors or Marines during the World War, either honorably discharged or now continuing in the Service, to become members of the American Pharmaceutical Association, and that in recognition of their services the Council appropriate, out of the general funds of the Association, an amount sufficient to pay the annual dues for the first year of \$4.00 for each such applicant for membership, it being understood that the new members who are exempted from the payment of dues for the first year shall not receive either the Journal or Year Book unless they care to pay for them.

Motion No. 31 (Approval of a Proposal to Organize Section of World War Veterans at Next Annual Meeting). Moved by Dr. F. E. Stewart, seconded by E. G. Eberle, that the Council approve the proposal to organize at the New York 1919 Annual Meeting, by proper amendment to the By-Laws of the Association, a Section of World War Veterans, on condition that sufficient interest be shown by the applications for membership in the

Association of the pharmacists who have served in the World War as Soldiers, Sailors or Marines, with the view of organizing such a section and with the understanding that such a section be authorized to adopt and have its own by-laws, subject to the Constitution and By-Laws of the Association.

J. W. ENGLAND,
415 N. 33RD STREET. *Secretary.*

A. PH. A. COUNCIL LETTER NO. 24.
PHILADELPHIA, PA., July 21, 1919.

To the Members of the Council:

Motion No. 33 (Election of Members). You are requested to vote on the following applications for membership:

- No. 271. Alexander Bell McArtan, Linden, N. C., rec. by W. H. Ziegler and Wm. B. Day.
- No. 272. David Tilden Riley, 110 W. Palmetto St., Florence, S. C., rec. by W. H. Ziegler and Wm. B. Day.
- No. 273. Nathan Silverman, 107 N. 19th St., Richmond, Va., rec. by W. F. Rudd and C. F. Walker.
- No. 274. John C. Scott, Cedar Bluff, Va., rec. by W. F. Rudd and C. F. Walker.
- No. 275. J. Gross Meyer, 54 Hazle Ave., Wilkes-Barre, Pa., rec. by Walter Banker and E. R. Owens.
- No. 276. W. V. Moyer, 43 N. Washington St., Wilkes-Barre, Pa., rec. by Walter Banker and E. R. Owens.
- No. 277. Otto Wendel, 83 Vaughn St., Dorranceton, Pa., rec. by Walter Banker and E. R. Owens.
- No. 278. Frank Goulden, 23 Wayne St., Wilkes-Barre, Pa., rec. by Walter Banker and E. R. Owens.
- No. 279. Daniel Taylor, care Torsion Balance Co., 206-31 W. Lake St., Chicago, Ill., rec. by Wm. Gray and Wm. B. Day.
- No. 280. Isaac F. Harris, 80 Beekman St., New York, N. Y., rec. by Leo Roon and Wm. B. Day.
- No. 281. Bernard M. Burke, 265 Washington St., Newton, Mass., rec. by T. J. Bradley and Wm. B. Day.
- No. 282. Luther Quincey Lee, Arcola, Miss., rec. by H. M. Faser and Wm. B. Day.
- No. 283. Lloyd Rodney Wyman, 3 Cornwallis Place, Waltham, Mass., rec. by Theo. J. Bradley and John G. Godding.
- No. 284. Cyriac Pierre Ricard, 38 Mulberry St., Nashua, N. H., rec. by E. H. LaPierre and Theo. J. Bradley.
- No. 285. Elizabeth Harding, 23 Davidson Road, Worcester, Mass., rec. by Howard H. Smith and Theo. J. Bradley.
- No. 286. Seymour Eastman Woodward, 881 Massachusetts Ave., Cambridge, Mass., rec. by John G. Godding and Theo. J. Bradley.
- No. 287. Alice Louise Mugar, No. 128 Glenway St., Dorchester, Mass., rec. by C. Herbert Packard and Theo. J. Bradley.
- No. 288. Rosamond Alice Guinn, 155 Cedar St., New Bedford, Mass., rec. by Theo. J. Bradley and Leon S. Thompson.
- No. 289. W. T. Linder, Groveton, Texas, rec. by R. H. Walker and J. M. Duggan.
- No. 290. C. E. McElroy, 204 E. Houston St., San Antonio, Texas, rec. by R. H. Walker and J. M. Duggan.
- No. 291. D. K. Leatherman, Bartlett, Texas, rec. by R. H. Walker and C. L. Jenkins.
- No. 292. Herman Dietel, Jr., 601 Goliad St., San Antonio, Texas, rec. by R. H. Walker and C. L. Jenkins.
- No. 293. W. A. Skillern, 1812 Commerce St., Dallas, Texas, rec. by R. H. Walker and J. M. Duggan.
- No. 294. J. D. McMahon, Cleveland, Texas, rec. by R. H. Walker and J. M. Duggan.
- No. 295. D. E. Jacobs, 1702 McKinney Ave., Houston, Texas, rec. by R. H. Walker and J. W. England.
- No. 296. Fred Brunkerhoefer, Nordheim, Texas, rec. by R. H. Walker and J. M. Duggan.
- No. 297. J. R. Pinchback, Jr., Garwood, Texas, rec. by R. H. Walker and J. M. Duggan.
- No. 298. Isadore Lewyn, 506 Travis St., Houston, Texas, rec. by R. H. Walker and C. J. Jenkins.
- No. 299. T. P. Frizzell, Knox City, Texas, rec. by R. H. Walker and J. M. Duggan.

J. W. ENGLAND,
Secretary.

415 N. 33RD ST.

REPORT OF THE TREASURER OF THE AMERICAN PHARMACEUTICAL
ASSOCIATION.

JANUARY 1, 1918, TO JANUARY 1, 1919.

By HENRY M. WHELPLEY, St. Louis, Mo.

Receipts.

Cash on hand, Jan. 1, 1918 (current account).		\$ 6,282.86	
Cash on hand, Jan. 1, 1918 (National Formulary)		4,059.24	
			<u>\$10,342.10</u>
Annual dues and Journal 1916.....	\$ 10.00		
Annual dues and Journal 1917.....	245.00		
Annual dues and Journal 1918.....	7,999.75		
Annual dues and Journal 1919.....	4,440.00		
Annual dues and Journal 1920.....	15.00		
Annual dues and Journal 1921.....	5.00		
		<u>\$12,714.75</u>	
Annual dues only 1917.....	8.00		
Annual dues only 1918.....	32.00		
Annual dues only 1919.....	36.00		
		<u>76.00</u>	
Paper certificates of membership, 3 at \$3.00....	9.00		
Parchment certificates of membership, 4 at \$5.00	20.00		
Proceedings.....	3.00		
Year Book (I, II, III, IV and V).....	63.60		
Journal Advertising.....	4,822.15		
Journal Subscriptions.....	322.50		
Miscellaneous (reprints, type and adv. cuts, etc.)	263.80		
Index.....	0.50		
Gold Badges and Bars.....	18.80		
Gold Buttons.....	15.00		
Gold Pins.....	8.00		
Plated Buttons.....	1.25		
Plated Pins.....	1.00		
Bank Exchange, paid with dues.....	3.12		
		<u>5,551.72</u>	
Interest on deposit in International Bank of St. Louis.....	544.35		
Interest on St. Louis City Bonds.....	400.00		
		<u>944.35</u>	
			<u>19,286.82</u>
National Formulary IV.....			4,410.47
Procter Monument Fund (Contribution).....	50.00		
A. Ph. A. Research Fund (for Committee Expense)	14.62		
Life Membership Fee.....	75.00		
		<u>139.62</u>	

Interest on Bonds Belonging to Funds.

Life Membership Fund, Massachusetts State Bonds.....	390.00		
Centennial Fund, Massachusetts State Bonds..	30.00		
Ebert Legacy Fund, St. Louis Bonds.....	80.00		
Ebert Legacy Fund, Liberty Bonds.....	80.00		
A. Ph. A. Research Fund, Liberty Bonds.....	200.00		
Procter Monument Fund, Liberty Bonds.....	226.25		
		<u>1,006.25</u>	

Interest on Funds in Boston Penny Savings Bank.

Life Membership Fund.....	424.96	
Ebert Prize Fund.....	48.67	
Centennial Fund.....	88.99	
Endowment Fund.....	294.82	
College Prize Fund.....	1.70	
	<hr/>	859.14

Interest on Funds in International Bank.

Life Membership Fund.....	0.45	
Endowment Fund.....	1.65	
Ebert Legacy Fund.....	20.17	
A. Ph. A Research Fund.....	147.24	
Procter Monument Fund.....	30.55	
Rice Memorial Fund.....	5.25	
	<hr/>	205.31

Received from International Bank to Pay for Liberty Bonds (Purchased 1917).

A. Ph. A. Research Fund.....	5,000.00	
Procter Monument Fund.....	3,000.00	
Ebert Legacy Fund.....	2,000.00	
	<hr/>	10,000.00

Received from Boston Penny Savings Bank to Invest in Liberty Bonds, Purchased 1918.

Life Membership.....	10,000.00	
Endowment Fund.....	6,800.00	
	<hr/>	16,800.00
Endowment Fund (from International Bank)...	105.82	
Procter Monument Fund (time deposit Certificate to current deposit for investment in Liberty Bonds).....	5,478.88	
Remington Honor Medal Fund (bonds received from New York A. Ph. A. Branch).....	1,000.00	35,595.02 59,292.31
	<hr/>	<hr/>
		69,634.41

*Disbursements.**Disbursements by Voucher Checks.*

Jan.	10.	Check 3009	H. M. Whelpley.		
			Salaries.....	\$ 500.00	
			Printing, postage and stationery.....	25.00	
			Miscellaneous expenses.....	8.25	
			Traveling expenses.....	39.50	\$ 572.75
"	10.	" 3010	Wm. B. Day.		
			Salaries.....	375.00	
			Printing, postage and stationery.....	15.00	
			Clerical.....	40.00	430.00
"	10.	" 3011	H. V. Army.		
			Salaries.....		300.00
"	10.	" 3012	J. W. England.		
			Salary.....		150.00
"	10.	" 3013	Sharp & Dohme.		
			Printing, postage and stationery.....		5.15
"	10.	" 3014	E. A. Sayre.		
			Miscellaneous expenses.....		1.80

“	10.	“	3015 E. G. Eberle.			
			Salaries.....	291.63		
			Journal (a).....	10.74		
			Journal (b).....	54.00		
“	10.	“	Journal (c).....	18.50		
			Journal (d).....	1.60		376.47
			3016 Eschenbach Printing Co.			
			Journal (a).....	462.35		
“	22.	“	Journal (b).....	16.72		479.07
			3017 Buxton & Skinner.			
“	22.	“	Printing, postage and stationery.....			1.20
			3018 E. G. Eberle.			
“	23.	“	Miscellaneous expenses.....			10.00
			3019 James H. Beal.			
“	23.	“	National Drug Trade Conference.....			82.52
			3020 Chas. M. Woodruff.			
“	29.	“	National Drug Trade Conference.....			50.00
			3021 Eschenbach Printing Co.			
“	29.	“	Journal (a).....	28.40		
			Journal (a).....	2.00		30.40
“	29.	“	3022 E. G. Eberle.			
			National Formulary IV.....	6.50		
			Printing, postage and stationery.....	8.00		14.50
“	29.	“	3023 H. Hornecker.			
			Miscellaneous expenses.....			10.00
“	29.	“	3024 Louis C. Hesse.			
			Printing, postage and stationery.....			10.50
“	29.	“	3025 C. B. Jordan.			
			Section on Education and Legislation.....			8.75
Feb.	12.	“	3026 Wm. B. Day.			
			Clerical.....	32.00		
			Miscellaneous expenses.....	3.00		
			Year Book —III 0.66	}.....	5.65	40.65
			—IV 0.19			
“	12.	“	—V 4.80			
			3027 E. G. Eberle.			
			Salaries.....	291.67		
			Journal (a).....	17.18		
			Journal (b).....	67.50		
“	12.	“	Journal (c).....	14.50		390.85
			3028 Eschenbach Printing Co.			
			Journal (a).....	481.25		
“	12.	“	Journal (b).....	15.41		496.66
			3029 H. M. Whelpley.			
			Printing, postage and stationery.....	35.06		
“	12.	“	Miscellaneous.....	10.00		45.06
			3030 Chas. A. Apmeyer.			
“	16.	“	Membership.....			12.00
			3031 W. F. Robinson.			
“	16.	“	Printing, postage and stationery.....	10.00		
			Membership.....	3.00		13.00
“	16.	“	3032 Louis C. Hesse.			
			Printing, postage and stationery.....			3.25
Mar.	6.	“	3033 Buxton & Skinner.			
			Printing, postage and stationery.....	11.50		11.50

	6.	"	3034	W. F. Robinson.		
				Printing, postage and stationery.....	6.50	
				Year Book V.....	4.00	10.50
	6.	"	3035	W. B. Day.		
				Printing, postage and stationery.....	6.00	
				Clerical.....	32.00	
				Year Book V.....	1.14	39.14
	6.	"	3036	Rounds & Truman Co.		
				Miscellaneous expenses.....		15.00
	6.	"	3037	E. G. Eberle.		
				Salaries.....	291.67	
				Journal (b).....	54.00	
				Journal (c).....	10.00	
				Journal (d).....	3.75	359.42
	8.	"	3038	Eschenbach Printing Co.		
				Journal (a).....	480.12	
				Journal (b).....	16.99	497.11
	8.	"	3039	John C. Wallace.		
				National Drug Trade Conference.....		51.85
April	3.	"	3040	H. M. Whelpley.		
				Printing, postage and stationery.....		63.10
	5.	"	3041	Louis C. Hesse.		
				Printing, postage and stationery.....		10.75
	5.	"	3042	Wm. B. Day.		
				Miscellaneous expenses.....	5.25	
				Printing, postage and stationery.....	15.00	
				Clerical.....	40.00	60.25
	5.	"	3043	Imitation Typewriting & Addressing Co.		
				Membership.....		4.50
	9.	"	3044	E. G. Eberle.		
				Salaries.....	291.67	
				Journal (b).....	54.00	
				Journal (c).....	12.45	
				Journal (d).....	2.49	360.61
	9.	"	3045	Eschenbach Printing Co.		
				Journal (a).....	398.26	
				Journal (b).....	19.03	417.29
	13.	"	3046	J. B. Lippincott & Co.		
				Year Book 1914.....		9.60
	13.	"	3047	Rodway & Stone.		
				Miscellaneous expenses.....		82.50
	18.	"	3048	Eschenbach Printing Co.		
				Printing, postage and stationery.....	9.80	
				Journal (a).....	70.57	80.37
	22.	"	3049	F. E. Bibbins.		
				Membership.....		7.00
	23.	"	3050	J. B. Lippincott & Co.		
				National Formulary.....		102.50
May	6.	"	3051	W. F. Robinson.		
				Printing, postage and stationery.....		4.50
	6.	"	3052	E. F. Greathead.		
				Printing, postage and stationery.....		12.75
	10.	"	3053	W. F. Robinson.		
				Printing, postage and stationery.....		6.00
	10.	"	3054	Wm. B. Day.		
				Clerical.....	32.00	
				Miscellaneous expenses.....	3.00	35.00

	"	10.	"	3055	E. G. Eberle.		
					Salaries.....	291.67	
					Journal (a).....	34.20	
					Journal (b).....	42.50	
					Journal (c).....	12.00	
					Journal (d).....	0.62	380.99
	"	10.	"	3056	Eschenbach Printing Co.		
					Journal (a).....	378.86	
					Journal (b).....	15.13	393.99
	"	10.	"	3057	Eschenbach Printing Co.		
					Women's Section.....	7.80	
					Journal (a).....	26.00	33.80
	"	21.	"	3058	Louis C. Hesse Printing Co.		
					Printing, postage and stationery.....	4.75	
					Printing, postage and stationery.....	3.50	8.25
June	1.	"	"	3059	H. M. Whelpley.		
					Printing, postage and stationery.....		96.71
	"	1.	"	3060	W. T. Robinson.		
					Printing, postage and stationery.....		12.25
	"	1.	"	3061	Eschenbach Printing Co.		
					Journal (a).....		25.62
	"	7.	"	3062	Eschenbach Printing Co.		
					Year Book V, 1916.....		2,877.90
	"	7.	"	3063	Wm. B. Day.		
					Printing, postage and stationery.....	20.00	
					Clerical.....	32.00	52.00
	"	18.	"	3064	E. G. Eberle.		
					Salaries.....	291.67	
					Journal (a).....	10.77	
					Journal (b).....	31.25	
					Journal (c).....	13.00	346.69
	"	18.	"	3065	Eschenbach Printing Co.		
					Journal (a).....	387.08	
					Journal (c).....	15.24	402.32
	"	18.	"	3066	John Block.		
					Certificates.....		5.00
	"	18.	"	3067	A. Ph. A. Research Fund.		
					National Formulary (IV) Special.....		4,059.24
	"	26.	"	3068	W. T. Robinson.		
					Printing, postage and Special.....		4.75
July	10.	"	"	3069	J. W. England.		
					Salaries.....	150.00	
					Printing, postage and stationery.....	31.13	181.13
	"	10.	"	3070	Wm. B. Day.		
					Salaries.....		375.00
	"	10.	"	3071	E. F. Greathead.		
					Committee on Membership.....		5.50
	"	10.	"	3072	W. T. Robinson.		
					Committee on Membership.....		20.80
	"	10.	"	3073	Eschenbach Printing Co.		
					Printing, postage and stationery.....	13.00	
					Year Book, 1916.....	15.67	
					Journal (a).....	7.00	35.67
	"	10.	"	3074	Lloyd Bros.		
					Year Book, 1916.....		17.64

"	10.	"	3075	J. B. Lippincott Co. National Formulary IV.....		102.50
"	10.	"	3076	H. V. Army. Salaries.....	300.00	
				Year Book, 1916.....	17.91	317.91
"	10.	"	3077	E. G. Eberle. Salaries.....	291.67	
				Journal (a).....	4.40	
				Journal (b).....	44.50	
				Journal (c).....	15.50	356.07
"	10.	"	3078	Eschenbach Printing Co. Journal (a).....	354.94	
				Journal (c).....	15.01	369.95
"	10.	"	3079	Wm. B. Day. Clerical.....	40.00	
				Miscellaneous expenses.....	4.00	
				Year Book, 1916.....	0.37	44.37
"	10.	"	3080	H. M. Whelpley. Salaries.....	500.00	
				Printing, postage and stationery.....	42.29	
				Miscellaneous expenses.....	4.80	547.09
"	19.	"	3081	W. T. Robinson. Printing, postage and stationery.....		3.75
"	19.	"	3082	Grimm & Gorly. Miscellaneous expenses.....		5.50
"	1.	"	3083	Louis C. Hesse. Printing, postage and stationery.....		4.25
Aug.	1.	"	3084	Louis C. Hesse. Printing, postage and stationery.....		25.50
"	19.	"	3085	E. F. Greathead. Printing, postage and stationery.....		12.75
"	8.	"	3086	Imitation Typewriting & Addressing Co. Committee on Membership.....		7.00
"	8.	"	3087	Wm. B. Day. Clerical.....	32.00	
				Year Book V (1916).....	0.68	
				Printing, postage and stationery.....	19.60	52.28
"	8.	"	3088	S. L. Hilton. Printing, postage and stationery.....	8.71	
				Miscellaneous expenses.....	6.38	15.09
"	8.	"	3089	E. G. Eberle. Journal (a).....	7.74	
				Journal (b).....	23.00	
				Journal (c).....	36.92	
				Printing, postage and stationery.....	7.50	
				Salaries.....	291.67	366.83
"	8.	"	3090	Eschenbach Printing Co. Journal (a).....	379.59	
				Journal (c).....	16.32	
				Journal (a).....	15.35	411.26
"	8.	"	3091	A. H. Fetting Mfg. Jewelry Co. Badges and Bars.....	29.62	29.62
"	22.	"	3092	Louis C. Hesse. Printing, postage and stationery.....		4.50
"	22.	"	3093	H. M. Whelpley. Printing, postage and stationery.....	69.85	
				Miscellaneous expenses.....	1.00	70.85

"	22.	"	3094 E. F. Greathhead.		
			Printing, postage and stationery.....		5.50
"	22.	"	3095 Louis C. Hesse.		
			Printing, postage and stationery.....		10.25
"	22.	"	3096 J. W. England.		
			Traveling expenses.....		112.50
"	22.	"	3097 H. P. Utech.		
			Membership.....		2.50
"	22.	"	3098 W. T. Robinson.		
			Printing, postage and stationery.....		3.50
"	22.	"	3099 J. C. Peacock.		
			Section on Practical Pharmacy and Dispensing.....		24.45
"	22.	"	3100 R. P. Fischelis.		
			Commercial Section.....		4.00
"	22.	"	3101 L. E. Sayre.		
			Historical Section.....		3.00
"	22.	"	3102 M. A. Martin.		
			Historical Section.....		4.50
"	22.	"	3103 W. F. Rudd.		
			Education & Legislation.....		7.00
"	22.	"	3104 C. B. Jordan.		
			Section on Education and Legislation.....		5.45
"	22.	"	3105 H. C. Fuller.		
			Section on Scientific Papers.....		1.50
"	22.	"	3106 W. B. Day.		
			Printing, postage and stationery.....	14.00	
			Clerical.....	32.00	
			Miscellaneous expenses.....	0.75	46.75
"	22.	"	3107 A. Lindell & Co.		
			Printing, postage and stationery.....		32.50
"	22.	"	3108 E. G. Eberle.		
			Salaries.....	291.67	
			Journal (a).....	52.00	
			Journal (c).....	19.26	362.93
"	22.	"	3109 Eschenbach Printing Co.		
			Journal (a).....	407.47	
			Journal (b).....	17.48	424.95
"	22.	"	3110 J. W. England.		
			Printing, postage and stationery.....		11.55
"	22.	"	3111 H. H. Schaefer.		
			Membership.....		72.00
"	22.	"	3112 C. H. Rogers.		
			Membership.....		44.00
"	22.	"	3113 E. N. Gathercoal.		
			Membership.....		63.00
"	22.	"	3114 General Shorthand Reporting Co.		
			Stenographers.....		319.13
"	22.	"	3115 C. M. Snow.		
			Syllabus Committee.....		25.00
"	22.	"	3116 J. B. Lippincott Co.		
			National Formulary (IV).....		246.00
"	30.	"	3117 W. B. Day.		
			Clerical.....	32.00	
			Printing, postage and stationery.....	85.00	
			Miscellaneous expenses.....	7.13	124.13

"	30.	"	3118	Fidelity & Deposit Co. Premium on treasurer's bond.....		37.50
Oct.	3.	"	3119	W. T. Robinson. Printing, postage and stationery.....		46.00
"	3.	"	3120	J. B. Lippincott Co. National Formulary.....		20.50
"	3.	"	3121	J. C. Wallace. National Drug Trade Conference.....		60.89
"	3.	"	3122	Eschenbach Printing Co. Journal (a).....	390.45	
				Journal (c).....	16.35	406.80
"	3.	"	3123	E. G. Eberle. Salaries.....	291.67	
				Journal (a).....	13.11	
				Journal (b).....	44.00	
				Journal (c).....	11.15	359.93
"	3.	"	3124	E. F. Greathead. Printing, postage and stationery.....		6.95
"	19.	"	3125	E. F. Greathead. Printing, postage and stationery.....		27.15
"	19.	"	3126	L. C. Hesse. Printing, postage and stationery.....		4.50
"	19.	"	3127	H. V. Army. Printing, postage and stationery.....	22.22	
				A. Ph. A. Research Fund.....	14.62	36.84
Nov.	8.	"	3128	Eschenbach Printing Co. Journal (a).....		8.43
"	8.	"	3129	W. W. Stockberger. Section on Scientific Papers.....		2.45
"	8.	"	3130	American Trust Co. Miscellaneous expenses.....		5.00
"	8.	"	3131	W. B. Day. Clerical.....	40.00	
				Miscellaneous expenses.....	0.77	40.77
"	8.	"	3132	Louis C. Hesse. Printing, postage and stationery.....		11.75
"	8.	"	3133	Eschenbach Printing Co. Journal (a).....		53.80
"	8.	"	3134	Louis C. Hesse. Printing, postage and stationery.....		6.75
"	23.	"	3135	E. G. Eberle. Salaries.....	291.67	
				Journal (a).....	59.10	
				Journal (b).....	55.00	
				Journal (c).....	28.76	434.53
"	23.	"	3136	C. H. Rogers. Membership.....		4.00
"	15.	"	3137	Eschenbach Printing Co. Journal (a).....	391.67	
				Journal (b).....	15.92	
				Section on Education and Legislation.....	1.76	409.35
Dec.	5.	"	3138	Wm. B. Day. Printing, postage and stationery.....	12.00	
				Clerical.....	32.00	
				Miscellaneous expenses.....	5.72	
				Year Book IV.....	0.25	49.97

"	14.	"	3139	J. W. England. Printing, postage and stationery.....		27.72
"	14.	"	3140	Eschenbach Printing Co. Journal (a).....	489.14	
				Journal (c).....	14.02	503.16
"	14.	"	3141	E. G. Eberle. Salaries.....	312.50	
				Journal (a).....	13.60	
				Journal (b).....	44.00	
				Journal (c).....	13.00	383.10
"	26.	"	3142	H. M. Whelpley. Salaries.....	500.00	
				Printing, postage and stationery.....	129.54	
				Miscellaneous expenses.....	12.95	
				Traveling expenses.....	65.04	707.53
"	26.	"	3143	Wm. B. Day. Salaries.....		375.00
"	26.	"	3144	H. V. Army. Salaries.....		300.00
"	26.	"	3145	J. W. Pine. Miscellaneous expenses.....		25.00
"	30.	"	3146	J. W. England. Salaries.....		150.00
"	31.	"	3147	W. T. Robinson. Printing, postage and stationery.....		14.00
"	31.	"	3148	W. T. Robinson. Printing, postage and stationery.....		3.50

Total disbursements by check..... \$24,337.10

Less check No. 3127 (belonged to Research Fund instead of
Current Fund)..... 14.62

Actual disbursements by check..... \$24,322.48

Disbursements to Funds.

Miscellaneous.

Procter Monument Fund (Contributions).....	50.00	
A. Ph. A. Research Fund (Committee expense).....	14.62	
Life Membership Fee.....	75.00	
		139.62

Interest on Bonds.

Life Membership Fund, Massachusetts State Bonds.....	390.00	
Centennial Fund, Massachusetts State Bonds.....	30.00	
Ebert Legacy Fund, St. Louis City Bonds.....	80.00	
Ebert Legacy Fund, Liberty Bonds.....	80.00	
A. Ph. A. Research Fund, Liberty Bonds.....	200.00	
Procter Monument Fund, Liberty Bonds.....	226.25	
		1,006.25

Interest on Funds in Boston Penny Savings Bank.

Life Membership Fund.....	424.96	
Ebert Prize Fund.....	48.67	
Centennial Fund.....	88.99	
Endowment Fund.....	294.82	
College Prize Fund.....	1.70	
		859.14

Interest on Funds in International Bank of St. Louis.

Life Membership Fund.....	0.45	
Endowment Fund.....	1.65	
Ebert Legacy Fund.....	20.17	
A. Ph. A. Research Fund.....	147.24	
Procter Monument Fund.....	30.55	
Rice Memorial Fund.....	5.25	
	<hr/>	205.31

Transfer of Funds and Investments in Bonds.

Life Membership Fund invested in Liberty Bonds.....	\$9,757.57	
Life Membership Fund from Boston Penny Savings Bank to International Bank of St. Louis (balance).....	242.43	10,000.00
	<hr/>	
Endowment Fund invested in Liberty Bonds.....	4,826.83	
Endowment Fund invested in Liberty Bonds.....	1,905.82	
Endowment Fund from Boston Penny Savings Bank to In- ternational Bank of St. Louis (balance).....	173.17	6,905.82
Procter Monument Fund invested in Liberty Bonds.....	4,757.91	
Procter Monument Fund balance of Time Deposit Certificate in International Bank of St. Louis.....	720.97	5,478.88
Remington Honor Medal Fund, Liberty Bonds.....		1,000.00
		<hr/>
		\$25,595.02
		<hr/>
Total amount of disbursements by checks to funds....		49,917.50

*SUMMARY OF DISBURSEMENTS.**January 1, 1918, to January 1, 1919.*

Salaries.....	\$ 7,495.83	
Printing, postage and stationery.....	1,118.23	
Clerical.....	416.00	
Miscellaneous expenses.....	227.80	
Stenographers.....	319.13	
Traveling expenses.....	217.04	
Committee on Membership.....	245.30	
Year Book.....	2,950.81	
Gold badges and bars.....	29.62	
Certificates.....	5.00	
Premium on Treasurer's bond.....	37.50	
National Drug Trade Conference.....	245.26	
National Syllabus Committee.....	25.00	
Section on Scientific Papers.....	3.95	
Section on Education and Legislation.....	22.96	
Practical Pharmacy and Dispensing.....	24.45	
Commercial Section.....	4.00	
Historical Section.....	7.50	
Women's Section.....	7.80	
Journal (a) Publication.....	\$5,461.19	
Journal (b) Clerical.....	599.61	
Journal (c) Printing, postage and stationery.....	312.80	
Journal (d) Freight, drayage and miscellaneous.....	8.46	6,382.06
National Formulary IV.....	478.00	
	<hr/>	\$20,263.24

National Formulary IV transferred to A. Ph. A. Research Fund (See Rules of Finance No. 14).....	4,059.24	
		4,059.24
Life Membership Fund.....	10,890.41	
Ebert Prize Fund.....	48.67	
Centennial Fund.....	118.99	
Endowment Fund.....	7,202.29	
Ebert Legacy Fund.....	180.17	
A. Ph. A. Research Fund.....	361.86	
Procter Monument Fund.....	5,785.68	
College Prize Fund.....	1.70	
Rice Memorial Fund.....	5.25	
Remington Honor Medal Fund.....	1,000.00	
		25,595.02
Total amount of disbursements.....		\$49,917.50
To National Formulary IV.....		1,976.49
Cash on hand Jan. 1, 1919.....		17,740.42
Total.....		\$69,634.41

American Pharmaceutical Association Expenditures and Appropriations.

January 1, 1918, to January 1, 1919.

	Expendi- tures.	Appropri- ations.
Salaries.....	\$ 7,495.83	\$ 7,495.83
Printing, postage and stationery.....	1,118.23	1,118.23
Clerical expenses.....	416.00	416.00
Miscellaneous expenses.....	227.80	200.00
Stenographers.....	319.13	350.00
Traveling expenses.....	217.04	150.00
Year Book.....	2,950.81	3,000.00
Gold badges and bars.....	29.62	50.00
Certificates.....	5.00	50.00
Premium on Treasurer's bond.....	37.50	50.00
National Drug Trade Conference.....	245.26	200.00
National Syllabus Committee.....	25.00	25.00
Scientific Section on papers.....	3.95	25.00
Committee on Membership.....	245.30	250.00
Committee on Unofficial Standards.....	.....	100.00
Committee of Recipe Book.....	.....	50.00
Section on Education and Legislation.....	22.96	25.00
Commercial Section.....	4.00	25.00
Historical Section.....	7.50	25.00
Women's Section.....	7.80	25.00
Practical Pharmacy and Dispensing.....	24.45	25.00
Journal.....	6,382.06	6,330.06
National Formulary.....	478.00	1,000.00
	\$20,263.24	\$20,985.12

The A. Ph. A. Permanent Funds, January 1, 1919.

	1918.	1919.	Increase.
Life Membership Fund.....	\$22,644.60	\$23,777.44	\$ 1,132.84
Ebert Prize Fund.....	1,133.27	1,181.94	48.67
Centennial Fund.....	3,057.68	3,176.67	118.99
Endowment Fund.....	6,864.30	7,428.12	563.82
Ebert Legacy Fund.....	4,324.47	4,504.64	180.17
A. Ph. A. Research Fund.....	7,043.31	11,398.33	4,355.02
Total January 1, 1919.....	\$45,067.63	\$51,467.14	\$ 6,399.51

Funds Held in Trust by A. Ph. A.

Procter Monument Fund.....	\$ 8,486.20	\$ 9,243.20	\$ 757.00
College Prize Fund.....	40.01	41.71	1.70
Rice Memorial Fund.....	178.40	183.65	5.25
Jos. P. Remington, Honor Medal Fund.....		1,000.00	1,000.00
Total January 1, 1919.....	\$ 8,704.61	\$10,468.56	\$ 1,763.95

The Association Assets January 1, 1919.

St. Louis City Bonds.....	\$10,000.00
Cash in Bank, January 1, 1919.....	17,740.42
Available assets.....	\$27,740.42
National Formulary IV.....	1,976.49
Permanent funds.....	51,467.14
Funds held in Trust.....	10,468.56
Total A. Ph. A. Assets, Jan. 1, 1919.....	\$91,652.61

Life Membership Fund (Established 1870).

Massachusetts State 3% Registered Bonds.....	\$13,000.00
On hand in Boston Penny Savings Bank, January 1, 1918..	\$ 9,644.60
Interest on deposit in Boston Penny Savings Bank, January 1, 1918, to January 1, 1919.....	424.96
Interest on Massachusetts State Bonds, January 1, 1918, to January 1, 1919.....	390.00
Life Membership Fee (H. R. Gering).....	75.00
	\$10,534.56
Withdrawn from Boston Penny Savings Bank to invest in Liberty Bonds.....	10,000.00
Balance in Boston Penny Savings Bank, Jan. 1, 1919.....	534.56
Balance from investment in Liberty Bonds placed in International Bank.....	242.43
Interest in International Bank.....	0.45
Balance in International Bank, Jan. 1, 1919.....	242.88
U. S. Liberty Bond Registered 4th Loan at 4 $\frac{1}{4}$ % (being registered).....	10,000.00
Total on hand, Jan. 1, 1919.....	23,777.44

Ebert Prize Fund (Established 1873).

On hand, Boston Penny Savings Bank, Jan. 1, 1918.....	1,133.27
Interest on deposit in Boston Penny Savings Bank, January 1, 1918, to January 1, 1919.....	48.67
Total on hand, Jan. 1, 1919.....	\$ 1,181.94

Centennial Fund (Established 1877).

Massachusetts State 3% Registered Bonds.....		\$ 1,000.00
On hand in Boston Penny Savings Bank, Jan. 1, 1918.....	\$ 2,057.68	
Interest on bonds, Jan. 1, 1918, to Jan. 1, 1919.....	30.00	
Interest on deposit in Boston Penny Savings Bank, Jan. 1, 1918, to Jan. 1, 1919.....	88.99	
	<hr/>	118.99
Balance in Boston Penny Savings Bank, Jan. 1, 1919.....		2,176.67
		<hr/>
Total on hand, Jan. 1, 1919.....		3,176.67

Procter Monument Fund (Established 1904).

(Held in Trust.)

Cash on hand, January 1, 1918.....	\$ 3,215.43	
Time Deposit Certificates due June 30, 1918.....	5,455.24	
Time deposit, interest July 1-August 22, 1918.....	23.64	
Interest on deposit in International Bank.....	30.55	
Interest on Liberty Bonds.....	226.25	
Contribution.....	50.00	
	<hr/>	\$ 9,001.11
Invested in Liberty Bonds.....	7,757.91	
Balance in International Bank, January 1, 1919.....		\$ 1,243.20
U. S. Liberty Bonds, 2d Loan, Registered, at 4%, Nos. 7840, 7841, 7842.....		3,000.00
U. S. Liberty Bonds, 2d Loan, converted, at 4 $\frac{1}{4}$ %, Regis- tered, No. 3393.....		5,000.00
		<hr/>
Total on hand, January 1, 1919.....		\$ 9,243.20

College Prize Fund (Established 1905).

(Held in Trust.)

On hand Boston Penny Savings Bank, January 1, 1918.....	\$ 40.01	
Interest on deposit in Boston Penny Savings Bank, January 1, 1918, to January 1, 1919.....	1.70	
	<hr/>	
Total on hand, January 1, 1919.....		\$ 41.71

Rice Memorial Fund (Transferred from U. S. P. C. in 1913).

(Held in Trust.)

On hand in International Bank, January 1, 1918.....	\$ 178.40	
Interest on deposit in International Bank, January 1, 1918, to January 1, 1919.....	5.25	
	<hr/>	
Total on hand International Bank, January 1, 1919...		\$ 183.65

Endowment Fund (Established 1906).

On hand in Boston Penny Savings Bank, Jan. 1, 1918.....	\$ 6,864.30	
Interest on deposit in Boston Penny Savings Bank, January 1, 1918, to January 1, 1919.....	294.82	
	<hr/>	\$ 7,159.12
Withdrawn from Boston Penny Savings Bank to invest in Liberty Bonds.....		\$ 6,800.00
		<hr/>
Balance in Boston Penny Savings Bank.....		\$ 359.12
Balance from investment in Liberty Bonds placed in Inter- national Bank of St. Louis.....	67.35	
Interest on International Bank of St. Louis.....	1.65	
Balance on hand International Bank, Jan. 1, 1919.....		69.00
Liberty Bonds, 4th Loan at 4 $\frac{1}{4}$ %, being registered.....		7,000.00
		<hr/>
Total on hand Jan. 1, 1919.....		\$ 7,428.12

Ebert Legacy Fund (Established 1909).

St. Louis City Registered 4% Gold Bonds.....		\$ 2,000.00
On hand in International Bank, Jan. 1, 1918.....	2,324.47	
Interest on St. Louis Bonds.....	80.00	
Interest on Liberty Bonds.....	80.00	
Interest on International Bank of St. Louis.....	20.17	

\$ 2,504.64

Invested in Liberty Bonds.....	2,000.00	
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Balance in International Bank, Jan. 1, 1919.....		504.64
U. S. Liberty Bonds, 4th Loan, Registered at 4 $\frac{1}{4}$ %, Nos. 7837, 7839.....		2,000.00

Total on hand, Jan. 1, 1919..... \$ 4,504.64
A. Ph. A. Research Fund (Established in 1905 as the National Formulary Revision and Research Fund and Changed in 1917 to A. Ph. A. Research Fund).

Cash on hand International Bank, Feb., 1918.....	\$ 7,043.31	
Balance from National Formulary IV for the year 1917....	4,059.24	
Interest on Liberty Bonds.....	200.00	
Interest on deposit in International Bank.....	110.40	

11,412.95

Expense of Research Committee.....	14.62	
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Invested in Liberty Bonds Feb. 1, 1918 to Jan. 1, 1919....	5,000.00	
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5,014.62

Balance in International Bank of St. Louis, Jan. 1, 1919 ..		\$ 6,398.33
U. S. Liberty Bonds, Registered, 2nd Loan, at 4%, No. 646.		\$ 5,000.00

Total on hand, Jan. 1, 1919..... \$11,398.33
Joseph P. Remington Honor Medal Fund (Established in 1918).

On hand U. S. Liberty Bond, 3d converted at 4 $\frac{1}{4}$ %, No. 91879.		\$ 1,000.00
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DIVISION OF PHARMACEUTICAL CHEMISTRY,
AMERICAN CHEMICAL SOCIETY.

We are just in receipt of a communication from Secretary G. D. Beal, of the Division of Pharmaceutical Chemistry A. C. S., advising that the meetings of this Division will be held Wednesday and Thursday, September 3 and 4 (see also page 638, this number of the JOURNAL). The support of this Division is up to the members and small contributions are asked for; these should be transmitted to Secretary G. D. Beal, Chemistry Building, Urbana, Ill.

An open meeting is planned for discussion of patent legislation. The proposed Research Institute will be an important consideration of the meeting in which pharmacists are deeply interested.

COMMITTEE REPORTS

REPORT OF THE COMMITTEE ON DRUG MARKET.*

In preparing our report for the past year, we were confronted with a double problem as practically one-half of the year from June 1st to the middle of November witnessed what was undoubtedly the greatest effort ever made by our nation in war and in industry. The other half of the year brought another phase, or what might be termed the re-adjustment period. Each of these periods presented their different problems and the review of the work accomplished under these conditions necessitates its consideration from the two angles. During the period of actual warfare, consumers frequently did not have much choice and were obliged to accept what was available, even though it was of inferior quality and not what they were accustomed to receiving. After the cessation of hostilities these conditions were not so pronounced as the demands of our Army and Navy were considerably decreased and men were released from the fighting forces to again occupy their places in the army of industry. While this condition relieved the stress in many lines, particularly in chemistry, it did not have a pronounced influence on the vegetable drugs, as their growing and collecting period had passed and no improvement to any extent can be expected before another season. Other lines of goods were in a somewhat different position, as the release of goods formerly held in large quantities for war purposes and the increased facilities for manufacturing satisfied the normal demand. These conditions, however, placed the analyst in a difficult position as he had to determine whether or not the article he was examining was still subject to war conditions or was an effort on the part of a manufacturer or dealer to market an inferior article, even when the production of a superior article was possible.

As in other lines of industry, the analytical staffs of the various laboratories have been severely handicapped by the lack of assistants, both by the requirements of private plants engaged in war work and the urgent demand of the Army for all available chemists. For these reasons the report of your committee does not have quite as wide a scope as we desire, but in accordance with our usual custom, we have endeavored to make it comprehensive in order to fully inform you concerning the quality of drugs and chemicals found on the market. In general, the important question that we have to consider is not whether a few unscrupulous dealers have succeeded in evading the law for a short time and have disposed of adulterated goods, but whether the trade, as a whole, has maintained its high standard of quality, or if there has been a general lowering of quality. In this connection we wish to report that notwithstanding the unsatisfactory industrial condition we feel justified in stating that the condition of drugs, oils, chemicals, etc., is fairly satisfactory. In commenting on this phase of the situation, Mr. E'we states as follows: "Considering the dearth of labor during the past year we find upon analysis of our records that the quality of medicinal substances during the past year has been gratifyingly satisfactory. The most striking result of the dearth of labor has been its effect upon the collection and marketing of crude vegetable drugs. These drugs have been offered with the undesirable parts of the plants either still attached or not removed to a sufficient extent to permit the drugs to come within the standard laid down for them. This condition has made necessary a higher proportion of rejections than usual."

Many of the cases of inferiority were entirely unwarranted and were evidently an effort on the part of some to profit by the abnormal conditions and also to dispose of goods of decidedly inferior quality. However, in some instances the fault is probably due to the fact that some persons were engaged in this occupation who had no previous experience and were ignorant of the exact requirement for the drug they were handling. A great many cases were due to carelessness or indifference to standards such as shipping Blackberry Root Bark containing 30% of whole roots, Butternut Bark and Cotton Root Bark each containing 30% of wood; Cramp Bark with 25% of whole roots and adhering wood; Goat's Rue consisting almost entirely of stems; Pipsissewa containing 50% of stems and fruits instead of leaves; Water Pepper consisting almost entirely of stems, whereas the whole herb is desired; Stronger Orange Flower Water containing 70 times and Stronger Rose Water containing 63 times more non-volatile water-soluble matter than is per-

* Presented to the 1919 Convention of the Pennsylvania Pharmaceutical Association at Buena Vista Springs, 1919.

mitted by the U. S. P.; and Zinc Borate containing 18% of zinc sulphate. In this class could also be considered instances where the active principle was considerably under standard, such as the instance of two shipments of Cinchona Bark, which contained only 0.36% and 0.68%, respectively, of alkaloids, Guaiacol containing a notable amount of impurities, Hydrastis containing only 0.73% of alkaloids, Ipecac with only .029% alkaloids and Stillingia Root containing 70% to 80% mouldy root.

Other cases, although gratifyingly few in number, are clear adulterations or substitutions. Under this heading we quote Kamala containing 46% sand, Oil of Cade containing Rosin Oil, the presence of another gum in Myrrh to the extent of 70%, the substitution of other members of the fern family for Male fern, Rhus Copalina for Rue, a mixture of other plants and grasses for St. John's Wort, Ruellia for Spigelia and *Cynodon bactylon* for Triticum. Occasionally, a particularly pernicious practice is uncovered where the valuable principle has been removed and the inert portion sold. This year we have two instances of this character, such as Australian Red Gum, which had been deprived of its water-soluble tannin and Hydrastis from which the alkaloids had been extracted.

An improvement in the quality of gum-resins and like products is essential, as of the twelve samples of Benzoin examined only five were of U. S. P. quality; only three of the seven samples of Asafetida and only one of four samples of Myrrh.

The usual number of cases were found where only slight inferiority was discovered. These items were usually not entirely satisfactory in color or contained impurities slightly in excess of the standards and were rejected or accepted according to whether or not the conditions noted were harmful.

In reviewing the data contributed to our report, we are re-impressed with the importance of a close examination of drugs and chemicals, not only to detect adulterations and determine the strength of preparations but to prevent the lowering of quality. It is only in this manner that the pharmacist can be assured that the prescription he is compounding contains the actual amount of the ingredient prescribed, as substances like Pipsissewa, which was found to contain 50% stems and fruits when only the leaves are desired, is in reality only one-half strength; Cramp Bark with 25% roots is only three-fourths strength, and Kamala with 46% sand is only about one-half strength.

Following its usual custom, the committee has taken advantage of the offer of the firms of H. K. Mulford Co. and the Smith, Kline & French Co., and has taken the following data from their files. The matter presented at this time does not represent all the substances examined by these firms but is typical of the articles examined during the period from June 1, 1918, to June 1, 1919.

ACETONE: One lot was 2.25% low in strength but was otherwise of U. S. P. quality.

Reported by J. G. ROBERTS.

ACETYSALICYLIC ACID: Although this substance is subjected to rather rigid tests, we find that by far the greater number of samples submitted complied with the requirements. Of the forty-one lots and samples examined only five were rejected. These were not very inferior but as they contained more than a faint trace of free salicylic acid and had a decided odor of acetic acid when triturated, they were not considered of acceptable quality. The results obtained with these samples show that most of the acetylsalicylic acid on the market is of excellent quality. No talcum or other adulterant was present in any sample.

Reported by J. G. ROBERTS.

ACID BENZOIC: All lots were of U. S. P. quality except one which had a decided yellowish color.

Reported by J. G. ROBERTS.

ACID SALICYLIC: While all samples gave satisfactory results with the U. S. P. tests it appears difficult to obtain an entirely satisfactory product as most of the samples examined had a yellowish appearance and when used for the manufacture of sodium salicylate gave a product with a decided pink color.

Reported by J. G. ROBERTS.

ACONITE ROOT: The rejection of one lot was recommended because it contained only 0.44% of ether-soluble alkaloids and because it contained about 45% of decayed and soft spongy material.

Reported by J. G. ROBERTS.

ALKANET ROOT: It was considered that one sample was of vary undesirable quality on account of an excessively high ash yield which indicated the presence of a notable amount of

dirt. The highest ash heretofore obtained was 15.18%, which was also excessive as all other samples examined yielded 6.45% to 10.27%. Reported by J. G. ROBERTS.

ALOID: A trifle more residue and water insoluble matter than is permitted by the U. S. P. was found in one lot. The very slight excess present, however, was not considered objectionable. Reported by J. G. ROBERTS.

ALUM: A lot of Ammonia Alum was not of U. S. P. quality on account of the presence of excessive amounts of iron and heavy metals. Reported by J. G. ROBERTS.

ASAFETIDA:

Sample.	Alcohol-soluble.	Ash.
1.....	18.6%	62.0%
2.....	60.0%	34.4%
3.....	73.6%	10.0%
4.....	59.3%	...
5.....	72.0%	4.7%
6.....	51.9%	18.0%
7.....	68.6%	7.5%
U. S. P. requires not less than	60.0%	Not more than 15.0%

ASAFETIDA-POWDERED:

Sample.	Alcohol-soluble.	Ash.
1.....	48.0%	27.4%
U. S. P. requires not less than	50.0%	Not more than 30.0%

Reported by F. J. KEENAN.

BELLADONNA LEAVES: One lot was infested with insects and although assaying 0.5995% alkaloids was rejected for use in pharmaceutical preparations. Two other lots, offered as Belladonna Leaves, consisted of *Solanum nigrum* (Common Black Garden Cherry).

Reported by G. E'WE.

BENZALDEHYDE: Sample was rejected because it gave a strong test for chlorinated products. A complete examination of the sample was not considered necessary on this account.

Reported by J. G. ROBERTS.

BENZOIC ACID: One lot contained 0.25% chloride, calculated as chlorine. This is greatly in excess of the U. S. P. allowance. Seven other lots were normal in this respect.

Reported by G. E'WE.

BENZOIN: The 12 lots examined assayed 65.4%, 65.5%, 65.8%, 66.7%, 67.0%, 69.3%, 69.7%, 77.5%, 80.0%, 80.2%, 84.3% and 84.6% alcohol-soluble matter, respectively. The U. S. P. requires 75%.

Reported by K. SUTO.

BERBERIS AQUIFOLIUM: One lot contained 50% of rhizomes and roots without bark, whereas the N. F. requires the rejection of Berberis without bark. Evidently the bark was lost in handling. This lot was rejected.

Reported by G. E'WE.

BLACK HAW: Desiring to obtain data on the ash content of Black Haw, comparative tests were made to determine the amount generally present in a commercial sample and in a clean, picked sample. The commercial sample was taken from ordinary stock and represented the quality usually found on the market. It yielded 7.25% ash and 1.4% acid insoluble ash. The picked sample yielded 5.4% ash and only 0.125% of acid insoluble ash was obtained by thoroughly cleaning several pieces of bark until they were entirely free of earthy matter. The results obtained in these tests show that Black Haw as found in the open market is clean and contains but little extraneous matter.

Reported by J. G. ROBERTS.

BLACKBERRY ROOT BARK: Three lots contained 21%, 30% and 25%, respectively, of whole roots, whereas only the bark is desired. This condition was due to the collection and inclusion of the fine roots from which the removing of the bark is an impractical process.

Reported by G. E'WE.

BLACK HELLEBORE: A 1900 lb. lot was rejected because it was found to be *Veratrum Viride* and not Black Hellebore as labeled.

Reported by J. G. ROBERTS.

BUTTERNUT BARK: One lot contained 30% of wood. Reported by G. E'WE.

CATECHU (Not pale Catechu, U. S. P.): The five lots examined assayed 66.1%, 81.0%, 83.0%, 88.5% and 89.2% of alcohol-soluble matter, respectively. The British Pharmacopoeia requires 60%.

Reported by G. E'WE.

CHESTNUT LEAVES: One lot was rejected because it was gathered too late and was hard and brittle and brown in color as a consequence. Another lot contained leaves of other *castanea* species than prescribed by the N. F.

Reported by P. COHN.

CHICORY: One lot was rejected because it was infested with insects.

Reported by G. E'WE.

CINCHONA BARK: Five lots from Ecuador assayed 0.36%, 0.68%, 2.22%, 2.56% and 5.32% total alkaloids, respectively. Two lots from Peru assayed 2.80% and 3.82% total alkaloids, respectively.

One lot of extremely thick Cinchona Bark assayed only 0.76% total alkaloids. Evidently this bark was taken from an extremely aged or abnormal tree. Reported by G. E'WE.

CINCHONA, YELLOW: An average sample from a forty bale lot was found to contain 6.05% alkaloids.

Reported by J. G. ROBERTS.

COPAIBA, PARA: This lot was not of U. S. P. quality as its specific gravity was appreciably below the U. S. P. standard of .940 to .955 at 25° C and its acid value below the U. S. P. standard of not less than 28 nor more than 95. It also gave unsatisfactory results with the U. S. P. paraffin oils test and yielded about 1% less resin than the standard of not less than 30%.

It was soluble in 0.6 part and less of absolute alcohol. The addition of more than this amount showed a decrease in solubility. The U. S. P. does not give a limit of solubility and simply states that Copaiba is "Soluble," showing not more than a slight opalescence in dehydrated alcohol. In view of the foregoing results it was considered that the lot was of undesirable quality.

Reported by J. G. ROBERTS.

COLCHICUM SEED: The colchicine content of a three-bag lot was found to be 0.625%, which is well above the U. S. P. standard of "not less than 0.45%."

Reported by J. G. ROBERTS.

COLCHICUM ROOT: Two lots were of very desirable quality and contained 0.57% and 0.5%, respectively, of colchicine.

Reported by J. G. ROBERTS.

COTTON-ROOT BARK: One lot contained 30% of wood, whereas the N. F. limits the wood to not more than 5%.

Reported by G. E'WE.

CRAMP BARK: One lot contained 25% of whole roots and adhering wood. Two other lots also contained excessive wood. The N. F. limits the wood to not more than 5%.

Reported by P. COHN.

Two samples labeled "Cramp Bark, so-called," consisted of the bark of *Acer spicatum*.

Reported by G. E'WE.

CREOSOTE: Considerable difficulty has been experienced in obtaining strictly U. S. P. creosote during the past year as three of the five lots examined contained coeruleignol according to the U. S. P. test.

Reported by F. J. KEENAN.

CREOSOTE: The examination of one lot showed that it complied with all the U. S. P. tests except that for the detection of coal-tar creosote. As the lot had been obtained from a reliable and well-known manufacturer the matter was taken up with them and we were informed that their product was pure and that the purest grades of creosote do not produce a clear mixture with glycerin, as stated in the U. S. P. They also stated that products of a lower degree of purity, such as the German products heretofore found on the market, will produce a clear mixture with glycerin, as they contain more cresols.

Upon consulting the U. S. P. Revision Committee, we were informed they had investigated the matter and had revised the test to read as follows: "Mix 4 mils of creosote and 4 mils of glycerin, then add 1 mil of water, shake gently and allow to stand. A creosote layer equal to or greater in volume than the creosote taken separates (Coal-tar creosote)."

As the lot complied with the revised test it was accepted and considered to be of U. S. P. quality.

Reported by J. G. ROBERTS.

DAHLIA BULBS: One lot contained many flinty and many soft, brownish, mushy bulbs, and was rejected as both flinty and soft, mushy bulbs give low yields of inulin. Only firm, white bulbs are satisfactory.

Reported by G. E'WE.

DAMIANA LEAVES: One lot contained an excess of stems.

Reported by G. E'WE.

DIASTASE: One lot assayed very much less than the 1:50 required by the U. S. P. This lot readily converted starch paste to the "thin" stage but not to the stage of complete conversion.

Reported by K. SUTO.

GAMBIR: Four lots assayed over 60% alcohol-soluble matter as required by the U. S. P. Two other lots assayed 45.0% and 55.0%, respectively. Reported by L. J. LIPMAN.

GLYCERIN: Five of the six samples examined were of U. S. P. quality except that they each had a yellowish color. This condition has been prevalent for some time and was probably due to the very heavy demand for war purposes which necessitated the production of the highest possible yield but which resulted in lowering the quality to some extent. A slight improvement has been noted since the cessation of hostilities but it does not yet have the water-white color required by the U. S. P.

GOATS RUE: Two lots consisted almost entirely of stems, whereas only the flowering tops are desired. Another lot contained 22% of stems. Reported by G. E'WE.

GRINDELIA ROBUSTA: One lot contained 30% of foreign plants. Another lot contained an excess of stems. Reported by G. E'WE.

GUAIACOL: One lot contained oily hydrocarbons but was of U. S. P. quality in every other respect. Reported by J. G. ROBERTS.

GUAIACOL: Two lots did not separate into two layers as required in the "U. S. P. petroleum benzine" test and also did not congeal as required in the U. S. P. "15% solution Potassium Hydroxide" test thus indicating according to the U. S. P. the "presence of impurities."

Reported by F. J. KEENAN.

GUAIAC:

Sample.	Alcohol soluble.	Ash.
1.....	81.3%	....
2.....	77.4%	....
3.....	75.2%	3.95%
4.....	87.3%	3.00%
5.....	81.9%	....
6.....	74.7%	....
7.....	69.0%	....
8.....	77.4%	....
9.....	83.4%	3.80%
10.....	81.9%	....
11.....	76.5%	....
12.....	84.1%	3.4%
13.....	79.9%	3.2%
14.....	77.6%	3.9%
15.....	74.8%	6.4%
16.....	83.2%	3.2%
U. S. P. requires not less than	85.0%	Not more than 4.0%

Reported by L. J. LIPMAN.

HELLEBORE ROOT: A sample of powdered root was found to contain 1.28% alkaloids and to yield 23.25% ash. Reported by J. G. ROBERTS.

HYDRASTIS: One lot of powdered drug assayed only 0.735% alkaloids whereas the U. S. P. requires not less than 2.5%. This lot was rejected as it had probably been partially extracted. Reported by G. E'WE.

IPECAC: One lot from Honduras assayed only 0.012% emetine and 0.029% total alkaloids. Reported by G. E'WE.

IPECAC: The only shipment examined contained 2.36% ether-soluble alkaloids which is well above the U. S. P. standard of 1.75%. It also contained about 3.5% stems.

Reported by J. G. ROBERTS.

IRON, REDUCED: All of the many lots of reduced iron examined during the past year contained sulphides in great excess of the U. S. P. allowance. All contained over 90% metallic iron. Reported by G. E'WE.

IGNATIA BEAN: One lot, so labeled, consisted of Calabar Beans.

Reported by G. E'WE.

IRISH MOSS: One lot was rejected because of excessive calcareous matter.

Reported by G. E'WE.

KAMALA: A foreign shipment of 200 lbs. was found to yield 46.45% ash which upon further investigation was found to be a reddish sand. Kamala is subject to adulteration with this substance as on other occasions we have obtained as high as 58.5% ash.

This practice has been going on for a considerable period and no improvement in quality over that furnished in previous years has been noted. Of the nine samples examined since 1908 only two samples, which yielded 2.4% and 2.47%, respectively, were low in ash. The other samples yielded the following amounts: 57.2%, 44.1%, 58.6%, 53.5%, 49.1%, 56.9%, 21.7%.

Reported by J. G. ROBERTS.

KIESELGUHR: Twenty samples were examined. Eight were strictly U. S. P. Six yielded slightly more loss upon ignition than the 10% allowed by the U. S. P., but not above 11%; the other six yielded 11.4%, 11.93%, 14.55%, 19.4% and 23.4%, respectively. All of the 20 samples were calcined Kieselguhrs, but a few yielded a slight amount of smoke upon ignition, indicating insufficient calcination.

Reported by G. E'WE.

KINO: The 6 lots examined assayed 37.8%, 40.6%, 45.5%, 62.7%, 91.5% and 93.6% of alcohol-soluble matter, respectively. The U. S. P. requires not less than 45%.

Reported by L. J. LIPMAN.

KOLA NUT: Every lot examined was of good quality and yielded from 1.5% to 2.04% of caffeine.

Reported by J. G. ROBERTS.

LACTIC ACID: It has been difficult to obtain lactic acid of 85% total lactic acid strength during the past year. Eleven of the lots assaying between 75% and 84% were otherwise U. S. P. and were used in proper proportions.

Reported by K. SUTO.

LIME, CHLORINATED: One lot contained only 27.2% available chlorine instead of not less than 30% as required by the U. S. P.

Reported by J. G. ROBERTS.

(To be concluded in September Issue.)

CORRESPONDENCE

CINCINNATI, July 28, 1919.

THE EDITOR:

Druggists are having an experience with vexatious taxes which ought to convince them that the time has come to direct public attention to other sources of revenue besides taxes on business. The average citizen seems to think there is just one way to raise public revenue and that way is by taxing business and industry. As long as people think that way, druggists, other merchants and business men generally, will be penalized with taxes for rendering service.

You have observed how men buy land and hold it unimproved until its value is doubled—often quadrupled, by the extension of public improvements and increase in population, and how they then sell, pocketing the increase in land value which the people created. Men have amassed untold wealth rendering no service whatever, just holding land unimproved and out of use. The people create the land values and land speculators appropriate them to enrich themselves.

There is an organization of business men and manufacturers who have organized to urge this simple and practical proposition—that instead of permitting individuals to appropriate the socially created land values for private use, the people appropriate them for public use. Then it will not be necessary to confiscate the profits of business and industry for public purposes. It is not a new theory; it is proving successful in Canada, in parts of California, in towns in Maryland; and Pittsburgh and Scranton, Pennsylvania, have taken steps in this direction.

I am sending you a copy of a little publication¹ containing an article of mine that will, I am sure, become of more and more interest, as the burden of taxation increases, especially in the drug trade.

Signed, CHAS. G. MERRELL.

¹ *Ohio Site Taxer*, June 19. The paper is printed in this issue of the JOURNAL.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Committee on Publication: J. W. ENGLAND, *Chairman*; G. M. BERINGER, CASWELL A. MAYO, H. B. MASON, E. L. NEWCOMB, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on the Progress of Pharmacy, *ex-officio*.

LEGENDS UNDER CUTS REVERSED IN ARTICLE ON "STRUCTURE OF BERMUDA GRASS COM- PARED WITH THAT OF TRITICUM."

Prof. C. J. Zufall advises us that due to an error of their office in typing the legends under cuts of the article on "Structure of Bermuda Grass Compared with that of Triticum," these were reversed, and he asks us to announce the error. See pp. 472-473, June issue JOURNAL A. PH. A. Readers will please make a notation that will indicate the transposition.

FIFTH NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES.

The forthcoming National Exposition of Chemical Industries at the Coliseum and First Regiment Armory, Chicago, during the week of September 22nd and 27th, inclusive, holds possibilities of as great benefit to American Chemical Industry as in the past during the war period when it contributed so directly to the firm establishment of a chemical industry in this country. This Exposition will prove that the chemical industry in this country is advancing with leaps and bounds; that the industries are flourishing and that the end is not yet in sight. It will show what optimism has done for the country and what a continued spirit of optimism can do. The fields of organic chemistry in dyes, pharmaceuticals and various organic technical products have made great strides in the last year, and will demonstrate that the greatest achievements in the war period were not of organic products for the taking of life alone or for temporarily incapacitating men.

DOCTORS PROPOSE TO MAKE NEW YORK WORLD'S MEDICAL CENTER.

Proposals to make New York a world medical center by construction of a \$50,000,000 medical foundation were announced July 11, by Dr. Royal S. Copeland, New York commissioner of health, after a meeting of physicians and surgeons, at which the New York Association for the Advancement of Medical Education and Medical Science was organized.

Objects of the association include the establishment of a working affiliation of the medical schools, hospitals, laboratories and public health facilities of the city and creation of a "medical educational foundation" to finance medical education and investigation.

Wendell C. Phillips, ear specialist, who proposed the association, was elected president; George D. Stewart, president of the New York Academy of Medicine, vice-president, and Haven Emerson, formerly commissioner of health, secretary.

NEW METHOD OF EXTRACTION OF ALKALOIDS.

L. Reutter suggests a new method of extracting alkaloids which consists in replacing the strong mineral acids by acetic, citric, tartaric, oxalic, or β -naphthalenesulphonic acids. The method is carried out by treating 50 grammes of the powdered drug with 200 grammes of boiling water containing 5 grammes of the acid, filter hot, decant from the separated oil or resin, extract the remaining traces with ether or petroleum ether, evaporate the solution to small bulk and precipitate the alkaloid by a suitable base. Redissolve and isolate the pure alkaloid by usual methods. Analytical results of the examination of twenty-six drugs with each of the five acids are tabulated, the results showing close agreement.—*Schweiz. Apoth. Ztg.* through *Chem. Abst.*

OXIDATION OF APOMORPHINE.

It has already been shown that when morphine is digested with unsterilized food substances no apomorphine is produced, nor is such the case with ferments in the presence of chloroform, toluol, or sodium fluoride. Experiments with fungi and bacteria have shown that neither *Aspergillus* nor *Penicillium* splits up cocaine with formation of an oil with a basic reaction, probably a pyrrol derivation; in no case, however, was benzoic acid produced; bacteria, on the other hand, readily do so. Neither fungus produces apomorphine from morphine. Apomorphine hydrochloride yields by oxidation with dilute solution of potassium ferricyanide a substance sol-

uble in benzol with production of an intense amethyst-violet color; this is an exceedingly delicate test for apomorphine. By a rather lengthy process (details in the original), an oxidation product was obtained in absolutely black crystals soluble in chloroform with intense violet color similar to that produced when an apomorphine solution is carefully oxidized with potassium bichromate and shaken with chloroform. E. Winterstein (*Schweiz. Apoth. Ztg.*, 57, 133; through *Pharmaceutical Journal and Pharmacist*, July 5, 19.)

NEW YORK SECURES HOSPITAL FOR DRUG ADDICTS.

Mayor Hylan, of New York City, announced on July 18 the acceptance by the city of the gift of a hospital by John D. Rockefeller for the treatment of drug addicts.

The gift includes the buildings of the War Demonstration Hospital, at Avenue A and 64th St., built at a cost of \$300,000, and the expense of moving the buildings to Warwick Farm, Orange County.

Warwick Farm was bought by the city and equipped for the treatment of inebriates, but as the country has gone dry, it is held that the need of such use has gone.

The city will appropriate \$36,500 for the hospital's work for the remainder of the year and \$25,000 for carrying on the work of relief of addicts within the city. The first step in establishing the farm was taken by the Sinking Fund Commission when it transferred Warwick Farm to the jurisdiction of the Board of Health.

July 17 was the last day on which drug addicts could obtain drugs on prescriptions without being registered. Between 600 and 700 sought yellow cards at the registration office in Prince St. Registration entitles the

addict to treatment for two months, in which time, the health commissioner said, it is hoped to effect a cure or to reduce the patient's wants greatly, with promise of a cure in a comparatively short time.

The commission said one of the best features of the registration plan is that it prevents duplication and reduplication, as the registration card bears the history of the addict and his or her picture. The commissioner cited the case of a man recently arrested who had obtained three prescriptions under different names from different physicians as one of the evils of the former system.

Through the information obtained by the registration plan in New York, some of the data of the report of the Special Committee on Narcotics can be checked. Great care was exercised in preparing this report, but with that there have been points overlooked. Each order for drugs requires a new prescription, thus drug addicts required many such prescriptions and the number cannot be made the basis of determining the number of drug addicts. The Government very likely has in its possession a large amount of the narcotic drugs reported and American manufacturers supplied the European armies before the entry of the United States into the war. The number of addicts in New York has been estimated at from 100,000 to 200,000, and up to July 17, only 3,000 addicts registered.

Dr Emil Fischer, professor of chemistry in the University of Berlin, died July 16.

Professor Fischer gained prominence through his numerous contributions to organic and biological chemistry. For his work in chemistry he was awarded the Nobel Prize in 1902; the Elliott Cresson Gold Medal was awarded Professor Fischer by the Franklin Institute of Philadelphia in 1913. Doctor Fischer was born in 1852.

OBITUARY.

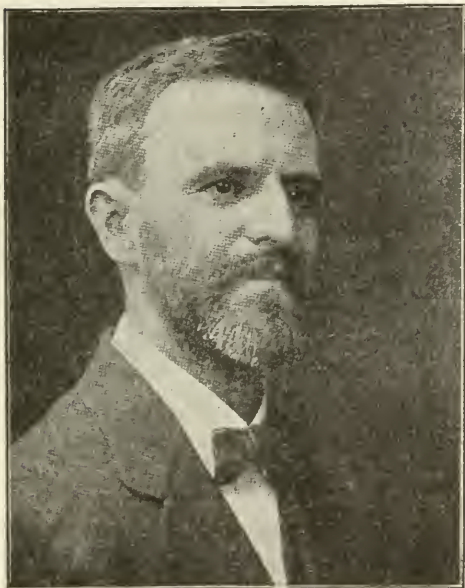
FRANKLIN MUHLENBERG APPLE.

Franklin M. Apple of Philadelphia, a well and favorably known member of the American Pharmaceutical Association, died at his home, 3233 W. Berks Street, July 9. While Mr. Apple had been in poor health for a number of years, the suddenness of the summons was a shock to his many friends, and their sympathy goes out to the bereaved.

The deceased was born at Centerville, Pa., February 14, 1870, the son of Rev. B. F. Apple and Ella P. Apple. Soon after graduating from the Bangor (Pa.) high school he entered the drug business; later he came to Philadelphia, where he was for a time employed in the store of a cousin. He graduated with honors from the Philadelphia College of Pharmacy in 1890, receiving the Alumni

Prize. Following his graduation he was assistant to Prof. Samuel P. Sadtler in the Chemical Laboratory of the University of Pennsylvania.

In 1891 he entered the drug business on his own account, later acquiring a second store. While successful in these ventures, his health gave way, and he disposed of these stores to engage in work that gave him outdoor employment. However, he could not very long resist the call of pharmacy, and in 1901 he bought the store at Thirty-first and Berks Streets, where he developed a successful business and gained an enviable reputation as pharmacist. His activities attracted the



FRANKLIN M. APPLE

attention of the Medico-Chirurgical College faculty, who elected him to give instruction in dispensing in this institution. The condition of his health again necessitated a change, and in 1914 he sold this store and sought recuperation in outdoor life and exercise, but very soon thereafter enlisted in Red Cross work; declining health induced him to spend the following winter in Florida, and here Mr. and Mrs. Apple later concluded to make their home.

Soon after returning to Philadelphia in 1918 Mr. Apple served his country in ammunition plants of this section, and at the conclusion of his engagements he was given a testimonial letter and also awarded a certificate for his faithful services by the Chief of

Ordinance. The following winter Mr. and Mrs. Apple returned to St. Petersburg, where the climate was favorable for the improvement of Mr. Apple's physical condition, and, when they came back to Philadelphia a few months ago, they completed their plans for permanently residing in Florida. But the passing of an hour, the slowing of the heart until it ceased its beat, changed all of this, and the happiness of a loving companion, because of the hopes which seemed so promising in their new home, turned to sorrow and distress.

The Medico-Chirurgical College conferred the degree of Doctor of Pharmacy on Mr. Apple in 1912, and the Alumni Association of the same institution elected him a frater. The deceased was interested in every movement for the advancement of the drug business and the improvement of pharmacy, therefore he not only affiliated with organizations having this as an object but actively participated in such promotions. He had been a member of the Philadelphia Retail Druggists' Association, was a member of the Pennsylvania Pharmaceutical Association and the National Pharmaceutical Service Association. He joined the American Pharmaceutical Association in 1905, and was First Vice-President in 1913-1914. He was Chairman of the Section on Practical Pharmacy and Dispensing in 1907-1908, and of the Section on Commercial Interests in 1910-1911. For a number of years he was a member of the Council. Mr. Apple was deeply interested in the National Formulary, and while in business acquainted the physicians in his section of the city with this Standard, and by his propagandic efforts promoted the prescribing of U. S. P. and N. F. preparations.

We are indebted to Mr. J. C. Peacock for the above data and the following appreciation.

"The works of Franklin M. Apple are more impressive than words, but I, his friend since early days, who knew so well that his ambition was limited by his strength of body, would like to say these few words:

He was sincere and genuine; he could not, much less would he, dissemble; 'twas not his nature; he must be himself. And though his temperament throughout life seemed one of intense earnestness, it was because he ever had and showed the courage of his convictions to stand for things in that light of the right in which he saw them; for he had a jolly side, as well; a cordial hand-shake, a hearty laugh,

a real, loyal interest in his friends, a tender heart, a generous disposition, and he was appreciative. One of the pleasing thoughts of his life was that he had made his own way from boyhood on."

Mr. Apple was a member of Meade Commandery, P. O. S. of A., Linwood Assembly No. 7, A. O. M. P., and Eagle Council No. 3, Fraternal Patriotic Americans.

The funeral services were held on Friday evening, July 11th. The interment was at Centerville, Pa., on the following day. He is survived by Mrs. Apple, his mother and three brothers.

JOHN LEONHARDT ETZEL.

John L. Etzel, of Clear Lake, Iowa, died suddenly June 29. For a number of years he had an organic heart trouble, and this affliction was the cause of his death.

He was born in New York City, December 23, 1857, and went to Iowa with his parents when a boy. He attended the public schools of Iowa City and later the University of St. Louis, and thereafter the University of Iowa. For several years he was employed in the pharmacy of Dr. William Vogt of Iowa City, and in 1876 took up his residence in Clear Lake. Here he became one of the prominent business men, not only engaged in the drug business but also interested in the financial institutions and manufacturing enterprises of Clear Lake. For several years, on account of his health, he had spent the winters in California. He is survived by his widow and one son.

Mr. Etzel joined the American Pharmaceutical Association in 1897.

CLAYTON WOOD HOLMES.

Clay W. Holmes, manufacturer of Elmira,

N. Y., died July 13, aged seventy-one years. Mr. Holmes was one of the organizers of the New York State Pharmaceutical Association, and for many years its Secretary. He was prominent in public life and Masonic circles. Mr. Holmes joined the American Pharmaceutical Association in 1873.

ABRAHAM JACOBI, M.D.

Dr. Abraham Jacobi, one of the foremost physicians of the United States, died July 10, at his summer home on Lake George. He was eighty-nine years old and apparently had been in good health until the day of his death.

Doctor Jacobi, a native of Westphalia, born May 6, 1830, was a graduate of Bonn University in 1851. Identified with the revolutionary movement in Germany, he was detained in Berlin and Cologne, 1851-53, for "high treason." In the latter year he settled in New York, making a specialty of children's diseases, serving in turn as a professor in New York Medical College, the University of New York and the College of Physicians and Surgeons of Columbia University. He filled many important hospital appointments and was distinguished as a contributor to medical publications; American and foreign medical societies and universities honored him; the University of Berlin offered him the professorship of pediatrics, but he declined.

Doctor Jacobi was a member for fifty-six years of the New York Academy of Medicine, serving for a time as its president. For more than a half century he was officially connected with the Mount Sinai Hospital in New York. At the age of eighty-two he was serving as president of the American Medical Association.

SOCIETIES AND COLLEGES.

NEW YORK MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The program of the sixty-seventh annual meeting of the American Pharmaceutical Association will be found in another section of this issue. Tentative programs of the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy are also included. These meetings are to be held in New York City, Hotel Pennsylvania, during the week of August 25. Make your arrangements to be present.

ANNUAL MEETING OF THE NATIONAL PHARMACEUTICAL SERVICE ASSOCIATION.

The annual meeting of the National Pharmaceutical Service Association was held at 145 North Tenth Street, Philadelphia, on the evening of June 30, 1919.

The Secretary presented his annual report, briefly reviewing the activities of the Association. Attention was called to the many hundreds of petitions sent to the Committee on Military Affairs of the House of Representatives from all parts of the United

States in the interest of the Edmonds' Bill, together with many personal telegrams and letters from prominent pharmacists, physicians, parents of men in the military service, and many public men. Considerable newspaper activity was also secured in various parts of the country.

Although the Edmonds' Bill did not pass in the last session of Congress, it has been re-introduced and arrangements are being made for a conference during the annual meeting of the American Pharmaceutical Association, so that all who are interested in securing such legislation may have an opportunity to express their views and determine what modifications may be necessary. At this meeting there will also be considered the Naval Bill introduced by Hon. George P. Darrow, for the establishment of permanent commissions in the Hospital Corps of the Navy, and it is hoped that Congressmen Edmonds and Darrow, and officials of the Navy, can be present to advise with and give us the benefit of their experience.

The Treasurer presented his annual report, and in setting forth the finances of the Association since its establishment, stated that the printing expenses have totaled \$555.56, postage \$394.59, expense of presenting the cause of military pharmacists to other associations, \$178.55, and the cost of a stenographer in the office \$807.50, with office furniture and typewriter rental \$29.95; these totaled an expenditure of \$1,966.15. The number of those who have failed to renew their membership since the signing of the armistice has been disappointing, and as shown by the Treasurer's report, the necessary expense in conducting this work is comparatively large.

The officers have given liberally of their time and services and it is strongly urged that the rank and file of pharmacy support the new officers in the propaganda which must be conducted actively during the present term of Congress if we can hope for success.

It is hoped that before the New York meeting of the A. Ph. A. a conference can be held with the office of the Surgeon-General of the Army, so that the army viewpoint of such legislation can be properly presented at the meeting.

The reports from the Ohio Branch of the N. P. S. A. were most gratifying and showed an intense interest in the cause of military pharmacists. About 200 members of this branch have recently renewed their allegiance

and the activities of this branch were commended.

The election of officers for the ensuing year resulted as follows:

President, Dr. Frank Cain, Cincinnati.

Vice-President, Caswell A. Mayo, Cincinnati.

Secretary, E. Fullerton Cook, Philadelphia.

Treasurer, Josiah C. Peacock, Philadelphia.

Executive Committee, George M. Beringer, Camden; Robert P. Fischelis, Philadelphia; Eugene G. Eberle, Philadelphia; William D. Robinson, Philadelphia; Theo. D. Wetterstroem, Cincinnati; Jeannot Hostmann, New York City; Henry Kraemer, Ann Arbor, Mich.; Charles H. LaWall, Philadelphia; Edwin L. Newcomb, Minneapolis.

A motion of appreciation to the medical friends who have been helping the Association in the effort to secure proper ranking for pharmacists in the army was unanimously approved. It was suggested that if possible, a meeting of the N. P. S. A. be held at the New York meeting of the A. Ph. A., and after the President's reception on Wednesday evening was suggested as an appropriate time.

E. FULLERTON COOK,

Secretary.

THE TWENTY-FIRST ANNUAL MEETING OF THE NATIONAL ASSOCIATION OF RETAIL DRUGGISTS.

The annual convention of the National Association of Retail Druggists will be held in Rochester, N. Y., September 8 to 12. The prospects are that this will be one of the largest and most important conventions ever held by this organization.

The important legislation which has been enacted by the Federal Government and State Legislatures will receive consideration.

The success and prosperity of druggists is largely dependent upon the interest taken by them in organization work. The officers of Associations do all in their power in behalf of the members, but the counsel and advice of the members are essential so that the work of the officers may be properly directed.

Rochester is a convention city, and a fine entertainment program has been outlined for the meeting.

THE SOUTHWESTERN DRUGGISTS' ASSOCIATION.

An association of the druggists of Missouri, Kansas, Oklahoma, Arkansas and Texas has been formed. The name of the new organiza-

tion is to be The Southwestern Druggists' Association. The initiative in the matter was taken by R. Lee Drummond, President of the Oklahoma Association.

At the initial meeting there were present, among others, Thomas Roach, S. W. Stone, W. R. Jarrett, H. S. Shackelford, R. L. Sanford and Mr. Montfordt, of Oklahoma; Paul L. Hess, Minnie M. Whitney and H. C. Tindall, of Missouri; and M. W. Friedenberg, W. A. Wilson, Matt Noll and Edward Dorsey, of Kansas.

STATE PHARMACEUTICAL ASSOCIATION OFFICERS FOR 1919-1920.

ALABAMA.

President, J. F. Spearman, Anniston.

First Vice-President, Luther Davis, Tuscaloosa.

Second Vice-President, Chas. C. Anderson, Huntsville.

Secretary, W. E. Bingham, Tuscaloosa.

Treasurer, S. L. Toomer, Auburn.

Among the important discussions was that on the proposed Alabama law concerning venereal diseases. Dr. Blasengame, of the State Board of Health, read a paper on the subject. Quite a number of physicians were in attendance, and discussed the points with the members of the Association.

Mobile was selected for the next place of meeting.

ARKANSAS.

President, W. C. Hogan, Atkins.

Vice-President, L. C. Hattaway, Fort Smith.

Secretary-Treasurer, Miss Mary A. Fein, Little Rock.

Executive Committee, F. M. McClerkin and L. K. Snodgrass, Little Rock, and M. A. Eisele, Hot Springs.

Discussion of legislative matters and the status of pharmacists in the Government Service occupied a considerable portion of the time during the Arkansas meeting. The Association will meet next year in Little Rock.

CALIFORNIA.

President, K. B. Bowerman, San Francisco.

First Vice-President, C. W. Hartsough, San Diego.

Second Vice-President, A. L. Hawkins, Pasadena.

Secretary-Treasurer, Edward A. Henderson, San Diego.

The important discussion of the meeting related to the need of more extended affiliation

with Associations by pharmacists. Fresno was named as the next place of meeting.

COLORADO.

President, A. B. Tipple, Pueblo.

First Vice-President, L. A. Jeancon, Denver.

Second Vice-President, W. F. Meyer, Colorado Springs.

Treasurer, C. D. Smith, Grand Junction.

Secretary, Chas. J. Clayton, Denver.

New taxes and narcotic regulations were subjects of discussion. Quite a number of interesting papers were read, dealing with drug store management and pharmaceutical manufacturing.

CONNECTICUT.

President, C. T. Hull, New Haven.

First Vice-President, S. S. Nelson, Hartford.

Second Vice-President, Frank Sisk, Norwich.

Secretary-Treasurer, P. S. Garvin, Bethel.

The Connecticut Association considered the advisability of raising the annual dues. A final decision will be made at the next annual meeting.

FLORIDA.

President, J. S. Jewett, Lakeland.

First Vice-President, Leon Hale, Tampa.

Second Vice-President, George R. Cherry, Jacksonville.

Third Vice-President, Max Hankins, Daytona.

Secretary-Treasurer, J. H. Haughton, Palatka.

The program of the Florida Association included discussions on drug store management and pharmaceutical dispensing. The Association is to be incorporated and the place for holding the next meeting is left to the Executive Committee.

GEORGIA.

President, W. T. Knight, Savannah.

First-Vice-President, D. G. Wise, Atlanta.

Second Vice-President, R. E. Perry, Sylvania.

Third Vice-President, Jabe Samps, Thomas-

ton.

Secretary, T. A. Cheatham, Atlanta.

Treasurer, T. C. Marshall, Atlanta.

Legislative topics occupied quite a large portion of the time of the Georgia Association, more particularly discussion of the new revenue law.

ILLINOIS.

President, John C. Wheatcroft, Grayville.

First Vice-President, William Clancy, LaSalle.

Second Vice-President, Adolph Umenhofer, Chicago.

Third Vice-President, Fred Roth, Springfield.

Treasurer, George N. Bennett, Urbana.

Secretary, William B. Day, Chicago.

The important feature of the Illinois Pharmaceutical Association meeting was the discussion of present federal legislative matters. There were more than four hundred in attendance at the meeting.

INDIANA.

President, E. W. May, Martinsville.

First Vice-President, Thomas B. Cregler, Attica.

Second Vice-President, W. H. Sheddell, Crown Point.

Treasurer, Frank H. Carter, Indianapolis.

Secretary, Wm. A. Oren, Indianapolis.

There was a general discussion of ways and means for improving the organization, also of methods of business conduct. The *Indiana Pharmacist* was selected as the official organ of the Association.

KENTUCKY.

President, C. J. Lordier, Ashland.

First Vice-President, J. F. Wilson, Mayfield.

Second Vice-President, W. H. Fischer, Somerville.

Third Vice-President, R. R. Woods, Pembroke.

Secretary, J. W. Gayle, Frankfort.

Treasurer, Vernol Driskoll, Ghent.

Much attention was given to discussion of legislative matters.

LOUISIANA.

President, J. N. W. Otto, New Orleans.

Vice-Presidents, W. N. Wilson, Independence, and Christian Schertz, New Orleans.

Recording Secretary, George W. McDuff, New Orleans.

Corresponding Secretary, Mrs. John T. Benedict, Jr., New Orleans.

Treasurer, Dr. George S. Brown, New Orleans.

The proposition of having one or more pharmacists on the Louisiana Board of Health was a subject under consideration by the Association, and the Governor will be requested to limit the Board of Pharmacy appointments to members of the Association.

MARYLAND.

President, David R. Millard, Baltimore.

First Vice-President, G. W. Pearce, Frostburg.

Second Vice-President, R. E. Lee Williamson, Baltimore.

Third Vice-President, J. W. Dorman, Baltimore.

Secretary, Dr. E. F. Kelly, Baltimore.

Treasurer, Samuel Y. Harris, Baltimore.

The Maryland Association favorably discussed the federation of state associations in the House of Delegates A. Ph. A. Consideration was given to various federal and state laws. J. Thomas Lyons, Manager of the *Baltimore Sun*, addressed the convention.

MASSACHUSETTS.

President, Charles C. Hearn, Quincy.

First Vice-President, Alfred J. Paquette, Lynn.

Second Vice-President, T. J. Mullarky, Framingham.

Secretary, James F. Guerin, Worcester.

Treasurer, John J. Tobin, Boston.

One of the most interesting features of the Massachusetts meeting was the place where the Convention was held, namely, in the new building of the Massachusetts College of Pharmacy. This magnificent college building was made possible by the generosity of George R. White, and the interest of the Association was much enhanced by the surroundings.

MISSISSIPPI.

President, C. E. Ading, Flora.

Vice-Presidents, W. B. Kelly, Jackson, and H. G. Carr, Yazoo City.

Secretary-Treasurer, A. S. Coody, Jackson.

Legislation was an important topic of discussion. Corinth was selected as the next place of meeting.

NEBRASKA.

President, Orel Jones, Oconto.

Treasurer, D. D. Adams, Nehawka.

Secretary, J. G. McBride, University Place.

The Pharmacy Section of the Code Bill received much consideration. This Bill was passed by the last Nebraska Legislature, and takes the appointment of examiners for the Board of Pharmacy out of the hands of the Association and reduces the number of examiners to three. The next meeting place is Omaha.

NEW HAMPSHIRE.

President, Charles E. Dufort, Manchester.

First Vice-President, S. H. Whiting, Raymond.

Second Vice-President, J. R. Kelly, Newport.

Secretary, Eugene Sullivan, Concord.

Treasurer, S. Howard Bell, Derry.

Auditor, J. H. Marshall, Manchester.

Governor Bartlett was present at the meeting of the New Hampshire Pharmaceutical Association and addressed the convention. New Castle was selected as the next place of meeting.

NEW JERSEY.

President, Edward A. Sayre, Newark.

Vice-Presidents, Harry W. Crooks, Newark, and Harry E. Bischoff, Union.

Secretary, Jeannot Hostmann, Hoboken.

Treasurer, Edward R. Sparks, Burlington.

Propaganda was started to educate the public as to the meaning of U. S. P. in connection with preparations dispensed and sold in drug stores. The next meeting will be the fiftieth anniversary of the Association, and is to be held in the home city of the President, E. A. Sayre.

NEW YORK.

President, Robert Lehman, New York.

First Vice-President, H. B. Guilford, Rochester.

Second Vice-President, E. B. Breckon, Buffalo.

Third Vice-President, W. C. Barton, Saratoga.

Treasurer, Frank Richardson, Cambridge.

Secretary, Edward S. Dawson, Syracuse.

Drug store conditions and legislative matters were important items of discussion. A large number of important papers were read.

NORTH CAROLINA.

President, G. R. Pilkington, Pittsboro.

Vice-Presidents, E. E. Missildine, Tryon I. W. Rose, Rocky Mount, J. A. Goode, Asheville.

Secretary-Treasurer, J. G. Beard, Chapel Hill.

Local Secretary, C. A. Raysor, Asheville.

The Edmonds' Bill and the Stephens' Price Maintenance Bill were reindorsed. A Scholarship was established at the School of Pharmacy, University of North Carolina. The federation idea in the House of Delegates, A. Ph. A., was favored. Efforts will be made to largely increase the membership of the Association.

Asheville was selected as the place for the next meeting.

PENNSYLVANIA.

President, Dr. Robert P. Fischelis, Philadelphia.

First Vice-President, Harlan J. Mentzer, Blue Ridge Summit.

Second Vice-President, Ira G. Amsler, Pittsburgh.

Secretary, Louis Saalbach, Pittsburgh.

Local Secretary, W. B. Goodyear, Harrisburg.

Assistant Secretary, J. H. Wurdack, Pittsburgh.

Treasurer, P. H. E. Gleim, Lebanon.

Resolutions were presented objecting to advertising by manufacturers that was unfair to druggists. The federation idea in the House of Delegates, A. Ph. A., was favored provided satisfactory arrangements could be made. Many important papers and reports were presented.

TEXAS.

President, Sam P. Harben, Richardson.

First Vice-President, W. C. Burns, San Antonio.

Second Vice-President, W. H. Wentland, Manor.

Secretary-Treasurer, W. H. Cousins, Dallas.

Legislation was an important subject of discussion. The Association is opposed to the sale of alcoholics in drug stores except in prescriptions. Dallas was selected as the next place of meeting.

VERMONT.

President, Fred D. Pierce, Barton.

First Vice-President, L. D. Clough, Woodstock.

Second Vice-President, L. J. Trudel, Rutland.

Third Vice-President, Harry Alexander, St. Albans.

Secretary, J. P. Lambert, Burlington.

Treasurer, W. L. Terrill, Burlington.

WASHINGTON.

President, Frank Robinson, Spokane.

First Vice-President, Harry S. Elwood, Ellensburg.

Second Vice-President, Harvey L. Young, Yakima.

Secretary, Mrs. Emily McCrea, Spokane.

Treasurer, Elmer Brown, Spokane.

Considerable time was given to a discussion of the new revenue law.

WISCONSIN.

President, A. F. Mentzel, Milwaukee.

First Vice-President, Arthur Hipke, Chilton.

Second Vice-President, E. J. Burnside, Ripon.

Third Vice-President, Fred W. Bernstein, Manitowoc.

Secretary, E. G. Raeuber, Milwaukee.

Treasurer, Henry Rollman, Chilton.

Higher educational requirements for pharmacists were favored by the Association, and the dispensing of alcoholics on physicians' prescriptions disapproved.

THE PHARMACIST AND THE LAW.

HOUSE PASSES BILL FOR PROHIBITION ENFORCEMENT.

By a vote of nearly three to one, the House, on July 22, passed a bill for prohibition enforcement with drastic provisions and penalties. The bill provides, among other things, that an intoxicating liquor is alcohol, brandy, whisky, rum, gin, beer, ale, porter, wine and "any spirituous, vinous, malt or fermented liquor, liquids and compounds, whether medicated, proprietary, patented, or not, and by whatever name called, containing one-half of one per centum or more of alcohol by volume, which are potable or capable of being used as a beverage."

The bill, as it passed the House, provides:

After January 26, 1920, every person permitted under the law to have liquor in his possession shall report the quantity and kind to the commissioner of internal revenue. (This applies to pharmacists, chemists, physicians, etc.)

After February 1, 1920, the possession of any liquor, other than as authorized by the law, shall be *prima facie* evidence that it is being kept for sale or otherwise in violation of the law.

It will not be required, however, to report, and it will not be illegal to have in one's possession liquor in a private dwelling while the same is occupied and used by the possessor as his private dwelling and the liquor is used for personal consumption by the owner, his family, or his guests.

The possessor of such liquors, however, bears the burden of proof that the liquor was acquired and is possessed lawfully.

Intoxicating liquor is defined as a beverage containing more than one-half of one percent of alcohol.

Any house, boat, vehicle or other place where liquor is manufactured or sold is declared a nuisance.

No person shall manufacture, sell, barter, give away, transport, import, export, deliver, furnish or receive any intoxicating liquors.

Liquor for non-beverage purposes and wine

for sacramental use may be sold under specified regulations.

Denatured alcohol, medicinal preparations (including patent medicines) unfit for beverages, toilet articles, flavoring extracts and vinegar are exempted.

Registered physicians are authorized to issue prescriptions under strict regulations for the use of liquor in cases where it may be considered necessary as a medicine.

Liquor advertisements of all kinds are prohibited.

Sale, manufacture or distribution of compounds, intended for the unlawful manufacture of liquor, are prohibited, together with sale or publication of recipes for home manufacture.

Use of liquor as a beverage on any public conveyance, train, boat or jitney bus is prohibited.

Board powers are given under the search and seizure section to officers charged with enforcement of the law. They may enter a dwelling house in which liquor is sold and seize it, together with implements of manufacture.

Seizure of all craft or vehicles used in the transportation of liquor is authorized.

Enforcement of the wartime act and the constitutional amendment is provided for in the measure and in virtually the same manner.

For first-offense violators the maximum fine is \$1000 or six months' imprisonment and for subsequent offenses fines range from \$200 to \$2,000, or one month to five years in prison.

Enforcement of both the wartime act and the amendment is reposed in the Internal Revenue Department and the Department of Justice.

INSTRUCTIONS OF COMMISSIONER OF INTERNAL REVENUE TO COLLECTORS.

Daniel C. Roper, Commissioner of Internal Revenue, issued instructions June 30 to collectors of internal revenue as to their duties in respect to the dry law, which went into effect at midnight of that day.

PRESCRIPTIONS IN DUPLICATE.

Physicians may prescribe wines and liquors for internal use, or alcohol for external use, but in every such case each prescription shall be in duplicate, and both copies be signed in the physician's handwriting.

The quantity prescribed for a single patient at a given time shall not exceed one quart. In no case shall a physician prescribe alcoholic liquors unless the patient is under his constant personal supervision.

All prescriptions shall indicate clearly the name and address of the patient, including street and apartment number, if any, the date when written, the condition or illness for which prescribed, and the name of the pharmacist to whom the prescription is to be presented for filling.

The physician shall keep a record in which a separate page or pages shall be allotted each patient for whom alcoholic liquors are prescribed, and shall enter therein, under the patient's name and address, the date of each prescription, amount and kind of liquors dispensed by each prescription, and the name of the pharmacist filling the same.

MONTHLY REPORTS. SPECIAL TAX AS RETAIL LIQUOR DEALER REQUIRED.

Any licensed pharmacist or druggist may fill such prescriptions (1) if his name appears on the prescription in the physician's handwriting, and (2) if he has made application and received permit, Form 737, in accordance with the provision of Treasury Department 2788, and (3) if he has qualified as retail liquor dealer, by the payment of special tax.

No such prescription may be refilled. Druggists filling these prescriptions shall preserve in a separate, carefully guarded file, one copy of every prescription filled, and once a month shall transmit to the Collector of Internal Revenue a list showing the names of the physicians, the names of the patients, and the total quantity dispensed to each patient during the month.

These lists shall be subject to immediate examination and frequent review in the Collector's offices, and wherever there is indicated either (1) that a physician is prescribing more than normal quantities, or (2) that any patient, through the services of one or more than one physician, is procuring more than a normal quantity, the Collector shall report the facts to the Commissioner and the United States Attorney.

ORDER FORMS.

Pharmacists should refuse to fill prescriptions if they have any reason to believe that physicians are dispensing for other than strictly legitimate medicinal uses, or that a patient is securing, through one or more physicians, quantities in excess of the amount required for legitimate uses.

Wholesale or retail liquor dealers having stocks of wine or liquors on hand, may sell to pharmacists holding permit, upon receipt of order on Form 739 and in conformity with the provisions of Treasury decision 2788, until their present supplies are exhausted.

Such orders may be filled from spirits tax paid at the \$6.40 rate. Wholesale or retail liquor dealers who are not licensed druggists or pharmacists will not be permitted to qualify, after their present stocks are exhausted, to deal in beverages or non-beverage spirits. Wholesale pharmacists may continue to qualify for the sale of liquors or wines for non-beverage purposes in conformity with the provisions of Treasury decision 2788.

Non-beverage alcohol, tax paid at the rate of \$2.20 per gallon, may be used in filling prescriptions for spirits or alcohol so medicated or denatured in accordance with existing regulations as to be unfit for beverage use. In filling prescriptions for spirits or alcohol not so medicated or denatured as to render it unfit for beverage use liquor tax paid at the rate of \$6.40 per gallon only must be used.

Tax paid wines must be used in all cases. The procedure outlined in Treasury decision 2765 for the production of wines in quantities not exceeding 100 gallons should be followed where wines are produced for sacramental purposes by churches or religious orders, and the production and distribution is entirely under clerical supervision. Such wines may be removed from the premises where produced, in accordance with the provision of Treasury decision 2788.

WHERE TO GET DETAILS.

The details of the procedure outlined in the two Treasury decisions mentioned will be furnished to any interested person by the Collector of Internal Revenue for the district in which the wines are produced.

If objections are made to collectors that the provisions of the Treasury decisions are inapplicable to the established procedure of any recognized religious body and that they impede or interfere with historic rites or cus-

toms, the Collector will carefully investigate the facts and make full report to the Commissioner, in order that it may be determined whether the regulations should be modified to meet the needs of the particular case.

Wine used for sacramental purposes is subject to tax. The department of Justice has exclusive jurisdiction to enforce the prohibition provisions of the act of November 21, 1918 (war prohibition law). Accordingly, it should be suggested to all persons making inquiry as to the prohibition provisions of the act that they address either the Attorney General of the local United States Attorney.

Similarly, when internal revenue officers become aware of apparent violations of the prohibition provisions of the act, they should report such facts as come to their attention to the local officers of the Department of Justice. They will coöperate with the Department of Justice agent if such coöperation is requested.

The regulations and instructions regarding the use of non-beverage spirits and alcohol for purposes other than those specifically dealt with herein continue in effect.

Where there is evidence the wine or liquor obtained actually or ostensibly of sacramental, medicinal or non-beverage purposes has been used for beverage purposes it shall be reported to the commissioner for assertion of additional tax liability and to the United States Attorney for prosecution under the internal revenue laws.

So long as the taxes on alcoholic liquor and on occupations connected with the production and sale of alcoholic beverages remain in force they must be enforced.

The Attorney General has advised this department that the fact that an occupation or the production or sale of a beverage is prohibited does not relieve those engaged in such

occupation or producing or selling the beverage from tax liability. It must, however, be clearly understood that payment of tax in no way conveys any right to act contrary to or to be exempt from liabilities imposed by the prohibition legislation. The result of the statutes imposing the taxes and prohibiting the traffic is that the same person may incur liability to tax and at the same time be liable to prosecution under the prohibition laws.

LIMITS NARCOTIC PRESCRIPTIONS.

Internal Commissioner Roper, in compliance with a recent decision of the Supreme Court, has modified the regulations as to the use of narcotics. The ruling contained in T. D. 2200 of May 11, 1915, permitting a practitioner to dispense or prescribe narcotic drugs in a quantity more than is necessary to meet the immediate needs of a patient has been revoked, and the revocation is applicable in all cases, whether a decreasing dosage is indicated or not.

The Commissioner says: "The act of December 17, 1914, as amended by the act of February 24, 1919, permits the furnishing of narcotic drugs by means of prescriptions issued by a practitioner for legitimate medical uses, but the Supreme Court has held that an order for morphine issued to an habitual user thereof of professional treatment of, not in the course in an attempted cure of the habit, but for the purpose of providing the user with morphine sufficient to keep him comfortable by maintaining his customary use, is not a prescription within the meaning and intent of the act—U. S. v. Doremus, No. 367, October Term, 1918, T. D. 2809.

"In view of this decision, the writer of such an order, the druggist who fills it and a person obtaining drugs there under, will all be regarded as guilty of violating the law."

OFFICERS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION 1918-1919.

President—Charles H. LaWall, 39 South 10th St., Philadelphia, Pa.

Honorary President—Oliver F. Fuller, 540 W. Randolph St., Chicago, Ill.

First Vice-President—F. W. Nitardy, 66 Orange St., Brooklyn, N. Y.

Second Vice-President—Theodore J. Bradley, 70 St. Botolph St., Boston, Mass.

Third Vice-President—Francis Hemm, 2108 Locust St., St. Louis, Mo.

General Secretary—William B. Day, 701 So. Wood St., Chicago, Ill.

Treasurer—Henry M. Whelpley, 2342 Albion Place, St. Louis, Mo.

Reporter on the Progress of Pharmacy—H. V. Arny, 115 West 68th St., New York, N. Y.

Editor of the Journal—E. G. Eberle, 253 Bourse Bldg., Philadelphia, Pa.

Local Secretary—Hugo H. Schaefer, 115 West 68th St., New York, N. Y.

Chairman of the Council—Lewis C. Hopp, 1104 Euclid Ave., Cleveland, Ohio.

Secretary of the Council—J. W. England, 415 North Thirtieth St., Philadelphia, Pa.

EDWARD MALLINCKRODT
ST. LOUIS, MO.

For more than fifty years a member of the American Pharmaceutical Association



EDWARD MALLINCKRODT

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

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EDWARD MALLINCKRODT

Few, if any other, members of the American Pharmaceutical Association have achieved as marked success in the commercial world as has Edward Mallinckrodt, president of the Mallinckrodt Chemical Works. Besides the interests represented by this firm in various parts of the world, Mr. Mallinckrodt, as may be surmised, is associated with many other business and financial institutions.

He was educated in the public and private schools of this country. This was followed by a training in chemistry in Germany. He began his business career in 1867 as a member of the firm of G. Mallinckrodt & Co., which was incorporated, in 1882, as the Mallinckrodt Chemical Works.

In pharmaceutical educational work and organizations Mr. Mallinckrodt became interested while a young man. He has served as president and during several terms as trustee of the St. Louis College of Pharmacy, in which school he established a scholarship. He is a life member of the American Pharmaceutical Association, which he joined in 1869. While not active in the affairs of the Association, he has always manifested a keen interest in the proceedings and accomplishments of the A. Ph. A. in the betterment of pharmacy. He is also a life member of the Missouri Pharmaceutical Association, which he joined in 1885.

As a director of Washington University, Mr. Mallinckrodt has given particular attention to the Medical School, making large endowments and devoting much of his own time to the welfare of the school. He is also a trustee of the St. Louis Art Museum and particularly interested in the Missouri Botanical Garden, of which he is a director. In these positions he has proved himself to be a vigorous and effective worker. His decisions are never rash nor hasty but given with promptness and efficiency.

As a man of active sympathies for the sick and unfortunate, we find Mr. Mallinckrodt looking personally after the general welfare and policies of St. Luke's Hospital and also giving substantial aid to the St. Louis Provident Association and a helpful interest as a director of the St. Louis Children's Hospital.

He is a member of the American Association for the Advancement of Science, the American Chemical Society, the American Institute of Chemical Engineers, the Society of Chemical Industry of Great Britain, Deutscher Chemiker Verein of Berlin and the St. Louis Academy of Science. He finds time to look over the transactions of these organizations as well as those of many other bodies with which he is affiliated.

Mr. Mallinckrodt is quiet in action and modest in appearance. He actually shrinks from publicity. It is only on close acquaintance that we realize his purposeful coolness and the calm determination with which he combines the rare faculty of quickly absorbing the essential features of a subject. While constantly handling large transactions, he is also a student of minute details, which are readily grasped by his comprehensive mind. He has a wonderful human understanding and sympathy when dealing with business associates and employees. Many persons have been with his firm for almost a lifetime.

Taken all in all, it is seldom that we find an individual in any walk of life with such extensive interests, making helpful contributions not only in his particular calling but to mankind in general.

HENRY M. WHELPLEY.

A MESSAGE FROM THE PRESIDENT OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

To the Members of the A. Ph. A.

Greeting:

FELLOW MEMBERS:

At the Sixty-seventh Annual Meeting of our organization upon the undersigned was conferred the honor of the highest office—the Presidency. His responsibilities begin from the date of his installation. That his work may be of the highest efficiency it requires the coöperation of every member.

This coöperation may take the form of solicitation for membership. Each member should constitute a committee of one to coöperate with the Chairman of the Membership Committee, William B. Day, 701 South Wood St., Chicago, Ill. This year we had an addition of nearly 600 members. Next year we should have the banner increase of at least 1,000 members. Think of it, 45,000 druggists in the United States—3,000 present members (less than 8 percent)! If pharmacy is to be influential it will be through representation. What use is it for us to go to Congress and ask for a hearing when we confess that your Committee represents only 8 percent of the pharmacists of the United States?

From time to time your president hopes to bring items before you, soliciting your earnest coöperation.

Very respectfully,

Signed,

L. E. SAYRE.

EDITORIAL

E. G. EBERLE, Editor

253 Bourse Bldg., PHILADELPHIA

THE HIGH LIGHTS OF THE NEW YORK MEETING.

THE recent New York meeting of the American Pharmaceutical Association was a phenomenal success. The attendance was large, the interest keen, the discussions animated, and real constructive work of the highest order was done, while the generous, warm-hearted hospitality of the New Yorkers was beyond all praise. System made it possible for the Local Committee to coördinate pleasure with business; "Let Your Watch Be Your Guide" was duly observed in conforming the programs of the sessions with the social functions. The registrations were above preceding years and the accession of membership during the year reached the highest mark in the Association's history.

It is difficult to point out the outstanding features of the meeting; they were so many and varied. But perhaps the most striking was President LaWall's address, which was clear, direct and full of "meat" for the betterment of the Association. It was so different from the conventional address so often presented to organizations—long, full of ancient history, statistics, and dry as dust. It was brief, virile and full of constructive thought.

Of equal importance for the future welfare of the Association was Chairman F. H. Freericks' report of the work of the Advisory Committee on Soldier and Sailor Pharmacists. It was splendid and potential in its possibilities. Chairman Freericks pointed out that there are in this country 10,000 pharmacists who have seen active service in the World War. These are young men; they will be the future leaders of American Pharmacy, and if they can be induced to enlist under the banner of our organization no mind can measure the influence for good they can wield for the betterment of the conditions of pharmaceutical practice in this country under the aegis of the American Pharmaceutical Association.

A forward step was taken by the adoption of the President's recommendation whereby an Executive Committee of the Council is created. If deemed necessary this Committee is to convene during the interim of Association meetings for the transaction of business. Among other duties the Committee is to study approved

resolutions and recommendations for the purpose of activating those of value under present-day conditions, if deemed practicable and advisable. While the move necessitates the expenditure of money, the results derived will prove the wisdom of this action by the accomplishment of things worth while.

The Association made affiliation of State Associations feasible and attractive by the proposal whereby, when fifty-one percent or more of the State Association affiliates—are members of the American Pharmaceutical Association—the Treasurer of the A. Ph. A. is authorized to remit annually into the treasury of the State Association one dollar for every member of the latter who is also a member of the American Pharmaceutical Association. This will enable State Associations to defray the annual expenses of their delegates, and, when the membership is large, provide funds for legislation, publicity, etc.

The movement started by the Committee on Federation to establish a Committee on Pharmaceutical Publicity is momentous. The importance of this action, together with that on the affiliation of related organizations in the House of Delegates, is again noted in the succeeding editorial.

The decision of the Association to go forward as rapidly as practicable with the preparation of the book of unofficial formulas will be received with approbation, not only by the members but by all engaged in related lines and who need a reliable compilation of this kind.

The report of the Treasurer was indicative of healthy growth of the Association and spoke for further accomplishments in behalf of American pharmacy.

This editorial would become very much extended by an attempt to outline the work of the Sections, and comparisons of results are not easily made, because their purposes differ. The addresses and reports will convince the members that real constructive work was done; the interest in the sessions was unusually strong.

The American Conference of Pharmaceutical Faculties reaffirmed its decision to require completed high school education of the prospective students for admission to Colleges of Pharmacy and graduation from the latter as a prerequisite to Board examinations, in 1923. Considerable discussion was devoted to the matter of publicity, as recommended by the Committee on Federation. The consensus of opinion was that the public should be correctly advised relative to the importance of pharmacy in matters of public health and impressed that pharmacists are trained for their work and deserving of related recognition. Concurrent action was taken by the National Association of Boards of Pharmacy.

The predominant feature of the latter convention was the address of President Culley, outlining an organization plan whereby the United States is divided into eight districts; for each a Vice-President is to be elected, who shall represent the Association. Endorsement was given to the requirement that completed

high school education of candidates for examination, and graduation prerequisite, should become effective in 1923. The Association approved the recommendation of the President that the Fairchild Scholarship should be awarded on the basis of a competitive examination to a second year student of a Conference school. This recommendation was practically approved to become effective for 1920 in the joint session of the Section on Legislation A. Ph. A. with this body and the American Conference of Pharmaceutical Faculties.

The award of the Joseph P. Remington Honor Medal demonstrates that pharmacists have vision; that they are possessed of altruism. It constitutes a memorial to a distinguished pharmacist, and provides an annual acknowledgment of the service in and for pharmacy of someone still with us. The award of this year meets universal approval.

The following were elected to honorary membership in the American Pharmaceutical Association:

Prof. Leon Guignard, Honor President, École de Pharmacie, Paris, France; Prof. Eugene Collin, Chemist Central Laboratory for Repression of Frauds, Paris, France; Prof. Emile Bourquelot, Paris School of Pharmacy, Paris, France; J. H. Maiden, Director Botanical Garden, New South Wales, Sydney, Australia; Wm. Kirkby, Manchester, England, President British Pharmaceutical Conference; Sir William Glyn-Jones, London, England, Secretary Pharmaceutical Society, Great Britain.

Taken as a whole, the meeting was a big success and in many respects marked and characterized by the city in which the convention was held.

The nation's Capitol was chosen for the next meeting, during the week of May 3. The selection is opportune, for 1920 is the centennial year of the U. S. Pharmacopoeia, and the Pharmacopoeial Convention assembles in Washington on the tenth of May.

E. G. E.

COORDINATED EFFORT AND PUBLICITY NEEDED FOR PHARMACEUTICAL PROGRESS.

FEDERATION of the drug interests may not be possible at this time, but there should be united and coördinated effort in matters that concern all of them; solidarity of interest should be championed by solidarity of effort. We are in the throes of revaluation of things and pharmacy with everything else will

be subjected to the analysis and judgment of not only those engaged in pharmacy but those served by pharmacists.

The greatest need, therefore, of pharmacy is coördination or unity of effort and purpose. We know that much of the effort of pharmacy, whereby greater service would have been rendered our military organizations, failed because of lack of coördination. The interests did not coöperate; each class was concerned with its importance instead of presenting the claims of pharmacy through a central organization. We have in the National Drug Trade Conference such a body, and in the House of Delegates of the American Pharmaceutical Association an organization wherein the great questions relating to pharmacy and the drug business can be systematically studied and the course of pharmacy and the drug business directed. Progress of the times will not cease; there can be no stopping the course of evolution, so it is necessary for pharmacy and the drug business to adopt policies that are adaptable to progress.

Pharmacy must further evolve from an art of observation and empiricism to applied science based on research; the spirit of the votaries must be alert, and they must be able to interpret general progress, so that pharmacy will keep abreast of the times with other lines of activity.

The importance of the various drug interests may be fully understood by those engaged therein, but a related appreciation must be awakened in the public. The contemplated committee on coöperative pharmaceutical publicity, representing the various interests of pharmacy, is a move in the right direction. The possibilities are shown in the well-planned efforts and splendid success of the American Medical Association and the American Chemical Society. Before this medicine and chemistry were sealed books to the public; they may be now, but certainly a greater interest in their importance has been instilled; pharmacy may well profit by their examples.

E. G. E.

LIFE IS A BANK, WE GET FROM IT AS WE GIVE.

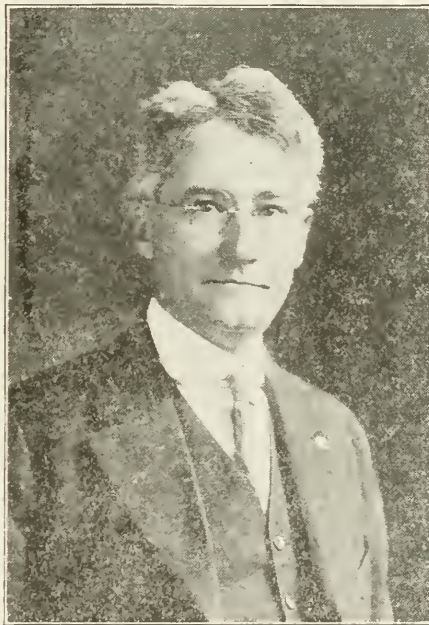
"What we have brought to life, whether it be guilt-edged securities of sacrifice on the unredeemable trash of passion or indifference, is in the vaults of life for us to draw against until the funds are exhausted. We draw on the vaults of life as we have given, plus the interest. If what we get out of life makes us discontented, there is only one remedy—give to life more wisely and more lavishly."

PRESIDENTIAL ADDRESS OF CHARLES H. LAWALL, PRESIDENT OF
THE AMERICAN PHARMACEUTICAL ASSOCIATION 1918-1919

The honor and the responsibility which have come to me through the election to your presidency are intensified upon this occasion by a realization that we are meeting for the fifth time in the history of the American Pharmaceutical Association in the foremost city of the greatest country in the world.

Time, the nimble tyrant of the ages, whose footsteps we measure by the system which originated in the fertile brain of some forgotten Egyptian philosopher, has wrought many changes. Nearly three generations have passed since the American Pharmaceutical Association had its initial meeting in 1852. During this period, and especially within the memory of the present generation, transformations have taken place or are now occurring which are almost revolutionary in their effect upon the practice of pharmacy.

Standards which served to guide our predecessors are frequently found to be obsolete. The radical changes in the practice of medicine, the marvelous developments of chemistry, the irresistible extension of commercialism have combined to effect alterations undreamed of by those who laid the foundation of this organization. Even the landmarks have suf-



CHARLES H. LAWALL

scientific facts and events of the year, or discuss such scientific questions as may to him seem suitable to the occasion."

Not for many years has an address, such as is contemplated in the paragraph quoted, been delivered, nor do I intend presenting one of that kind now. I quote the article to show how far afield we have traveled even from our own rules and to emphasize the necessity for our committee on by-laws to pay greater attention to details of this kind in making the changes which are from time to time found necessary.

For many years it has been the custom in most national and state associations for the presiding officer to present a survey of the entire field of activities which have a bearing upon the welfare of the body, and in the light of his experience and observations to make recommendations and suggestions for the development and progress of the association. This does not necessarily imply that an

ferred metamorphoses so that there exists a gap between the past and the present which can be bridged only by those familiar with the intervening history, and even such would fear to prophesy as to what the future will bring forth.

In Article IX of the By-laws of this Association, referring to the duties of the President, it is stated that:

"He shall present at each annual meeting an address embodying general

illusion of infallibility accompanies the elevation to the honor, although this is unfortunately sometimes true. It does mean that for the period of his office, the president should, if he realizes his opportunities and responsibilities, spend such time in studying his field of work and conferring wherever possible with those who are more experienced and wiser in the affairs of the association than he, so that, in the language of science, he may act as a crystallizing nucleus, around which may develop the geometric form of the perfect twin crystal of efficiency and progress.

The solution in which this change must be imagined to take place is the membership of the association. In following the simile still further it will be realized that this solution is not always homogeneous and transparent. As there are sometimes colloids present which prevent crystallization in a real solution, so there are present in the membership factors which prevent the realization of our aims.

A perfect membership in any organization (although I have never known of an instance where the ideal was realized) is a membership composed exclusively of workers. Most organizations, and ours is no exception to the rule, are composed of two classes of members, *i. e.*, a small proportion who work all the time and a very large proportion who do little or nothing, even when asked to help, but whose strong suit is criticism of the way in which things are done. Each of these classes makes the other possible, for the workers have so much to do that it is a wonder more mistakes are not made.

The majority of the members in any organization are those who contribute dues, receive the publications and for exercise spend their time wandering in the labyrinth of dissatisfaction, all oblivious of the exit which is found through the gate of service. There is no simple remedy for this defect, of which I am aware, although I believe much progress could be made if more young men could be induced to take an active part in association work and if some of the older members would be content to serve in advisory capacities.

One of the greatest faults in most association work lies in the perpetuating of committees of almost the same personnel year after year. It is true that where a committee does its work well it would seem like injustice or lack of appreciation to make radical changes, but if the larger meaning of progress is once appreciated it will be found to include not only the accomplishments themselves but also the instruments by which they were brought about. In the immortal words of a well-known American "There is glory enough for all." Why should we not therefore share it?

In this connection, I would again direct attention to the fact, emphasized by former presidents, that we have so many committees that when the time comes for the president to make his appointments, and he begins to study the situation, he is likely to fear that the membership list will be exhausted before all of his committees are filled.

The growth of membership in our Association during the past year has been phenomenal. It is very gratifying and has been accomplished mostly by personal work rather than by correspondence. Many of the colleges are to be commended for persuading the members of the graduating classes to join the Association. As has been well said by a former president of this organization,

"The key to success lies in the extension of membership," and our greatest hope for the future lies in the number of young men whom we can induce first to join and then furnish with convincing reasons why they should retain their membership, partly by giving them responsibilities and opportunities of service. The benefits of belonging to our Association must be made so apparent that those who are on the outside will want to come in and those who are on the inside will want to stay in.

The local branches are in fairly good condition, the most discouraging feature seeming to be the small attendance at meetings except when some unusual program is offered. One of the most encouraging phases of the year's work is the establishment of a local branch at Wilkes-Barre, Pa., embracing the pharmacists of the surrounding territory known as the Wyoming Valley. Every pharmacist in this territory has been enrolled and they have succeeded in improving general conditions, shortening the drug store hours so that they extend from 9 A.M. to 9 P.M. during the winter months and in other ways illustrating the advantages of organization and coöperation. This should be an inspiration for pharmacists in many other localities throughout the country.

I feel that we are derelict in our obligations to the past, our duties to the present and our responsibilities toward the future in not paying proper attention to the importance of our code of ethics. The soul or essence of a professional organization is its code of ethics. That of the A. Ph. A. is not given sufficient publicity. It has never, to my knowledge, been revised and brought up to date and it is so long since it has been printed and circulated that nobody remembers when that last happened.

Recommendation
No. 1, regarding
code of ethics. I recommend that the Committee on revision of constitution and by-laws be authorized and directed to immediately revise the code of ethics and submit the revised form to the Council for approval and adoption and that this revised code of ethics be then printed on or distributed with each membership application blank as constant evidence of our professional ideals.

There is no question as to the value of our organization to the majority of the members who belong to it. There is no doubt, either, as to the great increase in the overhead costs to the Association and if things continue in the same proportion we shall soon have a deficit in the treasury. As we have long given more than value for the money expended for membership dues and as our publications are undoubtedly worth more than we have been charging for them, I believe that instead of pricing the Year Book and Journal at \$4.00 per annum each and charging annual dues of \$5.00 (including both publications) the value of these two publications should be placed at \$5.00 each when subscribed to separately and the annual dues (including both publications) should be \$7.50.

Recommendation
No. 2. Referendum
on raising dues. I therefore recommend that a referendum vote on this matter be taken at the time of sending out the ballots for the annual election and if seventy-five percent of the members voting express themselves in favor of raising the dues as proposed, that the dues be so raised at the beginning of the next fiscal year.

The House of Delegates in its reconstructed form should add strength to our organization. It is too early to say just what its value will be as it will depend

largely upon the personnel of its officers and the degree of coördination exhibited between it and the main body.

**Recommendation
No. 3. House of
Delegates.**

I believe that much benefit would be derived by changing the by-laws so that the Chairman or presiding officer of the House of Delegates shall be the First Vice-President of the Association, and the officers of the House shall be members of the Council and that the first general session of the Association and the first session of the House of Delegates be made a joint or coincident session at the future annual meetings. I recommend that these changes be made in our by-laws and procedure.

The monthly journal of the Association has more than fulfilled the expectations of those who were responsible for its inauguration seven years ago. I wish to express my personal appreciation of the way in which it has been handled during the past year so as to keep the expenses down to a minimum and at the same time maintain its high standard as a representative publication of American Pharmacy. The Association is fortunate indeed in having as its editor one who, with singleness of purpose and unselfish motives, devotes his every effort to the upbuilding of this our most important asset.

The Year Book, that monumental record of our professional achievements, has also made great progress under its present editorship and it is a pleasure to report that the coming year will probably see the publication of the extra volume which will bring it up to date. If our Association had done nothing else but transmit to posterity the publications which have been issued under its authority, its existence would have been fully justified, for they alone constitute a library which if properly arranged and intelligently used is indispensable to the right practice of pharmacy both scientific and practical.

**Recommendation
No. 4, regarding
research.**

The scientific achievements, which have been so largely responsible for the success of the Allies in overwhelming the Teutonic aspirations toward world domination, have been primarily based upon research. Pharmacists have contributed their share in this respect although almost entirely without credit being given to the profession itself. It is our duty to continue our efforts along this most important line of progress irrespective of where the credit is placed. I therefore recommend that, notwithstanding the smallness of the fund now available, the Committee on Research be directed to take such necessary steps as will result in the accomplishment each year of some investigation which shall be published and for which credit shall be given to the American Pharmaceutical Association.

This committee should also offer to coöperate with other associations planning research work along cognate lines and should keep in constant touch with the portion of the field of scientific investigation which properly belongs to pharmacy, standing clear of any movements, however, which are not wholly based upon service to the profession as a whole or to the public, which is the ultimate beneficiary in any results of real and permanent value.

**Recommendation
No. 5. Committee
on Federation.**

Federation has been one of the most widely discussed topics of the year in meetings of the various pharmaceutical organizations. When the views of the proponents and opponents are critically studied it will be seen that it is the name rather than the idea which is the principal stumbling block. The com-

prehensive plan of federation which was promulgated by President Dohme does not seem probable of adoption as soon as was anticipated. The best way to accomplish a task of such magnitude is to first get together upon the points on which there is no disagreement. Your Committee on Federation, under the able leadership of Chairman Army, has taken for the initial subject "Coöperative Publicity in American Pharmacy." It is believed that there will not be a dissenting voice in the vote to inaugurate a working plan on this subject and it is felt that a beginning has at last been made in attacking this most difficult problem. I recommend that the Committee on Federation be continued as a working committee of the Association and that Chairman Army be continued as its head and that he be given authority to select his associates for the ensuing year.

The plan of offering a concession to State associations based upon a hundred percent membership affiliation does not seem to be practical, but there must be some plan based upon this thought which is capable of being developed and which will ultimately unite the memberships of the State Pharmaceutical associations with our own. When that has been accomplished, we shall have effected a federation which will have a tremendous influence in shaping the pharmaceutical progress of the future.

The National Drug Trade Conference continues to be worthy of our commendation and support. Limited as it is in its effectiveness by the fact that its members cannot act for their respective organizations quickly in cases of emergency, it nevertheless is a successful experiment of its kind and is one of the strongest evidences of the need of that real federation for which many of us hope and which all of us will undoubtedly see.

One of the memorable events of this year's meeting will be the presentation of the first Joseph P. Remington honor medal to be awarded. This medal, which is to be awarded annually to a prominent pharmacist for distinguished services performed during the preceding year, originated in and is presented by the New York Branch under conditions approved by the Council of the Association. A fact which will add distinction to this occasion is that the recipient is one of our own ex-presidents, whose services to Pharmacy have been noteworthy for many years past. Established in honor of one of America's greatest pharmacists, it is believed that in time the distinction which attaches to this honor will be as great as that of the Hanbury Medal of the British allied scientific bodies.

Our Association is fortunate in its close affiliation with the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy. Both of these organizations are pioneers and leaders in their respective fields and the benefits which are derived by the coincidence of our meetings cannot be over-estimated. A correlation must necessarily exist between education, legislation and practice. No permanent or healthy improvement can be made except it is shared proportionately between these three elements of progress. Each must keep pace with the others. If one assumes a dominant attitude, it does so to its own prejudice and to the detriment of pharmacy. More is likely to be lost than gained through radical changes which set up antagonism and opposition that destroy where it is intended to create. Let us foster a spirit of coördination and coöperation. Let us try to be tolerant and wise and let us subordinate personal preferences and advantages for the larger and more generous

viewpoint which recognizes that pharmacy is not decadent and that its possibilities were never greater than at present.

By the time the four years have elapsed which will see all of the leading colleges with a full high school entrance requirement, I believe that many of the present evils and obstacles to professional progress will have disappeared by a natural and healthy process of elimination. One of the signs of the times in this respect is the number of States which are added each year to the list of those possessing graduation prerequisite laws.

**Recommendation
No. 6. Hospital
Pharmacists.**

One of the most important phases of pharmaceutical practice is that of hospital pharmacy. It would seem just as necessary to provide laws for the proper handling and dispensing of drugs in hospitals as for the practice of pharmacy to the public. Few states have laws or regulations affecting pharmacy as practiced in hospitals. I therefore recommend that the National Association of Boards of Pharmacy and the House of Delegates have this fact brought to their attention and that they be requested to take up this subject for discussion with the view of formulating regulations or enacting legislation covering the practice of pharmacy in hospitals in the various states.

The practice of pharmacy has, during recent years, come to be more and more hampered by governmental regulations. The modern pharmacist needs the frequent services of an expert accountant and a legal adviser to enable him to avoid the pitfalls of non-compliance with arbitrary technical and often unnecessary regulations and rulings imposed upon him by those who have little sympathy with and less knowledge of his professional responsibilities and difficulties than they should. Be it to the everlasting credit of pharmacy that it has frequently led and always acquiesced in reforms which are for the real and ultimate benefit of the public, even though financial loss is incurred thereby. The history of anti-narcotic legislation bears tribute to this fact and the more recent coöperation with the regulations of the Public Health Service regarding venereal diseases is an added proof of the readiness with which private gain is subordinated to the public welfare.

One of the tests of the profession is yet to come through the changes arising from prohibition legislation. In some quarters, a form of hysteria seems to have developed for fear pharmacists will be tempted to violate the prohibition laws. Probably some will, just as they always have in the past, but under the present rules it will always be with the connivance and collaboration of a physician, and why any more discredit should attach to pharmacy for the few who are unworthy of the calling than to medicine for the same reason is hard to understand. If added responsibilities should come to pharmacists, and they no doubt will through the issuance of rules and regulations in respect to both alcoholic liquors and narcotics (for both now seem to be on the same plane of discredit), they should be accepted as a tribute to the dignity and responsibility of the calling and as a recognition of the honesty and worthiness of the profession as a whole which is implied by such a trust.

Compulsory health insurance does not seem to be making the progress in this country that its sponsors hoped and its opponents feared. Theoretically it is admirable. Practically, it is a breeder of mendaciousness, malingering and mis-

representation. Before such laws are passed we should have a strengthening of our health, sanitation and housing laws and a proper enforcement thereof. Pharmacists should encourage legislation which tends to develop and maintain good health and should continue to oppose compulsory health insurance legislation which would not only increase tremendously our burden of taxation but which thus far has failed to accomplish its object in every country where it has been tried.

**Recommendation
No. 7. U. S. P.
delegates.**

The decennial United States Pharmacopoeial Convention will be held in May of next year in Washington. The American Pharmaceutical Association has both as an association and through its individual members been a prominent factor in pharmacopoeial revision in the past. In view of the importance of this organization being properly represented by delegates who will attend the Convention and who would be eminently suitable for service on the new Committee of Revision, I recommend that the incoming president be requested to appoint as delegates only those who fulfil these requirements and who are not appointed as delegates from any other organizations. It has sometimes happened that persons were appointed who also held credentials from other organizations while equally good men were debarred from service on the Revision Committee by not receiving any appointment at all.

The Fourth Edition of the National Formulary has continued to merit the approval of those who have taken advantage of the wealth of practical material which it contains. The Committee of our Association upon which is placed the responsibility of conducting the next revision should lose no time in getting to work in the near future so that the issuance of the N. F. V may be synchronized with that of the U. S. P. X.

Pharmaceutical service of a praiseworthy type has been rendered by thousands of members of our profession in the two years of the existence of our augmented military and naval forces. In the Navy, through the medium of the Naval Hospital Corps, opportunity was afforded for pharmacists to gain commissioned rank, which hundreds of them have done. In the Army, the policy has been consistently antagonistic to any recognition of pharmacy and the bill which was introduced to establish a pharmaceutical corps remained in committee. There seems to be no reason why pharmacists who are properly qualified should not be given commissions except the unwillingness on the part of the military authorities to make the necessary departmental changes. No one who is conversant with the true situation during the summer and autumn of 1918 gives credence to the statements that were published that it was because pharmacy was unworthy of recognition.

**Recommendation
No. 8. Commissioned
rank for Army
Pharmacists.**

There is no doubt whatever that a pharmaceutical corps should, can and will be established. Whether it will be through the passage of a bill forcing it upon the Surgeon General's Department, or whether the proper and better way is to seek its establishment through coöperation of that Department by means of conferences and discussions, remains to be seen. It is probable that the latter plan will bring about the most satisfactory results and I recommend that the American Pharmaceutical Association again place itself on record as favoring the

recognition of properly qualified pharmacists by elevation to commissioned rank, in a corps or body affording an opportunity for distinctive service, and that the officers of the A. Ph. A. be directed to coöperate fully with all other organizations having the same object in view.

Recommendation

**No. 9. Naval
Pharmacists.**

I also recommend the endorsement of the Darrow Naval Bill providing for the improvement of the status of naval pharmacists.

Recommendation

No. 10. Nominations.

One of the weakest points in our constructive work is our method of making nominations. I have studied carefully the systems in use in other similar organizations and have conducted much correspondence to ascertain how other plans work out in practice. No method of which I have learned seems to be free from imperfections. I am, therefore, not prepared to make any suggestion embodying a radical change. I do feel, however, that a more representative list of names might be obtained if the local branches were given an opportunity to voice their feelings in the matter. I therefore recommend that the secretary of this organization be instructed to send a communication in February or March of each year to the Secretary of each local branch asking for a list of not more than five names of members who are worthy of honor and distinction at the hands of the parent Association by being nominated for office. These names, after being received by the General Secretary, should be compiled alphabetically and the list mimeographed so that each member of the General Nomination Committee may be furnished with a copy at the initial meeting of that body. Such a list will serve as a valuable guide for the final selection of nominees whose names are to be recommended to the Association for ballot.

Recommendation

No. 11. Nominations.

I also recommend that on this informative list and also on the final balloting slip of nominees, the occupation of the nominee be given as well as his place of residence. In this way the members may be enabled to make a more intelligent selection than by the procedure in use at present, in which it is assumed that this knowledge is possessed by those voting.

In an organization which has evolved under the peculiar difficulties which have attended the growth of the American Pharmaceutical Association there is to be expected an unwieldiness in certain directions and a failure to properly coördinate to the best interests of the work. This has partly been brought about by the growth of the Council from a small, compact governing body to a large body in which there seems to be a great deal of lost motion, probably due to the necessity of conducting all business by correspondence. When only a small group of persons is involved, correspondence is not such a bad method of getting results, although it is much less satisfactory than personal meetings. As the number increases, however, the efficiency decreases in inverse ratio.

Recommendation

**No. 12. Executive
Committee of
Council.**

I therefore recommend that there be constituted an executive committee of the Council consisting of not more than ten members (including the elective officers of the Association) which shall be elected by the Council by ballot at its first session and to which shall be referred such matters as the Council may determine in the interests of expediency and efficiency.

**Recommendation
No. 13. Forgotten
recommendations.**

I also recommend that the first duty of the incoming Council shall be to refer to this Executive Committee the presidential addresses for the past ten years with directions to take such steps as will result in the carrying out of many recommendations which have been approved and then entirely disregarded or forgotten. This shall not apply, however, to such recommendations as are no longer pertinent or of present importance and value.

I feel that this is one of the most important suggestions that I have to make, for as I have studied the presidential addresses of past years and seen the ready acquiescence with which the Association endorsed recommendations involving much careful study and thought, and the almost equal ease with which these same important actions seem to be forgotten, I have been surprised at the large number of matters of importance that seemingly have been neglected. I therefore propose this, not so much in the interest of my own recommendations as for the sake of the good material that has been lying dormant and for the sake of the future.

Death has laid his heavy hand upon our membership list during the past year as usual. There is little that we can do or say that can add to the lustre of the names of those who were eminent, and we know that for the rest they know not nor care what we may do, having solved all mysteries and attained all knowledge.

Recommendation

**No. 14. Honoring
of members who have
died during the year.**

That we may show ourselves not unmindful of their loss, I recommend that a suitable time be set aside by the General Secretary at one of the future sessions of this meeting at which an opportunity may be afforded to either speak of the departed or pay them the equally eloquent tribute of devout silence as their names are read.

I should be unmindful of my obligations did I not take this opportunity to express my appreciation to the permanent officers of the Association, and to the section officers, for the helpfulness which each has shown to make this year's work a success. As I relinquish the gavel, the emblem of my office, I shall do so with the feeling that perhaps I have benefited more than has the Association. The year's service has brought to me many new friends, it has renewed my faith in pharmacy and my appreciation of the fact that this ancient and honorable organization is one which has helped to keep alive the spark of scientific interest which in time will kindle the torch to light the path of future generations of pharmacists toward the land of professionalism, whither we are all journeying. And if any bedlamite or evil disposed person shall ask us mockingly as we journey on our way "What is it that ye seek?" let us answer in all sincerity "We seek truth."

REPORT OF THE COMMITTEE ON THE PRESIDENT'S ADDRESS.

To the Members of the American Pharmaceutical Association:

The Committee on the President's Address has given careful consideration to the excellent recommendations contained in it. We believe that President LaWall and the Association are to be congratulated on the sane, constructive character of the address and the sound common sense shown in the recommendations. The Committee does not differ from the President on any of the principles involved in the recommendations, and its work has been almost entirely aimed at perfecting the suggestions made.

(The recommendations were considered seriatim by the Association, and the action thereon, for convenience and information, is inserted in brackets in the report.—EDITOR.)

Recommendation No. 1 is recommended for adoption, it being understood that the proposed revised code shall be finally approved by the Association.

(Approved.)

Recommendation No. 2 is recommended for adoption, it being understood that the proposed referendum shall be conducted in compliance with the provisions of the Association for amending the By-Laws.

(This recommendation was approved by the Association. In a later action by the Association, with the approval of the President and the Committee, this subject was referred to the Executive Committee of the Council.)

Relative to Recommendation No. 3, the Committee has decided that it is too soon to again change the organization of the House of Delegates and its procedure, and that some of the proposed changes would not be practicable; therefore the recommendation is not recommended for adoption.

(The Association approved the action of the Committee.)

Recommendation No. 4 is recommended for adoption.

(Approved.)

Recommendation No. 5 is recommended for adoption.

(The recommendation, owing to the action by the Committee on Federation,* was withdrawn by President LaWall.)

Recommendations 6, 7, 8 and 9 are recommended for adoption.

(Approved.)

The Committee agrees with the President that the present method of making nominations is far from perfect, but does not agree that the slight modification proposed will effect any great improvement; therefore Recommendation No. 10 is not recommended for adoption.

(The Association voted to refer the question to a special committee of three to investigate our method of nominating and voting and report a plan whereby the system may be improved. This committee is to be appointed by the incoming President.)

That part of Recommendation No. 11 which would require that the vocation of the nominees shall appear with their names and addresses on the ballots and in electing officers is recommended for adoption.

(The Association approved the report of the Committee.)

Recommendation No. 12 is recommended for adoption, with the change that the proposed Executive Committee of the Council shall include the President of the Association and the Chairman of the Council, instead of the elective officers of the Association.

(The report of the Committee was approved.)

Recommendations 13 and 14 are recommended for adoption.

(Approved.)

Signed, T. J. BRADLEY, Chairman,
G. M. BERINGER,
L. C. HOPP,
R. S. LEHMAN,
R. A. LYMAN,

Committee.

(The report of the Committee, as amended, was then adopted as a whole.)

AWARD OF THE JOSEPH P. REMINGTON HONOR MEDAL.

President Charles H. LaWall, in reconvening the First General Session of the Sixty-seventh Annual Meeting of the American Pharmaceutical Association, Tuesday evening, August 26, 1919, said:

"We are assembled for a purpose in which we are all glad to participate, the occasion of the first presentation of the Joseph P. Remington Honor Medal,

* These transactions, whereby a Pharmaceutical Publicity Committee is to be created, will be reported in a succeeding issue of the JOURNAL.

which is to be awarded to one of the distinguished Ex-Presidents of the American Pharmaceutical Association."

He then introduced Prof. Jacob Diner, who spoke in part as follows:

Mr. President, Ladies and Gentlemen:

Many years ago when I was still a tyro, really an embryo so to speak, in pharmacy over yonder where recently the world war waged, there came to us in Europe the renown of a man from the wilderness of America, a land which we saw in our vision peopled with Indians and where the white man's path was fraught with danger and difficulties; yet from this land there came to us the name and fame of a pioneer in pharmacy, Joseph Price Remington.

His renown, due to the pioneer work in pharmacy, reached us and left a deep impression upon us young men sitting on the benches and imbibing the lore of pharmacy. It was far from my mind that the hour would ever come when upon me would devolve the honor and the pleasure of being the first one to present the Joseph P. Remington Honor Medal on these shores.



THE JOSEPH P. REMINGTON HONOR MEDAL

Some twenty odd years ago, at one of our State Pharmaceutical Association meetings, I found myself, during an excursion given by the Association, making feeble efforts to land the elusive fish in the waters of the St. Lawrence River, when a kindly gentleman fishing alongside of me said, "Boy, let me show you how to bait your hook." He did so, and to my great surprise, astonishment and pleasure, I landed a fish. We became somewhat acquainted, and I dropped the first prize that I ever won in my life, and I think the last one, when I learned that this illustrious fisherman was no less a man than Joseph P. Remington. Somehow or other it seems to me that my life and path were more or less interwoven with his from that time, and of course like most of you I learned to know and, like everyone of us, to love Joseph P. Remington while he was alive, and to honor his memory now that he is gone from us.

The honor of this presentation has come to me as an Ex-President of the New York Branch of the American Pharmaceutical Association, and under these circumstances it is certainly a pleasure to have been a senior and to have the honor of presenting this medal.

Now a word or two so that we may thoroughly understand the method of awarding the medal and the more appreciate the value of the man who is to receive it. The objects of the medal, of course, are well known to you. One is to perpetuate, if that were necessary at all, but to perpetuate in a befitting manner the memory of the late Joseph P. Remington, and the other is to do it by awarding the medal to a man who during the preceding year has done something worth while to advance pharmacy in any or many of its branches.

The award is made, or the choice is made, by having each of the living past presidents of the American Pharmaceutical Association nominate by mail someone whom he thinks worthy of receiving this distinction, and enlarging upon the reasons for his choice. From these nominees, the three names receiving the highest number of votes are again submitted to the past presidents, and from these the one receiving the highest number of votes receives the medal.

You can see therefore that the recipient must have merit, must have done something to enthruse a large number of these older men, who are careful in their choice and in their selection, accustomed to deliberation and fully aware of the importance of the American Pharmaceutical Association and the importance of it to pharmacy; such nomination and selection places the award only within the reach of those who have merit and have won true, honest distinction. Thus we find ourselves here tonight to present this medal for the first time.

James H. Beal, educator, scientist, writer, diplomat, legislator, upon you has fallen the choice, the selection, the dictum of these wise and careful men, to be the recipient of this distinction, and in honoring you by presenting you this Medal, I feel that I express the sentiments of every one present, that the New York Branch of the American Pharmaceutical Association unites with me in the declaration that in honoring you we honor ourselves, and we honor the Association. May you live long to continue your useful work on behalf of pharmacy, to be the adviser and helper and friend of pharmacy as you have been in the past. Mr. Beal, I congratulate you, and I congratulate the members who so wisely chose."

ADDRESS OF JAMES HARTLEY BEAL, MEDALIST.

Mr. President, Members of the New York Branch, Ladies and Gentlemen:

When I compare my own few and feeble efforts in behalf of pharmacy with the substantial achievements of so many faithful and deserving members of this Association I cannot help but wonder, as perhaps some of you have wondered, why I should have been selected to receive the first Remington medal.

However we may view the action of the committee in this particular instance, no one will question the wisdom or the laudable enterprise of the New York Branch of the American Pharmaceutical Association in establishing the means of commemorating the eminent services of one who for so many years filled so large a place in American pharmacy, both in name and in fact, as did Professor Joseph Price Remington.

When I became a member of the Association many years ago, Professor Remington was one of the first to extend the hand of professional fellowship, and from the day of that first acquaintance until the last his sympathetic advice and encouragement were unfailing. This was typical of his behavior to many other young and timid members who will always gratefully remember his approachableness, his efforts to make them feel at home at the annual meetings and to interest and encourage them in association work.

To you who knew him so well little could be said that would add to your knowledge of his personal characteristics. You still have a keen recollection of his vigorous personality, of his constant zeal in advancing the interests of this Association, of his readiness in debate, of his wisdom in counsel, and of his uniform courtesy and unfailing good humor.

Professor Remington's professional experience bridged the space between two distinct periods of pharmaceutical development. When he began his apprenticeship the apothecary, as he was then commonly called, was the principal manufacturer as well as the purveyor of medical supplies. The mineral acids and salts and most of the medicinal chemicals were purchased ready-made, but the galenicals which then ruled in the world of medicine were almost uniformly manufactured in the same establishment that dispensed them. He lived to see the period when the apothecary ceased to be the principal producer of medicinal compounds and became mainly the purveyor of preparations manufactured by others, and when the medicinal agents in most common use assumed a character that required for their successful production the resources of establishments maintained by large aggregations of capital and employing large numbers of specially trained workers.

To those who knew him intimately it was evident that although Professor Remington did not welcome the passing of the manufacturing functions of the apothecary to the large laboratory, he at length came to realize that such a change was inevitable, that it was but a natural step in the process of social evolution, and that the logical action of the apothecary was not to resist that which he could neither prevent nor change, but to readjust himself to the new conditions.

To some people optimism consists in refusing to see unwelcome facts, or in denying their existence when they are forced upon their attention. Professor Remington's optimism was of a different sort. He frankly recognized the changes that had come to pharmacy, but he had an abiding faith in its future, and in the opening of new fields of usefulness that would always require the best efforts of the best trained minds.

The historical development of a human vocation in many respects resembles the development of a river bed. Within certain rather narrow limits the stream determines its own channel; it may dig away the bank at one place and deposit a bar or build up to a point at another, but its volume of flow, its principal characters and general direction will be determined by the nature of the water-shed, by the general topography, and by other natural factors which no action of the current can control or modify. In a similar manner the members of a trade or profession are limited largely to the control of the collateral and incidental features of its development. By conscious thought and coöperation certain minor phases can be emphasized, restrained or reformed, but the general trend of its evolution will be determined by the fundamental features of the society and civilization which it serves, and by other factors beyond direction and control regardless of whether the direction of such evolution be in accordance with the ideals of its teachers and philosophers or opposed to them.

It is a common characteristic of men to cling to their early ideals for the progress of the particular calling with which they have been associated, and to feel that it will lose in power and dignity if the direction of its development chances to be along different lines than those previously marked out for it, overlooking the historical fact that the evolution of an art or a science according to preconceived ideals has been the exception rather than the rule; and also forgetting that each successive stage of development in every human vocation has brought with it opportunities for the best efforts of the best trained men and the basis for the formulation of new ideals as much worth while, or perhaps even more worth while, than the ideals that have been discarded.

After all, what is the proper measure by which to determine the correctness of professional ideals? Is not the true standard that of service, and service alone? Is not the truest and the most worth while development of an art that which brings the greatest good and the greatest service to the greatest number?

If the old method of local and individual production furnished more efficient medicinal agents than the new, then we are justified in regretting the change in the methods of production and distribution; but if the transfer of productive functions from the individual apothecary to the manufacturing laboratory has resulted in increasing the efficiency of medicinal agents, or has enlarged the extent of our control over disease, then we have no alternative but to acquiesce in the transfer, and to readjust our ideas and ideals to make them fit the new conditions.

It is not true that pharmacy has failed to progress in accordance with the spirit of the age. The improvement in the quality of its products and in the methods of their production has been as great as the improvement in any other line of productive manufacture. It is only the external form, not the substance of pharmacy, that has altered.

We must get away from the pessimistic idea that pharmacy is not pharmacy unless it is carried on in small establishments where two or three individual workers produce and dispense medicaments to a limited clientele in a small locality. The workers in the large laboratories who contribute to the improvement of thera-

peutic agents or who are engaged in their production on a large scale are as truly entitled to be called pharmacists as if each of the individual workers expended his entire activities behind the dispensing desk or in the back room laboratory of a small retail store.

Examined without prejudice the frequently deplored commercialization of pharmacy can be interpreted as the beginning of the separation of its merchandising features from its purely professional features. It is a part of the natural process of evolution; a first step toward a more complete specialization of functions. Its tendency is towards the same end as that sought by those who advocate legislation to create two classes of pharmacies, one class to be purely commercial, the other purely professional. We can retard the rate of this beginning cleavage between commercial and professional functions by demanding that every pharmacy shall particularly concern itself with the production and standardization of medicinal agents and the compounding of physicians' prescriptions, or we can materially advance its progress by frankly acknowledging the right of commercial pharmacy to a separate and independent existence.

The total amount of real pharmaceutical service required by the public and the medical profession is insignificant as compared with the number of existing drug stores, whereas its division among a smaller number of establishments would give a substantial portion to each and would encourage the cultivation of such work as a specialty.

It may be too early to ask for legislation dividing pharmacies into different classes according to the character of the patronage they seek, but it ought not to be too early to encourage the progress of such a separation through voluntary action on the part of their proprietors.

He must indeed be pessimistic who cannot see in present conditions the promise of a prosperous future for pharmacy. If all other signs were lacking, the fact that for years the demand for the graduates of our colleges and university schools of pharmacy has been far greater than the supply, and that the call for still better trained men is ever increasing, should be evidence enough to convince the unbiased mind that pharmacy is not decadent.

Though it is true that hitherto the majority of the better trained graduates have been absorbed by the large laboratories, this is because the demand there has been most insistent. When this demand has been more nearly satisfied, we may reasonably expect to see an increasing number of establishments where the compounding of prescriptions, the making of laboratory examinations required by the physician, and the other so-called professional features of pharmacy, will be cultivated as specialties.

By some Professor Remington would probably have been denominated an opportunist, owing to the fact that at times he seemed to endorse policies which, externally at least, appeared to be inconsistent with each other. Those who were more intimately associated with him came at length to realize that he was a man of remarkable tenacity of purpose; that however much he might seem to yield in matters of detail the central thought and idea of his purpose was never lost sight of. Like a skillful commander he knew that campaigns are rarely completely carried out as planned, and that the details of their execution must be varied to meet the changing exigencies of the situation to make the central purpose of the general plan come true.

In other words, he was more intent upon final results than upon the forms or formulas by which they were obtained, and his tenacity was for things of substance rather than for mere names or for theoretical consistency. If he could meet a prejudice or lessen opposition to his general purpose by the sacrifice of some non-essential detail, or by a change of name to suit some stickler for form and method, he never hesitated to yield the point and to come to an accommodation. Not infrequently those who contested an important matter with him, later had reason to realize that although they had gained liberal concessions in the way of empty

forms and minor details, Professor Remington had gained practically every substantial point involved in the contest.

It was this diplomatic disposition to yield in non-essentials in order to accomplish matters of larger consequence that enabled him to act so successfully as moderator between antagonistic views and personalities, where without such diplomatic mediation only confusion and disagreement could have resulted.

Professor Remington's position in pharmacy was not fortuitous nor was it thrust upon him by circumstance. Men do not achieve such a position of leadership as he so long enjoyed, nor continuously fill so many important and conspicuous positions, without the possession of unusual qualities of mind and character.

Even those who were occasionally forced by circumstances into positions of antagonism that sometimes verged upon bitterness will be most ready to admit his large and liberal qualities of mind and heart. In all the essential qualities of manhood he was sound and vigorous, clean alike in thought and habit, and with a personality and character that justly entitle him to rank as one of the very foremost men of the profession which he so long adorned.

Doubtless, like all men of action, he was at times responsible for decisions or policies that his own reason would not have endorsed at a later date, but even those most frequently at variance with him will concede that, weighed in any balance, his worth as a man and the value of his services to the American Pharmaceutical Association and to American pharmacy will far exceed the sum of any human frailties or errors of judgment that a critical examination of his life and character might bring to light.

No words at my command can adequately express my appreciation of the honor of having been selected as the first Remington medalist. I can only assure you that I am very deeply sensible of the distinction which you have conferred.



COMMITTEE ON NATIONAL FORMULARY, HOT SPRINGS, ARK., SEPTEMBER 3-7, 1908.

Seated left to right in front row: H. V. Arny, H. A. B. Dunning, Leonard A. Seltzer; second row, Martin I. Wilbert, Wilbur L. Scoville, C. S. N. Hallberg, C. Lewis Diehl, Henry P. Hynson; standing, Leo Eliel, Charles H. LaWall, George M. Beringer, A. B. Stevens (Honorary President A. Ph. A., 1919-1920), Joseph W. England.

FINAL REPORT ON THE ALKALOIDS OF GELSEMIUM.*

BY L. E. SAYRE AND G. N. WATSON.

For many years contributions have been offered and published in the Proceedings of this Association by the author and others from the University laboratory upon the subject of the active constituents of Gelsemium.¹ Each one of these investigations has progressively added some new information tending toward solving the problem of separating the various active constituents of the drug. The difficulty involved in the isolation or separation of these constituents has been due largely to the fact that the peculiar intractable resin-like body (a resinoid differing from the ordinary members of its class) permeates the extractive (or alkaloidal) substances which is difficult to separate from the latter without losing these alkaloidal constituents or masking them in a way that leads one to the conclusion of former investigators, that some of these active principles are uncrystallizable.

One of the most noteworthy investigations contributing much to the constitution of the extractives of Gelsemium was that of Charles Watson Moore, published in the *Transactions of the English Chemical Society*, 1910, Volume 97. But this author failed, like others, to separate the component parts of the so-called uncrystallizable material of Thompson, which, the latter author named "Gelseminine."² The facts revealed by our investigation seem to show that there does not exist in the drug any such alkaloid as Gelseminine, but that this constituent (so-called) is a compound body consisting of several alkaloids having different properties, as we will attempt to show.

In this report the authors desire to give such details of the separation of the various constituents that others, following same, may be assured of successful results in such separation of Gelsemium active principles. It is hoped it will be a guide to manufacturers who wish to isolate any or all of the principles for the market. The process of isolation will throw some light upon a method of standardization of the drug, which will be the subject of another paper by our colleague, Professor L. D. Havenhill.

SEPARATION OF SEMPERVIRINE (AS NITRATE).

Twenty-five pounds of the drug in No. 20 powder were completely extracted with 70 percent alcohol by re-percolation. The alcohol was distilled off on a water bath. The concentrate, made alkaline with ammonia, was extracted with large excess of chloroform (5 washings) until free from alkaloid. The chloroform extract (washing) was concentrated by distillation on a water bath. The evaporated chloroformic concentrate was extracted with 0.5 percent hydrochloric acid. The acid solution, containing the alkaloidal hydrochloride was treated with a saturated solution of sodium nitrate (5 mls per 100 mls of acid solution) which resulted in

* Read before Scientific Section, A. Ph. A., New York Meeting, 1919.

¹ Assay of F. E. Gelsemium, Proc. A. Ph. A., 1907, p. 357. A further Study of the Alkaloids of Gelsemium, A. Ph. A. meeting at Hot Springs, Arkansas, Sept. 7-12, 1908. "A Study of the Alkaloids Gelsemine and Gelseminine," Proc. A. Ph. A., 1909. Gelsemium, A. Ph. A., Richmond, Virginia, 1910. "The Composition of Gelseminine," A. Ph. A., Journal, May, 1912. "Further Study of the Alkaloid Gelseminine," A. Ph. A. Journal, March, 1914. "Sempervirine from Gelsemium Root," A. Ph. A. Journal, 1915. "Third Alkaloid from Gelsemium," A. Ph. A. Journal, 1915.

² Pharmaceutical Era, 1887, p. 3.

the precipitation of sempervirine nitrate (an alkaloid previously reported). The sempervirine nitrate was separated by filtration, dissolved in hot water and reprecipitated with sodium nitrate. The latter process was twice repeated. The resulting sempervirine nitrate was first washed with water containing sodium nitrate, then with water, small amount (process repeated twice). The salt was then dried and dissolved in hot alcohol and set aside to crystallize from alcoholic solution. About 3 grammes of a somewhat bulky sempervirine nitrate were thus obtained.

REMOVAL OF GELSEMIC ACID.

The acid filtrate from the sempervirine nitrate (representing organic—gelsemic acid—alkaloidal salts, etc.) was extracted with chloroform, the solution before washing being somewhat concentrated and only partly neutralized. This chloroform washing removed gelsemic acid.

SEPARATION OF GELSEMINE.

The above acid solution of the alkaloids was then made alkaline with NH_4OH and extracted, first with ether (3 washings) to remove gelsemine and then with chloroform (3 washings) to remove other alkaloids soluble in chloroform.

The ether extract was concentrated and precipitated in ether solution by means of HCl gas as an impure gelsemine hydrochloride.

The impure gelsemine hydrochloride was dissolved in water. The greater part of the water was evaporated spontaneously, filtered and the residue washed with strong alcohol until colorless. By this method of purification all possible traces of gelsemic acid and the hydrochlorides of other alkaloids were removed leaving the pure white gelsemine hydrochloride. Both the aqueous and alcoholic filtrates were further concentrated and treated in order to remove all alkaloidal material, gelsemine hydrochloride and the hydrochlorides of associated alkaloids.

About 8 grammes of gelsemine hydrochloride were obtained.

EXTRACTION OF REMAINING ALKALOIDS.

The chloroformic solution of alkaloids after extraction of the gelsemine was concentrated by distillation to a soft brown, amorphous extract representing the remaining total alkaloids, *i. e.*, the total alkaloids minus the gelsemine and sempervirine.

This extract was dried, dissolved in the least possible amount of absolute alcohol in a glass stoppered flask, the alcoholic solution treated with hydrochloric acid gas and then with a large excess of absolute ether. The mixture was allowed to stand 24 hours and then filtered. The precipitate of hydrochlorides of the so-called amorphous alkaloids was washed with chloroform, which dissolved an amorphous portion and left on the filter a brown, heavy, granular, crystalline, extremely soluble, hydrochloride of an alkaloid (weighing 1.75 grammes), for which we suggest the name "Gelsemidine"—not "Gelseminine"—since gelseminine, the name formerly given to the amorphous alkaloids of gelsemium, has been proved conclusively to be not a single alkaloid but a mixture of three alkaloids, one of which is crystalline, one capable of forming a crystalline salt and one distinctly amorphous and possibly colloidal.

Weight of Gelsemidine hydrochloride, about 2.5 grammes.

The chloroform-soluble portion of the mixture of hydrochlorides was of a light brown color and amorphous when first precipitated, but soon passed into a

dark brown mass having a resinous appearance. This residue was strongly alkaloidal and in appearance and behavior is very much like Lloyd's Emetoidine, said to be a colloidal alkaloid of Ipecac, and might be very appropriately called "Gelsemoidine."

In order to secure the total gelsemic acid (not important to this investigation) the original chloroform extract was concentrated to a syrupy extract and washed with hot water to remove gelsemic acid which was purified by repeated concentrations and filtrations and finally crystallized from alcohol.

PHYSICAL DESCRIPTION.

Gelsemine.—Gelsemine is the most abundant and only ether-soluble alkaloid of Gelsemium. Its ether residue is a reddish, amorphous mass having a resinous appearance. Its hydrochloride is pure white, crystalline, soluble in water and difficultly soluble in alcohol. The fact that the alkaloid is soluble in ether and its hydrochloride almost insoluble in alcohol makes its separation from the other alkaloids and its final purification very efficient. The aqueous solutions of its salts are precipitated by the general alkaloidal reagents.

Sempervirine.—The free alkaloid crystallizes from chloroform in reddish brown needles. It is slightly soluble in alcohol and water and almost insoluble in ether, benzol and petroleum ether. Its hydrochloride is readily soluble in water and alcohol and is precipitated by nitric, tannic and picric acids; by potassium chromate, platinic chloride, sodium chloride and sodium nitrate giving yellow precipitates. The nitrate is somewhat soluble in water, very soluble in hot water and in hot alcohol. Their solutions give precipitates with Wagner's and Mayer's reagents.

Gelsemidine is an amorphous alkaloid, insoluble in ether, soluble in chloroform and alcohol. Its hydrochloride is insoluble in ether and chloroform, soluble in alcohol and extremely soluble in water. Its crystalline form is granular; its action, purely sedative. Like sempervirine, gelsemidine exists in gelsemium in very small quantity.

COLOR REACTIONS WITH SULPHURIC ACID AND MANGANESE DIOXIDE.

Gelsemidine (hydrochloride).....	Purple, bluish green
Gelsemoidine (hydrochloride).....	Purple, green
Sempervirine (nitrate).....	Green, yellowish green
Gelsemine (hydrochloride).....	Crimson, green, yellowish

PHYSIOLOGICAL ACTION OF THE ALKALOIDS OF GELSEMIUM ON FROGS.

Alkaloid.	Respiration.	Behavior.	Paralysis.
Gelsemine Hydrochloride	Slow, irregular 30 per 22-30 sec.	Restless, convulsions	Slight
Sempervirine Nitrate	Slow, irregular 30 per 27-30 sec.	Restless, convulsions	None
Gelsemidine Hydrochloride	Nearly normal, regular 30 per 16-19 sec.	Quiet	Decided
Gelsemoidine Hydrochloride	Normal	Quiet	Present
Physiological study to be continued.			

Gelsemoidine is amorphous, insoluble or nearly insoluble in ether, soluble in alcohol, soluble in chloroform and in water. It does not form crystalline salts.

Its hydrochloride is soluble in the same solvents and is hygroscopic. Like *semper-virine* and *gelsemidine*, it is in small quantity. It is separated from the ammonia-soluble, resinous matter (once thought to be alkaloid) by means of water or acidulated water in which it is soluble.

As above stated, it is believed that this investigation will aid in the determination of a satisfactory process for the standardization of the drug and its preparations. Conjointly with this work Professor L. D. Havenhill is working out such a process of standardization.

The authors would like to add a word with regard to the importance of our understanding the chemical constitution of such a drug as *Gelsemium*, as this drug is one that powerfully impresses the nervous system. It is said that small medicinal doses relax the muscles and allay nervous irritation. Therapeutically, *Gelsemium* is said to act upon the cerebrospinal nervous centers and it has found much favor among the eclectic practitioners who claim that the drug "possesses a perfect control over the nervous system, removing nervous irritability more completely than any other known agent."

Since the habit-producing drugs (of the narcotic and hypnotic group) have caused much alarm, evidenced by legislation, it is wise for chemists and therapeutists to endeavor, as far as possible, to employ a substitute. It is believed that if the drug in question is more thoroughly studied by therapeutists it will be found more valuable, than it is deemed at present, as one of the important agents in the armamentarium of the practitioner.

THE PERMANENCY AND DETERIORATION OF SOME VEGETABLE DRUGS TWENTY-FIVE YEARS OF AGE.*

BY E. N. GATHERCOAL.

Some two years ago opportunity offered for the examination of a collection of crude drugs that had been prepared some twenty-five years ago by W. K. Higley of Northwestern University School of Pharmacy, Chicago. These drugs were placed in glass-stoppered bottles kept in cases more or less exposed to the light. For a number of years, at least, none of the bottles have been opened. While the conditions under which these drugs have been kept are not exactly similar to the conditions met with in drug stores, in many respects they are similar to those in stores where crude drugs are kept in glass. Of course, where drugs are kept in wooden drawers or boxes, or in paper packages, the liability to deterioration is perhaps increased.

This paper is deficient in some respects. It will be noted that a number of assayable drugs have not been assayed. This was due in some cases to an insufficiency of material, in others to lack of time on the part of the author. Despite the fact that spare moments for two years have been devoted to this work, many of the drugs have not received nearly the attention they should have had.

A number of important drugs are omitted because samples of them were not present in the collection examined.

Among the drugs fully U. S. P. there occur, much to the author's surprise, *Digitalis*, which is of a strength one and a half times the present pharmacopoeial

* Read before Scientific Section, A. Ph. A., New York City meeting, 1919.

requirement, and Belladonna leaves well above the U. S. P. strength. Unfortunately the assay of Hyoscyamus and of Stramonium was not completed owing to lack of material in the samples. Both have been placed in the non-U. S. P. column because of their very brown color. However, the Belladonna leaves were also brown.

The Umbelliferous fruits, Anise, Caraway, Fennel and Celery, were all fairly good and would fully correspond with a good commercial grade of the same drugs today.

On the other hand the Labiate herbs were uniformly much depreciated. Peppermint was especially poor, Spearmint somewhat better, Catnip poor.

Other leaf drugs that had suffered appreciable depreciation were Buchu, Boneset, Coltsfoot, Witchhazel (?), Matico, Gaultheria and probably Pilocarpus. Humulus was brown in color but possessed an odor and taste characteristic of fresh, good hops. Lupulin also had a brown color but a fine odor and taste. Possibly repeated exposures to air are required to produce the disagreeable odor of deteriorated hops and lupulin.

Several samples of Bitter Orange peel, ribbons and quarters, Sweet Orange peel and Lemon peel were present and in each instance showed a marked depreciation in color and in odor, but, rather oddly, the odor was in no instance terebinthinate but always citrous. On the other hand, Prickly Ash berries, N. F., which normally have an odor of citral, were decidedly terebinthinate.

Some of the drugs, notably Colchicum seed, Gambir, Viburnum opulus, Rhamnus cathartica and possibly Asafoetida, the English Aconite and the first sample of Lobelia, have fallen into the non-U. S. P. column because they were of poor quality when placed in the collection.

Fully U. S. P.*	Not fully U. S. P.*	Remarks.
1 Acontium, Ger.		Good appearance; assay, 0.55%. (U. S. P. 0.5%.)
2	Aconitum, Eng.	Small, short, thick roots, very gray externally; infested with insects; taste not fully acrid; assay, nil. (U. S. P. 0.5%.)
3 Anisum, Ital.		Odor and taste very good; free from conium, excess stem or clay.
4	Arnica	Dull gray-brown color; yellow florets all faded to brown; odor much weakened.
5	Asafoetida	Very dark red-brown; odor good; 57% soluble in alcohol. (U. S. P. 60%.)
6 Aspidosperma		
7	Aurantii Amari Cortex, ribbons	Yellowish brown, inner surface light brown; taste bitterish, weakly pleasantly aromatic, not terebinthinate.
8 Belladonnae Folia		Brownish color; assay, 0.32%. (U. S. P. 0.30%.)
9 Belladonnae Radix		Assay, 0.53%. (U. S. P. 0.45%.)

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Fully U. S. P.*	Not fully U. S. P.*	Remarks.
10	Benzoinum, Sumatra	Very red externally; on freshly fractured surface for some distance inward from edge the tears were very reddish; odor good; crystals of benzoic acid on interior of bottle.
11	Buchu, long } Buchu, short }	Color much faded; odor and taste much weakened though characteristic.
12		
13 Calumba		Good yellow color; very bitter.
14 Cannabis, American		Not assayed. (U. S. P. 0.03 mil of fluidextract.)
15 Cannabis, Indica		Not assayed. (U. S. P. 0.03 mil of fluidextract.)
16	Cantharis, Russian	Badly infested with insects; not assayed. (U. S. P. 0.6%)
17	Capsicum	Genuine African; color much faded; odor somewhat rancid, "oily," taste very pungent.
18 Carum		
19 Caryophyllus		
20 Cascara Sagrada		Emodin tests, good.
21 Chondrus		
22 Cimicifuga		Strongly acrid.
23 Cinchona		Fine specimen of flat bark; assay, 6.3%. (U. S. P. 5%.)
24 Cinchona Rubra		Assay, 7.2%. (U. S. P. 5%.)
25 Cinnamon. Saigon.		Thick quill.
26 Cinnamon. Zeylon.		Better in odor and taste than present commercial article.
27 Coccus, silver		Large, plump, not heavily coated.
28 Colchici Cormus		Not assayed. (U. S. P. 0.35%.)
29	Colchici Semen	Not assayed. (U. S. P. 0.45%); small, shrivelled; many foreign seeds.
30 Digitalis		Color good; taste bitter; assay (by Dr. J. M. Francis of Detroit) M. L. D. 0.004 mil. (U. S. P. 0.006 mil.)
31 Eriodictyon		Odor and taste very good, color somewhat faded, veins not green.
32 Eucalyptus		
33 Foeniculum		
34 Frangula		Inner surface very dark brown; emodin test not strong.
35 Galla		
36	Gambir	Very dark and hard; much foreign matter; soluble in alcohol 43%. (U. S. P. 65%.)
37 Gelsemium		
38 Gentiana		
39 Glycyrrhiza, Russian		
40 Glycyrrhiza, Spanish		
41 Granatum, stem bark		
42 Grindelia Robusta		Very stemmy.

Fully U. S. P.*	Not fully U. S. P.*	Remarks.
43 Guaiacum		Very dark greenish externally; some chips present.
44 Guarana		Assay, 5%. (U. S. P. 4%.)
45	Humulus	Light reddish brown; odor much weakened but not disagreeable nor valerian-like.
46 Hydrastis		Assay, 2.8%. (U. S. P. 2.5%.)
47	Hyoscyamus	Very brown; not assayed. (U. S. P. 0.065%.)
48 Ipecacuanha, Cartagena		Assay, 1.75%. (U. S. P. 1.75%.)
49 Ipecacuanha, Rio		Assay, 2.05%. (U. S. P. 1.75%.)
50 Jalap		Assay, 10.5%. (U. S. P. 7%.)
51 Kino		
52	Lobelia, first sample	Straw-colored, very stemmy, slightly acrid, not sternutatory.
53 Lobelia, second sample		Strongly acrid.
54 Lycopodium		
55 Maltum		It converted five times its weight of starch into sugars. (U. S. P. 5 times.)
56 Manna, large flake		Yellow to light brown external color.
57 Manna, small flake		
58 Matricaria		
59	Mentha Piperita	Color much faded; odor weak; stemmy.
60	Mentha Viridis	Brown in color; odor and taste strong and characteristic.
61 Mezereum		Acridity rather slight.
62 Myrrha		Many pieces have a dark-red, soft, granular exudation.
63 Nux Vomica		Not assayed. (U. S. P. 2.5%.)
64 Petroselinum		
65 Physostigma		Not assayed. (U. S. P. 0.15%.)
66	Pilocarpus (Jaborandi)	Not assayed. (U. S. P. 0.6%); very brown.
67 Podophyllum		Assay, 3.7% resin. (U. S. P. 3%.)
68 Prunus Virginiana		Contains 0.078% HCN; color dark reddish.
69 Pyrethrum		
70 Quassia		
71 Resina		
72 Rheum		
73 Rosa Gallica		Color, odor and taste exceptionally good.
74 Sanguinaria		
75 Sarsaparilla, Honduras		
76 Sarsaparilla, Mexican		
77 Sassafras		
78 Scammoniae Radix		Genuine Levant; not assayed. (U. S. P. 8%.)
79 Scilla		Not assayed. (U. S. P., M. L. D 0.006 mil.)
80 Senega		
81 Senna, Alexandria		

Fully U. S. P.*	Not fully U. S. P.*	Remarks.
82 Senna, India		
83 Serpentaria, Virginia		Odor and taste strongly camphoraceous.
84 Spigelia		Dirty, but free from Ruellia, etc.
85 Staphisagria		
86 Stillingia		
87	Stramonium	Brown color; heavy narcotic odor; not assayed. (U. S. P. 0.25%.)
88	Strophanthus, first sample	Brown to dark brown; not assayed. (U. S. P. 0.00006 mil.)
89	Strophanthus, second sample	Small, pointed, very brown seeds; oily odor, strongly bitter; not assayed. (U. S. P. 0.00006 mil.) No greenish color with sulphuric acid.
90 Sumbul		
91 Triticum		
92 Uva Ursi		
93 Valeriana, Belgian	}	Clean, good odor and taste.
94 Valeriana, German		
95 Valeriana, English		
96 Veratrum Viride		
97 Viburnum Prunifolium		
98 Xanthoxylum, Northern		
99 Xanthoxylum, Southern		Unscraped; strongly pungent.
100 Zingiber, African		
101 Zingiber, Jamaica		

Fully N. F.**	Not fully N. F.	Remarks.
1 Absinthium		
2 Agaricus		Very bitter.
3	Aletris	Badly infested; rhizomes almost destroyed.
4	Angelicae Radix	Taste rather harsh, acrid, not so aromatic as recent drug.
5 Apii Fructus		Color and odor fair; taste rather strong and disagreeable.
6	Asclepias	Color dark reddish; odor not good; taste slight.
7 Baptisia		
8	Berberis, first sample	No yellow internal color; somewhat bitter.
9 Berberis, second sample		Yellow internally, very bitter.
10	Calendula	Much faded; odor pleasant, slightly aromatic and bitter.
11	Cataria	Faded; odor very poor.
12 Caulophyllum		
13 Centaurium		Red color of petals bright; stems and leaves faded to straw color; odor pleasant; taste aromatic and bitter.
14 Cocculus Indicus		
15	Coffea Tosta	Odor strong, disagreeable; not assayed. (N. F. assay 1%.)
16 Optis		Very fine yellow color and bitter taste.
17 Crocus		Color, odor and taste very good; not adulterated.

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** National Formulary, 4th edition.

Fully N. F.**	Not fully N. F.	Remarks.
18 Cypripedium		Odor heavy.
19 Dioscorea		
20	Eupatorium	Color much faded; taste slightly bitter.
21	Farfara	Upper surface of leaves very dark brown.
22 Galanga		Odor and taste aromatic; not pungent.
23 Geranium		Fine sample; very reddish.
24	Hamamelidis Folia	Very red brown in color.
25 Helonias		
26 Ignatia		Not assayed. (N. F. assay 2%)
27 Inula		Very fine.
28 Iris (Florentine Orris)		Very fine appearance and odor.
29 Juglans		
30 Kava		
31 Leptandra		
32 Lupulinum		Very good color and odor as of freshly dried Lupulin.
33 Mastic		Color yellowish brown.
34	Matico	Color much faded to a brown; odor and taste very slightly pepper-like.
35 Pareira		
36 Petroselin Radix		
37 Quillaja		
38	Rhamnus Cathartica	Fruits of <i>Rhamnus tinctorius</i> instead of <i>Rhamnus catharticus</i> .
39 Sambucus		Color good; odor and taste very slight; somewhat stemmy.
40 Scoparius		Color but slightly faded; taste strongly bitter.
41 Trillium		Taste very acid.
42	Viburnum Opulus	Bark of <i>Acer spicatum</i> .
43	Xanthoxyli Fructus	Stemmy; odor terebinthinate, not of citral; no tingling sensation after chewing.

SUMMARY.

1. A collection of crude drugs in glass-stoppered bottles prepared twenty-five years ago was examined for the quality of the drugs and compared with the present U. S. P. and N. F. requirements.

2. Most of the drugs were very well preserved and fully met the present standards, notably: Aconite, Belladonna Leaves, Cinchona, Cinnamon, Digitalis, Lobelia, Malt, Matricaria, Prunus Virginiana, Rosa Gallica, Senna, Valerian, Ginger, Spanish Saffron, Florentine Orris, the Umbelliferous fruits, etc.

3. Among the drugs much depreciated were Orange and Lemon peels, the Labiate herbs (Peppermint, Spearmint and Catnip), and a number of leaf drugs (Buchu, Boneset, Coltsfoot, Witchhazel, Matico, Gaultheria and probably Pilocarpus).

4. Humulus and Lupulin, while brown in color, possessed a very fresh characteristic odor, not at all valerian-like.

5. A number of the drugs were adulterated or of poor quality when placed in the collection, notably Colchicum seed, Gambir, Viburnum Opulus (*Acer spicatum*), Rhamnus Cathartica (*Rhamnus tinctorius*), Asafoetida, English Aconite and one sample of Lobelia.

THE PHARMACOGNOSY LABORATORY, ITS ACTIVITIES AND AIMS.*

BY ARNO VIEHOEVER.

This paper has been prepared in the hope that other workers, engaged in pharmaceutical and related research, may be induced to prepare similar statements, sufficiently detailed to indicate the nature of their studies, though the work may be still in progress. Thus we could hope to secure a census of pharmaceutical research in this country.

Such a census, it is believed, would largely prevent unnecessary duplication of work, and bring about increased coöperation; it would demonstrate the extended scientific activities of American pharmacists, pharmaceutical-botanists—chemists, physiologists—and the broad fields covered by their endeavor; it would suggest and stimulate new research.

The activities of the Pharmacognosy Laboratory may well be discussed under 2 headings: "Crude Drug Control" and "Pharmacognosy Investigations." This division, however, is rather arbitrary, since it is and has been our aim to carry on the one, drug inspection, with a research spirit, and the other, drug or plant investigation, with a practical view point.

I.

CRUDE DRUG CONTROL.

The work of the Pharmacognosy Laboratory in connection with the enforcement of the Food and Drugs Act consists in the main of examination of samples of appealed shipments, and the identification of unknown or mislabeled drug products which are sent in by inspectors, supervising interstate trade or importations. Some results of our activities along this line, throwing also a light on the nature of the work and the difficulties sometimes encountered, were presented at the last (1918) meeting of this Association and are published in the June number of the JOURNAL.¹ In connection with crude drug products which have come recently to our attention and which are as yet little known to the general trade, incorrect or misleading names were used. A note has, therefore, been prepared, which, after pointing out the existing varied bases for common names, urges greater care in the adoption and use of a common name and gives suggestions how the improvement may be brought about.²

Domestic Trade.—A preliminary survey was made of the crude drug industry of the Southern Appalachian Region, covering part of the mountains of West Virginia and North Carolina, in order to secure information regarding domestic trade practices. A paper relating the observations made on this trip is published in this JOURNAL.³ A considerable number of different native drugs, largely of an unofficial nature, were also secured for reference and investigational purposes. A paper reporting the analytical data with regard to total and acid-insoluble ash, and total and volatile ether extract found in the specimens, numbering over 300, has been prepared for publication.⁴ A note on "Commercial Hydrastis," discussing briefly the analytical results obtained in the examination of domestic samples, both in the whole and powdered state has also been prepared.⁵ The major part of the samples, and especially those in ground state, were found to contain excessive amounts of sand and earthy material. Another note discussing the charac-

* Read before Scientific Section, A. Ph. A., New York City meeting, 1919.
Contribution from the Bureau of Chemistry, U. S. Dept. of Agriculture.

teristics of Man-root (*Ipomoea pandurata*), a possible substitute of Jalap-, Scammony- or Orizaba-resin, and two other convolvulaceous resins is in preparation.⁶ A product called "linen seed" and submitted for identification was found to be *Hibiscus bifurcatus*. Though related to cotton seed (*Gossypium*) and containing like this appreciable amounts of a fatty oil, the phenolic and poisonous substance—gossypol—present in cotton seed, was absent in *Hibiscus* seed.

Import Trade.—Among adulterants found in import trade those of *Aethusa cynapium* for *Conium* leaves,⁷ and *Santolina chamaecyparissus* for *Matricaria chamomilla*⁸ were recently reported. Further should be mentioned the substitution in part of the seeds of *Jatropha curcas*, occurring in an imported shipment of castor beans, and the adulteration of "mustard" consisting of 85 percent Indian Tori (related to European rape) and only 15 percent of genuine Indian mustard, *Brassica juncea*. A root, probably of an unofficial smilax species, was found to be substituted for sarsaparilla; another, as yet not identified monocotyledonous root composed part of a shipment, labeled "Black Hellebore" (*Helleborus niger*), the remainder being genuine hellebore. Arnica Flowers were substituted by flowers of *Heterotheca inuloides* and rhubarb again by rhaponticum root. Service and Regulatory Announcements discussing the main differentiating characteristics of the adulterants in comparison with the genuine products, have been prepared, but not as yet published. Regarding previous announcements see (9).

Elimination of Inert and Objectionable Material in Crude Drugs and Spices.—General information has been obtained regarding the cleaning of different types of crude drugs and spices by washing, flotation, sifting, blowing, scraping and other methods based on difference of weight, size, shape or consistency. Specific information has been collected in the case of wormy or moldy nutmegs, areca nuts, ginger, orris root, and mustard seed.

Extension of Standardization of Purity for Drugs.—A large number of ash analyses of crude drugs have been made, with especial reference to the value of the acid-insoluble ash determination as an index of cleanliness. A paper calling attention to the value of such standards has been prepared and will be published in your journal.(10)

Value of Volume Weight Determinations.—Data have been collected to demonstrate the value of a more extended use of volume weight determination in the analysis of crude drugs and spices. The weight of a certain volume is extensively used in grain standardization and to some degree by the trade in the judgment of pepper. Recent findings with regard to areca nuts, nutmegs, fennel, ergot, mustard, etc., suggest that the weight of 100–500–1000 ccm. of crude drugs, as far as they are of fairly uniform size, such as seeds and fruits, or consist of powder, such as lycopodium or kamala, can often be used for an immediate indication of inferiority, due to worm infection, moldiness, immaturity, partial extraction, substitution, presence of sand or other foreign matter, etc.

Pharmacopoeial Work.—The collection of data dealing with the further improvement of the U. S. Pharmacopoeia has been continued. The nomenclature of the Pharmacopoeia as well as that of the National Formulary has been studied, especially with regard to the Latin names, English names, and synonyms for crude drugs officially recognized. As a result of this study it appears that further im-

provements tending to greater uniformity and clearness are desirable. The adoption, by the Pharmacopoeia and other standard works, of acid-insoluble ash standards and the change or adoption of certain standards for total ash has been urged in a note, already referred to.

THE PREVENTION OF WASTE AND UTILIZATION OF WASTE CRUDE DRUG PRODUCTS.

Cinchona.—In recent years the world has been virtually dependent on Java for its supplies of cinchona bark (or quinine). This has, especially under the recent war emergency, resulted in extreme scarcity and greatly increased prices. Considerable supplies of cinchona bark are still available in South America, though the trees are mostly wild. A number of specimens from these sources have shown marked variation in alkaloidal content; further samples of authentic bark have been obtained from Ecuador for pharmacognostical and chemical study.

Ipecac.—Ipecac root, as frequently imported, contains a considerable amount of so-called "stems," of which the present U. S. Pharmacopoeia only permits 5 percent at the most to be present in the drug. Collective evidence has been obtained that this part referred to as "stem" consists largely of the underground part of the axis, more properly referred to as rhizome; the young and still smooth roots at times may also be considered as stem, since they resemble the rhizome rather closely in appearance. These parts, evidently by mistake, referred to as "stem" were found to contain appreciable quantities of ether soluble alkaloids. It appears quite probable that the problem connected with the utilization of this hitherto rejected but valuable part of the Ipecac plant can be solved by the modification of the definition for Ipecac as "the dried roots and rhizome. . . ." It is contemplated to publish a note on this subject.

Areca Nuts.—The material of areca nuts imported within recent years has not been of high quality. A sample, badly infected by worms and molds, was separated into sound, distinctly moldy, and wormy nuts. The three separations were analyzed for arecoline, according to the method of the Swiss Pharmacopoeia (1907), except that iodeosin was used instead of haematoxylin as an indicator, in conformity with a suggestion given in recent literature by Hebeisen. In order to ascertain whether all available arecoline had been extracted during the procedure suggested in the method, samples of each grade were extracted in soxhlets, and the extract treated as before.

RESULTS.

	Extraction according to Method in Swiss Pharmacopoeia.	Complete Soxhlet extraction.
Sound nuts.	0.39-0.40% arecoline	0.37% arecoline
Distinctly moldy.	0.32-0.34% "	0.32% "
Very wormy.	0.36-0.38% "	0.34% "

Analysts: A. Viehoveer and E. E. Stanford.

These results indicate that the alkaloidal content is highest in sound nuts, but that it is not very appreciably affected by worms and mold. Molds had a stronger effect than the worms. No grade of this sample attained the standard of 0.5 percent alkaloids, suggested by the Swiss Pharmacopoeia. Recently further samples of moldy and wormy areca nuts have been secured, and arrangements have been made with the Bureau of Animal Industry to submit them to pharmacological tests.

American Ergot.—The utilization of American ergot, obtained from rye screenings, has been under consideration in coöperation with the Central Inspection District located in Chicago. The products examined were in excellent condition and were found to be quite active physiologically; difficulties, however, are encountered in isolating the ergot on an efficient commercial scale from the screenings.

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II.

PHARMACOGNOSY INVESTIGATIONS.

Studies in Brassicas.—Growing experiments and chemical studies were carried out with several mustards and mustard substitutes.(1) The seeds were obtained from different parts of the world, and especially from Japan, China and India. They were planted in Arlington, Va., Yarrow, Md., and Urbana, Ill. The plants grew well in all three places, but especially vigorously in the rich soil of Illinois. The amount of seeds obtained per plant, and the pungency of the seeds, were great. In a number of instances sufficient material from individual plants was secured for the determination of the latitude in the amount of glucoside present. The amount of volatile oil found reached in certain cases as high as or even higher than any reported in literature. While the growing experiments were only carried out on a small scale, the results suggest that the commercial cultivation of all the different varieties, and especially the Japanese and white mustard, should be successful.

Preliminary experiments concerning the distribution of the glucoside or glucosides within the plant indicate that the fresh tissue of the different parts of the entire plant, roots, stems, leaves and fruitpods, yield an oil with characters similar to that obtained from the seeds. The enzyme, effecting the hydrolysis of the glucoside, appears present in the green plant in a highly active form, since the glucoside in the growing tissue is far more readily hydrolyzed than in the seeds.

A monograph on Chinese Colza is being published as a Department Bulletin.(2) It discusses the chemical, anatomical data of the seed, and the physiological data of the seed and seed constituents, and the morphological characters of the plant

in the different stages of its growth. A brief note has been prepared for a trade journal, discussing especially the value of the seed as an oil seed and as a substitute for rape.(3) While the seed had been first offered to the trade as mustard, the investigation proved the distinct difference from mustards and the close relationship to the colza group.

Studies on Oxalic Acid in Foods and Spices.—Studies on this subject are nearing completion. They had the object to determine the presence of oxalic acid as calcium oxalate or otherwise in the plant tissue by means of microscope and microchemical reagents;(4) and determine also quantitatively the amount of oxalic acid in different foods and spices.(5) Interesting data have been obtained which should be helpful to food and drug analysts, as well as to physiologists or pharmacologists.

Evidence that oxalic acid sublimes already at 100° C. and below was secured, and a new microchemical reaction with resorcin-sulphuric acid was worked out.

Studies of Spanish Digitalis, Digitalis thapsi.—In continuation of previous studies, incident to the identification of this spurious Digitalis (see S. R. A 19)(6) the plants grown from the seeds, that had been separated from the material imported, were harvested, being in their second and third year of growth. Further chemical, microchemical and pharmacological work is planned.

Studies of Saponins.—The work on saponins and saponin-yielding plants was carried out jointly with Drs. Johns and Chernoff in continuation of previous studies(7)–(10) on the same subject. The recent studies were concerned with plants growing quite abundantly in American deserts and are now partly utilized as emergency feed for cattle, as soap substitute and as fiber material. Manuscripts on *Agave lechuguilla*, *Yucca glauca* (*angustifolia*) and *Yucca radiosa* (*elata*), the latter usually referred to as soap weed, have been prepared for publication. Special attention was paid to the distribution of the saponins within the plant, to their chemical and hemolytic properties and probable function in the metabolism of the plant. The observation that in these desert plants the saponins occur in the cell sap or veins suggest that they are not only used as food material, suggested by the presence of one or more sugar molecules in saponins, but also serve, since they are generally hygroscopic, to retain moisture within the tissue during long periods of draught.

Cyanogenesis.—1. *Studies of Edible and Poisonous Varieties of Beans of the Lima Type (Phaseolus lunatus).*—These studies,(11) nearing completion, had the object in mind to establish botanical and chemical characteristics of seeds and plants, to find or develop reliable methods for testing and estimating the glucoside, as well as the hydrocyanic acid obtained from it by either acid or enzymatic hydrolysis,(12) to determine the latitude of varietal and individual variation in the glucosidal content and to render the beans harmless by cultural, chemical or physical means. Of the results obtained it may be stated that the seeds, and the plants in different stages of growth can be quite readily distinguished from other *Phaseolus* species of economical value in this country. The species *Phaseolus lunatus* is also chemically distinct from other *Phaseolus* species by lacking calcium oxalate in the seed coat and containing in all the varieties examined the cyanogenetic glucoside. Parts containing this, such as the inner kernel or the remainder of the

seed placenta, often visible at the hilum, are stained intensely yellow upon exposure to ammonia. This test, together with the characteristic arrangement of the veins in the seed coat, radiating from the hilum to the dorsal venture, are means of differentiation which can be readily determined macroscopically, while the lack of calcium oxalate can be easily established microscopically. The American grown varieties "Limas" appear to contain the cyanogenetic glucoside in the smallest amount of any grown anywhere, and the beans may, therefore, as far as the results at hand show, be considered harmless.

2. *Fate and Significance of Linamarin in the Metabolism of the Bean Plant, Flax, Etc.*—To solve this problem seeds of several varieties of *Phaseolus lunatus* and also flax seeds have been germinated and the amount of HCN present under different conditions of germination has been determined. These studies are being continued with plants in different stages of growth and grown under different conditions.

The effect of frost and drying has also been under consideration. A loss of HCN in the first case is certain, and in the second case strongly indicated. No free HCN has positively been found in the plant and no HCN is apparently exhaled under normal conditions. The glucoside in the leaves and other growing tissue is evidently much more speedily hydrolyzed than in the seeds, probably due to the fact that the enzyme, effecting the hydrolysis of the glucoside, is in a far more active form present in the green growing tissue than in the seed.

3. *Distribution and Occurrence of Cyanogenetic Glucosides.*—In continuation of previous studies(13) other vegetable products were tested for hydrocyanic acid, however with negative results. The following may be mentioned: Horse beans (*Vicia faba*), Tepary beans (*Phaseolus acutifolius* var. *latifolia*), Azuki beans (*Phaseolus angularis*), a Japanese or Chinese bean, also called "Adzuki," Jack beans (*Canavalia ensiformis*), Velvet beans (*Stizolobium deeringianum*), Spanish or Runner beans (*Phaseolus multiflorus*), Soja beans (*Soja hispida*), and Mexican and oriental (Japanese, Chinese and Manchurian), varieties of common beans (*Phaseolus vulgaris*).

4. *Isolation of Hydrocyanic Acid and the Glucoside Yielding it from Indian Beans of Lima Type, Phaseolus lunatus, from Flax, Linum usitatissimum, Etc.*—The studies have resulted in a very simple method of isolation of the glucoside from the beans. The ground bean meal is extracted repeatedly with ethyl acetate, and this then shaken out several times with very small amounts of water. Upon evaporation of the water, preferably without application of heat, the glucoside is obtained in surprisingly pure, white to yellowish crystals. For the isolation of the glucoside from flax this method had to be modified, since in flaxseed the great amount of oil, of water-soluble slime and of wax, interfered very much.

Preliminary experiments with certain chemicals acting upon the glucoside or the beans effecting a transformation of the poisonous glucoside have been very successful and will be continued on a larger scale and extended to other cyanogenetic products.

Study of Piper bredemeyeri, an Adulterant of Matico.—An examination of the volatile oil revealed the absence of asaron, found in matico, *Piper angustifolium*, and of matico camphor, found in *Piper angustifolium* var. *ossanum*. Over 50 percent of dill apiol were present in the volatile oil of *P. bredemeyeri*; in this and

other respects the oil resembled the volatile oil of *Piper mandoni*, as reported in literature. The chemical and botanical similarities of *P. bredemeyeri* and *P. mandoni* suggest that the name *P. mandoni* has been given to plants belonging to the species *P. bredemeyeri*.⁽¹⁴⁾ Recent reports indicate that material of matico and especially also of volatile matico oil vary greatly in composition. The medicinal qualities of matico have been questioned. Matico has been deleted from the U. S. Pharmacopoeia, though it is now included in the National Formulary. While the medicinal value, as said, of matico is in question, that of the adulterant *P. bredemeyeri* and other related *Piper* species is still more in doubt. No physiological tests have as yet been made. Attempts to secure further authentic material of different *Piper* species were unsuccessful.

Studies of Cedron Seed, Simaba cedron, and the Glucoside Cedrin.—From cedron seed, originating in Central America, and used there against snake bites and yellow fever, the bitter principle "cedrin" had been isolated some time ago.⁽¹⁵⁾ Certain physical and chemical properties had been determined and the glucosidic character definitely established. The nature of the sugar in the glucoside could, however, not be ascertained due to insufficient amounts of cedrin available. Recently, however, after prolonged attempts, more material of cedron seeds was obtained through the efforts of the Office of Foreign Seed and Plant Introductions, B. P. I., U. S. Department of Agriculture. The studies can therefore be taken up again and completed.

Microsublimation.—Extended studies of microsublimation in its relation to food and drug analysis were undertaken. A critical study of the types of apparatus used in this work has resulted in the development of improved apparatus and methods. A general paper discussing the value of microsublimation in food and drug analysis is under consideration. The ready sublimation has been effected of santonin from worm seed, oxalic acid from calcium oxalate in beans, of quercetin, obtained from the cotton plant, of sapogenin, obtained from Agave saponin, and of a number of other substances. It is contemplated to prepare brief notes recording the observations made.

Studies of other Vegetable Products.—1. Tepary Beans.—A brief study of Tepary beans (*Phaseolus acutifolius* v. *latifolius*), a newly discovered food product of the Indians, has also been made and a note discussing the chief characteristics is in preparation for publication.⁽¹⁶⁾ 2. Coffee.—A considerable number of samples of coffee, including damaged coffee, have been examined and data collected indicating the relation of grade to objectionable material present. Microscopical changes have been observed, which, together with a specific stain⁽¹⁷⁾ for the presence of mold, have proved of value in the judgment of the quality of import and interstate samples. The data obtained have helped to increase our knowledge of the nature and extent of changes which take place through maturing and through spoiling of coffee. The work will be continued. 3. Peat.—The nature of nitrogen in peat and the possible value of peat in feed products is another problem, to which some attention is being given. Experiments were undertaken to locate microchemically chitin, possibly responsible for some of the nitrogen. Considerable difficulty was experienced in breaking up and identifying the highly carbonized peat particles. Potassium hydroxide has thus far been found to be the most useful agent in breaking up peat without dissolving chitin, which is con-

verted to chitosan and can as such be specifically stained.(17) While further experiments have to be made, the results thus far obtained are promising. Chitin likely is only accidentally present in peat, due to numerous dead bodies of insects buried in peat and containing chitin.

Isolation and Study of the Composition of the Cotton Plant, Gossypium herbaceum, and other Gossypium Species.—A volatile oil, decidedly attractive to boll weevils, has, with the assistance of Drs. Johns and Chernoff, and others, been isolated from different parts of the cotton plant. The oil is found in lysigenous glands which are located near the surface in nearly all parts of the cotton plant. Besides the oil, these glands contain flavone glucosides, if exposed to light, and gossypol, if unexposed to light.(19) Two papers, discussing the findings in detail, have been published in the *Journal of Agricultural Research*.(18,20).

Differentiation of Plant Species.—The value of pollen grains for the differentiation of species is under investigation. Numerous other data on the morphological, anatomical, chemical and physiological differentiation of plant species, genera, etc., have been or are being collected. These data have been very valuable in deciding questions of true relationship of plants and plant products. The knowledge of the proper classification of a vegetable product or plant, we feel, often permits a preliminary judgment as to their possible utilization for medicinal, food or technical purposes.

COÖPERATION.

The laboratory has coöperated with the Scientific Division of the Shipping Board in formulating a revised system of classification of imports and exports of crude drugs and chemical products. Data on various products have been furnished the Price Section of the War Trade Board. Detailed and constructive criticism has been made of the crude drug portion of the import tabulation of chemical products, which was drawn up under the auspices of the Department of Commerce. Information on several drug products has been furnished the Tariff Commission. Some work of a confidential character has been carried out for the Aircraft Production Board. The laboratory has coöperated with different laboratories of the Bureau of Plant Industry, *e. g.*, in the growing of a number of plants, such as Spanish digitalis, mustards, beans, etc.; with the Bureau of Entomology in the fight of the cotton boll weevil, and is assisting the Smithsonian Institution in the identification of certain supplies, especially Cinchona barks, secured by Dr. Rose in his exploration of Ecuador. The laboratory has further assisted with advice other institutions, such as the Bureau of Science, Philippines, the Department of Internal Revenue in Canada, or other state institutions and private parties in this country. Suggestions regarding the further improvement of the Pharmacopoeia have been submitted to the Pharmacopoeial Committee and it is hoped to continue not only this coöperation but to extend it also to the Committee concerned with the revision of the National Formulary.

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ACID-INSOLUBLE ASH STANDARDS FOR CRUDE DRUGS.*

BY CLARE OLIN EWING AND ARNO VIEHOEVER.

Having had occasion to review analyses of a considerable number of domestic and imported crude drugs with regard to their content of ash and acid-insoluble ash, the attention of the writers was called to a number of instances where a striking discrepancy occurred between the general run of analyses and the U. S. Pharmacopoeia and National Formulary Standards. In some instances it appeared that the present standards were somewhat rigid, whereas in others the ash standard was placed so high as to excite suspicion that a sample of the product in question yielding such an ash would be extremely dirty. It appeared, furthermore, that determinations of the ash insoluble in 10 percent hydrochloric acid would often disclose the true condition of the material, as regards cleanliness, and that an ex-

* The changes of existing standards and the establishment or adoption of new limits as standards, suggested in this manuscript, should be considered as an expression of our personal opinion and not as an official announcement of the Bureau of Chemistry.

tension of ash standards, including limits for acid-insoluble ash, would be very much preferable to the present standards.

The requirement of a standard for ash in connection with vegetable crude drugs is comparatively modern. It seems to have been first introduced practically simultaneously in the U. S. Pharmacopoeia VI (1882) and the German Pharmacopoeia II (1882). There was apparently considerable commercial opposition to the inclusion of such ash standards and the expansion of the practice proceeded rather slowly; in the U. S. Pharmacopoeia VIII (1905) there were a trifle less than thirty. The last Pharmacopoeial Revision Committee appears to have been fully converted to the practice, and there are only a few exceptions in the present revision (IX) where standards for ash are given; among these, however, are such important drugs as cascara sagrada, hydrastis, wild cherry, sanguinaria, and black haw. The Committee went even a step farther in its efforts to insure clean drugs and in a few instances included standards for acid-insoluble ash, notably in the cases of Saigon and Ceylon cinnamon (ash 6 percent, acid-insoluble ash 2 percent), black pepper (ash 7 percent, acid-insoluble ash 2 percent), and senna (ash 12 percent, acid-insoluble ash 3 percent), although oddly enough, no method for its determination is given. We are convinced that this is a rather serious omission, and that not only should a method be inserted in the Pharmacopoeia, but the practice of including insoluble ash standards should be extended, in support of which opinion a number of specific examples are cited herewith:

Asafoetida.—The U. S. Pharmacopoeia allows the use of either starch or magnesium carbonate as diluents in order to maintain the powdered form of asafoetida; in order to allow for the presence of magnesium carbonate the ash limit of the powdered asafoetida is raised from the 15 percent of the whole drug to 30 percent, although, if starch were used, an extremely dirty product, when powdered, would comply with the 30 percent standard. It is of interest in this connection, that although crude asafoetida may yield as low as 5 percent or less of ash, samples have been noted which yielded over 50 percent. Attempts have been made to import some lots yielding over 15 percent but less than 30 percent, for use in the preparation of the powdered drug. We believe this to be contrary to the intent of the Pharmacopoeia. In order to obviate these possibilities, the use of magnesium carbonate might well be discontinued, and starch only be specified. By so doing the same ash standard could be enforced for the powdered as for the crude drug. The occurrence of material containing such high amounts of ash indicates lack of care in collection, and is strong presumptive evidence that the collector may have been none too scrupulous regarding the source of his material; in fact, in a number of instances asafoetida which was found to be extremely dirty, also failed to comply with all of the U. S. Pharmacopoeia tests of purity, notably the ferric chloride test for foreign resins. The adoption of a standard for acid-insoluble ash would serve to discourage the importation of extremely dirty material. Such a standard would not even interfere with the use of magnesium carbonate as a diluent, inasmuch as this substance is soluble in the acid solution and only the dirt, sand, pebbles, etc., would be revealed by that determination.

Hydrastis.—Thirty-one commercial samples of hydrastis root showed a range of 4.49 percent to 17.81 percent of total ash, and 1.27 percent to 11.22 percent

acid-insoluble ash¹. It was noteworthy in this connection that the samples of genuine whole root generally yielded lower percentages than the powdered specimens. The nature of the product is such that one would of course expect that certain amounts of earthy material might be included in the commercial handling of the drug, but obviously such a high amount as the 11.22 percent above noted is beyond all reason. At the current price of over \$5.00 per pound a person buying a 100 pound lot of the drug would be paying over \$50.00 for valueless material. It is of interest in this connection that the Austrian (VIII, 1906) and Swiss (IV, 1907), Italian (III, 1909) and Netherland (IV, 1905) pharmacopoeias all have an ash standard of 6 percent. While only few samples which we had under observation came up to this foreign standard of 6 percent, it should be remembered that golden seal root is one of the few domestic drugs which is exported to these European countries in large amounts, and there appears no reason why the drug used in the home trade should not be collected and handled with the same care as that which is designed for export. We feel also that in a case like this where the drug is so expensive, it is of especial importance to provide not only a suitable standard for total ash, but also one for acid-insoluble ash. We would therefore suggest that a standard of 8 percent (or possibly even 6 percent) for total ash, and also a limit of 2.5 percent for acid-insoluble ash be adopted.

Hyoscyamus.—*Hyoscyamus* is also a comparatively expensive drug and should have an ash standard lower than the present limit of 30 percent. The German Pharmacopoeia (V, 1910) has a limit of 24 percent, the Austrian (VIII, 1906) of 20 percent; this latter figure may be somewhat rigid—Wilbert² has stated that the Austrian Pharmacopoeia has been severely criticized for its generally low ash content requirement for drugs and that the figures cited there are largely academic.

Newcomb's data³ are of especial interest since he examined both commercial samples of *Hyoscyamus* and carefully cleaned material, which he had grown himself in the medicinal garden of the University of Minnesota. From his data the variation in ash content of different parts of the plant is evident, but the results are also suggestive with regard to the effect of cleaning.

ASH CONTENT OF HYOSCYAMUS.

	Part of Plant.	Source.	Percent of ash.
(1)	Basal leaves, 89%	Commercial sample	21.69
	Flowering tops, 11%		
(2)	Basal leaves, 89%	Commercial sample	19.97
	Flowering tops, 11%		
(3)	Flowering tops	Select commercial sample	9.88
(4)	Flowering tops	Select commercial sample	9.48
(5)	Flowering tops	Select commercial sample	9.54
(6)	Flowering tops	Select commercial sample	9.06
(7)	Basal leaves, first year	Medicinal plant garden	16.02
(8)	Basal leaves, first year	Medicinal plant garden	16.17

¹ Analysts: Mr. Elgar O. Eaton, San Francisco Station; Mr. Hugo I. Wichmann, Denver Station; Mr. F. O. Woodruff, Boston Station; Mr. C. K. Glycart, Chicago Station. (All of the Bureau of Chemistry.)

² Wilbert, M. I., J. A. Ph. A., 1, 457, 1912.

³ Newcomb, E. L., Belladonna and *Hyoscyamus*," *Amer. Journ. of Pharmacy*, 87, 8, 1915.

Analyses of 12 commercial samples made by different analysts of the Bureau of Chemistry showed a range of 18.2 percent to 30.52 percent of total ash, and 11.6 percent to 19.05 percent of acid-insoluble ash.

Based upon the data at hand, an ash standard of 24 per cent, supplemented by an acid-insoluble ash standard of 12 percent would appear to be suitable and should conduce toward greater cleanliness in this product. In conversation with a number of growers and large commercial users of *hyoscyamus* the writers have been informed that it would be entirely practicable in a commercial way to comply with such limits.

Mustard.—Within the past several years the writers have analyzed or reviewed analyses of probably more than 200 specimens of mustards of different species and varieties, and have rarely observed a specimen of clean material yielding over 5 percent of total ash, or over 1 percent of acid-insoluble ash. Commercial methods for cleaning mustard have been so far developed that material may invariably be obtained containing less than these amounts, although the present U. S. Pharmacopoeia standard for both black and white mustard allows 9 percent of total ash. The Department of Agriculture some time ago promulgated a standard of 5 percent total ash for mustard used as a food, and a limit of 1.5 percent of ash insoluble in hydrochloric acid.⁴ A few instances have in the meantime come to our attention which suggested that the standard for total ash might be 6 percent rather than 5 percent, in order to cover exceptional cases of naturally high ash in the seed. The standard thus amended, 6 percent for total and 1.5 percent for acid-insoluble ash appears quite satisfactory for mustard used as a drug or as a food.

Rhubarb.—In connection with rhubarb several interesting cases have recently come to light. In one instance a sample of the powdered drug, having been analyzed and found to yield about 20 percent of ash, which of course is far in excess of the U. S. Pharmacopoeia limit of 13 percent, the dealer was cited. It developed in the hearing that the material had been ground from a very fine grade of Shensi rhubarb, the variety most highly prized by the trade. Some of the original whole drug being available, this was submitted to the Department for analysis. The analysis⁵ of the sample, which was clean and of excellent appearance, revealed that the material contained about 20 percent of total ash, of which less than one-tenth of 1 percent was insoluble in acid. Rhubarb is known to contain comparatively large amounts of organic acids, especially oxalic in the form of calcium oxalate. It was, therefore, not altogether surprising that a sample which yielded such a high ash should show as well such a low acid-insoluble ash. Since this occurrence several other shipments have been offered for importation which also yielded a total ash in the neighborhood of 20 or 21 percent, although in every instance the acid-insoluble ash was practically negligible. It would appear, therefore, that the present limit of 13 percent total ash for rhubarb should be raised to 22 percent; by including at the same time an acid-insoluble ash standard of 1

⁴ *Food Inspection Decision*, 1918, 172. "Condiments other than Vinegar and Salt," par. 33.

⁵ Analyst: Mr. Eugene Bloomberg, Buffalo Laboratory, Bureau of Chemistry.

percent, sophistication of a powdered drug normally yielding a low total ash would in a considerable measure be prevented.

Sassafras.—*Sassafras* is a drug which is altogether of domestic origin, and since facilities for inspection of domestic drugs are not so advantageous as for imported drugs, attention has not heretofore been directed to the present absurd U. S. P. ash standard of 30 percent. Recently, however, analyses⁶ of two authentic clean specimens showed a total ash of 2.5 percent and 3.7 percent and an acid-insoluble ash of 0.5 percent and 1.3 percent, respectively. Another sample which yielded a total ash of 18.85 percent showed an acid-insoluble ash of 14.8 percent; the latter consisted very largely of earth and sand. This also was an authentic sample, but was extremely dirty. Other analyses of this product which have been noted in the Bureau, as well as analyses reported in literature, show that it is entirely practicable to obtain commercial material which yields less than 10 percent of total ash and 5 percent of acid-insoluble ash. Even these figures appear far too liberal for a standard.

While the instances cited above by no means exhaust the list of drugs where present standards could be advantageously altered and supplemented by standards for acid-insoluble ash, they include some of the more striking illustrations which have been recently noted.

The effect which the presence of different parts and portions of the plant may have on total ash is discussed above in the case of *Hyoscyamus*. Newcomb and Rogers⁷ also brought this out in the case of *Digitalis*, and Sievers⁸ in the case of *Belladonna*. It appears to be quite a general rule, observed by other workers as well as ourselves, that the leaves are richer in ash than the stems or flowers, and that the more stems there are present the lower usually will be the ash. This seems to hold true also for the acid-insoluble ash.

The influence which varietal, environmental, and soil conditions in particular may have on the amount and composition of ash has also been previously discussed in the literature. Rogers and Newcomb have recently discussed this in the case of *digitalis*, and have pointed out that the cultivated forms, on the average, yielded higher amounts of ash than the wild form.⁹ We have pointed out above in the case of *rhubarb* that a high ash is not necessarily an indication of uncleanness; since *rhubarb* contains considerable amounts of oxalic acid in a soluble form, it is readily conceivable that in plants grown in calcareous soils the amount of calcium oxalate may be appreciably greater than in plants grown on other soils.

When the pure ash of a vegetable drug is heated with 10 percent hydrochloric acid, only a small portion, as a rule, remains undissolved. From the amount, then, of this acid-insoluble portion of ash one can usually draw a definite conclu-

⁶ Analyst: J. F. Clevenger, this laboratory.

⁷ Newcomb, E. L., and Rogers, C. H., "The Relative Activity of Separated Portions of *Digitalis*," *Amer. Journ. of Pharmacy*, 90, 580-8, 1918.

⁸ Sievers, A. F., "The Percentage of Stems on *Belladonna* Herb and Its Effect on the Quality of the Herb," *Ibid.*, 90, 847, 1918.

⁹ Rogers, C. H., and Newcomb, E. L., "A Method for Cleaning *Digitalis*, with a Study of the Inorganic Constituents," *Ibid.*, 90, 239-252.

sion as to the presence or absence of sand and earthy material in a drug sample.¹⁰ The determination of the amount of acid-insoluble ash present in a drug will therefore be valuable as a test for purity. It requires very little more time than the ash determinations, and is, as we have seen, sometimes of even more value than the latter in the final judgment of cleanliness. The addition of an acid-insoluble ash standard will permit the raising of the total ash standard of a number of drugs, such as rhubarb, mentioned above, in order to cover wide variations due, probably, in the main, to soil conditions, and at the same time guard against careless handling or gross adulteration of drugs both in the whole and particularly in the powdered form.

The following simple method has been followed by the writers for a number of years:¹¹

To the ash obtained by the U. S. Pharmacopoeia method is added 25 Cc. of 10 percent hydrochloric acid. This is digested on a steam bath for about 10 minutes, filtered, washed, ignited over a bunsen burner, cooled, and weighed.

While it is well known that a certain amount of siliceous matter can only be rendered insoluble in hydrochloric acid by several evaporations to dryness, the method as given approximates that given for the determination of ash insoluble in acid in the Bureau of Chemistry Bulletin 107, Revised (1912), page 162, under "Methods for the Analysis of Spices," and is sufficiently accurate for purposes of crude drug control.

PHARMACOGNOSY LABORATORY,
BUREAU OF CHEMISTRY
U. S. DEPARTMENT OF AGRICULTURE.

ON THE SHRINKAGE OF ALCOHOL-WATER MIXTURES.

BY HORATIO C. WOOD, JR., M.D.

The United States Pharmacopoeia states that when 500 mls of alcohol are mixed with 500 mls of water "if the two liquids are measured at the temperature of 25° C, the mixture when cooled to the same temperature will measure about 970 mls." In some experiments which I have been engaged in, it was important to know what volume percentage of alcohol would result from mixing alcohol of a given strength with water. It is evident that a mixture, for example, of equal volumes of absolute

¹⁰ Fortunately the dust, dirt, and sand often adhering to drugs after collection can, to a considerable degree, be removed, even if the drugs are in the dried condition. Rogers and Newcomb (*loc. cit.*) have shown this in the case of digitalis, and we also have had similar experience with other drugs (mustard, for example). The importance and feasibility of cleaning drugs, however, appears to be not so widely recognized as it should be. The more the machines and methods used in the grain and related industries are applied to the cleaning of drugs and spices, the less difficulty will the trade experience in obtaining high grade products.

¹¹ To demonstrate the presence of sand and dirt directly in a powdered drug, without an ash analysis or microscopic examination, we have in a few instances floated the material on carbon tetrachloride, a liquid of high specific gravity (1.630). The vegetable matter usually floated on the surface, while the mineral impurities sank to the bottom. A very dirty commercial sample of Pennyroyal leaves so treated yielded a precipitate which, when dried, amounted to 26.7 percent while an acid-insoluble ash determination gave 27.9 percent, the two results being in surprisingly close agreement.

alcohol and water, would give a solution containing more than 50 percent by volume of alcohol, because while the amount of alcohol remains the same there is a shrinkage in the total volume of approximately 3 percent. It is manifest that the statement of the Pharmacopoeia is too indefinite to be of any scientific use; moreover, it is important to know whether the shrinkage is at the same rate for all proportions; that is, would a mixture of one part of alcohol with two parts of water diminish in volume in the same proportion, as a mixture of equal parts? As I have been unable to find this data, I have made a small series of observations to determine what the degree of shrinkage is with various proportions of alcohol and water.

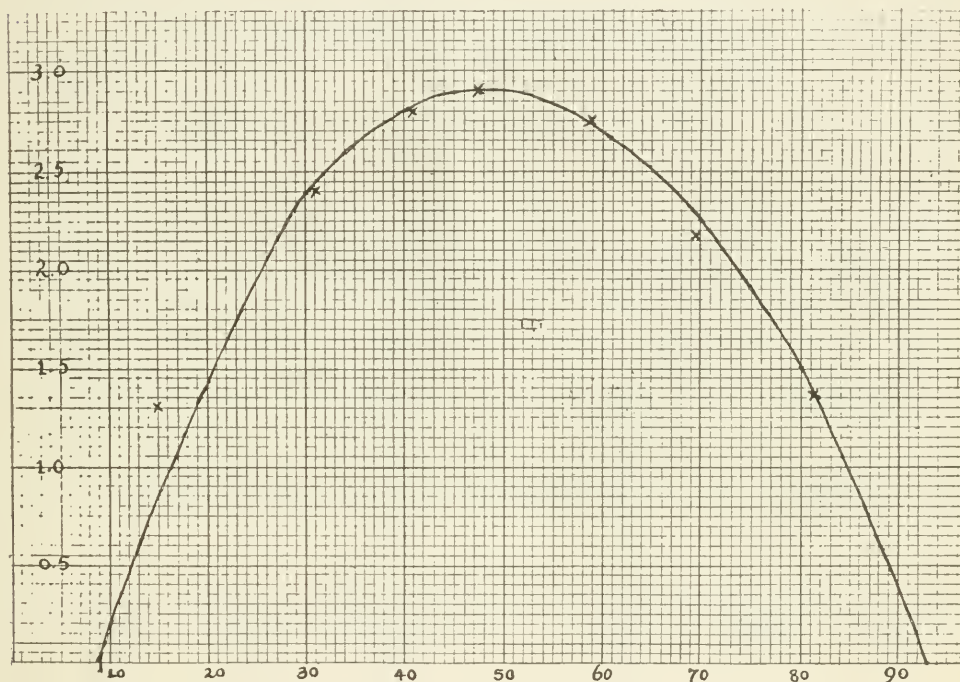


Fig. 1.—Graph showing the shrinkage in volume when water is added to 93 percent alcohol. Figures on the abscissa indicate expected percent of alcohol; figures on the ordinate indicate percent of shrinkage in the volume of the mixture. Curved line is drawn from calculations based on Pharmacopoeial tables (see Table 2); crosses represent experimental averages (from Table 1).

For reasons of convenience, I have used in these experiments an alcohol containing 93 percent by volume. I have found that our laboratory alcohol, supposedly 95 percent, showed this latter concentration, when tested by the hydrometer, only at a temperature of approximately 25° C. At the official temperature of 15.56°, it represented about 93.5 percent of alcohol. In order to avoid the complications of dealing with too many fractions, I added water to bring the percentage down to correspond with 93 percent at 15.56°, measured by the Tralles hydrometer.

The method of experimentation employed was as follows: A carefully mea-

sured amount of alcohol, varying from 10 to 25 mls, was placed in a burette graduated in tenths of a mil. To this was added a measured volume of distilled water, say 5 mls. The burette was then tightly stoppered and reversed several times to assure a thorough commingling of the alcohol and water, allowed to stand for a few minutes, in order that the temperature of the mixture might return to its norm, and the volume of the mixture read. The difference between the volume read and the sum of the amounts of alcohol and water taken, represents the amount of shrinkage which has taken place; by a simple arithmetical calculation was determined the percentage of shrinkage. To this mixture were then made further additions of water, usually in 5 mil portions, with similar readings and calculations after each addition. In this way was obtained a series of figures showing the diminution of volume by adding water to varying strengths of alcohol.

The quantities employed being so small, it was not surprising that there was quite a little variation in the individual results. For example, three observations with mixtures of water and alcohol in the proportions which should have yielded an alcohol of 40.7 percent (in all cases, unless otherwise stated, the percentage of alcohol refers to volume percent); the shrinkage in one was 2.57 percent, in another, 2.29 percent, and in the third 2.70 percent. While there were considerable individual variations, by repeated experiments average figures were obtained which were consistent with each other and also with a theoretical shrinkage, figured, in a manner I shall describe, from the tables in the Pharmacopoeia. The amount of shrinkage is given both in a table and in a curve, made by plotting the various observations. I may say here, that in a general way the shrinkage was greatest at a little over 50 percent, amounting to about 2.9 per cent, and diminished at about the same rate when either the quantity of water or alcohol was lessened. The lowest percentage of alcohol tested was 8.48 percent, which gave a shrinkage of 0.63; and the highest 83.13 percent, with a shrinkage of 1.25 percent (see Table 1).

TABLE 1. SHOWING SHRINKAGE FOUND EXPERIMENTALLY WITH ALCOHOL-WATER MIXTURES.

Expected Percent Alcohol.	Shrinkage. Found.	Averages.	Expected Percent Alcohol.	Shrinkage. Found.	Averages.
8.48	0.63%		50.81	2.67%	
			53.78	2.78	
14.43	1.72		53.92	2.98	
15.57	1.07		52.50	....	2.810
15.00	....	1.395	55.42	2.90	
24.17	2.29		59.43	2.83	
31.67	2.00		58.81	2.86	
31.67	2.33		61.58	2.41	
32.17	2.93		58.81	....	2.750
31.86	....	2.420	66.50	2.20	
38.54	3.04		67.85	2.43	
40.71	2.29		....	....
40.71	2.57		73.88	1.89	
40.75	2.70		69.41	....	2.750
43.77	3.31		....	....
40.90	....	2.802	79.16	1.50	
47.50	2.80		....	....
47.50	2.97		83.13	1.25	
47.50	....	2.885	81.14	....	1.375

As just mentioned, it is possible to figure the proportion of shrinkage, when mixtures of absolute alcohol and water are used, from the alcoholometric tables in the Pharmacopoeia. This was done on the following basis: suppose, for example, it is desired to know the amount of shrinkage when 60 volumes of absolute alcohol are mixed with 40 volumes of water. First, obtain the weight percent of the alcohol in this mixture, by multiplying 60 by 0.79365 (the specific gravity of absolute alcohol); to this is added 40 (the quantity of water used) and divide this sum into the weight of alcohol employed. The weight percent obtained in this manner is 54.348. By reference to the Pharmacopoeial tables, it is found that an alcohol containing this weight percentage is equivalent to a volume percent of 62.193. Evidently, there has been a diminution in the volume of the mixture; the volume of the mixture may be determined by dividing 60 (the expected percentage) by 62.193, the found percentage. The result of this division equals 96.475. Subtract this from 100, and we get the figures 3.525, representing the percentage of shrinkage which takes place when 60 volumes of absolute alcohol are mixed with 40 of water. Similar calculations were made for ten different proportions of alcohol and water, enough to allow the construction of a curve representing the shrinkage of mixtures of alcohol and water. (See Table 2.) It was found that, with absolute alcohol the shrinkage was greatest when 54 parts of alcohol were mixed with 46 parts of water, being equal to 3.612 percent of the expected volume.

TABLE 2. SHOWING SHRINKAGE IN ALCOHOL-WATER MIXTURES FIGURED FROM ALCOHOLOMETRIC TABLE OF U. S. PHARMACOPOEIA.

Expected Percent Alcohol.	Found Percent Alcohol.	Shrinkage with 100% Alcohol.	Shrinkage with 93% Alcohol.
10	10.07	0.715	0.575
20	20.345	1.696	1.416
30	30.833	2.699	2.380
40	41.388	3.353	2.794
50	51.866	3.595	2.897
54	56.017	3.612	2.858
60	62.193	3.526	2.688
70	72.320	3.209	2.236
80	82.160	2.629	1.512
93		1.299	0.00

It is obvious that since a considerable diminution in volume takes place when 7 parts of water are added to 93 of alcohol (in making a 93 percent alcohol), the amount of shrinkage which would take place when 93 percent of alcohol is mixed with the water, would be less than that indicated in the accompanying table. To determine this difference, I first found the shrinkage in reducing 100 to 93 percent alcohol; this is 1.299 percent. This is then multiplied by the number of parts of alcohol taken—for instance, with the example given above, by 60—and since it would take obviously more than 60 parts of 93 alcohol to make 60 volume percent, the result of this multiplication was divided by 0.93. This factor, representing the difference due to shrinkage in 93 percent alcohol, is then to be subtracted from the shrinkage found in 100 per cent alcohol. When this is done, as may be seen by reference to the tables 1 and 2, the result is very close to the average shrinkage obtained in my observations, varying from them only in the second decimal place. I have constructed a curve showing the theoretical shrinkage

(figured from the U. S. P. tables) on which are marked the averages (from Table 1) which I obtained by actual experiment. Table 3 gives the shrinkage and true volume percent of alcohol when 93 percent alcohol is mixed with water in the proportions which should form various strengths of alcohol.

TABLE 3. SHOWING CHANGE IN VOLUME PERCENT OF MIXTURES OF 93 PERCENT ALCOHOL WITH WATER.

Expected Percent Alcohol.	Shrinkage Percent.	True Percent Alcohol
20	1.42	20.28
30	2.38	30.73
40	2.79	41.15
50	2.90	51.49
60	2.69	61.66
70	2.24	71.60
80	1.51	81.23

A NOTE ON A VERY OLD SPECIMEN OF PEPSIN.

BY L. E. WARREN.

An occasion recently arose to examine some rather old pharmaceutical preparations which were claimed to contain pepsin. Since the specimens were of unknown age (but known to be at least about 9 years old) the question arose as to the proper method to be used for making the test for proteolytic power. Since it was not the object of these tests to determine whether the preparations contained pepsin conforming to the present U. S. P. standards, and as the laboratory constant temperature bath was in use for other experiments at 40° C. and was to be so employed for a long period, it was decided to use this temperature according to the method prescribed by the U. S. Pharmacopoeia of 1890 for the valuation of pepsin. In brief, the method consists in digesting ten grammes of moist egg albumen for six hours at a temperature of from 38 to 40° C. with 100 Cc. of 0.2 percent hydrochloric acid which contains 0.0035 Gm. of pepsin.

As some of the preparations to be tested (tablets) had been in the laboratory for a number of years the question of the stability of pepsin had to be considered. It chanced that a very old specimen of pepsin and another which had been received ten years before were in stock. It seemed worth while to compare the proteolytic activity of the two old specimens with a specimen of pepsin of recent purchase, using the assay method outlined above as employed on the other pepsin preparations.

The history of the old specimen was not positively established but it is believed to have been prepared by Mr. F. S. Hereth. The label bore the statement that it had been prepared during the months of October and November, 1880. Consequently at the time of this test (July), its age was probably nearly thirty-nine years. Unfortunately its initial proteolytic strength was not known, but since the methods for preparing pepsin were not so refined four decades ago as now, it is probable that the specimen was not of 1 to 3000 value as is now required by the standards of the U. S. Pharmacopoeia. So far as the evidence could be ascertained the specimen had been stored in a small, cork-stoppered, green-glass bottle at the temperature of the laboratory since the date of manufacture and the

container had not often been opened. The other specimen was Armour's so-called insoluble pepsin which had been received from the manufacturers in July, 1909. Since its receipt it had been stored in its original container, a cork-stoppered bottle of amber glass, at the temperature of the laboratory. The bottle had been opened from time to time and about four-fifths of the contents used. At the time of sending the preparation, the manufacturer stated that it possessed a strength of 1-3000. The proteolytic strength was not verified at the time of the receipt of the specimen. The specimen used for comparison tests was Armour's "spongy granular, soluble" pepsin received from the manufacturer in May, 1919. The label claimed a strength of 1-3000 for the preparation.

The old laboratory specimen was a fine, cream-colored powder which was not noticeably hygroscopic. Its odor was not unpleasant, being similar to that of the specimen of recent purchase. Its taste was distinctly saline and somewhat bitter. The material was soluble in water, yielding a turbid solution which was strongly acid toward litmus paper. The ten-year old specimen was a greyish, somewhat lumpy powder. Its odor and taste were normal. The modern specimen was in the form of pale yellowish scales or granules.

Ash was determined by igniting a weighed quantity in a porcelain crucible, moistening the charred mass with a little ammonium nitrate solution, drying and again igniting. The very old specimen gave 48.8 percent of ash while the two more recent specimens gave, respectively, 4.14 percent and 3.01 percent of ash. As an average of several trials the proteolytic strength of the three specimens was found to be, respectively, 1-500, 1-2500 and 1-3000.

An examination was made to determine whether the literature contained reports of examinations of pepsin as old as the oldest specimen here studied, but no records were found. That a specimen nearly thirty-nine years old should retain any proteolytic activity is considered worthy of record.

LABORATORY OF THE AMERICAN MEDICAL ASSOCIATION.

THE LONGEVITY OF BACTERIA IN BOTTLED COMMERCIAL SPRING WATER.

BY MAUD MASON OBST.

The longevity of bacteria in natural waters after having been bottled for commerce does not seem to have been studied extensively. Many references are made in the literature to the longevity of significant individual bacteria in water under natural conditions. Sellards¹ states "Typhoid bacteria are neither harbored in lower animals, nor multiply in natural waters." Houston reports² "Outside the animal body the *B. coli* is usually known to be a decadent organism. At 20° C. it dies rapidly in both sea and tap water." Dunham³ found that pure waters originally free from bacteria were contaminated mostly with chromogenic bacteria. Waters polluted with soil or vegetation contained *B. subtilis*, *B. my-*

¹ Sellards, "Water Bacteria," *Jour. Inf. Dis. Suppl.* No. 3, p. 41, 1907.

² A. C. Houston, "Significance of *B. Coli* in Water," *British Medical Journal*, No. 2699, p. 407, Sept. 1912.

³ E. K. Dunham, "Value of Bacterial Examination from a Sanitary Point of View." *Jour. Amer. Chem. Soc.*, Vol. XIX, No. 8, p. 591, Aug. 1897.

cordes, *B. figurans*, and organisms coming from the air. He also recorded the following data:

"One liter of distilled water inoculated with 1 Cc. of filtered suspension of *B. coli* contained an initial count of 42,971 per Cc. At the end of 24 hours the count was 14. One liter of distilled water enriched with 1 Cc. nutrient bouillon and inoculated as above, gave an initial count of 57,102 per Cc. at the end of 24 hours a count of 29,276. One liter of distilled water to which was added 1 Cc. hay infusion and *B. coli* as above had an initial count of 14,030 per Cc. and at the end of 24 hours a count of 439."

Streptococci and *B. coli*⁴ introduced into tap water in the form of extract of feces died in a short time. Few of the streptococci survived more than two weeks, though the *B. coli* were still alive at the end of eleven weeks. The amount of organic matter introduced with the sewage, and the other kinds of organisms present were not stated.

Browne⁵ studied the occurrence of organisms of the *B. coli* group in water into which he had introduced 1 gramme of fresh feces to 1 liter of water. *B. aerogenes*⁶ is reported as being seldom found in stored waters and when present as indicating contamination from grain. When inoculated into water they decrease more rapidly than *B. coli*; 98 to 99 percent of both died off by tenth day.

In 1916 there were many samples of bottled water which had been stored for various lengths of time in the Bureau of Chemistry. Portions of the samples had been removed and bacteriological examinations made at the time of their receipt. The bottles, bearing identification numbers, had then been carefully sealed by the bacteriologist and stored without consideration of the conditions of light and temperature to which they might be exposed. In the summer and fall of 1916 a re-examination was made of all the water on which records of the previous examination were available. The standard methods prescribed by the American Public Health Association were followed in this work and confirmatory tests were made for *B. coli* whenever gas-producing organisms were found.

The results of the examinations of these samples are recorded as averages of the numbers obtained from all the individual bottles which constituted one sample. (See Table 1.)

Sample No. 2 (Table 1) shows the uniformity of the counts obtained upon the individual bottles in the first examination. Each bottle contained a relatively high number of organisms, and this number is of the same magnitude for all of the bottles in this sample. Those samples which are bacterially clean generally vary much less than this, although occasionally one of four or six bottles may contain hundreds of bacteria when the remainder have less than 20 per Cc. Sample No. 23 (Table 1) was one of two out of 40 samples examined which showed an ap-

NOTE.—The writer is indebted to W. W. Skinner, in charge Water Laboratory, Bureau of Chemistry, for the use of the chemical data included in this paper and for many helpful suggestions.

⁴ W. G. Savage and D. R. Wood., "Vitality and Viability of Streptococci in Water," *Jour. of Hygiene*, 16, No. 3, 227, 1917.

⁵ W. W. Browne, "Predominance among the Members of the *B. coli* Group in Artificially Stored Water," *Jour. Inf. Dis.*, 17, No. 1 72-78, 1915.

⁶ C. E. A. Winslow and B. Cohen, "Viability of *B. coli* and *B. aerogenes* Types in Water," *Jour. Inf. Dis.*, 23, No. 1, 82, 1918.

preciable variation in the counts at 25° C. In the routine work of the laboratory striking irregularities have been noted in the results obtained from imported samples which have naturally been bottled for some time before being examined.

TABLE I.—DETAILED RESULTS OF THE RE-EXAMINATION OF COMMERCIALY BOTTLED WATERS AFTER PERIODS OF STORAGE.

					Bacteria per cubic centimeter developing on				Gas-producing bacteria present in Cc.	
Sample No.	Date of First.	Examination Second.	No. of days in storage.	Bottle No.	Gelatin at 25° C.		Nutrient agar at 37° C.		1st exam.	2nd exam.
					1st exam.	2nd exam.	1st exam.	2nd exam.		
2	2-19-13	11-17-16	1,357	1	3,700	0	900	0	1.0	<i>b</i>
				2	5,100	4	2,400	0	1.0	<i>b</i>
				4	28,200	3	11,500	3	0.1	<i>b</i>
				5	11,000	2	4,000	7	1.0	<i>b</i>
				6	68,000	31	12,000	20	0.001	10.0
Averages.....					23,200	8	6,160	6	++	<i>a</i>
23	3-17-15	11-8-16	607	1	9,300	0	500	9	1.0	<i>b</i>
				2	37,000	60	270	9	0.1	<i>b</i>
				4	370	23	250	40	1.0	<i>b</i>
				6	290	170	220	720	1.0	<i>b</i>
Averages.....					11,690	63.2	310	194.5	+	0

"Experimental work † has shown that when certain types of mold infection are present in the water or in the cork, mold development may follow. In certain cases the cork becomes deeply infected with mold hyphae which fruit constantly. The spores drop into the water as they ripen or are washed into the water whenever the container is handled. Once in the water these forms germinate and produce little, submerged, colorless, cottony tufts of mycelium, which often remain sterile and in some cases finally die. In other cases, the mold spores float, develop into pin point colonies on the surface of the water, which produce considerable numbers of spores. Any living colony when the bottle is thoroughly shaken may provide a liberal seeding for cultures made from the sample. It is clear that, aside from the substance of the cork, the very small amounts of inorganic and organic matter present is quite carefully handled; waters and their containers can be utilized by certain species of molds."

"The cork, on the other hand, has shown itself to be one of the chief vehicles of mold contamination in bottled waters as in other bottled products. Examination of the stoppers from bottles long in storage shows clearly that the substance of the cork is regularly attacked by certain fungi, which, together with their products, contaminate the water.

"It would appear that this condition of the corks is a considerable factor in old and musty flavors in water, since diffusible by-products seem to be very quickly produced by many molds. Mold spores are occasionally found in considerable numbers in fresh water. These occasions are few and can usually be closely correlated with inspection data. As a rule in actual inspection practice, numerous mold colonies in cultures from commercial bottled waters are indicative of rather long storage."

As shown in Table 2, there were only two samples in which the counts actually increased during the periods of storage. In many samples *B. coli* survived for a long time. In several instances, where no molds were noted at the time of the first examination there were molds present when finally examined.

† NOTE.—The paragraphs upon molds in water were prepared by Dr. Charles Thom.

TABLE II.—RESULTS OF THE RE-EXAMINATION OF COMMERCIALY BOTTLED WATERS AFTER STORAGE FOR VARYING LENGTHS OF TIME.
(Expressed in the Average for the Number of Bottles Examined.)

Sample No.	Date of Examination.		No. of bottles in storage.	No. of bottles examined.	Total.		Liquefiers.		Nutrient		Gas-producing bacteria present in Cc.		Remarks.			
	First.	Second.			1st exam.	2nd exam.	1st exam.	2nd exam.	1st exam.	2nd exam.						
1.....	10- 8-12	11- 6-16	1,490	4	5	Molds	.....	.....	4	Molds	+	0	Plates sterile except for molds	
2.....	2-19-13	11-17-16	1,363	5	23,200	8	6,150	6	+	+		Plates sterile except for molds		
3.....	12-30-13	11-17-16	1,053	3	66,000	360	16,000	12	+	(a)			Plates sterile except for molds	
4.....	12-30-13	11-17-16	1,053	4	3,120	225	220	11	+	0				Plates sterile except for molds
5.....	2- 6-14	11- 6-16	1,004	6	5,390	5	200	1	+	0					Plates sterile except for molds
6.....	2-11-14	11-17-16	1,010	5	110	1	.....	.....	70	1	0	0	Plates sterile except for molds	
7.....	4-27-14	11-10-16	928	4	970	Molds	50	Molds	0	0		Plates sterile except for molds		
8.....	5-29-14	11-10-16	896	3	124,500	Molds	55	0	300	Molds	0	0			Plates sterile except for molds	
9.....	5-29-14	11-17-16	903	8	6	Molds	2	Molds	0	0				Plates sterile except for molds
10.....	4-28-14	11-10-16	927	6	600	Molds	31	0	8	Molds	0	0					Plates sterile except for molds
11.....	5-11-14	11-10-16	914	3	115	Molds	.....	.....	1	Molds	0	0	Plates sterile except for molds	
12.....	6- 2-14	11-10-16	892	3	1	315	2	165	0	0		2 bottles showed molds		
13.....	6-20-14	11-17-16	881	6	7,850	225	1,330	0	1,030	23	+	2+			2 bottles showed molds	
14.....	6-23-14	11-17-16	878	6	7,850	490	990	225	+	+				2 bottles showed molds
15.....	10-10-14	11- 8-16	759	5	21,500	970	350	0	3,100	515	+	+					2 bottles showed molds
16.....	11-14-14	11-16-16	733	5	340	2,100	13	0	900	920	+	+	2 bottles showed molds			
17.....	10-31-14	11- 8-16	739	6	178,000	9	100,000	7	0	0		2 bottles showed molds		
18.....	12- 7-14	11- 6-16	689	3	4	(b)	4	7	(b)	0	0			2 bottles showed molds	
19.....	1-23-15	11-16-16	662	6	1,570	125	125	0	2,500	9	+	+				2 bottles showed molds
20.....	2-24-15	11-16-16	630	5	48,000	14	190	0	4,150	115	+	+				
21.....	3-23-15	11-16-16	605	6	12,000	105	2,150	0	16,500	28	+	+	2 bottles showed molds			
22.....	3-17-15	11- 8-16	602	2	32,000	34	400	0	22,000	50	+	+		2 bottles showed molds		
23.....	3-17-15	11- 8-16	602	4	11,700	63	310	195	+	+			2 bottles showed molds	
24.....	5- 3-15	11-14-16	562	6	3	0	1	0	0	0				2 bottles showed molds
25.....	5- 4-15	11- 6-16	551	4	25,000	265	645	0	3,450	96	+	+				
26.....	5-25-15	11-10-16	534	4	53	14	290	6	0	0	2 bottles showed molds			
27.....	5-22-15	11- 6-16	533	5	3,500	0	14	0	138	0	+	+		2 bottles showed molds		
28.....	6-14-15	11- 6-16	544	6	8,900	13	500	0	26,500	47	+	+			2 bottles showed molds	
29.....	6-23-15	11-10-16	539	8	9,500	64	410	0	580	38	+	+				2 bottles showed molds
30.....	7-16-15	11-14-16	487	3	800	4	26	0	325	4	0	0					2 bottles showed molds
31.....	7-17-15	11-14-16	486	5	555	18	175	0	54	18	0	0	2 bottles showed molds			
32.....	7-19-15	11-16-16	486	2	6,500	85	100	0	32,500	122	+	+		2 bottles showed molds		
33.....	7-27-15	11-14-16	476	9	60,000	240	+	+			2 bottles showed molds	
34.....	7-31-15	11-10-16	468	11	4,600	225	265	0	5,500	190	+	+				2 bottles showed molds
35.....	8- 9-15	11-14-16	463	9	32,000	200	+	+					2 bottles showed molds
36.....	2-28-16	7-24-16	147	8	.....	.....	.....	.....	1	0	0	0	2 bottles showed molds
37.....	3-24-16	7-24-16	146	6	2,900	58	0	0	6,000	41	+	+		2 bottles showed molds		
38.....	3-14-16	7-24-16	132	11	9,700	81	10,000	0	18,000	60	0	0			2 bottles showed molds	
39.....	3-16-16	7-24-16	130	8	43,000	31,000	0	28	11,000	2,200	+	+				2 bottles showed molds
40.....	4- 5-16	7-24-16	110	6	2,600	38,000	100	0	138	60,000	0	0					2 bottles showed molds

(C) Many micrococci

It would be expected that the number of days which a specific water remained in storage would have a marked effect upon the numbers of bacteria present. This is proved to be true by a comparison of samples numbered 2, 13, 14, 15 and 23. These are all samples shipped from one spring in interstate commerce. A proportional difference is shown in the counts obtained after incubation at 37° C., the decrease being greatest on the water which has been stored the longest. After nearly two years' storage (samples 13 and 14) this water still showed an undesirable number of bacteria for a bottled water, and an excessive number of gas-producing organisms.

TABLE III.—PRELIMINARY EXPERIMENT.
Water "C."—Inoculated with *B. coli* on 1-10-16.

Date examined.	No. of days stored.	Total counts on bottle numbers (per Cc.)			
		A.	B.	C.	D.
1-10-16	0	2,000	100,000	600	400
1-12-16	2	2,300	110,000	540	370
1-14-16	4	1,900	90,000	390	300
1-19-16	9	1,800	70,000	400	300
1-28-16	18	1,600	76,000	350	290

Water "C."—Inoculated with *B. coli* on 1-14-16.

Date examined.	No. of days stored.	Total counts on bottle numbers (per Cc.)			
		A.	B.	C.	D.
1-14-16	0	1,300,000	3,000,000	2,100,000	1,600,000
1-17-16	3	1,400,000	3,000,000	2,000,000	1,200,000
1-28-16	14	1,200,000	2,700,000	1,700,000	1,300,000

Water "B."—Inoculated with *B. coli* on 1-10-16.

Date examined.	No. of days stored.	Total counts of bottle numbers (per Cc.)			
		A.	B.	C.	D.
1-10-16	0	4,000	10,000	7,000	6,000
1-12-16	2	4,000	10,000	5,900	5,400
1-14-16	4	2,700	7,000	5,000	5,100
1-19-16	9	2,600	5,800	5,100	5,000
1-28-16	18	2,100	5,000	4,700	4,300

The samples (Table 2) which gave high averages of bacterial counts after storage for several months were shown by chemical analysis* to be relatively high in total solids, including a variety of elements in calculable quantities. Aside from waters with relatively high total solids, these examinations showed no multiplication of bacteria during periods of storage but ordinarily a marked reduction. This indicates that the number of bacteria reported as present when commercial samples, and especially imported ones, are received in the laboratory are always less, rather than more than the number present in the water at the time of bottling.

A commercially bottled water which had been condemned as unfit for drinking was stored in the bottles to ascertain the practicability of attempting to purify polluted waters in this way. It was held from December 4, 1914, to April 17, 1915. During this time there was no marked decrease in the total counts of bacteria. The *B. coli* in those bottles held at room temperature did not decrease. It is probable that the temperature of the room was much less than it would have been in

* NOTE.—Analyses were furnished by the Water Laboratory of the Bureau of Chemistry.

summer, and if the water had been stored during the warmer months, the change in the bacterial content might have been slightly more marked. The bottles of this water which were stored at 36° F. showed no change in the numbers of bacteria. A decrease in the bacterial count was observed in a few bottles which stood in the direct sunlight for four weeks. There appeared to be no difference in the effect of using brown glass or colorless glass bottles. *B. coli* were present in 0.1 Cc. quantities in several bottles at the time of the last examination.

TABLE IV.
Water "A."

Inoculated with	Date examined.	No. of days stored.	Average number of organisms per Cc. ¹ from bottles stored at	
			20° C.	Room temperature
<i>B. dysenteriae</i>	4-27-16	0	6,550,000	1,350,000
	4-29-16	2	4,150,000	465,090
	5- 2-16	5	(1 bottle) 20	(3 bottles) 83.3
	5-15-16	18	0	0
<i>B. typhosus</i>	4-14-16	0	1,592,500	1,383,000
	4-18-16	4	Less than 1,000	3,428
	4-21-16	7	(1 bottle) 340	(2 bottles) 520
Others less than 1 per Cc.				
<i>B. coli</i>	4-27-16	0	99,750,000	16,700,000
	4-29-16	2	47,600,000	99,213,333
	5- 4-16	7	7,825,000	1,405,222
	6-11-16	45	Less than 10	Less than 100
	6-21-16	55	.....	.....

No bottle contained gas-producing organisms in 10 Cc. quantities.

Chemical Constituents (Hypothetical Combinations).

	Mg. per liter.
Sodium chloride.....	6.6
Sodium sulphate.....	0.5
Magnesium sulphate.....	11.7
Magnesium bicarbonate.....	36.9
Calcium bicarbonate.....	283.2
Silica.....	12.4
Total.....	351.3
Ammonia, free.....	.012
Ammonia, albuminoid.....	.060

Mixed flora introduced by adding sewage to bottled waters has been referred to in the literature cited above, although little work has apparently been done with known mixtures. No reference was found regarding the action of pure cultures of specific organisms in spring waters containing known chemical constituents. Water possessing the following characteristics were, therefore, used in experiments with pure cultures of organisms:

- (A) High in mineral salts, and low in organic matter.
- (B) High in both mineral salts and organic matter.
- (C) Medium high in both mineral salts and organic matter.
- (D) Very low in both groups of constituents.

¹ All samples were incubated on nutrient agar 2 d. at 37° C.

The waters were collected directly from the springs either by the bacteriologist or by a Food and Drug Inspector under special instructions. They were sent to the laboratory in Washington, in sealed, 5-gallon carboys. There the water was transferred to colorless 1-liter, glass-stoppered bottles, which had been previously carefully washed, rinsed with distilled water and then with the water with which they were to be filled. The water was sterilized in these small bottles under pressure. The water high in carbonates was sterilized in bottles filled very full, and with the stoppers firmly tied in place to prevent the precipitation of the carbonates.

TABLE V.
Water "B."

Inoculated with	Date examined.	No. of days stored.	Average number of organisms per Cc. ¹ from bottles stored at	
			20° C.	Room temperature.
<i>B. typhosus</i>	6-23-16	0	26,375,000	5,037,000
	6-26-16	3	12,050,000	3,412,500
	6-30-16	7	3,900,000	423,750
	7- 7-16	14	162,750	21,183
	8-31-16	69	866	0
<i>B. coli</i>	6-15-16	0	39,750,000	23,400,000
	6-17-16	2	31,250,000	16,350,000
	6-21-16	6	15,000,000	4,210,000
	8-31-16	77	966,666	449,100
	11-3-16	141	343,333	17,755

Chemical Constituents (Hypothetical Combinations).

	Mg. per liter.
Sodium nitrate.....	5621.0
Sodium chloride.....	2604.0
Magnesium chloride.....	1349.0
Magnesium sulphate.....	17517.0
Calcium bicarbonate.....	1408.0
Ferric oxide alumina.....	8.0
Silica.....	22.0
Total.....	29126.0

In preparing the cultures of bacteria for inoculation, transfers were made in standard nutrient bouillon for three successive days and from the last 24-hour culture in this medium streaks were made upon several nutrient agar slants. These were incubated at 37° C. for 36 hours. Then the surface growth was removed by adding a few cubic centimeters of sterile distilled water and loosening the growth beneath this water with a heavy platinum loop. If any agar was taken up in this way with the growth, it was easily discernible, and the tube was discarded. The liquid containing the bacteria from all the tubes was combined in a sterile flask, thoroughly shaken with glass shot, and finally transferred to the sterile spring water. The water was at once tested for contaminations and if the bottle was found to contain any but the organism with which it had then been inoculated, it was discarded. This method of inoculation may have introduced very small quantities of food material, and many clumps of bacteria. The clumps,

¹ All samples were incubated on nutrient agar 2 days at 37° C.

however, were broken apart as much as possible by shaking the bottles vigorously. Whenever samples were to be removed the bottles were inverted and shaken 25 times through an excursion of 1 foot. In order to reduce errors further, a number of bottles were used in each experiment and the results upon which the discussion is based are the averages of the counts of bacteria obtained from four or more bottles.

TABLE VI.
Water "C."

Inoculated with	Date examined.	No. of days stored.	Average number of organisms per Cc. ¹ from bottles stored at	
			20° C.	Room temperature.
<i>B. dysenteriae</i>	4-14-16	0	7,750,000	3,532,000
	4-15-16	1	6,092,500	3,940,000
	4-18-16	4	516,666	6,250
	4-21-16	7	0	0
<i>B. typhosus</i>	4-14-16	0	5,250,000	1,772,000
	4-18-16	4	5,425,000	1,960,000
	4-21-16	7	20,300	66,300
	6-11-16	58	0	0
<i>B. coli</i>	2- 8-16	0	8,050,000	1,474,000
	2- 9-16	1	8,550,000	1,676,000
	2-11-16	3	8,025,000	1,922,000
	3- 8-16	29	6,975,000	753,000
	4-16-16	76	.....	88,000
	4-18-16	78	1,612,500	.....
	6-11-16	132	.....	12,650
	6-15-16	136	902,500	.....
	8-31-16	213	480,000	208.3
	11-2-16	276	21,533	17.5

Chemical Constituents (Hypothetical Combinations).

	Mg. per liter.
Magnesium chloride.....	9.4
Magnesium bicarbonate.....	70.3
Calcium sulphate.....	1317.9
Calcium bicarbonate.....	139.6
Total.....	1537.2
Ammonia, free.....	.016
Ammonia, albuminoids.....	.120

Four bottles of each set were stored in an electrically regulated 20° C. incubator, and ten bottles at room temperature in the dark. Counts and identifications were made each time of examination to prove that the original organism of inoculation was still present in condition to grow on culture media.

A preliminary experiment was carried out to determine the best degree of inoculation. Two waters, both fairly rich in organic matter were given heavy and light inoculations with *B. coli*. The results are recorded in Table 3. No noticeable difference was found. It was decided to give all of the water a fairly heavy inoculation hoping it might thus be made uniform.

¹ The samples were incubated on nutrient agar 2 days at 37° C.

TABLE VII.
Water "D."

Inoculated with	Date examined.	No of days stored.	Average number of organisms per Cc. ¹ from bottles stored at	
			20° C.	Room temperature.
<i>B. dysenteriae</i>	2-19-16	0	3,450,000	739,000
	2-21-16	2	330,000	184,500
	2-23-16	4	900	64
	4- 8-16	49	All bottles sterile	
<i>B. typhosus</i>	2- 1-16	0	207,500	270,100
	2- 3-16	2	292,500	200,333
	2- 5-16	4	120,250	126,200
	2-14-16	14	10,000	82,750
	2-16-16	16	Contaminated	63,100
	3- 8-16	37	.....	630
	4- 8-16	67	.....	0
<i>B. coli</i>	1-29-16	0	1,665,000	2,380,000
	1-31-16	2	1,270,000	1,228,000
	2- 2-16	4	647,500	616,400
	2-14-16	16	95,000	718,888 ²

Chemical Constituents (Hypothetical Combinations).

	Mg. per liter.
Potassium chloride.....	0.80
Sodium nitrate.....	2.43
Sodium chloride.....	1.35
Sodium sulphate.....	2.89
Sodium bicarbonate.....	1.46
Magnesium bicarbonate.....	10.63
Calcium bicarbonate.....	21.37
Ferrous bicarbonate.....	1.78
Silica bicarbonate.....	35.07
Total.....	77.78
Ammonia, albuminoid.....	0.005
Nitrogen as nitrates.....	0.400

DISCUSSION OF RESULTS.

Three waters were inoculated with *B. dysenteriae* from a culture furnished by the Hygienic Laboratory of the U. S. Public Health Service. It was inoculated in numbers varying from 120,000 to 16,000,000 per Cc. These organisms decreased rapidly during the first two days of storage, and in most cases by the end of 5 days there were less than 1 per Cc. remaining alive. In the water described in the tabulation as "C," the *B. dysenteriae* remained alive in appreciable numbers after four days' storage at 20° C., but at the end of seven days they were nearly all dead.

B. typhosus did not apparently multiply in any of the waters. Counts on this organism showed, in waters "D" and "C," averages which increased between the first and second examinations from 207,500 to 292,500 and from 5,250,000 to 5,425,000 per Cc. There was nothing, however, to indicate that these increases were due to contamination, or to multiplication. It is evident that they may have been due to the breaking apart of clumps of bacteria which were not separated at the

¹ The samples were incubated on nutrient agar for 2 days at 37° C.

² Several bottles became seriously contaminated before the next examination. At that time (3-8-16) nearly all of the bottles contained millions of bacteria but no *B. coli*.

time of inoculation. After the second examination the *B. typhosus* decreased rapidly in numbers. In water "D" the numbers were greatly decreased at the end of 14 days' storage at both temperatures. In water "C" they were reduced from an average of 5,250,000 to an average of 20,300 within 30 days, and 28 days later there were practically none. In waters "C" and "D" this organism decreased more rapidly at 20° C. than at room temperature. In water "B" large numbers survived at 14 days' storage and some remained alive at 20° C. for 68 days. Water "A" seemed to possess a mild germicidal action. *B. typhosus* survived in it less than four days, except in three of the fourteen bottles which showed an average of 500 organisms per Cc. after 7 days. This water showed the same effect upon *B. coli*; they were all dead at the end of 45 days, or before June 11th. It is noteworthy that no bottle of this water showed any form of contamination, although 3 bottles were left unstoppered in the laboratory for six hours in an effort to contaminate them. Repeated examinations of routine samples of this water seldom showed many bacteria. This water contains a moderate amount of mineral matter comprised mostly of magnesium and calcium bicarbonate (see chemical data) and very little organic matter.

The average counts of the *B. coli* show only water "C" to have given upon the second examinations an increase over the numbers present at the time of the first examination. In this instance this increase is at 20° C. from 8,050,000 to 8,550,000 and at room temperature from 1,474,000 to 1,676,000. The same water, examined two days later showed a decrease at 20° C. and a slight increase at room temperature. It may be possible that if the increase was not due entirely to the shaking apart of the clumps, it may have been aided by a single subdivision of part of the bacteria after inoculation. Possibly it was the completion of subdivisions which had been started before the removal of the bacteria from the agar. There were, however, not sufficient increase to warrant the conclusion that either *B. coli* or *B. typhosus* multiplied in the bottled spring water.

The two waters "A" and "D" which were low in organic matter did not support the pure cultures of bacteria as long as waters "B" and "C." Water "D," containing very small quantities of either organic or inorganic compounds apparently had little effect upon the bacteria but harbored them till they died. Water "A" seemed to contain some element slightly germicidal. Waters "B" and "C" did not induce any increase in numbers of bacteria but did sustain them for a comparatively long period.

In some cases when the bottled water became contaminated with bacteria from the air the *B. coli* remained alive longer than in the uncontaminated water. Other proof of this is shown in the re-examination of stored commercially bottled water. The air contaminations consisted of two forms of micrococci, one forming a small, white pin-point colony, and the other a yellow colony on nutrient agar. The former multiplied with great rapidity in the bottled waters.

CONCLUSIONS.

1. Water can be stored in bottles so that contamination will not enter.
2. A re-examination of a stored bottled water within 30 days may, or may not give the same total count as the first examination, but it is improbable that the *B. coli* will ever be found to have increased.
3. Pollution can be detected in a bottled water even after three years of storage. Such water may not be safe to use for drinking purposes.
4. The presence of certain salts seems to aid the longevity of bacteria in commercial waters, while the presence of other salts seems to have the opposite effect.
5. The presence of molds in large numbers in a bottled water suggests storage.
6. *B. coli*, in symbiosis with water bacteria, may live in bottled spring waters for several years. It is not safe to assert that *B. typhosus* and others of these groups will not survive long periods of storage under symbiotic conditions.

7. *B. coli*, *B. dysenteriae* and *B. typhosus* in pure culture did not multiply when inoculated into sterilized bottled spring waters.

8. *B. typhosus* was obtained alive from spring water "B" after inoculation and two months' storage.

9. *B. dysenteriae* remained alive from four to five days in pure culture in spring waters, "A," "C," and "D."

10. From the results obtained with water "A" it is indicated that certain chemicals in natural spring waters may inhibit the existence of bacteria.

11. A steady decrease in the numbers of the inoculated bacteria was evident in waters "B," "C," and "D." This decrease was more rapid in water "D," which was low in both organic and inorganic matter than it was in waters "B" and "C," which contained, respectively, large and medium quantities of organic and inorganic matter.

SOME SUGGESTIONS FOR NATIONAL FORMULARY REVISION.*

BY WILBUR L. SCOVILLE.

Comments on National Formulary preparations since the advent of the Fourth Edition have been very meagre. This is probably due more to war conditions, the diverting of attention, and the restrictions placed upon materials, as well as upon time and men for experimenting than to a special satisfaction with the National Formulary. Thus we have come to the time for appointment of a new revision committee, and our pharmaceutical literature offers but few suggestions for improvement. The following may be of help in getting work started, and are offered with this in mind:

Compound Elixir of Glycerophosphates precipitates on standing. Glycerin does not help this, and the amount of glycerin in the preparation might be reduced without detriment in this respect, though not without detriment to the taste. Probably more acid is needed.

Emulsions.—Nearly all commercial emulsions are made to contain tragacanth as well as acacia, in order to preserve homogeneity in appearance. Those pharmacists who make their own emulsions probably make some weeks' supply at a time, and this factor is of advantage to them. A small amount of tragacanth prevents the formation of layers in the emulsion for a considerable time, and in some instances adds to palatability.

Solution of Aluminum Subacetate is directed to be adjusted to a definite specific gravity. Such adjustments are difficult to make and not in accord with the usual methods. Adjustment to a definite volume, with a descriptive clause would be desirable.

Solution of Ferric Hypophosphite precipitates on standing. Glycerin again does not help. Probably more Sodium Citrate is needed.

Compound Solution of Phosphates also precipitates quite badly. Probably more acid is needed in this.

Liquid Petroxolin.—Complaints have been made that this does not always make a clear preparation. Experiments on the use of potassium or sodium hydroxide are desirable to learn whether more certain results are likely to follow than when stronger ammonia water is used. The present formula is probably satisfactory when the materials are standard, but it is not always practicable to get

* Presented to Section on Practical Pharmacy and Dispensing, A. Ph. A., New York Meeting, 1919.

stronger water of ammonia of full strength, and too much warming will further reduce this.

Syrup of Calcium and Sodium Hypophosphites precipitates on standing. Probably too much sugar is used.

Compound Syrup of Phosphates and Syrup of Phosphates with Quinine and Strychnine precipitates on standing. Since both of these are made from *Compound Solution of Phosphates*, this is probably the key to the difficulty.

Compound Syrup of White Pine and *Compound Syrup of Stillingia* both precipitate organic matter on standing. This kind of precipitation is not easily remedied except by a change in constituents. This may not prove to be practicable.

Antiperiodic Tincture also precipitates. This may be due to excessive acidity, and the use of another salt of quinine may reduce, or possibly inhibit, precipitation.

Stronger Tincture of Iodine.—Several complaints have been made that not enough potassium iodide is used to get all the iodine into solution.

Tincture of Vanilla.—The method of manufacture is unnecessarily complicated and wasteful. Direct percolation of the vanilla, either with or without the sugar makes just as good a preparation with much less trouble and expense.

A number of the N. F. preparations should be introduced to the "purity rubric" and have definite standards and methods of assay attached, if retained in the next edition. Among these are Caffeine Sodio-Salicylate, Extract of Jalap, Extract of Podophyllum, Fluidextract of Kola, Fluidextract of Jalap, Fluidextract of Sanguinaria, Solution of Iron of Albuminate, Solution of Iron Oxide, Solution of Iron Peptonate, Solution of Iron Protochloride, Solution of Strychnine Acetate, Magma of Ferric Hydroxide, Syrup of Calcium Iodide, Syrup of Codeine, Syrup of Iron and Manganese Iodide, Syrup of Ferrous Chloride, Syrup of Quinidine, Syrup of White Pine with Morphine, Tincture of Ferric Citrate, Tincture of Ferrated Extract of Apples, and Tincture of Jalap.

Whether it will be wise to standardize the pepsin preparations is debatable, since the conditions of permanency in solutions of pepsin are not yet known. But it is desirable to make the different liquid preparations of pepsin more uniform as to acidity. These have all been accepted as offered by independent authors, with such modifications as may have suggested themselves to the revisors. In consequence, they vary widely in acidity, and probably also in stability. The latter question should receive considerable attention in the next revision. Probably eight different liquid preparations of pepsin are more than needed, but uniformity in the chemical and physiological composition should be adopted in such as are retained.

Have abbreviations of the titles served any good purpose? If not, why encumber another book with them?

OINTMENT DIFFICULTIES.*

BY WM. GRAY.

In preparing ointments for a famous dermatologist, I have had trouble in trying to furnish a perfect preparation. Here is an example:

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New York meeting, 1919.

Acidum Boricum.....	15.0
Zinci Oxidum.....	10.0
Amylum.....	10.0
Bismuthi Subnitrates.....	10.0
Oleum Olivae.....	30.0
Adeps Lanae Hydrosus.....	30.0
Liquor Calcis.....	30.0
Aqua Rosae.....	15.0

This preparation is called Cream Base No. 3. If you try to prepare it cold, it will not work, as you cannot incorporate all the liquids; if you apply much heat, you will have an ill-appearing mess. The trick is: after you have mixed all the ingredients to apply a very slight amount of heat. Stir constantly. Watch your preparation and at the psychological moment remove the heat and you will have a perfect preparation.

Diachylon Ointment is another bad actor. If you have to add some other ingredient to this ointment, when it is cold, it will break up into an unsightly mess. Even the act of stirring the ointment without any admixture does the same thing; that is, after the ointment has been standing a short time. Now, suppose you are called upon to add salicylic acid, phenol or some volatile oil to this ointment, you will have difficulty unless you apply a gentle heat, not enough to change the character of or volatilize the medicaments, but just enough to bring them to the proper consistency. Don't forget, heat is the answer!

THE DIAGNOSTIC LABORATORY IN THE PHARMACY.*

BY JACOB DINER.

SCOPE OF THE WORK.

Before beginning the planning of the laboratory one should carefully consider the scope of the work so as to plan intelligently how to arrange and equip the laboratory. It is entirely within the province of the up-to-date pharmacist to undertake the examination of urine, feces, blood, gastric and duodenal contents; to examine blood for malarial parasites, milk for bacterial contents as well as for adulteration and preservatives, exudates for gonococci, throat smears and cultures for diphtheria bacilli, sputum for tubercle bacilli, and cerebro-spinal fluids for globulin, copper-reducing substances and cell count as well as for bacteria. With reference to cerebrospinal fluid, however, we must bear in mind that many physicians are not familiar with the technic of lumbar puncture and they will therefore prefer to have the laboratory man perform that operation previous to examining the fluid. The procedure for obtaining spinal fluid by lumbar puncture, while relatively simple in the hands of a trained man, is fraught with many dangers to the patient when attempted by the inexperienced, and I doubt whether the pharmacist would legally be entitled to perform this operation. Similar objections may be raised against removal of blood from the vein of the patient for the purpose of performing the complement fixation test for gonorrhoea or syphilis. And even should the physician be willing to do that part of the work himself the preliminary steps necessary for carrying out the complement fixation

* Read before Section on Commercial Interests A. Ph. A., New York Meeting, 1919.

test, such as preparation of antigen, and amboceptor, securing complement from guinea pigs, and titrating these important reagents each time before beginning the actual test would entail so much labor, consume so much time, and prove so expensive as to be prohibitive for a casual execution of this work on a single specimen. On the other hand, the preparation of autogenous vaccines can be carried out successfully by the trained laboratory man and will prove remunerative from a professional as well as from a financial point of view.

The following prices indicate the charges usually made for clinical and diagnostical work:

URINE	
Qualitative Chemical and Microscopical.....	\$ 1.00
Quantitative Chemical and Microscopical.....	3.00
Nitrogen Partition.....	10.00
BLOOD.	
Red and White Cell Count and Haemaglobin, each.....	2.00
Differential Leucocyte Count.....	2.00
Complete Clinical Examination.....	5.00
Widal reaction.....	2.00
Plasmodia.....	2.00
Wassermann complement fixation.....	10.00
SPUTUM.	
T. B. or Pneumonia.....	2.00
FECES.	
Chemical or Microscopical.....	3.00
Bacteriological.....	10.00
GASTRIC CONTENTS.	
Chemical and Microscopical.....	5.00
SMEARS.	
Urethral, etc., for Gonococci.....	1.00
CEREBROSPINAL FLUID.	
Wassermann complement fixation.....	10.00
Noguchi Batoryic Acid Reaction.....	3.00
Nonne Reaction.....	3.00
Cell Count.....	5.00
Bacteriological.....	15.00
VARIA.	
Autogenous Vaccines.....	10.00
Milk Analysis.....	5.00
Water Analysis.....	5.00
Tissue.....	5.00
Drug Assay, Food Analysis and other Chemical Analysis.....	
Quotations on application.	

LOCATION AND EQUIPMENT.

Inasmuch as we know what we wish to accomplish we can now intelligently plan our laboratory. In an article which appeared in the *American Druggist* some time ago, I gave a detailed plan for the arrangement, and it is not necessary to repeat it here. Generally speaking, the laboratory should be removed from the other departments of the pharmacy as far as possible. A room about 10 by 12 feet, well lighted by windows and electric light, preferably with northern exposure, should be the location of choice.

The equipment may be divided into four groups: 1. Glassware. 2. Reagents. 3. Implements. 4. Accessories.

GLASSWARE. Test-tubes, preferably of medium size and assuredly of good quality should be provided in abundance. Beakers of assorted sizes, porcelain evaporating dishes, Florence and Erlenmeyer flasks, a few distilling flasks and condensers, one of which at least should be a reflux condenser, microscopical glass slides and cover glasses of good quality, staining bottles of the drop-bottle variety, reagent bottles glass stoppered except those for alkalies, which latter should have rubber stoppers, a good supply of glass and rubber tubing and some stirring rods. A few extra large sized test tubes with thick walls for the purpose of constructing a Van Slyke apparatus should also be provided and, of course, a sufficient supply of urinometers, ureometers, pipettes and burettes, centrifuge tubes and Petri-dishes, the latter at least 1.5 cm. deep and 10-12 cm. wide.

REAGENTS. Stock solutions, as well as working solutions, of the following stains should be on hand: Carbol-fuchsin, carbol-gentian violet, Loeffler's alkaline methylene blue, aqueous solution of methylene blue, Gram iodine, acid-alcohol, acetone-alcohol, and Wright's blood stain. In addition to the stains the following reagents should be kept on hand, of course carefully titrated: $N/10$ NaOH, $N/10$ H_2SO_4 , $N/10$ HCl; 2% acetic acid, 36% acetic acid, glacial acetic acid, diluting fluid for red blood corpuscles such as Hayem's, or that devised by me and published in the *Journal of the A. M. A.*, Fehling's solution, Benedict's solution for quantitative determination of sugar, bromine solution for urea determination (Rice's formula), Obermeyer's solution, standard $AgNO_3$ (1 Cc. to equal 0.1 NaCl); uranium nitrate solution (1 Cc. to equal 0.005 P_2O_5), acetic mixture, barium chloride test solution, 10% butyric acid in normal saline, etc. Indicators: Neutral potassium chromate, litmus, methyl orange, Töpfer's, cochineal, alizarin, phenolphthalein.

IMPLEMENTS. If possible one should have a good polariscope; also electric centrifuge, test-tube racks and holders, electric incubator, electric hot-plate, platinum loops and needles. Hagedorn needles, Arnold sterilizers, dry, hot air oven, autoclave. The possession of a good microscope, with oil immersion lens and mechanical stage, is an absolute necessity.

ACCESSORIES. Bunsen burners, two- or three-ring gas burner, grommets, crucible tongues, funnels and supports for same, filter paper, double-boiler (rice boiler), test-tube brushes and bottle brushes, metal and horn spatulas, triangular file, glass-pencil (a wax pencil for writing on glass), slide boxes and labels.

With reference to all the items enumerated above would say that quality only should be the determining factor and while a sufficient supply should always be on hand overstocking must be carefully avoided. The chemicals needed, as a rule, are found in every well stocked pharmacy. The formulae for the different reagents can readily be obtained from any standard text-book.

TRAINING.

In order to intelligently carry out laboratory work for diagnostic purposes one should have a thorough training, both theoretical and practical. A systematic course in this work should be the first step. This should be followed by about 3 to 6 months' practical work in a laboratory connected with a hospital or one in

which such laboratory work is done on a fairly extensive scale, under the immediate supervision of a trained pathologist. Ardent collateral reading, both of text-books and modern medical literature, are an essential part of the training. And while it is by no means necessary for the laboratory worker to become a physician it will prove of great advantage if he learns to evaluate the laboratory findings and their relation to disease.

METHODS FOR PROCURING BUSINESS.

This may be subdivided under two heads: (a) Direct advertising; (b) Indirect advertising.

(a) DIRECT ADVERTISING: At the very outset one should acquaint the physicians in the community with the fact that the laboratory has been established, stating frankly the qualifications of the man in charge and enclosing a schedule of fees for the different types of examinations one is ready to carry out. Secondly: Cordial invitations should be extended to the medical profession to visit and inspect the laboratory. Thirdly: Proper containers should be provided for the collection of specimens by the physician. Fourthly: Monthly or bi-weekly pamphlets of a scientific nature should be mailed to each physician. Each pamphlet may show the relation of some phase of the laboratory work to diagnosis and, if possible, to prognosis.

(b) INDIRECT ADVERTISING: Painstaking and accurate work carefully performed and intelligently reported. A good equipment well maintained and always open for inspection. Willingness and desire, frequently expressed, to have the physician present while the work is being carried out.

For methods of analysis and collateral reading one is referred to Hawk's Biological Chemistry, Simon's Clinical Diagnosis, Todd's Clinical Diagnosis, Emerson's Clinical Diagnosis, Wood's Clinical Diagnosis, Ewing's Hematology, Hiss and Zinsser's Bacteriology, Jordan's Bacteriology, Park's Bacteriology, *The Journal of Laboratory and Clinical Diagnosis*, and many other good books and publications easily found if desired. I may also be permitted to refer to a rather detailed outline on the preparation of autogenous vaccines published in the JOURNAL OF THE A. PH. A., February, 1914, by myself, as well as numerous monographs on laboratory diagnosis published by me in various medical and pharmaceutical journals.

The advantages of a diagnostic laboratory in conjunction with a modern pharmacy are too evident to require discussion. The least of these is the direct financial return from the work and the increase in the prescription work arising from the added confidence of both the physician and the public. One of the more important returns worth considering is the broadening influence which such work is bound to have on the pharmacist and the added appreciation of the importance of the pharmacy as a valuable adjunct in the diagnosis and treatment of disease.

CLOSER AND MORE PROFITABLE RELATIONS BETWEEN THE PHARMACIST AND HIS BANK.*

BY CLARENCE O. BIGELOW.

At no time in the last decade or more has the pharmacist been beset with so many vexatious problems as confront him to-day. Conditions arising out of the

* Read before Section on Commercial Interests A. Ph. A., New York Meeting, 1919.

war, Federal and State legislation, together with regulations imposed by local boards, all have tended not only to perplex and harass him, but have raised a doubt in his mind as to whether we are not about entering upon another era quite as disturbing as was that immediately following the early days of the cut-rate evil, and the advent of the so-called chain-store, its natural sequence.

Troublesome though these things are, there is no question as to their being helpful and educative to the pharmacist. We shall gradually adjust ourselves to changed conditions, meet with equanimity whatever the future has in store for us in the way of legal requirements, and the chain-store, long regarded as a menace, will assuredly be looked upon ultimately as a direct blessing.

Up to about 1900 a drug store, even in the larger cities, doing a business of \$150 to \$200 a day, was a rarity, while to-day there are more stores taking in from \$800 to \$1,000, and over, than could boast of the smaller receipts twenty years ago. This is the result of many and diverse causes, chief of which is the natural effect consequent upon the departure from old-fashioned methods of merchandising, the reflex action of which has slowly but surely broken through the ethical, and found lodgment in the commercial side of Pharmacy. For this we owe much to the live pharmacists of the country and to the department store, but still more are we indebted to the trade journals and house organs, which for years have carried on a most comprehensive merchandizing propaganda.

The day of small sales and large profits is past. The pharmacist is now a man of larger affairs, and as such he should make the most of his opportunities, which admittedly are far greater than at any time within the recollection of the present generation. But is the pharmacist making the best use of his opportunities? Seemingly not. While the volume of drug store business has increased something like four-fold in recent years, and purchases have increased in like ratio, from reliable information the pharmacist has failed to finance his business in such manner as to ensure best results. He has unquestionably failed to utilize the facilities offered by his bank to the extent he should in providing ready cash to promptly meet maturing obligations, preferring rather to permit accounts to run to maturity thereby losing the cash discount offered by jobbers and manufacturers. This is a grave mistake, as has long been recognized and taken advantage of by business men in most other lines of trade.

When starting in business the pharmacist generally goes to a jobber and makes what should be, and no doubt is, a frank and truthful declaration of his financial affairs, upon which he expects to obtain a line of credit. It is just as important that he make a like statement to his bank. A pharmacist therefore may very profitably establish closer relations with his bank than those comprised in the mere depositing of money and drawing checks, etc.

In the majority of cases the supply houses grant extra discounts for payments in ten days, frequently 1 or 2 percent., and in some cases they make better prices to customers paying with prompt regularity, so that the ability to pay in cash, rather than let bills run to maturity, means a real saving in the original cost of goods and on a large turnover such savings will make a substantial addition to the year's profits.

For example, the pharmacist purchases \$10,000 worth of goods per annum at the rate of \$800 every month and he sells his goods either for cash or settle-

ment at the end of the month, which means 15 to 30 days' extra time to his customers, so that on the average he will have to wait 30 days before his money comes in. If he pays in ten days he will make a saving of \$200 in discounts, and as he probably will not require more than \$2,000 at any time to cover his payments while awaiting the return flow of money from his customers' account, the interest charged him by his bank at 6 per cent, if he should borrow constantly through the year, would still leave him a profit of \$80.

In actual practice it will probably be necessary for him to borrow only twice or three times a year, for periods of two to three months, to cover his purchases until the proceeds of his accounts receivable return in sufficient volume to liquidate his loans, so that his average borrowing for the year will probably not exceed \$1,000 to \$1,500, on which the interest would be \$60 to \$90, leaving him a profit of \$140 or \$110, this profit of course increasing as the volume of his purchases increases and further increasing as he might be able to make a more rapid recovery of his accounts payable.

It would seem, therefore, that it would be profitable to borrow money from the bank for this purpose on the credit and assets of the business, if in the bank's opinion they offer sufficient security, or by furnishing security in the form of approved stocks, bonds or other acceptable collateral.

The main elements in procuring credit are capital, character and ability, and while character and ability are vitally necessary, the lack of capital may sometimes be compensated for by the high quality of the other factors.

Bearing all these facts in mind, it would seem as if pharmacists generally would find it decidedly to their advantage to discuss their affairs more fully with their banks, looking to the establishment of closer and more profitable relations.

CAMOUFLAGE.*

BY S. L. HILTON.

The following prescription is submitted as one that, under usual conditions, would likely be compounded without much question; on due consideration, however, the true intent can be readily discerned. This is an example of scientific thought to provide a method for obtaining narcotics. A morphine habitue would jump with joy to have possession of this prescription as a means for obtaining his supply of morphine, almost free from resins and gum, contained in tincture of opium.

R Plumbi Acetatatis..... $\overline{5}$ i
 Tincturae Opii..... $\overline{3}$ iv

Misce, et signetur:—To be used as directed.

The addition of lead acetate to tincture of opium removes the resins and gum and only a portion of the lead goes into solution; this can readily be removed with diluted sulphuric acid, the solution filtered leaving a hydro-alcoholic solution representing 10 percent of opium, containing all of the alkaloids of opium.

*Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New York City Meeting, 1919.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

ST. LOUIS.

A meeting of the St. Louis Branch, A. Ph. A., was held at the St. Louis College of Pharmacy, July 31, with a large attendance in spite of the excessively hot weather.

The address of the evening was given by Captain J. H. Sewing, a pharmacist and physician of St. Louis, who was captured and held as a prisoner in Germany. Captain Sewing told in a most interesting manner of his experience from the moment a fellow soldier informed him that they were "going to Berlin" to the time he reached the American line after the armistice. His narrative was given in a conversational manner, covering many little incidents in which everyone was interested. He described the hardships and cruelties inflicted on some of the prisoners. For a time he served as a physician in a German hospital. Captain Sewing dwelt on the drug market of Germany as he found it during the war. Coal-tar products were very plentiful and were used as freely as salt. Hydrogen peroxide was as available as water. Castor oil, however, and fats of all kinds were unobtainable for medical use or food.

Following his address, the members asked many questions which led to his outlining his experience in Belgium and France while serving with the British army.

In the absence of the President and Vice-President, Dr. H. M. Whelpley occupied the chair during the business session. Officers were elected as follows:

President, Frantz F. Berg.

Vice-President, Burton H. St. John.

Secretary-Treasurer, Leslie E. Pritchard.

Member of the Council, J. Merner Noble.

The Branch unanimously voted to extend the American Pharmaceutical Association an invitation to hold the 1921 meeting in St. Louis.

The Committee on Membership, consisting of Messrs. F. F. Berg and J. Merner Noble, reported that nine applications for membership had been turned over to the treasurer.

The special program for the meeting of September 12 will include a report from the St. Louis members who attend the New York meeting of the American Pharmaceutical Association.

COMMITTEE REPORTS

REPORT OF THE COMMITTEE ON DRUG MARKET.*

(Continued from p. 673, August issue, JOURNAL A. PH. A.)

LANOLINE, ANHYDROUS: Anhydrous Lanoline has been a cause of some concern during the past year, the odor, amount of ash and reaction of ash in particular having tended to deviate from the U. S. P. requirements. Following is a detailed report on 13 of the lots examined, many of which were rejected:

* Presented to the 1919 Convention of the Pennsylvania Pharmaceutical Association at Buena Vista Springs, 1919.

Sample.	Acidity.	Ash.	Reaction of Ash.	All other U. S. P. Requirements.
1	Normal	Unweighable	Normal	Normal
2	Normal	0.234%	Alkaline	Normal
3	Normal	0.270%	Alkaline	Normal
4	Normal	0.062%	Normal	Normal
5	Excess	0.01%	Normal	Normal except negligible excess of chlorides
6	Normal	0.004%	Normal	Normal
7	Slight excess	0.09%	Normal	Normal except negligible excess of chlorides
8	Normal	0.041%	Normal	Normal except negligible excess of chlorides
9	Normal	0.600%	Alkaline	Normal
10	Slight excess	0.14%	Alkaline	Normal
11	Slight excess	0.238%	Alkaline	Normal
12	Normal	0.44%	Alkaline	Normal
13	Slight excess	0.40%	Alkaline	Normal

Reported by G. E'WE.

LIQUOR FORMALDEHYDE: One lot was rejected because it was thick and gelatinous. It undoubtedly contained considerable paraformaldehyde.

Reported by J. G. ROBERTS.

LUPULIN: Nine lots assayed 44.9%, 45.2%, 53.9%, 57.7%, 60.5%, 63.0%, 63.7% and 64.3% ether-soluble matter, respectively. The U. S. P. 8th requires not less than 60%.

Reported by L. J. LIPMAN.

MAGNESIUM CARBONATE: Each of three lots examined contained an excess of calcium amounting to 0.94%, 1.24% and 1.32% calculated as calcium oxide.

Reported by J. G. ROBERTS.

MALE FERN: Three lots were not Male Fern but were other members of the fern family.

Reported by G. E'WE.

MANGANESE DIOXIDE: Three lots assayed 66.2%, 70.1% and 70.3%, respectively, of Manganese Dioxide but were otherwise U. S. P. The U. S. P. requires not less than 80% Manganese Dioxide.

Reported by F. J. KEENAN.

MANGANESE GLYCEROPHOSPHATE: One lot contained no citric acid as required by the N. F. and as a consequence was not as soluble as required by the N. F.

Reported by L. J. LIPMAN.

MERCURY CACODYLATE: One lot labeled "C. P." was not nearly completely soluble in water and therefore, was unsuitable for hypodermic tablets or ampul solutions. Another lot labeled simply "Mercury Cacodylate" gave reactions for mercury and cacodyl but contained about 25% of mercuric chloride.

Reported by K. SUTO.

MERCURIC OXIDE, YELLOW: One lot was alkaline to litmus. Another lot was alkaline to litmus and alkaline to methyl orange equal to 0.072% sodium carbonate. A third lot was alkaline to litmus, neutral to phenolphthalein and alkaline to methyl orange equal to 0.949% sodium carbonate. The U. S. P. requires that yellow oxide mercury be neutral to litmus. This is an admirable requirement since this substance is employed largely in the treatment of the eye.

Reported by G. E'WE.

MYRRH: One lot contained about 70% of another gum, and was rejected. Four lots assayed 25.7%, 25.8%, 33.4% and 38.7%, respectively, of alcohol-soluble matter. The U. S. P. requires not less than 35% alcohol-soluble matter.

Reported by G. E'WE.

OIL, ALMOND, EXPRESSED, NOT U. S. P.: A sample, so labeled, consisted of Oil Peach Kernels.

Reported by K. SUTO.

OIL, BEAR: The following results were obtained with one lot:

Sp. Gr. at 15° C. 0.922

Saponification value. 197

Iodine value. 57

Reported by J. G. ROBERTS.

OIL CADE: One lot was not of U. S. P. quality as it responded to the U. S. P. test for rosin. Reported by F. J. KEENAN.

OIL CEDAR LEAF: Ordinary oil of cedar leaf as found on the market is said to be made indiscriminately from *Juniperus Virginiana*, *Thuja Occidentalis* and other related conifers, a fact which causes considerable variations in its analytical characters. Pure Oil of Cedar Leaf obtained from *Juniperus Virginiana*, has a specific gravity of .887 at 15° C and an optical rotation of +59° 25'.

The examination of three samples from various sources give specific gravities at 15° C. ranging from .9221 to .9256 and optical rotations ranging from +25.76° to +32.87°. All of these samples have higher specific gravities and lower optical rotations than the standard but they are closer than usual to it and probably contain less oil from the other portions of the tree.

Reported by J. G. ROBERTS.

OIL CHAULMOOGRA: The one lot examined had a Sp. Gr. at 45° C. of 0.907, iodine number 107, saponification number 185, acid number 11.4. There is no U. S. P. or N. F. standard. The British Pharmacopoeia gives standards for Chaulmoogra Oil. This lot did not conform to the British Pharmacopoeia standards. Reported by G. E'WE.

OIL GOOSE: One lot of good quality gave the following results:

Solidifying point.....	14° C.
Specific gravity at 15° C.....	.921
Acid value.....	6.0
Saponification value.....	196.8
Iodine value.....	72.7

Reported by J. G. ROBERTS.

OIL LEMON, TERPENELESS: There is a great need for a standard for aldehydes, calculated as citral, for this product. The 12 lots examined varied as follows: 20.2%, 24.2%, 25.8%, 26.6%, 33.4%, 44.3%, 49.4%, 52.2%, 54.1%, 59.2%, 60.3% and 67.9% aldehydes, calculated as citral, respectively.

Reported by G. E'WE.

PAPAIN: Continues to assay low and vary in activity. The 6 lots examined digested 1.33, 4.01, 9.48, 13.6, 14.0 and 14.6 parts of fresh lean beef, calculated on a dry basis, respectively.

Reported by K. SUTO.

PAPAIN: There is probably no substance which has been subjected to as much adulteration and about which more conflicting statements have been made than Papain. Among the adulterants that are known to have been added are bread crumbs, rice, flour, dextrin, congee and wild cactus milk. Positive identification of some of these substances is very uncertain so that it is possible, in some instances, for unscrupulous dealers to dispose of adulterated goods without detection. One sample was rejected because it was of suspicious quality. We were unable to detect any adulterants but it had the property of readily absorbing water which rendered it gummy and unfit for powdering.

Reported by J. G. ROBERTS.

PHENOL: The rejection of a two-drum lot was recommended because it was of poor appearance. One drum was quite dark colored while the other was both dark and dirty.

Reported by J. G. ROBERTS.

PHENYL SALICYLATE: One sample was considered of unacceptable quality because of a yellowish color.

Reported by J. G. ROBERTS.

PILOCARPUS: Two broker's samples were submitted, each of which contained about 22% of stems. As the U. S. P. permits not more than 5% it was considered that the quantity present was in considerable excess. They were entirely satisfactory in regard to alkaloidal content as they contained, respectively, 0.92% and 0.76%, which amounts are well above the U. S. P. limit of not less than 0.6%.

Reported by J. G. ROBERTS.

PIPSISSEWA: Two lots contained 38% and 50%, respectively, of stems and fruits, whereas only the leaves are desired. A third lot was largely stems. The N. F. limits stems and fruits to not more than 5%.

One lot was *Chimaphila maculata*, whereas the N. F. specifies *Chimaphila umbellata*.

Reported by G. E'WE.

POPPY HEADS: It was found necessary to reject five of the thirteen cases in one lot because the contents were in a mouldy condition.

Reported by J. G. ROBERTS.

POTASSIUM CARBONATE: A sample submitted by a broker did not comply with the U. S. P. requirements as it was 3% low in strength, contained an excess of heavy metals and was insufficiently soluble in water. The U. S. P. states that Potassium Carbonate is soluble in 0.9 part of water; this sample was not soluble in this amount but required about three parts to dissolve the greater portion. The rest appeared to be insoluble as the addition of several more portions did not give a clear solution.

Reported by J. G. ROBERTS.

POTASSIUM PERMANGANATE: The rejection of two lots was advised because they were 2.3% and 1.07%, respectively, low in strength.

Reported by J. G. ROBERTS.

One lot was a trifle low in strength, namely 98.4%, whereas the U. S. P. requires 99%. It also contained an excessive proportion of insoluble matter rendering it unsuitable for compressed tablets to be used in the preparation of solutions.

Reported by G. E'WE.

PULSATILLA: One lot consisted of only the tops, whereas the whole dried herb is used.

Reported by P. COHN.

RED GUM, AUSTRALIAN: One lot was practically insoluble in water. It contained no water-soluble tannin. It was soluble in alcohol to the extent of 94.5%. This lot had evidently been previously exhausted with water. Australian Red Gum should contain 40-50% of water-soluble tannin. This lot was rejected.

Reported by G. E'WE.

RENNIN: The five lots examined assayed 1 : 15,625, 1 : 25,000, 1 : 25,000, 1 : 30,000 and 1 : 37,500, respectively. They were all satisfactory except the first one.

Reported by K. SUTO.

RUE: One lot so labeled contained no rue but consisted of the crushed leaves of *Rhus copalina* with traces of the pellucid glandular leaves of a second species which consisted of an unidentified heath.

Reported by G. E'WE.

SAFFLOWER, AMERICAN: One lot was so old and faded that it would yield a poorly colored fluid extract and was rejected, as a consequence.

Reported by G. E'WE.

SANGUINARINE NITRATE: A great improvement has been effected in this product during the past year. Whereas in previous years low strength and great variation was the rule, in the past year the four lots examined all assayed between 99.8-100.0% pure sanguinarine nitrate.

Reported by L. J. LIPMAN.

SARSAPARILLA: Two lots contained excessive stem structure adhering to the roots.

Reported by G. E'WE.

SASSAFRAS BARK: Two lots contained 20% and 22% respectively, of whole roots. A third lot was mostly not deprived of the periderm as required by the U. S. P.

Reported by P. COHN.

SCAMMONY RESIN: One lot assayed 85.0% ether-soluble matter and 1.38% ash but was otherwise of U. S. P. quality. Another lot assayed 84.0% ether-soluble, gave an unweighable ash and was otherwise of U. S. P. quality. The U. S. P. requires not less than 95% ether-soluble matter and not more than 1% ash.

Reported by G. E'WE.

SCOPOLA ROOT: The alkaloidal content of one lot was a little low as it contained only .47%.

Reported by J. G. ROBERTS.

SCULLCAP: One lot contained only a trace of official scullcap. It contained a small proportion of *Scutellaria canescens*, a species related to the official drug, but consisted mostly of *Trichostema dichotomum*.

Reported by G. E'WE.

SAPO MOLLIS, U. S. P.: Practically all of the many lots examined were neutral or possessed a negligible acidity whereas the U. S. P. requires an alkalinity equivalent to not less than 0.1% potassium hydroxide. It seems impractical to meet the U. S. P. requirement of minimum alkalinity. The explanation offered by a soap manufacturer is that soft soap may be alkaline in great excess of the U. S. P. upper limit when first prepared, because of incomplete saponification and later became neutral due to completion of the saponification.

Reported by G. E'WE.

SOAP, CASTILE: The rejection of a lot represented by one sample was advised because its iodine value was only 68.7 whereas the U. S. P. standard requires it to be not less than 84 nor more than 90.

Two other samples having iodine values of 81 and 82.5, respectively, were examined. This seems to be a prevalent condition as almost without exception the iodine values of other samples are lower than the U. S. P. minimum limit. Samples of a well established and reliable

brand of Castile Soap obtained at various times have been found to have the following iodine values: 81.79, 82.28 and 79.36. These results indicate that the U. S. P. limit is too high particularly in view of the fact that the minimum limit for olive oil from which it is made is only 79.

Reported by J. G. ROBERTS.

SODIUM BENZOATE: One lot was not of U. S. P. quality because it was only 96.1% pure.

Reported by J. G. ROBERTS.

SODIUM SULPHATE: Sample was slightly acid to litmus instead of neutral as required by the U. S. P.

Reported by J. G. ROBERTS.

SPIGELIA: The examination of four samples showed that not one of them was of U. S. P. quality. One sample was practically all *Ruellia*. Another contained about 21% stems and other foreign matter and about 29% dirt, showing that it contained about 50% of true *Spigelia*. One lot contained about 5% excess of stems, while another was practically of U. S. P. grade as it had only 1% excess of stems.

Reported by J. G. ROBERTS.

One lot contained excessive soil and stones.

Reported by G. E'WE.

ST. JOHN'S WORT: A lot of ground "St. John's Wort" consisted of a mixture of innumerable plants, grasses and other botanical specimens in a finely ground condition. Botanical examination failed to reveal more than a trace of St. John's Wort. This lot of drug was offered by a jobber who maintains no scientific control over his botanical supplies and evidently this lot of "St. John's Wort" was foisted upon him by another dealer. This lot was rejected.

Reported by G. E'WE.

STILLINGIA ROOT: One lot was wormy and mouldy to the extent of 70-80% and was rejected.

Reported by G. E'WE.

STRAMONIUM LEAVES: Three lots were found to contain 0.36%, 0.33% and 0.43%, respectively, of mydriatic alkaloids which amounts are all well above the U. S. P. limit of not less than 0.25%.

Reported by J. G. ROBERTS.

STROPHANTHIN: The U. S. P. requires Strophanthin to be very soluble in water. Two lots were not very soluble since even minute quantities dissolved very slowly but completely.

Reported by G. E'WE.

STYRAX: The four lots examined yielded the following results:

Sample.	Ash.	Insol. matter.	Non. vol. alc. sol.	Acid value.	Sap. val.	All other U. S. P. tests.
1. . . .	0.42%	1.56%	Normal	99.9	189	Normal
2. . . .	0.01%	1.43%	87.9%	117.6	198.5	Normal
3. . . .	0.08%	2.17%	74.0%	150	196	Normal
4. . . .	0.55%	2.20%	75.0%	114	193.1	Normal

U. S. P.
requires not more than 1% than 2.5% than 60%
Not more than 2.5% than 60%
Not less than 60%

Nos. 3 and 4 were labeled "artificial."

Reported by G. E'WE.

TOLU: The U. S. P. requires that Tolu be "soluble in alcohol" but sets no standard for the accidental impurities always present in a natural product. The seven lots examined contained 0.5%, 1.0%, 1.3%, 1.8%, 2.1%, 3.43% and 5.8% alcohol-insoluble matter, respectively. They answered all other U. S. P. requirements.

Reported by G. E'WE.

TRITICUM: Bermuda Grass has been frequently offered as a succedaneum for *Triticum* during the past year, but of course, cannot be used in a preparation labeled as containing *Triticum*.

Three lots of *Triticum* were not *Triticum* but *Cynodon dactylon* (a related grass).

Reported by G. E'WE.

WAHOO BARK: One lot consisted of the whole root.

Reported by G. E'WE.

WATER PEPPER: One lot consisted almost entirely of stems whereas the whole herb is desired.

Reported by G. E'WE.

WATER, ROSE, STRONGER: This did lot not comply with the U. S. P. requirements and was of very undesirable quality as it had a decided yellowish color, contained mucoid growths, and yielded about 63 times more residue after the evaporation of 100 mls than is permitted by the U. S. P. It apparently was obtained by maceration instead of distillation.

Reported by J. G. ROBERTS.

WATER, ORANGE FLOWER, STRONGER: This lot also, did not comply with the U. S. P. requirements and was of undesirable quality. It yielded about 70 times more residue after the evaporation of 100 mls than is permitted by the U. S. P., had a decided yellowish color and contained mucoid growths. It also appeared to have been obtained by maceration instead of by distillation.

Reported by J. G. ROBERTS.

WILD CHERRY BARK: Has been very scarce the past year owing to the dearth of labor. Much which has been offered has been very thick and weak in flavoring power.

One lot consisted of 65% of official *Prunus serotina* and 35% of another *Prunus* bark, probably *Prunus demissa*, which was blackish externally, light brown on its inner surface, very thick and practically devoid of hydrocyanic acid.

Reported by G. E'WE.

YERBA SANTA: Two lots contained 11% and 15%, respectively, of stems whereas the U. S. P. permits only 5%.

Reported by G. E'WE.

ZINC BORATE: One lot contained sulphates equivalent to 18% of zinc sulphate and was rejected.

Reported by G. E'WE.

ZINC OXIDE: Only two of the fourteen lots examined contained lead in excess of the U. S. P. limit.

The lead in one of the two samples was only slightly in excess, whereas the other contained a tremendous excess.

Reported by G. E'WE.

The following table shows the results of 206 crude drug assays made in the Analytical Laboratory of the H. K. Mulford Company during the year June 1, 1918-June 1, 1919.

Drug.	No. of samples.	Lowest assay.	Highest assay.	Average.	Standard.	No. standard.	
						Above.	Below.
Aconite Leaves.....	2	0.350%	0.660%	0.505%	0.2% alkaloids	2	0
Aconite Root.....	5	0.371%	0.693%	0.549%	0.5% alkaloids	4	1
Belladonna Leaves.....	14	0.272%	0.686%	0.469%	0.3% alkaloids	13	1
Belladonna Root.....	7	0.450%	0.672%	0.701%	0.45% alkaloids	7	0
Cantharides, Chinese...	3	0.667%	1.290%	0.933%	0.6% cantharidin	3	0
Capsicum.....	4	14.44%	15.08%	14.80%	15% non-volatile ether-sol. matter	2	2
Cinchona, Red.....	2	4.90%	9.40%	7.15%	5% alkaloids	1	1
Cinchona, Yellow.....	12	3.90%	8.86%	6.46%	5% alkaloids	9	3
Colchicum Seed.....	4	0.555%	0.650%	0.621%	0.45% colchicine	4	0
Conium Seed.....	5	0.739%	1.003%	0.875%	0.5% coniine	5	0
Cubeb Berries.....	3	23.6%	25.4%	24.8%	15% oleoresin	3	0
Gelsemium.....	1	0.930%	0.930%	0.930%	0.4% alkaloids	1	0
Ginger, Jamaica.....	18	3.11%	7.45%	4.69%	4% oleoresin	13	5
Guarana.....	6	4.18%	4.70%	4.25%	4% caffeine	6	0
Hydrastis.....	10	2.97%	4.06%	3.64%	2.5% alkaloids	10	0
Hyoscyamus.....	2	0.0843%	0.0975%	0.0909%	0.065% alkaloids	2	0
Ignatia.....	4	2.62%	3.28%	3.03%	2% alkaloids	4	0
Ipecac.....	18	1.63%	2.54%	2.25%	1.75% alkaloids	17	1
Jalap.....	2	7.50%	15.10%	11.30%	7% total resins	2	0
Kola Nuts, Dried.....	16	1.40%	2.73%	1.88%	1.5% caffeine	13	3
Lobelia.....	10	0.460%	1.066%	0.857%	0.5% alkaloids	10	0
Nux Vomica.....	12	2.15%	2.80%	2.49%	2.5% alkaloids	5	7
Physostigma.....	8	0.120%	0.373%	0.190%	0.15% alkaloids	4	4
Pilocarpus.....	4	0.570%	0.930%	0.762%	0.6% alkaloids	3	1
Podophyllum.....	18	2.49%	6.50%	3.99%	3% resin	14	4
Sanguinaria.....	7	2.50%	6.65%	5.03%	2.5% alkaloids	7	0
Stramonium Leaves....	1	0.544%	0.544%	0.544%	0.25% alkaloids	1	0
Veratrum.....	8	1.22%	2.70%	1.57%	1% alkaloids	8	0
Totals.....	206					173	33

COMPARISON WITH REPORTS PREVIOUSLY SUBMITTED.

Year.	Total.	Above.	Below.	Percent. above.
1909 Report.....	395	313	82	79.3
1910 Report.....	340	291	49	85.6
1911 Report.....	263	224	39	85.1
1912 Report.....	298	235	63	78.8
1913 Report.....	382	264	118	69.1
1914 Report.....	286	221	65	77.2
1915 Report.....	133	98	35	73.6
1916 Report.....	215	156	58	72.9
1917 Report.....	172	147	25	85.3
1918 Report.....	131	113	18	86.8
1919 Report.....	206	173	33	83.9

Last year one-half of the Aconite Root, Hyoscyamus, Jalap and Stramonium Seed samples ran below standard. This year Capsicum, Red Cinchona, Nux Vomica and Physostigma are the drugs, one-half or more of which ran below standard. The general yearly average of 83.9% is very satisfactory in view of the dearth and inexperience of the available labor during the past year.

Reported by G. E'WE.

Committee { G. E'WE,
CHARLES H. LAWALL,
G. W. OSTERLUND,
J. G. ROBERTS, *Chairman*.

COMPOUND SOLUTION OF CRESOL.*

BY S. L. HILTON.

The official formula for this preparation is accompanied by some difficulties; on account of these it is not usually compounded in a retail pharmacy. The cost of linseed oil and potassium hydroxide unnecessarily increases that of the finished product. The liberation of glycerin in making the product is also a disturbing element, and the product made with linseed oil has not been a popular one, owing to its dark color.

The above facts led to a series of experiments, wherefrom some suggestions are submitted for the next revision of the U. S. Pharmacopoeia, also a sample of the product, prepared according to the devised formula. The finished, modified preparation is of the same cresol strength as the official, contains no glycerin, has approximately the same amount of soap, mixes clear with water and is much lighter in color. It has been pronounced superior to the official preparation by several physicians who had formerly used the official preparation.

Formula.

Cresol.....	500 Gm.
Oleic Acid.....	226 Gm.
Sodium Hydroxide.....	35 Gm.
Water.....	

1000 Gm.

Dissolve the sodium hydroxide in 100 mls of water and filter through cotton. Weigh the oleic acid in a tared container (bottle or flask), add the cresol, shake well. Add the solution of sodium hydroxide, shake thoroughly until saponified and add sufficient water to bring the weight of the product to 1000 grammes.

The preparation can be made in less than 15 minutes and has all of the properties of the official preparation, without the disadvantages pointed out above.

It cost about 60 cents per liter as compared to about 98 cents per liter for the official, at the present market price of materials.

*Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New York City Meeting, 1919.

COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 25.

PHILADELPHIA, PA., August 4, 1919.

TO THE MEMBERS OF THE COUNCIL:

Motions No. 30 (Temporary Membership of Soldier and Sailor Pharmacists) and No. 31 (Approval of Proposal to Organize Section of World War Veterans at Next Annual Meeting), have each received a majority of affirmative votes.

Motion No. 33 (Election of Members; applications Nos. 271 to 299 inclusive) has received a majority of affirmative votes.

Motion No. 34 (Election of Members). You are requested to vote on the following applications for membership:

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| <p>No. 300. Domingo Poli, Luis Venegas St. No. 51, Guayama, Porto Rico. rec. by Wm. B. Day and E. N. Gather-coal.</p> <p>No. 301. Samuel Lourie, 397 Cross St., Malden, Mass., rec. by Theo. J. Bradley and Howard H. Smith.</p> <p>No. 302. Chas. Aubrey Spence, Jr., 1001 W. Franklin St., Richmond, Va., rec. by W. F. Rudd and C. F. Walker.</p> <p>No. 303. Harry T. Haley, Tazewell, Va., rec. by W. F. Rudd and C. J. Walker.</p> <p>No. 304. Mrs. Charles Saint, Kaplan, La., rec. by R. F. Grace and Adam Wirth.</p> <p>No. 305. Walter G. Williams, Charlotte C. H., Va., rec. by W. F. Rudd and C. F. Walker.</p> <p>No. 306. Robert Lee Walker, 501 Clay Ave., Norfolk, Va., rec. by W. F. Rudd and C. F. Walker.</p> <p>No. 307. W. D. Clark, Cook & A Streets, Portsmouth, Va., rec. by W. F. Rudd and C. F. Walker.</p> <p>No. 308. Arthur L. I. Winne, 601 W. 24th St., Richmond, Va., rec. by W. F. Rudd and C. F. Walker.</p> <p>No. 309. Robert Leroy Miller, Christiansburg, Va., rec. by W. F. Rudd and Wm. B. Day.</p> <p>No. 310. G. L. Anderson, 4164 Drexel Bldg., Chicago, Ill., rec. by Wm. Gray and Wm. B. Day.</p> <p>No. 311. John Weireter, 3401 Southport Ave., Chicago, Ill., rec. by Wm. Gray and Samuel C. Henry.</p> | <p>No. 312. Thelma Webber, 2450 Wylie Ave., Pittsburgh, Pa., rec. by Albert F. Judd and J. A. Koch. Materia Medica Prize, Pittsburgh College of Pharmacy.</p> <p>No. 313. Clarence Greenwood Earlin, 1817 Brighton Rd., Pittsburgh, Pa., rec. by Louis A. Saalbach and J. A. Koch. Theoretical Pharmacy Prize, Pittsburgh College of Pharmacy.</p> <p>No. 314. Alexander Meyers, 3900 Penn. Ave., Pittsburgh, Pa., rec. by Louis A. Saalbach and J. A. Koch. Chemistry Prize, Pittsburgh College of Pharmacy.</p> <p>No. 315. Garrett Edward Wagner, 4th & Water St., Belle Vernon, Pa., rec. by Louis A. Saalbach and J. A. Koch. Pharmaceutical Products Prize, Pittsburgh College of Pharmacy.</p> <p>No. 316. Donald Martin Mitchell, 120 Laurel Ave., New Castle, Pa., rec. by J. A. Koch and L. K. Darbaker. Pharmacognosy Prize, Pittsburgh College of Pharmacy.</p> <p>No. 317. David Busis, 2254 Centre Ave., Pittsburgh, Pa., rec. by J. A. Koch and F. J. Blumenschein.</p> <p>No. 318. Jesse Turner Clanton, 636 N. Main St., Danville, Va., rec. by W. F. Rudd and C. F. Walker.</p> <p>No. 319. Herman G. Weicker, 136 Liberty St., New York, N. Y., rec. by T. R. L. Loud and Hugo H. Schaefer.</p> <p>No. 320. Morris S. Fine, Doremus Ave., Newark, N. J., rec. by T. R. L. Loud and Hugo H. Schaefer.</p> <p>No. 321. William Lee Crosby Nichols, 111 N. Market St., Chicago, Ill., rec. by Wm. Gray and Wm. B. Day.</p> <p>No. 322. Chas. F. Port, 150 Chambers St., New York, N. Y., rec. by Chas. F. Fischer and Hugo Schaefer.</p> <p>No. 323. Fred. J. Budelman, 348 E. 78th St., New York, N. Y., rec. by Chas. F. Fischer and Hugo Schaefer.</p> <p>No. 324. Horacio G. Arrieta, 14 San Julio, Marianao, Havana, Cuba, rec. by J. G. Diaz and José Alacan.</p> <p>No. 325. Sergio Herrera, 85 Cuba St., Havana, Cuba, rec. by J. G. Diaz and José Alacan.</p> |
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- No. 326. Dr. A. Mesa, 57 Independencia, Agramonte, Matanzas, Cuba, rec. by J. G. Diaz and José Alacan.
- No. 327. Dr. Manuel J. Diaz, Campanario 66, Havana, Cuba, rec. by A. D. Guerra and Frank C. Starr.
- No. 328. William Polk Teel, Hardin Co., Batson, Texas, rec. by R. H. Walker and J. M. Duggan.
- No. 329. Rose Fried, 1761 Madison Ave., New York City, rec. by H. V. Army and Hugo H. Schaefer.
- No. 330. Charles E. Gilland, 31 Brattle St., Cambridge, Mass., rec. by John G. Godding and Theo. J. Bradley.
- No. 331. Fred W. Fuhrmeister, Farmington, Missouri, rec. by Francis Hemm and Frantz F. Berg.
- No. 332. Katherine E. O'Hearn, 11 Copley St., Roxbury, Mass., rec. by John G. Godding and Theo. J. Bradley.
- No. 333. Robert Maxwell Duckett, Whitmire, S. C., rec. by D. T. Riley and E. G. Eberle.
- No. 334. Samuel Connor Hodges, 401 E. Main St., Greenwood, S. C., rec. by D. T. Riley and E. G. Eberle.
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- No. 336. Marion S. Dantzler, Elloree, S. C., rec. by D. T. Riley and E. G. Eberle.
- No. 337. Lester E. Bishop, Laurens, S. C., rec. by D. T. Riley and E. G. Eberle.
- No. 338. Geo. W. Evans, Anderson, S. C., rec. by D. T. Riley and E. G. Eberle.
- No. 339. S. F. Donnalld, Honea Path, S. C., rec. by D. T. Riley and E. G. Eberle.
- No. 340. John Bates, 1320 Woodside Ave., Greenville, S. C., rec. by D. T. Riley and E. G. Eberle.
- No. 341. Carroll M. Miller, 103 W. Main St., Laurens, S. C., rec. by D. T. Riley and E. G. Eberle.
- No. 342. Arthur P. Aimar, 409 King St., Charleston, S. C., rec. by D. T. Riley and E. G. Eberle.
- No. 343. Donald J. Brown, 4 West Broad St., West Hazleton, Pa., rec. by E. G. Eberle and J. W. England.
- No. 344. Frank M. Smith, 117 Ashley Ave., Charleston, S. C., rec. by E. G. Eberle and J. W. England.
- No. 345. M. Gusman, 322 Champlain Ave., Cleveland, Ohio, rec. by W. F. Hagemeister and A. L. Flandermeyer.
- No. 346. A. C. Serra, 2723 Woodland Ave., Cleveland, Ohio, rec. by W. F. Hagemeister and A. L. Flandermeyer.
- No. 347. Herbert M. Highfield, 153 Woodlawn Ave., Janesville, Ohio, rec. by Geo. B. Kauffman and Frank H. Freericks.
- No. 348. Charles Otto Moosbrugger, 650 N. Main St., Dayton, Ohio, rec. by E. H. Thiering and Frank H. Freericks.
- No. 349. Alton F. Conrad, 9300 Kinsman Rd., Cleveland, Ohio, rec. by A. L. Flandermeyer and M. N. Ford.
- No. 350. Zygmunt W. Kobylanski, 2652 Superior Ave., Cleveland, Ohio, rec. by W. F. Hagemeister and A. L. Flandermeyer.
- No. 351. Anthony Bert Ejbl, 7008 Broadway, Cleveland, Ohio, rec. by W. F. Hagemeister and A. L. Flandermeyer.
- No. 352. Albert J. Maurer, 10514 St. Clair Ave., Cleveland, Ohio, rec. by W. F. Hagemeister and A. L. Flandermeyer.
- No. 353. Ellsworth Loesch, 2843 W. 25th St., Cleveland, Ohio, rec. by W. F. Hagemeister and A. L. Flandermeyer.
- No. 354. Herbert E. Benfield, 12520 Detroit Ave., Cleveland, Ohio, rec. by W. F. Hagemeister and A. L. Flandermeyer.
- No. 355. Harold Fildew Millman, 134 Hamilton St., Rahway, N. J., rec. by E. G. Eberle and J. W. England.
- No. 356. Isaac Alonzo Rigby, 156 E. Main St., Spartansburg, S. C., rec. by D. T. Riley and E. G. Eberle.

415 N. 33RD STREET.

J. W. ENGLAND, *Secretary*.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Committee on Publication: J. W. ENGLAND, *Chairman*; G. M. BERINGER, CASWELL A. MAYO, H. B. MASON, E. L. NEWCOMB, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on the Progress of Pharmacy, *ex-officio*.

CORRECTIONS TO BE MADE IN REPORT OF A. PH. A. COMMITTEE ON U. S. PHARMACOPOEIA.

In the December, 1918, issue of the Journal A. Ph. A., Volume VII, Number 12, on page 1106 and page 1107, under article "Impurities in Potassium Carbonate and Bicarbonate" there were the following typographical errors:

On page 1106, 6th paragraph, 4th line, should read: "Page 885" instead of "page 883."

On page 1107, 3rd paragraph, 3rd line, should read: "2 grammes of KHCO_3 " instead of "2.8 grammes of KHCO_3 ."

On page 1107, 5th paragraph, 1st line, should read: "To the dry sample" instead of "or the dry sample."

THE NATIONAL PHARMACEUTICAL MEETINGS IN NEW YORK CITY.

Extended reports of the New York meeting of the American Pharmaceutical Association and related organizations during the last week of August must be deferred to succeeding issues of the JOURNAL.

The nominees for president of the American Pharmaceutical Association, the ballots to be mailed are: C. H. Packard, of Boston, F. W. Nitardy, of Brooklyn, and Leonard A. Seltzer, of Detroit.

Officers elected by the American Conference of Pharmaceutical Faculties are: *President*, W. F. Rudd, of Richmond, Va.; *Vice-President*, J. A. Koch, of Pittsburgh; *Secretary-Treasurer*, T. J. Bradley, of Boston; *Chairman of the Executive Committee*, Henry Kraemer, of Ann Arbor, Mich.; and *Chairman of the Syllabus Committee*, E. F. Cook, of Philadelphia.

The National Association of Boards of Pharmacy elected these officers: *President*, W. R. Jarrett, of Oklahoma City, Okla.; *Vice-Presidents*, Lucius L. Walton, of Williamsport, Pa.; J. C. Piercy, of Tonopah, Nev., and J. L. Dow, of Lancaster, N. H.; *Executive Committee*, Chas. Gietner, Chairman, Missouri. Members: John Culley, Utah; Lawrence C. Lewis, Ala-

bama; *Treasurer*, Chas. H. Skinner, Vermont (re-elected); *Secretary*, H. C. Christensen, Illinois (re-elected).

A War Veterans' Section of the A. Ph. A. was organized with the following officers: *Chairman*, Robert P. Fischelis; *Vice-Chairmen*, W. M. Chase and T. Fairchild; *Secretary*, W. D. Walters. Clyde L. Eddy was made chairman of the committee on publicity.

FACTORS IN ASSOCIATION WORK.

In his address to Congress, President Wilson said, "There can be no energy in endeavor where there is no peace of mind." This is true relative to those who are assigned duties; they should be in position to work unhampered by uncertainties and be given whole-hearted encouragement.

In all associations there are microscopic minds; these see faults that would be invisible if focused in a way which presented them in due proportion; they also recognize actual deficiencies that exist and are obscure to others. Thus while, at times, there may be unwarranted criticism, the possibilities of improvement are not infrequently developed by criticism. Differences in opinion, contrasts in points of view, debate, amendment and reservations seem to be necessary conditions to progress.

Just as unjust criticism discourages and destroys, so also the development of an association is retarded by too much conformity and uniformity. We need dissent to spur us on to our best endeavors; disagreement is often as helpful as agreement. An association that is content with its accomplishments is as near standstill as the individual who is perfectly content with the output of his work, day by day.

Coming back to the first thought, in an association we have the right to congenial comradeship, and we shall labor most effectively when in our dispositions we are happy, possessed of a morale that implies "belief in one another," that we can coöperatively do the best work.

THE ADVERTISING VALUE OF THE JOURNAL SHOULD BE DEMONSTRATED AND ITS CLIENTELE INCREASED.

The members of the American Pharmaceutical Association should realize that the money received from advertisements in the JOURNAL constitutes a dividend for them from their investment in the annual dues. These dividends will increase with additional income from advertising, in other service features. Non-members pay \$4.00 for the Year Book and \$4.00 for subscription to the JOURNAL.

It is important that the advertising value of the JOURNAL be evident and recognized. The publication reaches patrons of manufacturers of and dealers in pharmaceutical products and other lines; the members themselves are in the best position to place an estimate on the valuation of this patronage. What is yours worth?

The income from advertising during these times of high paper and increased labor costs has contributed to the ability of our Association to furnish its publications without increasing the dues. Practically all members can assist in this promotion and your coöperation is solicited in your and the Association's interest. The advertising pages, no less than the reading pages, mark the membership.

THE HIGH COST OF LIVING AND THE PROFESSOR'S SALARY.

The high cost of living is the result of the advanced cost of commodities and higher scale of wages in some activities without corresponding increase in the income or salaries of others. If it were possible to adjust the advances in accordance with demands and requirements higher costs would not be complained of.

It is surprising that under existing salary limitations such a large proportion of teachers have willingly and devotedly continued in their service. There is evident a spirit of altruism that should be recognized by an interest of the alumni to better the conditions referred to. The subject was a topic of the American Conference of Pharmaceutical Faculties, and a very timely one. The undergraduate does not understand the sacrifice made for him by the teacher. The need of endowments for colleges of pharmacy is admitted and adequate provision should be made for paying their professors salaries commensurate with the importance of their positions and duties.

PHARMACEUTICAL RESEARCH.

The address of President Kirkby, of the British Pharmaceutical Conference, was intensely practical and research was an important theme. The necessity of pharmaceutical research by pharmacists was emphasized.

The present situation of pharmacy should cause us to give most careful heed, and this thought was evident in the address of President LaWall and in the programs of the various sections of the American Pharmaceutical Association. Lack of coöperation in research means not only needless duplication of effort, but loss through arrested development.

INCOMPATIBILITY OF MERCURIC BENZOATE AND SODIUM CHLORIDE.

Gaucher and other Continental physicians have prescribed mercuric benzoate dissolved in dilute sodium chloride solution for administration by hypodermic injection for the treatment of syphilis. At a recent meeting of the Académie de Médecine, E. Seger pointed out that such a combination was incompatible, and that mercuric chloride and sodium benzoate resulted from the double decomposition of these salts. M. Delépine fully confirms this. He prepared two solutions, one with mercuric benzoate and sodium chloride, according to Gaucher's formula; the other with equivalent quantities of mercuric chloride, sodium benzoate, and sodium chloride. The ultimate composition of the two products was identical. On shaking out with ether, that solvent contained the same amount of mercuric chloride in each case. This proves that the original formula of Gaucher is defective and that nothing is gained by the use of mercuric benzoate, to immediately decompose it into mercuric chloride. If ammonium benzoate is used instead of sodium chloride in the solution with mercuric benzoate and some ammonia, the result is different. A crystalline double salt is formed, which might possibly be of service therapeutically. Ultimately, however, even this compound is likely to be decomposed into mercuric chloride when it comes into contact with the sodium chloride present in the body.—M. Delépine (*Répertoire Pharm.*, 30, 184, 1919; through *Pharmaceutical Journal and Pharmacist*, July 5, 1919).

NEW TEST FOR ACONITINE.

While working at the Chemical Laboratory of the National Hygiene Bureau of Buenos Aires, L. P. J. Palet (*Journ. Pharm. Chem.*, No. 9, 1919; *Chem. & Drug.*, July 5, 1919) discovered a new test for aconitine. He found that on heating samples of amorphous aconitine with phosphoric acid (sp. gr. 1.7) over a small flame until vapors were evolved, a violet color was produced. Only a grey coloration was obtained with the crystalline varieties of aconitine. He prepared a reagent, consisting of 25 grammes of phosphoric acid and 1 gramme of sodium molybdate, with which crystalline aconitines yielded a very bright violet coloration, whereas these alkaloids had failed to react to phosphoric acid alone. He tested the prepared reagent's value as a means of recognizing aconitine, and found that only aspidospermine (violet) and veratrine (violet-red) yield colorations which could be mistaken for the violet reaction of aconitine. The effects of oxidizing agents on the first, and of mineral acids on the second, however, enable both easily to be distinguished from aconitine.

THE HARRISON MEMORIAL LECTURE.

The following paragraph appeared under "Notes" in *Nature* for July 31: "On Wednesday, July 23, Mr. F. H. Carr, at a meeting of the British Pharmaceutical Conference, delivered a memorial lecture on the late Lieut.-Colonel E. F. Harrison, whose invaluable work on the development of the anti-gas respirator has lately been the subject of so much eulogy. No more fitting place could have been chosen for the lecture than the buildings of the Pharmaceutical Society, in which Harrison received his training in the profession he had selected, and with which he was afterwards so intimately associated, nor could the delivery of a lecture in his memory have been entrusted to a better or more capable man than Mr. Carr. Most of the audience had been personal friends of Harrison's, some of them for upwards of twenty years, and they knew that the testimony that Mr. Carr bore to his sterling qualities, his upright nature, his sincerity, and the fearless manner in which he grappled with difficult problems was only too well deserved. The details which Mr. Carr gave of Harrison's early life, his tenacity of purpose and remarkable self-denial, were interesting in the extreme, and went far to explain a certain austerity in his nature. The part which Harrison played in the final phase of his life, the develop-

ment of the box-respirator, by which so many lives were saved and which contributed so largely to the victorious issue of the war, occupied the latter part of the lecture, which will long remain in the memory of those who were fortunate enough to hear it."

PERMANENT PHARMACEUTICAL EXHIBITION IN PARAGUAY.

The National Pharmaceutical Society of Paraguay has decided to establish in Asuncion a permanent exhibition of pharmaceutical products, chemicals, biological preparations, etc., which will be opened on October 12.

DEATHS.

We have been advised of the decease, on August 23d, of Theodore Henry Patterson. A sketch of the deceased is printed in the February, 1919, issue of the *Journal A. Ph. A.*, page 87. Dr. Patterson was a life member of the American Pharmaceutical Association, a Charter member of the Chicago Veteran Druggists' Association, an ex-president and the first secretary of the latter organization.

News has also reached the office of the death of Charles Harrison Bassett, of Boston, a life member of the Association. A picture appears in the June issue *Journal A. Ph. A.*, page 450.

ALBERT FREDERICK SEEKER.

Albert Frederick Seeker died August 19th, following an operation for appendicitis.

For fourteen years Mr. Seeker had been in the employ of the Bureau of Chemistry, United States Department of Agriculture, and for the last three years was chief of the New York Station. He was considered by all who knew him, or his work, as the ablest chemist in the Service. Every one in the Bureau and those having dealings with Mr. Seeker, as the Bureau's representative, had a profound respect for his knowledge, ability and judgment. He was admired by his friends and associates.

By his death the Bureau has lost one of its ablest officers and the pharmaceutical profession a silent but very active ally.

It was Mr. Seeker's duty to see that the Food and Drugs Act was enforced in the New York district and he put his life and soul into the work. In making decisions he combined his broad knowledge of chemistry, and its allied subjects, with judgment that is the gift of only a few. As a result of his work the people were protected and the pharmaceutical

profession received much needed assistance in maintaining its high standards. Controlling the quality of foods and drugs entering the great port of New York is a large problem, but we may say that Mr. Seeker did his duty well.

C. J. Z.

A DRUGGIST BACHELORS' CLUB.

Several months ago some sixty New Orleans pharmacists banded themselves into an

organization. The only requirements for membership were a liking for a good time and an unmarried status. They called the organization the Druggist Bachelors' Club.

The officers must pledge their troth and when successful in matrimonial contract yield their office and membership. Chairman R. F. Grace, of the Louisiana Committee on Membership, A. Ph. A., is largely responsible for the organization of which he is an officer.

SOCIETIES AND COLLEGES

MEMBERSHIPS IN THE AMERICAN PHARMACEUTICAL ASSOCIATION AS COLLEGE PRIZES.

In addition to the prize memberships given by Schools of Pharmacy in the American Pharmaceutical Association, mention of which was made in the July issue of the JOURNAL page 589, the Highland Park College of Pharmacy awarded a membership to Clifford A. Neville for best work in Organic Chemistry, and the University of Montana two memberships, being the Alex. F. Peterson Prize in Manufacturing Pharmacy to Olive C. Gnose, of Anaconda, and the Charles E. Mollett Prize in Pharmacognosy to Ida M. Sylvester, also of Anaconda.

NATIONAL COMMITTEE ON THE PHARMACEUTICAL SYLLABUS.*

BULLETIN XXIII.

The Committee will meet at the headquarters hotel during the week of the 1919 Convention of the American Pharmaceutical Association, August 25-30. The exact time and place will be announced at the Convention by the Chairman and the Secretary.

As the third edition of the *Syllabus* should go into effect during 1920, this meeting will be of great importance, as it will probably be the last opportunity we shall have to meet before the book appears, and all other business will have to be done by correspondence. For this reason, members are urged to make a special effort to be present. A great deal was accomplished at the meeting last year in Chicago, and much work has been done by the sub-committees and the officers, so that the body of the revised book is nearly ready for the printer. If we can accomplish as much at the coming meeting as at the last one, the book should appear on time, in spite of

the difficulty of accomplishing a special piece of work like this during the disturbed conditions due to the great war.

Motion No. 23, by C. M. Snow, that the subject of Commercial Pharmacy be omitted from the next edition of the *Syllabus*, is *lost*, the vote being: Yes, 4; No, 14; not voting, 3.

Motion 24, by C. M. Snow, that if the subject of Commercial Pharmacy be included in the next edition of the *Syllabus*, it shall be printed in small type, to indicate that it is not compulsory that it be taught in the schools or examined on by the Boards of Pharmacy, is *carried*, the vote standing: Yes, 10; No, 8; not voting, 3.

Signed,

THEODORE J. BRADLEY,
Chairman.

BOSTON, MASS., Aug. 15, 1919.

FIFTH NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES.

From data and information on hand the forthcoming Fifth National Exposition of Chemical Industries at the Coliseum and First Regiment Armory, Chicago, during the week of September 22nd, promises with its attendant society meetings to be an assemblage worthy of the past accomplishments of this great Exposition. The managers of the Exposition report that there are as many exhibitors as at the last very complete Exposition, that there are a great many who have never before been exhibitors and for which exhibits visitors may look forward with interest. The old established exhibitors have nearly all something new in the way of developed products since the entry of our country into the war for which the chemical profession and industries may look with renewed interest.

* This Bulletin is published for record, after the convention has been held.

NATIONAL ASSOCIATION OF RETAIL DRUGGISTS.

At this writing the prospects are that the Rochester convention of the National Association will be largely attended. An interesting program has been prepared which includes addresses by Commissioner of Internal Revenue, Daniel C. Roper, and Wayne B. Wheeler, general counsel of the Anti-Saloon League. The latter also spoke before the American Pharmaceutical Association in New York City and his remarks indicated a reasonable, rational attitude.

The National Association of Retail Druggists is rendering valuable service to druggists particularly pronounced in its legislative work. The hope is expressed that the meeting will be successful in every respect.

AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS.

Prominent educators and chemists of the United States and Canada have organized the American Society of Biological Chemists.

The petitioners for incorporation and temporary directors are: Andrew Hunter, of the University of Toronto; Lafayette B. Mendel, of Yale University; E. V. McCollum, of Johns Hopkins University; Harold C. Bradley, of the University of Wisconsin; Victor C. Myers, of No. 303 East Twentieth Street, New York City; Donald D. Van Slyke, of Avenue A and Sixty-sixth Street, New York City; and Stanley R. Benedict, of 477 First Avenue, New York City.

STATE PHARMACEUTICAL ASSOCIATION OFFICERS FOR 1919-1920.

IDAHO.

President, Allen Fisher, Twin Falls.
Vice-President, Frank Murray, Twin Falls.
Secretary, Thomas Starr, Boise.
Treasurer, C. M. Isenburg, Ashton.

The Drug and Chemical Alliance was endorsed. Legislative matters were discussed. Affiliation with the American Pharmaceutical Association was favored. Guyer Hot Springs was selected for the 1920 meeting.

MAINE.

President, Edgar F. Carswell, Gorham.
First Vice-President, S. L. White, Houlton.
Second Vice-President, Harry C. Riddle, Rangeley.
Third Vice-President, George W. Rankin, Portland.
Treasurer, Albert W. Meserve, Kennebunk.
Secretary, Dr. M. L. Porter, Danforth.

The Maine Convention was held at the Mount Kineo House. An address on biological products was delivered by Dr. George C. Diekman, of New York. Legislative matters were discussed.

MONTANA.

President, J. W. Seiden, Lewistown.
First Vice-President, C. R. Fuller, Anaconda.
Second Vice-President, Henry Hubert, Jr., Butte.
Third Vice-President, Charles J. Chapple, Billings.

Treasurer, J. N. Talbot, Manhattan.
Secretary, J. A. Riedel, Boulder.

The outstanding feature of the Montana Association was its aspect as an informal economic conference. Affiliation with the American Pharmaceutical Association was favored. Helena was chosen for the 1920 convention.

OHIO.

President, Chas. E. Roseman, Cleveland.
First Vice-President, Frank Schwilk, Dayton.
Second Vice-President, H. Dale Kuhn, Shelby.

Treasurer, L. W. Funk, Columbus.
Secretary, Theo. D. Wetterstroem, Cincinnati.
Member of the Council, J. W. Dysle, Marietta.

The Legislative Committee presented a very comprehensive report. Plans were made for the employment of a legislative agent. A number of interesting addresses were made, among the speakers being F. H. Freericks, E. C. Brokmyer, Dr. Frank Cain and Charles T. Souther. President J. W. Dysle reviewed the important legislative measures and the effect on the drug trade.

RHODE ISLAND.

President, M. H. Corrigan.
Vice-President, E. H. Mason.
Treasurer, F. R. Keighley.
Secretary, O. H. Barrett.
Executive Committee, J. P. McDonald, W. J. Batchelder and B. A. Smith, Jr.

The meeting was held at The Hummocks, Hamilton, and was attended by about 150 members.

SOUTH CAROLINA.

President, D. Tilden Riley, Florence.
First Vice-President, S. C. Hodges, Greenwood.
Second Vice-President, T. P. Young, Greenwood.
Secretary and Treasurer, Frank M. Smith, Charleston.

Ninety percent. of the members of the South Carolina Pharmaceutical Association answered

to roll call. As a result of the suggestions by President D. T. Riley the State is to be organized into districts and these will send delegates to the State Convention. Affiliation with the American Pharmaceutical Association was favored; about twenty members were added from South Carolina to the membership of the A. Ph. A. The annual dues were increased to three dollars.

Charleston was selected for the next place of meeting.

TENNESSEE.

President, H. M. Oliver, Union City.

First Vice-President, R. L. Thompson, Nashville.

Second Vice-President, John Sonner, Knoxville.

Third Vice-President, W. J. Cox, Memphis.

Treasurer, T. S. Scruggs, Jackson.

Secretary, D. J. Kuhn, Nashville.

A resolution was passed advocating the repeal of the section of the new pharmacy law whereby under certain conditions registrations are permitted without examination. Many interesting papers were read.

Knoxville was chosen as the next place of meeting.

UTAH.

President, F. J. Holland, Salt Lake.

First Vice-President, C. E. Driver, Ogden.

Second Vice-President, D. C. Watson, St. George.

Secretary, Eugene L. Wade, Salt Lake.

Treasurer, George Huscher, Murray.

Members of the Executive Committee, F. J. Folland, Hugo Druehl, Salt Lake; George Huscher, Murray.

Legislative matters were given much consideration, and also business management. Endorsement was given to the National Drug and Chemical Alliance. United effort of the drug trade is proposed by this organization against fanatical attacks and adverse legislation.

Salt Lake was selected for the 1920 convention.

VIRGINIA.

President D. E. Seagle, Pulaski.

First Vice-President, J. B. Clower, Woodstock.

Second Vice-President, W. T. Reeves, South Boston.

Secretary, E. L. Brandis, Richmond.

Treasurer, Miss Maud Lambert, Roanoke.

Entertainment, Chas. M. Gray, Norfolk.

Local Secretary, R. N. Moir, Roanoke.

Executive Committee, Harry Orchard, Lynchburg.

Legislative Committee, J. E. Jackson, Tazewell.

President Charles H. LaWall, of the American Pharmaceutical Association, spoke on the need of higher education, and urged affiliation of the state associations with the A. Ph. A. Eugene Brokmyer analyzed Congressional legislation. President Girard Thompson stressed the importance of higher pharmaceutical education and favored the federation of drug interests.

The Association will again meet next year at National Bridge.

THE COMMENCEMENT OF ANOTHER YEAR FOR COLLEGES AND SCHOOLS OF PHARMACY.

Catalogues from many Schools and Colleges of Pharmacy have been received. These show progress in pharmacy; higher entrance requirements are demanded and the courses have been extended. It is noticeable that more hours are given to laboratory training and a number of institutions have added commercial courses, while others have prepared for a more thorough training in the business management of drug stores.

From information, the classes in most schools promise to be much larger than during the year preceding the war, and all of them expect to have more students than last year.

Some of the schools have advanced their tuition fees, responsive to higher costs in all lines, but in no instance have the fees been increased sufficiently, if the lower purchasing value of the dollar is considered.

The Alumni of schools should see that their Alma Maters have endowments which will provide an income that will make them less dependent on tuition fees. Endowments should also be provided for the teaching staffs; even the clergymen, who are deemed as deficient in business qualifications as professors, have displayed a degree of energy that has resulted in the establishment of very large endowments.

The latter reference calls to mind an advertisement in a daily paper for window cleaners, wages \$7.50 per day, the equal of \$2300 per year. While professors receive more than that, perhaps, some associate professors and assistant professors would regard \$2300 a year affluence. The question of professors' salaries was a timely topic before the American Conference of Pharmaceutical Faculties.

THE PHARMACIST AND THE LAW.

LEGAL ADVICE WITH A GUARANTEE.

In the following, an editorial of the *Scientific American*, August 16, 1919, is drawn on for information and comment. Almost everything one does to-day may appropriately be examined in the light of its possible consequence to others; and surprising it is how often agreement as to the extent of these is difficult to reach. The number of decisions which our courts reach by a divided vote is earnest of this; unanimity is the exception among professional judges. A tale is accredited to Mark Twain relating to a business man who conceived a plan for making a fortune but was in doubt as to how the courts would regard the scheme. The question was laid before a District Attorney in every detail and asked whether the plan would stand legal attack. The proponent was advised to put the plan into effect and then he (the District Attorney) would prosecute him under the assumption that the plan was illegal; the result of the trial would decide. Even such decision, as has been proven, will not always determine legality, for judges differ. The thing is reduced to a guessing contest, with penalties for a bad guess.

The American Bar Association has a suggestion which would correct this. They would have Congress empower some administrative body to determine in advance, on proper application, whether a business agreement or arrangement is due and reasonable, and therefore lawful. The decision thus reached in advance might be permanent and binding; or at least, if it were subject to review and reversal, there would be no penalty attached to having acted under it in the meantime.

Aside from the relief which this would extend to business men in enabling them to initiate large undertakings with greater security against legal inpassé, it would in all certainty relieve the cluttered courts of a goodly portion of their calendar arrears. There would of course be suits brought to reverse the commission's findings; but they would be small in numbers in comparison with present Sherman Law prosecutions, injunction proceedings and damage claims.

VENEREAL DISEASE REMEDIES SEIZED BY FEDERAL OFFICERS AS MISBRANDED.

By order of the Federal courts more than 450 seizures have been made recently in differ-

ent parts of the United States of so-called cures for venereal diseases. A campaign to end the false labeling of such preparations is being conducted by the officials charged with enforcing the Federal food and drugs act. In all the seizure actions the Government alleged the preparations to be falsely and fraudulently labeled, because the ingredients could not produce the results claimed on the labels.

Action under the Federal food and drugs act in reference to venereal disease preparations coming under its jurisdiction and sold under proprietary names is limited by the terms of the act largely to the prevention of false or fraudulent labeling. The act does not prevent the sale of any mixture as medicine, however worthless it may be, if there is directly or indirectly no false or fraudulent labeling. The officials in charge of the enforcement of the act are of the opinion, however, that by causing the elimination of false labeling, upon which the sale of such preparations largely depends, the evils and dangers resulting from their indiscriminate use can be greatly checked and substantial aid rendered to public health officials.

SALE OF FLAVORING EXTRACTS AND TOILET PREPARATIONS RE- STRICTED TO LEGITIMATE USE.

Commissioner Roper has declared that greater precaution must be taken to prevent the marketing, under the guise of legitimate and necessary medicinal toilet and flavoring extracts, of preparations which do not conform to the standards fixed by the regulations and which are easily and generally diverted to beverage uses. Hereafter, he states, all manufacturers of preparations in which non-beverage alcohol is authorized to be used will be uniformly held for tax and penal liability where their products have been found to be marketed and manufactured otherwise than according to the regulations.

CHANGES IN THE PROHIBITION EN- FORCEMENT BILL.

The National Association of Retail Druggists was successful in getting incorporated by the Senate Judiciary Committee into the prohibition enforcement bill as reported to the Senate an amendment under which retail druggists will be able to obtain permits for the purchase of alcohol for legitimate purposes that are good if issued after August 31 in any

year until December 31 of the year following instead of being good only for 90 days, as previously provided.

Amendments to the bill permit manufacturers and wholesale druggists to advertise alcohol in "business publications or trade journals circulating generally among manufacturers of lawful alcoholic perfumes, toilet preparations, flavoring extracts, medicinal preparations and like articles;" the word "non-potable" has been stricken from the section exempting from the provisions of the act denatured alcohol, medicinal preparations, patented and proprietary medicines and toilet, medicinal and antiseptic preparations and solutions. The phrase "unfit for beverage purposes" has been retained. The definition of flavoring extracts and syrups exempt from the bill is that they must be "unfit for use as a beverage." It is provided that no more alcohol shall be used in the manufacture of extracts, syrups, etc., which may be used for beverage purposes than is necessary for the extraction or solution of the elements contained therein, and the preservation of the article.

COURT DECISION ON HARRISON NARCOTIC LAW ISSUED BY TREASURY DEPARTMENT AS T. D. 2887.

The decision as issued is as follows:

1. Narcotics—Constitutionality of Harrison Act—Section 2 of the act of December 17, 1914, known as the Harrison Anti-Narcotic Drug Act, being a revenue measure, is not unconstitutional as an invasion of the police power reserved to the States.

2. Same—Expert testimony by physicians as to manner of treating drug addicts—It is proper to permit physicians to testify as experts as to the well recognized methods among the medical fraternity of treating persons addicted to the use of narcotics for the purpose of curing them of the habit, with a view to showing that a physician did not dispense narcotics in a legitimate manner. Evidence from physicians to the effect that unless confined an addict is never cured of the habit was properly admitted.

3. Same—Object of Harrison Act—The object of the narcotic act, although enacted under the taxing power of Congress, is to prevent the growing use of narcotics, deemed a menace to the nation by Congress, the act having a moral end as well as revenue in view.

4. Same—Proviso of Act—Sales of Physicians. The fact that a physician when "in the course of his professional practice only" is excepted from the requirement that narcotics shall be dispensed upon an official order form does not provide the authority for a physician to sell narcotics, if he does not do so in good faith, for the purpose of securing a cure of one suffering from an illness, or to cure him of the morphine habit. The exception referred to must be construed strictly, in accordance with the general rule, and those who set up any such exception must establish it as being within the words, as well as within the reason, thereof. A contention that the act does not make it an offense for a registered physician to sell narcotics under any circumstances is without basis.

5. Same—Personal attention to addicts by physicians—A physician who furnished narcotics to an addict in decreasing quantities and claims to be attempting a cure of the addiction is acting contrary to the narcotic act when it is shown that the physician has not personally attended the addict, or has given the addict some personal attention, but not sufficient to show, in connection with other facts and circumstances, that he acted in good faith.

6. Same—Indictment for violating Harrison Act—Evidence as to sales to third persons. The illegal dispensing of narcotics may be made a separate count in the indictment as to each addict involved, and evidence may be admitted tending to prove sales of the drug by the physician to persons other than those mentioned in the indictment, such evidence to be considered by the jury in determining the intent, or system, or knowledge on the part of the physician in selling to the persons set out in the indictment.

PAREGORIC SALES RESTRICTED.

Sales of paregoric and other similar exempted articles for any but legitimate medicinal purposes are not permissible under the Harrison Law, according to an interpretation made by a United States Court in the Oliver case. In that decision the court held that a sale of paregoric to a narcotic addict for the satisfaction of a craving, and not for legitimate medicinal use, is a violation of the Harrison Law. In view of the susceptibility of paregoric to illegitimate usage, it is recommended that all pharmacists restrict their sales of this and similar

preparations as much as possible, assuring themselves at all times that supplies are not diverted to illegitimate purposes, which might be done by fixing a low maximum quantity to be supplied to any one customer at one time.

TREASURY DECISIONS APPLYING TO
MEDICINAL ARTICLES AS RELATED
TO THE EXCISE TAX REQUIRE-
MENTS OF REVENUE ACT
OF 1918.


Articles Given Away as Free Samples.—Article 5 of regulations 51 is supplemented by adding thereto the following:

"Articles given away as free samples are not subject to tax if a notation is made on the package that the article is not to be sold for consumption or use, but is a free sample. If an article taxable under Section 907 is given away free with the purchase of another article taxable under this section the tax shall be computed upon the total amount paid and the proper amount of stamps affixed to the package."

"When a dealer dispenses bromo seltzer, seidlitz powders, &c., to customers he will be considered the consumer and must affix the proper stamps to the bottle."

Sales to the United States or a State.—Article 8 of regulations 51 is hereby amended to read as follows:

"Articles sold to the United States or to a State or a political sub-division thereof for use in carrying on its governmental operations are not taxable."

 Cough Drops.—Article 16 of regulations 51 is supplemented by adding thereto the following:

"Where cough drops are held out or recommended as remedies or specifics for a cold or affection of the throat and are sold by or for a dealer or his estate for consumption or use, such sale is subject to a tax of 1 cent for each 25 cents or fraction thereof of the amount paid for the cough drops. If two or more packages of cough drops, troches or lozenges recommended as a remedy for a cold or for an affection of the throat are sold for 25 cents or less, the tax collectible is 1 cent, provided

the container or wrapper in which the packages are sold bears the requisite tax stamp or stamps."

Serums, Vaccines, Etc.—Article 17, subdivision (d), of regulations 51 is supplemented by adding thereto the following:

"Chemical preparations such as serums, vaccines, antitoxins, and salvarsan when prepared by open formula advertised to the medical profession only and the labels and directions indicate use only by the medical profession, are exempt from tax."

COÖPERATION CONTEMPLATED IN A
MEASURE BEFORE CONGRESS IN
THE CARE OF DRUG ADDICTS.

Senator France, of Maryland, has introduced a bill in Congress whereby States co-operating with the Federal Government may utilize hospitals of the Army and Navy for the care and treatment of drug addicts. Part of the enacting clause reads:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that the Secretary of the Treasury is authorized to coöperate with the States through their respective State boards or departments of health, narcotic commissions or other State or municipal officials in charge of the control of the production or distribution of narcotics and habit-forming drugs, or in charge of the care and treatment of drug addicts, in contributing to the care and treatment of drug addicts resident within the confines of the respective States, but no money appropriated under this act and apportioned to any State shall be expended therein until its Legislature shall have assented to the provisions of this act, except that until the final adjournment of the first regular session of the Legislature held after the passage of this act the assent of the Governor of the State shall be sufficient and until an equal sum has been appropriated by the Legislature or provided by municipalities therein or by private contributions from within the State for the prevention or control of drug addiction and the care and treatment of drug addicts.

PUBLICATIONS RECEIVED.

Twentieth Report of the Michigan Academy of Science; Notes on the Michigan Flora; The Yellow Flowered Cyripediums; The Trillium Grandiflorum Group. Oliver Atkins Farwell.

Tsuga Americana (Mill.) Farwell, A Final word; Bromelica (Thurber): a New Genus of Grasses; Necessary Changes in Botanical Nomenclature. Reprints from Rhodora,

Journal of the New England Botanical Club, Vol. 21, 1919. Oliver Atkins Farwell.

Increased Tolerance and Withdrawal Phenomena in Chronic Morphinism. A. G. DuMez, Ph.D.

Botanical Nomenclature of the Pharmacopoeia. Reprint from The Druggists' Circular, Vols. LXII and LXIII. Oliver Atkins Farwell.

The Spatula Soda Water Guide and Book of Formulas for Soda Water Dispensers, by E. F. White. 5th Edition. Spatula Publishing Co., Boston, Mass.

The Supplement to the United States Naval Medical Bulletin, July, 1919. Published for the information of The Hospital Corps of the Navy Issued by the Bureau of Medicine and Surgery, Navy Department.

Proceedings of the Thirty-sixth meeting of the Maryland Pharmaceutical Association, held at Braddock Heights, Maryland, June 25 to 28, 1918.

Proceedings of the Forty-first Annual Meeting of the Pennsylvania Pharmaceutical Association, held at Wilkes-Barre, Penna., June 25 to 27, 1918.

UNITED STATES PUBLIC HEALTH SERVICE.

LIST OF CHANGES OF DUTIES AND STATIONS OF COMMISSIONED AND OTHER OFFICERS OF THE UNITED STATES PUBLIC HEALTH SERVICE, FOR THE PERIOD ENDED AUGUST 13, 1919.

Pharmacist G. W. Iltis. Relieved at Alexandria, La. Proceed to Galveston, Tex., for duty in the outpatient office. July 12, 1919.

Asst. Chemist E. J. Casselman. Relieved at Springfield, N. J. Return to Station at Washington, D. C. July 19, 1919.

Biologist Bruce Mayne. Report to Surgeon L. D. Fricks, Memphis, Tenn., for duty in investigations of malarial. July 17, 1919.

Pharmacist L. C. Spangler. Relieved at Boston, Mass. Proceed to Washington, D. C., for duty in the Marine Hospital Division. July 23, 1919.

Pharmacist Carl Stier. Relieved at Norfolk, Va. Return to Station at Baltimore, Md.

Pharmacist H. B. Megaw. Relieved at the Purveying Depot, Washington, D. C. Proceed to Norfolk, Va., for duty at the Custom House. July 23, 1919.

Pharmacist William G. Beucler. Proceed to

New York, N. Y., St. Louis, Mo., Chicago, Ill., Cleveland, Ohio, Pittsburgh and Philadelphia, Pa., for conference in the matter of closing up the offices of Industrial Hygiene in those cities. July 19, 1919.

Pharmacist David Gleason. Relieved at the Quarantine Station, Galveston, Texas. Proceed to the Marine Hospital, Boston, Mass., for duty. July 22, 1919.

Pharmacist John H. Hayes. Relieved from duty at the Custom House, Norfolk, Va. Proceed to Public Health Service Hospital at Sewell's Point for duty. July 22, 1919.

Pharmacologist A. G. DuMez. Proceed to New York to attend the annual convention of the American Pharmaceutical Association, August 25-30. July 25, 1919.

Pathologist Arthur Lederer. Relieved at the Hygienic Laboratory Washington, D. C. Proceed to the Marine Hospital, Chicago, Ill., for duty. July 29, 1919.

CASUALTY.

Pharmacist T. V. O'Gorman* died at the Marine Hospital, Port Townsend, Washington, July 16, 1919.

* Pharmacist T. V. O'Gorman joined the American Pharmaceutical Association in 1897.

JOURNAL ANNOUNCEMENTS.

Subscriptions: Annual subscriptions in advance, including postage: United States and Mexico, \$4.00; Canada, \$4.35; foreign countries, \$4.50. Single copies 35 cents. Remittance should be made payable to Treasurer H. M. Whelpley but mailed to JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION 211 Church St., Easton, Pa., or 253 Bourse Building, Philadelphia, Pa. Under the rules of the Post Office the JOURNAL can be regularly mailed only to bona-fide paid subscribers.

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Contributions The JOURNAL accepts no responsibility for the opinion of its contributors. Contributions should be typewritten and sent to the Editor; use only one side of the sheet for writing, and double-space the lines. Articles are accepted for publication on condition that they are contributed solely to this JOURNAL; and "all papers presented to the Association and its Branches shall become the property of the Association, with the understanding that they are not to be published in any other publications than those of the Association, except by consent of the Committee on Publication." (By-Laws, Chapter X, Article 11.)

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them, provided the order is received with the returned proof. The prices are also given on this page. Otherwise type is distributed as soon as the JOURNAL is printed.

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Further information will gladly be furnished by any of the officers of the Association and members.

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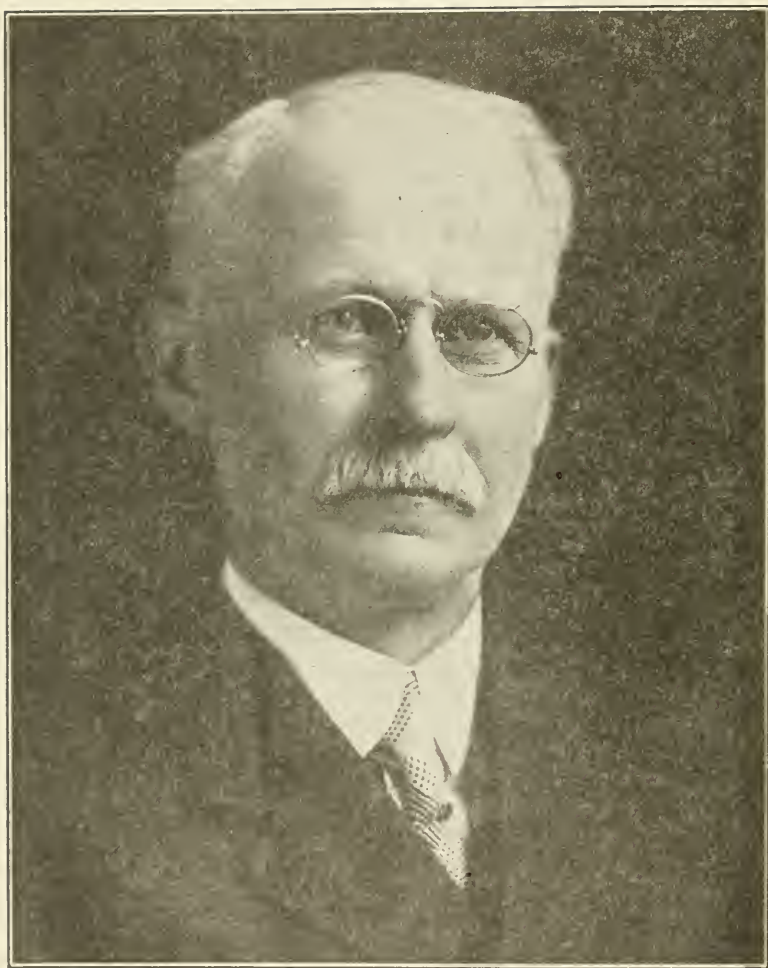
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ALVISO BURDETTE STEVENS, Ph.D.

• ESCONDIDO, CALIF.

(Formerly of Ann Arbor, Mich.)

Honorary President of the American Pharmaceutical Association
1919--1920



A. B. STEVENS

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. VIII

OCTOBER, 1919

NO. 10

ALVISO BURDETTE STEVENS.

The Honorary President of the American Pharmaceutical Association for 1919 to 1920 is A. B. Stevens, who, until the conclusion of the last school year, was professor and dean of the Pharmacy Department of the University of Michigan.

The subject of the sketch was born in Tyrone, Livingston County, Michigan, June 15, 1853. His mother died in 1863 and his father gave his life for the preservation of the Union in the battle of Cold Harbor, in 1864; thus, at the age of eleven years, Alviso Stevens was left an orphan. He was educated in the public schools of Byron and Saginaw of his native state and, in 1875, graduated from the Pharmacy Department of the University of Michigan.

From an errand boy in a drug store he worked up to the position of manager. In 1877 he became proprietor of a Detroit pharmacy and specialized in analytical work, and also taught pharmacy in the Detroit Medical College. In 1886 he retired from active business to become instructor in pharmacy of his Alma Mater; he was elected lecturer in 1890 and assistant professor in 1892. After two years of special work in Europe he received the degree of Ph.D. from the University of Bern, Switzerland. He was thereafter advanced to full professorship and succeeded the late Dr. J. O. Schlotterbeck as dean of the Pharmacy Department, University of Michigan, and is now, after retirement, at home in Escondido, California.

Professor Stevens was the first president of the Detroit Pharmaceutical Society, 1883-1884, and president of the Michigan Pharmaceutical Association in 1894. He was chairman of the Pharmaceutical Division of the American Chemical Society, 1908-1910, and in charge of *Pharmaceutical Abstracts* for the A. C. S. from 1905 to 1911.

The Honorary President joined the American Pharmaceutical Association in 1885, was first vice-president, 1890-1891; the first secretary of the Section on Education and Legislation, and the chairman, 1891-1892. He served on all the committees for revising the National Formulary and on the last two committees on Revision of the United States Pharmacopoeia.

Professor Stevens was vice-president of the American Conference of Pharmaceutical Faculties, 1908-1909. He has been a liberal contributor to pharmaceutical publications. On account of the number of his contributions to the American Pharmaceutical Association reference thereto is made to the indices of its Proceedings and Journal. The paper by him, in 1907, with collaboration of L. E.

Warren, on "Poison Sumac," was awarded the Ebert Prize. He is author of an "Arithmetic of Pharmacy" and a volume on "Pharmacy and Dispensing."

The promotion of Dr. Stevens by his election as dean of the Department of Pharmacy of the University of Michigan was amply earned by efficient service on the faculty for a quarter of a century, and the election as Honorary President of the American Pharmaceutical Association was a well deserved recognition of valuable services rendered to American pharmacy in general and the Association in particular. In 1876 Mr. Stevens was married to Miss Amoretta L. Search, a former university classmate of Janesville, Wis. She passed away February 6, 1918.

E. G. E.

AN APPRECIATION.

The successor to⁷ Dean A. B. Stevens, Dr. Henry Kraemer, has sent in the following appreciation:

"If I were to summarize the characteristics brought out in the life of Dr. Stevens I should say that they are distinguished by three qualities: 1, purity of soul; 2, helpfulness of disposition; 3, a scientific mind. His every action and word exhibit these qualities. He has not a single habit which departs from rectitude and uprightness, and he is an example to every one who comes in contact with him.

"His desire for service is seen by the esteem in which he is held by students, alumni and neighbors. He never loses an opportunity to do a kindness and is always ready to serve any worthy object.

"Dr. Stevens' scientific work is among the best produced by American pharmacists. He has the ability to resolve almost any situation in its true light. His work on poison sumac will stand as a basis for all future work, and his studies on the distribution of the cyanogenetic glucoside in wild cherry are not only of interest in pharmacy but are a contribution to physiological botany. It is largely due to Dr. Stevens that the chemical assay processes in the U. S. Pharmacopoeia are generally acceptable and satisfactory."

EDITORIAL

E. G. EBERLE, Editor

253 Bourse Bldg., PHILADELPHIA

THE WORLD WAR VETERANS' SECTION.

TEN thousand pharmacists were called from the paths of peace to the work of war. These men served in every branch and in all ranks. They are now going back to pharmacy richer by wonderful and soul-stirring experiences. No matter where they served or in what capacity, whether on the battle line, in the supply service, in Siberia, at Archangel, or in the United States, whether as pharmacists, as dispensers, as first-aid men, as medical supply officers, or as combatants, whether as privates or as officers, all these men will have in common the memory of the fact that when the liberty of the world was at stake they offered their lives to make that liberty secure.

How natural, therefore, it will be for these men to seek association with each other where the mutual memories may be shared of dangers experienced and of risks run, where they may tell each other of the long, dull monotony of routine work and of the fierce joy of battle, and where they may be sure of finding men whose interests are the same though their experiences may have been most diverse. An opportunity for bringing about just such associations is offered freely and without cost in the World War Veterans' Section of the American Pharmaceutical Association which was organized at the New York meeting.

Every pharmacist who served his country no matter in what capacity is invited to become a member of the World War Veterans' Section of the American Pharmaceutical Association without money and without price. By vote of the general association every World War Veteran who was a pharmacist or a student of pharmacy is invited to become a member of the Association without the payment of any initiation fee, and without any charge for the first year's dues. Surely every pharmacist who served in the war will welcome this opportunity to get into touch with fellow pharmacists who have also served.

Every reader of the JOURNAL should bring this matter to the attention of all who have served either in the Army or the Navy and urge that they forward applications to the secretary of the Section, Captain W. D. Walters, care of the Wm. S. Merrell Company, Cincinnati. No special form is required and no financial obligation is imposed. Merely send a post-card stating the facts as regards service in pharmacy and in the war. No matter whether the service was in the medical department or outside, no matter whether it was as a teamster, a runner, a machine gunner, a hospital dispenser, a hospital orderly, or a medical supply officer, the mere fact that the applicant is a pharmacist or a student of pharmacy, that he served his country and that he has not been dishonorably discharged puts him into the class of men who have received this cordial invitation from the oldest pharmaceutical association in the world, to become an honored member without cost.

The World War Veterans' Section is the direct outgrowth of the work done by the Advisory Committee for Soldier and Sailor Pharmacists under the chairmanship of Frank H. Freericks, Cincinnati, Ohio. Over a thousand pharmacists have already been aided to return to civil life under favorable conditions by this Committee and the committee is still vigorously at work, placing in civil life men who are leaving the Service.

This invitation will bring into the Association a splendid group of young, vigorous and enterprising men who will undoubtedly exert a wholesome influence both upon the organization and upon pharmacy, and who, in turn, will undoubtedly be favorably influenced in their relations to pharmacy and their obligations to their calling through membership in the World War Veterans' Section, a section which carries in it the seed of wonderful possibilities for a most helpful and useful future.

CASWELL A. MAYO.

PHYSICIANS' AND PHARMACISTS' RESPONSIBILITY FOR THE SO-CALLED WORTHLESS AND SUPERFLUOUS MEDICINAL PREPARATIONS.

BEFORE a class of medical students the lecturer was commenting upon the subject of an elixir of the three bromides. He pointed out that since the bromine ion was the hypnotic ingredient of the salts entering the preparation it would seem that this prescription was irrational, as has been stated by the best medical authorities—that a solution of any one of the bromide salts would be as efficacious as the three salts combined; that the combination of bromine with the three different bases did not seem to have any special merit. One of the medical students of the class took occasion to inform the professor that in his part of the country an elixir of five bromides was most popular among physicians of his acquaintance.

The question naturally arises—where lies the responsibility for these unworthy preparations or drugs? Who should stand sponsor for them and why?

There is a small uninformed number of the medical profession who believe the pharmacists are responsible for the so-called irrational preparations, and some of the members of the pharmaceutical profession believe that they were brought into existence by physicians. Neither view is tenable. The fact is, most physicians and pharmacists are alike responsible for the popularity of these. The pharmacists, as a rule, will not pronounce upon the therapeutic value of any finished product. Pharmaceutical manufacturers frequently receive private formulas from physicians such as would not pass censorship but they do not pass upon their clinical value—whether certain ingredients in these compounds are considered by experts as superfluous, irrational or useless. We need some able and constructive criticisms of existing pharmaceutical preparations and it would seem as if, in this particular service, physicians and pharmacists might well co-

operate. On the higher lines and strata of the professions of Pharmacy and Medicine there is no antagonism, but the moment we descend into the commercial there is always friction and antagonism. Pharmaceutical science is worthy of the medical man's respect. Pharmacy is as much of an art and science as legitimate medicine. It is this fact the physician should recognize. It is true that it is not nearly as evident, for in the very nature of the retail drug business there is bound to enter a preponderance of commercialism that even the cheap doctor does not exhibit. If legitimate Pharmacy were absolved from this sin, which weighs upon it so highly, medical men would soon recognize the nobility and idealism of the profession. Let the best physicians come into contact with the best pharmacists and note results.

It would seem that now since we are approaching the revision of our national standards such coöperation should be emphasized. One of the most difficult points that the committees of revision of the United States Pharmacopoeia and the National Formulary have to face is that which relates to the drugs and preparations that are to be included for the use of the medical profession in the treatment of disease. Different groups of physicians have various conceptions as to the value of these. One group is convinced that a given class or set of drugs gives excellent results in their practice. Another feels equally positive that the drug or preparation is of little use. It should be borne in mind that the function of the Pharmacopoeia is not to determine whether or not one physician or set of physicians shall be relied upon or made sponsors for these different sets of preparations. It should also be borne in mind that the primary purpose of the Pharmacopoeia is to provide standards which will insure uniform and reliable drugs and preparations. The selection of these should be placed in the hands of medical men and their value determined in their practice.

In order that the number of so-called useless and unwarranted drugs and preparations shall be eliminated or materially reduced, it is fair to assume that the members of the medical profession should have, probably, a ruling voice but, in our opinion, the object sought will be promoted very much more rapidly if a hearty coöperation is effected with the representative pharmacists. The pharmacist supplies what is demanded and, naturally, if he uses his business and pharmaceutical skill, he will create, improve and multiply preparations to meet his patrons' wants. He will promote his branch of Medicine to the extent of his business and scientific ability. If he has the guidance and cordial coöperation of the medical profession he will do this with much more intelligence than he otherwise would. We should get rid of the idea that pharmacists are responsible for the multiplication of these so-called unworthy preparations. The medical profession should not be unwilling to bear part of the responsibility for their continuance. Physicians continue, in spite of everything, to prescribe preparations which the Council

on Medical Education proclaim to be worthless and superfluous, stating that they obtain favorable clinical results. Certainly one very desirable result would be obtained if a coöperation between pharmacists and physicians existed—it would remove, to some extent at least, the prejudice which now exists between the two professions which tends to restrain and retard effective coöperation and coördination in the aim and end previously indicated.

The American Medical Association has opened the way and made progress in the direction named, having pronounced its own point of view, which should be duly recognized. It is natural that the point of view of the American Pharmaceutical Association differs from that of the former association, and the pharmacists' views should also be respectfully considered.

As to clinical evidence, Rule 5 of the Council on Pharmacy and Chemistry of the A. M. A. states: "To be acceptable, the clinical evidence must offer objective data with such citation of authority as will enable the Council to confirm the facts and establish the scientific value of the conclusions drawn," etc. This rule would be helpful in the coöperative work.

As to unscientific and useless articles, Rule 10 of the Council should be expanded and made more definite. A basis might be discovered whereby one could more definitely determine whether an article or preparation is unscientific or useless.

Rule 10 reads as follows: "The use of articles which are unessential modifications of official or established non-proprietary articles is unscientific and serves no useful purpose. * * * * * This includes mixtures containing an excessive number of ingredients; those which contain substances of no probable therapeutic assistance to each other; those of no therapeutic value. The combination of two or more remedies in a mixture must be considered contrary to scientific medicine unless a distinct reason exists for such a combination," etc.

It should be added that a paper upon this subject was read before the American Pharmaceutical Association by Prof. L. E. Sayre and was published in Volume VIII, No. 5, of THIS JOURNAL. The debate which followed the reading of this paper was participated in by Dr. Bernard Fantus who stated, in substance, that it was to be hoped that the physicians would meet the pharmacists as they ought to. He further said: "You know doctors have quite a way of being autocratic in the sick room and they get to feel that they have the right to be autocratic in all respects, and many of us here, I suppose, including myself, are opinionated. The fact Hippocrates discovered and published, that experience is fallacious and judgment difficult, is so true of medical practice that the opinion of any one physician or any number of us, on such questions as the desirability of certain preparations, should not be regarded altogether too seriously. I am convinced that pharmacists could be of great help to physicians in their learning about the value of preparations."

THE REPORT ON THE PROGRESS OF PHARMACY.

BY H. V. ARNY.

The Chairman of the Scientific Section of the American Pharmaceutical Association made at the New York meeting the following recommendation:

"That the Association discontinue the Report on the Progress of Pharmacy in the Year Book, but publish same in monthly installments as a part of the JOURNAL of the Association, or in a new journal, and that all abstracts be published within one or two months of the publication date of the original paper. The Year Book of the Association should be continued, but contain only record of the activities of the Association during the year, be prepared by the General Secretary and published and distributed as soon as possible after each annual meeting."

To this proposition the writer submits his vigorous objections, both as a rank-and-file member of the Association and also as its Reporter on the Progress of Pharmacy.

As a member of the A. Ph. A., the writer has fought for the Year Book in its present form since he believes that a bound book containing the Report on the Progress of Pharmacy is what a large majority of our members want. This point seemed settled by the ballot of 1916 (see JOURNAL OF THE A. PH. A., 1917, 184) so at this time it need merely be pointed out that it is the exception rather than the rule for the pharmacist to have loose journals bound and that in many private pharmaceutical libraries in this country the only bound periodicals are our old Proceedings and our Year Books. Fond as the writer is of pharmaceutical periodicals, the old Proceedings and the present Year Books are the only ones of this class having permanent positions on his book-shelves and this is true of hundreds of others in the A. Ph. A. Hence publishing the Report in unbound form will make the Report lose half of its educational value.

Another objection as a member of the A. Ph. A. that the writer has to the proposition is that the publication of the material now in the Report on the Progress of Pharmacy in monthly installments will make the Report a loosely constructed, unscientific jumble of information. It is likely that this statement will be challenged by testimony showing the value of *Chemical Abstracts*, of the abstract pages of the *Journal of the Chemical Society*, and of *Botanical Abstracts*. Just those examples are exactly what is in mind, when making the foregoing statement. Science is classified knowledge and it will take pretty forcible arguments to persuade the writer that really classified knowledge is found in a journal where one has to look in a year's volume (provided it is bound) in a dozen or twenty-four places to find references to a particular subject, let us say pharmacognosy. This perhaps explains why the Society of Chemical Industry is now publishing each year, besides the scattered abstracts in its journal, a classified summary of the chemical work of the year in a single volume.

Another fault of the plan of publishing the Report on the Progress of Pharmacy in monthly installments is the chance of blunders arising from the rush of getting out a journal each month at a specified time. None but those with journalistic experience can realize the wild rush accompanying the getting out of a magazine, even when there is a staff of workers giving its entire time to the work. To

those who know, the wonder is, not that mistakes creep in, but that so few blunders are to be found. But blunders there are and these are due to no reason other than the rush that a definite schedule of publication demands. In the writer's opinion, an abstract publication should be a leisurely affair; a book that it is intended to keep and to study as the years roll on; a compilation of data to which sufficient time has been given to free it as much as possible from the blunders of haste.

All of the objections to the plan of a monthly abstract journal given above are presented by the writer as one of the 3,000 members of the A. Ph. A. As Reporter on the Progress of Pharmacy, the writer has several more objections which he freely discussed at the New York meeting of the Council, but which are scarcely the material to present in printed form. Reduced to its simplest form, the proposal will mean the change from a Reporter who can arrange his time to suit himself (provided that the work is not permitted to lag) to an Editor working on a definite scale, subjected to the rush described above. The change cannot be made except at distinct advance in cost to the Association, an advance cost which, in the writer's opinion, is scarcely justified by advantages obtained.

In conclusion, the Reporter desires to say that he is curious to know how many members of the A. Ph. A. agree with the outspoken opponents of the Year Book in their statements that the present Year Book is of little value to them. As the Reporter is now giving to the Year Book one-quarter of his working time for one-tenth of his total income, he would be the first to demand a stopping of the waste of his time as well as the waste of the funds of the Association should he become convinced that a majority of members of the A. Ph. A. find the Year Book an unnecessary publication.

THE TEACHER AND THE RESEARCH WORKER.

A teacher and an investigator are not always to be found in the same man or woman. No one who teaches can possibly know too much of the subject in his charge, but a different degree of knowledge may suffice for the mere teaching of a topic from that complete mastery which can alone equip the investigator, he who leads us out into new and untrodden fields and adds, by actual discovery or at least by placing things in a truer light, to the sum total of human knowledge. It is no wonder, then, that these two things, the training of teachers and the training of scholars and investigators, should have fallen somewhat apart. On the one hand we are told by some that a teacher had better spend more of his time in learning how to teach than to spend it all in the acquisition of his subject. Elsewhere we find a certain condescension on the part of the men of microscopes and laboratories for "mere teachers" who impart only what they have garnered and do not acquire original or new stores of knowledge.—"The Gownsmen" in *Philadelphia Public Ledger*.

SCIENTIFIC SECTION, AMERICAN PHARMACEUTICAL ASSOCIATION.
ABSTRACT OF THE MINUTES OF THE SESSIONS HELD IN NEW YORK CITY,
AUGUST 27, 28 AND 29.*

FIRST SESSION.

The first session of the Scientific Section, A. Ph. A., was called to order by Chairman E. N. Gathercoal, August 27, at 2 P.M. All the officers were present.

The Chairman's address was read following the reading of a paper by W. W. Stockberger on "Commercial Drug Growing in the U. S., in 1918."

First Vice-Chairman C. B. Jordan presided during the presentation of the Chairman's address, entitled:

THE FUTURE OF THE SCIENTIFIC SECTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

While the title just read might indicate that something in the nature of prophecy is to follow, such is not the case, for the author hasn't a particle of divine discernment and cannot really see a single moment ahead.

However, he has a real regard for the American Pharmaceutical Association and greatly desires its successful continuance. Nearly all persons become wrapped up in some particular interest, an interest outside of the daily earning of bread and butter—that gives a recreation, a zest to life which adds much to the joy of living. With me such an interest is the A. Ph. A., and I approach the subject named above as one who hopes and works for continual development and improvement, who dreads any retrogression, and who wishes to see our Association always in the front rank of scientific societies.

The fact, also, that pharmacists, and pharmacy as a science, have played so important a part in the medical service of the recent world war increases one's appreciation of the truly ethical and professional character underlying the apparent commercial spirit of pharmacy. Mr. Freericks states that ten thousand pharmacists were in the military or naval service of our country during the war. In Illinois a careful compilation indicates that about 800 pharmacists, out of 6,000 or 7,000 registered, were in the service and three-fourths of these in the medical department of army or navy.

Recently, while in discussion with a well-known officer of the A. Ph. A., this interesting statement was made to me: "If a true amalgamation should be brought about between the A. Ph. A. on the one hand, and the state pharmaceutical associations and the National Association of Retail Druggists on the other,—it would be but a short time before the Scientific Section of the A. Ph. A. would be so engulfed in the predominating commercial spirit of the latter organization that it could find no place for opportunity to hold its meetings at the annual convention—and would be forced into an organization of its own, or compelled to join some other organization such as the American Chemical Society."

This statement so startled me that it has held my attention since then.

As one reviews the activities of the national and local organizations of retail pharmacists, especially within recent years, it is evident that the A. Ph. A. represents the scientific side of pharmacy; the N. A. R. D. is particularly interested in the national legislative and commercial interests of pharmacy; the state associations are especially active along the lines of state legislation, and the local associations look after the local legislative, commercial, and social interests.

In my opinion, it is possible and very desirable to unite all of these organization activities of retail pharmacists under one national head, with the membership embracing a large percentage of the pharmacists of our country. Whether or not such amalgamation occurs, it is certain that retail pharmacy will continue organized and will steadily improve and strengthen its organizations.

The wholesale and manufacturing interests of pharmacy are also well organized and, while the National Wholesale Druggists' Association has never established a scientific section or committee, the American Drug Manufacturers' Association has recently formed a strong committee on standards and deterioration, which committee presented a very able and scientific report at the 1918 meeting of this organization. We understand also, that the latter organization is

*Papers with discussions will, hereafter, be printed apart from the minutes. It is understood, unless otherwise stated, that the papers were referred to the Publication Committee.

fathering advanced work in materia medica, and highly valuable publications may soon be issued under its auspices. It is well known to all of us that the scientific staffs of the great pharmaceutical manufacturing houses constitute one of the strongest supports to scientific pharmacy.

Just at this point, in order to center your attention on the discussion that is to follow, let me present three questions.

1. How can the A. Ph. A. fully maintain, in organized pharmacy of the future, its position as representing scientific pharmaceutical ideals?

2. Cannot the A. Ph. A. in its Scientific Section so direct its activities that it will hold and attract the interest of all persons interested in scientific pharmacy?

3. Is it not possible for the A. Ph. A. to so increase the value and attractiveness of its scientific program as to place the Association on a higher plane among scientific societies than it now holds?

To effectively answer these questions requires more brains than I possess. They have been asked that others might ponder and discuss them. However, a few self-evident facts may help us to get our bearings.

First. Many organizations are competing for all of the real, scientific knowledge produced. If the A. Ph. A. expects to retain its scientific standing, it must be prepared to compete for scientific papers. Apparently the most successful means in this competition are: A large and interested audience to hear and discuss the papers when read; a journal to widely circulate them to a reading public; a means of preserving them for ready reference by future investigators. Frequently, the sole reward for years of painstaking investigation is the publicity the investigator receives.

Second. Scientific investigation requires an increasingly greater outlay of time, money and knowledge. The A. Ph. A. must be in a position to offer facilities, often of an expensive nature, to the investigators in order to draw them to her ranks.

Third. An educated membership is essential to maintain the scientific reputation of an organization. No educated investigator cares to present his results to an unsympathetic, non-appreciative audience. The character of the audience will surely determine, in the long run, the character of the scientific matter put before it. Other scientific organizations have a membership largely, or entirely, of college-bred men and women. The A. Ph. A. must stand for the better education of all entering the practice of pharmacy.

Fourth. A strongly centralized, "one-man" power to lead the organization, especially in times of great need, is very desirable. Our Association could well use, at this time, a leader with high ideals, capable of enlisting in his following a majority of the membership, a good organizer with business acumen, conciliatory yet commanding.

During the preparation of this address, a consideration of the above conditions suggests the following questions: Is the A. Ph. A. increasing its scientific activities and, if so, to what extent? Is this increase proportional to the advance made by pharmacy as a whole, and to that of other scientific organizations?

An examination of the available data discloses the following interesting facts:

In 1892 the membership of the A. Ph. A. was 1380; the membership of 21 state pharmaceutical associations was 9051.¹

In 1917 (twenty-five years later) the membership of the A. Ph. A. was 2696; of 39 state pharmaceutical associations 22,308;² of the National Association of Retail Druggists, 16,000(?).

This numerical comparison would indicate that the influence of scientific ideals as compared with commercial influences is not growing in organized retail pharmacy. It should be borne in mind that the membership of the N. A. R. D. is largely identical with state association membership. On the other hand, the state associations in 1892 included in their meetings, as a rule, scientific programs, while now very few of these associations, possibly four or five, give any consideration to scientific papers.

In 1892 there were 30 colleges or schools of pharmacy in the United States with approxi-

¹ This includes all the larger associations. Of a few others I could obtain no data. Some of the associations included all the registered pharmacists of the state.

² See preceding.

mately 1800 students.³ There were practically no requirements for entrance, except the fees, and 1200 hours of instruction was considered a long course.

In 1917 there were 69 colleges or schools of pharmacy in the United States with 5952 students³ and 2043 graduates. At least 46 of these (the Conference Schools) required some high school work for entrance, and 1800 hours of instruction was considered a short course.

While the figures indicate a real advancement in pharmaceutical education, yet one cannot deny that university men hold in low esteem the average pharmacy course and look upon pharmaceutical degrees as of doubtful value.

In 1892, 26 papers were read before the Scientific Section and 37 in 1917. The abstracts in the Proceedings of 1892 numbered 4550, while in the Year Book of 1916 there were 1550.⁴ In 1892 the original scientific papers⁵ published in American drug journals totaled 205, in 1917, 185.

The establishment of the JOURNAL OF THE A. PH. A. was a great step in advance for the scientific standing of our Association. When one considers that in 1892 the Association published less than 30 papers which represented any original investigation while in 1917 the number of such papers was 70, one can gather some idea of the way in which our Journal is assisting in maintaining our scientific position.

No effort has been made to answer with definite figures the question as to the increase of pharmaceutical, scientific knowledge as compared with that of other scientific lines.

In conclusion, I would suggest that the Scientific Section authorize by resolution a Permanent Secretary of the Section. The by-laws already provide for the permanency of this office and also for a membership roll and other secretarial duties best accomplished by a continuing officer.

Further, that the Scientific Section endorse and recommend to the Council the following:

1. That an accurate, modern index of the 9 volumes of the Proceedings since the fifty-year index, be authorized; and that plans be laid for an index of the Year Book and a decennial index of the JOURNAL.

2. That the Association discontinue the Report of the Progress of Pharmacy in the Year Book, but publish same in monthly installments as a part of the Journal of the Association or in a new journal and that all abstracts be published within one or two months of the publication date of the original paper. The Year Book to be continued, but contain only the record of the activities of the Association during the year, be prepared by the General Secretary and published and distributed as soon as possible after each annual meeting.

3. That the Association either by itself or in collaboration with the United States Pharmacopoeial Convention and possibly other scientific bodies lay plans for substantial assistance to pharmaceutical scientific investigations. This assistance might take the form of a Pharmaceutical Research Institute with a capable Director at its head, through whom financial aid to investigators can be offered, and much be accomplished in the direction, coördination and collaboration of important investigations. Such an institute could very nicely collaborate with a Chemical Research Institute, if desirable.

On motion the address of Chairman E. N. Gathercoal was referred to a committee of three, consisting of F. R. Eldred, W. L. Scoville and E. A. Ruddiman.

The following papers were read and discussed.

³ No data could be obtained from a few unimportant schools.

⁴ Editor Henry Kraemer, in 1892, included, often by title only, a great many papers that were but distantly related to pharmacy and yet that did add to the completeness of the review of pharmaceutical literature. In 1916, Editor H. V. Army included only such papers as bore a strong interest to pharmacy. Furthermore, the war markedly decreased the number of scientific papers. Hence the decreased number in 1916 is not necessarily an indication of a decreased interest in scientific literature.

⁵ The definition of "scientific paper" has been difficult to frame, but the greatest liberality has been used in this tabulation. The journals examined were the *Druggists Circular*, *Pharmaceutical Era*, *American Journal of Pharmacy* and, in 1892, the *Pharmaceutische Rundschau* and Proceedings of the A. Ph. A., and in 1917 the JOURNAL OF THE A. PH. A.

"A Final Report of the Constituents of Gelsemium," by Lucius E. Sayre and G. N. Watson.
 "Urorosein," by J. Atlee Dean.

"The Manufacture of Arsphenamine (Salvarsan) and Neo-Arsphenamine," by H. A. Krumwiede.

Caswell A. Mayo introduced Lieutenants, senior grade, Schaffer and Swiezbeck. Mr. Mayo spoke of their services as a credit to pharmacy.

A paper by Isaac F. Harris on "Chloramine Products: Their Manufacture and Use," was read. A motion carried to recommend the inclusion of a formula for standardized Dakin's Solution in the National Formulary.

H. C. Hamilton read a paper on "The Germicidal Value of Mercuric Iodide, Alone and Associated with Soap."

Carl Braubach presented a paper on "Uniformity Necessary in Stating the Phenol Coefficient of Disinfectants." A resolution on the paper was referred to a committee consisting of Messrs. Hamilton, Gershenfeld and McEwen.

Then followed the reading of a paper on "Acid-Insoluble Ash Standards for Crude Drugs" and one on "The Resin of Man Root, Ipomoea Pandurata," the former by C. O. Ewing and Arno Viehoever and the latter by Ernest E. Stanford and C. O. Ewing.

The Chairman announced as members of the Committee on Nominations: George D. Beal, of Illinois; Jeannot Hostmann, of New York; and J. W. Sturmer, of Pennsylvania.

The first session of the Scientific Section was then adjourned.

SECOND SESSION.

The second section of the Scientific Section convened August 28, at 9.30 A.M.

Chairman H. C. Hamilton of the committee to pass on the resolution in the paper on "Uniformity Necessary in Stating the Phenol Coefficient of Disinfectants," reported that the author requested that no action be taken at this time, pending a more definite report to be announced at the coming meeting of the American Public Health Association. The request was complied with.

The following papers were read, discussed and referred:

"Preliminary Note on a New Pharmacodynamic Assay Method" (2nd paper), by Paul S. Pittenger.

"Digitalis Standardization by the Cat Method with Some Suggested Modifications," by L. W. Rowe.

"Maintaining Frogs for Testing Purposes," by L. W. Rowe.

"The Biologic Test of Digitalis," by Robert A. Hatcher.

"The Standardization of Blood Coagulants," by H. C. Hamilton.

REPORT OF THE COMMITTEE ON THE CHAIRMAN'S ADDRESS.

Chairman W. L. Scoville reported for the Committee on the Chairman's Address:

The first recommendation, that the Scientific Section authorize by resolution a permanent Secretary of the Section, was *not* recommended for adoption by the Committee. The reason for the report was, that there is in the by-laws a provision for making the officer permanent by re-election, if desired; other officers than the secretary, however, can hold office for no more than two succeeding terms.

After a somewhat prolonged discussion, wherein the desirability of a permanent secretary was expressed, the report of the Committee was adopted.

The Committee recommended the adoption of the following, and was sustained by the Section:

That an accurate modern index of the 9 volumes of the Proceedings since the fifty-year index, be authorized and that plans be laid for an index of the Year Book and a decennial index of the Journal.

Chairman Gathercoal recommended,

That the Association discontinue the Report on the Progress of Pharmacy in the Year Book, but publish same in monthly installments as a part of the JOURNAL of the Association or in a new journal, and that all abstracts be published within one or two months of the publication date of the original paper.

The Committee recommended this for adoption with the exception of the fixed time for the publication date of the abstracts of papers, making this read— * * * that all abstracts be published "within as early a period as possible" * * *

The Section concurred in the change made by the Committee and approved the recommendation as amended.

Chairman Gathercoal recommended,

That the Year Book of the Association be continued, but contain only the record of the activities of the Association during the year, to be prepared by the General Secretary, and published and distributed as soon as possible after each annual meeting.

The Committee recommended that this be *not* adopted.

Considerable discussion ensued. The report of the Committee was approved, the understanding of the members being,— that if the Year Book be discontinued the matter of publishing Association records will be provided for, as the Association and Council deem best.

(The Council referred the action taken by the Section anent the Year Book to the incoming Executive Committee of the Council for further consideration, and this Committee is instructed to report to the Council.)

The recommendation,

"That the Association either by itself or in collaboration with the United States Pharmacopoeial Convention and possibly other scientific bodies lay plans for substantial assistance to pharmaceutical scientific investigations. This assistance might take the form of a Pharmaceutical Research Institute with a capable Director at its head, through whom financial aid to investigators can be offered and much can be accomplished in the direction, coördination and collaboration of important investigations. Such an institute could very nicely collaborate with a Chemical Research Institute, if desirable."

Chairman Scoville stated that while the Committee favored the idea, the Committee on Research, A. Ph. A., was just getting under way, and that it was not wise to complicate matters by two different plans. The Committee recommended that this be *not* adopted.

Most of the views expressed were favorable to the proposal, none opposed. The reason assigned by the Committee seemed to meet the approval of the members. Final action of the Section resulted in the adoption of an amendment by Mr. Murray to refer Chairman Gathercoal's suggestion to the Committee on Research, for incorporation with their plans.

The second session of the Scientific Section was then adjourned.

THIRD SESSION.

The third session of the Scientific Section was convened August 29, at 9.30 A.M.

The following papers were read, discussed and referred for publication:

"The Permanence of Alkaloidal Fluidextracts and Tinctures," by W. L. Scoville.

"The Identification of Gums by the Phenylhydrazine Test," by C. W. Ballard.

"A Suggested Change in Technique of U. S. P. Assay of Opium," by H. W. Jones.

"The Solubility of Some Volatile Oils in Weak Alcohol," by Horatio C. Wood, Jr.

"A Study of Chenopodium and Its Volatile Oil," by Elmer H. Wirth.

"Analysis of Solution of Magnesium Citrate," by Joseph L. Mayer.

"The 'Shaking-Out' Method for the Quantitative Estimation of Alkaloids, II. Effect of Clarification and 'Salting-Out'," by George D. Beal and Thomas S. Hamilton.

"Observations on *Digitalis Sibirica*," by H. W. Youngken.

Then followed a Symposium on Scientific Phases of U. S. P. Revision.

Introductory Remarks were made by Chairman Charles H. LaWall.

(These and the papers of the Symposium will be printed in a succeeding issue.—

EDITOR.)

The contributors to the Symposium were Henry Kraemer, W. L. Scoville, A. R. L. Dohme and George D. Rosengarten.

REPORT OF THE COMMITTEE ON THE EBERT PRIZE.

Fellow Members:

Your Committee on the Ebert Prize begs to report that the prize is awarded to Arno Viehoever, C. O. Ewing and J. F. Clevenger, for their paper on "Some Commercial Viburnum Barks and Preparations."

The Committee also recommends that hereafter in awarding the Ebert Prize, papers of a scientific character presented before any of the Sections of this Association be considered as eligible for the prize. When the Ebert Prize was established papers on scientific subjects were only presented in the Scientific Section; now we have the Section on Practical Pharmacy and Dispensing; in fact, all papers of a scientific character presented in any of the Sections should be considered in the award. Moreover, Mr. Ebert was primarily interested in the development of practical pharmacy, and we feel that it would be in accordance with his desires that papers relating to that phase be considered in the award.

Mr. Clark called attention to the fact that papers of other Sections had been heretofore considered in the award of the Ebert Prize, and moved to accept the report and endorse the recommendations. Carried.

The following papers were read by title and referred to the Publication Committee:

"Microscopical Method for the Quantitative Determination of Vegetable Adulterants," by Fanchon Hart.

"Unusual Method for Testing the Alcoholic Strength of Pharmaceuticals," by William G. Toplis.

"Lac Fermentatum," by Joseph W. Harrison and Ivor Griffith.

"Laboratory Notes," by Geo. E. E'we.

"An Investigation of the Accuracy of the So-called Dispensing Tablets," by K. F. Ehmman and Jos. W. E. Harrison.

"Oil of Sandalwood," by Azor Thurston.

"The Permanency and Deterioration of Some Vegetable Drugs Twenty-Five Years of Age," by E. N. Gathercoal.

"A Method for Estimating Quinine and Strychnine Occurring in Common Solution," by A. R. Bliss, Jr.

"The Pharmacognosy Laboratory, Its Activities and Aims," by Arno Viehoever.

"Partial Analysis of 330 American Crude Drugs," by C. O. Ewing and J. F. Clevenger.

Chairman Gathercoal stated that the latter paper had particular value in connection with the coming revisions of the U. S. P. and N. F.; that it was a paper of considerable length and had involved in its preparation the expenditure of considerable time and money.

It was moved by H. V. Army, that the Scientific Section request the Publication Committee to publish this paper and direct it to the attention of the Revision Committees. He did this, because the paper was lengthy and the Publication Committee did not look with favor on long papers, unless of exceptional value. A. H. Clark added to the motion, with the consent of the mover, that other papers appertaining to the revision of the standards be published before the meeting of the Pharmacopoeial Convention. Motion carried.

OFFICERS FOR 1919-1920.

The report of the Committee on Nominations was received. A motion carried to close the nominations and that the ballots be spread. The following were elected: *Chairman*, Jacob Diner, of New York; *First Vice-Chairman*, A. R. Bliss, of Atlanta; *Second Vice-Chairman*, C. W. Ballard, of New York; *Secretary*, A. G. DuMez, of Washington, D. C.

Chairman E. N. Gathercoal spoke briefly, conveying his thanks for the assistance given him during the year and the sessions of the Convention. Chairman Jacob Diner expressed his appreciation of the honor conferred.

There being no further business the Scientific Section was adjourned.

THE RESIN OF MAN-ROOT (*Ipomoea pandurata* (L.) MEYER) WITH NOTES ON TWO OTHER CONVULVULACEOUS RESINS.

BY ERNEST E. STANFORD AND CLARE OLIN EWING.

Among drugs particularly affected by disturbances of the recent war, particular mention may be made of the purgatives furnished by *Convolvulaceae*. Jalap, a drug of comparatively nearby origin, rose in 1917 to five times its price of the preceding year. Genuine scammony had long before disappeared from the market, though its place had been filled in a measure by the Mexican root, *Ipomoea orizabensis*.

These conditions, naturally, incited considerable interest in available substitutes. The *Convolvulaceae*, consisting of some 1,000 quite closely related species, many of which already have more or less cathartic use, offers a particularly attractive field for medicinal research. The present value of this family, unfortunately, is considerably limited by the tropical habitat of the majority of its members, which are therefore no more accessible than their better-known congeners. Preliminary studies of a physiologically active Convolvulaceous plant, *Piptostegia pisonis* Mart., (1)¹ (3) (15) (16) and of *Resina drastica* (3), an apparently related drug of unknown origin, have recently been reported.

A review of plants of this family occurring within the United States indicated only two whose root appeared to be available in large quantity. One, *Ipomoea pandurata* (L.) Meyer (*Convolvulus panduratus* L.), is a common indigenous plant of the Southern Atlantic and Gulf States. An introduced species, *Ipomoea batatas* L., is the common sweet potato. The first named was known to possess purgative properties, but appeared, deservedly or not, to have dropped from medicinal view. The sweet potato appeared unpromising indeed from a medicinal standpoint. While the root has undergone numberless proximate analyses, and the nature and formation of the sugars therein have formed the subject of several researches, nothing to be found in the literature indicated a purgative or resinous constituent. The plant, like its medicinal congeners, possesses a milky juice, which is abundant in the cortex of the root. It often forms a gummy incrustation on the knives used in cutting the root, whose possibilities as a wartime wheat substitute have recently received considerable attention. It seemed at least possible, therefore, if this juice contained even small amounts of purgative principles, that means might be devised for obtaining it on a considerable scale as a by-product of sweet-potato flour manufacture. A preliminary study, sufficient to indicate something of the medicinal and commercial possibilities of the alcoholic extracts of the roots of these plants, was accordingly undertaken.

Some time previously, the root of another species, provisionally identified as *Operculina discoides* Perma, was submitted to this laboratory. A brief note on the resin of this plant is also included here.

THE RESIN OF MAN-ROOT.

Ipomoea pandurata (L.) Meyer, known as man-root, man-in-the-ground, wild sweet potato, wild jalap, and by a host of other local names, is a trailing plant

¹ Reference is made by number to literature cited.

of dry and sandy soil, occurring throughout the eastern half of the United States, especially in the south. The fleshy root is perennial and unusually large, even for a *Convolvulaceous* plant, being, according to King's Dispensatory (4) "from two to eight feet in length, and from two to four or five inches in diameter." The National Standard Dispensatory (6) states "the root sometimes reaches the size of a man's body."

Man-root evidently had some vogue in early American medicine, although literature referring to its properties is very scant. It appears (as *Convolvulus panduratus*) in the supplementary list of the United States Pharmacopoeia II (1842), and III (1851), but is not included in the Fourth Revision (1868). Accounts of its medicinal virtues indicate that the root was usually administered in powder or infusion, no effort being made commercially to prepare from it a resin analogous to those of scammony or jalap. MacLean (10) states " * * * as a cathartic, it has failed * * * given freely in infusion, I have found it to produce more decided diuretic action than any other single article which I have ever used." Planchon and Collin (12), Hartwich (7), King's, the United States, and the National Standard Dispensatories accord it brief mention as a drug allied to jalap. The brief references to the chemistry of the root are evidently drawn from Manz (11) and Kromer (9). King's Dispensatory states regarding the root "it possesses mild cathartic properties * * * the infusion * * * has been effective in dropsy, strangury and calculous affections. It seems also to exert an influence over the lungs, liver, and kidneys * * * It is asserted that the Indians can handle rattlesnakes with impunity after wetting their hands with the milky juice of the root."

Manz (11) extracted the ground root with 90 percent alcohol and treated the extract with animal charcoal. He obtained, after evaporation and repeated reprecipitation from water, 1.5 percent of a resin to which he ascribed griping, hydrogogue cathartic action (in three-grain doses). He further stated it to be glucosidal in nature, soluble in ether, chloroform, and aqueous alkalies, and insoluble in benzol, benzin, and acetic acid. Kromer (9) first extracted the root with water, then with alcohol at 50-60°, purified the alcohol extract by precipitation with basic lead acetate, filtration through animal charcoal, and reprecipitation from alcoholic solution with ether, and thus obtained a resin from which he further separated small amounts of two semi-fluid bodies, soluble, respectively, in ether and petroleum ether. The remaining and larger portion of the resin Kromer considered a homogeneous body, a glucoside which he named ipomoein. He described it as insoluble in ether, petroleum ether, benzol, and chloroform; easily soluble in alcohol and acetic acid; difficultly soluble in cold, but readily in hot, methyl alcohol and acetone. Its melting point was 170° and its optical rotation -32.62°. Kromer does not report the yield nor did he, apparently, test its physiological properties. The chemical value of Kromer's rather extensive research seemed somewhat doubtful, in view of the fact that the various *Convolvulaceous* resins examined by Power and Rogerson (including that of scammony to which Kromer (8) had also attributed homogeneous character) have been shown by these writers to be very complex.

The dried root used in the present study was obtained by the writers during a brief survey of the drug-collecting centers of the Southern Appalachians, an

account of which has previously been given in THIS JOURNAL (2). The sample (Fig. 1) was obtained from a wholesale warehouse; its history and season of col-

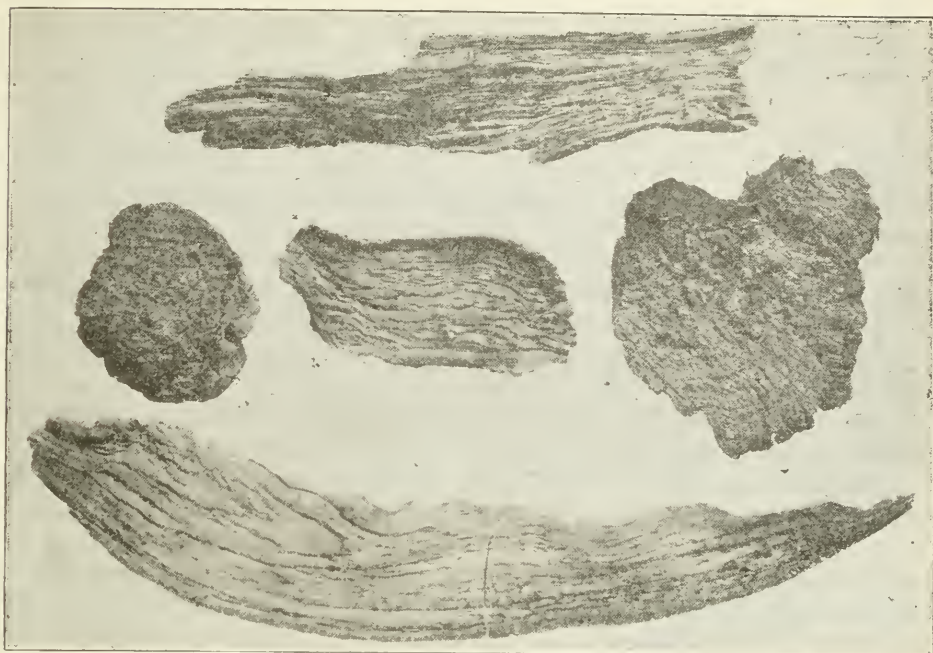


Fig. 1.—Commercial Specimen of Man-root, $\times \frac{1}{2}$.

lection are unknown. It consisted of longitudinal and transverse pieces, the former predominating. The specimens varied in color from light to dark brown, with occasional dark resinous extrusions. Annular markings were more or less evident, especially in longitudinal portions. The pieces ranged up to about 6 cm. in diameter, and about 20 Cm. in length. The taste of the root was weakly bitter. The powder was light brown. The product bore a considerable resemblance to *Piptostegia* root, although the annular markings were less plain.

A dark brown, rather gummy and somewhat hygroscopic resin was prepared from the ground root by percolation with 95 percent alcohol and precipitation and washing with water, in the manner prescribed by the United States Pharmacopoeia for jalap resin. The yield was 4.65 percent. The resin, after long-continued drying, could be ground to a light powder. Its odor somewhat resembled that of other Convolvulaceous resins, particularly *Orizaba* resin. It was sweet and fruity, with a suggestion of stewed prunes. The optical index of the crude resin, after decolorization with animal charcoal, was -30.24° at 24° C. This figure² is not far from that obtained by Kromer (-32.62°), in his work on man-root.

² Guigues (5), who brought forward the value of the optical index in the differentiation of Convolvulaceous resins, reports an index of $-20^\circ 10'$ to $-31^\circ 35'$ for the resin of turpeth root (*Operculina turpethum* Pet.). Obviously the optical indices alone would not serve to differentiate this resin from that of man-root.

By successive extractions with various solvents the following fractions were obtained:

Petroleum ether (b. p. 55-75°).....	11.66%
Ether (anhydrous).....	17.53%
Chloroform.....	23.25%
Ethyl acetate.....	41.59%
Alcohol.....	6.27%

The petroleum ether fraction was a dark, waxy mass, hygroscopic, and impossible to powder, at least at ordinary temperatures. It was readily soluble in petroleum ether, and displayed a slight green fluorescence in solution. In alcohol it was rather difficultly soluble.

The ether fraction was similar in color. It dissolved rather slowly in ether and alcohol, and was fluorescent in solution. On prolonged desiccation it solidified to a hard, brown, hygroscopic, varnish-like resin.

The chloroform fraction was a brittle, light brown resin, rather slowly soluble in chloroform and alcohol.

The ethyl acetate extract was lightest in color of the fractions, easily powdered, and more rapidly soluble in alcohol than in ethyl acetate.

The alcohol fraction was deep brown and brittle. Unlike the others, it carried a trace of brown coloring matter soluble in water.

Each fraction was boiled with water and tested with Fehling's solution. No reduction resulted. After heating with 5 percent sulphuric acid, however, the ethyl acetate and alcohol fractions reacted strongly with Fehling's solution. The chloroform fraction reduced it in less degree. The ether extract at first brought forth no reaction, but after standing some time a precipitate of copper oxide slowly developed. The petroleum ether extract gave negative results.

The process of Kromer (9) previously referred to appeared to yield a less complex product, yet, judging from the work of Power and Rogerson on other convolvulaceous products, and the above results, it seemed improbable that his "ipomoein" could have represented a pure glucoside. To test this supposition 2 grammes of the crude resin were dissolved in alcohol, the solution allowed to stand several days with an excess of basic lead acetate, after which the excess of lead was removed from the filtered solution with H_2S . After treatment with animal charcoal the colorless solution was filtered and evaporated. 0.7293 Gm. (36.46 percent of the original weight) remained. This was fractionally extracted, with the following results:

Petroleum ether (b. p. 55-75°).....	(accidentally lost)
Ether (anhydrous).....	17.14%
Chloroform.....	16.08%
Ethyl acetate.....	44.15%
Alcohol.....	14.26%

The fractional percentages obtained by this method, it will be readily seen, do not differ greatly from those derived from the crude resin.

To test the physiological action of the crude resin the material was administered in half-gramme dose to two adults. In one case only a mild catharsis followed; in the other the results were a trifle more severe; some griping was caused, and the action obtained resembled in kind that of jalap resin, but was much milder in

degree than would be expected from a medicinal dose ($\frac{1}{8}$ Gm.) of the latter. Separate tests of the chloroform, ethyl acetate, and alcohol fractions in amounts somewhat greater than represented in $\frac{1}{2}$ Gm. crude resin ($\frac{1}{4}$ Gm. of the chloroform and ethyl acetate extracts and $\frac{1}{2}$ Gm. of the alcohol) indicated the ethyl acetate extract to possess the most activity, although the results in no case approximated that of the crude resin. The chloroform and alcohol fractions exerted no action beyond a mild sense of internal discomfort.

No dogs were available for pharmacological tests. Both the crude resin and all fractions save the petroleum were administered to several cats in amounts up to 1 Gm. each. In no case was any cathartic action noted. In view of this negative result, and inasmuch as no information was available as to the reaction of the cat to this type of purgative, it seemed advisable to make a comparative test of several other related resins. The cats at first refused to consume meat containing the more drastic products, but the addition of a small amount of ground catnip to the mixture obviated the difficulty. One-half gramme of *Piptostegia* resin, $\frac{1}{2}$ Gm. of jalap resin, and 1 Gm. of orizaba resin, were required to induce marked cathartic effect. 1 Gm. of jalap resin induced emesis. These results indicated that cats are less susceptible to the action of convolvulaceous resins than are human subjects, and also that man-root resin, and the fractions previously described, are considerably lower in cathartic power than the related substances ordinarily used in medicine.

When our survey was made (summer of 1918) collectors were offered $2\frac{1}{2}$ cents per pound for the dried root, which appeared not to be in much demand. When no demand exists for a drug, dealers in the collecting districts, instead of dropping the commodity, frequently continue to list it at a low nominal price, insufficient to encourage collections. Had there been a demand, the price would no doubt have been materially higher. At the low price quoted, and at a yield such as obtained in the present instance, the resin could compete in price with the resins of jalap or true scammony, although not with that of Orizaba, which root is now chiefly obtained under the designation "Mexican Scammony," at a price around 6 cents per pound. In view of the weak medicinal action of man-root resin, and the mechanical difficulties entailed by its hygroscopic nature, it appears, however, not to exert a very strong claim for notice, notwithstanding the present apparent low price of the crude root and the present conditions of scarcity of true scammony and jalap resins.

THE RESIN OF THE SWEET POTATO.

The material used in this work was obtained by courtesy of Mr. H. C. Gore, of the Fruit and Vegetable Utilization Laboratory, Bureau of Chemistry. It had been dried in small pieces at a low temperature, by a process devised in that laboratory. The ground product was percolated in the same manner as the man-root. Upon evaporation of the alcohol a syrupy, dark brown extract resulted. Upon attempt to wash it, it formed a persistent, milky emulsion from which, on several days' standing, only a small amount of syrupy matter separated. The material was then distilled with steam. A very small quantity of oily matter (0.0023 percent of the dried potato) was obtained, from which, upon standing, acicular crystals deposited. Its odor was suggestive of butyric acid.

The residue was evaporated to dryness and extracted with hot absolute alcohol. After evaporation of the alcohol, the extract was repeatedly washed with small amounts of hot water until an emulsion ceased to form. The dried residue was a dark brown, viscous, syrupy mass, quite hygroscopic, which long continued drying at 105° failed to reduce to a pulverizable condition.

The mass amounted to 0.56 percent of the weight of the dried root. Its odor was faintly sweet, resembling that of the dried root. Its optical index after treatment with animal charcoal was -8.07° , an unusually low figure for a convolvulaceous resin. With various solvents the following fractions were obtained:

Petroleum ether (b. p. 55-75°).....	82.9%
Ether (anhydrous).....	9.3%
Chloroform.....	3.6%
Alcohol.....	4.7%

The petroleum fraction was a soft hygroscopic, reddish brown mass much resembling the material extracted. The remaining fractions were similarly colored, but somewhat harder. All save the alcohol extract rapidly became gummy on exposure to the air. Upon boiling with water they did not react with Fehling's solution. After hydrolysis with dilute acid the last three yielded a reducing substance. The reaction was most marked in case of the ether extract. This indicated the presence, in extremely small amounts, of glucosidal constituents in the root of *Ipomoea batatas*.

In its high percentage of petroleum-soluble material as well as in its lack of cathartic properties, this product resembles the extract of *Ipomoea horsfallii* Hooker, as reported by Power and Rogerson (13). It is of course not impossible that the portions insoluble in petroleum ether (in which the purgative properties of Convolvulaceous resins usually reside) may have possessed activity, but the small amounts obtained from the material in hand were insufficient for an adequate test.

THE RESIN OF YELLOW MORNING GLORY.

The root of this plant was received from Mr. W. E. Safford, of the Office of Economic and Systematic Botany, Bureau of Plant Industry. Mr. Safford states in a private communication that the plant is native to Mexico and Central America. The root in question came from San Antonio (Texas) Experimental Farm, where it has been introduced as an ornamental. From the characters of its flowers and leaves it has been provisionally referred to as *Operculina discoidesperma* (Donn. Sm.) House (Syn. *Ipomoea discoidesperma* Donn. Sm.), but owing to its failure to form seed it cannot yet be identified with certainty. The portion examined consisted of a slender rootstock about 20 cm. long and 2 cm. in diameter. An extract was made by the usual method for jalap resin (U. S. P. IX). The root yielded 6.5 percent of a waxy, hygroscopic resin much resembling that of man-root. Like the latter, also, it possessed a sweet, fruity aroma. The chemical characteristics of this product were not investigated. A limited test of the physiological properties failed to demonstrate any cathartic action.

SUMMARY.

Resins (alcoholic extracts) of Man-root (*Ipomoea pandurata* (L.) Meyer), sweet potato (*Ipomoea batatas* Poir.) and yellow morning glory (*Operculina discoidesperma* (Donn. Sm.) House), were prepared.

Fractional extractions of the extracts of man-root and sweet potato with several organic solvents showed them, like other Convolvulaceous resins, to be of complex composition, and partly of glucosidal nature.

A limited number of tests of all the resins showed only the man-root resin to possess marked physiological activity. This resin proved a mild cathartic. Although the yield (4.65 percent) is rather higher than that previously reported, this product because of its mild action and hygroscopic nature appears unlikely to attain commercial or medicinal importance as a competitor of scammony, jalap or orizaba resin.

PHARMACOGNOSY LABORATORY,
BUREAU OF CHEMISTRY.

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THE MANUFACTURE OF ARSPHENAMINE (SALVARSAN) AND NEO-ARSPHENAMINE (NEO-SALVARSAN).*

BY H. A. KRUMWIEDE.

INTRODUCTION.

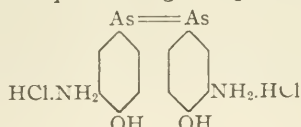
Salvarsan or Arspenamine, as the Federal Trade Commission has named the drug, is now being successfully manufactured in this country. Previous to the war, it was made in Germany under Ehrlich's supervision, but since the taking over of all alien-enemy patents, there are at least three firms, besides several Health Departments, making it in the United States, and several more are making application for the license to manufacture it.

* Read before Scientific Section A. Ph. A., New York Meeting, 1919.

Arsphenamine is also called by other names according to the firm making it, as for example—arsenobenzol, diarsenol, kharsivan, hydrosan, and arsaminol.

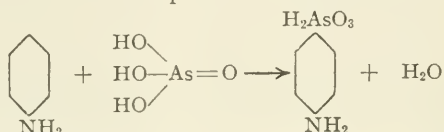
METHOD OF MANUFACTURE.

Arsphenamine is the dihydrochloride of diamino-dioxy-arsenobenzene and its successful preparation has required long and painstaking research.



Of the various possible methods of manufacture, the one most favored is the so-called oxalic method; while it may seem long on paper, it is simpler than some of the others and is now being used by several firms.

The initial step is the formation of para-arsanilic acid by the combination of aniline oil and arsenic acid at a temperature around 180° C.

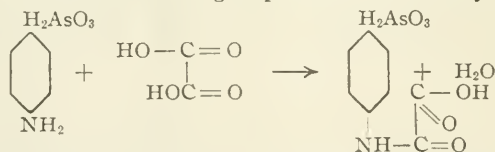


The fusion mixture is dissolved in caustic and is precipitated out by means of acid.

The sodium salt of *p*-arsanilic acid is the "atoxyl" of commerce, and was first made in 1863 by Bechamp. It was also used as a remedy for sleeping sickness and syphilis but the uncertainty of results, with the possibility of blindness, has caused it to be used with caution.

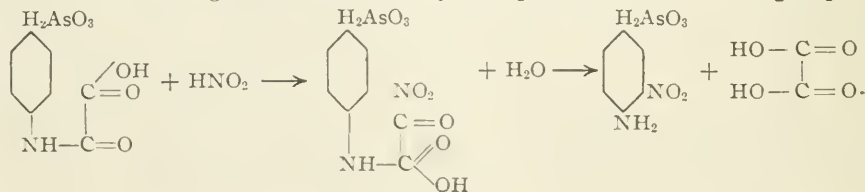
This seemingly simple process is the most difficult one of all the various steps that follow it, because on it depends not only the purity of the final product, but the percentage yield has to be sufficiently large to make it commercially practical.

A nitro- or NO₂ group has to be next attached to the benzene ring, but before this can be done, the amino- or NH₂ group has to be fixed by an oxalic acid group.



This is accomplished by heating the arsenilic acid with oxalic acid until the mixture is perfectly dry, which requires several hours of baking at a moderately high temperature.

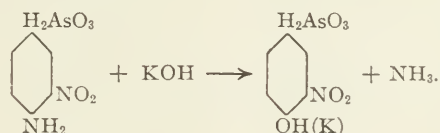
So the third step is the nitration process by means of which the NO₂ group joins the benzene ring in the ortho or adjacent position to the amino group.



To do this the oxalic acid derivative or oxanil-arsenic acid is dissolved in sulphuric acid and a molecule of nitric acid added at low temperature. By diluting and cooking with water, the oxalic acid is again split off, and the nitro-arsanilic is thrown down as a yellow crystalline mass.

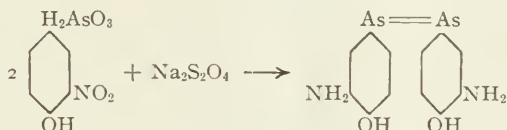
The three subsequent changes while they are very important do not materially alter the general structure of the substance as we finally have it, and the skeleton framework of Arsphenamine is now practically completed.

The three steps are as follows:



The amino group is saponified by means of a strong caustic solution to an OH or phenol group with the natural loss of ammonia. The purified nitrophenol-arsenic acid has only a pale yellow color.

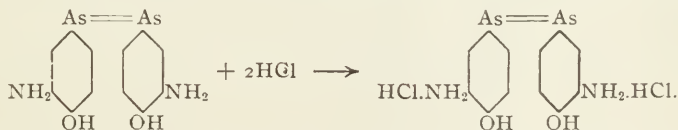
By treating this with sodium hydrosulphite, the nitro group is reduced,



likewise the pentavalent form of arsenic is reduced to a trivalent form, which is very important, as the trivalent form is more valuable therapeutically than the pentavalent variety; this eliminates most of oxygen from the molecule, thus causing two arsenic atoms to unite, which gives us the substance known as Arsphenamine Base, which is the active portion in any of the allied preparations found on the market.

As the base is very insoluble in water, and in order to change it into a form whereby it can be more easily handled clinically, it is necessary to change it into a dihydrochloride. According to the Ehrlich method, the base is dissolved in anhydrous methyl alcohol and hydrochloric acid, and re-precipitated from a large volume of ether. In view of the fact that both the alcohol and ether used are anhydrous, there is no justification for the general assumption, that the Arsphenamine contains two molecules of water of crystallization.

By the Kober method, the base is dissolved in caustic and reprecipitated with an excess of hydrochloric acid with rapid stirring and at a low temperature.

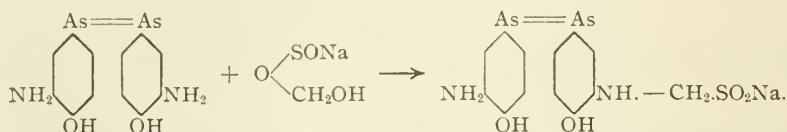


A yellow-white, curdy precipitate is formed, which rapidly turns to a greenish yellow gum, if left exposed to the air, but if filtered and dried under anaerobic conditions, a light yellow powder is obtained which is the product you see in the ampoules—Arsphenamine.

Too much stress cannot be laid on the importance of having the filtering and drying done with the exclusion of air or in an atmosphere of some inert gas, such

as nitrogen or hydrogen, as otherwise the product undergoes rapid oxidation, turning dark brown in color, forming, according to Ehrlich, a substance known as oxyphenyl-arsenic oxide, which is many times more toxic than Arsphenamine.

Neo-Arsphenamine is the sodium salt of diamino-dioxy-arsenobenzene-methanal sulphonylate, and is made by adding to a solution of Arsphenamine an aqueous solution of formaldehyde sulphonylate (which is made by combining formaldehyde with sodium hydrosulphite); a precipitate is formed which is called the Neo-Base; this is dissolved in sodium carbonate solution and re-precipitated by the alcohol method.



A modified method has been developed in this laboratory by which the alcohol has been eliminated, which method will be published at a later date elsewhere.

One big advantage Neo-Arsphenamine has over Arsphenamine is, that it is less toxic and can, therefore, be administered in large doses. It is also more soluble in water, forming a neutral solution; but to offset these advantages it is less stable and is oxidized by air even more rapidly than the Arsphenamine.

In testing either of these drugs for decomposition, the best way is to see if the ampoule is air-tight, or if the ampoule had been partially evacuated when it was filled; if such is the case we can readily assume the product is in good condition.

PROPERTIES.

Arsphenamine and the Neo-derivative are both somewhat similar in color, the Arsphenamine being a pale yellow while the Neo is more of an orange-yellow shade.

Chemically, they can be readily distinguished from one another by simple tests, as for example their behavior toward 36% acetic acid, which with Neo-Arsphenamine gives an orange-yellow precipitate on heating, while the Arsphenamine gives none at all; or again, the diazotation of Arsphenamine yields a greenish yellow fluorescent compound, while Neo-Arsphenamine gives a brown solution.

The color of Arsphenamine is no criterion of its toxicity, as some light colored preparations were very toxic and others darker in shade were comparatively non-toxic.

According to some recent investigators, the variations of the toxicity in the drug are largely due to the fact that methyl alcohol and ether are used in the Ehrlich method of precipitating the dihydrochloride, in the final step of the preparation, and due to this fact the methyl alcohol is either occluded in the molecule or the product has been methylated, with the alcohol and ether bound chemically as an ester or ether. In the method used, modified by Kober, no alcohol or ether are employed, thus eliminating that toxicity factor.

It has been found that despite careful methods of manufacture, there is a possibility that variable amounts of arsenic, in an inorganic form, will be present, although theoretically all the arsenic should exist in the organic form only; and to complicate matters still further, various organic arsenic combinations with a higher toxicity than Arsphenamine enter into the final composition.

As these combinations cannot be analyzed chemically, you can readily see how highly essential it is that before this drug can be placed on the market its toxicity has to be determined by means of biological assays, using rabbits, guinea pigs or rats.

The arsenic content of the various Arsphenamine preparations on the market averages around thirty percent, which is the standard set by the Hygienic Laboratory of the United States Public Health Service, while the arsenic content in the Neo-derivative should average around nineteen percent.

The present biological standard set by the same Laboratory, for the Maximum Tolerated Dose, is 100 milligrammes per kilo-body-weight of animal for Arsphenamine; it is 200 milligrammes per kilo-body-weight for Neo-Arsphenamine.

The dose for Arsphenamine usually given to adults is from 0.4 to 0.6 gramme, while from 0.6–0.75 gramme is the usual dose for Neo-Arsphenamine.

RESEARCH LABORATORY,
E. R. SQUIBB & SONS.

THE PERMANENCE OF ALKALOIDAL FLUIDEXTRACTS AND TINCTURES.*

(SECOND PAPER.)

BY WILBUR L. SCOVILLE.

Nine years ago, at the Richmond meeting, I reported, under the above title, upon the keeping qualities of some fifty alkaloidal fluidextracts and tinctures over a period of two to three years. The remaining portions of those preparations were set aside in a closed case having glass doors where they have been stored during the intervening time. The preparations are now ten to twelve or more years old, and have been stored during that period under conditions which simulate the ordinary storage of business, namely, in partially filled bottles, in a fairly even temperature, and in a diffused light. They were each assayed by the same method as used ten years ago, and the results are shown in the following table.

The column headed "standard" shows the strength (grammes per 100 mls) to which the preparations were adjusted by assay when made.

TABLE OF RESULTS.

Abbreviations in tabular matter: F.—fluidextract; T.—tincture. Under "physical condition," the extent and character of the precipitate are indicated as follows: Slight precipitate—s; very slight—v. s.; moderate—m.; dense—d.; heavy—h.; considerable—c.; gelatinous—g.; wholly gelatinized—w. g. For fluidextracts of cinchona, guarana, ipecac and kola see also statements indicated by key number to foot-notes. Abbreviated references to preparations without precipitates are: O—clear; N—nearly clear; A—acetic.—EDITOR.

Made.	Percent alcohol.	Preparation.	Standard.	Assay		Percent loss.	Physical condition.
				1910.	1919.		
7-'07	40	F. Aconite lf.....	0.40	0.50	0.44	00.0	s.
1-'08	65	F. Aconite rt.....	0.40	0.43	0.407	00.0	N
1-'07	63	T. Aconite rt.....	0.050	0.051	0.0486	3.0	s.
10-'07	75	F. Anhalonium.....	5.50	6.48	5.6	00.0	v.s.
7-'08	50	F. Aspidosperma.....	1.00	1.04	0.53	47.0	h.
3-'08	60	F. Belladonna lf.....	0.30	0.297	0.277	8.0	m.

* Read before Scientific Section, A. Ph. A., New York Meeting, 1919.

TABLE OF RESULTS.—(Continued).

Made.	Percent alcohol.	Preparation.	Standard.	Assay.		Percent loss.	Physical condition.
				1910.	1919.		
9-'08	65	F. Belladonna rt.....	0.40	0.383	0.385	4.0	m.
2-'08	48	T. Belladonna lf.....	0.030	0.028	0.028	7.0	s.
5-'07	58	F. Cinchona Cal.....	4.00	2.85	2.20	44.0	c. ¹
8-'07	56	F. Cinchona Pale.....	3.00	2.72	2.56	15.0	m.
11-'07	56	F. Cinchona Red.....	5.00	4.75	4.60	8.0	s.
4-'08	53	F. Cinchona Comp.....	3.00	3.00	3.02	0.0	s.
2-'07	63	T. Cinchona Cal.....	0.75	0.63	0.56	25.0	h.
4-'08	64	T. Cinchona Comp.....	0.60	0.61	0.59	1.0	c.
8-'08	38	F. Coca.....	0.50	0.49	0.15	70.0	h.
5-'07	25	F. Coca misc.....	0.50	0.47	0.26	48.0	h.
12-'07	55	F. Colchicum corm.....	0.35	0.31	0.24	30.0	v. s.
3-'08	55	F. Colchicum seed.....	0.40	0.30	0.26	35.0	v. s.
2-'08	56	T. Colchicum seed.....	0.040	0.050	0.037	8.0	v. s.
8-'07	40	F. Conium.....	0.45	0.27	0.049	90.0	c.
12-'07	55	F. Gelsemium.....	0.50	0.42	0.49	2.0	O
5-'08	55	F. Gelsemium fresh.....	0.25	0.23	0.25	0.0	c.
3-'08	60	T. Gelsemium.....	0.05	0.041	0.038	24.0	s.
5-'08	60	F. Guarana.....	3.50	3.68	1.45	59.0	h ² .
8-'08	47	F. Hydrastis.....	2.00	2.06	1.86	7.0	s.
3-'08	60	T. Hydrastis.....	0.40	0.344	0.288	28.0	m.
12-'07	55	F. Hyoscyamus.....	0.075	0.073	0.0074	2.0	m. h.
6-'08	46	T. Hyoscyamus.....	0.0075	0.0072	0.0074	2.0	s.
10-'08	68	F. Ignatia.....	1.50	1.45	1.46	3.0	s.
2-'08	57	F. Ipecac Cart.....	1.75	1.78	1.39	20.0	g. ³
1-'08	57	F. Ipecac Rio.....	1.75	1.70	1.40	20.0	g. ⁴
	28	F. Kola N. F.....	1.00	0.92	0.93	7.0	c.
8-'08	52	F. Kola fresh.....	0.65	0.70	0.00	100.0	w. g. ⁵
8-'08	60	F. Nux Vomica.....	1.00	0.976	1.002	0.0	v. s.
6-'08	68	T. Nux Vomica.....	0.10	0.098	0.100	0.0	v. s.
6-'08	45	T. Opium.....	1.25	1.25	1.034	17.0	c.
4-'08	22	T. Opium deod.....	1.25	1.25	1.115	8.0	c.
11-'08	32	F. Opium Comp.....	4.82	4.58	4.06	16.0	m.
11-'07	88	F. Physostigma.....	0.15	0.157	0.138	8.0	s.
5-'08	92	T. Physostigma.....	0.014	0.016	0.016	0.0	v. s.
6-'08	43	F. Pilocarpus.....	0.40	0.33	0.35	12.5	s.
3-'08	Acet	F. Sanguinaria A.....	2.50	0.57	0.17	96	c.
2-'09	60	F. Sanguinaria.....	2.50	1.63	0.56	78	h.
3-'08	56	F. Sanguinaria.....	0.25	0.092	0.090	64	c.
11-'06	68	F. Scopolia.....	0.50	0.505*	0.51	0.0	s.
8-'07	52	F. Stramonium lf.....	0.25	0.27	0.236	6.0	m.
3-'07	63	F. Stramonium seed.....	0.35	0.326	0.34	3.0	m.
2-'08	48	T. Stramonium.....	0.025	0.025	0.018	28.0	s.
1-'08	85	F. Veratrum.....	1.00	0.70	0.60	40	O
4-'08	93	T. Veratrum.....	0.10	0.070	0.062	38	O

A study of this table discloses that there are two main reasons for deterioration in these preparations: (1) the unstable character of some of the alkaloids, and (2) precipitation of secondary constituents by which alkaloids are taken out of the solution.

Loss through the instability of the alkaloid is shown particularly in the fluid-

¹ One and one-half inch precipitate. ² 102 grammes moist precipitate. ³ 1/8 inch gelatinous precipitate. ⁴ 1/8 inch gelatinous precipitate. ⁵ Wholly gelatinous.

extracts of colchicum corm and colchicum seed. Both of these have lost more than a third of their strength, yet they remain nearly clear. The tincture shows much less loss, and contains a marked precipitate.

The fluidextract and tincture of veratrum show a loss of 40 percent, but are clear and, so far as physical appearance shows, are in excellent condition. Probably the deterioration in this is due entirely to partial decomposition of the alkaloids.

Sanguinaria shows the greatest loss of any of the preparations, the acetic fluidextract, which was formerly official, being almost inert. The sanguinaria alkaloids are easily changed, and in assaying the aged preparations it was evident from the appearance of the acid solutions that sanguinarine was present only in small amounts, if at all, since the blood-red color of acid solutions was lacking. The solution obtained from the acetic fluidextract had a yellow coloring in which no red was observed, while that from the alcoholic fluidextracts and tincture showed only a light orange color. This alone indicated a decomposition of the alkaloids, since in fresh preparations the color is a deep blood red, and the extraction of the alkaloid by acid can be closely followed by the color of the solutions. Precipitation is heavy in these preparations and may also be a factor in deterioration.

With coca and pilocarpus, decomposition of the alkaloid is doubtless the main factor in loss, but precipitation is also a secondary cause. Preparations of both of these precipitate badly.

It is especially noticeable, however, that the mydriatic alkaloids, which are generally regarded as unstable, show no serious losses on aging. Of all the preparations of belladonna, hyoscyamus, scopolia and stramonium, the only one showing a loss of more than 8 percent is tincture of stramonium. Hyoscyamus preparations show only 2 percent loss, though previous reports by other investigators have shown much greater losses.

Why the tincture of stramonium should undergo a deterioration of 28 percent is a puzzle. It shows less precipitate than some of the other stramonium and belladonna preparations, and it contains the same amount of alcohol as tincture of belladonna, which shows only 7 percent loss. Taken as a whole, the mydriatic preparations show an unexpected degree of stability.

Physostigma preparations are also stable to a surprising degree. Perhaps the alcoholic strength is a factor in this.

The aconite preparations also show no appreciable loss. Chemical assay in this instance is not conclusive, since the decomposition products of aconitine have a lower molecular weight and consequently show a higher titration value, and one is not certain in titration how much is aconitine and how much is aconine. But a comparison of the results by weight and by titration indicate that aconitine formed the greater portion of the alkaloid.

Among the preparations which show a loss in strength caused by the mechanical absorption of the alkaloids by the precipitate which is formed, those which contain tannoid bodies are conspicuous. Such are aspidosperma, cinchona, coca, kola, and guarana. The tannins in these drugs appear to oxidize easily and become insoluble, and in precipitating they carry down the alkaloids.

It is noticeable that in preparations of these drugs, loss in strength is appar-

ently proportional to the amount of precipitate. When there is no precipitate, there is no loss in strength, and when the precipitate is heavy the loss in the fluid is considerable.

That the precipitate carries down the alkaloid mechanically was shown in 1910 in the case of a fluidextract of cinchona which had dropped from 4 percent of ether-soluble alkaloids to 3.3 percent and which contained 75 grammes of moist precipitate containing 4.84 percent of ether-soluble alkaloids.

The case of fluidextract of guarana, which assayed 3.5 percent of caffeine in 1908 and 3.68 percent in 1910, when precipitation had begun, yielded only 1.45 percent in 1919; but it contained 102 grammes of dense, leather-like precipitate which could not be removed from the bottle without breaking the latter. This precipitate assayed 6.88 percent of caffeine. Apparently the first portions of precipitate did not occlude the alkaloid, but as it increased, alkaloid was absorbed from the liquid.

A similar case is shown in fluidextract of fresh kola, which showed only a slight precipitate in 1910 and tested 108 percent of standard, but had wholly gelatinized in 1919. Unfortunately this gelatinous mass was thrown away without assay.

Both samples of fluidextract of ipecac show a loss of 20 percent and contain considerable caked precipitate. Since ipecac does not contain tannin this precipitate is of a different character, but presumably it contains some of the alkaloids.

With opium the precipitate is of a resinous character, as shown by its partial solubility in 95 percent alcohol. It was found to contain morphine, but not in sufficient amount to account for the loss in the tinctures.

In general, the presence of a considerable quantity of precipitate in a fluidextract or tincture may be taken as an evidence of deterioration in strength. Evidently the precipitate does not consist of inert matter, as has frequently been taught, but contains more than its proportionate share of active principles, even when these are freely soluble in themenstruum. A slight or very moderate amount of precipitate does not necessarily indicate deterioration, as shown in the case of belladonna, hyoscyamus, and stramonium (fluidextract), but on the other hand even a clear fluid may have deteriorated, as shown by veratrum and colchicum preparations.

It is also interesting to note that tinctures show, in the cases of aconite, belladonna, and compound cinchona, slightly more, and in cinchona calisaya, gelsemium, hydrastis, and stramonium considerably more deterioration than the corresponding fluidextracts.

The influence of alcoholic strength is not so clear, from the table. With the exception of the opium, coca and kola preparations, all contained above 45 percent of alcohol. It is to be remembered that the tendency of late years has been to increase the strength of drug menstrua to prevent precipitation. This seems a wise tendency in so far as it effects this purpose, because not only the solubility of the alkaloids but the influence of other constituents of the drug, which may in themselves be inert, is important. The question of the strength of alcohol needed to extract the active principles and prevent fermentation changes, which is now being argued, is not sufficient if we are to have reliable preparations. The influence

of alcohol in excluding inert but instable constituents, in preventing oxidation, or in otherwise maintaining solution, is of prime importance. Stability and reliability in galenical and pharmaceutical preparations are of more importance than alcoholic restrictions.

As a whole, the preparations of our active potent drugs show a very satisfactory degree of stability during a considerable period.

LABORATORY OF
PARKE, DAVIS & COMPANY,
1919.

AN UNUSUAL METHOD FOR TESTING THE ALCOHOLIC STRENGTH OF PHARMACEUTICALS.*

BY WILLIAM G. TOPLIS.

On page 115 of the February 1919 issue of the *American Journal of Pharmacy* will be found a contribution by two Hindu gentlemen¹ connected with the Hindu University Chemical Laboratory at Benares, India, entitled, "A Simple and Rapid Method for the Estimation of Alcohol in Spirituous Liquors."

This is an example of widely separated minds operating along similar lines, each quite unknown to the other. The writer had occasion to visit Prof. C. H. LaWall some time before this article appeared in print, and one of the topics of discussion was this very subject.

The following is quoted from their paper to explain the method: "The method for the estimation of alcohol described below is the result of an investigation to devise a simple method for its estimation with a fair degree of accuracy, avoiding distillation."

The method consists of treating a known quantity of spirituous liquor, in a glass tube, graduated in tenths of a cubic centimeter, or finer, with an excess of anhydrous potassium carbonate, adding five to ten percent of water in case the alcohol is above ninety percent. The mixture is then thoroughly shaken and allowed to settle (or preferably centrifuged) when it will separate into a lower layer of solid potassium carbonate, a middle layer of solution (saturated) of potassium carbonate, and an upper layer of alcohol hydrate corresponding with the formula $4C_2H_5OH \cdot H_2O$. The authors here set forth the evidence of the truth of their statements, and the method by which it was secured. They have treated the subject with great care and show that the method is dependable and gives precise results. To the purely chemical investigator thus far ends the chapter. To the pharmaceutical observer there appears a further usefulness. Employing a similar method with different agents it is possible to determine with useful accuracy, not alone the alcohol in a preparation but certain substances soluble in dilute alcohol that are insoluble in concentrated alcohol or saturated solution of a salt; for example, essence of pepsin or wine of pepsin may be made to disclose, in addition to the alcohol, the pepsin content as well, by placing a known quantity of either preparation in a test tube and simply saturating the liquid with potassium citrate (previously dried); immediately the alcoholic part will rise to form the

* Read before Scientific Section, A. Ph. A., New York Meeting, 1919.

¹ Magendra Chandra Nag and Panna Lal.

top layer, the pepsin will be salted out of the water solution, rise to form the middle layer, and the solution of potassium citrate will subside; a graduated tube will give the parts of each ingredient near to the truth. The writer has found that 50 percent alcoholic liquids respond promptly to the test. Since pepsin preparations are much lower in alcohol than this it is good practice to add alcohol in known quantity to the test, to insure the best result, making proper correction of course for the added spirit. Again, this test may be made to disclose in whisky not alone the alcoholic content but a factitious spirit, and the amount of caramel that has been used in coloring it. Simply proceed as before; a measured quantity of the suspected liquid is saturated in a graduated tube, with the dried potassium citrate; the alcohol rises at once; the caramel, insoluble in strong alcohol, separates from both it and the saturated water solution and assumes the middle portion between them. If this tube be corked and set aside for some days the caramel may be removed in one piece and weighed.

Strong mixtures of alcohol and water separate most readily under this method, though a 10 percent alcohol (and 90 of water) responds. So far the writer has not succeeded in separating the alcohol from five percent beer by this method. Such determinations must be assisted by the addition of known amounts of alcohol.

The specific gravity of alcohol prepared by this process indicates 89.25 percent by volume. There is, no doubt, a small quantity of water retained by the alcohol; on the other hand there is doubtless a small portion of alcohol retained by the water so that these errors are acting to neutralize each other and the result is a very fair approximation of the fact.

A METHOD FOR ESTIMATING QUININE AND STRYCHNINE WHEN OCCURRING IN COMMON SOLUTION.

BY A. RICHARD BLISS, JR., M.D.

INTRODUCTORY.

One of the recommendations turned over to the writer as Associate Referee on Alkaloids to the Association of Official Agricultural Chemists was "*That further work be done on the methods for separating Quinine and Strychnine, and that a method be submitted to the collaborators which has a reasonable certainty of yielding concordant results.*" A communication sent to all the collaborators on alkaloids and to the chief chemists of the great majority of the leading chemical manufacturers in which the question was asked, "*Have you been using a method for the separation of Quinine and Strychnine that has proved satisfactory?*" was answered in every case (where the communication was answered at all) in the negative. A search of recent chemical and pharmaceutical literature available to the writer failed to disclose mention of any methods for the estimation of Quinine and Strychnine when occurring in the same solution other than the *Oxalate Method*,¹ the *Tartrate Method*,¹ and the *Ferrocyanide Method* as modified by Simmonds.² It seems that most investigators have concluded that these methods are not entirely satisfactory.

¹ Allen, "Commercial Analysis," Vol. VI, p. 461; Vol. IX, p. 518.

² *The Analyst*, 39, 81-85, 1914.

While considering the physical properties of the two alkaloids the method below presented itself, and in the hands of the writer has proved to be rather satisfactory. The very simplicity of the method seemingly indicates that surely other workers in this field must have tried this method or some modification of it, but, as already stated, available literature failed to reveal anything but mention of the three methods listed above. The writer is submitting the method for collaborative work and will be grateful for criticisms, suggestions and reports of results.

THEORY OF THE METHOD.

The preparations which are most likely to call for a method of this kind are, of course, the preparations of Iron, Quinine and Strychnine, such as the Glycerite, the Syrup and Elixir of the U. S. P. VIII. After the usual treatment of the sample with citric acid and ammonia water, the shakings out with ether-chloroform, and the recovery of the mixed alkaloidal residue from the latter by careful evaporation, advantage is taken of the following physical properties of the two alkaloids:

	Quinine.	Strychnine.
Solubility in Water ³	1 Gm. in 1560 mils	1 Gm. in 6420 mils
Solubility in Ether ³	1 Gm. in 1.9 mils	Very slightly
Solubility in Chloroform ³	1 Gm. in 1.1 mils	1 Gm. in 5 mils

The separation is accomplished by (1) dissolving the mixed alkaloidal residue in sufficient diluted sulphuric acid, (2) adding an *excess of water*, keeping in mind the fact that 1 Gm. of strychnine requires 6420 mils of water for solution,³ (3) precipitating the quinine by the addition of ammonia water (the strychnine remaining in solution since a sufficient excess of water is present to accomplish this), (4) dissolving and separating the quinine by shaking out with separate portions of ether (in which strychnine is practically insoluble), (5) shaking out the remaining ammoniacal liquid with separate portions of chloroform to dissolve out and separate the strychnine.

DETAILS OF THE METHOD.

Fifty (50) mils of the sample are treated in the usual way (as with the Oxalate or the Tartrate Methods⁴) with Citric Acid and Ammonia Water, the precipitated alkaloids removed by shaking with ether-chloroform, and the mixed alkaloids recovered by very careful evaporation in a tared dish. This weight of the mixed alkaloids is noted to be used later in checking the results of the method.

The mixed alkaloidal residue is dissolved in sufficient 5 percent sulphuric acid, transferred to a separatory funnel, and the dish washed with sufficient distilled water to make a volume of about 250 mils (1 Gm. of strychnine requires 6420 mils for solution). An excess of ammonia water is added and the mixture shaken out with seven (7) portions of ether using 35, 20, 10, 10, 10, 10, and 5, carefully washing the stem of the separatory funnel each time and running such ether used for washing into the combined ethereal fraction. The combined ethereal fraction is washed with 5 mils of distilled water and allowed to stand for 15 minutes to completely separate. A pledget of absorbent cotton is introduced into the stem

³ U. S. P. IX, p. 349, 416.

⁴ Allen, "Commercial Analysis," Vol. VI, p. 461.

of the separatory funnel, and the ethereal fraction very carefully run into a tared dish. Five (5) mls of ether are poured into the separatory funnel and run into the tared dish, and this is repeated with 5 more mls of ether. Finally the outside of the stem of the separatory funnel is carefully washed with ether and this also run into the tared dish. The ethereal solution is then *very carefully* evaporated on a bath, dried at 100° C. for an hour and weighed as quinine.

The ammoniacal liquid left after the foregoing treatments with ether, is next shaken with seven (7) portions of chloroform using 35, 20, 10, 10, 10, 10 and 5 mls, and carefully washing the stem of the separatory funnel with chloroform and running this chloroform also into the combined chloroformic fraction. The combined chloroformic fraction is washed with 10 mls of distilled water and allowed to stand 15 minutes. A pledget of absorbent cotton is introduced into the stem of the separatory funnel and the chloroformic solution carefully run into a tared dish. Ten (10) mls of chloroform are added to the contents of the separatory funnel, the mixture thoroughly agitated, and, when completely separated, the chloroformic layer run into a tared dish. The outer and inner surfaces of the separatory funnel are washed with a little chloroform and this also run into the tared dish. Lastly, the chloroformic solution is evaporated *very carefully* on a bath, removing the dish from the bath as the last portions evaporate. The residue is dried at 100° C. for an hour and weighed as Strychnine.

Both the weight of the strychnine and that of the quinine may be checked volumetrically by dissolving each residue separately in neutral alcohol, adding an excess of $\frac{N}{10}$ H_2SO_4 , and titrating back with $\frac{N}{50}$ KOH, using methyl red as the indicator. One (1) mil of $\frac{N}{10}$ H_2SO_4 is equivalent to 0.0334 Gm. of strychnine and 0.0428 Gm. of strychnine sulphate. One (1) mil of $\frac{N}{10}$ H_2SO_4 is equivalent to 0.0324 Gm. of quinine and 0.0436 Gm. of quinine sulphate.

EXPERIMENTAL.

The following table gives the results of ten estimations carried out on a solution containing 0.4375 Gm. of quinine and 0.0138 Gm. of strychnine in 50 mls (Elixir I. Q. & S., U. S. P. VIII strength):

TABLE I.

Experiment No.	No. Shakings with ether.	Quinine found. (Had 0.4375).	% Found.	No. Shakings with chloroform.	Strychnine found. (Had 0.0138).	% Found.
1	4	0.4284	98—	4	0.0131	95
2	4	0.4287	98	4	0.0130	95—
3	5	0.4333	99+	5	0.0133	97—
4	5	0.4330	99—	5	0.0132	96
5	6	0.4330	99—	6	0.0135	98
6	6	0.4333	99+	6	0.0135	98
7	7	0.4374	100—	7	0.0136	99
8	7	0.4378	100+	7	0.0133	97
9	7	0.4373	100—	7	0.0135	98
10	7	0.4377	100+	7	0.0137	99

A few preliminary experiments with solutions containing strychnine alone, and carried out by diluting the solutions first with distilled water as above, adding an excess of ammonia, and then shaking out with chloroform, gave the following:

TABLE 2.

Experiment No.	Strychnine in 50 mils.	Strychnine found.	%.	No. shakings.
1	0.0376 Gm.	0.0360 Gm.	95—	5 ⁵
2	0.0376 Gm.	0.0375 Gm.	99.9	7
3	0.0182 Gm.	0.0182 Gm.	100	7
4	0.0182 Gm.	0.0176 Gm.	97	5 ⁵

CONCLUSIONS.

The method, as shown by the results of the experiments tabulated above, is certainly reasonably accurate, in the hands of the writer at any rate. A comparison of this method with the other three methods is now being carried out by the writer, who hopes to present the results of his comparative study in the form of a paper at an early date.

LABORATORIES OF PHARMACOLOGY,
SCHOOL OF MEDICINE,
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COMMERCIAL DRUG GROWING IN THE UNITED STATES IN 1918.*

BY W. W. STOCKBERGER.¹

When some historian of the future writes the history of drug plant growing in the United States, the eventful year 1918 will stand out in sharp relief as a period of readjustment of popular opinion with regard to this important subject. The cumulative effect of the unusual conditions occasioned by the great war cannot yet be fully determined, nevertheless there is much positive evidence that certain important changes have occurred in the drug growing industry. By no means the least of these is the partial emergence of drug growing from the romantic phase which has been so pronounced during recent years into one which is more prosaic but certainly far more sensible and businesslike. Another change, brought about for the most part by bitter experience, is the growing realization that drug growing as a business proposition does not differ essentially from other types of agricultural enterprises, particularly in respect to crop risks and marketing problems, or if any appreciable difference is to be noted it is in the direction of greater uncertainty as to the successful outcome.

Stimulated by the high price levels reached by many important crude drugs during the early period of the war, or hoping thereby to render a patriotic service to our nation in a time of need, the commercial production of crude drugs was undertaken by numerous individuals who had little or no experience in this particular enterprise. In a regrettably large number of cases the outcome was very disappointing although this contingency had been foreseen and publicly predicted in advance by those whose previous experience placed them in a position to judge the situation fairly.

The situation with respect to some of the most important drug crops grown in 1918 fully demonstrates the danger of overproduction regarding which much

⁵ After last shake-out still gave a decided precipitation with Mayer's reagent.

* Read before Scientific Section, A. Ph. A., New York meeting, 1919.

¹ Physiologist in Charge, Office of Drug, Poisonous and Oil Plant Investigations, Bureau of Plant Industry.

has been said in recent years. The growers of belladonna for example although not very numerous found that the product from the relatively small acreage planted was more than the market would readily absorb, and it was soon currently reported in the trade that there was a heavy overproduction of the drug with the natural result that the price rapidly declined to a figure that was discouragingly low to the grower. Producers of cannabis and digitalis also experienced some difficulty in finding a satisfactory market although price fluctuation in the case of these two drugs was not very great.

From such information as it has been possible to secure, it appears that marketable quantities of the following annual drug crops were produced under cultivation in this country last year: Belladonna, henbane, digitalis, cannabis, calendula and sage. Senega, mandrake, pink root, valerian, cypripedium and blood root were also grown but in negligible quantity. As in former years the following oils were produced from cultivated plants: Peppermint, spearmint, wormwood, chenopodium and tansy. To obtain accurate data on all these crops was practically out of the question for a number of reasons. The individual growers are widely scattered over the country, thus making a personal canvass impossible. The only recourse was to send out written requests for the desired information but as complete lists of the growers of various drug plants are not available it is practically certain that many growers were not called on for a report. Moreover, another element of uncertainty was introduced by the fact that no reply was made to many of the requests sent out. It must therefore be distinctly understood that the figures given later in this report are to be taken with certain reservations and that with two or three exceptions, they merely represent the reported production which may be far from the actual production.

BELLADONNA.

The war-time interest in drug growing was chiefly centered on belladonna, and the success attained by some growers in 1917 was reflected in the increased acreage planted in the year following. The general distribution of the acreage and the production are shown in the accompanying tabulation:

State.	No. of growers.	Average.	Production in pounds.			
			Herb.	Leaves.	Stems.	Root.
Michigan.....	13	45.5	20950	10075	2550	9825
Indiana.....	7	32.73	2944	11114	3680	2445
New Jersey.....	4	34.75	26725	340	25	5050
Pennsylvania.....	6	41.75	1500	11258	1585	3017
California.....	24	95.63	37675	20984	5500	1430
Maryland	6	23.35	1256	5540	2373	510
Virginia						
West Virginia						
Illinois						
Wisconsin						
Oregon	60	273.71	91050	59311	15713	22277
Iowa						
Total.....	60	273.71	91050	59311	15713	22277

This tabulation which represents reports from 60 growers and an area of 273. acres, or an average of 4.5 acres for each grower, shows an average yield of approximately 600 pounds of belladonna herb (including leaves and stems), per acre.

From 136 acres twenty-four growers harvested 11.13 tons of root, an average production of 164 pounds of root per acre. Summarized, the total production for the year was approximately 83 tons of herb (including leaves and stems), and 11 tons of root.

The average yield by states expressed in pounds per acre was as follows: New Jersey 780, Michigan 703, California 671, Indiana 542, Pennsylvania 343. These data are insufficient to form a basis for any sound conclusions as to the section of this country most favorable for the cultivation of belladonna. It can be stated, however, that so far the results in California have been less favorable than were expected. Mr. N. R. Mueller of the Office of Drug, Poisonous and Oil Plant Investigations, visited practically all of the plantings of belladonna in California during the summer and fall of 1918 and found that in addition to the acreage reported above, about 35 acres planted to belladonna had not been harvested on account of failure of the crop. He also found that the potato stalk borer, *Trichobares trinotata*, had become a serious pest of belladonna, especially on plantings of second year growth, and that the ravages of this insect had introduced a large element of uncertainty with respect to this crop. Indeed the opinion has gained ground among growers that the cultivation of belladonna in southern California will be greatly reduced if not abandoned in the near future unless some effective means can be found to prevent the destructive action of the potato stem borer on this crop.

CANNABIS.

During the year under consideration, the quantity of cannabis produced was sufficient to meet market demands for the American grown drug. The reported acreage and production were as follows:

State.	No. of growers.	No. of acres.	Production in pounds.
Illinois.....	1	20	30,000
New Jersey.....	2	9	5,350
Pennsylvania.....	1	3.75	4,300
South Carolina.....	13	29.50	10,000
Virginia.....	1	20	10,000
Total.....	18	82.25	59,650

Owing to the different methods employed in harvesting and preparing cannabis for market, no just comparison can be made of acre yields in the different geographical locations. The South Carolina cannabis is produced under the general supervision of a representative of the Bureau of Plant Industry, and every precaution is taken to keep all of the drug marketed from that state up to the pharmacopoeial standard. After the flowering tops are harvested they are thoroughly cured under cover, then worked over by hand and all the stems and large foliage leaves removed. This process gives a drug of high quality, but greatly reduces the net or marketable yield per acre, since the portion rejected often equals or exceeds in weight the part which is regarded as suitable to offer to the drug trade.

DIGITALIS.

Judging from the reports received the cultivation of digitalis does not as yet appear to be established on a commercial basis. Small areas of cultivated digitalis,

usually from one-half to one acre in extent, were harvested in Pennsylvania, South Carolina, Washington, California and some other states. The figures which are available do not warrant even an approximate statement of the probable production but there is little doubt that with proper encouragement the quantity necessary to satisfy domestic needs would be readily available. In some sections the yield of the cultivated drug appears to be quite satisfactory, and unless the cost of production is excessive the crop should show a profit to the grower.

In addition to the strictly commercial plantings, *digitalis* was grown on a relatively large scale at several of the more important drug gardens which are maintained in connection with a number of Schools of Pharmacy. Several tons of *digitalis* leaves and a quantity of seed was also collected from plants of wild growth in the general region of the Coast Range of mountains on the Pacific Coast. The possible competition of this wild material is a factor that must be taken into account in the future development of the production of *digitalis* under cultivation.

CALENDULA.

Calendula continued to receive the attention of a few growers in 1918, notwithstanding the failure of the market to recover from the decline in prices that was precipitated in 1916 by the importation of this product from Japan. The reports at hand show that in 1918 two acres of *calendula* were grown in New York, six acres in Massachusetts, and a number of small plots in Los Angeles County, California. Some growers marketed the florets only, while others were able to sell the whole flowers in both the fresh and the dried state. Since these were not distinguished in the reports, no figure can be given for the total production.

SAGE.

Although sage is widely grown as a home and market garden crop, a comparatively small number of growers have attempted quantity production for the spice trade. Efforts in this direction have met with moderate success in Wisconsin, Missouri, Ohio, Massachusetts and South Carolina. A total of 12 growers from these states report the harvesting of from 8 to 10 acres of sage with a production of from 9,000 to 10,000 pounds. The yield per acre ranged from 300 to 1,250 pounds, the lower figure being largely due to unfavorable weather conditions which prevailed in some sections during the early part of the year.

HENBANE.

The cultivation of henbane has continued to be a very difficult problem for most growers. In the year under consideration attempts were made to grow henbane in a number of states but with little success except in Michigan, where one grower at least has been able to produce a good crop. The great decline in price from former high levels and the difficulties encountered in the production of henbane seem likely to retard progress in the cultivation of this crop at least for the immediate future.

This brief, although incomplete résumé of the situation, may serve to show something of the extent of the present development of the commercial cultivation of medicinal plants. It is evident that all of these enterprises are small and that in many cases they can hardly be regarded as having passed the experimental

stage. The experience of the past few years seems more than ever to point out the futility of depending upon a large number of amateur drug raisers to supply market demands. From the standpoint of the drug manufacturer, a constant and reliable source of supply is of primary importance, and it is believed that the interests of both producers and manufacturers will be best conserved by restricting drug growing so far as possible to those individuals who are in a position to undertake the work on a permanent business basis.

FERRUM REDUCTUM.*

BY CHARLES H. LAWALL AND J. W. E. HARRISSON.

The standards for Ferrum Reductum were changed in the U. S. P. IX to provide for greater definiteness and accuracy, but were not made any more rigid than were the requirements of the U. S. P. VIII as regards the more important tests.

The test of greatest importance from the standpoint of the prescriber is the test for limit of sulphide.

Sulphide in reduced iron originates in the process of manufacture through the fact that the ferric oxide has not been entirely freed from soluble sulphates. These sulphates in the process of reduction are changed to sulphides and enter into combination with the iron to produce ferrous sulphide. The objectionable character of this impurity will be appreciated when it is realized that Ferrum Reductum containing larger amounts of sulphide than permitted by the U. S. P. test, will give evidence of the fact by unpleasant eructations of hydrogen sulphide when the reduced iron comes into contact with the hydrochloric acid of the gastric juices.

When the present standards were framed prior to 1914, there was no difficulty in obtaining supplies of proposed U. S. P. quality nor was there any protest on the part of any manufacturers of inorganic chemicals, who were consulted in framing these standards, that the requirements could not be met. Shortly after the U. S. P. IX became official in 1916, it became apparent that Ferrum Reductum of official quality was not being supplied by the manufacturers and wholesalers. Instead, an article was furnished which either bore the anomalous or misleading subterfuge "technical" so often resorted to by chemical manufacturers or it was stated on the label that "it contains sulphides in slight excess of the U. S. P. limit."

While the responsibility lies primarily with the wholesalers and manufacturers for furnishing a substandard article which is used for no other purpose than in medicine, there is also a lack of watchfulness evident on the part of the retail pharmacist who accepts and uses such an inferior article in filling prescriptions.

If every pharmacist would have returned to the manufacturer each package so labeled and would have followed this action with a vigorous protest, it would not have taken long for American chemical manufacturers to have realized their

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New York Meeting, 1919.

responsibility in the matter and to have taken steps to supply an article of the desired quality.

The reason given for the failure to supply an official article at the present time is that prior to the war all supplies of reduced iron came from Europe and that since that time they (the manufacturers) have been unable to obtain supplies of equal quality.

Shades of Maisch and Procter. Where is our vaunted progress in chemical manufacturing if such flimsy pretexts are to be accepted by American pharmacists for the failure to supply an article of official quality.

The real reason is that American dispensing pharmacists have supinely accepted what was sent to them without protest or question and the manufacturers have naturally taken advantage of that fact instead of maintaining a high standard of quality voluntarily.

As was the case with zinc oxide a few years ago, no improvement can probably be hoped for until some state boards make a few inspections and prosecutions and bring the entire pharmaceutical trade to a realization of its responsibilities.

The standard for sulphides is not an unnecessary nor an unattainable standard and it should be a matter of personal pride with American manufacturers to meet its requirements.

The following tabular statement shows the results of the examination of seven samples purchased in the open market representing four well known manufacturers and two wholesale druggists:

Sample No.	1.	2.	3.	4.	5.	6. ¹
Ignition test.....	Normal	Normal	Normal	Normal	Normal	Abnormal
Reaction.....	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
Sulphides time limit.....	1/2 min.	3 1/2 min.	25 sec.	15 sec.	10 sec.	15 sec.
Insoluble residue.....	Normal	Normal	Normal	Normal	Normal	3.3 percent (excessive)
Arsenic test.....	Normal	Normal	Normal	Normal	Normal	Normal
Assay.....	97.1%	89.03%	90.65%	99.4%	95.05%	90.35%

An attempt was made to devise an easy and simple method for the quantitative determination of the combined sulphur but without avail.

A method in which the evolved H_2S was collected in a solution of cadmium chloride and the cadmium sulphide later determined by iodometric titration showed the amount of ferric sulphide in the samples examined to range between 0.124 and 0.40%.

This is hardly sufficient to produce any adverse physiological effect but the reason for the test as previously stated is sufficiently strong to warrant its retention and the foregoing exposition of existing conditions will, it is hoped, result in immediate improvement in the quality of the article as supplied by American manufacturing chemists.

¹ Sample No. 6 from its physical appearance was nothing but fine iron filings.

PROPOSED CHANGES IN THE SOAPS OF THE PHARMACOPOEIA.*

BY E. V. KYSER.

The purpose for which a soap is to be used should determine its composition.

The ingredients used in the soaps of the Pharmacopoeia and the methods of manufacture directed are not economical to use and do not produce the best finished product.

I. SAPO—SOAP.

The official soap of the U. S. P. IX, familiarly known as Castile soap, is made from olive oil and sodium hydroxide. The term "Castile Soap" which signifies a pure olive oil soap, means very little to-day, because this once highly recommended soap has been replaced by other soaps which are superior in quality and can be produced more economically. While olive oil is a non-drying oil, it is composed of a large proportion of unsaturated glycerides, as evidenced by its high iodine value, which is undesirable for soap-making purposes. Olive oil soaps as well as other soaps made from unsaturated oils are readily decomposed and quickly become rancid.

In the manufacture of soaps for the toilet the use of corn, cotton seed, soya, peanut or any other oil of low titer and high iodine value is objectionable because the resultant soaps become rancid very readily, yet olive oil which is similar in chemical composition to the oils named is used and recognized by the Pharmacopoeia. This preference for olive oil soap no doubt originally arose from the fact that olive oil was the only oil suitable for soap making which was obtainable in suitable quantity and quality when the manufacture of soap was in its infancy. After the industry was established, this preference was, of course, fostered by interested manufacturers for their own profit. The general public has long since been won away from the preference for olive oil soap by the substitution of other and better soaps, but the conservatism of the Pharmacopoeia makers has prevented any change in this authority.

Olive oil soaps are neither chemically nor physically adapted for general use. They have a disagreeable odor, are unsightly in appearance, do not produce a good lather and have less value as detergents than soaps made from other oils and fats. Moreover, they are generally made by the semi-boiling method which, at times, fails to insure complete saponification. This process is also open to the objection that any impurities present in olive oil are retained in the finished soap. Olive oil soaps also contain a high proportion of water, the Pharmacopoeia allowing 36 percent of moisture in the soap in bars and 10 percent in the powdered soap.

The Pharmacopoeia is the only place where olive soap is given the preference. In all the purchases of soap made by the United States Government, the State and the Municipal governments, except in the cases where the U. S. P. soap is named, the specifications stipulate that the soap shall be a milled soap with 80 percent tallow and 20 percent coconut oil as a base. I propose that the Pharmacopoeia shall

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New York meeting, 1919.

abandon its antiquated and impracticable standards and shall recognize the progress that has been made in the manufacture of soap and shall adopt standards in conformity with the best modern practice in soap making. I append a set of specifications for the consideration of the Committee of Revision of the Pharmacopoeia.

Sapo.—A milled soap, made by the settled or grained process, consisting of 80 percent tallow and 20 percent coconut oil in conjunction with sodium hydroxide as the saponifying agent. The tallow employed shall be prime tallow with less than 3 percent free acid, and the coconut oil shall be Cochin grade, water white and under 5 percent free acid. Said soap shall be of a cream color and comply with the following standards:

Volatile matter at 105° C. shall not exceed 15 percent.

Free alkali, calculated as NaOH, shall not exceed 0.25 percent.

Alkali, alkaline salts calculated as sodium carbonate (Na_2CO_3), shall not exceed 0.3 percent. Not more than one-half of the alkali as alkaline salts shall be sodium silicate. (The term "Alkaline Salts" here includes carbonates, borates, and silicates.)

Sulphate, calculated as sodium sulphate (Na_2SO_4), shall not exceed 0.1 percent.

Chloride calculated as sodium chloride (NaCl), shall not exceed 0.3 percent.

Matter insoluble in water shall not exceed 0.1 percent.

Unsaponified saponifiable matter shall not exceed 0.1 percent.

Rosin, sugar, and foreign matter shall not be present.

Titer and acid number of the mixed fatty acids prepared from the soap must be, respectively, not less than 37° and not less than 203 nor more than 212.

The specifications set forth above are those adopted by the U. S. Government and by state and municipal authorities generally. These specifications can be met by all American manufacturers of toilet soaps and the product will prove much more satisfactory for all purposes than the olive oil soap now recognized. The only objections to the change will come from the European manufacturers, the sale of whose soap will be affected. These standards are recognized by the U. S. Government and in the state as well as city specifications generally.

Soap made in compliance with these standards constitute the general methods of all American soap manufacturers of toilet soap. Such soaps are ideal in their composition. They are stable, lather freely in hot or cold water, are readily soluble, mild, emollient and free from deleterious matter.

Soap occurs as a white or whitish solid in the form of bars, hard yet easily cut when fresh, or as a fine yellowish white powder, having a faint peculiar odor, free from rancidity, and a slightly alkaline taste. It is soluble in water or alcohol, dissolving more readily, however, with the aid of heat. Its aqueous solution is alkaline to litmus.

METHODS OF TESTING.

Such a soap as is indicated by the preceding specifications will conform to the requirements formulated by the U. S. Bureau of Standards. This Bureau has issued a circular of *Specifications for and Methods of Testing Soaps*. Copies of this pamphlet can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for five cents each.

II. SAPO MOLLIS—SOFT SOAP.

Soft soap which will meet every requirement of the Pharmacopoeia can be successfully made from the oils of cotton seed, corn, soya bean, peanut and various other vegetable oils and with the substitution of soda for potash.

Sodium soaps, while not as soft nor as soluble as potash soaps, are sufficiently soluble for the uses of the Pharmacopoeia and their detergent and lathering properties are fully as good.

The fifty mls of alcohol, used in the Pharmacopoeia formula, is completely lost as it is volatilized during the process of making.

The method usually pursued for making soft soap is as follows:

The oil to be saponified is run into kettles equipped with agitators and heated to a temperature of 160–170° F. (71–77° C.). The calculated amount of alkali is added to the total amount of water to be used and is now slowly added to the oil and the whole is boiled, with stirring, until saponification is complete. The soap is allowed to cool sufficiently and then run into containers. The same procedure may be followed on a small scale, or the alkali may be stronger and the soap hydrated after saponification; this eliminates the difficulties met with in the pharmacopoeial method.

The method for analysis given by the Pharmacopoeia is inadequate, in fact, a soap made of the above ingredients would conform with the pharmacopoeial requirements.

I propose that the same methods of analysis proposed for soap be adopted for soft soap with the necessary changes as to moisture, titer, iodine value, acid number, etc.

III. LINIMENTUM SAPONIS—SOAP LINIMENT.

This preparation should be made in accordance with the present formula and method except that the dried soap used can be supplanted by the addition of 120 Gm. of Sapo Mollis.

IV. LINIMENTUM SAPONIS MOLLIS—LINIMENT OF SOFT SOAP.

This should be made by the present method and formula with the substitution of the proposed soft soap.

V. LINIMENTUM CHLOROFORMI—CHLOROFORM LINIMENT.

This should be made by the present formula and method with the substitution of the proposed soap liniment.

VI. LINIMENTUM CALCIS—LIME LINIMENT.

Lime liniment or carron oil is not a true soap as it is an emulsion of oil with water formed by the presence of a small amount of calcium soap. There is no particular advantage in the use of linseed oil, any other oil could be used as well. The medicinal properties of the liniment are due entirely to the bland and emollient character of the product, and any other oil would give the same results.

I would advise the substitution of soya bean oil for linseed oil in this liniment.

VII. LIQUOR CRESOLIS COMPOSITUS—COMPOUND SOLUTION OF CRESOL.

The only use of soap in this preparation is for the purpose of rendering cresol miscible with water. Any soap which accomplishes this purpose can be substituted for the expensive linseed oil, potash soap. The alcohol used in the formula is not necessary and does not serve any useful purpose. I propose that *Liquor Cresolis Compositus* be made from equal parts by weight of *Sapo Mollis* and cresol.

Solution of cresol made by this formula mixes clear with water in any proportion. It gives a light colored solution and affords a method of making that should meet with the approval of pharmacists. Cresol is an excellent solvent for soaps and the soft soaps can readily be dissolved in the cresol at a low temperature.

I respectfully suggest that this paper be referred by the Section to the Committee of Revision of the U. S. Pharmacopoeia. I submit samples which may also be turned over to the committee.

LABORATORY OF THE CINCINNATI SOAP CO.,
CINCINNATI, OHIO.

USE OF HYDROGENATED OILS AND FATS IN PHARMACY.*

BY E. V. KYSER AND C. A. MAYO.

Hydrogenation is the process of applying latent hydrogen to organic compounds which are unsaturated or, in other words, having free bonds which are capable of taking up additional hydrogen, oxygen, or any of the halogens.

Hydrogenation, however, does not confine itself to oils alone, but at the present time we are interested in this special field, the hydrogenation of oils and fats, in an endeavor to procure a substance which will prove an efficacious substitute for lard as an ointment base.

There are many methods of hydrogenation proposed, as well as in practice. The early work on hydrogenation of oils and fats was (while somewhat crude and non-applicable to quantity production) sufficient to show the feasibility of converting unsaturated glycerides of higher fatty acids into saturated compounds.

Primarily, the object sought was to convert olein or oleic acid into stearin or stearic acid which is largely used in the manufacture of candles.

The difficulty in manipulation of the earlier processes was the sluggishness or inactivity of hydrogen, and it is only within the last decade that this has been overcome by the use of catalyzers which accelerate the combining power of hydrogen and unsaturated oils.

There are many proposed catalytic agents and methods of preparation. Among these are various salts of nickel, palladium, iron, zinc and copper, as well as other metals.

In quite a number of instances these catalysts are supported by carriers or vehicles in the form of porous substances such as fullers' earth, pumice stone and kieselguhr, which have a tendency to finely divide the particles of catalyzers

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New York meeting, 1919.

used. Freshly reduced nickel oxide, prepared by heating nickel to a high temperature and subsequently reducing by hydrogen, is most generally employed and is calculated to produce the best results. Generally, the prepared nickel oxide is supported on fullers' earth or pumice stone.

The procedure for hydrogenation is quite simple and leads to results that are satisfactory. The oil or fat to be hydrogenated is intimately mixed with the catalyzer in an autoclave under pressure at a temperature of 160 degrees to 250 degrees C. (depending upon the process followed as well as the oil or fat used). Either hydrogen or water gas is supplied in the quantities specified, the whole being agitated so as to insure complete or partial saturation, as desired. The procedure is regulated by taking samples which are controlled by either a titer or iodine absorption test, or by both.

Hydrogenation has been resorted to in this country mostly for the production of lard substitutes, compound lard and butter compounds, and soaps. In Europe where unsaturated oils, which are unsuited for the manufacture of soaps, are cheap and abundant, the process of hydrogenation is quite popular.

There has been some work done in this country on hydrogenated oils for ointment bases. Most oils when hydrogenated to a degree whereby their iodine value is low, become too hard and are unsuited for this purpose. In an endeavor to procure a substitute, which is of very near the same consistency as lard and having a low iodine value, we have chosen coconut oil.

This oil, nominally, is easily obtained and is usually the lowest priced of all the oils. The iodine value is low and it requires very little hydrogen to saturate its glycerides. The process was carried out in the usual way and the finished oil had an iodine value of one and a slightly higher melting point than that of lard.

The hydrogenated oil is particularly suited for use in the preparation of iodine ointment. The fact that the iodine value of lard is high and consequently the amount of iodine absorbed is large has been responsible for the substitutions of petrolatum and petroleum oils in iodine compounds to overcome this quality.

Fats for use as ointment bases are much better suited than are the petroleum substitutes since they are more readily absorbed by the skin. The wax in the pharmacopoeial ointments can be replaced by a hydrogenated oil of a higher titer and, by proper admixtures, ointment bases of any consistency can be made.

We have prepared all of the ointments of the Pharmacopoeia from a base containing hydrogenated coconut oil and stearin. The ointments are good in appearance and consistency. We have not had the opportunity to observe these for any length of time and consequently can make no definite recommendation.

We will do additional work along this line and report our observation at a later date.

ABSTRACT OF DISCUSSION.

MR. MAYO: The paper on "Proposed Changes in the Soaps of the Pharmacopoeia" bears on the paper on "The Uses of Hydrogenated Oils in Pharmacy," by Mr. Kyser and myself. I would ask that the paper and its samples be referred to the Committee on U. S. Pharmacopoeia.

MR. NITARDY: My understanding of the hydrogenation of oils is, that chemically the glycerides of oleic acid or liquid oils are changed into glycerides of stearic acid and for that reason the finished product of the completely hydrogenated oils are physically similar to stearin or tallow. Is that always the case or are there physical differences in the product?

MR. MAYO: Physically there is a difference in the degree of hardness and that is shown and mentioned in the paper; chemically the reaction is apparently the same.

MR. GRIFFITH: I wonder if I am right in saying that it depends on the nature of the oil with which you start. Palmitin oils, oils containing an amount of palmitin, do not show physical changes as quickly as those containing a large amount of olein. Consequently an oil containing a certain amount of palmitin and olein is not of such hard consistency when the end reaction is reached.

MR. JONES: About five years ago I started with some investigations along these lines. I used "Crisco;" tried it out as a substitute for ordinary lard in the making of zinc oxide ointment, advocating the adoption of a petrolatum vehicle in that particular ointment, which was afterward rejected. I have a sample of that ointment on hand which is fully five years old. However, I do not advocate keeping zinc ointment five years. This sample is perfectly smooth and a fine ointment.

One of the peculiarities of hydrogenated fats, particularly with the "Crisco," is, that when melted and quickly cooled a smooth product is obtained. The stiffness of such fat is dependent on the amount of unsaturated fatty acids or glycerides which are present.

Hydrogenated cacao butter is peculiar. When it is hydrogenated a waxy substance results which resembles in appearance carnauba wax. It has a brittle structure which probably makes it useful as a base for cacao butter suppositories.

I took up the matter with the "Crisco" manufacturers and asked them why they could not put out a stiffer hydrogenated fat than "Crisco." They replied that it was used mostly for cooking and the women did not care whether it cooled smoothly, or not. By inclusion of fifteen percent of wax a very smooth product of desirable consistency is obtained.

THE CHAIRMAN: About four years ago I had occasion to examine a sample of zinc oxide ointment. I thought there was petrolatum in it, but I found that was not the case. The melting point of the fat was a little higher than it should be, and it was certainly made of a hydrogenated oil. It was put up by a large pharmaceutical manufacturing firm, labeled strictly U. S. P. If the degree of absorption is the same it makes no particular difference, or as is usually the case with zinc oxide ointment, but when it is used in cases where rapidity of penetration is essential this point should be considered.

(Samples of hydrogenated oils were supplied by courtesy of Procter & Gamble Company.—E. V. K.)

LABORATORIES OF THE CINCINNATI SOAP COMPANY
AND THE WM. S. MERRELL COMPANY.

THE FUNCTION OF GLYCERIN IN SOME U. S. P. AND N. F. PREPARATIONS.*

BY EDESEL A. RUDDIMAN.

The object of these experiments was to determine if possible the value of glycerin in some preparations; whether it adds to the permanency or in any way makes them better.

Samples were made up in August 1918, following the formulas of the U. S. P. and N. F. At the same time samples were made up in which glycerin was replaced by other fluids. Five samples of each preparation were made as follows:

- No. 1. In each case the formula given was used.
- No. 2. Glycerin was replaced by syrup.
- No. 3. Glycerin was replaced by water.
- No. 4. Glycerin was replaced by a commercial solution of invert sugar.

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New York meeting, 1919.

No. 5. Glycerin was replaced by a solution of glucose, specific gravity about 1.21.

To avoid repetition, reference will be made to these samples by number instead of stating the modifications of the formula each time.

The solution of invert sugar used had some yellow color and this accounts in some cases for the preparations made from it being darker than others.

These preparations were examined about the middle of February 1919, and again in August, the notations being given in the following table:

TABLE SHOWING VARIATIONS IN PREPARATIONS—PERCENT GLYCERIN REFERS TO AMOUNT IN U. S. P. OR N. F. PREPARATION.

Preparation.	When first made.	At end of six months.		At end of one year.	
	Color.	Color.	Appearance— Precipitate.	Color.	Appearance— Precipitate.
Elixir of Bismuth (12.5% Glycerin).					
No. 1.....	Colorless	Colorless	Clear	Colorless	Clear
No. 2.....	Colorless	Colorless	Clear	Colorless	Clear
No. 3.....	Colorless	Colorless	Clear	Colorless	Clear
No. 4.....	Pale yellow	Deep yellow	Clear	Light amber	Clear
No. 5.....	Colorless	Colorless	Clear	Colorless	Clear

Remarks—Practically the same except in sweetness.

Elixir Calcium and Sodium Glycero-phosphates (30% Glycerin).

No. 1.....	Colorless	Colorless	Clear	Colorless	Clear
No. 2.....	Colorless	Colorless	Clear	Very pale yellow	Clear
No. 3.....	Colorless	Colorless	Clear	Colorless	Clear
No. 4.....	Pale yellow	Pale yellow	Clear	Pale yellow	Clear
No. 5.....	Colorless	Colorless	Clear	Colorless	Clear

Remarks—Difference in sweetness. No. 1 had disagreeable taste on account of so much glycerin—Choice, No. 2.

Elixir of Gentian (5% Glycerin).

No. 1.....	Red	Red	Clear	Red	Clear
No. 2.....	Red	Red	Clear	Red	Clear
No. 3.....	Red	Red	Clear	Red	Clear
No. 4.....	Red	Red	Clear	Red	Clear
No. 5.....	Red	Red	Clear	Red	Clear

REMARKS—No appreciable difference—Choice, No. 2.

Compound Elixir of Glycerophosphates (35% Glycerin).

No. 1.....	Greenish yellow	Reddish	Slimy precipitate	Dirty brown	Black precipitate covering bottom of bottle
No. 2.....	Greenish yellow	Deep straw	Flaky precipitate	Pale greenish brown	Similar to No. 1
No. 3.....	Greenish yellow	Light amber	Flaky precipitate	Light straw	Flaky, brownish yellow
No. 4.....	Darker green	Light amber	Flaky precipitate	Red-brown	Light brown
No. 5.....	Similar to No. 1	Deep straw	Slight precipitate	Similar to No. 2	Light brown

Remarks—None of these samples are satisfactory. In taste, No. 2 is preferable to No. 1.

Preparation.	When first made,	At end of six months.	At end of one year		
	Color.	Color.	Appearance— Precipitate.	Color.	Appearance— Precipitate.
Solution of Ferric Hypophosphite (15% Glycerin).					
No. 1.....	Green	Green	Crystalline film at bottom	Dark green	Thin crystalline layer
No. 2.....	Green	Much darker than No. 1	Considerable precipitate	.....	.....
No. 3.....	Green	Similar to No. 1	Crystalline film	Lighter than No. 1	Similar to No. 1. Some, but suspended
No. 4.....	Green	Much darker than No. 1	Not perceptible	Dirty reddish brown	.....
Remarks—Considerable pressure in all. Bottle No. 2 burst.					
Solution of Ferrous Chloride (25% Glycerin).					
No. 1.....	Green	Green	Clear	Yellowish green	Very slight flocculent precipitate
No. 2.....	Green	Very dark	Slimy precipitate	Light brown	Dark brown precipitate covers bottom
No. 3.....	Green	Green	Clear	Light green	Clear precipitate
No. 4.....	Green	Dark brown	Slimy precipitate	Darker than No. 2	Similar to No. 2
No. 5.....	Green	Green	Slight precipitate	Light green	Very slight precipitate
Remarks—Nos. 2 and 4 had an odor of caramel. No ferric iron present at end of a year.					
Solution of Ferric Salicylate (17.5% Glycerin).					
No. 1.....	Deep red	Deep red	Clear	Very dark	None settled
No. 2.....	Deep red	Deep red	Clear	Very dark	None settled
No. 3.....	Deep red	Darker than No. 1	Clear	Very dark	None settled
No. 4.....	Deep red	Very dark	Clear	Very dark	None settled
No. 5.....	Deep red	Darker than No. 1	Slight precipitate	Very dark	None settled
Remarks—All samples were a little turbid.					
Compound Solution of Hypophosphites (35% Glycerin).					
No. 1.....	Light yellow	Straw	Clear	Straw	Clear
No. 2.....	Light yellow	Straw	Clear	Darker than No. 1	Clear
No. 3.....	Light yellow	Amber	Clear	Dark amber	Clear
No. 4 (lost).....	.....	.....	.....	.....	.....
No. 5.....	Light yellow	Similar to No. 1	Clear	Between No. 1 and No. 2	Clear
Remarks—Trace of mold in No. 2 and No. 5—Choice, No. 1.					
Compound Solution of Phosphates (37.5% Glycerin).					
No. 1.....	Greenish yellow	Red straw	Considerable flaky precipitate	Reddish brown	Considerable crystalline mass
No. 2.....	Similar to No. 1	Dark reddish	Considerable precipitate	Very dark reddish brown	Crystalline precipitate
No. 3.....	Similar to No. 1	Light straw	Similar to No. 2	Light greenish yellow	Similar to No. 2
No. 4.....	Little darker than No. 1	Very dark red	Slight precipitate	Similar to No. 2	Less than No. 2
Remarks—Crystals were small isodiametric. Odor of caramel in No. 2 and No. 4. None were satisfactory.					

Preparation.	When first made.	At end of six months.		At end of one year.	
	Color.	Color.	Appearance— Precipitate.	Color.	Appearance— Precipitate.
Syrup of Hypophosphites (5% Glycerin).					
No. 1.....	Colorless	Colorless	Clear	Clear	Colorless
No. 2.....	Colorless	Colorless	Clear	Colorless	Clear
No. 3.....	Colorless	Colorless	Clear	Colorless	Clear
No. 4.....	Pale yellow	Pale yellow	Very slight precipitate	Yellowish	Slight precipitate
No. 5.....	Colorless	Colorless	Clear	Colorless	Clear
Remarks—Very slight growth in No. 2 and No. 3—Choice, No. 1					

Syrup of Ipecac (10% Glycerin).					
No. 1.....	Red-brown	Red-brown	Slight precipitate	Red-brown	Slight precipitate
No. 2.....	Red-brown	Red-brown	Slight precipitate	Red-brown	Slight precipitate
No. 3.....	Red-brown	Red-brown	Slight precipitate	Red-brown	Slight precipitate
No. 4.....	Red-brown	Red-brown	Slight precipitate	Lighter than No. 1	Slight precipitate
No. 5.....	Red-brown	Darker than No. 1	Slight precipitate	Darker than No. 1	Slight precipitate
Remarks—No. 3 is U. S. P., except acetic acid is omitted—Choice, No. 2.					

Syrup of Wild Cherry (5% Glycerin).					
No. 1.....	Red	Red	Slight precipitate	Red	Slight precipitate
No. 2.....	Red	Red	Slight precipitate	Red	Slight precipitate
No. 3.....	Red	Red	Slight precipitate	Red	Slight precipitate
No. 4.....	Red	Red	Slight precipitate	Red	Slight precipitate
No. 5.....	Red	Red	Slight precipitate	Red	Slight precipitate

Remarks—When first made, No. 1 was slightly darker than others, but in February they were similar—Choice, No. 2.

Syrup of Ammonium Hypophosphite (10% Glycerin).					
No. 1.....	Pale yellow	Pale yellow	Very slight precipitate	Yellow	Very slight precipitate
No. 2.....	Pale yellow	Pale yellow	Very slight precipitate	Yellow	Very slight precipitate
No. 3.....	Pale yellow	Slightly lighter	Very slight precipitate	Sample lost	.....
No. 4.....	Slightly darker	Slightly darker	Very slight precipitate	Light amber	Very slight precipitate
No. 5.....	Pale yellow	Pale yellow	Very slight precipitate	Yellow	Very slight precipitate

Remarks—Practically no difference except No. 4 is deeper yellow—Choice, No. 2.

Syrup of Ferrous Chloride (12.5% Glycerin).					
No. 1.....	Pale yellow	Pale yellow	Very slight precipitate	Light yellow	Very slight precipitate
No. 2.....	Pale yellow	Pale yellow	Very slight precipitate	Light yellow	Very slight precipitate
No. 3.....	Pale yellow	Pale yellow	Very slight precipitate	Light yellow	Very slight precipitate
No. 4.....	More yellow	Pale yellow	Very slight precipitate	Light brown	Very slight precipitate
No. 5.....	Pale yellow	Pale yellow	Very slight precipitate	Light brown	Very slight precipitate

Remarks—Practically no difference except No. 4 is a little darker. No ferric iron was present at end of a year.

Preparation.	When first made.	At end of six months.		At end of one year.	
	Color.	Color.	Appearance— Precipitate.	Color.	Appearance— Precipitate.
Syrup of the Phosphates of Iron, Quinine and Strychnine (10% Glycerin).					
No. 1.....	Light yellow	Dark	Small crystals	Dark reddish	Crystalline precipitate
No. 2.....	Light yellow	Darker than No. 1	Similar to No. 1	Similar to No. 1	Similar to No. 1
No. 3.....	Light yellow	Slightly darker than No. 1	Nearly clear	Similar to No. 1	Very slight precipitate
No. 4.....	Deeper yellow	Darkest	Clear	Darker than No. 1	Very slight precipitate
No. 5.....	Light yellow	Similar to No. 2	Crystals on sides of bottle	Similar to No. 1	Large crystalline precipitate

Remarks—None of these formulas are satisfactory.

Compound Syrup of Hypophosphites (5% Glycerin).					
No. 1.....	Pale straw	Deep straw	Clear	Deeper than others	Clear
No. 2.....	Pale straw	Pale straw	Clear	Pale straw	Clear
No. 3.....	Pale straw	Pale straw	Clear	Pale straw	Clear
No. 4.....	Straw	Deep straw	Clear	Darker than No. 3	Clear
No. 5.....	Pale straw	Pale straw	Clear	Lightest	Clear

Remarks—But little difference in color between them. Slight growth in No. 5—Choice, No. 2.

Compound Syrup of the Phosphates (15% Glycerin).					
No. 1.....	Red	Dark red	Flocculent precipitate	Dark red	Considerable precipitate
No. 2.....	Red	Similar to No. 1	Less precipitate than No. 1	Similar to No. 1	Less than No. 1
No. 3.....	Red	Similar to No. 1	More precipitate than No. 2	Similar to No. 1	Least precipitate
No. 4.....	Red	Very dark	Less precipitate than No. 2	Similar to No. 1	Similar to No. 1
No. 5.....	Red	Very dark	Less precipitate than No. 1	Darker than No. 1	Similar to No. 2

Remarks—None of these samples were satisfactory.

Syrup of Phosphates with Quinine and Strychnine (15% Glycerin).					
No. 1.....	Light greenish yellow	Dark	Bulky precipitate	Dark reddish brown	Bulky precipitate
No. 2.....	Light greenish yellow	Dark	Less than No. 1	Similar to No. 1	Slight precipitate
No. 3.....	Light greenish yellow	Lighter than No. 1	Less than No. 2	Lighter than No. 1	More precipitate than No. 2
No. 4.....	Straw	Darker than others	Slight precipitate	Similar to No. 1	More precipitate than No. 3
No. 5.....	Light straw	Lighter than No. 1	Slight precipitate	Similar to No. 1	Less precipitate than No. 1

Remarks—None of these samples were satisfactory.

Preparation.	When first made.	At end of six months.		At end of one year.	
	Color.	Color.	Appearance— Precipitate.	Color.	Appearance— Precipitate.
Compound Syrup of White Pine (10% Glycerin).					
No. 1.....	Red	Red	Flocculent precipitate	Red	Flocculent precipitate
No. 2.....	Red	Red	Flocculent precipitate	Red	Flocculent precipitate
No. 3.....	Red	Red	Flocculent precipitate	Red	Flocculent precipitate
No. 4.....	Red	Red	Flocculent precipitate	Red	Flocculent precipitate
No. 5.....	Red	Red	Flocculent precipitate	Red	Flocculent precipitate
Remarks—No appreciable difference—Choice, No. 2.					
Compound Syrup of Stillingia (10% Glycerin).					
No. 1.....	Red	Red	Bulky, flocculent precipitate	Red	Bulky, flocculent precipitate
No. 2.....	Red	Red	Bulky, flocculent precipitate	Red	Bulky, flocculent precipitate
No. 3.....	Red	Red	Bulky, flocculent precipitate	Red	Bulky, flocculent precipitate
No. 4.....	Red	Red	Bulky, flocculent precipitate	Red	Bulky, flocculent precipitate
No. 5.....	Red	Red	Bulky, flocculent precipitate	Red	Bulky, flocculent precipitate
Remarks—No appreciable difference—Choice, No. 2.					

In sample No. 5 of the syrup of hypophosphites, syrup of ferrous chloride, and syrup of the phosphates of iron, quinine and strychnine, the "heavy" syrupy glucose was used in place of the solution of specific gravity 1.21.

All of the samples of solution of ferric hypophosphite produced gas and in sample No. 2 a sufficient amount to burst the bottle. This gas is due not to fermentation but to the oxidizing effect of the ferric salt in strong solution on the citrate in the presence of light. Difficulty was experienced in getting all of the iron salt into solution and the addition of more citrate seemed to cause greater subsequent precipitation. Samples in which the iron hypophosphite was cut from 165 Gm. per liter to 150 Gm. per liter showed less precipitation.

Samples of elixir of hypophosphites, compound elixir of vanillin, and mixture of rhubarb were made in the summer of 1919. At the end of six weeks there was no appreciable difference in appearance between the N. F. samples and those made by replacing glycerin by syrup or by water.

SUMMARY.

Invert sugar tends to lessen the amount of precipitation for a time. At the end of six months, the amount of precipitate was less in the samples containing invert sugar than in samples not containing it although at the end of twelve months there was not much difference in most cases.

These experiments go to show that glycerin is not necessary for the permanency of these preparations except in a few cases as in compound solution of hypophos-

phites and syrup of hypophosphites. The large amount of glycerin, as in elixir of calcium and sodium glycerophosphates and compound elixir of glycerophosphates, is objectionable because of the disagreeable taste which develops. On the other hand glycerin is preferred to syrup when the preparation contains a large percentage of acid or inorganic salt because sugar is so easily caramelized.

CHEMICAL RESEARCH DEPARTMENT,

PARKE, DAVIS & Co.,

DETROIT, MICHIGAN,

August 21, 1919.

ABSTRACT OF DISCUSSION.

MR. RAUBENHEIMER: While it is true that glycerin can be replaced to some extent, as Professor Ruddiman has reported, there are a great many preparations wherein it is absolutely necessary. The standards must be complied with, and the author has this in mind. The work done by him will, doubtless, prove of value in the revision of the standards.

PROTECTIVE OINTMENTS AGAINST MUSTARD GAS.*

BY JOHN M. WILLIAMS.

Mustard gas, dichlorodiethylsulphide, is an intense vesicant as well as being very toxic when inhaled. It has a marked action upon the eyes, causing temporary blindness, and quickly produces intense hoarseness followed by inflammation of the lungs. It penetrates clothing, producing a flesh wound of much the same character as the burn from phosphorus.

Mustard gas is produced by passing dry, pure ethylene into sulphur chloride at a temperature maintained within very narrow limits. Of the manufacture I will not go into detail.

Mustard gas was first used by the Germans on the Ypres sector in July 1917, and proved a formidable weapon, and had the Germans been able to manufacture it then on such a large scale as the Allies were doing at the time of the Armistice, there is little doubt that the allied lines would have melted, with a different conclusion of the war.

The need for a protection against mustard gas is realized when you consider the terrible burning effect of the liquid or gas. A small drop of the liquid on the skin will cause a marked erythema within a few hours, followed by a large blister, and a sore that heals very slowly. Exposure to the vapor gives a similar result, the severity of the burn depending upon the concentration of the vapor and the length of the exposure.

In considering possible preventatives or curative agents, attention must be drawn to the fact that absolutely no immediate effect of exposure of the external skin to mustard gas can be noticed. This decreases the value of any possible curative agents, and to be efficacious must be applied shortly after exposure. Exhaustive investigations failed to find an effective curative agent, although washing the exposed parts with kerosene, or soap and water, within one minute would keep it from burning. If washed within one-half hour a redness would appear, but this treatment is impossible under field conditions.

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New York meeting, 1919.

Protection from mustard gas may be secured in at least three different ways:

- a. A protective outside suit to be put on when exposure is anticipated.
- b. Protective underclothing, to be worn continuously.
- c. A protective ointment, to be applied to the skin when exposure is anticipated.

The latter is the one this paper will treat with although we will show how it was also made effective by the underclothing.

From the first it was recognized that the use of ointments had three fundamental disadvantages:

- a. It would be impossible to protect the whole body by the use of ointment. Such a wholesale application might result fatally.
- b. The ointment would be apt to rub off.
- c. Only an impervious, unpleasant coating could protect against liquid drops of mustard gas.

The advantages are:

- a. A small amount would supply a large number of men with protection.
- b. Such an agent could be rapidly manufactured.
- c. On certain *limited portions* of the body such protection must be used.
- d. It could be used for horses, dogs and other animals.

At the outset it was agreed that an ointment to be satisfactory should possess the following properties to the greatest possible extent:

- a. It should protect against "Mustard Gas."
- b. It should give protection for 24 hours.
- c. It should not be easily rubbed off.
- d. It should in itself be non-irritating.
- e. There should be no toxic or unpleasant effects from continued use.
- f. It should retain a proper consistency under service conditions and give a proper coating at the temperature of the body.
- g. It should be simple and rapid to manufacture. The raw materials required should be such as were available.
- h. The cost should not be excessively great.

To determine if the ointments were satisfactory, a standard method of testing must be had. So exactly one-tenth of a mil of the ointment was rubbed over three square inches of the skin; after the ointment was applied no effort was made to protect it from rubbing off.

For exposure of gas to the skin an apparatus was prepared as follows: A test tube $4\frac{1}{2}$ inches by $\frac{1}{2}$ inch was placed inside a tube 5 by $\frac{3}{4}$ inches, and the inner tube separated from the outer by pieces of cork on the bottom, and at the sides. In the inner tube a piece of glass wool was placed about 2 inches from the top, and on this was dropped 1 mil of Mustard Gas. This inner tube was kept stoppered when not in use.

For rapidity in making a large number of exposures eight such tubes were attached in a row to a heavy strip of rubber.

In testing the ointments a blank burn was put on at the same time a burn was put on the skin covered with the ointment, and this burn was compared with the blank and a percent given taking the blank as 100 percent.

This was called the standard test, but ointments which gave good results were subjected to the more severe tests.

In order to make the study of possible ointment materials as systematic and thorough-going as possible, the first series of over 50 ointments was made up as follows: It was considered that each ointment consisted of two parts. First, there was the metallic soap or other solid material which was considered to give the protection, and second, there was the oil or liquid material which was worked up with the solid, and which probably gave permanence, etc., to the ointment. The latter was called the ointment base.

Bases of the following composition were prepared and made into ointments, using zinc stearate, zinc oleate, and zinc linoleate, respectively, as the chemical protection:

Base A. Raw Linseed Oil.....	89%	Base E. Lanolin (30% Water).....	100%
Wax.....	11%	(Neutral Wool Fat).....	
B. Liquid Petrolatum.....	90%	F. Lanolin.....	98%
Paraffin.....	10%	Gum Arabic.....	2%
C. Olive Oil.....	89%	G. Liquid Petrolatum.....	77%
Wax.....	11%	Paraffin.....	14%
D. Coconut Oil.....	95%	Tar.....	9%
Paraffin.....	5%		

The results showed that Lanolin (Base E) gave the best result, and Liquid Petrolatum (Base B) the poorest. The others showed about the same degree of protection.

Direct comparisons were also made between zinc stearate, zinc oleate and zinc linoleate. Series were made consisting of three ointments made up with the same base, but each with a different soap. The result showed that the oleate and linoleate ointments are much better than the stearate.

The thing that showed out the strongest and might be of some pharmaceutical importance is that any ointment made up of vaseline or liquid petrolatum gives a higher percentage burns than the blanks.

Since the preliminary work indicated that lanolin followed by such oils as linseed, olive and coconut were best, ointments were prepared using these as the main constituents with slight modifications and additions of different chemicals.

The following ointments were prepared and tested:

No. 16 Zinc Oxide....	25	On % of blank	No. 44 Magnesium Oxide....	44
Linseed oil....	25		Linseed Oil.....	43
Lanolin.....	50	37	Paraffin.....	1
No. 3: Calcium Oxide.	55		Base D.....	12
Linseed Oil....	22		No. 41 Manganese Rosinate.	75
Lanolin.....	23	35	Base D.....	25
				33

From the work done it was noted that the ointment prepared from an oxide with an oil appeared to give better results than the metallic soaps as ordinarily prepared.

The question of which oxide was best was then taken up, and over one hundred ointments of different proportions of CaO, ZnO, Bi₂O₃, MgO, oil and some base, generally lanolin or neutral wool fat, were used.

The results showed that calcium and zinc oxides gave the best results so a number of ointments of these two oxides were made and prepared.

The best ointments of these two classes were as follows:

No. 82	Calcium Oxide.....	40%	No. 66	Zinc Oxide.....	40%
	Linseed Oil.....	28		Linseed Oil.....	20
	Water.....	9		Lard.....	20
	Lanolin.....	21		Lanolin.....	20
	Wax.....	1			

The CaO ointment gave good results, while the amount of CaO in them appeared to be high, the effect on the skin was not harmful, this ointment being applied to the skin and tender parts of the body for two weeks without any injurious effect at all. But these ointments harden or "set" on exposure to air and on long standing, so that they would not be practical for field use.

The ZnO ointments gave the best results, and a series of ointments were prepared and tested; the four ingredients varied in different amounts in order to see if No. 66 could be improved either in its protective properties or in its physical properties.

The results obtained showed, when any very great change in formula is made, that every substance used has a definite function, and the percentage composition is the best.

The following ointment, No. 146, was recommended for field use:

No. 146	Zinc Oxide.....	45%
	Linseed Oil.....	30
	Lard.....	10
	Neutral Wool Fat.....	15

The physical properties of No. 146 are very good. It forms a smooth, even coating on the skin; sticks well enough not to rub off too easily on the clothing, and yet is not so sticky as to plaster down the hairs and be disagreeable. Its consistency is just about right to press readily from an ointment tube and to rub on the skin well. The change with temperature variation is not great. A tube was heated to 42° C for 12 hours without hardening of the ointment or separation of the oil. Another tube was kept in a freezing mixture at -10° C for several hours, and when removed the ointment could easily be pressed out and rubbed on the skin. Test tubes were filled to the top with ointment and left standing exposed to the air in order to see if the ointment tended to separate. After two weeks' time there was no sign of separation. A jar of No. 66 has been kept for a month and a half open to the air more or less every day, without apparent effect on the ointment, and the ointment has been used from day to day without noticeable change in consistency. The ointment contains nothing which could in any way injure the skin during constant use. The materials to make it are all plentiful and cheap except lanolin, but by using neutral wool fat this objection was overcome.

Neither the use of all lanolin nor of all lard gave as good results as part lanolin and part lard. This ointment has the best proportions and any attempt to improve or cheapen the product frequently impairs to a considerable extent the degree of protection against mustard gas. It has been found by experiments that slight and apparently negligible changes in the composition often seriously im-

paired the efficiency of the product. This fact cannot be too strongly emphasized, and exact adherence to the given directions were required.

The ointment was painty white, and for field use it had to be camouflaged, so we found that one percent burnt umber gave a very satisfactory color—a light brown tint—the one desired.

Many other materials were tried in ointments besides different stearates, oleates and linoleates. They were metallic resinsates (these gave very good immediate results, but as a rule formed a very sticky mass on the skin which plastered down the hairs), aluminum chloride, ferric acetate, sodium carbonate, and sodium perborate, but without significant results. Among organic compounds chlorinating agents such as dichloramine and phenyliodide dichloride were used and also basic compounds such as oxamide, phthalamide and pyridine, all common oils, and a number of chlorinated oils. In no case were as good results consistently secured as when the regular ZnO ointment No. 146 was used.

At one time it was considered as a possibility that certain animal and vegetable oils alone rubbed on the skin might give as good protection as when made up in ointments with oxides and soaps. A number of oils were therefore tried, but none were found to give particularly good results as compared with the best ointments.

After these tests were made word was received from the A. E. F. laboratory that boiled linseed oil gave very good protection against mustard gas. Therefore another series of tests was made comparing boiled linseed oil with Ointment No. 66. The results showed the ointment gave the better protection. There were a number of drawbacks to using oil instead of an ointment. Repeated applications of boiled linseed oil gave a very unpleasant coating on the skin which slowly peeled off, causing a very marked degree of discomfort. None of the ointments made a coating even on repeated application for two weeks or more, making one or two applications a day.

The value of ointments for field use was subjected to some controversy, but Col. Bacon very emphatically stated that both American and Allied forces needed even partial protection such as was afforded by protective ointments. He stated that by far the greatest proportion of the casualties were caused by vapor burns and that the prevention of any reasonable percentage of these casualties would justify the use of a protective ointment.

It was found that this ointment gave more protection against high or medium concentrations than against long-continued exposure to uniformly low concentrations. But it was found that a large proportion of the men were exposed to high or medium concentrations and the use of the ointment would certainly prevent a considerable proportion of the casualties.

The directions were—rub on the ointment twice a day when exposure to mustard gas is anticipated. Do not apply to the whole body, but only to the crotch, in the arm pits, on the hands and feet, and exposed portions of the face.

This ointment gives good but not complete protection against mustard gas. It is a preventative only, and is of no value if applied after exposure to the gas.

The ointment proved its value a number of times. Men obliged to handle mustard gas who have made use of a protective coating of No. 146 ointment on their hands have been remarkably free from even slight mustard gas burns.

The manufacture and shell-filling plants have used this ointment with very satisfactory results. Men have worked over or taken apart machinery and apparatus containing liquid mustard gas with practically complete immunity from burns when they previously covered their hands and arms with ointment, put on protective gloves and subsequently washed off the ointment.

The ointments have also been used with distinct success in the impregnation of socks, underclothing and leather puttees and gloves, for mustard gas protection.

And this same ointment has also been found to give good protection against other powerful skin irritants which were going to be used when the Armistice was signed, and protective ointments were no longer needed.

SOME FUNDAMENTAL CONSIDERATIONS IN DISPENSING PHOTOGRAPHIC FORMULAS.*

BY IRWIN A. BECKER.

(A communication from the Chairman of the Sub-Committee on Photographic Formulas, A. Ph. A. Recipe Book.)

To the English reading and speaking photographic world the most potent single influence is the *British Journal of Photography*, together with its supplementary publication, "The British Journal Photographic Almanac, etc."

Naturally then, all weights and measures in these publications, when not expressed in terms of the metric system, are in terms of avoirdupois weights and "Imperial" fluid measure.

The very fact that a formula calls for a twenty or forty fluidounce quantity is a strong hint that the idea of the Imperial pint or quart suggested this amount, rather than some other influence. Also, photographic journals in this country (U. S.) largely quote from these publications, even to the extent of reprinting verbatim entire articles.

What mischief may be spread broadcast by this practice is nicely shown by an instance that happened during 1918.

The *British Journal of Photography* printed an elaborate exposition of the methods of reckoning percentage,—all, and properly so, based on avoirdupois weights and Imperial measure. These were generously copied or reprinted verbatim by various photographic publications in this country.

None, however, called attention to the essential difference in weight of the "Imperial" fluidounce of 437.5 grains and the U. S. liquid ounce of 454.6 grains, at ordinary conditions of temperature, pressure and humidity.

Therefore where a definite effect, or rate, or time limit is stated with any given formula of British origin, identical results can only be expected by actually duplicating the original formula. This can easily be accomplished in the absence of British measures, by weighing the fluids with avoirdupois weights, making due allowance, of course, for specific gravity where necessary. A general admonition is to pay close attention to cautions and precautions by manufacturers of, or dealers in, photographic materials.

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New York meeting, 1919.

To properly advise and inform one's trade in photographic goods it is necessary to fully understand the difference between the ordinary or non-color plates or films, which are sensitive only to the ultra-violet, violet, and blue rays of the spectrum; and the "ortho" or "iso" chromatic plates and films which, in addition to the former, by the use of suitable dyes, are also sensitive to some of the blue-green, green, yellow-green, yellow and up to orange light, thereby rendering more correctly in monochrome (black and white) landscapes, seascapes and cloud effects; and lastly, plates sensitized, more or less, to all the colors, including the red, which make up white light, known as pan-chromatic or spectrum plates, these latter requiring special precautions in the dark room on account of their sensitivity to red light. Brochures dealing with the photography of colored objects, giving very valuable information on this subject, are published by the various makers of these materials and can be had for a nominal price or in some instances gratis. The qualities of the various printing papers should also be fully understood to properly advise in their use.

In photography, given the proper instrument for making the exposure, the proper exposure and the proper medium (plate or film) for recording the effects of the exposure, one of the most important procedures is the development of the latent image to produce a negative of proper quality. This is accomplished by a preparation called generally "the developer" composed of various ingredients possessed of certain properties and subserving definite functions. To properly compound and preserve this most important preparation of photography requires thorough understanding of its purpose and the functions of its several ingredients. The finished preparation should be kept in containers as full to the stopper or other closure as practical, the oxygen of the air and not the light does the harm.

A developer consists, *firstly*, of a reducing, so-called "developing" agent of from one to several ingredients; such as metol or its various substitutes, hydroquinone, pyro, etc., whose function is to attack the light-weakened silver compound and reduce it to the metallic state; *secondly*, of a preservative agent to prevent the reducing agent from being too rapidly destroyed by atmospheric and other non-photo-salt agencies; such as sodium sulphite and bisulphite, and potassium meta bisulphite, etc.; *thirdly*, an accelerating agent which may possess a direct synergic action on the developing agent, but hastens the reaction principally by softening the gelatin base of the sensitive salt; such as the fixed alkalies, alkaline carbonates, etc.; *fourthly*, the restraining agent, whose function is to prevent the reducing action on that portion of the sensitive silver salt not affected by the light of the image, the prevention of "chemical fog," as this action is called, such as bromide, iodide, etc. Those particularly interested in "chemical fog" are referred to an article under this title by J. I. Crabtree in the 1919 *American Annual of Photography*.

Different developing agents show varying degrees of stability to atmospheric conditions and a varying sensitivity toward the "restraining" influence of the "bromides," the restrainer generally used.

With each developing agent and the various other ingredients of the developer there exists a proportion of each which affords the maximum action, together with the greatest preserving, accelerating and restraining influence, without causing fog;

a developer in such condition is called "well balanced." The experienced photographer varies the proportion, within certain limits, of these several agents to produce specific effects. Consequently the importance of producing a preparation exactly as called for by the formula. The sequence of mixing the ingredients also has an important bearing on the properties and action of the consequent solution, because of conditions of solubility, and of new compounds, either desirable or undesirable, being formed. To enumerate these would take us too far afield photographically, and from the purpose of this paper.

The soda salts, however, require some attention. The preservatives usually are sodium sulphite or bisulphite, and potassium meta bisulphite, and the accelerators are the fixed alkalies, or more generally their carbonates. Thus we may have sodium sulphite anhydrous or crystalline, and sodium carbonate of several degrees of anhydration, and crystalline; both salts differing greatly in their content of active chemical, accordingly. It will readily be seen, therefore, that the proper salt the formula calls for, or its equivalent in any of the other forms, should be employed so that the relative concentration of absolute salt be not altered. For halving or doubling the relations of either or both of these salts must produce such different results as to destroy the confidence in either the compounder or the formula.

It is highly advisable to use the brands of these salts marketed as "photographic," since they are of the necessary degree of purity and have a definitely stated degree of anhydration. The proper compounding of developers for making prints is scarcely of lesser importance, perhaps, than for negatives since readily staining compounds must be avoided. The watchword in general is "cleanliness," to avoid contamination.

Of the various processes for modifying negatives or prints, the more important are "intensification" and "reduction." The pharmacist who would cater to tyros and amateurs should have available, and be able to compound correctly, the "mercury bichloride," and the "mercuric iodide" intensifiers. He should be able to recommend a reducer for,—*uniform reduction*; one for *reduction for increasing contrast*, that is, for reducing shadow details; and a reducer to *diminish contrast*, that is, for reduction of high lights. The ferricyanide-hypo reducer should be mixed either as needed, or, each ingredient may be dissolved separately and mixed when needed; when separately dissolved keeps for some time. Users should be informed, however, that after mixing, the preparation soon loses its yellow color, after which it is useless for its intended purpose. This latter information is usually not found, even, in photographic formularies.

An "equalization" process, a form of reduction and redevelopment, may be found in the 1919 *American Annual of Photography*, under the title "The equalization of values in negatives," by A. Brooker Klugh. Every work on a special branch of photography usually contains formulas germane to that particular branch.

For photographic formulas, in general, and for descriptions of new processes, the writer would recommend the *American Annual of Photography* and the *British Journal Almanac* as affording a wealth of such formulas, for a comparatively small outlay financially.

JOURNAL OF THE

INSURANCE FOR DRUGGISTS.*

BY S. S. HUEBNER.¹

Leading forms of insurance as a necessity to place the individual and his business on a sound basis—life insurance, property insurance indemnity insurance. The uses of life insurance as a means of capitalizing the earning capacity of life, as a means of borrowing, as a power for encouraging thrift and conserving earnings. Features designed to protect the druggist's vocation in property and indemnity insurance.

Insurance in its various forms has for its purpose the elimination of risk from our business affairs. Whereas little was said and written about insurance a decade ago, few subjects have received more emphasis in recent economic literature as a constructive force for betterment and for saneness in the business community. Heretofore, economics, the science of human industrial activity, has confined itself to a discussion of the problems connected with production, distribution, and consumption. Insurance constituted a perplexing problem to writers in economics since they found it difficult to place within any one of the aforementioned divisions. Insurance deserves a separate division in economic science, and it is to be hoped that before long economics will be discussed in our leading text-books from the fourfold standpoint of production, distribution, consumption, and *elimination of risk*.

LIFE INSURANCE AS AN ASSET.

Many, if not most of those present here, probably expect a discussion of property and liability insurance, to the exclusion of practically everything else. Instead, I shall first place greatest emphasis upon life insurance, because it is by far the most important. In every vocation, and druggists are not an exception, life insurance outranks all other forms of insurance as a real necessity and duty. This is particularly true in your vocation if I have been correctly informed. I have asked for advice from those who ought to know, and have been informed that druggists usually depend upon their own business until too old to work longer; that for most of them the accumulation of \$15,000 represents a life's work, and that few retire on the income from outside investments; that not less than 75 percent of druggists carry financial obligations in the form of notes or mortgages; and that the average druggist requires from 7 to 15 years, under favorable conditions, to earn enough to free his business from debt, while, under unfavorable conditions, many carry these debts throughout their business life.

In presenting the cause of life insurance, I desire first to call attention to the fact that the most valuable asset in your vocation is the druggist himself. His life has a value that should be capitalized and conserved. It is high time that you should emphasize the value of your lives as contrasted with the value of mere property in your business. Certainly your personal value greatly exceeds the value of the material property in your business. Everywhere expression is being given to the fact that the productive lives in any community constitute

* Read before Section on Commercial Interests, A. Ph. A. New York meeting, 1919.

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by far the greatest economic value. Economic thought is rapidly turning to the incorporation of human values, and it is here that life insurance furnishes the only known method of capitalizing the income-producing value of a life.

In other words, life insurance is corporation finance applied to human values. From the moment the policy is signed and the premium paid an estate has been created. The policy is a callable, sinking fund bond issued upon the life of the policy holder. If Providence calls the policy holder the policy will be paid. In case Providence should not call the policy-holder, the policy, or bond, will also be paid at the time of maturity through the accumulation of its savings fund feature. Live or die, the payment of the bond is a certainty, so long as the premium is paid regularly. The value of the earning capacity of the life has been capitalized, and should premature death destroy this value the proceeds of the policy will act as a substitute for the former earning capacity of the deceased. At this point a few figures may indicate the extent to which this idea of human life capitalization is gaining ground. During 1917, \$1,953,000 of life insurance was written every working hour in the year (assuming an eight-hour day); \$32,545 every working-minute, and \$542 every working-second.

Now why emphasize the value of a working life, and why capitalize it? In the overwhelming mass of cases a man's real value is to his dependents as the bread winner. We all pursue some occupation useful to our fellow men, it is true, but at bottom we serve them in our vocation in order to support a home. The home is the basis of society, and for nine men out of every ten it furnishes the motive for energy and progress. In other words, men have two businesses, one the vocation and the other the home. The first supports the second, and regard for the second furnishes vitality for the first. We must grasp the new economic concept of the family. As I have stated on other occasions we must view family economics in the same sense that we now apply economic thought to the conduct of business. The family is a man's first and most important business. It should be established and run as a business. It should be protected against bankruptcy. The death of the head of a family should no more bring about its impairment or dissolution than does the death of the head of a bank, a store, or a railroad. Every corporation represents capitalized earning capacity and good will. Why, then, should not the business called a family be protected against the loss of the only real good will, namely, the earning capacity of the bread-winner? Why is it not fully as reasonable to protect the family, as to back every foreign bill of exchange with a marine insurance certificate? The voyage in the first instance is certainly much longer, surrounded with much greater hazards, and in case of ship-wreck the consequences infinitely more serious. Why should not the value of one's life be capitalized and protected when we are so careful about insuring our building and tangible goods, when obviously the value of the life is far the most important, in the great majority of instances? Is it not foolish for a man to put capital into himself and to build up his earning capacity, gradually from year to year, and then suddenly have all of this value snuffed out by death? From the standpoint of the family the capitalization of this value becomes a sacred duty. As Dr. Talmage once said in referring to a person who had this matter explained to him, and who nevertheless refused to adequately capitalize his earning capacity for the benefit of dependents: "He does not die, he absconds."

But life insurance also bears a definite relationship to business enterprise in that it furnishes the means to protect the payment of obligations in case of the premature death of the debtor. As already stated, probably 75 percent of druggists carry financial obligations in the form of notes or mortgages. Many also own homes financed under a mortgage; while about 10 percent, I am informed, are regular borrowers from banks. Here life insurance affords a real opportunity. Every mortgage on a home or on the business should be hedged with a life insurance policy, the proceeds of which will retire the indebtedness and clear the property in case of the premature death of the debtor. Every building and loan association account should also be hedged with a life insurance policy. It takes time to save, and a life insurance policy protects against the contingency of the saving period being cut short by death before the saving fund, either under the mortgage or the building and loan association account, has reached a substantial figure. To regular borrowers from banks life insurance will also serve as a means of enhancing credit and of securing the most favorable rate of interest. Bankers are loud in their praise of life insurance. Recently a prominent banker called attention to his practice of asking for a statement of the amount of life insurance carried by the borrowers from his bank. When told by one of the borrowers that his insurance, although adequate, was all in favor of his family, this banker exclaimed: "that is all right; you have taken it and your act shows the man."

But, aside from its protective influence, life insurance should also be considered in its relation to saving. Not only does life insurance constitute compulsory thrift, but no other institution furnishes a more convenient method of saving. Life insurance is "compound interest in harness," and inculcates the habit of saving. In this connection let us remember that we do most things by habit, and saving is a habit. Life insurance may be compared to the conservation of by-products by the leading manufacturing concerns. The little odds and ends which otherwise would be frittered away are gradually accumulated at a very substantial rate of interest (4.9 percent in 1917) into a substantial sum at the end of a stipulated number of years.

Such systematic saving is especially to be encouraged in this country where rank speculation is so rampant. The words "guaranteed," "preferred," and "endorsed," carry with them a fascination in the United States as nowhere else. Every effort should be made to have the masses place their investments not directly, but indirectly, through the medium of large investment institutions. Such institutions have a threefold advantage: their investments are made through expert investment managers; their acts are regulated strictly by law; and they have furthermore the advantage of the law of average in such a way as to give the maximum return consistent with safety. By spreading investments widely, a loss in one direction is fully counterbalanced by a gain in another.

Of still greater importance is the fact that life insurance guarantees the saving period from being cut short by death. Let us never forget that it takes time to save and that a person is foolish to say: "I do not believe in life insurance, I believe in saving." What right has a man to say, "I will save \$10,000 in twenty years?" In the first place he does not know that he will live twenty years. In fact, out of some 85,000 persons at the age of 30 over 15,000 will fail because of premature death. The value of life insurance in this respect may be illustrated

by an endowment policy of, say, \$10,000, maturing at age 65, the average age of retirement. Such a policy represents a combination of decreasing term protection with an increasing savings fund. When the savings fund has reached \$1,000 the protection has declined to \$9,000. Should death occur early, when the savings portion is only \$1,000 the \$10,000 estate, nevertheless, exists because of the \$9,000 of protection. When the savings fund reaches \$5,000 the insurance protection has decreased correspondingly to \$5,000, the two again amounting to \$10,000 in case of death. Should the insured be fortunate enough to survive the full savings period (to age 65 under our assumption) the savings fund will have grown to \$10,000, this amount being paid to the insured, while the insurance protection, now no longer needed, is reduced to zero.

But even assuming life and will power to save, what assurance is there that the saving can be retained through individual investment? Again, let us not forget that one-half of those who accumulate a decent competency by the time age 50 is reached, again lose the same before death. All these contingencies are overcome by relying upon life insurance because it furnishes a happy combination of sure saving and protection against the saving period being cut short. Live or die, an estate is guaranteed as long as the premiums are paid. Here again a few figures may serve to show how the saving concept in life insurance is gaining ground. During 1917, the accumulated reserve (savings fund) of 241 life insurance companies increased \$160,000 every working hour of the year (assuming an 8-hour day), \$2,700 every working minute, and \$45 every working second.

FIRE INSURANCE—LIABILITY INSURANCE.

And now a few words with reference to property and liability protection. As regards fire insurance, the policy contract has been fairly standardized throughout the United States, and inquiry shows that the companies have no special form of policy, or of clauses, applicable to the property of druggists. The property is insured under the regular forms generally used in insuring stocks of merchandise, and the druggist's chief care should be in the selection of first-class indemnity, *i e.*, a company whose capital and surplus is indicative of financial strength.

The descriptive portion of the contract is practically the same as that used to insure any merchandise and store furniture and fixtures. This portion of the policy should enumerate fully (1) the various classes of property constituting a druggist's stock, being the property of the insured, or held in trust or on commission, or sold but not delivered, or for which the insured may be liable; and (2) the various classes of store furniture, fixtures, and utensils of every description as used in the business of the insured. As regards each of these two items it is customary to assign a separate valuation. Additional permits are also required where gasoline and other articles prohibited by the policy are kept on the premises. A careful reading of the policy by the insured is therefore essential to make certain that no avoidance of the contract exists in this respect. A special clause for permission to use electricity, for the obtaining of a certificate from the local underwriter's board showing the adequacy of the electrical equipment, and for notice to the board of any alteration in such equipment following the issuance of the certificate, is also required.

A so-called co-insurance clause is also required, the provision being to the

effect that the company shall not be liable for a greater proportion of any loss or damage to the property described in the policy than the sum insured bears to a designated percentage (usually 80 percent) of the actual cash value of the property insured. In other words, the owner is expected to insure his property to at least 80 percent of its value. If the insurance taken is less, a loss will be paid only in the proportion that the insurance taken bears to the insurance required. Probably no practice has received so much adverse criticism on the part of property owners. Yet plain justice requires that the practice be enforced. It is the Golden Rule in fire insurance. It is manifestly unfair, in view of the fact that the great mass of fire losses are small partial losses to permit a property owner to take only a small amount of insurance and yet have all his losses paid in full. Fire insurance premiums are a tax on the community, and like ordinary property taxes should be paid in proportion to the value of the properties involved. He who refuses to bear his just share of the community's fire premium tax should be willing to have his loss claim scaled proportionately, *i. e.*, the insured should receive only as he was willing to give.

Druggists' liability insurance should also commend itself to all druggists who desire to conduct their business with security and without worry. Reference is had to public liability insurance as distinguished from compensation insurance for employees which is now required by the law of practically every industrial State. Liability insurance has for its purpose the indemnification of the insured "against loss from liability imposed by law for damage on account of loss of life or bodily injuries suffered by any person or persons and resulting from any alleged civil malpractice, omission, error, or negligence in the practice of the insured's profession, or in the dispensing or sale of any drug, chemical, medicine, or pharmaceutical preparation, or other article regularly carried in stock by physicians or druggists, and not excepted in the Schedule, and occurring while this policy is in force; also against the cost of defense against any claims or suit based upon such civil malpractice, omission, error, or negligence, including the cost of any appeal to a court of last resort." No druggist can afford to go on the theory that errors resulting in injuries to customers will never occur, despite the utmost care in selecting his help. Even if we could assume that no errors would be made, no druggist can afford to remain unprotected against possible claims of unscrupulous persons. Where a suit is successfully prosecuted the recovery of damages for a single injury, if fatal, or totally disabling, may easily be so large, where the druggist's business is of ordinary size, as to cripple his financial standing. And even where the claim is unjust and the suit unsuccessful, the employment of counsel to defend is apt to be expensive in time and money. How much better it is to pay a definite premium of moderate size, and have an insurer protect the insured's interests by taking immediate charge of the case and by effecting an adjustment with the least delay and publicity. How much better it is to use insurance and to operate one's business on the basis of *certainty* instead of *uncertainty*.

Time limits forbid a detailed analysis of the contract, a copy of which may easily be obtained from any company. Suffice it to say that the contract is conspicuously free from onerous conditions. The limit of the company's liability is subject to agreement, but is usually \$5,000 for injury or loss of life to one person; and, subject to the same limit for each person, the company's total liability for

any number of persons is customarily fixed at \$10,000. But it is usually provided that the expenses incurred by the company in defending any suit, including the interest on any verdict or judgment, and any costs taxed against the insured, will be paid irrespective of the limits expressed above. The contract also contains certain provisions which safeguard the company against paying losses which are incurred under irregular conditions. Thus it is common to provide some such clause as the following: "The company shall not be liable for any alleged error or mistake—(1) caused by any employee unless such employee is classified in said Schedule and at the time of making the alleged error or mistake is on duty in the occupation under which he is classified; (2) caused by the Assured or any employee in prescribing any drug or medicine (as distinguished from an alleged error or mistake as defined herein), or caused by the intentional substitution of any drug or medicine for the drug or medicine ordered; (3) unless a demand or claim has been made on the Assured while this policy is in force or within six months after the termination or expiration thereof; (4) for or on account of any criminal prosecution of the Assured or any employee; (5) if the Assured or any employee shall have violated any law or ordinance in connection with any alleged error or mistake; (6) if the Assured or any employee was to any extent under the influence of any anaesthetics, intoxicants or narcotics."

Brief reference may also be made to the customary method of arriving at the premium on liability policies. Two items comprise the charge, *viz.*, (1) the store charge, covering one store and its proprietor, and (2) the employees whom the proprietor may decide to cover under the policy. The store charge depends upon the size of the policy, while the charge for employees (an annual rate varying in amount for different classes of employees, such as registered pharmacists or prescription clerks, assistant pharmacists or junior prescription clerks working under one or more registered pharmacists, relief clerks, salesmen, porters, and soda-water clerks) remains the same irrespective of the amount of the policy. The insurer is not required to have all employees covered, but if any are excluded, it follows that the company is not liable for any of their errors. But if the insurer has decided upon the classes of employees to be covered (the above mentioned employees are grouped in classes, a separate charge being assigned to each class) it is required that he must include all the employees of that class. If two or more stores are operated by one concern, the charge for employees remains the same, but the store charge is reduced, usually about 10 percent for two stores, 15 percent for three, etc., until a maximum reduction of 25 percent is reached.

BUYING FOR A RETAIL DRUG STORE.*

BY CHARLES W. HOLZHAUER.

The importance of right buying—general principles, factors and conditions to be considered.

How—Systematic methods of ordering and keeping stock. Inventories, record of purchases, order forms, etc., price information and cash discounts.

When—A brief outline of the best time to buy certain lines.

Where—Available markets, source of supply, jobbers, manufacturers, specialty houses, buying clubs, etc.

* Read before Section on Commercial Interests, A. Ph. A., New York meeting, 1919.

The question of buying for a retail drug store is of sufficient importance to be worthy of careful study by every pharmacist. We acknowledge at the outset that pharmacy is, of necessity, partly professional and partly commercial, hence time devoted to the science of buying wisely will be time well spent. The old saying that "Goods well bought are half sold" holds just as good in the drug business as in the department store. Too frequently no stock records, either mental or physical, are kept and when the supply of an article is exhausted a new supply of the same quantity is bought whether the time, as far as price is concerned, is favorable or not. Perhaps instead of fifty pounds, on account of market conditions, it might be better to buy ten, and, conversely, instead of fifty it might be better to buy one hundred. The pharmacist in many lines he carries is in direct competition with other merchants, and his purchases must be about right, if he is to meet competition successfully.

No absolutely definite rules can be laid down for every store. General principles together with business sense must guide. The character of the store, its clientele, its location with reference to available markets, the amount of capital at its disposal, the time elapsing between order and delivery, are all factors to be considered. Perhaps the subject may be covered best by considering it under separate heads, *i. e.*, What to Buy—When—Where—How Much—and What to Pay.

WHAT TO BUY.

If the store is in very truth a *drug* store, then this question is easily answered. The purchases will be only drugs, chemicals, pharmaceuticals, and sick room supplies. If, on the other hand, it is a drug store as these stores exist to-day, then its buying activities will be extended beyond the scope mentioned. And here it is pertinent to ask how far from the true drug field a store should go. There is a limit, as in all things, and yet the limit seems to be far and wide. It is a safe rule, I think, to confine the purchases to articles that have some relation, remote perhaps, to the general drug line. This would include soda water, through long association perhaps, or because in days long past CO₂ was made on the premises from marble dust and sulphuric acid, bristle goods, toilet articles, photographic supplies—for the pharmacist is versed in chemistry—candy, cigars—if any profit is derived therefrom—novelties, holiday and Easter goods, and other lines that suggest themselves to the individual store. Very often the question of what to buy depends upon the requirements of the customers who patronize the store. If they require certain goods it would seem to be good business for the pharmacist to supply them although not directly in his line. Such a case came to my attention this summer. During the summer of 1918 a store had repeated calls for bath caps and bathing shoes. The proprietor did not wish to run a shoe store and he sent his customers away without the goods. Very often this happened at night and his customers' wants were supplied by other drug stores. Reluctant to send his customers to his competitors, he put in a line of caps and shoes in 1919 and has done a profitable business in these goods without interfering with his regular business. Hence local conditions, customers' wants, etc., will regulate the extent to which the pharmacist will indulge in side lines. The middle ground is probably the best—not adhering strictly to pharmaceuticals—nor, on the other hand, carrying all the jimcracks of the 5 and 10 cent stores.

Whatever the purchases are, it is a sound rule to buy only good merchandise—goods the seller can stand back of. It will build business better than almost anything else and business that it is a pleasure to transact. This does not necessarily mean the most expensive goods for often goods of medium price are excellent value to the consumer, but goods of questionable value and utility—shoddy merchandise—should be strictly avoided. All reputable wholesalers and manufacturers stand back of their products and if the retailer buys of such houses—and they are the only kind to deal with—he can also stand back of his goods. We all know of a popular brand of insect powder that has a large sale and keeps on repeating year after year. I have an idea that the success of this brand is due to the package containing the unexpanded flower heads of *Pyrethrum* in their pure and unadulterated state. Good goods always pay.

What goods to buy for your store? You will receive additional light on this subject by noting what other stores are doing. I never visit a strange city without observing what the drug stores are selling. May I put in a plea for pharmaceutical meetings? The attendance often is slim and I think this may be due to the fact that the every-day problems of the drug store are not given sufficient prominence. And yet, even so, the man who attends these meetings and keeps his eyes open for what is going on will obtain new ideas for his store and what is to the point in this paper—he will find out what other pharmacists are buying and selling. I have received ideas at pharmaceutical meetings which have been worth dollars to me in hard cash.

WHEN TO BUY.

When to buy—need not detain us long. Regular goods will be bought daily from the source of supply. Special or seasonable lines, however, are usually ordered far in advance of their sale. Thus many glass factories go out of blast during the summer months and a sufficient supply of bottles should be ordered in the spring to carry until fall. Holiday candy and stationery lines are often shown in August and orders placed at that time. Market conditions, whether upward or declining, will suggest whether the time is propitious for the purchase of a quantity of a drug or chemical. I know of one store that laid in a large stock of chemicals at the beginning of the war—a very wise thing to have done—for we all know to what prices some chemicals soared. One man, remembering that phenol was closely associated with explosives, bought a large stock at a low price. Later he wasn't paying \$1.00 a pound for his carbolic acid. An eye to market conditions as well as current events will have a bearing as to time of purchase of a given commodity. Before leaving this topic of when to buy—it is a good plan to order staple goods every day, that is for a store that is doing a fair volume of business and is close to its base of supplies. If items are allowed to accumulate on the want book it means a delay in receiving the goods and a possible loss of sale. Prompt ordering is a great help in keeping a stock complete.

WHERE TO BUY.

What sources of supply for drug store merchandise are available? There are so many sources that one is at a loss for the point of beginning. The general drug jobber, is, I suppose, the principal supply for most drug stores. The jobber carries a good stock, is usually close by, often in close touch with an individual business,

can make frequent and quick deliveries, extends credit with discount for prompt payment, and in many cases can furnish anything from strychnine to shoe polish. The jobber is, as the name implies, an intermediate and is a very useful link in the movement of goods from the maker to the consumer. His chief function, as a jobber, is the supplying of broken lots, and many items bought by the druggist must be purchased in small lots. Quite naturally he must be paid for the service rendered and receives a jobber's discount from the manufacturer.

The pharmaceutical manufacturer, as the name indicates, supplies U. S. P. and N. F. preparations besides hundreds of other items of various formulas. These concerns generally sell to anyone (of good credit) and often require a contract for a minimum amount of goods in a year. The price is also based upon quantity purchased, ranging from 40 percent off list prices on pharmaceuticals to—I don't know how much. These houses render a useful service to the pharmacist especially in supplying preparations of guaranteed standard that it is not practical for the individual pharmacist to make. Biological products, ampuls, etc., are part of their products. Many also sell household remedies under buyer's name in attractive packages. Branches in various parts of the country facilitate the quick delivery of goods, and there are very few corners of the country in which they are not prepared to render an efficient service.

Chemical houses make a specialty of furnishing chemicals. They are first hands and in a position to quote attractive prices. Their terms are usually thirty days with one or two percent for cash in ten days.

Buying clubs and drug syndicates. These organizations are composed of retailers banded together to purchase in quantity, and effect a saving in price for their members. They are stock companies in which each member owns a block of stock and receives an annual dividend. They sell to their members at a close margin of profit and prompt payment is required—usually weekly. Buying clubs have sprung up in many of our large cities and do a large volume of business. Their prime object is to supply goods at low cost, rather than pay large dividends on their capital stock.

Besides the jobber, manufacturer, and buying club, crude drug merchants are first hands in supplying crude drugs; oil concerns that specialize in essential oils; toilet goods and perfumery houses, houses that make a specialty of bristle goods, sponges and chamois; general importers, and jobbers that make proprietary remedies at a discount their main feature. Many proprietary remedy manufacturers also sell their product in quantity directly to anyone. The alert pharmacist no doubt avails himself of various sources of supply—each one has its advantage and fills a want.

There seems to be a tendency, however, toward direct buying—reducing the number of hands through which an article passes from maker to consumer. The less handling, the lower will be the cost of an article, and where the quantity purchased is of fair size, this method would seem to have much to commend itself. The closer the retailer comes to first hands, the better price he can obtain.

HOW MUCH TO BUY.

The day has passed when druggists will buy a quantity of an unknown article merely upon the say so that it is to be advertised. Business methods and prin-

ciples are more and more becoming the guide for the pharmacist in his business dealings, and in no place are they more important than in considering the amount of goods to be purchased. "Turnover" is a frequent word in the journals. It is heard on every hand. To buy intelligently one must have facts before him, and no greater help can be had in ordering goods than a card record of the quantity purchased in the past. We keep such a record—entering every item on our invoices on a separate card—and it has been a very valuable aid in purchasing. An offer of free goods is made with the purchase of a gross of an article. Can we use a gross? The card record gives a pretty good idea. We note from our record that the sale of an article is falling off. We regulate our buying accordingly.

The time consumed in keeping up such a record is not more than an hour a day, in the average store, and it is time well spent.

But our question as to how much of a staple article we should buy is still unanswered. As a rule we think a two months' supply about as much as it is wise to purchase although, if the discount is sufficient, a six months' supply may not be too much. The more frequently goods are turned into cash and the money reinvested, the greater the profit at the end of the year. Here also the amount of capital at hand is a consideration. If it is just enough to do business with, then smaller purchases would be wiser, for there may come a time when cash in the bank is more desirable than a lot of goods in the cellar. While there is danger from overstocking, there is also danger from understocking. We are all forgetful. We sell the last of an article and do not put it upon the want book and miss a sale the next time that article is called for. If our stock is fairly liberal this is apt to happen less often. Nothing is more exasperating than to have to advise a customer that "we are just out of it."

WHAT PRICE TO PAY.

Not infrequently the question of price is not a question at all. A certain article must be had at once, for the patient is waiting for the prescription, the quantity needed is small and is obtained as quickly as possible from the nearest source of supply. The total cost is usually trifling and, while the invoice may be checked up later, the very smallness of the transaction precludes much argument as to price. Of course the pharmacist does not expect to pay exorbitant prices even for such purchases but on many small items quibbling as to price does not pay. The difference at best will be only a few cents.

It is in the buying of his regular stock where the element of time is not the most important factor that the pharmacist should consider well the price. What information can be obtained as to market prices? There are many sources.

One of the very best sources of price information and trend of the market is the salesman. He is posted about supply and demand in the lines he carries. While he is out to sell goods, if he is conscientious and has the interest of his customer at heart—as most have—he is a veritable reservoir of information. The friendship and goodwill of the traveling man is an asset to the retailer, particularly as to price tendencies.

The drug journals publish lists of quotations of drugs, chemicals, oils, etc., which give up-to-date information as to market prices. A weekly price sheet, with current prices quoted as well as a forecast of the future market, is also ob-

tainable. The daily commercial journals also carry quotations of many drug store items. Several of the drug journals publish a very full price list about twice a year. These books are very useful in the store, especially the information about proprietary preparations, size of package, cost, supposed retail price and name and address of the maker.

There are also goods the drug store will buy on which there are no quotations—such as tooth brushes, sponges, chamois, etc. Here the experience of the buyer, his knowledge of the goods, and the reliance he places in the firm with which he is doing business are the important elements. And it cannot be reiterated too often that good merchandise bought of reliable firms gives the best satisfaction all around—to the maker, retailer and consumer alike. We can elevate our calling by establishing the reputation of selling only first-class articles.

Finally, just a word as to order forms, receiving goods, checking up, and cash discount. All goods should be ordered on a regular form with all conditions about the order explicitly stated. This will avoid future disputes. A carbon copy should be kept of the order and filed in systematic fashion. It is surprising how often delivery may be had at the store if it is asked for and specified on the order. In these days of high freight rates this is a considerable item in the course of a year. It is often a good plan to state in the order that goods not supplied are not to be forwarded unless so directed. If this is not done, and the same item is reordered from another house, there may be a double quantity of the item supplied.

After the goods have been ordered and received we find it good practice to enter the items in a receiving book. This procedure gives accurate information in checking up quantity with order and in case of delayed or lost invoices gives an accurate record of what was received. The goods now received being checked and entered in the receiving book, the separate items are priced and put into stock. Although considerable work, we find it pays to mark most items with cost and selling price—the latter in plain figures. It is a great help at inventory time to have a cost price too. The invoice is now checked for price and extension and the bill passed for payment. And most firms allow a cash discount on the amount of the bill for prompt payment, and many pharmacists overlook this means of adding to their incomes. It always pays to take the cash discount, which ranges from one to five or more percent. If money is not at hand it may be borrowed from the bank, provided the pharmacist has established a banking connection. If he has conducted his business as he should and can show a statement of financial condition to his banker, and the statement shows a going business, he will have little trouble procuring a line of credit. This is good business, for the bank is often the business man's best friend. By all means take advantage of the cash discount, and, it may be added, most firms look with favor upon a man who pays promptly.

Give close attention to the purchasing department of the drug store. Buy wisely and intelligently, liberally yet cautiously, and pay promptly, and you will have started upon a policy that may reasonably be expected to bring its own reward.

REVIEW OF THE DRUG MARKET.*

BY HARRY B. FRENCH.

The Armistice, in the latter part of 1918, brought the war to a sudden, unexpected and very favorable conclusion. The business community was for some time thereafter at sea as to the immediate and more remote effects of the cessation of hostilities. All except necessary buying temporarily ceased and, for a time, there was an important reaction in prices. As time passed on, the situation was complicated by the political and economical agitation pursued by the so-called labor classes in Europe, both of the Central Empires and in the Allied Nations. Over a large portion of the continent there was an indisposition to work caused by the reaction from the excitement of war, the idleness in which a large portion of the population had lived for a long time past, and in certain portions, because of the mal-nutrition of the people. These conditions gave rise to fantastic and Utopian claims that demoralized the efforts at reconstruction.

This condition was accentuated by a lack of supplies of raw material in large sections of the territory, which made the resumption of work impossible. The reflex influence of the war and of the theories propounded abroad have had their effect in this country, but we may confidently rely upon the sober second thought of the American people to insist upon a readjustment that will take into consideration the interests of all parties, especially of the public, in the readjustment of industrial conditions. After a few months had passed, it was found that the immediate necessities of foreign buyers were so great and the demands for shipments both of food and manufactured products were so large, that industry resumed not only its normal course but it is now operating at the highest tension. This condition will continue so long as this foreign demand continues and the buyers are able to pay for shipments.

In this respect, however, the condition is becoming critical. The English Pound recently sold in this country at \$4.12¹/₂ against a normal price of \$4.80, and it is quite generally believed that the price will go lower. This means that on all purchases the buyer must pay about twenty percent advance in price. The exchange of other countries is even more demoralized. It is possible that foreign nations are not unwilling that this decline should take place, so that their nationals may be forced to restrict their purchasing. Thoughtful men of experience know that the present condition can be remedied only by efficiency, that is, increased productiveness on the part of individual workers, and economy, that is, the purchase of only so much as may be necessary for comfortable living. This truth is appreciated only in part by labor in the United States. The demand for shorter hours, and in some cases for work five days only a week, and the tendency in some directions to slackness in work, has perhaps a more potential influence upon advancing prices than increased cost of labor. In other words, if the increased cost of labor secured efficiency there would be much more probability of the present scale of wages being maintained for a much longer time in the future.

There is much talk of profiteering, but much of this so-called profiteering is made necessary by the increased cost of operation. It must always be remem-

* Read before Section on Commercial Interests, A. Ph. A., New York meeting, 1919.

bered, however, that the basic cost is that of labor and that this cost is not measured solely by the amount paid to a man for a day's work, but by his efficiency. The era of expansion is bound to continue so long as excessive issues of money remain in circulation. Some years ago the average per capita of circulation in the United States was about twenty dollars, now it is over fifty dollars. This will be remedied in the course of time by a gradual repayment of the national debts and the withdrawal of superfluous currency. Europe and the rest of the world cannot buy unless they sell, and as they are working under the pressure of necessity, we must expect that their purchases in the future will decidedly decrease, though perhaps not immediately, and that their production must necessarily increase. The reflex action of this improvement of conditions abroad will benefit this country by a reduction in the price of food and manufactured products.

Since the signing of the Armistice the general tendency of American crude drugs has been to greatly advance in price, and this tendency will continue for the next several months. Chemicals have a tendency to decline and European crude drugs will be obtainable at lower prices as soon as they can finance shipments and transportation can be arranged. It is true, however, that in many cases the goods they have to offer are old stock, which would seem to indicate that during the recent years of the War, the crops were not generally gathered.

PERMISSIVE PRICE MAINTENANCE.

The Trade Commission has reached the following conclusions relative to Price Maintenance and has accordingly addressed the Speaker of the House:

- (1) That producers of identified goods should be protected in their intangible property right or good will.
- (2) That the unlimited power both to fix and to enforce and maintain a resale price may not be made lawful with safety.
- (3) That unrestrained price cutting is not in the public interest.

Bills now pending before the Congress may well be made to meet the difficulties of the situation if amended to provide for a review of the terms of resale contracts and a revision of resale prices by a disinterested agency.

Therefore, it is recommended that it be provided by law that if the manufacturer of an article produced and sold under competitive conditions desires to fix and maintain resale prices, he shall file with an agency designated by the Congress a description of such article, the contract of sale, and the price schedule which he proposes to maintain, and that the agency designated by the Congress be charged with the duty, either upon its own initiative or upon complaint of any dealer or consumer or other party in interest, to review the terms of such contract and to revise such prices and that any data and information needful for a determination be made available to such agency.

SIXTY-SEVENTH ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, NEW YORK CITY, AUGUST 26-30, 1919.

ABSTRACT OF THE MINUTES OF THE FIRST GENERAL SESSION.

The First General Session of the Sixty-Seventh Annual Meeting of the American Pharmaceutical Association was called to order by President Charles H. LaWall in the banquet hall of Hotel Pennsylvania, New York City, Tuesday afternoon, August 26, 1919, at 3.40 P.M.

After introductory and congratulatory remarks by President LaWall, Secretary William B. Day read a letter from Mayor John L. Hylan, welcoming the Association, and very cordially extending the hospitalities of the metropolis. A vote of thanks was tendered him.

Letters and telegrams were read from Messrs. Geo. F. Payne, Burton Cassaday, I. L. Lyons, E. A. Whittier, D. V. and Mrs. Whitney and from Mrs. Fletcher Howard.

Vice-President F. W. Nitardy presided while the president read his address, which was referred to a committee of the following members: Theodore J. Bradley, Geo. M. Beringer, L. C. Hopp, R. S. Lehman and R. A. Lyman. (The address and report of the committee thereon are printed in the September issue of the JOURNAL.)

Secretary Joseph W. England read the minutes of the Council.

On motion of W. C. Anderson, seconded by H. M. Whelpley, and a favorable vote, the minutes were approved.

Treasurer H. M. Whelpley presented a summary of his report and also a résumé of the Association's financial condition up to August 15, 1919. He stated that the total assets of the Association aggregated \$100,000; in round numbers the funds of a permanent nature amount to \$55,000; trust funds, \$10,000, and current funds \$35,000. The Association has quite largely invested in Liberty Bonds. The Treasurer stated that about 100 more members had been elected during this year than in any preceding, and that fewer members were in arrears than in any previous year. (The report of the Treasurer is printed in the August issue of the JOURNAL, pp. 654-667.)

The list of general and special committees was read and the Secretary requested that the respective chairmen present their reports at the Second General Session.

A recess of ten minutes was declared for the selection of a nominating committee. The following were named as members:

MEMBERS OF NOMINATING COMMITTEE.

Alabama.....	L. C. Lewis
Arkansas.....	W. R. Appleton and Frank Schachleiter
Colorado.....	F. E. Mortenson and F. W. Nitardy
Connecticut.....	B. E. Hockett
Delaware.....	H. K. Watson
District of Columbia.....	L. F. Kebler and S. L. Hilton
Florida.....	E. Berger
Georgia.....	A. M. Roehrig
Illinois.....	F. W. Metzger and C. H. Avery
Indiana.....	F. W. Meissner and E. W. May
Iowa.....	Gus. Scherling and E. O. Kagy
Kansas.....	L. E. Sayre
Louisiana.....	F. C. Godbold
Maryland.....	John F. Hancock and R. S. McKinney
Massachusetts.....	John G. Godding and T. J. Bradley
Michigan.....	W. M. Chase and W. L. Scoville
Minnesota.....	E. A. Brown and J. H. Biese
Missouri.....	S. Boehm and F. S. Berg
Nebraska.....	R. A. Lyman and V. J. Fitz-Simon
New Jersey.....	E. A. Sayre and C. W. Holzhauser
New York.....	W. L. DuBois and R. S. Lehman
North Carolina.....	E. V. Howell and E. V. Zoeller
North Dakota.....	Oscar Hallenberg

Ohio.....	R. W. Terry and C. G. Merrell
Oklahoma.....	W. R. Jarrett and C. V. Nichols
Oregon.....	Geo. C. Blakeley
Pennsylvania.....	J. A. Koch and J. L. Lemberger
South Carolina.....	W. H. Ziegler and D. T. Riley
South Dakota.....	F. L. Vilas
Tennessee.....	W. R. White and E. A. Ruddiman
Texas.....	J. M. Fletcher and E. G. Eberle
Utah.....	John Culley
Vermont.....	C. H. Skinner and W. B. Eastman
Virginia.....	J. E. Jackson and B. E. Sigel
Washington.....	C. W. Johnson
Wisconsin.....	Edward Kremers and W. O. Richtmann
Cuba.....	W. F. Ortiz

Members-at-large, appointed by the President: H. V. Army, J. H. Beal, C. A. Mayo, G. M. Beringer, and H. M. Whelpley.

MEETING FOR CONFERRING THE JOSEPH P. REMINGTON HONOR MEDAL.

The First General Session was adjourned to meet at 8.15 P.M. On reconvening President Charles H. LaWall announced the purpose of the meeting to be the conferring of the Joseph P. Remington Honor Medal. (See September JOURNAL, pp. 702-706.) After this presentation, the First General Session was adjourned, and followed by a delightful entertainment program provided by the Local Committee.

SECOND GENERAL SESSION.

The Second General Session of the American Pharmaceutical Association was convened by President Charles H. LaWall at 8.30 P.M., August 28.

The minutes of preceding sessions were read and by motion, duly seconded, and voted on, approved.

REPORT OF THE NOMINATING COMMITTEE.

To the President and members of the American Pharmaceutical Association:

Your Committee organized with Caswell A. Mayo as chairman and C. W. Johnson as secretary. Nominations were at once proceeded with and the nominees are as follows:

For *President*: C. H. Packard, of Boston; F. W. Nitardy, of Brooklyn, and Leonard A. Seltzer, of Detroit.

For *First Vice-President*: Hugo H. Schaefer, of New York; C. B. Jordan, of Lafayette, Ind., and E. Fullerton Cook, of Philadelphia.

For *Second Vice-President*: Lyman F. Kebler, of Washington, D. C.; George C. Blakeley, the Dalles, Ore., and Charles E. Caspari, of St. Louis.

For *Third Vice-President*: W. P. Porterfield, of Fargo, N. D.; F. E. Mortenson, of Pueblo, Col., and Miss Zada Cooper, of Iowa City, Ia.

For *Members of the Council*: Theodore J. Bradley, of Boston; Harry B. Mason, Detroit; L. E. Sayre, Lawrence, Kan.; Charles W. Holzhauer, Newark, N. J.; D. F. Jones, Watertown, S. D.; W. H. Ziegler, Charleston, S. C.; George M. Beringer, Camden, N. J.; John G. Godding, Boston, and Frederick J. Wulling, of Minneapolis.

(Signed) C. W. Johnson, Secretary.

Theodore J. Bradley asked permission to withdraw his name as nominee for the Council and that John Culley, of Ogden, Utah, be designated in his stead. The request was granted, and the latter was named as candidate.

The report of the Committee, as amended, was approved.

Other reports of Committees were then presented. (In these minutes only the action on the reports will be given; they will be printed under Committee Reports, hereafter.)

Report of Committee on International Pharmaceutical Nomenclature. Accepted.

Report of Committee on Compulsory Health Insurance. Accepted.

Report of Committee on Patents and Trade Marks. Accepted and resolutions approved.

One of the resolutions endorsed a bill in Congress, providing for reorganization of the Patent

Office, separate from the Department of Interior, and the other, the creation of a Court of Patent Appeals.

Report of the Committee on Local Branches. Accepted.

Report of the Committee on William Procter, Jr., Monument Fund. Chairman John F. Hancock reported progress.

The report of the Committee on the Pharmaceutical Syllabus was presented by Geo. M. Beringer. Accepted.

Secretary Jeannot Hostmann, of the House of Delegates, read the minutes of these sessions in abstract. On motion of W. C. Anderson, seconded by S. L. Hilton, and a vote, the report was received and the recommendations adopted. (The minutes of the House of Delegates will be printed in a later issue of the JOURNAL.)

The Committee on the President's Address reported. (See September issue of the JOURNAL, pp. 701 and 702.) Vice-President F. W. Nitardy presided during these considerations.

It was stated that the report of the Committee on Physiological Testing would be transmitted to the Publication Committee.

The Committee on Time and Place, through Chairman T. J. Bradley, requested that the Association decide on the time of the next annual meeting. After considerable discussion in which argument for the meeting to be held about the usual time was presented, and also, of others, for holding the meeting during the week prior to the Pharmacopoeial Convention. The vote was decisive for the week beginning May 3, 1920.

Chairman Bradley then requested the Association to decide whether Richmond or Washington should be the convention city. The vote resulted in favor of Washington.

A report was presented by the Chairman of the Committee on the Status of Pharmacists in the Government Service. After presentation, and considerable discussion, W. C. Anderson moved that the Chairman be permitted to withdraw the report and that a report of the Committee be presented at the Final General Session. The motion received a second, and it was so voted.

Chairman L. F. Kebler stated that the report of the Committee on U. S. Pharmacopoeia would be mailed to the editor of the JOURNAL.

Chairman F. H. Freericks reported for the Committee on Model Pharmacy Law.

Mr. England moved and L. E. Sayre seconded the motion, that the report be received and referred to the Publication Committee; that a suitable number of reprints be made of the original Model Pharmacy Law and mimeograph copies of this report, to be submitted to each State Board of Pharmacy and each State Pharmaceutical Association.

George M. Beringer suggested that the Model Pharmacy Law should be published in distinct paragraphs.

The motion made was placed before the Association and carried.

Secretary J. W. England presented the minutes of the third and fourth sessions of the Council. They were separately considered and approved.

The Second General Session of the Association was then adjourned.

THIRD SESSION.

The Third General Session of the American Pharmaceutical Association was called to order by President Charles H. LaWall, Saturday, August 30, at 11 A.M.

The minutes of the previous session were read by Secretary William B. Day and approved by the Association.

Jeannot Hostmann presented the report of the Committee on Weights and Measures. He suggested that the report be referred to the Council, and it was so ordered.

Chairman Jacob Diner reported verbally for the Committee on Closer Affiliation of Pharmacists and Physicians. In his opinion, this Committee should be in part constituted by the delegates to the American Medical Association, and one or more of the members should be resident in or near the Convention City. He thought that a large part of the work contemplated for this Committee could be most effectively done before the Section on Pharmacology A. M. A.

Secretary William B. Day reported for the Committee on Membership. The result of the year's work had been very encouraging, he said; nearly 600 new members were added to the membership roll.

The report of the American Joint Committee on Horticultural Nomenclature was presented. An appropriation of \$25 was recommended and referred to the Council.

The report of the Committee on the Status of Pharmacists in the Government Service was read by Chairman S. L. Hilton.

It was moved that the report be accepted and that reprints be made for distribution among members of Boards and Schools of Pharmacy. Carried.

The following resolution was presented by L. F. Kebler:

WHEREAS, the cost of living has greatly increased during the past few years and the purchasing value of the dollar has greatly decreased, and

WHEREAS, the Keating Commission is investigating the situation with a view of giving the Government employees relief by providing a living wage, therefore be it

RESOLVED, by the American Pharmaceutical Association assembled this 30th day of August, 1919, that the President of this Association immediately appoint a committee to confer with the Commission and to point out the needs relative to what fair salaries should be under existing conditions.

The resolutions were seconded by S. L. Hilton. Carried.

The President appointed L. F. Kebler, Lewis Flemer and Frank T. Stone as members of the Committee.

Frank Cain moved that this Association extend a vote of thanks to physicians, military men, health officers and others who have given their support to the bill for the establishment of a pharmaceutical corps in the Army. Carried.

Local Secretary Hugo H. Schaefer spoke of the high registration during the present convention, the attendance having been about six hundred. He was deeply appreciative of the work of the chairmen and members of the local committees, who had labored faithfully and successfully to make the New York meeting of the American Pharmaceutical Association a success.

That the members fully agreed with the Local Secretary was evidenced by the enthusiasm with which his remarks were received. A rising vote of thanks was tendered to all who had contributed to the program and entertainment features, the hospitalities and good fellowship which abounded. The preceding motion was made by E. L. Patch with a hearty second by John Culley, who asked that the hotel management and the retiring officers be included in the vote. Carried.

H. M. Whelpley stated that he was a member of a committee, appointed by the Council, to confer with the officers of the newly formed World War Veterans' Section relative to continued work in behalf of the soldier and sailor pharmacists. The speaker said that the Committee of which he was a member was to have held another session, but time did not permit, prior to adjournment of the Association. The officers had summarized the situation and made a request for two thousand dollars for carrying on the work during the year. Instead of looking ahead twelve months, he, individually, recommended that, with the approval of the Council and the Finance Committee, five hundred dollars be provided for carrying on the work of the Section. If at the end of three months the work is such that the Council feels justified in making further appropriations, this can be done.

Caswell A. Mayo moved that the recommendation made by H. M. Whelpley be referred to the Council, seconded by Hugo Kantrowitz. Carried.

It was requested that all members who knew of eligible pharmacists for this Section should advise the officers of their names. The lists prepared by schools and associates was commended, not only as of value at present, but for the future.

The minutes of the final session of the Council for 1918-1919 were read by Secretary J. W. England.

Chairman T. J. Bradley, of the Committee on the President's Address, moved that the Association reconsider its action in the matter of a referendum on an increase in dues, and that the question in all its bearings be referred to the newly created Executive Committee of the Council for investigation, and report to the Council for approval, and later, report its findings at the First General Session of the Association next year.

President C. H. LaWall concurred in the motion.

W. C. Anderson moved to reconsider the action of the Association whereby approval was given to a referendum vote. Seconded by Jeannot Hostmann. Carried.

Mr. Bradley, with a second, then renewed his motion, which was adopted by vote. The minutes of the Council, as amended, were then approved.

The minutes of the reorganization meeting of the Council were then read by Secretary J. W. England. Approved.

The officers-elect present were then introduced by Ex-President Caswell A. Mayo and installed by the retiring president, Charles H. LaWall. They are as follows:

President, L. E. Sayre, Lawrence, Kans.

Honorary President, A. B. Stevens, Escondido, Cal.

First Vice-President, Theodore J. Bradley, Boston, Mass.

Second Vice-President, Harry Whitehouse, Johnson City, Tenn.

Third Vice-President, E. Fullerton Cook, Philadelphia, Pa.

General Secretary, William B. Day, Chicago, Ill.

Treasurer, Henry M. Whelpley, St. Louis, Mo.

Reporter on the Progress of Pharmacy, H. V. Army, New York, N. Y.

Editor of the Journal, E. G. Eberle, Philadelphia, Pa.

Local Secretary, Samuel L. Hilton, Washington, D. C.

The new members of the Council are: J. H. Beal, Urbana, Ill.; Charles H. LaWall, Philadelphia, Pa.; S. L. Hilton, Washington, D. C.

Mr. Mayo performed the duties assigned him in a happy manner. President LaWall thanked the Association for having honored him and pledged his further service. President Sayre was mindful of the duties assumed by him and asked for coöperation and advice from the members. He appreciated the honor conferred and was assured of the whole-hearted support of the officers.

The Final General Session of the Sixty-seventh Annual Convention of the American Pharmaceutical Association was then adjourned.

COUNCIL BUSINESS

COUNCIL MEETINGS 1918-1919.

The second session* of the Council of the American Pharmaceutical Association for 1918-19 was held at the Hotel Pennsylvania, New York, on Tuesday, August 26, 1919.

The meeting was called to order at 9.45 A.M., by Chairman Lewis C. Hopp.

Present: Messrs. H. V. Army, G. M. Beringer, Charles E. Caspari, Wm. B. Day, E. G. Eberle, Frank R. Eldred, J. W. England, E. N. Gathercoal, John G. Godding, Samuel L. Hilton, Lewis C. Hopp, Hugo Kantrowitz, E. F. Kelly, J. A. Koch, C. H. LaWall, Caswell A. Mayo, Wortley F. Rudd, Clyde M. Snow, Dr. Francis E. Stewart, R. W. Terry, Dr. Henry M. Whelpley and Wm. R. White.

The reading of the minutes of the first session for 1918-19, held at the Congress Hotel, Chicago, on August 17, 1918, was, on motion, dispensed with.

Announcement was made of the passage of Motion No. 34 (Election of Members; applications Nos. 300 to 356 inclusive).

Applications for membership from Nos. 357 to 520 inclusive were presented and favorably acted upon. The list was as follows:

- No. 357. Randall Horace Greeley, U. S. Marine Hosp., Chelsea, Mass., rec. by John G. Godding and Theo. J. Bradley.
- No. 358. Paul Mondello, 7 Rockland St., Dedham, Mass., rec. by Theo. J. Bradley and Eliz. H. LaPierre.
- No. 359. Joseph Martin Widmer, 4402a Gibson Ave., St. Louis, Mo., rec. by J. Merner Noble and Leslie E. Pritchard.
- No. 360. Herman M. Cecil, 4149 Flad Ave., St. Louis, Mo., rec. by J. Merner Noble and Leslie E. Pritchard.
- No. 361. George Raymond Byrnes, 4126 Flad Ave., St. Louis, Mo., rec. by Leslie E. Pritchard and J. Merner Noble.
- No. 362. Edgar Eugene Craig, 1210a Hebert St., St. Louis, Mo., rec. by Leslie E. Pritchard and J. Merner Noble.

* The first session (1918-1919) was held in Chicago, August 17, 1918.

- No. 363. Herman A. Vogler, 4053 Lindell Blvd., St. Louis, Mo., rec. by H. M. Whelpley and J. Merner Noble.
- No. 364. Raymond S. Webb, 4215 Westminster Pl., St. Louis, Mo., rec. by H. M. Whelpley and Frantz F. Berg.
- No. 365. Paul Thomas Capps, 3046 Rolla Pl., St. Louis, Mo., rec. by H. M. Whelpley and Frantz F. Berg.
- No. 366. John Whitehill, 3328 Chestnut St., Phila., Pa., rec. by Willard Graham and J. W. England.
- No. 367. John M. Bauer, 1902 Payne Ave., Cleveland, O., rec. by A. L. Flandermeyer and Edward Spease.
- No. 368. Charles Carroll Thome, 107 Walnut St., Berkeley, Norfolk, Va., rec. by L. Zembsch and Frank H. Freericks.
- No. 369. Frederick James Austin, 343 Sixth Ave., Brooklyn, N. Y., rec. by C. DeJonge and F. W. Nitardy.
- No. 370. Augustin Ortiz, 271 2nd Ave., E., Roselle, N. J., rec. by H. M. Whelpley and J. W. England.
- No. 371. John F. McCambridge, Carlisle Courts, 14th & Columbia Rd., Washington, D. C., rec. by S. L. Hilton and Redmond Mayo.
- No. 372. Thomas Leslie Stribling, 307 Main St., Seneca, S. C., rec. by D. T. Riley and E. G. Eberle.
- No. 373. Leon Reiss, 806 Market St., Camden, N. J., rec. by Edward A. Wickham and Margaret Ritchie.
- No. 374. William J. Downer, 229 Bedford Ave., Brooklyn, N. Y., rec. by Edward A. Wickham and Margaret Ritchie.
- No. 375. Robert R. Gerstner, 63 W. 102nd St., New York, N. Y., rec. by Hugo H. Schaefer and H. V. Arny.
- No. 376. Walter G. Garber, 946 Richmond St., Cincinnati, O., rec. by D. E. Murphy and Frank H. Freericks.
- No. 377. F. H. Sleight, 2405 Mound Ave., Norwood, Ohio, rec. by D. E. Murphy and Frank H. Freericks.
- No. 378. James Cherry Fausnaught, 306 Main St., Worcester, Mass., rec. by E. H. LaPierre and Theo. J. Bradley.
- No. 379. Olive C. Gnose, Anaconda, Mont., rec. by Alex. F. Peterson and Chas. E. Mollett.
- No. 380. Ida M. Sylvester, Anaconda, Mont., rec. by Alex. F. Peterson and Chas. E. Mollett.
- No. 381. Leo David Steinberg, 639 Morton St., Dorchester, Mass., rec. by Theo. J. Bradley and John G. Godding.
- No. 382. Winthrop Bancroft Osgood, Peter Bent Brigham Hosp., Boston, Mass., rec. by Theo. J. Bradley and John G. Godding.
- No. 383. V. Caleagno, 729 Cauldwell Ave., New York, N. Y., rec. by J. Leon Lascoff and Hugo H. Schaefer.
- No. 384. Herbert E. Haines, 120 Broadway, Room 1247, cr. Armour & Co., New York, N. Y., rec. by Hugo H. Schaefer and H. V. Arny.
- No. 385. Alexander G. Murray, Bureau of Chemistry, U. S. Dept. of Agri., Washington, D. C., rec. by Frederick B. Power and L. F. Kebler.
- No. 386. Carlos A. Moya, 22½ Avenida de Italia, Havana, Cuba, rec. by J. G. Diaz and Jose P. Alacan.
- No. 387. Jose Capote y Diaz, 342 Avenida de Maximo Gomez, Havana, Cuba, rec. by J. G. Diaz and Jose P. Alacan.
- No. 388. Dilomeno Jimenez, P. Gomez, 63, Yaguajay, Prov. de Santa Clara, Cuba, rec. by J. G. Diaz and Jose P. Alacan.
- No. 389. Armando J. Alacan, 17th St. bel. K. & L. Vedado, Havana, Cuba, rec. by J. G. Diaz and Jose P. Alacan.
- No. 390. Charles G. Duggan, 1391a Goodfellow Ave., St. Louis, Mo., rec. by Frantz F. Berg and H. M. Whelpley.
- No. 391. Paul F. Knecht, 349 Broad St., Newark, N. J., rec. by Edward A. Wickham and Margaret Ritchie.

- No. 392. William J. Dewis, 293 Hamilton Ave., Paterson, N. J., rec. by Edward A. Wickham and Margaret Ritchie.
- No. 393. Emil H. Borath, Nicollet, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 394. Alfred Sophus Rasmussen, Pequot, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 395. Walter Anderson, Kasson, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 396. Charles August Anderson, Litchfield, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 397. Henry C. Kruckeberg, 2630 E. 25th St., Minneapolis, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 398. John Harvey Charles Coleman, Sandstone, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 399. Robert T. Wincott, 1715 Portland Ave., Minneapolis, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 400. Aug. H. F. Grotefend, 1011 N. E. Main St., Minneapolis, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 401. Porter B. Remington, Spring Valley, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 402. Morris Alton Harris, 614 Azeele St., Tampa, Fla., rec. by M. M. Taylor and E. Berger.
- No. 403. William Archibald Cunningham, 220 Hyde Park Ave., Apt. H., Tampa, Fla., rec. by Leon Hale and M. M. Taylor.
- No. 404. E. G. Coe, cr. Stephens & Co., St. Augustine, Fla., rec. by D. W. Ramsaur and M. M. Taylor.
- No. 405. Hugh F. Dickson, cr. Elbre's Pharmacy, No. 5, Miami, Fla., rec. by D. W. Ramsaur and M. M. Taylor.
- No. 406. Wallace B. Parnell, Elbre's Drug Stores, Inc., W. Palm Beach, Fla., rec. by Roy N. Chelf and M. M. Taylor.
- No. 407. Otto F. Franz, 102 W. Francis Ave., Tampa, Fla., rec. by Leon Hale and M. M. Taylor.
- No. 408. George Francis Curry, Jr., 773 Rockdale Ave., New Bedford, Mass., rec. by John G. Godding and Theo. J. Bradley.
- No. 409. Guy Coe Norton, 3323 N. 27th St., Tacoma, Wash., rec. by C. W. Johnson and Edith Hindman.
- No. 410. William E. Burke, 608 S. Smith St., St. Paul, Minn., rec. by E. L. Newcomb and Wm. B. Day.
- No. 411. Ethel Rasmussen, 2181 Doswell Ave., St. Paul, Minn. rec. by E. L. Newcomb and Wm. B. Day.
- No. 412. Charles Wm. Walling, Slayton, Minn., rec. by E. L. Newcomb and Wm. B. Day.
- No. 413. Enoch Sundholm, Clinton, Minn., rec. by E. L. Newcomb and Wm. B. Day.
- No. 414. Francis Thomas Jamieson, 4759 14th Ave., N. E., Seattle, Wash., rec. by C. N. Johnson and F. Edith Hindman.
- No. 415. Maria Ylagan Orosa, Univ. of Wash., College of Pharm., Seattle, Wash., rec. by C. W. Johnson and F. Edith Hindman.
- No. 416. George Herbert Needham, 2608 Mayfair Ave., Seattle, Wash., rec. by C. W. Johnson and F. Edith Hindman.
- No. 417. Eva Sabina Carr, 2112 East 47th St., Seattle, Wash., rec. by C. W. Johnson and F. Edith Hindman.
- No. 418. Adolph Weinberger, 3001 Scoville Ave., Cleveland, Ohio, rec. by A. L. Flandermeyer and E. A. Spease.
- No. 419. Joseph Schneider, 3700 Eastern Ave., Cincinnati, Ohio, rec. by D. E. Murphy and Frank H. Freericks.
- No. 420. Fred J. Minstermann, 1119 E. McMillan St., Cincinnati, Ohio, rec. by D. E. Murphy and Frank H. Freericks.
- No. 421. Henry C. Bruggaier, 11638 Detroit Ave., Cleveland, Ohio, rec. by A. L. Flandermeyer and Edward A. Spease.
- No. 422. A. J. Eckstein, Buffalo Lake, Minn., rec. by E. L. Newcomb and Wm. B. Day.

- No. 423. Walter B. Scott, Ray, N. D., rec. by H. L. Haussamen and Wm. B. Day.
- No. 424. Joseph B. Bruce, Cor. Coffee & Main Sts., Greenville, S. C., rec. by D. T. Riley and E. G. Eberle.
- No. 425. William Mutter, 53 Haledon Ave., Paterson, N. J., rec. by Edward A. Wickham and M. H. McNeill.
- No. 426. Ermilinda M. Villamena, 204 E. 116th St., New York, N. Y., rec. by Edward A. Wickham and Margaret Ritchie.
- No. 427. Philip Sundock, 586 Hendrix St., Brooklyn, N. Y., rec. by Edward A. Wickham and D. Villamena.
- No. 428. Joseph Albrecht, 1896 E. 75th St., Cleveland, Ohio, rec. by W. M. Fox and A. L. Flandermeyer.
- No. 429. William Goggin Crockett, Baylor Univ., Dept. of Phar., Dallas, Tex., rec. by Jno. E. Jackson and W. F. Rudd.
- No. 430. Clare Bernard Kime, Box Q, Univ. Sta., Seattle, Wash., rec. by C. W. Johnson and Edith Hindman.
- No. 431. John Wilson Bryant, Hornersville, Mo., rec. by Potter and Schachleiter.
- No. 432. Charles Ferdinand Falk, 602 First Ave., Two Harbors, Minn., rec. by E. L. Newcomb and Chas. H. Rogers.
- No. 433. Arthur J. Yackel, Comfrey, Minn., rec. by E. L. Newcomb and Chas. H. Rogers.
- No. 434. Emily Lucille Lyman, 120 W. Lincoln St., Fergus Falls, Minn., rec. by E. L. Newcomb and Chas. H. Rogers.
- No. 435. Emil Erick Hallin, Parkers Prairie, Minn., rec. by E. L. Newcomb and Chas. H. Rogers.
- No. 436. John W. Hollenitsch, Butterfield, Minn., rec. by E. L. Newcomb and Chas. H. Rogers.
- No. 437. John Walter Cook, 108 W. Olive St., Pipestone, Minn., rec. by E. L. Newcomb and Chas. H. Rogers.
- No. 438. A. Ernst Lofstrom, Litchfield, Minn., rec. by E. L. Newcomb and Chas. H. Rogers.
- No. 439. Harold A. Tyrholm, New Richland, Minn., rec. by E. L. Newcomb and Chas. H. Rogers.
- No. 440. Addison C. Douglass, 104 No. Main St., Kimball, Minn., rec. by E. L. Newcomb and Chas. H. Rogers.
- No. 441. Henry H. Gregg, 4314 $\frac{1}{2}$ Upton Ave., So. Minneapolis, Minn., rec. by E. L. Newcomb and Chas. H. Rogers.
- No. 442. Urban Smith Livingston, 53 Main St., Newport, Vt., rec. by Theo. J. Bradley and John G. Godding.
- No. 443. Richard D. Morton, Watertown, S. Dak., rec. by D. F. Jones and A. A. Zieske.
- No. 444. James M. Stanley, Watertown, S. Dak., rec. by D. F. Jones and A. A. Zieske.
- No. 445. John Henry McBrearty, Anderson St., No. 5, Pelzer, S. C., rec. by E. G. Eberle and J. W. England.
- No. 446. Rozier L. Francis, 142 N. Sycamore St., Petersburg, Va., rec. by W. F. Rudd and Chas. F. Walker.
- No. 447. W. T. Reeves, So. Boston, Va., rec. by C. F. Walker and W. F. Rudd.
- No. 448. C. B. Traylor, 1000 E. Carey St., Richmond, Va., rec. by W. F. Rudd and C. F. Walker.
- No. 449. Andrew J. Clark, Crozet, Va., rec. by C. F. Walker and W. F. Rudd.
- No. 450. T. S. Wakefield, 7140 Madison St., Oak Park, Ill., rec. by Wm. Gray and Wm. B. Day.
- No. 451. Daniel M. Kollen, 600 E. 169th St., New York, N. Y., rec. by Jos. L. Mays and Hugo H. Schaefer.
- No. 452. Perry H. Clute, Big Stone City, S. Dak., rec. by D. F. Jones and Chas. H. Rogers.
- No. 453. George L. Rogers, Main St., No. 40, Antwerp, N. Y., rec. by Geo. C. Diekman and Lewis Brown.
- No. 454. Charles Carroll Hearn, 1295 Hancock St., Quincy, Mass., rec. by John G. Godding and Theo. J. Bradley.
- No. 455. Ethel M. Leavitt, Milbank, S. Dak., rec. by D. F. Jones and Anton Hogstad, Jr.

- No. 456. Francis Marion Greenwalt, St. Luke's Hosp., St. Paul, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 457. M. DeWitt Martin, Division St., Northfield, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 458. Benne Albert Baldowsky, Milaca, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 459. Bertram Hanson, 3rd & Main Sts., Sauk Centre, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 460. John P. Olson, New London, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 461. John Jay Allen, Pine River, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 462. Roland T. Lakey, 271 Belvidere Ave., Detroit, Mich., rec. by E. L. Newcomb and Chas. H. Rogers.
- No. 463. Charles Perry Neadle, 401 W. Lake St., Minneapolis, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 464. Alfred Charles Blasing, Henderson, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 465. August Peterson, Big Lake, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 466. Marie A. Piesinger, New Prague, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 467. Emile J. Proulx, 416 Ave. C, Cloquet, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 468. C. J. Oscar Luring, Roseau, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 469. Ned L. Larson, Atwater, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 470. John Mitchell Connell, 115 Freeman Ave., Luverne, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 471. Victor E. Lundholm, Warroad, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 472. Edwin Nordstrom, Sacred Heart, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 473. George W. Vanderhule, 410 Locust St., Yankton, S. Dak., rec. by E. L. Newcomb and Wm. B. Day.
- No. 474. Absalom Kraft, Hooper, N. Dak., rec. by E. L. Newcomb and Wm. B. Day.
- No. 475. George Decker, 128 St. Marks Pl., New York, N. Y., rec. by Hugo Kantrowitz and Hugo H. Schaefer.
- No. 476. Charles West Parsons, 66 W. Broadway, New York, N. Y., rec. by Hugo Kantrowitz and Hugo H. Schaefer.
- No. 477. George Niles Hoffman, 322 Wall St., Kingston, N. Y., rec. by Romaine Pierson and Hugo Kantrowitz.
- No. 478. Paul L. Foster, 50 Union Sq., New York, N. Y., rec. by Robt. Gerstner and Hugo Kantrowitz.
- No. 479. Max Brandt, 720 Third Ave., New York, N. Y., rec. by Hugo Kantrowitz and Hugo H. Schaefer.
- No. 480. John J. Molloy, 623 Callowhill St., Phila., Pa., rec. by C. H. LaWall and Wm. B. Day.
- No. 481. J. Richard Pryde, 2419 Venable St., Richmond, Va., rec. by C. F. Walker and Wm. B. Day.
- No. 482. Henry Madison Oliver, Union City, Tenn., rec. by William R. White and E. A. Ruddiman.
- No. 483. Guy Wilbur Wilcox, Cor. Broadway and 2nd Sts., Miller, S. Dak., rec. by D. P. Jones and A. A. Zieske.
- No. 484. Francis Asbury Bryant, Herrick, S. Dak., rec. by D. P. Jones and A. A. Zieske.
- No. 485. Henrick J. Peterson, Sturgis, S. Dak., rec. by D. P. Jones and A. A. Zieske.
- No. 486. John C. Aldons, Henry, S. Dak., rec. by D. P. Jones and A. A. Zieske.
- No. 487. Theodore D. Landsberger, Eden, S. Dak., rec. by D. P. Jones and A. A. Zieske.
- No. 488. Rose Louise Holec, Granite Falls, Minn., rec. by E. L. Newcomb and Wm. B. Day.
- No. 489. Herman LaFayette Berger, 1863 Second Ave., New York, N. Y., rec. by J. Leon Lascoff and Hugo H. Schaefer.
- No. 490. William Renwick, 357 W. 115th St., New York, N. Y., rec. by Hugo H. Schaefer and J. Leon Lascoff.
- No. 491. Isidore Malis, 608 Prospect Ave., New York, N. Y., rec. by Max Soskin and M. Zagat.

- No. 492. Joseph Aquaro, 202 Spring St., New York, N. Y., rec. by Henry C. Louis and Hugo H. Schaefer.
- No. 493. Sigmund Kopald, 700 Morris Park Ave., New York, N. Y., rec. by Mendel Zagat and Max Soskin.
- No. 494. John Krack, 407 First Ave., New York, N. Y., rec. by Henry C. Louis and Hugo H. Schaefer.
- No. 495. Nathan Williams Haynes, 3 Park Pl., New York City, N. Y., rec. by E. J. Kennedy and C. H. Stocking.
- No. 496. William P. Harrison, 3901 Williamsburg Ave., Richmond, Va., rec. by Albert Bolenbaugh and W. F. Rudd.
- No. 497. Samuel Y. Harris, Lombard & Poppleton Sts., Baltimore, Md., rec. by Daniel Base and E. F. Kelly.
- No. 498. Thomas Ellsworth Ragland, 2809 Guilford Ave., Baltimore, Md., rec. by Daniel Base and E. F. Kelly.
- No. 499. Lloyd Campbell Bird, 1716 Grove Ave., Richmond, Va., rec. by W. F. Rudd and A. L. I. Winne.
- No. 500. Peter Diamond, 14 Wooster St., New York, N. Y., rec. by Hugo H. Schaefer and Jacob Diner.
- No. 501. A Finstad, 111 N. Phillips Ave., Sioux Falls, S. Dak., rec. by E. L. Newcomb and Wm. B. Day.
- No. 502. Samuel Baer Barnett, 399 Case St., Cor. Arkwright, St. Paul, Minn., rec. by E. L. Newcomb and Wm. B. Day.
- No. 503. Charles Louis Funk, Red Lake Falls, Minn., rec. by E. L. Newcomb and Wm. B. Day.
- No. 504. George H. Haywood, Osakis, Minn., rec. by E. L. Newcomb and Wm. B. Day.
- No. 505. Charles J. Tenhoff, Balaton, Minn., rec. by E. L. Newcomb and D. D. Turner.
- No. 506. Joseph D. Lascoff, 2556 7th Ave., New York, N. Y., rec. by J. Leon Lascoff and Hugo H. Schaefer.
- No. 507. Ernest A. Peppmuller, 144 Columbus Ave., New York, N. Y., rec. by Curt P. Wimmer and Lewis N. Brown.
- No. 508. Nathaniel Morton Chasau, 747 Second Ave., New York, N. Y., rec. by J. Leon Lascoff and Hugo H. Schaefer.
- No. 509. Wilson B. Wardwell, Ellendale, Minn., rec. by E. L. Newcomb and Wm. B. Day.
- No. 510. Bronislaw Prebol, 61 Third St. Elizabeth, N. J., rec. by Edward A. Wickham and Edward A. Sayre.
- No. 511. Michael Uhorchok, 216 Washington St., Jersey City, N. J., rec. by James McCloskey and Hugo H. Schaefer.
- No. 512. Tappen Fairchild, 70-76 Laight St., New York, N. Y., rec. by S. W. Fairchild and M. G. Foster.
- No. 513. Elias W. Dusenberry, 70-76 Laight St., New York, N. Y., rec. by S. W. Fairchild and M. G. Foster.
- No. 514. Frank J. Chamberlain, Colome, S. Dak., rec. by E. C. Bent and E. L. Newcomb.
- No. 515. Charles Luther Guthrie, 130 South Ave., Petersburg, Va., rec. by E. G. Eberle and J. W. England.
- No. 516. Ervin F. Kemp, 608 S. Dearborn St., Chicago, Ill., rec. by E. G. Eberle and Wm. B. Day.
- No. 517. Nathaniel Nicolai, 150 Nassau St., New York, N. Y., rec. by Jeannot Hostmann and Hugo H. Schaefer.
- No. 518. Hartie Lorenzo Coble, Centreville, Tenn., rec. by E. G. Eberle and J. W. England.
- No. 519. Arthur Gold, 656 Newark Ave., Jersey City, N. J., rec. by Hugo Kantrowitz and E. G. Eberle.
- No. 520. Walter Landrum Cubbedge, U. S. Marine Hosp., Savannah, Ga., rec. by A. M. Roehrig and Wm. B. Day.

The report of the Secretary of the Council was presented and approved. It was as follows:—

REPORT OF THE SECRETARY OF THE COUNCIL.

TO THE MEMBERS OF THE COUNCIL:

The Council for 1918-19 held one session at Chicago and has transacted its business by mail since.

Twenty-five Council Letters have been issued covering 56 pages, and 34 motions.

A synopsis of the motions of the Council is attached.

The applications for membership received to date inclusive number 519, the number for last year by the first session at Chicago was 395. The record for any one year was at Detroit (1914) and was 433.

The membership of the Council numbers 41, of which 17 are representatives of local branches.

There are 21 local branches.

The three members of the Council elected by mail in November last for 1919-20 were: Charles H. LaWall, Philadelphia; James H. Beal, Urbana, Ill.; and Samuel L. Hilton, Washington, D. C.

The Association has no more important work than the preparation and publication of the National Formulary and the time is rapidly approaching when the work of the fifth edition should be considered.

Chapter VII, Article II of the By-Laws of the Council provides that: "Whenever deemed advisable by the Council, it shall after the publication of each edition of the National Formulary appoint a committee of fifteen members from the general membership of the Association, which committee shall have charge of the Formulary, etc."

Furthermore, it is most desirable that the work of the fifth edition of the National Formulary proceed coincidentally with the work on the tenth decennial revision of the U. S. Pharmacopoeia, so that the forthcoming edition of both books shall be issued about the same time and become legal as of the same date.

It is, therefore, suggested that the Council select the Committee on National Formulary not later than the final session of the Council of this annual meeting.

J. W. ENGLAND, *Secretary*.

SYNOPSIS OF MOTIONS OF THE COUNCIL, 1918-19.

Motion No. 1. That the Council of the American Pharmaceutical Association, appreciating the seriousness of venereal diseases among the armed forces of the United States, and desirous of doing everything in its power to assist the Government in the war emergency, pledges the best efforts of the organization in coöperating with the program of the United States Public Health Service to reduce the venereal disease scourge, and that this Association recommend to the retail druggists of the United States that they discourage attempted self-treatment by refusing to sell to infected people who are carriers of venereal disease, patent proprietary remedies compounded for such self-treatment, and by directing such carriers to competent physicians, venereal clinics or boards of health for scientific care, so as to hasten their cure and reduce the danger of infection to civilians and to soldiers and sailors of the United States. Carried.

Motion No. 2. That the following be nominated as members of the Committee on Research to be elected by the Council: Messrs. H. V. Army, G. M. Beringer, J. A. Koch, Henry Kraemer, Edward Kremers, C. H. LaWall, W. L. Scoville, A. B. Stevens and H. M. Whelpley. Carried.

Motion No. 3. That George D. Beal be nominated for the Committee on Research. Carried (Committee elected November 5, 1918).

Motion No. 4. That the recommendations of the Committee on Finance of September 23, 1918, contained in Council Letter No. 2, be adopted. Carried.

Motion No. 5. Election of members Nos. 1 to 37 inclusive. Carried.

Chairman Hopp announced the appointment of the following committees:

Committee on Conservation: Hugo H. Schaefer, *Chairman*, New York; Theo. J. Bradley, Boston; E. Fullerton Cook, Philadelphia; H. A. B. Dunning, Baltimore; and H. C. Fuller, Washington, D. C.

Advisory Committee for Sailor and Soldier Pharmacists: Frank H. Freericks, *Chairman*, Cincinnati; Clarence O. Bigelow, New York; Edward Spease, Cleveland; H. C. Christensen, Chicago; and Charles E. Caspari, St. Louis.

Committee on Drug Classification: Jacob Diner, *Chairman*, New York; E. F. Kelly, Baltimore; Dr. F. E. Stewart, Philadelphia; E. Von Hermann, Chicago, and L. A. Seltzer, Detroit.

Motion No. 6. That an additional appropriation of \$150 be made for the budget item for the National Drug Trade Conference. Carried.

Motion No. 7. Election of members Nos. 38 to 43 inclusive. Carried.

Motion No. 8. That the Council approve of the proposed service to Soldier and Sailor Pharmacists, as set forth in the Circular Letter of the Advisory Committee of November 8th and that the Council hereby authorizes the committee to accept contributions for the purpose of carrying on its work; also, that the committee be authorized to name its own treasurer to have custody of and to disburse the funds so collected. Carried.

Motion No. 9. Election of members Nos. 44 to 55 inclusive. Carried.

Motion No. 10. That the Proposed Budget of Appropriations for 1919 be approved. Carried.

PROPOSED BUDGET OF APPROPRIATIONS FOR 1919.

Appropriation for General Expenses:

No. 1	Salaries.....	\$6,400
No. 2	Printing, Postage and Stationery.....	1,000
No. 3	Clerical Expenses, Secretary's service.....	416
No. 4	Miscellaneous Expenses.....	200
No. 5	Stenographers.....	350
No. 6	Traveling Expenses.....	200
No. 7	Committee on Membership.....	250
No. 8	Committee on Unofficial Standards.....	100
No. 9	Year Book.....	3,000
No. 10	Premium on Treasurer's Bond.....	50
No. 11	National Drug Trade Conference.....	200
No. 12	Section on Scientific Papers.....	25
No. 13	Section on Education and Legislation.....	25
No. 14	Section on Commercial Interests.....	25
No. 15	Section on Practical Pharmacy and Dispensing.....	25
No. 16	Section on Historical Pharmacy.....	25
No. 17	Women's Section.....	50
No. 18	National Syllabus Committee.....	25
No. 19	Committee on Recipe Book.....	50
		<hr/> \$12,416

Appropriations for Open Accounts:

No. 20	Journal.....	\$6,250
	(a) Publication.....	\$5,000
	(b) Clerical Expenses.....	800
	(c) Postage and Stationery.....	300
	(d) Freight, Drayage, Miscellaneous.....	150
No. 21	National Formulary.....	1,000
No. 22	Badges and Bars.....	50
No. 23	Certificates.....	50
		<hr/> 7,350
		<hr/> \$19,766

Motion No. 11. That the resignation of Hugo H. Schaefer as Secretary of the Scientific Section be accepted. Carried.

Motion No. 12. That the Budget of Appropriations for 1919 be amended to include an appropriation of \$25 for expenses of Committee on Local Branches. Carried.

Motion No. 13. Election of members Nos. 56 to 69 inclusive. Carried.

Motion No. 14. That A. G. DuMez be elected as Secretary of Scientific Section, succeeding Hugo H. Schaefer, resigned. Carried.

Motion No. 15. That an additional appropriation of \$300 be made to Item No. 4, Miscellaneous, of Budget of Appropriations. Carried.

Motion No. 16. That a vote of thanks be extended by the Council to Prof. John Uri Lloyd for his generous services in caring for material belonging to the Association, free of charge. Carried.

Motion No. 17. That the 67th annual meeting of the American Pharmaceutical Association be held during the week beginning August 25, 1919. Carried.

Motion No. 18. That an additional appropriation of \$118.03 for printing, postage and stationery and for \$80.06 for the JOURNAL be authorized. Carried.

Motion No. 19. Election of members 70 to 126 inclusive. Carried.

Motion No. 20. That the Ebert Prize Fund, now amounting to \$1,200 and on deposit in the Boston Penny Savings Bank, be invested in the Fourth Liberty 4 $\frac{1}{4}$ % Bonds, to be purchased in the market at current price. Carried.

Motion No. 21. That no paper nor address at Section meetings be permitted to occupy more than ten minutes, except by unanimous consent, that discussion be limited to not over five minutes for each participant and that no permission be permitted to speak twice upon a given subject except by unanimous consent. Withdrawn, as the by-laws of the Association (Chapter X, Article II) and of the Scientific Section (Section X) cover the subject matter of the motion.

Motion No. 22. That the General Secretary be authorized to dispose of certain Association property, etc. Carried.

Motion No. 23. Election of members Nos. 127 to 145 inclusive. Carried.

Motion No. 24. That copies of the Proceedings of the A. Ph. A. be presented to the National Association Boards of Pharmacy. Carried.

Motion No. 25. That the General Secretary retain 20 copies of bound Year Books, I to V, and that as soon as conditions permit, sets of these five volumes be sent to the leading foreign pharmaceutical journals with the compliments of the American Pharmaceutical Association. Carried.

Motion No. 26. Election of members Nos. 146 to 159 inclusive. Carried.

Motion No. 27. That the Program for the 1919 Annual Meeting as finally revised be approved. Carried.

Motion No. 28. Election of members Nos. 160 to 196 inclusive. Carried.

Motion No. 29. Election of members Nos. 197 to 219 inclusive. Carried.

Motion No. 30. That the Council authorizes the Advisory Committee for Soldier and Sailor Pharmacists to invite all pharmacists serving as Soldiers, Sailors or Marines, during the World War, either honorably discharged or now continuing in the Service, to become members of the American Pharmaceutical Association, and that in recognition of their services the Council appropriate, out of the general funds of the Association, an amount sufficient to pay the annual dues for the first year of \$4.00 for each applicant to membership, it being understood that the new members who are exempted from the payment of dues for the first year shall not receive either the JOURNAL or Year Book unless they care to pay for them.

Motion No. 31. That the Council approve the proposal to organize at the New York 1919 Annual Meeting, by proper amendment to the by-laws of the Association, a Section of World War Veterans, on condition that sufficient interest be shown by the applications for membership in the Association of the pharmacists who have served in the World War as Soldiers, Sailors or Marines, with the view of organizing such a Section and with the understanding that such a Section be authorized to adopt and have its own by-laws, subject to the Constitution and by-laws of the Association.

Motion No. 32. Election of members Nos. 213, 214 and 220 to 270 inclusive. Carried.

Motion No. 33. Election of members Nos. 271 to 299 inclusive. Carried.

Motion No. 34. Election of members Nos. 300 to 356 inclusive. Carried.

The Report of the Committee on Publication was presented by Chairman England, as follows:

TO THE MEMBERS OF THE COUNCIL:

The Committee on Publication submits the following report:—

Expenditures for the Journal: The expenditures for the JOURNAL in 1918 for publication, etc., were \$6,382.06, which with the editor's salary totalled \$10,132.06; the total cost of the previous year was \$9,782.61 (\$6,282.61 + \$3,500), an increase of \$339.45.

Receipts of the Journal: The receipts of the Journal in 1918 from advertisements, etc., were \$5,408.45, and for 1917 were \$6,000.73, a decrease of \$592.28. The receipts for 1919 to August 1 show an increase of \$589.11, or equivalent, if continued, to about \$1,000 for the year.

Net cost of the Journal: In 1918 the total cost of the Journal (including salaries) was \$10,132.06, and the total receipts were \$5,408.45, making a net cost of \$4,723.61. In 1917 the net cost was \$3,781.88, or an increase for 1918 of \$941.73, the increased cost being due chiefly to increased printing costs and decreased advertising receipts. In other words, there were in 1918 over 2,700 members in the Association, and the Journal for 1918 cost the Association, practically, only \$1.75 per member.

Printing of Journal for 1919: The printing of the JOURNAL for 1919 was continued with the Eschenbach Printing Company of Easton, Pa., on October 1, 1918, which company asked 20 percent advance by reason of the greatly increased cost of labor, paper, presswork, etc., but we compromised on the basis of about 10 percent. The service rendered by this company has continued to be satisfactory.

Year Book for 1917 (Vol. 6): The contract for printing the Year Book for 1917 was awarded to the Eschenbach Printing Company of Easton, Pa., on October 9, 1918, under the terms and conditions covering the 1916 Year Book, Vol. V, subject to Government regulations which required the use of 50 lb. M. F. paper instead of 60 lb., as heretofore, and the price therein subject to an increase of 20 percent. The advance asked was fair and reasonable and unavoidable by reason of rapidly advancing costs in labor, paper, binding cartons, etc. The book was distributed in July, 1919.

The 1917 Year Book cost \$3,575.98, including postage and expressage, etc., which with the salary of the Reporter on the Progress of Pharmacy (\$600) totaled \$4,175.98. The 1916 Year Book cost \$2,950.81 including postage and expressage, which with the salary of the Reporter on the Progress of Pharmacy (\$600), totaled \$3,550.81, an increased cost of \$625.17, or about 17 percent for the 1917 issue.

On the basis of 2,700 members, the Year Book for 1917 cost the Association, practically, only \$1.55 per member per year. The Year Book contains about one-half as many reading pages as the JOURNAL, the increased relative cost being due chiefly to the fact that the Year Book carries no advertisements.

The JOURNAL and the Year Book, therefore, cost the Association, practically, but \$3.30 per member per year.

National Formulary: During 1918, 3,257 copies of the N. F. IV were sold, yielding \$4,410.47. The stock on June 1, 1919, was 545 books (191 muslin, 197 buckram and 157 interleaved). The total sales up to July 1, 1919, have been 26,850, the first copy having been sold on July 25, 1916. The General Secretary will present in his annual report a statement of the distribution of the book and the Treasurer, in his report, a statement of the receipts and expenditures.

In the publication of the JOURNAL, the Year Book and the National Formulary, the American Pharmaceutical Association is presenting the result of detailed research work that is of incalculable value, not only to the profession of pharmacy, but also, if indirectly, to the professions of medicine and chemistry, and it is doing this at an exceedingly reasonable cost to the Association, as the figures given above show.

It seems to your Committee on Publication that the time has now come when the Association should go a step further. The Association has an exceedingly able committee on the A. Ph. A. Recipe Book. Up to September, 1917, the Committee has published in the JOURNAL for criticism and suggestions, some 642 valuable formulas; and doubtless the Committee has many other formulas in reserve unpublished.

Your Committee on Publication would, therefore, suggest that the American Pharmaceutical Association publish these formulas and others, if necessary, in book form at an early date, so that pharmacists may have the formulas in a readily available form for use. We do not

believe that the expense would be prohibitory; indeed such a volume could be made the source of profit to the Association.

If not inconsistent with the purposes of the work of the Committee on Unofficial Standards, it might be desirable to include in the receipt book as Part II, unofficial standards, not only for drugs, but also for materials that enter into the formulas of the book, and in such case, it might be desirable, also, to name the book "Unofficial Formulas and Standards," instead of Recipe Book, to which latter title there has been some objection.

If the Association decides to publish the book, we recommend (1) that the title of the Committee on Recipe Book be changed to Committee on Unofficial Formulas, (2) that the Committee on Unofficial Formulas and the Committee on Standards be requested to prepare copy for the book, and (3) that the Council be authorized, through its Committee on Publication, to have the book printed and to fix its selling price.

J. W. ENGLAND, *Chairman*.

On motion of G. M. Beringer, seconded by S. L. Hilton, the report was received and the recommendations of the Committee on Publication were directed to be considered seriatim; as a substitute motion it was moved by W. B. Day and seconded by H. M. Whelpley, that the report be received and action on the recommendation be deferred until after the Report of the Committee on Recipe Book had been presented and adopted.

The Report of the Editor of the JOURNAL was presented by Editor Eberle as follows:
TO THE MEMBERS OF THE COUNCIL:

I respectfully submit herewith my report for 1918 as Editor of the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION and Advertising Manager.

The entering of the United States into the world war not only increased the expenses of 1918 but induced some patrons of the JOURNAL to discontinue their advertising. It was possible to hold the expenses down to \$6,402.31 for the year, that is, only \$119.70 above that of 1917, because of our favorable publication contract, which terminated with the December issue of 1918. We did not fare so well with our receipts from advertising; these were reduced to \$4,647.24, or the equivalent of about three pages less per issue of the year. In this connection it may not be out of place to report that our receipts from this source to date for 1919 have increased in about the same proportion. Our subscriptions have also slightly increased.

The receipts from advertising amounted to \$4,647.24; from subscriptions and single copies, \$309.50; from reprints, \$259.75; type cuts, \$4.05; total receipts, \$5,220.54. By consulting the report of the Treasurer you will find that he credits the receipts with \$5,408.45; this difference is due to a remittance of December 31, 1917, of \$187.91, which reached him January, 1918, hence by him credited to that month and year.

Our expenses totaled \$6,402.31, of which \$548.45 was for clerical expense; \$152.29 for office postage; \$139.10 for engravings; \$5,482.06 for publishing and mailing the JOURNAL and reprints; \$3.80 for expressage; \$20.00 for binding of JOURNALS, and \$56.61 for stationery and office supplies. The Treasurer's report charges us with \$6,382.06; this difference is due to the fact that most of our expense bills are rendered on the first of the month for the preceding month, and the Treasurer enters voucher checks when bills are paid, hence most of the items for December, 1917, are charged by him against 1918, and the December items of 1918 will appear in his report for 1919.

It is hardly necessary to make a comparative statement for 1917 and 1918 relative to expenses. As stated, the difference is only \$119.70, and practically all for an increased number of reprints; some of it is due to a higher letter postage; office expenses were less.

The Editor renders a monthly statement to the Publication Committee. The remittances of the JOURNAL are made payable to the Association and receipt of these is acknowledged by the Treasurer to the JOURNAL. Publication costs are paid direct to the publishers; other expenses are paid by the Editor, bills are sent to the Secretary and voucher-checked by the Treasurer, after approval by the Chairman of the Finance Committee. Duplicate copies of all transactions, monthly reports, remittance letters, itemized and scheduled accounts are submitted with this report. Considering the conditions of 1918, your reporter is confident you will agree with him that a very good showing has been made.

As indicated, our contract with the Eschenbach Printing Company terminated with the December issue of 1918, as the publishers were unwilling to renew the contract on the same

basis. After considerable correspondence by the Editor with the publishers in a number of cities the Publication Committee decided to ask for bids on publishing the JOURNAL, designating that a lighter weight paper than heretofore be used. The bids ranged from about ten percent advance on the former cost to upwards of twenty percent. Of the former two competitors were close bidders, one of them the present publishers. After careful consideration of these two bids by the Publication Committee it was decided to again contract with the Eschenbach Printing Company.

After consultation with the Chairman of the Publication Committee your Advertising Manager entered into an agreement with Mr. Max I. Barth, 171 Madison Ave., New York City, to solicit advertising in New York City and immediate vicinity, on a commission basis. His commissions so far this year, 1919, have amounted to \$103.75. As a result of his work and the coöperation of the office some new advertising has been secured, and it is hoped that this arrangement and a continuation thereof will be approved by you.

It may be stated that while our publication costs have been increased, our receipts so far have also been larger, the latter proportionately exceeding the former; indications are that this relation will continue throughout the present year.

The JOURNAL coöperates with the Membership Committee, and doubtless is an aid in the securing of new members.

It is suggested to the Local Branches of the A. Ph. A. that many of the papers read before the Sections, and printed in the JOURNAL, should be made subjects of discussion at their monthly meetings. The same is true relative to other contributions appearing in our publication. A number of papers have been contributed by members of the Council on Pharmacy and Chemistry of the American Medical Association, being reports of investigations supported by a grant from the Therapeutic Research Committee; others have been received from the Laboratory of the American Medical Association, and each month, for a year or more, a contribution from the Pharmacognosy Laboratory, Bureau of Chemistry, U. S. Department of Agriculture, has been printed, and to these contributors the Editor desires to express his thanks. It is hoped that the work on the A. Ph. A. Recipe Book will be continued, so that another important service may be rendered pharmacy and pharmacists by the American Pharmaceutical Association.

The value of the JOURNAL can be extended by making more and greater use of it, and the income augmented by increasing the number of its advertising pages. All members may share in these promotions and in the benefits derived.

The Editor is thankful to the officers of the Association and members of the Publication Committee for their assistance and encouragement, and grateful to the membership for the many considerations they have shown him. He hopes that his work has your approval, with an assurance that you will continue to coöperate with him in making the JOURNAL a better and more valuable asset of the Association.

Respectfully submitted,

E. G. EBERLE, *Editor of Journal.*

On motion the report was accepted.

The Report of the Treasurer was presented by Treasurer Whelpley. It contained a number of recommendations, the disposition of which were as follows:

(1) That the Ebert Prize be limited to \$25 until the Ebert Fund amounts to \$1,500. Withdrawn.

(2) That the Treasurer be authorized to transfer a sum not exceeding \$15,000 from the checking account in the International Bank of St. Louis to the Boston Penny Savings Bank. Carried.

(3) That the Rules of Finance be so amended that provision be made for the auditing of the account of the Treasurer by a professional auditor. Changed to require that the Committee on Finance and the Committee on Audit be authorized to engage annually a public accountant to audit the accounts of the Treasurer.

(4) That the U. S. Liberty Bonds of \$50 to \$100 denominations now on hand be held for the present as coupon bonds. Adopted.

(5) That the Treasurer be authorized to make further purchases of United States Bonds, as the money accumulates in the treasury in sufficient amount to justify such investments. Adopted.

(6) That the Treasurer be authorized to sell the Ebert jewelry and turn the proceeds into the Ebert Legacy Fund. Adopted.

(7) That the Rice Memorial Fund be incorporated with the Endowment Fund. Adopted.

(8) That the College Fund be merged with the Endowment Fund. Adopted.

On motion of Charles E. Caspari, seconded by C. H. LaWall, it was directed that the Treasurer's bond be increased to \$25,000.

On motion of W. B. Day, seconded by W. R. White, it was directed that the appropriation for the Year Book in the Budget of Appropriations for the year 1919, be increased \$600.

The Report of the Committee on Research was presented by Chairman Army, as follows:

REPORT OF COMMITTEE ON RESEARCH.

TO THE MEMBERS OF THE COUNCIL:

The Committee on Research authorized at the Chicago meeting as a permanent committee of the Council was formally elected by the Council during the latter days of 1918. The names of the ten members are as follows: Messrs. Army, LaWall, Kremers, Koch, Kraemer, Beringer, Scoville, Stevens, Whelpley and George D. Beal.

The Committee transacted its business during 1919 by means of five bulletins, as copy of which is handed in with this for the purpose of filing. In addition to these bulletins the Committee held a meeting on the morning of August 25th, at which the following members were present: Messrs. Beringer, Koch, Kremers, LaWall, Scoville and Army. This report has been submitted to those unable to be present at the meeting and those approving of the results of the deliberations have appended their names to this report.

The main duty for which the Committee was created was to recommend to the Council the name or names of the person or persons to whom the grant from the American Pharmaceutical Research Fund be awarded; announcement of such award having been published in the July and August numbers of drug, medical and chemical journals; these announcements bringing to the chairman four applications for the grant, which by authority of the Committee was placed this year at \$240. After careful consideration of the applications the following conclusions were reached:

1. That we recommend to the Council that the grant this year be made as one appropriation.

2. That the grant this year (1919-1920) be made to George Denton Beal for a continuation of his work on anthraquinone drugs in collaboration with Vernon L. Harnack.

3. That the three other applications, which were of highly attractive character, be kept on file for further consideration when the fund is available if the work proposed be deferred until that time.

4. That this recommendation be respectfully submitted to the Council for action.

During the year considerable discussion was devoted to the proposed institute for drug research that is being considered by the American Chemical Society. As your Committee was not in agreement on the matter and as the proposition is still in intangible form your Committee has no specific recommendations to make in the matter at this time.

Your Committee regrets to announce the resignation of Professor A. B. Stevens because of his retirement from pharmaceutical activities. Professor Stevens' letter is presented with this report for action by the Council and is being so transmitted with the deep regrets of your Committee.

In closing, attention should be called to the fact that by the terms of creation of your Committee, the terms of two of its members expire in 1919: Messrs. Whelpley and Beal. A third vacancy will occur if Professor Stevens' resignation is accepted. So an election to fill such vacancies will be in order during this New York meeting.

Respectfully submitted,

CHARLES H. LAWALL.

HENRY KRAEMER.

GEORGE M. BERINGER.

H. V. ARMY, *Chairman*.

EDWARD KREMERS.

J. A. KOCH.

H. M. WHELPLEY.

The report was received and the recommendations made were disposed of, as follows:

- (1) That the Council "grant" this year be made as one appropriation. Adopted.

(2) That the "grant" this year (1919-1920) be made to Dr. George Denton Beal. Adopted.

(3) That the three other applications be kept on file for further consideration when the fund is available if the work proposed be deferred until that time. Adopted.

On motion of W. R. White, seconded by H. M. Whelpley, the report was adopted as a whole.

On motion of H. V. Army, seconded by G. M. Beringer, the resignation of Prof. A. B. Stevens from the Committee was accepted with deep regret and expressions of appreciation for services rendered.

George M. Beringer proposed the following names for honorary membership in the American Pharmaceutical Association:

(1) Prof. Leon Guignard, Honorary President of Ecole de pharmacie, Paris, France.

(2) Prof. Eugene Collin, Chemist, Central Laboratory for the Repression of Frauds, Paris, France.

(3) Prof. Emile Bourquelot, Paris School of Pharmacy, Paris, France.

(4) J. H. Maiden, Director of the Botanical Garden, New South Wales, Sydney, Australia.

(5) Wm. Kirkby, M. Sc., President of British Pharmaceutical Conference, Manchester, England.

(6) Sir William Glyn-Jones, Secretary of Pharmaceutical Society of Great Britain, London, England.

On motion of C. H. LaWall, seconded by E. G. Eberle, the nominees were unanimously elected.

Adjourned until Wednesday, August 27, 1919, at 7:30 P.M.

J. W. ENGLAND, *Secretary*.

REPORT OF THE SOLDIER AND SAILOR ADVISORY COMMITTEE TO THE AMERICAN PHARMACEUTICAL ASSOCIATION.

To the Members of the Council:

Your Committee was appointed in November by Chairman Hopp of the Council, and immediately took up its work. A tentative program or outline of the intended scope of its work was agreed upon by correspondence, in order that the Committee become immediately active, and such tentative program of activity was confirmed and augmented at a meeting held in Cincinnati, late in December, which was attended by Messrs. C. O. Bigelow, H. C. Christensen, Edward Spease, H. M. Whelpley and Frank H. Freericks; Dr. C. E. Caspari being prevented from attending because of illness. The work of the Committee has been very extensive along many different lines. The assistance and encouragement which it received, and the service in one form or another which it was able to render, and all of the incidents connected therewith, might well be the contents of a good sized book, and this report will be only a condensed statement, it being in mind also that the effort of the Association must largely speak for itself.

THE SCOPE OF OUR WORK.

It being the duty of the Committee to help wherever it might be necessary to re-establish men who entered the service out of pharmacy, we decided that our first task would be to learn of positions, partnership and store openings, to which the men might be referred. As a part of this work, it was thought to be of importance that ready means of Reciprocal Registration be provided, and that attention be given toward facilitating college education wherever desired and needed. Only after arranging for these essential preliminaries might we reasonably expect to render service, and not until then get in touch with the men whom we were to serve. It was our task on the one hand to learn from the fifty thousand retail pharmacists of the country what opportunities, if any, they had to offer the returning men, and on the other hand to get in touch with the approximately ten thousand men in the service, so that they might learn of the opportunities so offered them. We realized almost immediately that an Expense Fund would be essential, and that our helpfulness would largely depend upon the size of our expense fund. Council authorized the Committee to accept contributions toward such a fund, and Dr. H. M. Whelpley

kindly consented to act as the Committee Treasurer. At this point it might be mentioned that on August 1st, the total contributions received by the Committee amounted to \$2,084.70, its total disbursements to \$1,379.83, leaving on hand \$703.87, out of which some subsequent disbursements have been made. Doubtless Treasurer Whelpley will make the list of contributors a part of his report, or otherwise it can be made a part of the final report of this Committee.

FINDING THE OPPORTUNITIES.

We are greatly indebted to the Pharmaceutical Press for editorial comment, and to both the Pharmaceutical Press and wholesale drug houses for the publication and distribution of a questionnaire to be filled out by the retail drug trade. Almost without exception the Pharmaceutical Press gave us page space publication, and through the wholesale drug houses we were able to distribute fifty thousand pieces of circular matter. Subsequently, through the coöperation of State Associations and State Boards of Pharmacy we distributed another thirty thousand questionnaire cards. The net result of the publicity work placed the Committee in touch with nearly three thousand positions, store and partnership openings, and enabled it to approach the other and real part of its work with some show of confidence, and has permitted that every request for assistance had satisfying attention. Through this publicity we are even now constantly coming in touch with new positions and new opportunities. We feel deeply indebted to the pharmaceutical journals, to the wholesale drug houses, to the State Boards of Pharmacy and to the State Associations for the help they have given us.

REFERRING OPPORTUNITIES.

Becoming satisfied within two weeks after commencing our work that we would be able with the generous support of retail pharmacists in all sections of the country to offer real service to the returning men, we took up the task of coming in touch with them, and there met with many disappointments and difficult problems. How to reach the ten thousand men in whom we were interested and who were in all parts of this and foreign countries, presented more than an ordinary undertaking. Naturally we turned to the various Government departments and to the various organizations engaged in war activities. To all we said that we wanted to reach the ten thousand pharmacists in the Army and the Navy, to let them know that the A. Ph. A. would be helpful in re-establishing them, and, with but few exceptions, none seemed prepared to help us. The various Government departments either could offer no suggestion, or thought that aid should properly be given us through some other department or bureau. Our first real help for this part of the work came from the Knights of Columbus, who seemed to grasp the situation and posted bulletins in all the camps and in all of their buildings in the country. Subsequently we also received some aid along like lines from one of the Government bureaus concerned with the re-employment of men, but it continued to be apparent that we were reaching only a small part of the men in whom we were interestd. After trying again and again in every different direction we finally turned once more to the Secretary of War and the Secretary of the Navy, stating our disappointment because of almost total lack of assistance from any of the Government departments and bureaus. In the end this last effort gave us the publicity which we needed both in the Army and in the Navy. In the Army we were fortunate early in April to secure the special interest of Colonel Arthur Woods, assistant to the Secretary of War, and his assistant, Capt. C. B. Hammond. Through them we secured the further assistance of the War Camp Community Service and the Knights of Columbus. The War Department, through General March, issued a special War Department circular and had it distributed to all Army units, and in one form or another brought to the attention of all who continued in the service from some time in April. Through them special attention was called to the work of the American Pharmaceutical Association in a booklet entitled, "Where Do We Go From Here," which was handed to every man who received his discharge commencing with late in April or early in May. The War Department also issued a news item from Washington to the press of the country, calling attention to the work of the A. Ph. A., and this was published in many of the large newspapers. In the Army also we secured publicity in the various camp publications and in the *Stars and Stripes*, a newspaper circulating among expeditionary forces overseas. In the Navy, commencing with April, we secured the help of the Bureau of Medicine and Surgery, and finally the help of the Bureau of Navigation, which resulted in the publication of a circular letter to all ships and stations requesting commanding officers to bring our work to the attention of their

men, and we have reason to believe that this was very generally done, the circular either being posted aboard or being read to the men assembled. Thus we at last secured the much needed publicity, and while doubtless thousands of men out of pharmacy had their discharge from the service before they could have notice of the work of this committee, it fortunately mattered little, because the men having early discharges were least in need of any service that we might render. As a result of our various publicity endeavors we have come in touch with about twenty-five hundred men out of pharmacy in or about to leave the service. We have been able to refer about eight hundred to positions, stores and partnership openings, and about four hundred have been advised and aided in connection with pharmaceutical education and college opportunities. We conservatively estimate that the work of the Committee has included the writing of from four to five thousand personal letters and circular matter running into many thousands of pieces.

RECIPROCAL REGISTRATION.

It was anticipated, as already mentioned, that much good might be done by our Committee in providing ready and, where need be, special means of reciprocal registration for the men honorably discharged. This part of the Committee work was put under the direction of Mr. H. C. Christensen, and it has been of great value and assistance to the men, and will continue to be so for some months to come. The several State Boards of Pharmacy were asked to allow as a special concession that pharmacists registered in one state having an honorable discharge be permitted unrestricted right of registration in their respective states. Almost without exception the State Boards of Pharmacy have coöperated in this work to the fullest extent, and only three or possibly four of the State Boards, largely because of legal restrictions, have been unable to grant a full measure of coöperation. Through the work of the sub-committee, pharmacists leaving service and finding better opportunity in new states have secured reciprocal registration in nearly every one of the states, and in that connection in every case special concessions have been made these men through the National Association of State Boards of Pharmacy. This part of our report would not be complete if we failed to mention that, in a spirit of real helpfulness and coöperation, the Ohio State Board of Pharmacy and the Pennsylvania State Board of Pharmacy were instrumental in securing law amendment so that they might grant the right of unrestricted registration to all soldier and sailor pharmacists registered in other states.

COLLEGE OPPORTUNITIES.

The Committee very early in its work concluded that much good might be done by advocating college work and by securing special inducements for men without college education to seek it upon their discharge. Prof. Edward Spease accepted the chairmanship of a sub-committee to take up this line of work. The active coöperation of the colleges of pharmacy was sought and in many instances heartily given. Lack of time and constantly changing conditions did not permit the adoption of any definite plan, but it is certain that none of the young men will need to go without a college education because they lack funds, and it is certain also that every college and school of pharmacy is taking a special interest in the men who have been in service. The work of the Committee in connection with college opportunities has more directly been centered in finding drug store employment where the men might hope to cover their expense while attending college. Of course, we fully recognize that it would be better if entire time and undivided attention could be given to college work, but often the financial condition of the student does not permit this, and it is a source of great satisfaction that hundreds of young men, because of the special interest and coöperation of many of the colleges of pharmacy, have and will find drug store employment where they can secure a college education. Again we want to express deep appreciation for the interest which many of the Colleges have taken in the work of the Committee.

WORLD WAR VETERANS SECTION.

Your Committee early in June decided to submit to Council the feasibility of creating within the Association a World War Veterans Section, and extending, toward that end, an invitation to every soldier, sailor and marine pharmacist, to become a member of the Association without dues for the first year. After most thorough deliberation on the part of Council, the proposal of your Committee was approved by it. Unfortunately after approval by Council, time did not permit prior to this meeting, that the offer of the Association be brought to the

attention of the pharmacists of the country and particularly to those who have been in the service, as it was planned to do. We have endeavored to reach the men with whom we have been in touch, but we discovered that many hundreds of them have changed addresses and cannot thus be reached. Nevertheless, we hope during the convention to submit sufficient applications for membership to prove to all that the offer of membership will be appreciated, and that the creation of a Section of World War Veterans is meeting with hearty response. Just a few words on the subject of a World War Veterans Section—what it will mean and what it may hope to accomplish. There are approximately ten thousand men out of the ranks of pharmacy who have been in the service. These men apart from their common interest in pharmacy and in its progress are bound together by ties of sentiment, which logically calls for an organization peculiarly their own within pharmacy. Where, if such an organization ought to exist, can it find better place, better environment, than within the folds of the American Pharmaceutical Association? A wonderful organization this can be, and will be, for the progress of pharmacy and for the influence of public good as it is concerned with pharmacy. A body of men, who, because of special service rendered, will often need only to ask in order to receive, what pharmacy ought to have. A body of men which through its several members in all sections and communities throughout the country can bring the need of pharmacy to the attention of their fellow veterans in all other walks of life. A body of men who from practical experience know what Army and Navy welfare requires in pharmaceutical service, and who because of their practical experience can demand of Congress that pharmacy receive the recognition in Army and Navy that it ought to have. A body of men which if brought to its proper numerical strength supported by the high ideals and aims of the American Pharmaceutical Association will be influential enough, will be strong enough, to bring American pharmacy into its own. A body of men who under proper leadership, where its members rendered pharmaceutical service, may even hope eventually to secure for them the remuneration which they ought to have had for such work while in the Service.

OUR WORK AS A WHOLE TO DATE.

The work of the Committee is not completed. Daily we receive many communications asking for advice and assistance in the line of our work. Lack of funds has prevented the employment of a sufficient clerical force to properly distribute and systematize the work, so that it would not be more or less of a burden on Committee members, but we are glad to say that we have been able to cope with the demands made upon us, and that in some manner we mean to finish the task. It may now with fairness be claimed that the creation, appointment and work of this Committee has been justified by its experience. We do not believe that any pharmacist who was in the Service would have been in need, or would have been at a loss in some manner to find employment or place, but we know that a great many more have readily found employment or place because of this Committee. We do know that millions of American citizens have learned of the unselfish activities of the American Pharmaceutical Association who otherwise would not have known of it. What is far more important, and a fact beyond doubt, is, that men out of pharmacy, called into the service of their country, stationed in all parts of the world, had the joy and the satisfaction while far away from home, in strange and often discomforting surroundings of knowing that the American Pharmaceutical Association was thinking about them and their future welfare when they returned home. One need only to visualize the young men out of pharmacy in far off Siberia, Macedonia, Germany, Belgium, France, those on board ship on the coast of Dalmatia, France, England, in the North Sea, on the waters of all parts of the globe, and wherever else the soldiers and sailors of our country are and have been, to appreciate what it must have meant to read an Army order, Navy order, or to read a bulletin, showing that the A. Ph. A. had them in mind. Many a letter testifies to the heart touch that this gave. With it all just a word to the credit of American pharmacy. It was the only class interest among all of the many classes which reached out to the men from its ranks, and said to them, we are looking for you—we have a place for you, when you come marching home.

Respectfully submitted,

C. O. BIGELOW,
C. E. CASPARI,
H. C. CHRISTENSEN,
EDW. SPEASE,
FRANK H. FREERICKS, *Chairman.*

NEW YORK
August 26, 1919.

MINUTES OF THE MEETING OF THE WORLD WAR VETERANS SECTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

A meeting of the members of the American Pharmaceutical Association and other pharmacists who served in the world war was called by Mr. Frank H. Freericks, Chairman of the A. Ph. A. Advisory Committee for Soldier and Sailor Pharmacists, Tuesday afternoon, August 26th, at 4 P.M., in Hotel Pennsylvania. Mr. Freericks explained that the Council of the American Pharmaceutical Association had voted in favor of organizing a World War Veterans Section of the A. Ph. A., provided sufficient interest was shown in the matter at the New York meeting of the A. Ph. A. and that such a Section would be able to exercise a wide influence in pharmaceutical circles and be of great assistance to the American Pharmaceutical Association in securing new members. Mr. Freericks explained that the American Pharmaceutical Association would grant membership, without the publications of the Association, to soldier and sailor pharmacists without cost for the first year.

In order to proceed with the organization of the Section, Mr. Freericks suggested that Captain W. D. Walters, of Cincinnati, be asked to act as temporary chairman and Robert P. Fischelis, of Philadelphia, as temporary secretary. These gentlemen agreed to act in the capacities named and assumed the respective temporary offices. It was moved by Mr. Fairchild and seconded by Mr. Gardier that the temporary officers named be made the permanent officers for this meeting. The motion was carried.

President Charles H. LaWall, of the American Pharmaceutical Association, was then asked to address the Section and spoke at some length upon the mutual advantages that would accrue through the formation of the Section and its affiliation with the A. Ph. A. Remarks regarding the possibilities of the Section were then made by Messrs. Fairchild, Steiger, Herron, Eddy, Chase, Shapiro, Gardier, Freericks and Fischelis. Upon motion duly seconded and carried a committee on by-laws was appointed. The Chairman named the following to serve on this committee: Clyde L. Eddy, *Chairman*; M. E. Eaton, W. M. Chase, C. S. Herron and R. P. Fischelis.

Mr. Fairchild moved that a vote of thanks be tendered Mr. F. H. Freericks for the excellent work he has carried on in behalf of soldier and sailor pharmacists and that he be invited to attend future meetings of the Section. This motion was carried.

After some remarks by the Chairman as to the purpose and possibilities of the Section, it was decided that a second meeting, to complete the organization, should be held on Wednesday evening at 7.30 P.M. in the Hotel Pennsylvania. The meeting adjourned at 6.40 P.M. The following were present:

Harry H. Johnson, 3124 Haverford Ave., Philadelphia.
 Clyde L. Eddy, 100 William St., New York City.
 Joseph Futterman, 4400 66th St., New York City.
 Joseph Shapiro, 22nd St., 9th Ave., New York City.
 Julius A. Huberman, 667 Flushing Ave., Brooklyn, N. Y.
 Tappen Fairchild, 74 Laight St., New York City.
 M. E. Eaton, Norwich, N. Y.
 Louis A. Gardier, 318 S. Main Ave., Scranton, Pa.
 Frank L. McCartney, St. Louis, Mo.
 Walter M. Chase, care Bulletin of Pharmacy, Detroit, Mich.
 Charles S. Herron, DuBois, Pa.
 W. F. O'Daniel, U. S. N., Home—Hunniwell, Mo.; present—Caldwell, N. J.
 Leonard W. Steiger, 400 Lookout Ave., Hackensack, N. J.
 Robert P. Fischelis, 605 Bulletin Bldg., Philadelphia, Pa.
 W. D. Walters, 161 E. McMicken Ave., Cincinnati, Ohio.

ROBERT P. FISCHELIS, *Temporary Secretary*.

SECOND SESSION.

The second session of the World War Veterans Section of the A. Ph. A. was held at the Hotel Pennsylvania, Wednesday evening, August 27th, at 7.30 P.M. Temporary Chairman W. D. Walters presided and R. P. Fischelis acted as Secretary. The minutes of the previous

meeting were read and approved. The Committee on By-Laws then submitted the following set of by-laws which were unanimously adopted:

PROPOSED BY-LAWS FOR THE WORLD WAR VETERANS SECTION.

SECTION I.

Name.

Article 1. This section shall be known as the World War Veterans Section of the American Pharmaceutical Association.

SECTION II.

Membership.

Article 1. All members of the American Pharmaceutical Association in good standing, who have served the United States during the World War, as soldiers, sailors, marines and well-fare workers, who express a desire to do so, by registering their names with the Secretary of this Section, shall become members thereof.

SECTION III.

Officers.

Article 1. The officers of the Section shall be a Chairman, a First and Second Vice-Chairman, Secretary and an Advisory Board consisting of one representative from each State, Territory and District of Columbia, all to be selected from members of the Section.

SECTION IV.

Election of Officers.

Article 1. Immediately after adoption of these by-laws, the temporary Chairman shall appoint a committee of three (3), who shall report to the Section at the same or at a subsequent meeting, one name for each office other than the Advisory Board. At the last or the same session of the Section these names or other names nominated from the floor shall be balloted upon, and the one receiving a majority for that particular office shall be declared elected. These shall then be installed, shall hold office for one year or until their successors are duly elected. The first permanent Chairman shall appoint the members of the first Advisory Board for each of the respective states and territories. Thereafter annually at each annual session a Nominating Committee of one man from each State, Territory and District of Columbia, shall be named from among the members who are in attendance from said respective States, Territories and District of Columbia, and such Nominating Committee shall then report to the Section one name for each office other than members of the Advisory Board. At the last session of the Section annually these names or other names nominated from the floor shall be balloted upon, and the ones receiving a majority for that particular office shall be declared elected and shall then be installed and shall hold office for one year or until their successors are duly elected. After the second year members of the Advisory Board may be selected as shall be decided upon at the next annual session.

Article 2. Officers may be re-elected, but with the exception of the Secretary, and the Advisory Board, shall not hold the same office for more than two consecutive years.

Article 3. The Advisory Board of the Section shall fill any vacancies that may occur among the officers.

SECTION V.

Duties of Officers.

Article 1. It shall be the duty of the Chairman to represent the Section in the Council of the Association, to preside at the annual meetings of the Section, appoint all committees of the Section, and fill any vacancies when occurring in those committees. He shall present an annual address on any subject of interest to the Section that he may deem of sufficient importance. He shall otherwise act for and represent the Section as may be decided upon by the Advisory Board.

Article 2. In the absence of the Chairman the First Vice-Chairman, or in his absence, the Second Vice-Chairman, shall preside, and for the time exercise all the functions of the Chairman.

Article 3. In the absence of all three of these officers the Section shall elect a **Temporary Chairman**.

Secretary.

Article 4. The Secretary shall keep a record of the proceedings of the Section, shall send to the members such notices as the Section may require, shall transmit to the General Secretary the names of the officers and committees elected or appointed, and notify the General Secretary of any changes in the personnel of the officers or committees of the Section, and shall furnish the General Secretary a report of the sessions held at the annual meetings. The Secretary, at least two months in advance, shall write to each member of the Section, giving notice of the latest date upon which papers on any subject of interest to this Section can be accepted for the program.

Article 5. The Secretary shall be custodian of the records and documents of the Section, as well as of all funds specially belonging to the Section, and shall make all disbursements subject to the approval of the Chairman.

Article 6. The Secretary shall arrange the program for the annual meeting and furnish the editor of the JOURNAL of the Association the program for inclusion in the number just preceding the annual meeting.

Article 7. The Secretary shall at each annual meeting present a brief report to the Association of the conditions within the Section.

Article 8. In case the Secretary is unable to attend the annual meeting, he shall notify the Chairman to that effect and the Chairman shall then appoint a Temporary Secretary.

SECTION VI.

Meetings.

Article 1. At least two sessions of the Section shall be held at each annual meeting of the Association. Additional sessions may be held at any time during the meeting when the officers may see fit, and by consent of the Council; provided, however, that these sessions be so arranged that they conflict as little as possible with the sessions of other Sections, and that no session be held simultaneously with the final general session of the Association.

SECTION VII.

Order of Business.

Article 1. The order of business at the first session shall be as follows:

1. Chairman's Address.
2. Secretary's Report.
3. Report of Standing Committees and Committees of the Association which report to this Section.
4. Selection of Nominating Committee.
5. Nomination of Officers.
6. Miscellaneous Business.
7. Reading of papers and discussions.

Article 2. The time of the other sessions shall be taken up with the reading of papers and discussions, excepting as is provided for in Section 4 and Section 10, to hear the reports of special committees.

Article 3. The reading and discussion of papers may be interrupted at any time to consider matters referred to the Section by the Association or by the Council.

Article 4. The regular order of business may be suspended at any time during a session for that particular session by a three-fourths vote of those present.

SECTION VIII.

Article 1. The expenses of the Section shall be paid from its funds as paid to it from the Association treasury. The funds of the Section shall be ample, in order to conduct a membership campaign with a view of securing the membership of every person entitled to that privilege; the funds to be allowed for that purpose shall annually be agreed upon between the Chairman and Secretary of this Section, and the Association or the Council.

SECTION IX.

Article 1. All papers and reports presented to the Section become the property of the Association and have to be forwarded to the editor of the JOURNAL immediately following the annual meeting by the Secretary of the Section.

SECTION X.

Amendments.

Article 1. By-Laws may be amended at the final session of any annual meeting by two-thirds vote of those present, provided notice of such amendment is given with the text thereof at any previous session held at that meeting. Amendments must finally be approved by the Council and not be in conflict with the Constitution and By-Laws of the Association.

Upon motion duly seconded and carried, it was decided that the by-laws of the Section be presented by the officers to the Council for approval. The Chairman then appointed a Nominating Committee consisting of Clyde L. Eddy, C. S. Herron and L. W. Steiger. While this Committee retired to select nominees for the various offices, a set of resolutions introduced by Mr. Freericks were adopted and upon motion the officers of the Section were instructed to submit these resolutions to the Council of the Association. (See Resolutions following the Minutes.)

The Committee on Nominations reported as follows:

Chairman, Robert P. Fischelis, Philadelphia, Pa.

First Vice-Chairman, Walter M. Chase, Detroit, Mich.

Second Vice-Chairman, Tappen Fairchild, New York, N. Y.

Secretary, William D. Walters, Cincinnati, Ohio.

Upon motion duly seconded and carried, the nominations were closed and the report of the Committee was unanimously approved. The Chairman of the Nominating Committee was asked to cast a unanimous ballot for the nominees and they were then duly declared elected.

Upon motion duly seconded and carried, the Chairman was empowered to appoint a committee of three to take care of the publicity in connection with the Section. The Chairman appointed Clyde L. Eddy, New York City; Walter M. Chase, Detroit, Mich.; and C. S. Herron, DuBois, Pa.

Mr. Herron advised the members that the New York State Pharmaceutical Association had a sum of money on hand which was collected for war and Red Cross purposes during the recent conflict. Some of the members of the New York State Pharmaceutical Association, according to Mr. Herron, had expressed themselves as favoring the use of this money for purposes designed to assist pharmacists who had served in the Army and Navy and were now confronted by financial difficulties. It was also deemed possible that some of this money might be available for the work of the Section.

Temporary Chairman Walters then called the newly elected presiding officer to the chair and after some remarks by the latter regarding the need for enthusiastic coöperation of all members of the Section, the meeting adjourned at 9.30 P.M. The following attended the second meeting of the Section:

Clyde L. Eddy, 100 William St., New York City.

Leonard W. Steiger, 400 Lookout Ave., Hackensack, N. J.

Charles S. Herron, DuBois, Pa.

Louis A. Gardier, 318 S. Main Ave., Scranton, Pa.

Carl H. Thorington.

Walter M. Chase, Detroit, Mich.

Robert P. Fischelis, 605 Bulletin Bldg., Philadelphia.

William D. Walters, 161 E. McMicken Ave., Cincinnati, Ohio.

ROBERT P. FISCHELIS, *Temporary Secretary.*

RESOLUTIONS.

The resolutions introduced by Mr. Freericks, adopted by the Section and later approved by the Council, are as follows:

"Deeply appreciative of the interest shown by the American Pharmaceutical Association in the civil life re-establishment of soldiers, sailors and marines who entered the service out of

pharmacy, and of its effort to assure their continued advancement and welfare by the creation and organization of this World War Veterans Section, we pledge our loyal, constant and unselfish support to the cause of American pharmacy and the aims and ideals represented by the American Pharmaceutical Association. We call upon all men out of pharmacy who served their country during the world war to seek membership in the A. Ph. A. and through it in this Section to the end that under its guidance this may become a body of influence and power for the good of American pharmacy; to secure proper recognition for pharmacy in the Army and Navy, at the same time serving to bind them specially together with ties of fraternity, friendship and sentiment.

"Resolved, That all men out of pharmacy who are or have been in the service of the United States during the world war be requested to report to the Secretary of this Section any condition or experience met with by them while in the Service relating to or concerning pharmacy, and its practice, which, in their opinion, impairs service efficiency and denies the same degree of care, attention and skill deemed necessary for the sick in civil life, and that they be also requested to offer suggestions for improving existing conditions.

"Resolved, That the World War Veterans Section devote its immediate attention to the condition of pharmacy and the status of the pharmacist in the Army and Navy with a view to determining upon and to advocating necessary changes therein, so that correct pharmaceutical service may be provided and in order that pharmacy may secure the recognition and standing which it ought to have.

"Resolved, That a Committee of three be appointed by the chair, to compile a roster of all men out of pharmacy who served during the world war, together with data concerning them, in order that a complete record may be perpetuated.

"Resolved, That this Section solicit the advice and recommendation of the Section on Education and Legislation, and of other bodies and committees engaged in the study of pharmaceutical legislation and its necessary amendment, with a view of supporting and securing such legislative action in nation and state as the legitimate interests of pharmacy requires and the public welfare demands.

"Resolved, That as speedily as conditions will permit members of this Section be organized into respective state branches with the intent that such state branches meet at the same time and place as do respective State Pharmaceutical Associations, there to transact such business as they may deem of interest and to select a delegate to represent them at the annual meetings of this Section."

"CINCHOPHEN"—FORMERLY "ATOPHAN."

It will be remembered that the Federal Trade Commission adopted the names *arsphenamin* and *nearsphenamin* for the drugs first introduced as "salvarsan" and "neosalvarsan," respectively; the terms *barbital* and *barbital sodium* for the substances first introduced as "veronal" and "veronal sodium," and the word *procain* as the name for the compound first marketed as "novocain." In issuing licenses for the use of the patents on these drugs, the commission stipulated that the drugs should be sold under the new trade designation, in which case the titles chosen by the commission should be given equal prominence. The Council on Pharmacy and Chemistry has cooperated with the Federal Trade Commission and has adopted the new names as the descriptive names which appear in *New and Nonofficial Remedies*. The Chemical Foundation, Inc., which has purchased some 4,500 German-owned patents, many of them for synthetic drugs, proposes to continue the wise policy of the Federal Trade Commission by requiring that those who receive licenses for the use of patents for synthetic drugs must use a common designation for each drug selected by the Foundation. "Cinchophen" has been selected as the designation for the substance introduced as "atophan" (also described in the U. S. Pharmacopoeia under "phenylcinchoninic acid"). In consideration of this action on the part of the Chemical Foundation, and also because physicians found it difficult to use the pharmacopoeial name "phenylcinchoninic acid," the Council on Pharmacy and Chemistry has recognized the contracted term "cinchophen" as a name for the drug introduced as "atophan." It is hoped that physicians will support this simplified and nonproprietary nomenclature in the same spirit with which they adopted the terms "*arsphenamin*," "*barbital*" and "*procain*."—*Journal A. M. A.*, August 9, 1919, p. 427.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Committee on Publication: J. W. ENGLAND, *Chairman*; G. M. BERINGER, CASWELL A. MAYO, H. B. MASON, E. L. NEWCOMB, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on the Progress of Pharmacy, *ex-officio*.

TWENTY MILLION DOLLARS FOR MEDICAL EDUCATION.

The value of the announced gift of \$20,000,000 to American medicine by the General Education Board (Rockefeller Foundation) does not lie wholly in the munificence of the gift nor in the relief it may bring to the medical institutions that come within the sphere of its beneficence, but in the example it should set to other givers.

The gifts of the Rockefeller Foundation are in most cases conditioned on changes in teaching methods and curricula. Local men should place medical schools on a financial basis that will enable them to comply with the provisions of the General Education Board.

Naturally, we are interested in medical promotions but more so in pharmacy schools. Many men of means must ascribe their success in pharmaceutical and chemical manufacturing to pharmacists. There are comparatively few pharmacists who have made fortunes in pharmacy. The two interests owe much to pharmacy schools, but only a few endowments have been provided for the latter. This is repetition of a very important matter. There is opportunity to endow schools according to the views of those who desire to perfect teaching along commercial lines and those who would encourage pharmaceutical research. While it is well enough to make such provisions in a will, to provide an endowment during the lifetime of the donor gives him the opportunity to witness the results of his investment. Both the spirit and attitude are important for they mould public opinion relative to pharmacy and the drug business.

DEATH OF SIR PETER WYATT SQUIRE.

News has come of the demise of Sir Peter Wyatt Squire on September 17, aged seventy-two years. A brief sketch appeared in the JOURNAL for July, 1918.

The deceased was a son of the late Peter Squire, head of the historic pharmacy in Oxford Street, London, and had been on the medical staff of the English Royalty from the time of Queen Victoria's accession. The former

had the honor of receiving the Jubilee Medal in 1887, with bar in 1897, the Coronation Medals of King Edward and King George, and was knighted in June, 1918.

Sir Peter Wyatt Squire was a student and prize winner of the British Pharmaceutical Society School, under Bentley and Redwood. He served as member of the Council from 1879-1885. He revised "Squire's Companion to the British Pharmacopoeia," was the author of "Methods and Formulae Used in Preparing Tissues for Microscopic Work," "Pharmacopoeias of the London Hospitals," "Companion to the Medicine Chest," and a frequent contributor to pharmaceutical and other scientific and technical publications.

Dr. Albert Schneider has resigned from the California College of Pharmacy to accept a call to the University of Nebraska. We understand that he is to occupy the Chair of Pharmacognosy in the Department of Pharmacy and will devote time to research.

Major General Merritte W. Ireland, surgeon general of the United States army, has been given an honorary fellowship by the Royal College of Surgeons, of Edinburgh, Scotland.

Frank G. Ebner, for some time assistant editor of the *Bulletin of Pharmacy*, has accepted a place in the advertising department of Parke, Davis & Co. Walter M. Chase has been elected assistant editor of the *Bulletin*.

Horace Greely Pierson, the elder brother of Romaine Pierson, publisher of the *Practical Druggist*, died August 9. The deceased was a druggist of Hornell, N. Y.

The New York drug and pharmaceutical publications gave much space to American Pharmaceutical Association matters. Each one of them rendered excellent service, worthy of more than this passing notice. The reports were up to their high standard and their special features interesting. These efforts are appreciated by the Association, and supplied their many readers with early reports of its transactions.

The male employees of Jno. T. Milliken & Company, pharmaceutical manufacturers, of

St. Louis, Mo., have organized an association to be known as the Milliken Expeditors' Club, the purpose of which is to promote good fellowship among the employees and to bring them into closer relationship with the heads of the various departments.

Kenneth N. Gilpin, son of H. B. Gilpin, member of the American Pharmaceutical Association, will in all probability be elected Speaker of the Virginia House of Representatives, of which he is a member. He served in the Aviation Corps during the war.

Richard M. Colgate, deceased, of Colgate & Co., bequeathed \$100,000 each to Yale and Colgate Universities.

CURES FOR UNREST.

The conferences to be held in Washington this month should have the interest of all citizens. The purpose of the International Labor Congress is not to formulate a series of rules and restrictions, nor concerned with scales and schedules of wages. It will be the aim of labor men, economists, capitalists and politicians to suggest or devise a code under which the worth of men to industry, to the community and to civilization can be established. This is a move in the right direction, for most of the unrest is due to misunderstanding and loose thinking. These conferences are to be international in character, but applying the thought to our interests, we may compete with foreign countries because of our great resources and our machinery, but it will not be with idle factories and shiftless workers. Let us think constructively.

ILEX VOMITORIA AS A NATIVE SOURCE OF CAFFEINE.

Frederick B. Power and Victor K. Chestnut, in *J. Amer. Chem. Soc.*, 41, 1307-12, August, 1919, report that search for a native source of caffeine has demonstrated that an abundant supply may be obtained from a native plant, *Ilex vomitoria*, Aiton. Assays by a method developed by the authors, published in the same issue and printed in abstract hereafter, showed the presence, in most cases, of about 1.0 to 1.5 percent of caffeine in dried leaves. Although considerable differences in the caffeine content of the leaves of the plant have been found to exist, these are doubtless attributable to varying conditions of soil and climate. It would, therefore, appear that by the cultivation of the shrub under the most favorable conditions the supply of material

for the production of caffeine could be increased to any desired extent.

So far as has at present been ascertained no other North American species of *Ilex* than that above mentioned contains caffeine, and this substance is not contained in the leaves of the European holly, *Ilex aquifolium*, Linné.

The assay method is recommended as the result of a large number of experiments with different material. The procedure has been abstracted by the PHARMACEUTICAL JOURNAL as follows:

Ten grammes of the finely ground material, previously moistened with a little alcohol, 95 percent, is extracted for about eight hours, in a Soxhlet, with alcohol. The alcoholic extract is then added to a suspension of 10 grammes of heavy magnesium oxide in 100 mls of water, contained in a porcelain dish, the extraction flask being rinsed with a little hot water. The mixture is evaporated on a water-bath until a nearly dry, powdery residue remains. This is mixed with sufficient hot water to enable it to be transferred to a filter, the dish being thoroughly cleaned with a little hot water by means of a glass rod with a rubber tip. The residue on the filter is then thoroughly washed with successive portions of hot water until about 250 mls of filtrate is obtained. This is transferred to a litre flask and treated with 10 mls of 10 percent solution of sulphuric acid. In some cases, as with tea and guarana, 20 mls of this acid is necessary, to prevent the formation of an emulsion in the subsequent shaking-out extraction. The acid mixture is first gently heated until frothing ceases, and then boiled, under an inverted funnel condenser, for thirty minutes. After cooling, the liquid is filtered into a separator, the flask being washed with a little 1:200 sulphuric acid. The clear acid filtrate is then shaken out with six successive 25 mls of chloroform. The chloroform extracts are bulked in another separator and shaken out with 5 mls of 1:100 solution of caustic potash, to remove coloring matter. After separation the clear chloroform is filtered into an Erlenmeyer flask, the remaining alkaline liquid being subsequently shaken out with two successive 10 mls of chloroform. This is filtered into the first chloroform solution, and the filter washed with a little of the same solvent. The chloroform is then distilled off, the residual caffeine being transferred to a tared beaker by means of a little of the solvent. After allowing the chloroform to evaporate spon-

taneously, the caffeine is dried for thirty minutes in the water-oven and weighed. It is then again heated for another thirty minutes, when a further slight decrease in weight is usually noted. This second weight is taken as caffeine. The final product is practically pure caffeine.

SUBSTITUTE FOR SENNA LEAVES.

Since the beginning of 1917 large quantities of so-called Palthé senna leaves have been imported into Germany from Switzerland. They have been identified as the leaves of *Cassia auriculata*, L., and are readily distinguished from senna leaves by the rounded and not tapering apex. It is remarkable that they contain no oxymethylantraquinones and are free from laxative action. With Bornträger's reaction (shaking an infusion with petroleum benzine, separating, and shaking

the benzine with ammonia) a yellow coloration of the ammonia is produced, whereas with genuine senna leaves a rose color is obtained.—*Pharm. Ztg.*, 64, 242, through *Pharm. Journal*.

CAPELLA BURSA PASTORIS.

Ergot and hydrastis being no longer obtainable in German commerce, Grimme recommends a liquid extract of this herb as a substitute. Its haemostyptic properties have long been known, and it is said to equal those of ergot and of hydrastis. The active constituent is supposed to be an organic acid, bursic acid. A liquid extract (1 in 1), made by exhausting the drug with boiling water, had a specific gravity varying from 1.042 to 1.064, and contained 9.06 to 14.61 percent of extract.—C. Grimme, *Pharm. Ztg.*, 64, 388, through *Pharm. Journal*.

SOCIETIES AND COLLEGES.

LIST OF REGISTRANTS AT THE 67TH ANNUAL CONVENTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, NEW YORK CITY.

A.

ALTMAN, JOS. R., Bronx, N. Y.
ANDERSON, WM. C., Brooklyn, N. Y.
ANDERSON, MRS. WM. C., Brooklyn, N. Y.
ANDREWS, LIONEL T., Woodhaven, N. Y.
ANDREWS, GEO. M., Woodstown, N. J.
ANDREWS, MRS. GEO. M., Woodstown, N. J.
ARMENTANO, A., New York City.
ARNY, H. V., New York City.
ARNY, MRS. H. V., New York City.
ARNY, MISS SARAH, New York City.
ARRINGTON, J. H., New York City.
ARRINGTON, MRS. J. H., New York City.
ATWOOD, J., New York City.
ATWOOD, MRS. J., New York City.
AUSTIN, F. J., New York City.
AVERY, CHAS., Chicago, Ill.
AYRES, CHAS. W., New York City.

B.

BAISE, JOHN H., Fergus Falls, Minn.
BAKER, MISS M. L., Philadelphia, Pa.
BALLARD, C. W., New York City.
BALMERT, C. A., Maywood, N. J.
BANKER, P. WALTER, Wilkes-Barre, Pa.
BARTHEN, CHAS. L., East Orange, N. J.
BASE, DANIEL, Baltimore, Md.
BAUER, MISS ELSIE, New York City.
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 VAN BUREN, C. H., New York City.
 VANDERKLEED, CHAS. E., Collingswood, N. J.
 VILLAMENA, DIODATA, New York City.
 VILAS, FRED L., Pierre, S. D.

W.

WALKER, CHAS. F., Richmond, Va.
 WALSTED, P., New York City.
 WALTON, L., Williamsport, Pa.
 WATSON, HERBERT K., Wilmington, Del.
 WATSON, MISS ALICE D., Wilmington, Del.
 WEBBER, HENRY S., New York City.
 WEIL, JACOB H., New York City.
 WEINTRAUB, MISS ESTELLE M., New York City.
 WHEELER, CARLTON B., Hudson, Mass.
 WHELFLEY, H. M., St. Louis, Mo.
 WHELFLEY, MRS. H. M., St. Louis, Mo.
 WHITE, J. S., Jr., New York City.
 WHITE, LEYDAN J., New York City.
 WHITE, MRS. S. J., New York City.
 WHITE, ROBERT C., Philadelphia, Pa.
 WHITE, WM. R., Nashville, Tenn.
 WHITEHOUSE, HARRY, Johnson City, Tenn.
 WHITEHOUSE, MRS. H., Johnson City, Tenn.
 WHITTLE, WM., Baltimore, Md.
 WICKHAM, EDWARD A., East Orange, N. J.
 WILLIAMS, JOHN M., New York City.
 WIMMER, CURT P., New York City.
 WIMMER, MRS. C. P., New York City.
 WINNE, A. L. I., Richmond, Va.
 WIRTH, RUDOLPH, New York City.
 WIRTHMAN, J. GEO., Kansas City, Mo.
 WIRTHMAN, MRS. J. GEO., Kansas City, Mo.
 WIRTHMAN, MISS MARIE, Kansas City, Mo.
 WISNER, E. H., Valparaiso, Ind.
 WOOD, MRS. LEWIS F., Cleveland, O.
 WYSZYNSKI, W. H., Chicago, Ill.

Y.

YOUNGKEN, H. W., Philadelphia, Pa.

Z.

ZAGAT, ARTHUR L., New York City.
 ZAGAT, MENDEL, New York City.
 ZEHNER, G. O., Brooklyn, N. Y.
 ZEIGLER, W. H., Charleston, S. C.
 ZEIGLER, MRS. W. H., Charleston, S. C.
 ZINK, EDWARD, New York City.
 ZINK, MRS. EDW., New York City.
 ZOELLER, E. V., Tarboro, N. C.

THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES.

BY THEODORE J. BRADLEY, SECRETARY.

The Twentieth Annual Meeting of the American Conference of Pharmaceutical Faculties was held at the Hotel Pennsylvania, New York City, on August 25-26, 1919. Delegates were in attendance from about thirty colleges located in twenty-four States. The President, Dean Charles B. Jordan of Purdue University School of Pharmacy, Lafayette, Indiana, presided at all sessions and his presi-

dential address was one of the features of the meeting. Of the constructive recommendations made by the President, the following were adopted after consideration and report by a special committee on the address:

1. That the dues be increased from ten dollars to twenty-five dollars per year for each member college, and that the entrance fee shall be twenty-five dollars hereafter.

2. That the Executive Committee prepare a budget showing the amounts that can properly be expended by the standing and other committees of the Conference, for expense.

3. That the Executive committee take steps to have the Conference coöperate with other organizations to suitably memorialize the service rendered by pharmacists in the great war.

4. That the Conference approve the exchange of lectures between members of the faculties of member colleges.

5. That a special committee be appointed to prepare a memorial to the Carnegie Foundation, requesting that an investigation be made of pharmaceutical education in the United States, similar to the investigation already made of medical education, dental education, etc.

6. That the Conference appoint a special committee to collect and distribute information on pre-requisite legislation to aid in the securing of such legislation in States not yet having a pre-requisite in pharmacy, this committee of the American Conference of Pharmaceutical Faculties to act jointly with a similar committee of the National Association of Boards of Pharmacy.

7. That the Conference reaffirm its adoption of high school graduation as a requirement for entrance to all member colleges after July 1, 1923, and to recommend that this entrance requirement be made effective at an earlier date when possible.

The Secretary-Treasurer, Theodore J. Bradley of Massachusetts, presented his report, in which the President's recommendation that the dues in the Conference be increased was endorsed. The total receipts of the Conference for the past year amounted to \$492.66, while the expenditures were \$863.72, the deficit being made up from the accumulated balance in the treasury. The balance on hand July 31, 1919, was \$686.27, of which \$600 is invested in Liberty Bonds.

Reports of the various standing and special committees were received as follows:

Executive Committee.—J. A. Koch of Pennsylvania, Chairman.

National Syllabus Committee.—T. J. Bradley of Massachusetts, Chairman.

Committee on Higher Educational Standards.—W. J. Teeters of Iowa, Chairman.

Committee on Faculties.—Zada M. Cooper of Iowa, Chairman.

Committee on Curricula and Teaching Methods.—J. W. Sturmer of Pennsylvania, Chairman.

Committee on Activities of Students and Alumni.—R. A. Lyman of Nebraska, Chairman.

Committee on Relations of Pharmacy Schools and other Professional Schools.—W. F. Rudd of Virginia, Chairman.

Committee on Research.—Henry Kraemer of Michigan, Chairman.

Committee to Consider and Report on the Question of the Establishment of Two Classes of Pharmacists and Corresponding Courses in Colleges of Pharmacy.—Jacob Diner of New York, Chairman.

Committee to Work Out Methods of Presenting the Advantages of Pharmacy as a Calling to High School Students.—W. B. Day of Illinois, Chairman.

Joint Committee on Examination Questions.—E. A. Ruddiman of Tennessee, Chairman.

Committee on Relations of the Colleges with the Boards.—Charles E. Caspari of Missouri, Chairman.

All of these committee reports will be published in the proceedings of the Conference and several of them will appear in other publications.

H. H. Rusby, of New York, read a paper on the Betterment of Salary Conditions in our Schools of Pharmacy, and, after discussion, it was voted that the Executive Committee send copies of this paper to the administrative heads of all colleges of pharmacy with the request that steps be taken to secure additional funds so that the salaries paid to teachers in the pharmacy school can be materially increased.

W. H. Ziegler, of South Carolina, presented a paper on the teaching of pharmacodynamics and related subjects in pharmacy schools, which was thoroughly discussed by many of the delegates present.

It was voted to appoint a representative for the Conference on the newly organized pharmaceutical publicity committee, representing all the interests allied with pharmacy

and to pay its share of the expenses of this committee.

It was voted to accept the invitation for the Conference to be represented in the National Drug Trade Conference.

The following officers were elected for the ensuing year:

President, Wortley F. Rudd of Richmond, Va.

Vice-President, Julius A. Koch of Pittsburgh, Pa.

Secretary-Treasurer, Theodore J. Bradley of Boston, Mass.

Chairman of the Executive Committee, Henry Kraemer of Ann Arbor, Mich.

Members of the Executive Committee.—Charles B. Jordan of Lafayette, Ind.; Julius W. Sturmer of Philadelphia, Pa.; Rufus A. Lyman of Lincoln, Neb.

Member of the Pharmaceutical Syllabus Committee.—E. Fullerton Cook of Philadelphia, Pa.

THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY.

BY H. C. CHRISTENSEN, SECRETARY.

The first session of the Sixteenth Annual Convention of the National Association of Boards of Pharmacy was called to order by President John Culley of Utah, at 10 o'clock Monday morning, August 25, 1919, in Parlor C of the Pennsylvania Hotel, New York City.

The meeting proceeded at once with the order of business. Secretary Christensen called the roll of States and announced that 31 State Boards of Pharmacy were represented, the total of delegates being 62. The 31 States represented at the meeting including the District of Columbia, were the following: Alabama, Arkansas, Colorado, Connecticut, District of Columbia, Florida, Georgia, Illinois, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nevada, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Dakota, Tennessee, Utah, Vermont, Virginia, West Virginia. At this time the *Active Member* list of the N. A. B. P. includes 43 States and the District of Columbia, making a total 44 between which reciprocity is in force. The State of New York is an "Associate" member State. There is at present no reciprocity between the State and Active Member States of the Association, although it is expected that conditions will permit of this important step in the very near future.

Probably the one most important accomplishment of the meeting was the adoption of a reorganization plan proposed by President Culley. In bringing the matter of reorganization to the attention of the Association the President stated in part, as follows: "The Association was organized sixteen years ago expressly to provide for interstate reciprocity in pharmaceutical licensure based upon a uniform pharmaceutical education and uniform legislation as stated in the Association's Constitution." He then explained that not only had this object practically been accomplished, but that it had been necessary to enter into so many other pharmaceutical, legislative and educational activities that he believed the organization as constituted not equal to the added burden imposed upon it. He emphasized the necessity for reorganization and explained that it was not a question of what had or had not been accomplished, "but a question of what we must do, and that our work is cut out for us." The plan of reorganization as adopted divides the United States into eight geographical districts or sections, with a Vice-President to be elected for each district, to have full power of supervision as a representative of the Association's work. The Vice-President in each of the eight districts is also to act as a member of the Advisory Committee for his district, and is to make personal visits to the boards included in his section. The Secretary of the Association is to remain the Chairman of the Advisory Examination Committee and is to attend meetings of boards of pharmacy in the different districts.

Probably the strongest feature of the reorganization plan is the one which provides that the President be elected from the membership of the eight Vice-Presidents, and that of the Executive Committee three members be elected from ex-Presidents. This arrangement will give a thoroughly systematic and well balanced working force and will, it is believed, bring correspondingly better results.

The Association again went on record as favoring higher requirements,—both preliminary and professional, and instructed the Secretary to take up with the individual State boards of pharmacy the matter of urging the adoption of four years of High School work and graduation in pharmacy as a pre-requisite for entrance to examination for registered pharmacist; these requirements to become effective not later than October 1, 1923.

The recommendation of the President with reference to the Fairchild Scholarship was unanimously adopted. The recommendation is as follows: That the Scholarship be a second year term in a Conference School or College of Pharmacy and be awarded on the basis of a competitive examination to candidates who are High School graduates and who have finished their first year work in a school or college of pharmacy, and that each school should be allowed or limited to two, or at the most three, candidates.

A recommendation was also passed that State boards, insofar as it is possible in accordance with laws governing registration of pharmacists in various States, require that candidates for examination must be citizens of the United States.

The Association also went on record as being adverse to the handling of narcotic prescriptions written by physicians for addicts, and recommended that the Government and the States provide institutions where these unfortunates would be under the personal care of nurses and physicians in the administration of curative dosages.

A motion was made and unanimously carried, that the boards obtain power wherever possible to revoke State licenses on "wilful" violation of narcotic laws.

On presentation by Professor Army of the proposition to organize a National Committee on Pharmaceutical Publicity this plan received the unanimous endorsement of the Association, which carried with it the recommendation that the N. A. B. P. hold membership in such an organization.

Officers for the ensuing year were elected, as follows:

President, W. R. Jarrett of Oklahoma City, Okla.

Vice-Presidents: L. L. Walton, Pennsylvania; Joseph Piercy, Nevada; Joseph L. Dow, New Hampshire.

Executive Committee: Charles Gietner, Chairman, Missouri. Members: John Culley, Utah; Lawrence C. Lewis, Alabama. Treasurer, Charles H. Skinner, Vermont; Secretary, H. C. Christensen, Illinois.

PHARMACY IN THE ARMY AND NAVY.

A meeting of the National Pharmaceutical Service Association was held on the evening of August 28th at the Hotel Pennsylvania during the Convention of the American

Pharmaceutical Association and everyone was cordially invited to be present.

The President, Dr. Frank Cain of Cincinnati, presided, and read an address urging the joint effort of pharmaceutical organizations working in harmony with physicians toward the proper recognition of pharmacy in the Army and Navy. He also presented the following letter from the Surgeon-General, which was received with applause and recognized as the beginning of the cordial relationship which will undoubtedly result in the adequate recognition of pharmacy:

"WAR DEPARTMENT,
OFFICE OF THE SURGEON-GENERAL,
WASHINGTON.

August 14, 1919.

"PROFESSOR E. FULLERTON COOK,
145 North Tenth Street,
Philadelphia, Pa.

"MY DEAR DR. COOK:

"I now desire to give you in writing the substance of the conversation we had on August 11th, in regard to commissions for pharmacists in the medical department of the Army. I think it is most important for the future welfare of the medical department to have a service corps for commissioned officers. To become an officer in this corps, it will be necessary for an applicant to enlist in the medical department and serve for a period of about five years. During this time he will be given an opportunity to perfect himself in hospital administration, quartermaster's duties, motor transport service, mess management, registrar's duties, pharmaceutical work, and the general duties of the hospital corps. It will be one of the requirements that an applicant for a commission in the service shall be a non-commissioned officer for 3 years of his 5-year enlistment. The duties of the officers of the service corps will be to act as adjutants of our large hospitals, property officers, mess officers, transport officers for the ambulance companies, and various other duties of non-professional character, connected with the medical department, for which we now have to use a highly trained medical officer.

"I have recommended to the General Staff that a service corps for the medical department be incorporated in the army reorganization bill now before Congress, and I sincerely trust this corps will be authorized.

"I am perfectly willing that a limited num-

ber of vacancies in the service corps shall be set aside for men who specially qualify themselves as pharmacists, and in the course of instruction candidates for the service corps will have to take, suitable provision will be made for advanced instruction in pharmaceutical work.

"After our very frank discussion of the needs of the medical department for pharmacists, I think we both agree that this will solve the question in a most satisfactory manner.

"With cordial regards, believe me,

"Very sincerely yours,

(Signed) M. W. IRELAND,

Surgeon-General, U. S. Army."

The President believed that the proposal of the Surgeon-General should be carefully considered and that a conference should be held with the Surgeon-General by a committee representing the several pharmaceutical organizations, and by this means to arrive at a plan whereby the associations can assist the Surgeon-General in his effort to establish a "service corps" and also provide a better status for pharmacists in the corps.

It was believed that the five-year non-commissioned service as a pre-requisite to commissions should be modified for those men who have adequate scientific training, although the Surgeon-General's desire that the candidate for commission should have thorough military training was recognized as essential.

The Secretary presented a statement of the general situation in both the army and navy, calling attention to the fact that the Hospital Corps Bill, known as H. R. 4760, had been combined in what was known as the Personnel Bill, and hearings will be granted some time this fall. The importance of securing the approval of the Secretary of the Navy was emphasized, and since then it has been learned that this will be of vital importance in obtaining the favorable consideration of the Naval Affairs Committee. Every effort should be made to enlist the interest and secure the approval of Secretary Daniels.

Colonel Frederick M. Hartsock, of the Surgeon-General's office, was present and spoke of the excellent work done by pharmacists in the Army, which was recognized as indispensable. He said the general staff had not worked out the details of the reorganized army, but that pharmacy should, in his opinion, be given adequate recognition. He recommended that proper presentation be made by pharmacists of their cause and that a definite plan

be worked out and presented to the Surgeon-General. A vote of thanks was extended to Colonel Hartsock for his frank statement and evident interest in pharmacists in the Service.

Mr. Beringer, in expressing appreciation for the statement made by Colonel Hartsock, expressed the hope that Colonel Hartsock would take back to the Surgeon-General's office the sense of this meeting and of this Association, which had always stood for co-operation with the Surgeon-General and desire to give the Army and Navy the most efficient aid and trained service which pharmacy could offer, and only asked for an opportunity on a basis which would permit the best service.

Lieutenant W. T. Minnick, of the Hospital Corps of the Navy, then spoke of the work of the pharmacist in the Navy. He stated that a Surgeon-General is compelled to take the view of the best interests of the entire service in recommending a preliminary military training before receiving commissions. He explained the many activities of the pharmacist in the Navy and the need for thorough training. The Association voted a motion of thanks to Lieutenant Minnick for his clear exposition of the situation in the Navy.

Mr. Charles F. Harding, President of the National Association of Retail Druggists, was present and promised the coöperation of the N. A. R. D. in every proper effort which would be started to insure proper recognition of pharmacy in the Army and Navy, and he suggested that all interests get together in a conference and devise a plan upon which all could unite. In the limited time available, the general subject was discussed by Professor Spease of Cleveland, Mr. Mayo of Cincinnati, Major F. L. McCartney, a pharmacist who served in the department of supplies in the Surgeon-General's office throughout the war, and by others.

Mr. Beringer moved that a committee be appointed by the President to endeavor to secure an early conference with the Surgeon-General of the Army, if possible in coöperation with similar committees from other national pharmaceutical associations, presenting the views of American pharmacy concerning the Surgeon-General's suggestion for the organization of a "service corps," and the recognition of pharmacy as set forth in his letter of August 14th, endeavoring to arrive at a mutually satisfactory plan for the establishment of pharmacy in the Army. This motion

was seconded and unanimously approved. Dr. Cain, the President, appointed on this committee for the conference with the Surgeon-General of the Army, Mr. George M. Beringer, Chairman, and Mr. Caswell A. Mayo and E. Fullerton Cook as the other members.

E. FULLERTON COOK,
Secretary, N. P. S. A.

THE AMERICAN CHEMICAL SOCIETY.

Probably the largest meeting in the history of the American Chemical Society was held in Philadelphia during the week of September 3. A feature of the Convention was the *Daily Catalyst*, the official bulletin of the Philadelphia and Delaware Sections of the A. C. S., Robert P. Fischelis being one of the editors. Secretary of War Baker addressed the convention.

The Society indorsed the establishment of a separate Federal patent and trade-mark office; attacked the policy of the Army with respect to the abolition of the Chemical Warfare Service; defended the quality of American dyes now attacked by German propaganda, and urged a request to President Wilson to take operative control of German dye plants in occupied territory.

The Council accepted the invitation of St. Louis for the spring meeting of 1920 and the autumn meeting will be held in Chicago.

Dr. Charles Herty was again elected editor of the *Journal of Industrial and Engineering Chemistry*. Major A. B. Lamb was reelected editor of the *Journal of the American Chemical Society*, and E. J. Crane the editor of *Chemical Abstracts*. Dr. Charles L. Parsons was chosen secretary, and Dr. B. C. Hesse a member of the Committee on National Policy.

A number of prominent pharmaceutical chemists attending the Convention of the American Chemical Society at Philadelphia were entertained at luncheon at the City Club by the Philadelphia Branch of the American Pharmaceutical Association on Thursday, September 4, 1919.

Those present were Dr. Frank O. Taylor, Dr. George D. Beal, Dr. E. L. Murray, Prof. H. V. Arny, Dr. Edward Kremers, Dr. J. H. Beal, Prof. L. E. Sayre, Dr. Reid Hunt, Dr. L. F. Kebler, Dr. A. P. Sy, Dr. H. C. Hamilton, Dr. I. K. Phelps, Prof. W. F. Rudd, Dr. H. T. Graber, Prof. Jeannot Hostmann, Dr. T. S. Githens, Dr. Arthur Hirschfelder, Dr.

Frank R. Eldred, H. K. Mulford, Dr. C. E. Vanderkleed, C. H. Kimberly, Dr. P. S. Pittenger, Dr. W. A. Pearson, Dr. F. E. Stewart, Prof. E. F. Cook, Prof. J. W. Sturmer, Dr. R. P. Fischelis, R. H. Lackey, Prof. Charles H. LaWall, Jos. W. England, Ambrose Hunsberger, E. G. Eberle and Elmer H. Hessler.

NATIONAL ASSOCIATION OF RETAIL DRUGGISTS.

Theodore F. Hagenow, of St. Louis, was elected president of the National Association of Retail Druggists at the twenty-first annual meeting of that organization held at Rochester. Mr. Hagenow has long been identified with the Association, having been an ardent worker in its ranks, and a member of its executive committee.

Vice-President W. A. Oren, of Indianapolis, was reelected and also Secretary Samuel C. Henry. The other elected officers are: Second Vice-President, Elmer E. Chilson of Rochester, N. Y.; Third Vice-President, Chas. J. Clayton of Denver, Colo.; Treasurer, John J. Possehl of Milwaukee, Wis.; Members of Executive Committee for three years, Julius H. Riemenschneider of Chicago, Ill., and Charles F. Harding of Cincinnati, Ohio.

The attendance was satisfactory and the interest gratifying. The drug exhibition proved an attractive feature.

Resolutions adopted favored the refusal of druggists to sell alcoholic liquors, even on prescription. Other resolutions contained an appeal for legislation to protect the chemical and dye industries of the country, favored an early repeal of the tax on proprietary goods, supported the Stephens bill, urged manufacturers to adopt the Colgate price-protection plan, recommended that druggists advertise none but price-protected goods, opposed the sale of drugs and medicines except by druggists, and inveighed against manufacturers' advertising derogatory to retailers.

According to official reports, during the year just brought to a close the association enjoyed the largest membership in its history.

AMERICAN DRUG MANUFACTURERS' ASSOCIATION.

On August 28, the Scientific Section of the American Drug Manufacturers' Association held a meeting at the Waldorf-Astoria, New York City, at which President Sayre of the A. Ph. A. was a notable guest.

One of the actions of greatest moment took

the form of a recommendation that Extracts of Aconite Leaves be deleted from manufacturers' price-lists on the ground that there is practically no demand for these troublesome preparations. In connection with the subject of Aconite it was also decided to recommend the recognition of Japanese Aconite in the U. S. P., but as a separate drug, since its constituents are somewhat different. It is thought that its admission would relieve the shortage of aconitine, of which there is none available in this country at this time.

Attention was also given to the fact that some of the menstrua of the U. S. P. are not entirely satisfactory and that, as a result, manufacturers are in many instances obliged to list a formula providing a special menstruum of their own in addition to the formula of the U. S. P., thus multiplying to a degree that is vexatious to both manufacturer and dealer the number of preparations to be carried in stock. With a view to simplification, a sub-committee was appointed to collect the experience of manufacturers on unsatisfactory menstrua and to endeavor to compile a simpler list of menstrua that they will be able to recommend to the Committee of Revision as meeting the approval of all manufacturers.

F. R. Eldred proposed that the Association retain the services from time to time of eminent research workers to conduct exhaustive researches on certain drugs of which comparatively little is known and to publish the results of their work for the benefit of all. It was thought that a place might be found for the work in the Mellon Institute and it was remarked that an investigator would progress at an immeasurably faster rate than if working alone, since he would have the benefit of the facilities and experience of the laboratories of almost all the pharmaceutical manufacturers of the country. The "Constituents of Digitalis" was suggested as the subject of the first of these treatises for, while the literature of Digitalis is voluminous, the subject is left in a most unsatisfactory condition. The Section recommended careful consideration of Dr. Eldred's proposal by the Association's Executive Committee.

DAIRY, FOOD AND DRUG OFFICIALS.

The twenty-third annual Convention of the Association of Dairy, Food and Drug Officials was held in New York City during the week of September 8. More than 300 delegates

were present. Dr. L. P. Brown spoke on "Food Sanitation in Army Camps," Dr. Carl S. Alsberg on "Food Containers and Utensils."

Dr. R. E. Rose, State chemist of Florida, who spoke on "State Drug Control, Present and Future," advocated an amendment of the national food and drug law by striking out of the provision allowing sub-standards of pharmaceuticals.

The following resolution was adopted:

WHEREAS, The U. S. Pharmacopoeia is the legally constituted standard for drugs under the drug laws of the several States and of the United States, and

WHEREAS, The U. S. Pharmacopoeia is revised at fixed intervals by a revision committee; therefore, be it

Resolved, That it is the judgment of the Association of American Dairy, Food and Drug Officials that the Federal and State drug control officials should be more adequately represented on the committee having in charge the revision of the U. S. Pharmacopoeia.

STATE PHARMACEUTICAL ASSOCIATION OFFICERS FOR 1919-1920.

NORTH DAKOTA.

President, John H. Vold, Grand Forks.

First Vice-President, Homer L. Hill, Sutton.

Second Vice-President, Oscar Zuercher, Kenmare.

Secretary, R. G. Cook, Fargo.

Treasurer, W. S. Parker, Lisbon.

Executive Committee: A. C. Grant, St. Thomas; Max Strehlow, Kindred; P. L. Foss, Page.

A committee on publicity was created. It was decided to hold the meetings of the Association during the winter. Grand Forks was selected and the meeting will be held in February.

OREGON.

President, J. C. Perry, Salem.

First Vice-President, E. A. Robbins, Portland.

Second Vice-President, Claud J. Kern, Cottage Grove.

Third Vice-President, L. L. Crocker, Portland.

Secretary, A. W. Allen, Portland.

Treasurer, B. F. Jones, Portland.

This was the largest meeting in the history of the Association. The dues were raised to \$12.00 annually, and an acting-secretary is to give all of his time to the Association and the

State Board of Pharmacy. The National Associations were endorsed, and coöperation with the National Drug and Chemical Alliance pledged in legislative matters.

SOUTH DAKOTA.

President, Perry H. Clute, Big Stone City.

First Vice-President, R. H. Ottman, Lead.

Second Vice-President, H. E. Anderson, Brookings.

Secretary, E. C. Bent, Dell Rapids.

Treasurer, A. A. Woodward, Aberdeen.

Local Secretary, E. R. Serles, Brookings.

President Vilas suggested stronger coöperation with the National Associations. A permanent publicity committee was created. Secretary Bent not only presented the usual statistics in his report, but paid a deserved tribute to pharmacists in the Service from South Dakota.

WASHINGTON.

President, Frank Robertson, Spokane.

First Vice-President, Harvey Young, Yakima.

Second Vice-President, Harry Ellwood, Ellensburg.

Secretary, G. Elmer Brown, Spokane.

Treasurer, Mrs. E. C. McRae, Spokane.

Legislative matters concerned the Association.

Oregon and British Columbia Associations have been invited to meet with this organization next year at the Driftwood Hotel, Long Beach, Wash.

WYOMING.

President, A. E. Roedel, Cheyenne (re-elected).

First Vice-President, John Yaeger, Rawlins.

Second Vice-President, W. P. Hays, Saratoga.

Secretary-Treasurer, E. J. O'Brien, Casper.

Torrington was selected for the 1920 meeting, and the date, August 12.

THE PHARMACIST AND THE LAW.

LIQUOR SALES IN CASES OF SUDDEN ILLNESS.

A Philadelphia U. S. Court decision acquitted a saloonkeeper who had sold whiskey as a medicine. There was then an impending epidemic of illness, but this was averted by Judge Dickinson of the U. S. District Court, Philadelphia, by a ruling which restricted such sales to cases of serious illness.

LABEL ON DENATURED ALCOHOL.

A recent circular, issued by the Commissioner of Internal Revenue as a treasury decision, notifies revenue officers concerning a new ruling relative to the labeling of packages of completely denatured alcohol. The notice states:

In view of the grave and extended abuses of the use of completely denatured alcohol reported, it is deemed necessary to print upon the labels affixed to wholesale and retail packages a further and more specific warning as to its use than is shown on the present required label.

In addition to the present matter on the labels there will be required on all new labels hereafter the printing in large letters in red ink under the skull-and-bones symbol the

word "Poison," and at the bottom of the label there will be printed the following statement:—

"Completely denatured alcohol is a violent poison. It cannot be applied externally to human or animal tissue without seriously injurious results. It cannot be taken internally without inducing blindness and general physical decay, ultimately death."

Until the present stocks of labels are exhausted this additional matter may be affixed to the containers on a separate label pasted above the present required label."

AMERICAN OWNERS OF TRADE- MARKS PROTECTED BY JAPANESE COURTS.

The Supreme Court of Japan, in a suit instituted by a Philadelphia manufacturing company for the protection of its trademark rights, has handed down a decision which upholds trademark rights guaranteed under Japan's treaty agreement with the United States. The company which brought suit is the Miller Lock Co. The Japanese Patent Office decided in the company's favor and the Crown Lock Co. appealed to the Supreme Court of Japan. Every American owner of a trademark registered in Japan is now assured of protection by Japanese Courts.

NEW PUBLICATIONS.

Methods in Chemical Analysis. Frank A. Gooch. 536 pp. Price \$4.00. John Wiley & Sons, New York City.

Chemical Pathology. H. Gideon Wells. Third Edition, revised, 8vo. 707 pp. Price \$4.25. W. B. Saunders Co., Philadelphia.

Elements of General Science. O. W. Caldwell and W. L. Eikenberry. Revised edition. 400 pp. Price, \$1.28. Ginn & Co., New York.

A Text-Book of Chemistry Intended for the Use of Pharmaceutical and Medical Students. Samuel P. Sadtler, Virgil Coblenz and Jean-not Hostman. Fifth edition, revised. J. B. Lippincott Co., Philadelphia.

Textbook of Physical Chemistry. Azariah T. Lincoln. 12-mo. 547 pp. \$3.50. D. C. Heath & Co., New York.

Chemistry of Synthetic Drugs Percy May. Second edition. Revised and enlarged. 8vo. 250 pp. Price, \$3.50. Longmans, Green & Co., New York.

One Thousand Technical Books. A selected list with annotations emphasizing especially elementary practical books. Compiled by Herbert L. Cowing. First edition. Washington, D. C. American Library Association; Library War Service.

Laboratory Exercises in General Chemistry. W. M. Blanchard. Second edition. 12mo. 156 pp. Price \$1.00. D. Van Nostrand Co., New York.

Qualitative Chemical Analysis; A Laboratory Guide. W. W. Scott. Third edition. Revised and enlarged. 12mo. 350 pp. Price, \$3.00. D. Van Nostrand Co., New York.

Handbook of Mineralogy, Blowpipe Analysis and Geometrical Crystallography. G. M. Butler. 3 volumes in one. 16mo. Price \$3.50. John Wiley & Sons, New York.

Era Formulary. D. O. Haynes. Price \$5.00. D. O. Haynes & Co., New York.

Handbook of Colloid Chemistry. W. Ostwald. Second English edition. Translated from third German edition by Martin H. Fischer. 8vo. 284 pp. Price \$3.50. P. Blakiston's Son & Co., Philadelphia.

A System of Physical Chemistry. William C. McLewis. 3 volumes. Second edition. 8vo. 506 pp. Price 15s. Longmans, Green & Co., London.

Volumetric Analysis: A Complete Course of Volumetric Analysis. William T. Bone. 164 pp. Price, 3s. 6d. Blackie & Son, Ltd., London.

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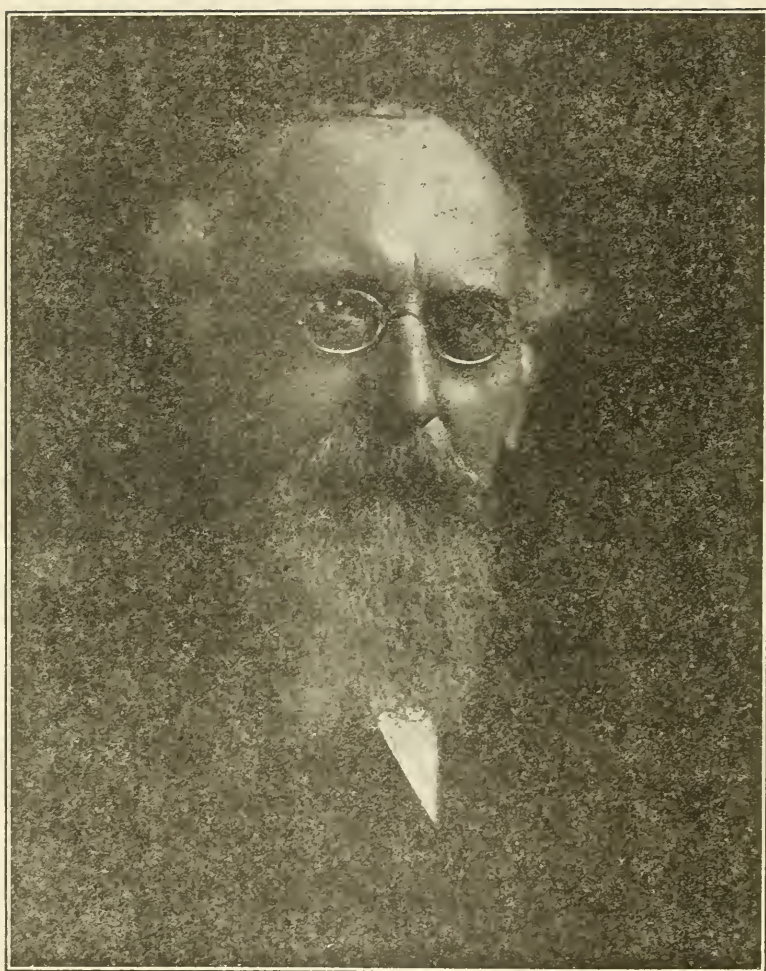
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OTTMAR EBERBACH
ANN ARBOR, MICH.

For more than fifty years a member of the American Pharmaceutical Association.



OTTMAR EBERBACH

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

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OTTMAR EBERBACH.

Ottmar Eberbach was born in Ann Arbor, Michigan, November 23, 1845, and this university town, with the exception of the years spent as a student in German universities, has always been his home. His earlier education was received in the public schools of Ann Arbor, and much of the spare time during these school years was given to work in his father's retail pharmacy.

In 1862 he went to Stuttgart, Germany, where he studied chemistry under Fehling, and later he attended the university at Tuebingen. Three years later he returned to his native city, where he engaged in his father's store, and in 1876 became associated in the business, under the firm name of Eberbach & Son. The business is now largely devoted to the sale of physical and chemical apparatus and supplies.

Mr. Eberbach was one of the charter members of the Michigan State Pharmaceutical Association, and was its president in 1900. He was appointed on the first Michigan Board of Pharmacy, serving for nine years, part of the time as president.

He joined the American Pharmaceutical Association fifty years ago, in 1869. His contributions to the Proceedings are printed in Volumes 22, 23 and 24, and deal with alkaloidal content in commercial elixirs, crystallization of santonine, standards for preparations containing colchicine and exposure of the composition of "Vinegar Bitters."

Prof. A. B. Stevens, to whom we are indebted for these data, states that Mr. Eberbach is enjoying good health and takes an active part in the business of which he is the senior member.

E. G. E.

EDITORIAL

E. G. EBERLE, Editor

253 Bourse Bldg., PHILADELPHIA

IF NOT FEDERATION, WHY NOT CLOSER COÖPERATION?

AT the recent Rochester meeting of the National Association of Retail Druggists, the Executive Committee reported on the subject of "Federated Pharmacy," as follows:

"At the convention last year we went into the question of Federated Pharmacy at considerable length and told you something about the proposition. It is too large a subject to take up and discuss in an executive committee report for the reason that it has a bearing upon every phase of work now carried on by the various drug trade organizations. Your Executive Committee has given a lot of thought to the proposition as presented by the American Pharmaceutical Association, for whom we have the highest respect, but we could not see our way clear to approve of their proposition. The more we studied it, the more it seemed to us that we would be working at a decided disadvantage if we accepted the proposition as laid down by their committee. Their idea is a splendid one but we fail to see how it can ever work out to advantage, particularly along the lines as suggested.

We believe that in the National Drug Trade Conference we now have the nucleus of an organization *which can do everything that the proposed Federation of Pharmacy had in mind to do* (italics mine, J. W. E.), but perhaps in a little different way. For the reasons above given, your committee decided to disapprove of the American Pharmaceutical Association's plan of federation."

The Executive Committee states in its report, also, that:

"It might appear from a careful reading of this and some other reports which will be presented to you that we are not particularly interested in the professional side of our business. That is a very mistaken idea. We are to-day, and always have been, intensely interested in the professional as well as the commercial side of our business. There are other pharmaceutical associations, however, that give a great deal of time and thought to the discussion of the purely professional and scientific side of pharmacy, and we think you all agree that they are doing a splendid work in that direction. As we have many matters of importance to consider, we have left that sort of discussion to them."

The report was referred to the Committee on Resolutions of the N. A. R. D. and later the following resolution was adopted by the Convention:

"Resolved, That it is the sentiment of this convention that methods should be adopted to insure the closer coöperation of the two parent national organizations of retail pharmacists and that a committee be appointed by the N. A. R. D. with instructions to coöperate with a similar committee of the A. Ph. A. in order to devise the best ways and means toward the accomplishment of this end."

In other words, the N. A. R. D. recognizes that there are two divisions of pharmaceutical practice, each with special interests—professional or scientific pharmacy, and commercial pharmacy; and while it is interested in both, it specializes in commercial pharmacy. On the other hand, the American Pharmaceutical Association, while interested in both divisions, specializes in professional or scientific pharmacy. What, then, could be more natural than that the two national organizations should join hands, as proposed by the N. A. R. D., in an endeavor to secure closer coöperation in both divisions, to the end that American Pharmacy may be bettered both scientifically and commercially?

If the American Pharmaceutical Association cannot realize its vision of a federated pharmacy, let us have, by all means, the closest possible coöperation, and not only between the A. Ph. A. and the N. A. R. D., but also, with the State Associations and with the national wholesale and manufacturing organizations, each caring for its own particular interests, in its own way, but each acting in harmony with the other bodies by means of conference committees; and who can tell but that such an arrangement may result in as great, if not greater, benefit to American Pharmacy, as a whole, as would result from one federated body?

The National Drug Trade Conference is a conference of coöperative committees of national pharmaceutical organizations to consider "drug trade" interests of national and general importance, including legislation. Its objects are expressed in its Code of Rules and Regulations adopted January 15, 1913 (J. A. Ph. A., 1913, 238), as follows:

"The objects of the Conference shall be to consider and report to the respective organizations represented therein upon matters of legislation, or upon any other matters of national and general importance to the drug trade."

It will be noted that the Conference exists to consider "drug trade" interests. It does not exist apparently for any other purpose. Its title, the National Drug Trade Conference, signifies this, also. *And being a trade body, it cannot represent professional or scientific interests, which are represented by other organizations.*

But why not apply the principle of national coöperation, not only along trade and legislative lines, as represented by the National Drug Trade Conference, but also, between the national pharmaceutical organizations along professional and scientific lines, by having coöperative committees from each organization, *and by making the American Pharmaceutical Association the clearing house for action on professional and scientific pharmaceutical questions?* The chief function of all the national pharmaceutical bodies, except the American Pharmaceutical Association, the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy, is along trade lines; and these trade bodies are very deeply concerned in the growth and development of the sciences and art of pharmacy, in fact, the trade-success of their members depends upon it.

The N. A. R. D. points the way. But, let us have coöperative committees of *all* the national pharmaceutical bodies to confer on professional and scientific questions and use the parent body of all the national bodies—the American Pharmaceutical Association, which preëminently represents the professional and scientific interests of American Pharmacy—to put into effect the results of such coöperation.

If this be done, the benefits that will accrue to American Pharmacy, as a whole, will be simply incalculable.

On the one hand, we would have the trade interests of American Pharmacy promoted by the National Drug Trade Conference, as now, and on the other hand, we would have the professional and scientific interests of American Pharmacy promoted by conference committees of all the national pharmaceutical bodies working through the American Pharmaceutical Association as a clearing house.

If the plan of a federated pharmacy, as originally proposed, is inherently better than the plan of closer coöperation between individual organizations acting through the National Drug Trade Conference and the American Pharmaceutical Association, nothing will disclose this fact more quickly than coöperation along the lines suggested, and if this is not the case, then there is no necessity for a federated pharmacy as such.

J. W. ENGLAND.

AMERICAN PHARMACEUTICAL AND MEDICAL RESEARCH.

OUR attention has been called to a statement in one of our pharmaceutical journals, as follows:

"Where are the leaders who are doing research work in the pharmaceutical field? Good papers dealing with the scientific side of pharmacy are becoming rare. That there are a vast number of problems of importance and value on the pharmaceutical field goes without saying. Where are the students and the facilities?"

In answer Dr. Edward Kremers sent two monographs:

A CENTURY OF THE UNITED STATES PHARMACOPOEIA, 1820-1920. L. The Galenical Oleoresins. By ANDREW G. DU MEZ. Thesis submitted for the degree of Doctor of Philosophy, University of Wisconsin. 8 vo., 288 pages. University of Wisconsin.

PIGMENTS OF FLOWERING PLANTS. By NELLIE A. WAKEMAN. Thesis submitted for the degree of Doctor of Philosophy, University of Wisconsin. 8 vo., 146 pages. Published by the University.

The number of pages in the monographs accounts for their not being published in full in the pharmaceutical journals. Much research work is done in the laboratories of pharmaceutical and chemical manufacturers; in part, reports are made in publications devoted to pharmacy, chemistry, medicine, botany, etc. A reference to a few of the previous issues of the Journal A. Ph. A. also will speak for research work in pharmacy and this number of the Journal has a series of reports on Digitalis. In our opinion research work in pharmacy by American pharmacists has not been neglected and there is a widening field of medical science before us.

By the recent gift of \$10,000,000 from John D. Rockefeller, to be added to his endowment of the Rockefeller Institute, additional research in biology, chemistry, physics and medicine will be carried forward. It is significant that Dr. Alexis Carrell has decided to stay in this country and will not return to France permanently. The funds for endowment made by Carnegie, Rockefeller and others will make the United States a mecca for foreigners who desire to continue their studies under proper laboratory conditions. Europe will not attract the numbers of American students as in the past.

When the special research provided for is correlated with medical education in general it can be discerned that the future for American medicine is roseate; higher technical education and scientific research in America are coming to their own and give the United States a supreme position. Pharmaceutical research has not been neglected but it needs financial encouragement. E. G. E.

THESE ARE PARLOUS TIMES.

SINCE the signing of the armistice a year ago uncalled-for strikes, rioting, mob violence, and every kind and manner of radical upheavals have occurred. There has been evident a spirit of unrest, a mad scramble for shorter hours and more pay. Never have operatives produced so little and asked so much. Such turmoil and confusion may be necessary to bring about a better understanding; our duty as citizens is clearly set forth by the Golden Rule.

Every right carries obligations, and no one can sidestep these who avails himself of his right; rights are limited by obligations, the rights of one class are qualified by the rights of another. There are groups who think they have the power to get what they want regardless of the rights of anyone else; they plot to use the power ruthlessly and with no regard for the rights of others. Extension of this power destroys government and leaves citizens at the mercy of those who wield it. It is developed because the majority of citizens are unmindful of their duties.

One of the results is that foodstuffs and manufactured goods are under the control of a few whose power is constantly increasing and operates to wrong innocent parties and bring loss and hurt to them. If there is one thing that should be seared upon the minds of people it is that we are our brother's keeper; if there is an obligation or duty greater than another, it is recognition of the rights of others.

More attention must be given to our duties. Our neglectfulness is shown in many ways; suffice it to point out two very familiar delinquencies—seeking to avoid jury service and indifference relative to suffrage. Last month, responsive to a summons from a Court of Common Pleas, only twelve out of sixty were willing to serve; the average election returns speak for the other defect. The administration of justice will lose that democratic character which has rescued it from abuses that were provoking revolution if the state of affairs relative to jury service

grows much worse. And if our disregard of the privileges of citizenship grows we can only hope to be controlled by those who are unmindful of the rights of others.

Much was expected from the International Industrial Conference; there is disappointment instead. The whole business would be a harmless farce if it were not for the bad temper and antagonism created, which will not be confined to those who were assembled. The ridiculous rules of the conference and the impractical method of going about its work were sufficient to thwart the energies and break down the patience of the serious-minded delegates. The segregation of the delegates into "employer," "labor" and "public" groups, and the prevention of any action except by group tended to promote class feeling, prejudice and stubbornness and to prevent the formation of any common feeling for the common good of those represented.

Coördination and coöperation, so essential in a reconstruction period, are not being effectively and efficiently made use of in industries, government or associations. The application of right principles is essential to effect right relations.

Attempts are being made to mold men and women by legislation, and frame laws in accordance with the viewpoints of the designers, ignoring those whose business is to be regulated. Personal or party advertisement is sometimes the motive for legislation, and the applaud of the galleries is an influential factor. Pharmacists, more than others, have been afflicted with legislation, because of the variety of stock carried by them and the restrictive legislation affecting medicines. And now the strike-mania has developed among the employees in drug stores; the control of drug stores and pharmacies will be lost to the owners if they yield to organizations that can direct their employees. Let us reason with one another and develop a morale which signifies belief in one another.

E. G. E.

PRELIMINARY NOTE ON A NEW PHARMACODYNAMIC ASSAY METHOD.*

CARASSIUS AURATUS (GOLD FISH) AS TEST ANIMALS FOR THE DIGITALIS SERIES.

(Continuation of a Previously Reported Paper.)¹

BY PAUL S. PITTENGER.

In a previous publication the author states that

"Although the methods employed at the present time for biologically standardizing digitalis and its allies have enabled the manufacturer to supply the physician with preparations of known and definite activity, there are still some things to be desired:

First: A reduction in the cost of the assay;

Second: A more sensitive method, and

Third: A method simple enough that any competent pharmacist or physician can carry it out equally as well as the expert."

"In experiments on frogs and guinea pigs we have always been of the opinion that after taking care of the weight and temperature factors, the most important cause of animals' dying or recovering "out of order" is the marked variation in rate of absorption. The great absorptive power of the gills of a fish, together with the fact that they contain a large number of blood vessels through which the blood circulates direct from the heart, made this animal present itself as a possible means of eliminating these variations due to absorption."

The result of several weeks' experimental work is then given as a basis for the following conclusions:

1. Gold fish are sensitive to variations of $2\frac{1}{2}$ percent in the strength of the dilutions of digitalis in which they are placed.
2. Variations due to differences in the rate of absorption appear to be practically eliminated by the use of these animals.
3. Decreasing the strength of the dilution increases the sensitiveness of the test.
4. The weight of the fish may be disregarded when making tests by this method.
5. Variations in the temperature markedly influence the resistance of gold fish to digitalis poisoning.
6. The individual variation in the susceptibility of gold fish is much less than that found in guinea pigs and frogs.
7. The gold fish method is unquestionably the simplest so far proposed and can easily be carried out by those not especially skilled in the pharmacodynamic art.
8. The inexpensiveness of the assay is decidedly in its favor. Gold fish of the proper size can be purchased wholesale for from 45 to 60 cents per dozen.
9. A sufficient number of animals can be procured at all seasons of the year.

*Read before Scientific Section, A. Ph. A., New York meeting, 1919.

¹ J. A. Ph. A., April 1915.

The experiments which led to the above conclusions were preliminary in the extreme, as they covered a period of only three weeks before the annual meeting of the A. Ph. A. at which time the paper was read. It was apparent, therefore, that in order to prove the value of the above conclusions, more extensive and detailed experiments would be necessary.

The time being limited, it was impossible to carry out all the experiments which suggested themselves, and the author stated that the investigations would be continued in an endeavor to determine the following:

1. The best time limit and
2. The most suitable dilution leading to
3. Tentative standards.
4. Action of other members of the digitalis group.
5. Extent of seasonal variations.
6. Best temperature to employ.
7. More extensive experiments on the effect of alcohol.

Owing to the exigencies of abnormal conditions existing during the past three years the enormous increase in regular routine work made it impossible to attempt any research which was not absolutely essential.

During the last 8 months, however, detailed experiments involving the use of several thousand fish have been carried out in order to devise and perfect a satisfactory gold fish method and to arrive at definite conclusions as to its value for standardization purposes.

As the previous experiments indicated that temperature was an important factor, the first series of experiments was carried out in order to determine the influence of variations in temperature upon the resistance of gold fish to digitalis poisoning.

TEMPERATURE.

The results of these experiments verified our former conclusions that "*variations in the temperature markedly influence the resistance of gold fish to digitalis poisoning.*"

We found that the greater the temperature the lower the resistance of the fish and *vice versa*.

Of the many experiments conducted the following two tables are typical examples of the results obtained:

TABLE I.

Temperature.	Amount of tincture in 500 mls.	Time required to kill.
22° C.	2.1	4 hrs. 20 min.
22° C.	2.2	3 hrs. 44 min.
22° C.	2.3	2 hrs. 30 min.
22° C.	2.4	3 hrs. 41 min.
22° C.	2.5	3 hrs. 35 min.
22° C.	2.6	3 hrs. 26 min.
22° C.	2.7	4 hrs. 20 min.
22° C.	2.8	2 hrs. 57 min.
22° C.	2.9	2 hrs. 21 min.

TABLE II.

Temperature.	Amount of tincture in 500 mls.	Time required to kill.
29° C.	2 . 1	2 hrs. 15 min.
29° C.	2 . 2	2 hrs. 41 min.
29° C.	2 . 3	3 hrs. 5 min.
29° C.	2 . 4	2 hrs. 50 min.
29° C.	2 . 5	1 hr. 57 min.
29° C.	2 . 6	2 hrs. 6 min.
29° C.	2 . 7	2 hrs. 30 min.
29° C.	2 . 8	1 hr. 35 min.
29° C.	2 . 9	1 hr. 47 min.

It will be noted from the above tables that at a temperature of 29° C. the fish all die in from 1 hour and 47 minutes to 3 hours and 5 minutes, whereas at a temperature of 22° C. the same amounts of tincture of digitalis required from 2 hours and 21 minutes to 4 hours and 20 minutes to produce death, thus proving the fact that the lower the temperature the greater the resistance.

After proving that temperature exerts a marked influence upon the resistance of the fish, our next problem was to determine the most satisfactory temperature at which to carry out our tests, or in other words, at what temperature we would obtain the most concordant results. The results of our experiments along this line showed that equally satisfactory results could be obtained by any temperature from 18° C. to 25° C., so long as the same temperature was maintained throughout the test.

However, we arbitrarily chose 22° C. as standard temperature at which to carry out the test for the following reasons:

1. Approximately ordinary room temperature.
2. Approximate temperature at which fish are usually kept.
3. Easily maintained.
4. Approximate temperature of running "tap-water" in summer (Phila.).
5. Satisfactory results obtained and ease in maintaining this temperature for frog work.

All of the earlier experiments were conducted by placing the fish directly into beakers containing the solution of the drug made from tap water, regardless of the temperature of the tap water. The beakers were then immediately placed in the constant temperature bath.

Our experience with frogs suggested that we determine whether our results would be effected by bringing the temperature of both the drug solution and the water in which the fish were stored to the standard temperature of 22° C. for at least one hour before placing the fish in the solution.

Accordingly, several experiments were made and the following tables are typical examples of the results obtained.

Table III shows that three out of six fish died out of order, whereas in Table IV only one fish died out of order, showing that more concordant results can be obtained by keeping the fish at a constant temperature of 22° C. for at least one hour before placing them in the drugged solution. Again, it will be observed that on an average it required less time to kill in Table IV than in Table III.

TABLE III.

Fish taken from aquarium, temperature 12° C. and placed in drug solution temperature 12° C. and immediately placed in constant temperature bath at 22° C.

Amount of tincture in 500 mls.	Time required to kill.	Remarks.
2.0	4 hrs. 42 min.	Died out of order
2.1	4 hrs. 53 min.	
2.2	4 hrs. 20 min.	Died out of order
2.3	3 hrs. 45 min.	
2.4	2 hrs. 56 min.	Died out of order
2.5	3 hrs. 41 min.	

TABLE IV.

Fish kept at 22° C. for one hour before being placed in drug solution which has also been kept in constant temperature bath at 22° C.

Amount of tincture in 500 mls.	Time required to kill.	Remarks.
2.0	4 hrs. 55 min.	
2.1	4 hrs. 40 min.	
2.2	4 hrs. 8 min.	
2.3	3 hrs. 25 min.	
2.4	3 hrs. 15 min.	Died out of order
2.5	3 hrs. 28 min.	

END-POINT.

As our former experiments showed that dilutions of the drug of sufficient strength to cause the death of the fish in about 3 hours gave more concordant results than dilutions which caused death in 1 hour, our next problem was to determine the best end-point.

We therefore made a comparison between the results obtained with dilutions of the drug of sufficient strength to kill within 1 to 3 hours, 3 to 10 hours and 18 to 24 hours with the object of determining at which time limit the test is the most sensitive.

Exhaustive experiments involving the use of over 1,000 fish showed that the test was the most sensitive when using dilutions of the drug which produced death in approximately 3 hours.

The following three tables are characteristic of the results obtained:

TABLE V.

18 to 24 hours.

Amt. of tincture in 500 mls.	Time required to kill.	Order in which fish should have died.	Order in which fish died.	Remarks.
1.0	21 hrs. 20 min.	1	4	Died out of order
0.9	18 hrs. 25 min.	2	2	
0.8	36 hrs. 15 min.	3	6	Died out of order
0.7	19 hrs. 55 min.	4	3	Died out of order
0.6	23 hrs.	5	5	Died out of order
0.5	17 hrs. 47 min.	6	1	Died out of order
0.4	41 hrs.	7	7	

Temperature 22° C.

TABLE VI.
3 to 10 hours.

Amt. of tincture in 500 mils.	Time required to kill.	Order in which fish should have died.	Order in which fish died.	Remarks.
1.3	9 hrs. 17 min.	7	7	
1.5	5 hrs. 55 min.	6	2	Died out of order
1.7	6 hrs. 15 min.	5	4	Died out of order
1.9	6 hrs. 25 min.	4	5	Died out of order
2.0	6 hrs. 10 min.	3	3	
2.1	7 hrs. 10 min.	2	6	Died out of order
2.3	3 hrs. 40 min.	1	1	

TABLE VII.
1 to 3 hours.

2.3	3 hrs. 50 min.	15	15	
2.4	3 hrs. 42 min.	14	14	
2.5	3 hrs. 38 min.	13	13	
2.6	3 hrs.	12	11	Died out of order
2.7	3 hrs. 30 min.	11	12	
2.8	2 hrs. 55 min.	10	10	
2.9	2 hrs. 45 min.	9	9	
3.0	2 hrs. 34 min.	8	7	Died out of order
3.1	2 hrs. 39 min.	7	8	
3.2	2 hrs. 35 min.	6	6	
3.3	1 hr. 31 min.	5	2	Died out of order
3.4	2 hrs. 28 min.	4	5	
3.5	2 hrs. 10 min.	3	4	
3.6	1 hr. 59 min.	2	3	
3.7	1 hr. 52 min.	1	1	

Temperature 22° C.

It will be noted by Table V that five out of seven fish died "out of order" and that in Table VI four out of seven fish died "out of order," whereas in Table VII only three out of fifteen fish "died out of order." It is apparent, therefore, that the best results are obtained by dilutions of the drug of such strength that they will produce death within 3 hours. We accordingly adopted 3 hours as our time limit.

TENTATIVE STANDARD.

Having decided as to the most satisfactory temperature and end-point, we are in a position to determine the amount of tincture digitalis of U. S. P. standard strength required to kill within the time limit, thus procuring the necessary data upon which to base a tentative standard.

Accordingly we adjusted a tincture of digitalis to standard U. S. P. strength by the "one hour frog method," after which we tested it upon gold fish, with the following results:

TABLE VIII.

Amt. tinct. digitalis in 500 mils.	Temperature.	Results at end of 3 hours.
2.65	22° C.	Alive
2.7	22° C.	Alive
2.75	22° C.	Alive
2.8	22° C.	Alive
2.85	22° C.	Dead
2.9	22° C.	Dead
2.95	22° C.	Dead
3.0	22° C.	Dead
3.1	22° C.	Dead

TABLE IX.

Amt. tinct. digitalis in 500 mls.	Temperature.	Results attend of 3 hours
2.7 mls	22° C.	Alive
2.7 mls	22° C.	Alive
2.7 mls	22° C.	Alive
2.7 mls	22° C.	Died
2.7 mls	22° C.	Alive
2.8 mls	22° C.	Died
2.8 mls	22° C.	Recovered
2.8 mls	22° C.	Died
2.8 mls	22° C.	Died
2.8 mls	22° C.	Recovered
2.8 mls	22° C.	Recovered
2.8 mls	22° C.	Died
2.85 mls	22° C.	Died
2.85 mls	22° C.	Died
2.85 mls	22° C.	Died
2.85 mls	22° C.	Died
2.85 mls	22° C.	Died
2.85 mls	22° C.	Died
2.9 mls	22° C.	Died
2.9 mls	22° C.	Died

As a result of these experiments we adopted 2.85 mls as our tentative standard as it will be noted that it is the smallest amount which will in practically every case cause the death of the fish within 3 hours.

ADOPTED METHOD.

The foregoing experiments led us to adopt a method which consists in determining the minimum amount of tincture of digitalis which in 500 mls of "tap-water" will prove fatal to gold fish within 3 hours, the fish being immersed in the solution which is kept at a constant temperature of 22° C.

The details of the method are as follows:

APPARATUS NECESSARY FOR EXPERIMENT.

Constant temperature bath,¹ 800 mil beakers, 500 mil volumetric flask, 10 mil pipette graduated in tenths and a 2 mil pipette graduated in hundredths.

Animals.—Common gold fish about 2½ to 3 inches in length, in good healthy condition.

Preparation of Experiment.—Adjust constant temperature bath so that it maintains a temperature of 22° C. Wash and thoroughly dry six 800 mil beakers and label 1 to 6, respectively; accurately pipette to the hundredth of a mil, 7/10 of the standard dose into the 500 mil volumetric flask and fill to the mark with "tap-water;" shake thoroughly and empty into beaker No. 1; five other solutions are similarly prepared containing 8/10, 9/10, 10/10, 11/12 and 12/12, respectively, of the standard, and placed in the beakers 2 to 6, respectively; all six beakers are then placed in the constant temperature bath, together with another larger beaker containing 6 gold fish in plain "tap-water."

Actual Standardization.—After one hour the fish are removed from the large beaker and one is placed in each of the six beakers containing the various dilutions

¹ Pittenger, J. A. PH. A., Nov. 1916. p. 1261.

of the drug. In removing the fish from the "tap-water" to the drugged solution, care should be exercised that no water be transferred with them. Note the time that the fish are placed in the drugged solutions. Maintain constant temperature of 22° C. After 3 hours note should be made of those living and those which are dead.

The results of this preliminary test, in which the range of dosage is quite wide, enables the investigator to form some idea as to the strength of the preparation. Basing the dosage upon these results, other series of dilutions are made by progressively increasing or decreasing the strength of the dilutions, as the case may be, still further diminishing the variation between doses, until the smallest amount of tincture in 500 mls of water is found which will prove fatal within 3 hours.

The probable M. L. D. (minimum lethal dose) of the preparation, unless it deviates considerably from that of the standard, is generally obtained by one or two series of dilutions.

In order to determine whether or not this is the true M. L. D. this result is checked by carefully preparing a new series of four dilutions; two with the smallest amount of tincture which was found to kill and two with the largest amount of tincture which did not kill. If, however, any of this last series show irregularities, further correction must be made.

After thus determining the M. L. D. of the preparation its relative strength can be calculated by comparing the M. L. D. of the unknown with the standard M. L. D. of 2.85 by simple proportion.

It will be observed from Tables VIII and IX that this method is sensitive to variations of less than 2 percent in the strength of the dilutions of digitalis in which the fish are placed.

In our former contribution we stated:

"It would appear from the above results that alcohol to the extent of that contained in the U. S. P. tincture does not affect the results. More extensive experiments, however, are necessary before definite conclusions may be drawn in regard to this point."

In order to arrive at a definite conclusion in regard to the effect of alcohol on the results we divided a tincture of digitalis into two portions. We then evaporated the one portion on a steam bath until it was freed from practically all of its alcohol, after which it was restored to its original volume with tap-water.

The two portions were then tested simultaneously with the following results:

TABLE X.
TINCTURE DIGITALIS.
70% alcohol.

Amt. of tincture in 500 mls.	Temperature.	Results after 3 hours.
2.5	22° C.	Recovered
2.6	22° C.	Recovered
2.7	22° C.	Recovered
2.8	22° C.	Recovered
2.85	22° C.	Died
2.9	22° C.	Died
M. L. D. = 2.85.		

TABLE XI.
TINCTURE DIGITALIS.
Alcohol Removed.

Amt. of tincture in 500 mils.	Temperature.	Results after 3 hours.
2.5	22° C.	Recovered
2.6	22° C.	Recovered
2.7	22° C.	Recovered
2.8	22° C.	Recovered
2.85	22° C.	Died
2.9	22° C.	Died
M. L. D. = 2.85.		

It will be noted that the above results confirm our former conclusions that *alcohol to the extent of that contained in the U. S. P. tincture does not affect the results.*

As a result of our experimental work to date we have arrived at the following conclusions:

1. Variations of less than 2 percent in the strength of tincture of digitalis can be accurately determined by the method outlined.
2. Variations due to difference in the rate of absorption appear to be practically eliminated by the use of these animals.
3. The weight of the fish may be disregarded when making tests by this method.
4. Variations in temperature markedly influence the resistance of gold fish to digitalis poisoning.
5. The individual variations in susceptibility of gold fish is much less than that in guinea pigs and frogs.
6. The gold fish method is unquestionably the simplest so far proposed and can easily be carried out by those not especially skilled in the pharmacodynamic art.
7. The inexpensiveness of the assay is decidedly in its favor. Gold fish of the proper size can be purchased wholesale for from 45 to 60 cents per dozen.
8. A sufficient number of animals can be procured at all seasons of the year.
9. Alcohol to the extent of that contained in the U. S. P. tincture does not affect the results.
10. A tincture of digitalis to be of standard strength should have a M. L. D. of 2.85 when assayed by this method.

Finally the author wishes to acknowledge his indebtedness to Mr. LeRoy Goinez for most of the laboratory work in connection with this paper.

PHARMACODYNAMIC LABORATORY,
H. K. MULFORD COMPANY,
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DIGITALIS STANDARDIZATION: A CONSIDERATION OF CERTAIN METHODS OF BIOLOGICAL ASSAY.*

BY L. W. ROWE.

The physiological standardization of the drugs comprising the digitalis series of heart tonics has received much consideration since Houghton¹ proposed the first method for the assay of *Strophanthus* preparations in 1898.

One of the more recent of the methods proposed for standardizing digitalis preparations and one which constantly appears to be receiving consideration is

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the cat method, which was suggested by Hatcher and Brody² in 1909. In this method the digitalis preparation, suitably diluted, is administered intravenously to an anesthetized cat. The degree of dilution and size of dose are such that when slowly injected the animal will be killed within 90 minutes. The result gives the M. L. D. based on the amount of the preparation necessary per kilogramme body weight of cat.

Several objections have been raised to the use of this method, the chief one being that the death of the cat is not always caused by the action of the digitalis on the heart since respiration often ceases before the heart stops beating. Other objections are the irregularity in time of death of the test animal and the difficulty in obtaining a sufficient number of cats and in handling them.

The experiments reported in this paper were carried out, first, to determine whether any relationship exists between the results of assays by the cat and frog methods; second, to determine the accuracy of the cat method, and third, to suggest certain modifications of the method, in order to make it more practical for commercial assay work.

A search of the literature reveals the fact that very little experimental work with the cat method has been reported except by Hatcher and his co-worker, Eggleston. Eckler's³ work published in 1912 on this subject seems to prove that the heart of the cat stops beating before respiration ceases. The number of samples tested, however, is too small to prove whether the method is suitable for commercial testing. Rowntree and Macht⁴ in their work by this method have recently suggested certain changes which seem to improve it. The rate of injection used by Rowntree and Macht is the most important of these changes and has been adopted in my experiments.

In a later publication, Hatcher⁵ enumerates certain features which he claims as distinct advantages, namely, elimination of absorption, speed of obtaining results, ease of handling animals and small comparative cost of assay. The method of administration certainly eliminates the question of absorption which is an important factor in the U. S. P. frog method. The most important consideration, however, in selecting a method of assay is accuracy; this and cost involved in obtaining and handling cats is open to question.

While results can be obtained more rapidly than by the M. L. D. frog method, it is doubtful if it is shorter than the official frog method. Most pharmacologists will agree that cats are not as easy to work with as other animals but a suggestion will be made later which has seemed to facilitate the handling of the cats. As to the expense involved, the test animals cost 75 cents instead of 10 cents, as Hatcher states, and then cannot be obtained in sufficient numbers for ordinary experimental purposes. Raising cats is also very unprofitable and our experience confirms that of Eckler³ on this phase of the subject.

Eggleston's⁶ work on the comparison of clinical results apparently established a ratio between the M. L. D. for cats and the dosage for man by carrying out clinical experiments in conjunction with his cat assays. It does not seem necessary, however, that results be transferable from the test animal to man in choosing a physiological method of assay, but other things being equal it is a point in favor of the cat method.

In my first experiments with the cat method, I attempted to kill the animal

in as nearly 90 minutes as possible just as Eckler did in his experiments. Later experiments showed, however, that much more uniform results could be obtained if the end-point was reached in from 20 to 45 minutes with 30 minutes as a good average. Also, in the first experiments the solutions were injected at a uniform rate from the beginning to the death of the animal. Injecting rapidly at first and then giving 1 mil every two minutes thereafter until the death of the animal is a better procedure.

In practically all of the experiments chloretone⁷ was used as the anesthetic. It is easily given, is rapid in its action and in every respect is very satisfactory. This is a very important point in the use of cats as the injection is given so easily and the action is so rapid and pronounced. For cats the solution used is only half as strong as that suggested for completely anesthetizing dogs since a dose of 0.15 Gm. to 0.20 Gm. of chloretone per Kg. body weight is sufficient, when injected intraperitoneally, to produce a satisfactory anesthesia which does not effect the heart or depress the respiratory center, and requires no further administration of anesthetic after the first dose. The use of chloretone entirely eliminates the trouble experienced in administering anesthetics to cats, with the attendant danger of giving too much, though of course, it does not overcome the other difficulty of working with these animals, namely, the insertion of a cannula into the small femoral vein. If chloretone is used as the anesthetic the only physical objections to the use of the cat as the test animal is the difficulty and even impossibility of obtaining them in sufficient numbers for assay purposes and the trouble of working with the small and delicate blood vessels of this animal.

Because of the greater convenience in using dogs rather than cats as well as the further advantages that dogs are more easily obtained and cheaper, I have made a series of tests of a number of samples, using the cat and the dog in the modified intravenous method, and comparing the activities thus obtained with the test of the sample by the minimum lethal dose frog method. The technique of the injection used in the later experiments which is preferable to that of Hatcher, is that of Rowntree and Macht, in which approximately one-half of the calculated amount is injected at the rate of 3 mils per minute and the rest at the rate of 1 mil every two minutes. In the case of digitalis, ouabain was not used to complete the reaction, as originally suggested by Hatcher. By using a larger dose, results equally as accurate can be obtained without the additional complication.

The dilutions chosen for injection should be such that the M. L. D. for cats is between 10 and 25 mils; for dogs between 20 and 50 mils, 18 mils being a good average total dose for cats and 25 to 30 mils being a good average total dose for dogs.

The following tables of data give the results of tests of 18 samples upon 61 cats and of 30 samples upon 132 dogs:

TABLE I.—EXPERIMENTS WITH CATS.
OUABAIN "A."

Cat No.	Sex.	Cond.	Weight.	Anes.	Dil. of sample.	Total dose.	Time to kill.	M. L. D. per Kg.
1	M	Good	2.12 Kg.	Deep	1 : 20000	3.9 mils	60 min.	0.092 mg.
2*	M	Good	2.72 Kg.	Deep	1 : 20000	6.4 mils	90 min.	0.1176 mg.
3	M	Good	2.47 Kg.	Deep	1 : 20000	4.7 mils	82 min.	0.095 mg.
5	F	Good	3.74 Kg.	Deep	1 : 20000	6.5 mils	75 min.	0.087 mg.
6*	M	Fair	1.73 Kg.	None	1 : 20000	4.4 mils	50 min.	0.127 mg.

given

Average M. L. D. per Kg. = 0.091 mg.

TABLE I.—EXPERIMENTS WITH CATS (*Continued*).

Cat No.	Sex.	Cond.	Weight.	Anes.	OUABAIN "B."			M. L. D. per Kg.
					Dil. of sample.	Total dose.	Time to kill.	
10	F	Fair	1.36 Kg.	Deep	1 : 50000	8.75 mils	46 min.	0.128 mg.
11	M	Good	2.1 Kg.	Light	1 : 50000	11.5 mils	33 min.	0.109 mg.
12	F	Good	2.82 Kg.	Deep	1 : 50000	18.5 mils	41 min.	0.131 mg.
13*	F	Poor	0.86 Kg.	Deep	1 : 50000	11.6 mils	38 min.	0.270 mg.
		(kitten)						
15*	M	Fair	1.94 Kg.	Deep	1 : 50000	14.7 mils	36 min.	0.151 mg.
		(kitten)						
16*	F	Poor	1.41 Kg.	Deep	1 : 50000	12.4 mils	48 min.	0.175 mg.
		(kitten)						

Average M. L. D. per Kg. = 0.123 mg.

OUABAIN "C."

17	F	Good	2.74 Kg.	Deep	1 : 50000	21.9 mils	58 min.	0.160 mg.
18	M	Good	2.84 Kg.	Deep	1 : 50000	19.2 mils	65 min.	0.135 mg.
19	F	Poor	0.88 Kg.	Deep	1 : 100000	12.8 mils	40 min.	0.145 mg.

Average M. L. D. per Kg. = 0.147 mg.

STROPHANTHIN (KOMBE) SAMPLE NO. 256490.

51	F	Good	2.40 Kg.	Fair	1 : 30000	15.0 mils	18 min.	0.228 mg.
52	F	Good	3.20 Kg.	Fair	1 : 30000	16.0 mils	16 min.	0.166 mg.
53	F	Good	2.70 Kg.	Fair	1 : 30000	15.0 mils	20 min.	0.185 mg.

Average M. L. D. per Kg. = 0.186 mg.

TINCTURE OF STROPHANTHUS U. S. P. 1890.

20	F	Good	2.28 Kg.	Deep	1 : 100	13.3 mils	87 min.	0.059 mil
21	F	Good	2.60 Kg.	Deep	1 : 200	25.3 mils	47 min.	0.049 mil
22	F	Good	2.50 Kg.	Deep	1 : 100	14.1 mils	30 min.	0.056 mil
23	M	Fair	1.24 Kg.	Deep	1 : 100	6.44 mils	27 min.	0.052 mil
44*	M	Good	3.66 Kg.	Fair	1 : 100	26.0 mils	36 min.	0.071 mil

Average M. L. D. per Kg. = 0.054 mil.

TINCTURE OF DIGITALIS FROM DRUG NO. 250139.

24*	M	Good	2.00 Kg.	Deep	1 : 10	27.5 mils	30 min.	1.38 mils
25	M	Fair	1.40 Kg.	Deep	1 : 10	13.5 mils	21 min.	0.96 mils
26	F	Good	1.94 Kg.	Deep	1 : 10	18.2 mils	30 min.	0.94 mils
27	F	Good	2.16 Kg.	Deep	1 : 10	22.0 mils	60 min.	1.02 mils

Average M. L. D. per Kg. = 0.97 mil.

TINCTURE OF DIGITALIS "A."

36	F	Good	2.92 Kg.	Deep	1 : 4	30.2 mils	30 min.	2.58 mils
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TINCTURE OF DIGITALIS "B."

37*	M	Good	4.48 Kg.	Fair	1 : 4	27.0 mils	32 min.	1.50 mils
38	M	Good	3.00 Kg.	Light	1 : 5	21.0 mils	28 min.	1.40 mils
42	M	Small	1.60 Kg.	Light	1 : 5	11.0 mils	12 min.	1.38 mils

O. K.

Average M. L. D. per Kg. = 1.40 mils.

TINCTURE OF DIGITALIS "C."

39	F	Good	2.76 Kg.	Fair	1 : 5	15.0 mils	15 min.	1.09 mils
40	M	Good	2.75 Kg.	Fair	1 : 5	19.0 mils	25 min.	1.38 mils
41	M	Good	3.00 Kg.	Fair	1 : 5	19.0 mils	24 min.	1.27 mils
43	F	Good	3.35 Kg.	Light	1 : 5	23.0 mils	22 min.	1.37 mils

Average M. L. D. per Kg. = 1.28 mils.

TABLE I.—EXPERIMENTS WITH CATS (*Continued*).

DIGITALONE NO. 046798.								
Cat No.	Sex.	Cond.	Weight.	Anes.	Dil. of sample.	Total dose.	Time to kill.	M. L. D. per Kg.
34	F	Good	2.00 Kg.	Deep	1 : 10	17.9 mls	27 min.	0.90 mil
FLUIDEXTRACT OF DIGITALIS, R No. 665561.								
48	F	Good	2.00 Kg.	Light	1 : 50	14.0 mls	14 min.	0.140 mil
49	M	Good	3.86 Kg.	Light	1 : 50	33.0 mls	37 min.	0.171 mil
50	F	Good	2.30 Kg.	Fair	1 : 50	15.0 mls	15 min.	0.130 mil

Average M. L. D. per Kg. = 0.147 mil.

FLUIDEXTRACT OF SQUILL, R No. 681685.

45	M	Good	2.25 Kg.	Fair	1 : 50	13.0 mls	15 min.	0.115 mil
46	F	Good	2.35 Kg.	Fair	1 : 60	16.0 mls	20 min.	0.113 mil
47	F	Good	2.50 Kg.	Very light	1 : 60	16.0 mls	18 min.	0.107 mil

Average M. L. D. per Kg. = 0.112 mil.

Asterisk after number of experimental animal means that result was not used in determining average.

TABLE II.—EXPERIMENTS WITH DOGS.

OUABAIN "A."

Dog No.	Sex.	Cond.	Weight.	Anes.	Dil. of sample.	Total dose.	Time to kill.	M. L. D. per Kg.
1	F	Good*	7.05 Kg.	Deep	1 : 20000	16.5 mls	97 min.	0.117 mg.
2*	F	Good*	10.5 Kg.	Deep	1 : 40000	50.0 mls	Not fatal	
3	M	Good*	18.5 Kg.	Deep	1 : 20000	37.5 mls	85 min.	0.101 mg.

Average M. L. D. per Kg. = 0.109 mg.

OUABAIN "B."

4	F	Good*	9.1 Kg.	Deep	1 : 25000	33.4 mls	57 min.	0.147 mg.
5	F	Good*	11.9 Kg.	Deep	1 : 20000	26.25 mls	60 min.	0.110 mg.
6*	M	Good*	12.05 Kg.	Deep	1 : 25000	48.2 mls	40 min.	0.160 mg.
7	F	Good	16.4 Kg.	Deep	1 : 20000	39.9 mls	38 min.	0.121 mg.

Average M. L. D. per Kg. = 0.126 mg.

OUABAIN "C."

11	M	Good*	9.0 Kg.	Deep	1 : 25000	28.6 mls	35 min.	0.127 mg.
12*	M	Fair*	7.0 Kg.	Deep	1 : 25000	28.8 mls	65 min.	0.165 mg.
13	M	Good*	9.5 Kg.	Deep	1 : 25000	33.0 mls	45 min.	0.139 mg.
14	F	Good*	17.2 Kg.	Deep	1 : 20000	50.0 mls	45 min.	0.145 mg.
15	F	Fair	6.0 Kg.	Deep	1 : 25000	30.4 mls	50 min.	0.136 mg.
16	M	Good*	9.0 Kg.	Deep	1 : 25000	33.5 mls	30 min.	0.149 mg.

Average M. L. D. per Kg. = 0.139 mg.

STROPHANTHIN (KOMBE) NO. 183774.

21*	M	Good*	8.5 Kg.	Deep	1 : 10000	29.1 mls	45 min.	0.343 mg.
22	F	Good*	10.8 Kg.	Deep	1 : 10000	29.4 mls	20 min.	0.273 mg.
24*	M	Good*	13.4 Kg.	Deep	1 : 10000	50.0 mls	Not fatal	
25	F	Good*	15.0 Kg.	Deep	1 : 10000	36.4 mls	26 min.	0.242 mg.
30	F	Good*	8.2 Kg.	Deep	1 : 10000	20.5 mls	36 min.	0.250 mg.

Average M. L. D. per Kg. = 0.255 mg.

STROPHANTHIN (KOMBE) NO. 256490.

98	M	Good	9.2 Kg.	Light	1 : 15000	35.0 mls	25 min.	0.253 mg.
99	F	Good*	12.8 Kg.	Fair	1 : 15000	45.0 mls	12 min.	0.234 mg.
100	M	Good	10.0 Kg.	Fair	1 : 15000	37.0 mls	28 min.	0.247 mg.
101*	M	Good*	14.4 Kg.	Deep	1 : 10000	41.0 mls	18 min.	0.284 mg.

Average M. L. D. per Kg. = 0.245 mg.

TABLE II.—EXPERIMENTS WITH DOGS (*Continued*).

STROPHANTHIN (KOMBE) NO. 256491.

Dog. No.	Sex.	Cond.	Weight.	Anes.	Dil. of sample.	Total dose.	Time to kill.	M. L. D. per Kg.
86*	F	Good	7.56 Kg.	Fair	1 : 15000	32.0 mils	33 min.	0.282 mg.
89*	M	Good*	7.6 Kg.	Deep	1 : 15000	37.0 mils	35 min.	0.324 mg.
90*	F	Good	7.1 Kg.	Fair	1 : 15000	30.0 mils	20 min.	0.282 mg.
91	F	Good	8.4 Kg.	Deep	1 : 15000	30.0 mils	17 min.	0.238 mg.
92	M	Good	9.2 Kg.	Deep	1 : 15000	33.0 mils	24 min.	0.239 mg.
93	F	Good	10.5 Kg.	Light	1 : 15000	36.0 mils	20 min.	0.228 mg.

Average M. L. D. per Kg. = 0.235 mg.

TINCTURE OF STROPHANTHUS U. S. P. 1890.

17	M	Good	7.94 Kg.	Deep	1 : 50	27.0 mils	35 min.	0.068 mil
18*	F	Good	*19.5 Kg.	Deep	1 : 25	19.2 mils	28 min.	0.039 mil
19	F	Good*	10.45 Kg.	Deep	1 : 50	26.5 mils	38 min.	0.051 mil
20*	M	Good*	14.10 Kg.	Deep	1 : 50	26.8 mils	40 min.	0.038 mil
23*	M	Good*	16.7 Kg.	Deep	1 : 50	35.0 mils	60 min.	0.042 mil
74	M	Good*	9.8 Kg.	Fair	1 : 50	27.0 mils	32 min.	0.055 mil
75	M	Good*	13.1 Kg.	Deep	1 : 50	46.0 mils	53 min.	0.070 mil
76	F	Good*	10.7 Kg.	Deep	1 : 50	34.0 mils	36 min.	0.064 mil
77	F	Good*	8.3 Kg.	Deep	1 : 50	21.0 mils	37 min.	0.051 mil
78	M	Good*	17.5 Kg.	Light	1 : 50	47.0 mils	42 min.	0.054 mil
79	F	Good*	11.1 Kg.	Light	1 : 50	34.0 mils	31 min.	0.061 mil
83	M	Good*	19.0 Kg.	Deep	1 : 40	44.0 mils	45 min.	0.058 mil
84	M	Good*	15.2 Kg.	Deep	1 : 50	44.0 mils	38 min.	0.058 mil
106	M	Good*	10.4 Kg.	Deep	1 : 50	32.0 mils	31 min.	0.062 mil

Average M. L. D. per Kg. = 0.059 mil.

TINCTURE OF STROPHANTHUS, U. S. P. 1910, R 86068.

63	M	Good*	20.7 Kg.	Deep	1 : 50	32.0 mils	31 min.	0.031 mil
64	M	Good	13.6 Kg.	Fair	1 : 50	21.0 mils	32 min.	0.031 mil
65	M	Good	15.0 Kg.	Fair	1 : 50	22.0 mils	20 min.	0.030 mil
66	M	Fair	14.2 Kg.	Light	1 : 50	23.0 mils	36 min.	0.032 mil

Average M. L. D. per Kg. = 0.031 mil.

TINCTURE OF STROPHANTHUS, 1910, R 683866

118	M	Good	14.0 Kg.	Fair	1 : 50	15.0 mils	18 min.	0.021 mil
119	M	Good	10.2 Kg.	Fair	1 : 75	20.0 mils	25 min.	0.026 mil
120*	M	Fair*	6.75 Kg.	Deep	1 : 75	14.0 mils	14 min.	0.0276 mil
121	F	Good*	12.0 Kg.	Fair	1 : 100	25.0 mils	20 min.	0.021 mil

Average M. L. D. per Kg. = 0.0227 mil.

TINCTURE OF DIGITALIS FROM DRUG NO. 250139.

26	M	Good*	9.75 Kg.	Deep	1 : 2	35.0 mils	86 min.	1.14 mils
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TINCTURE OF DIGITALIS, R 674678.

31	F	Good*	9.75 Kg.	Deep	1 : 2	37.8 mils	42 min.	1.94 mils
32	M	Good*	7.07 Kg.	Light	1 : 25	34.5 mils	30 min.	1.95 mils
33*	F	Poor	4.75 Kg.	Light	1 : 3	31.0 mils	57 min.	2.18 mils

Average M. L. D. per Kg. = 1.95 mils.

TINCTURE OF DIGITALIS "A."

35*	M	Good*	10.5 Kg.	Deep	1 : 2	42.0 mils	50 min.	2.0 mils
36	M	Good*	7.2 Kg.	Deep	1 : 3	59.0 mils	80 min.	2.73 mils
37	F	Good	7.75 Kg.	Fair	1 : 3	67.5 mils	85 min.	2.90 mils
38	M	Good	7.1 Kg.	Fair	1 : 2	44.0 mils	68 min.	3.09 mils

Average M. L. D. per Kg. = 2.91 mils.

TABLE II.—EXPERIMENTS WITH DOGS (*Continued*).

TINCTURE OF DIGITALIS, R 676593.

Dog No.	Sex.	Cond.	Weight.	Anes.	Dil. of sample.	Total dose.	Time to kill.	M. L. D. per Kg.
49	F	Good*	8.8 Kg.	Fair	1 : 3	32.0 mls	50 min.	1.21 mls.
50	M	Good*	10.7 Kg.	Deep	1 : 3	36.3 mls	50 min.	1.13 mls.

Average M. L. D. per Kg. = 1.17 mls.

TINCTURE OF DIGITALIS, R 676593 (ADJUSTED).

52*	F	Good*	9.0 Kg.	Deep	1 : 3	45.0 mls	40 min.	1.66 mls
53	F	Good	6.1 Kg.	Light	1 : 3	33.0 mls	62 min.	1.80 mls
54*	F	Good*	10.0 Kg.	Deep	1 : 3	47.6 mls	27 min.	1.59 mls
56	F	Good	8.3 Kg.	Fair	1 : 3	49.0 mls	50 min.	1.97 mls
57	F	Good	9.65 Kg.	Fair	1 : 3	57.0 mls	58 min.	2.00 mls

Average M. L. D. per Kg. = 1.92 mls.

TINCTURE OF DIGITALIS "B".

59	F	Good	6.9 Kg.	Fair	1 : 3	29.0 mls	33 min.	1.40 mls
85*	F	Very Poor	5.0 Kg.	Light	1 : 3	30.0 mls	42 min.	2.00 mls
87	F	Good	11.4 Kg.	Fair	1 : 3	50.0 mls	48 min.	1.46 mls
88*	F	Poor	5.8 Kg.	Fair	1 : 3	34.0 mls	36 min.	1.95 mls

No. 85 had distemper and No. 88 was mangy and emaciated.

Average M. L. D. per Kg. = 1.43 mls.

TINCTURE OF DIGITALIS "C".

60	M	Good*	12.1 Kg.	Deep	1 : 3	45.0 mls	40 min.	1.24 mls
61	M	Good	9.55 Kg.	Light	1 : 3	37.0 mls	37 min.	1.29 mls
62	F	Small*	7.9 Kg.	Deep	1 : 3	27.0 mls	20 min.	1.14 mls

Average M. L. D. per Kg. = 1.22 mls.

TINCTURE OF DIGITALIS, R C136053.

114*	M	Good*	11.0 Kg.	Deep	Undil.	14.0 mls	24 min.	1.27 mls
115	M	Good	13.6 Kg.	Deep	Undil.	21.0 mls	30 min.	1.54 mls
116	M	Good	7.75 Kg.	Fair	1 : 2	32.0 mls	46 min.	1.83 mls
117	M	Good*	14.6 Kg.	Deep	Undil.	22.0 mls	28 min.	1.50 mls

Average M. L. D. per Kg. = 1.62 mls.

DIGITALONE, No. 046798.

27	M	Good*	6.8 Kg.	Deep	1 : 3	31.5 mls	105 min.	1.54 mls
28	M	Good*	8.8 Kg.	Fair	1 : 2	29.5 mls	70 min.	1.67 mls
29	M	Good*	9.4 Kg.	Deep	1 : 2	26.0 mls	30 min.	1.38 mls

Average M. L. D. per Kg. = 1.53 mls.

DIGITALONE, No. 049780.

107	F	Good*	9.7 Kg.	Deep	Undil.	17.0 mls	20 min.	1.75 mls
108	M	Good*	13.35 Kg.	Fair	Undil.	23.0 mls	30 min.	1.72 mls
110	M	Good	8.8 Kg.	Light	1 : 2	32.0 mls	27 min.	1.81 mls

Average M. L. D. per Kg. = 1.76 mls.

FLUID EXTRACT OF DIGITALIS, R 665561.

68	F	Good*	12.9 Kg.	Fair	1 : 20	47.0 mls	50 min.	0.186 mil
69	M	Good*	16.5 Kg.	Deep	1 : 10	29.0 mls	25 min.	0.176 mil
70*	M	Good	8.45 Kg.	Light	1 : 20	40.0 mls	52 min.	0.236 mil
71	M	Good	17.8 Kg.	Deep	1 : 10	31.0 mls	30 min.	0.174 mil
72	F	Small	6.25 Kg.	Light	1 : 20	25.0 mls	29 min.	0.200 mil

Average M. L. D. per Kg. = 0.183 mil.

SOLID EXTRACT OF DIGITALIS, R 661579.

80	M	Good*	20.0 Kg.	Fair	1 : 30	34.0 mls	48 min.	0.057 mil
81	F	Good	10.0 Kg.	Deep	1 : 50	35.0 mls	50 min.	0.070 mil
82	M	Good*	14.7 Kg.	Deep	1 : 30	26.0 mls	35 min.	0.059 mil

Average M. L. D. per Kg. = 0.062 Gm.

TABLE II.—EXPERIMENTS WITH DOGS (*Continued*).

FLUIDEXTRACT OF SQUILL, R̄ 675384.

Dog No.	Sex.	Cond.	Weight.	Anes.	Dil. of sample.	Total dose.	Time to kill.	M. L. D. per Kg.
39*	F	Good*	13.0 Kg.	Deep	1 : 10	24.0 mils	65 min.	0.185 mil
40	M	Good	9.0 Kg.	Deep	1 : 15	21.2 mils	30 min.	0.156 mil
41*	F	Good*	11.2 Kg.	Deep	1 : 15	31.1 mils	48 min.	0.184 mil
42	F	Good	10.7 Kg.	Deep	1 : 15	25.8 mils	41 min.	0.160 mil
43*	F	Good*	13.5 Kg.	Deep	1 : 15	30.0 mils	34 min.	0.148 mil
44	M	Good	7.3 Kg.	Very light	1 : 15	17.0 mils	32 min.	0.156 mil
45	F	Good	9.0 Kg.	Very light	1 : 15	22.0 mils	60 min.	0.163 mil
48*	F	Good*	12.8 Kg.	Deep	1 : 15	36.3 mils	35 min.	0.190 mil

Average M. L. D. per Kg. = 0.159 mil.

FLUIDEXTRACT OF SQUILL, R̄ 681685.

102	F	Good	15.9 Kg.	Deep	1 : 10	28.0 mils	20 min.	0.176 mil
103*	M	Poor	14.25 Kg.	Deep	1 : 10	20.0 mils	12 min.	0.140 mil
104	F	Fair	8.7 Kg.	Fair	1 : 20	28.0 mils	32 min.	0.161 mil
105	M	Good	10.0 Kg.	Deep	1 : 15	24.0 mils	19 min.	0.160 mil
109	F	Good	7.8 Kg.	Light	1 : 20	24.0 mils	27 min.	0.154 mil

Average M. L. D. per Kg. = 0.163 mil.

FLUIDEXTRACT OF SQUILL, R̄ C134342.

55	M	Good*	14.5 Kg.	Deep	1 : 20	31.5 mils	27 min.	0.108 mil
58	M	Good*	12.6 Kg.	Deep	1 : 20	31.0 mils	36 min.	0.123 mil

Average M. L. D. per Kg. = 0.115 mil.

Asterisk after number of experimental animal means that result was not used in determining average.

In Table II asterisk after condition of dog means that animal had been used prior to the test of the heart tonic.

Tables I and II give in as concise a form as possible all of the data which is necessary to a critical analysis of the results reported. An attempt was made to test a variety of preparations and yet to test several different samples of each type. The results are summarized in the following Tables III and IV:

TABLE III.—COMPARISON OF AVERAGE M. L. D. TO CATS AND DOGS.

Sample.	Cats. M. L. D. per Kg.	Dogs. M. L. D. per Kg.	Ratio.
Ouabain "A".....	0.092 mg.	0.109 mg.	1 to 1.2
Ouabain "B".....	0.123 mg.	0.126 mg.	1 to 1.02
Ouabain "C".....	0.147 mg.	0.139 mg.	1 to 0.96
Ouabain "D".....	0.134 mg.	0.151 mg.	1 to 1.12

Strophanthin

No. 256490.....	0.186 mg.	0.245 mg.	1 to 1.31
No. 256491.....		0.235 mg.	
No. 183774.....		0.255 mg.	

Tr. Strophanthus

U. S. P. 1890.....	0.054 mil	0.059 mil	1 to 1.09
R̄ 86068.....		0.031 mil	
R̄ 681309.....	0.0179 mil	0.0263 mil	1 to 1.47
R̄ 683866.....	0.0179 mil	0.0227 mil	

Sample.	Cats. M. L. D. per Kg.	Dogs. M. L. D. per Kg.	Ratio.
<i>Tr. Digitalis</i>			
No. 250139.....	0.97 mil	1.14 mils	1 to 1.17
R̄ 674678.....		1.95 mils	
“A”.....	2.58 mils	2.91 mils	1 to 1.12
R̄ 676593.....		1.17 mils	
R̄ 676593 (Adj.).....		1.92 mils	
“B”.....	1.40 mils	1.43 mils	1 to 1.02
“C”.....	1.28 mils	1.22 mils	1 to 0.95
“D”.....	1.56 mils	1.82 mils	1 to 1.17
R̄ C136053.....		1.62 mils	
<i>Digitalone</i>			
No. 046798.....	0.90 mil	1.53 mils	1 to 1.7
No. 049780.....		1.76 mils	
<i>F. E. Digitalis</i>			
R̄ 665561.....	0.147 mil	0.183 mil	1 to 1.24
<i>S. E. Digitalis</i>			
R̄ 661579.....		0.062 Gm.	
<i>F. E. Squill</i>			
R̄ 673584.....		0.159 mil	
R̄ 681685.....	0.112 mil	0.163 mil	1 to 1.45
R̄ 134342.....		0.115 mil	
<i>Tr. Digitalis</i>			
Unknown			
Activity.....	0.98 mil	0.134 mil	1 to 1.37
<i>Tr. Strophanthus</i>			
Unknown activity.....	0.0286 mil	0.0326 mil	1 to 1.14
<i>Ouabain</i>			
Unknown activity.....	0.202 mg.	0.191 mg.	1 to 0.95

TABLE IV.

Sample.	Cat units.	Dog units.	M. L. D. frog method. Heart tonic units.
Ouabain "A".....	10,989	9174	201,500 (101%)
Ouabain "B".....	8,130	7936	185,200 (93%)
Ouabain "C".....	6,802	7194	197,600 (98%)
Ouabain "D".....	7,462	6622	177,800 (89%)
<i>Strophanthin</i>			
No. 256490.....	5,376	4081	150,000 (150%)
No. 256491.....		4255	171,000 (171%)
<i>Tr. Strophanthus</i>			
U. S. P. 1890.....	18.5	17.0	650 (50%)
R̄ 86068.....		32.2	815 (62.7%)
R̄ 681309.....	55.86	41.1	1500 (115%)
R̄ 683866.....		44.0	1978 (136%)
<i>Tr. Digitalis</i>			
No. 250139.....	1.03	0.88	10.0 (166%)
R̄ 674678.....		0.51	5.0 (83%)
"A".....	0.387	0.343	2.0 (33%)
R̄ 676593.....		0.854	8.25 (137.5%)
R̄ 676593 (Adj.).....		0.52	6.67 (111%)
"B".....	0.71	0.70	9.52 (158%)
"C".....	0.78	0.82	6.06 (101%)
"D".....	0.64	0.55	5.0 (83%)
R̄ 136053.....	0.64	0.62	9.17 (153)

Sample.	Cat units.	Dog units.	M. L. D. frog method Heart tonic units.
<i>Digitalone</i>			
046798.....	1.1	0.65	5.9 (98%)
049780.....		0.57	6.6 (110%)
<i>F. E. Digitalis</i>			
R 665561.....	6.8	5.5	72.0 (110%)
<i>S. E. Digitalis</i>			
R 661579.....		16.1	140.0 (70%)
<i>F. E. Squill</i>			
R 675384.....		6.3	120.0 (150%)
R 681685.....		6.1	100.0 (125%)
R 134342.....		8.7	140.0 (175%)
<i>Tr. Digitalis</i>			
Unknown activity.....	1.02	0.746	8.0 (133%)
<i>Tr. Strophanth.</i>			
Unknown activity.....	35.0	30.4	1000 (77%)
<i>Ouabain</i>			
Unknown activity.....	4950	5235	114300 (57%)

Table III gives the average M. L. D. decided upon from the data obtained in the test of each sample upon either cats or dogs. Whenever the sample was tested upon both cats and dogs the ratio of the M. L. D. for the cat to that for the dog is placed in the fourth column. In this table it is plainly shown that there is no constant relation between the M. L. D. of a sample to cats and that of the same sample to dogs. In general, it can be stated, however, that the M. L. D. per Kg. body weight is slightly greater for the dog than for the cat.

Table IV gives the comparative results, in units, of the tests of samples upon the cat, dog and frog. The cat unit is defined by Hatcher as the amount of drug which is just sufficient to kill one kilogramme of cat when slowly and continuously injected into the vein. The number of units per gramme of the pure principles or per mil of tinctures or fluidextracts is, therefore, one divided by the average M. L. D. per Kg. as determined in the test. This exact procedure was also used in determining the number of dog units in each preparation. In the case of the M. L. D. frog test the Heart Tonic Unit is ten times the minimum lethal dose per gramme body weight of standard test frogs kept under proper test conditions. The number of heart tonic units per gram or per mil of a preparation is, therefore, one divided by 10 times the normal M. L. D. per gramme body weight of frog. The percentage which is placed in parentheses after the number of heart tonic units found for each sample is the strength of the sample in terms of the standard which has been adopted for that particular preparation.

This table (IV) shows that there is no definite relation between either the M. L. D. of a sample to the cat and M. L. D. to the frog or between the M. L. D. to the dog and that to the frog. In the case of the samples of ouabain, Sample "C" was a close second in activity to Sample "A" by the frog test while by the cat and dog tests it was a poor third. The third sample of *Tr. Strophanthus* was three times as active as the first sample by the *cat* test and but 2.3 times as active by the frog test. The second sample of Tincture of *Strophanthus* was nearly twice

as active as the first by the *dog* test while it was but $1\frac{1}{4}$ times as active by the frog test. Particularly in the tests of samples of Tincture of Digitalis are the inconsistencies of the M. L. D. to dogs plainly shown. One sample, R 676593, was diluted on the basis of the original frog assay to 80 percent of its original strength and the assay of the diluted product by the M. L. D. frog test checked the dilution almost exactly while the assay of these samples upon dogs showed the diluted product to be but 60 percent as strong as the original. Several other instances of inconsistency between the results obtained upon dogs and frogs might be pointed out but they can be readily seen upon close examination of the results.

In order to arrive at the relative accuracy of the three methods in as nearly an unprejudiced a manner as possible, and to check the results reported in the preceding tables, three samples were submitted for test. They were prepared by diluting or concentrating certain lots which had been tested by all three methods but the degree of dilution or concentration was entirely unknown to the writer until after the tests were completed and results reported. Tables V and VI give the detailed reports of the tests as well as the comparison of the results obtained with the actual change which was made.

TABLE V.—ORIGINAL SAMPLES FROM WHICH UNKNOWNNS WERE MADE.

TINCTURE OF STROPHANTHUS.

Test on Dogs.

Dog No.	Sex.	Cond.	Weight.	Anes.	Dil. of sample.	Total dose.	Time to kill.	M. L. D. per Kg.
94*	F	Good	12.8 Kg.	Fair	1 : 100	30.0 mils	35 min.	0.234 mil
95	M	Fair	7.2 Kg.	Fair	1 : 100	10.0 mils	26 min.	0.0277 mil
96	F	Good*	9.8 Kg.	Deep	1 : 100	26.0 mils	24 min.	0.0265 mil
97	M	Good	11.5 Kg.	Fair	1 : 100	29.0 mils	32 min.	0.0252 mil
112	F	Good*	11.6 Kg.	Deep	1 : 50	15.0 mils	14 min.	0.0259 mil

Average M. L. D. per Kg. = 0.0263 mil.

Test on Cats.

54	F	Good	2.7 Kg.	Light	1 : 250	12.0 mils	12 min.	0.0180 mil
55	F	Good	2.9 Kg.	Fair	1 : 250	13.0 mils	35 min.	0.0179 mil
56*	M	Good	3.3 Kg.	Fair	1 : 250	20.0 mils	38 min.	0.0242 mil
57	M	Good	3.75 Kg.	Fair	1 : 250	17.0 mils	25 min.	0.0180 mil
61	F	Good	2.45 Kg.	Fair	1 : 250	13.0 mils	21 min.	0.0177 mil

Average M. L. D. per Kg. = 0.0179 mil.

TINCTURE OF DIGITALIS "D."

Test on Dogs.

122*	F	Poor	8.5 Kg.	Fair	1 : 2	24 mils	30 min.	1.41 mils
123	M	Good	15.0 Kg.	Fair	1 : 2	50 mils	54 min.	1.66 mils
124	F	Good	6.1 Kg.	Fair	1 : 2	22 mils	37 min.	1.80 mils
125	M	Good	10.6 Kg.	Fair	1 : 2	41 mils	52 min.	1.93 mils
132	F	Good	9.6 Kg.	Fair	1 : 2	18 mils	35 min.	1.88 mils

Average M. L. D. per Kg. = 1.82 mils.

Tests on Cats.

64	M	Fair	1.6 Kg.	Fair	1 : 6	15 mils	36 min.	1.56 mils
65	F	Fair	2.4 Kg.	Fair	1 : 6	20 mils	40 min.	1.39 mils
66	M	Fair	3.65 Kg.	Fair	1 : 6	38 mils	60 min.	1.73 mils

Average M. L. D. per Kg. = 1.56 mils.

TABLE V.—ORIGINAL SAMPLES FROM WHICH UNKNOWNNS WERE MADE (*Continued*).

OUABAIN "D."

Test on Dogs.

Dog No.	Sex.	Cond.	Weight.	Anes.	Dil. of sample.	Total dose.	Time to kill.	M. L. D. per Kg.
126	M	Good	9.9 Kg.	Fair	1 : 20000	30.0 mils	42 min.	0.151 mg.
127	F	Good	14.65 Kg.	Fair	1 : 20000	40.0 mils	35 min.	0.137 mg.
128	M	Good	17.1 Kg.	Fair	1 : 10000	28.0 mils	37 min.	0.164 mg.
129*	M	Good	12.4 Kg.	Light	1 : 10000	23.0 mils	34 min.	0.185 mg.

Average M. L. D. per Kg. = 0.151 mg.

Test on Cats.

67*	F	Kitten	1.3 Kg.	Fair	1 : 75000	17 mils	38 min.	0.174 mg.
68	F	Good	2.5 Kg.	Fair	1 : 50000	17 mils	26 min.	0.136 mg.
69*	F	Kitten	1.0 Kg.	Fair	1 : 50000	11 mils	30 min.	0.220 mg.
70	M	Good	3.05 Kg.	Fair	1 : 50000	20 mils	34 min.	0.131 mg.

Average M. L. D. per Kg. = 0.134 mg.

Samples (activity unknown at time of test).

TINCTURE OF STROPHANTHUS FROM R 681309.

Test on Dogs.

135	F		14.4 Kg.	Light	1 to 50	18 mils	24 min.	0.0250 mil
136	M		11.85 Kg.	Light	1 to 50	20 mils	38 min.	0.0337 mil
139*	M		8.2 Kg.	Fair	1 to 50	18 mils	31 min.	0.0440 mil
140*	M		10.6 Kg.	Fair	1 to 50	23 mils	35 min.	0.0434 mil
141	M		17.4 Kg.	Fair	1 to 50	29 mils	40 min.	0.0330 mil
142	M		10.6 Kg.	Fair	1 to 50	17 mils	20 min.	0.0320 mil
148	M		11.0 Kg.	Fair	1 to 75	26 mils	35 min.	0.0315 mil

Average M. L. D. per Kg. = 0.0326 mil.

Test on Cats.

58	F		2.5 Kg.	Fair	1 to 250	18 mils	34 min.	0.0288 mil
59	M		3.75 Kg.	Fair	1 to 200	19 mils	24 min.	0.0253 mil
60	F		2.9 Kg.	Fair	1 to 250	23 mils	37 min.	0.0319 mil

Average M. L. D. per Kg. = 0.0287 mil.

TINCTURE OF DIGITALIS FROM "D."

Test on Dogs.

133*	M		10.0 Kg.	Fair	1 to 2	22 mils	38 min.	1.1 mils
134	M		9.5 Kg.	Fair	1 to 2	23 mils	48 min.	1.31 mils
138	M		8.9 Kg.	Fair	1 to 2	23 mils	45 min.	1.29 mils
144	M		5.9 Kg.	Fair	1 to 3	25 mils	36 min.	1.41 mils

Average M. L. D. per Kg. = 1.34 mils.

Test on Cats.

62	M	Good	3.2 Kg.	Fair	1 to 5	15 mils	20 min.	0.94 mil
63	M	Good	2.6 Kg.	Light	1 to 6	16 mils	30 min.	1.02 mils

Average M. L. D. per Kg. = 0.98 mil.

OUABAIN FROM "D."

Test on Dogs.

143	F		11.4 Kg.	Light	1 to 15	34 mils	48 min.	0.198 mil
146	M		9.0 Kg.	Fair	1 to 15	25 mils	33 min.	0.185 mil
147	F		7.7 Kg.	Fair	1 to 15	22 mils	27 min.	0.190 mil

Average M. L. D. per Kg. = 0.191 mg.

Test on Cats.

71*	F	Kitten	1.2 Kg.	Fair	1 to 50000	15 mils	40 min.	0.250 mg.
72	M	Good	2.94 Kg.	Good	1 to 40000	25 mils	45 min.	0.213 mg.
73	F	Good	2.5 Kg.	Fair	1 to 40000	19 mils	34 min.	0.190 mil

Average M. L. D. per Kg. = 2.20 mg.

TABLE VI.—RESULTS OF TEST UNKNOWN.

Sample.	% of Original.			Correct percent.
	Dogs.	Cats.	Frogs.	
Tr. Stroph.	74.5%	62.6%	66.7%	66.7%
Tr. Digitalis.	135%	159%	160%	150%
Ouabain.	79%	63%	64%	60%

From the results of the test of the unknowns reported in Table VI, it can be seen that the frog assay is the more reliable since in one case the report was exactly right, and in the other two, slightly high (a matter of about 7 percent). Two of the results on the dogs were considerably high while the third was about as much too low, showing no consistency toward either high or low results. The results on the cats were much better than those on the dogs but not quite as good as those obtained by the frog method. Because of the fact that we have used the M. L. D. frog method for so many years to check up dilutions (based on original assays) of commercial lots and have with *very* few exceptions found it to be accurate, it seems that the results obtained from this small series of unknowns is entirely representative of the relative merits of the method.

Enough data was not obtained with cats to absolutely prove that they are as unsatisfactory as dogs and in fact I scarcely believe that they are but the data reported in Table IV indicates that there is no real consistency between the results obtained when using the cat and those obtained with the frog. Since the frog method vindicated itself so satisfactorily in the test of the unknowns it seems hardly possible that the cat method can be considered to possess the same degree of accuracy.

It, therefore, seems most logical to conclude from the results reported that no relationship exists between the M. L. D.'s of heart tonic preparations to cats, dogs and frogs and that consequently, since the frog method has shown itself to be the most accurate by tests of samples of unknown activity, the M. L. D. frog method is the most accurate of the three. This being true, there should certainly be no hesitancy as to the choice of the method for use in quantitative assay work even though it might possibly be proved that the cat or dog method is a little the less expensive and that results can be obtained in a somewhat shorter time than with the frog method.

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STANDARDIZATION OF DIGITALIS—A PRELIMINARY REPORT.*

BY ROBERT A. HATCHER, M.D.

Some of those present will remember that Apocynum and Euonymus were dismissed from the Pharmacopoeia because it was held that no safe and effective dose could be given. Oral doses of these drugs equal to many times the fatal vein dose may be administered to animals without inducing any effects in many cases. Convallaria behaves similarly. The absorption of strophanthus and strophanthin is also imperfect; if the single daily of strophanthus—0.06 Gm. every four hours—were absorbed promptly it would prove almost immediately fatal, in fact, one could not administer it every four hours for an entire day, as that would be equal to about twice the average fatal vein dose for a man if his susceptibility is equal to that of the cat.

The daily proof of the poor absorbability of strophanthus is had in the fact that the dose given in the Pharmacopoeia for it is the same as that for digitalis, though the Pharmacopoeia requires that strophanthus shall be just one hundred times as active as digitalis. In other words, if one gives an effective dose of strophanthus he must give far more than the patient could possibly withstand should absorption occur.

Experience has taught us the danger of administering strophanthus by the mouth, and certain clinicians no longer use strophanthus orally. I am firmly convinced that many patients have died from the immediate effects of strophanthus, death being attributed to cardiac disease.

So, there is a firm basis for the continued belief in the superiority of digitalis among the more careful clinical observers, since it shows the *most nearly* uniform absorption and clinical effects of any of the drugs of the group. It is not my purpose to undermine the confidence in an old friend, but rather is it my purpose to show that Digitalis is a sort of Jekyll and Hyde, inasmuch as its constituents are not all of the readily absorbable type.

During the course of an investigation undertaken at this time for another purpose I hit upon an extremely simple and easy method of separating the digitalis principles into two groups. One of these may be termed, for convenience, the Chloroform-soluble group, and the other the Water-soluble group. The best method of separating them has not been worked out in all its details, and it presents a number of minor problems, but it may be described as follows: The digitalis in powder is exhausted with water on a water bath, the infusion is filtered, the filtrate concentrated to a syrupy consistence and precipitated with a large excess of alcohol, the alcohol is expelled, the residue taken up in water and the solution shaken several times with chloroform. The chloroformic solution is distilled and the residue taken up in diluted alcohol.

I have received a number of specimens of digitalis tincture from clinicians in well known hospitals, with the request that I test them because they failed to induce the usual effects of digitalis. In every case I found the tinctures fairly active.

The most striking case of this sort will be described briefly. Dr. Wedd, working in the service of Dr. Carter, in the Cleveland City Hospital, sent a speci-

*Read before Scientific Section, A. Ph. A., New York meeting, 1919.

men of tincture of digitalis for examination because of the failure to secure any toxic effect with total amounts of as much as 149 Cc. administered to a patient, weighing 140 pounds, during a single course of treatment. This amount merely caused slowing. I found the tincture to be active by the biologic test.

The chloroform-soluble fraction varies in the percentage of the total active constituent, but the specimen just described showed an unusually low percentage, this fraction constituting only one-fourth of the total activity of the leaf. At the other extreme in the series thus far tested, is a specimen placed in alcohol by Professor Newcomb immediately after gathering a leaf of the first year. In this the chloroform-soluble constituent constituted about 65 percent of the active constituents.

It is my purpose to examine specimens of the leaf obtained from various sources, and variously treated, both from the first and second year, in order to determine whether one can be found of constant composition, or that which yields constantly the highest percentage content of the more absorbable constituent.

I have been fortunate in securing the coöperation of growers and dealers and hope to be able to report much progress during the coming year.

One specimen of fluidextract at least 38 years old was fractioned, and while the amount available was too small for satisfactory study (especially as it involved a probable accident) it seems that the content of the chloroform-soluble constituent in this specimen is very high.

The work raises numerous problems which cannot be discussed now, but it seems clear that the higher the digitoxin content (if digitoxin is present in the leaf) the lower should be the biologic activity measured by the official assay, but the more active by oral administration. It seems probable from previous work done in our laboratory that the water-soluble constituent is relatively more actively emetic than the chloroform-soluble. Not only is the chloroform-soluble fraction absorbed more readily than the water-soluble, but it is almost certainly more lasting in its effects, in other words, its action probably persists for as many weeks as that of the other in days.

I believe that we must assay digitalis with reference to the content of this more readily absorbable fraction, and that a specimen containing a high percentage of this fraction will be more active clinically than one showing a greater total activity but with a low percentage of this fraction.

Incidentally, I believe that this chloroform-soluble fraction may be made available for intravenous use, since it mixes perfectly with water. The permanence of such mixtures has not been sufficiently studied.

DETERIORATION OF HIGH TEST AMERICAN-GROWN DIGITALIS.*

BY J. F. O'BRIEN AND J. P. SNYDER.

In the Fall of 1916 we received a shipment of American-grown Digitalis from the state of Washington, which upon assay gave such a high test by the U. S. P.

*Read before Scientific Section, A. Ph. A., New York meeting, 1919.

IX method that we decided to prepare a tincture and a fluidextract and determine the deterioration after standing for a considerable length of time. Accordingly we prepared, following out the methods as outlined in the Pharmacopoeia, a tincture and a fluidextract, and after making tests by the U. S. P. frog method, the 24-hour guinea pig method and the Hatcher & Brody cat method these two preparations were allowed to stand in the laboratory under conditions which closely paralleled that in which tinctures and fluidextracts of Digitalis are kept in the average drug store. After a period of two and one-half years the tincture and the fluid were tested under similar conditions by the same methods as when first prepared.

TINCTURE OF DIGITALIS BY GUINEA PIG METHOD.

Animal.	No.	Wt.	Dose per 250 Gm.	Dilution.	Dose of dilution.	Results after 24 hours.
Guinea pig	1	255	0.4	1-1	0.4	Died
Guinea pig	2	315	0.6	1-1	0.75	Died
Guinea pig	3	280	0.8	1-1	0.9	Died
Guinea pig	4	310	1.0	1-1	1.24	Died
Guinea pig	5	255	1.1	1-1	1.12	Died
Guinea pig	6	215	1.2	1-1	1.03	Died
Guinea pig	2	315	0.4	1-1	0.5	Died
Guinea pig	4	305	0.3	1-1	0.36	Died
Guinea pig	5	370	0.2	1-1	0.3	Recovered
Guinea pig	6	290	0.4	1-1	0.46	Died
Guinea pig	7	320	0.3	1-1	0.38	Died
Guinea pig	1	250	0.2	1-1	0.2	Recovered
Guinea pig	2	360	0.1	1-1	0.14	Recovered

Accepting the standard for a 250 Gm. guinea pig as 1 Cc., we find this Tincture Digitalis to test 330 percent, we finding the M. L. D. for a 250 Gm. pig to be 0.3 Cc.

TINCTURE DIGITALIS BY GUINEA PIG METHOD AFTER STANDING TWO AND ONE-HALF YEARS.

Animal.	No.	Wt.	Dose per 250 Gm.	Dilution.	Dose of dilution.	Result.
Guinea pig	1	600	0.4 mil	1-1	0.96	Died
Guinea pig	2	540	0.5 mil	1-1	1.08	Recovered
Guinea pig	3	415	0.6 mil	1-1	0.99	Died
Guinea pig	4	480	0.7 mil	1-1	1.34	Died
Guinea pig	5	585	0.8 mil	1-1	1.87	Died
Guinea pig	6	575	0.9 mil	1-1	2.07	Died
Guinea pig	7	660	0.3 mil	1-1	0.79	Recovered
Guinea pig	8	405	0.4 mil	1-1	0.65	Recovered
Guinea pig	9	480	0.4 mil	1-1	0.77	Recovered
Guinea pig	10	435	0.43 mil	1-1	0.75	Died
Guinea pig	11	455	0.45 mil	1-1	0.82	Recovered
Guinea pig	12	380	0.47 mil	1-1	0.71	Recovered
Guinea pig	13	495	0.5 mil	1-1	1.0	Recovered
Guinea pig	14	595	0.55 mil	1-1	1.3	Recovered
Guinea pig	15	360	0.57 mil	1-1	0.82	Died
Guinea pig	16	480	0.55 mil	1-1	1.05	Recovered
Guinea pig	17	455	0.57 mil	1-1	1.03	Died

M. L. D. is 0.57 per 250 Gm. Pig percent of activity, 175.

TINCTURE DIGITALIS BY ONE-HOUR FROG METHOD.

No.	Dose per Gm.	Weight.	Dose.	No. Cc.		Result after one hour.	Dilution
127	0.006	28.9	0.1734	0.17		Stopped	20-100
128	0.005	31.9	0.15	0.16		Stopped	20-100
129	0.004	24.9	0.099	0.19		Stopped	20-100
130	0.003	27.9	0.083	0.08 = 0.4		Stopped	20-100
131	0.002	24.8	0.049	0.05 = 0.25		Recovered	20-100
132	0.003	26.2	0.078	0.08 = 0.4		Stopped	20-100
127	0.001	27.7	0.0277	0.0277 = 0.13		Beats	20-100
128	0.002	23.0	0.046	0.046 = 0.23		Stopped	20-100
129	0.003	27.0	0.081	0.081 = 0.40		Stopped	20-100

From the above we selected the M. L. D. as 0.0025 with ouabain at 0.000,00055, which in terms of percentage would be 264.

TINCTURE DIGITALIS BY ONE-HOUR FROG METHOD AFTER STANDING TWO AND ONE-HALF YEARS.

After standing we find that the tincture digitalis tests by the one-hour frog method 120%, we selected the M. L. D. as 0.006 with ouabain at 0.000,0006, which shows preparation to test 120%.

No.	Wt.	Dose per Gm.	Dose.	Dilution.	Dose of dilution.	Result.
1	20.2	0.003	0.06	1-1	0.06	B
2	18.0	0.004	0.07	1-1	0.07	B
3	17.3	0.005	0.085	1-1	0.085	B
4	12.5	0.006	0.075	1-1	0.075	S
5	15.2	0.007	0.1	1-1	0.1	S
2	18.4	0.008	0.15	1-1	0.15	S
1	18	0.0055	0.1	1-1	0.1	B
2	17.6	0.0057	0.1	1-1	0.1	B
3	15	0.006	0.09	1-1	0.09	S
4	18.4	0.0057	0.1	1-1	0.1	B
5	20	0.006	0.12	1-1	0.12	S

M. L. D.—0.006 with ouabain at 0.000,0006. Percent of activity, 120.

TINCTURE DIGITALIS BY CAT METHOD.

Weight of cat.	Sex.	Mils of digitalis injected.	Mils of ouabain injected.	Dilution.	1 mil ouabain.	Results.
2 kilos	female	4	5	1-10	0.00002	40 mg. = C.U.

Here we find that 50 mg. of digitalis is equal to one cat unit, as Hatcher and Brody consider the cat unit for digitalis to be about 100 mg. We find this in terms of percentage to be about 250.

TINCTURE DIGITALIS BY CAT METHOD AFTER STANDING TWO AND ONE-HALF YEARS.

Weight of cat.	Sex.	Mils of digitalis injected.	Mils of ouabain injected.	Dilution.	1 mil ouabain.	Results.
2.7 kilos	female	4	10	1-10	0.0002	57.7 mg. = C.U.

Here we find that 1 C. U. = 57.7 mg. or 173%. The check analysis gave 174%.

F. E. DIGITALIS BY THE GUINEA PIG METHOD.

Animal.	No.	Wt.	Dose per 250 Gm.	Dilution.	Dose of dilution.	Result after 24 hours.
Guinea pig	1	250	0.01	1-20	0.2	Recovered
Guinea pig	2	255	0.02	1-20	0.4	Recovered
Guinea pig	3	275	0.03	1-20	0.66	Recovered
Guinea pig	4	300	0.04	1-20	0.96	Died

Animal.	No.	Wt.	Dose per 250 Gm.	Dilution.	Dose of dilution.	Results after 24 hours.
Guinea pig	1	320	0.02	1-20	0.51	Recovered
Guinea pig	2	20	0.03	1-20	0.67	Died
Guinea pig	3	260	0.03	1-20	0.62	Died
Guinea pig	4	245	0.04	1-20	0.78	Died
Guinea pig	5	250	0.03	1-20	0.6	Died
Guinea pig	6	265	0.04	1-20	0.84	Died
Guinea pig	1	245	0.02	1-20	0.4	Recovered

We selected from the above 0.03 Cc. as the M. L. D. for a 250 Gm. guinea pig, which, in terms of percentage, would be 330.

F. E. DIGITALIS BY GUINEA PIG METHOD AFTER STANDING TWO AND ONE-HALF YEARS.

Animal.	No.	Weight.	Dose per 250 Gms.	Dose.	Dilution.	Dose of dilution.	Result.
Guinea pig	1	545	0.04	0.087	1-10	0.87	Recovered
Guinea pig	2	475	0.05	0.095	1-10	0.95	Recovered
Guinea pig	3	640	0.055	0.14	1-10	1.4	Recovered
Guinea pig	4	520	0.06	0.12	1-10	1.2	Died
Guinea pig	5	515	0.055	0.11	1-10	1.1	Recovered
Guinea pig	6	410	0.057	0.093	1-10	0.93	Died
Guinea pig	7	435	0.06	0.104	1-10	1.04	Died
Guinea pig	8	425	0.055	0.093	1-10	0.93	Recovered
Guinea pig	9	465	0.057	0.106	1-10	1.06	Died

M. L. D. 0.057. Percent of activity, 175%.

F. E. DIGITALIS BY ONE-HOUR FROG METHOD.

No.	Dose per Gm.	Weight.	Dose.	No. Cc.	Results after one hour.	Dilution.
127	0.0006	26.4	0.0158	0.016 = 0.8	Stopped	20-1000
128	0.0005	23.1	0.01155	0.011 = 0.55	Stopped	20-1000
129	0.0004	24.8	0.0099	0.0099 = 0.49	Stopped	20-1000
130	0.0003	29.9	0.0089	0.0089 = 0.49	Stopped	20-1000
131	0.0002	23.8	0.0047	0.0047 = 0.23	Beats	20-1000
132	0.0001	30.6	0.00306	0.00306 = 0.15	Beats	20-1000
127	0.0002	31.9	0.00638	0.00638 = 0.32	Stopped	20-1000
128	0.00025	27.8	0.00695	0.00695 = 0.34	Stopped	20-1000
129	0.0003	26.9	0.00807	0.00807 = 0.4	Stopped	20-1000
129	0.0003	25.0	0.0075	0.0075 = 0.37	Stopped	20-1000

Here we figure the M. L. D. to be 0.00025, which gives us in terms of percentage 264 percent, with ouabain at 0.000,00055.

F. E. DIGITALIS BY ONE-HOUR FROG METHOD AFTER STANDING TWO AND ONE-HALF YEARS.

No.	Weight.	Dose per Gm.	Dose.	Dilution.	Dose of dilution.	Result.
1	18.1	0.0003	0.0054	1-10	0.054	B
2	19.0	0.0004	0.0072	1-10	0.07	B
3	15.8	0.0005	0.008	1-10	0.08	B
4	17.1	0.0006	0.01	1-10	0.1	S
5	18.0	0.00057	0.01	1-10	0.1	B
6	16.0	0.0006	0.009	1-10	0.09	S
7	15.4	0.0057	0.0087	1-10	0.09	B
8	10.2	0.0006	0.011	1-10	0.11	S

M. L. D. 0.0006 with ouabain at 0.000,0006 or 120%.

F. E. DIGITALIS BY CAT METHOD.

Weight of cat.	Sex.	Mils of digitalis injected.	Mils of ouabain injected.	Dilution.	1 mil ouabain.	Results.
2.6 Kilos	female	4	8.5	1-100	0.00002	44.4 mg. = C. U.
2.7 Kilos	male	4	8.2	1-100	0.00002	33.7 mg. = C. U.

The average of 44.4 and 33.7, the number of mgs. of digitalis form the fluid-extract which we find by this method to be equal to a cat unit, is 41; and, based upon 100 mg. as the standard cat unit, we find the percentage strength of this to be about 244 percent.

F. E. DIGITALIS BY CAT METHOD AFTER STANDING TWO AND ONE-HALF YEARS.

Weight of cat.	Sex.	Mils of digitalis injected.	Mils of ouabain injected.	Dilution.	1 mil ouabain.	Results.
2 kilos	male	4	7.5	1-100	0.00002	57.6 mg. = C. U.

Test is 173%. Check 175%.

DETERMINATION OF LETHAL DOSE OF OUABAIN ON CATS.

Female Cat

Weight 2.5 kilos

Time.	4.05	4.10	4.15	4.20	4.30	4.40	4.50	5.00	5.10	5.20	5.30	5.40	5.45	5.50	6.00	6.10
No. of Cc..	1	1	1	1	1	1	1	1	1	1	1	0.5	0.5	0.2	0.3	dead

Male Cat

Weight 2 kilos

Time.	10.00	10.10	10.20	10.30	10.40	10.50	11.00	11.10	11.20	11.30	11.40	11.50	12.00	12.15	12.30
No. of Cc..	1	1	1	1	1	1	1	1	1	0.5	0.5	0.5	0.3	0.2	dead

From the above we find that in cat No. 1 the cat unit is 0.1 mg. per kilo, and in cat No. 2, 0.11 per kilo, and that these both closely check the standard selected by Hatcher and Brody which is 0.1 mg. per kilo weight of cat.

CONCLUSION.

We find from the results of the above experiments that tincture and fluid-extract of digitalis prepared from this particular lot of drug does deteriorate and that the deterioration in the tincture and fluidextract is practically the same. In the case of the guinea pig method, we first find it to test 330 percent, and after standing, 175 percent, or a loss in activity by the guinea pig method of 47 percent. In the case of the tincture and fluidextract by the one-hour frog method we formerly found it to test 264 percent and after standing, 120 percent, or a loss in activity of 55 percent. In the case of the cat method we at first found it to test approximately 250 percent and after standing, 175 percent, or a loss in activity of 30 percent. We therefore find that the frog method shows the greatest deterioration and that the cat method shows the least, and that the guinea pig method more closely checks with the frog method than it does with the cat method as far as deterioration is concerned, although in the case of the guinea pig method no attempt was made to standardize these animals against seasonable variation, which has been shown to exist. Furthermore, that in the case of this high-test digitalis, after being made into a tincture and fluidextract and standing two and one-half years neither the frog method, guinea pig method, nor the cat method shows the preparations to have deteriorated below the U. S. P. minimum standard for the tincture and fluidextract, and the test would indicate that this fluidextract

and tincture after standing this length of time still retains sufficient activity for them both to be considered standard preparations.

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ABSTRACT OF DISCUSSION ON DIGITALIS PAPERS BEFORE SCIENTIFIC
SECTION, A. PH. A.

ROBERT A. HATCHER: I have a number of questions. I hope I won't seem too inquisitive. I have been very much put to it to secure my favorite animal, the cat, in testing, and I have been casting about to see if I could substitute frogs for cats. That might come as a shock to a good many members of this assembly, but it has been impossible at times to secure an adequate supply of cats. I have been experimenting on frogs, and while I had from time to time standardized various preparations on frogs, I recently purchased a batch of five hundred frogs with which I was utterly unable to standardize a single preparation of digitalis and could not even standardize the frogs against ouabain. On three hundred and seventeen out of five hundred frogs I could not standardize the frogs against ouabain. Now there are some here who will throw up their hands in horror at my inability to do this. I have, however, consulted with others, who informed me that the uniformity of absorption is the bane of the work in the hygienic laboratory; that they occasionally have similar experiences. Now if gold fish eliminate the uncertainty due to variation in susceptibility I am certainly glad because of the saving in time consumed. I want to ask if the same ratio exists between the toxicity of tincture of strophanthus and tincture of digitalis when tested on gold fish or when tested on cats or frogs?

PAUL S. PITTINGER: I had better answer the questions as they come up. We have not gone far enough with the gold fish method to find the exact ratio between digitalis and the other drugs. We intend to take up strophanthus and the other drugs later on. We have, however, started with ouabain and found that it took a very much greater amount of ouabain in comparison with the amount of digitalis required to produce toxic effects than on either frogs or guinea pigs.

ROBERT A. HATCHER: More ouabain?

PAUL S. PITTINGER: No, not more ouabain than tincture of digitalis, but many times more ouabain *in comparison with the amount of digitalis* than by either the guinea pig or frog method.

ROBERT A. HATCHER: Where it is not necessary to be absolutely accurate what are the ranges of accuracy with slight variations in temperature? It is rather difficult to maintain a temperature that does not vary over a degree.

PAUL S. PITTINGER: All these tests were carried out with a variation in the temperature bath from one to one and a half degrees, with the accuracy of the test well within two and a half percent.

HENRY KRAEMER: I was very much interested in the paper of Dr. Pittenger because I have long realized that gold fish were exceedingly sensitive to chemical substances. A few years ago a client came to me to investigate a problem. He had some trees which had been destroyed by a Public Service Corporation tearing up the streets, affecting the gas mains. So I was called in about eighteen months after the damage had been done, to act in the capacity of an expert. I went out and saw the trees were all dead. The question was, what had killed them? It occurred to me that there ought to be some definite, scientific way of showing the cause. The soil was clay, so I had a man dig down about six feet and obtained some samples. It occurred to me that probably a very simple test could be performed by comparing my samples with ordinary soil from some other locality. I bought a couple dozen gold fish and it was surprising as to how immediate the reaction was. After putting a sample of the soil, which I had obtained from the roots which were injured, in the water the gold fish immediately succumbed. One thing you have to watch in the city, where you have flowing water, is the effect of the chemicals used in treating the water. One time, for instance, I was making starch water, and was surprised to see how much the water tested of chlorine. Such things are very apt to affect some work, when you are expecting definite reactions you may have those from the chemically treated water. I merely interject this so you will appreciate that there are some things apart from the

sensitiveness of the gold fish that will have to be taken into consideration. There is no question but that gold fish are wonderfully sensitive to a poisonous substance like chlorine gas.

HERBERT C. HAMILTON: I have been very much interested in the subject of the use of gold fish for standardizing digitalis. I recall very well the presentation of Dr. Pittenger's first paper quite a number of years ago. About twelve years ago our firm was submitted a sample of some kind of root that was used as a fish poison in the East Indies or somewhere in a foreign country. It was put up to us to see whether it contained anything of therapeutic value. It seemed to be not particularly poisonous. I tried the drug on gold fish. As Dr. Pittenger and Dr. Kraemer have mentioned, I found the gold fish exceedingly sensitive to the material. While the possibility of using them for standardizing drugs never occurred to me, it certainly was a wonderful means of demonstrating the value of that fish poison. There is one question that I do not know whether Dr. Pittenger brought out, as I did not hear all his remarks. I would like to bring out the point as to whether the test could be shortened up in time, and instead of three hours have the time nearer two hours without seriously impairing its accuracy. Another point I want to speak of. Objection might be raised on the point as to whether the toxicity test is a clear indication of the therapeutic value of these heart tonics. One of the things we always think of in connection with the use of frogs, in testing, is the opportunity of examining the heart to see if it is contracted, which is very characteristic of digitalis and is a means of eliminating the frogs that die from other causes. It seems to me that this is one and may be almost the only point that can be raised against this method of testing.

PAUL S. PITTENGER: In regard to the time, I would state that the paper shows very conclusively that the results obtained with a time limit of exactly three hours are more accurate than those obtained by a shorter or longer limit. We ran experiments using doses large enough to kill in from one-half hour to two or three hours; from three to six hours; from six to eight hours; and from twelve to twenty-four hours; in other words, to see which time limit gave the most sensitive results. We found the method most sensitive by using a limit of three hours. That is the reason we adopted three hours for the time limit. Using the method described with a three hour "time limit" we were able to get accurate results down to a variation of only five hundredths of a mil of tincture of digitalis in 500 mils of water. Of course it is almost foolish to try such small quantities, but we actually did get fairly concordant results with a variation in the dosage as small as this. Although some fish died "out of order" the M. L. D. could be accurately determined. In regard to the toxicity, I have not carried out any experiments to prove whether the results obtained on fish parallel those obtained on frogs. This can very easily be determined, however, by testing a series of drugs by both methods.

Discussion on papers by L. W. Rowe and Robert A. Hatcher.

JACOB DINER: Both Dr. Rowe and Dr. Hatcher are to be complimented. I was very glad to hear Dr. Rowe bring out the inconsistency between the action upon the cat, the dog, and the frog. It merely brings home to us again the fact that the pharmacologists have been getting into a rut and the sooner they get out of that rut the better it will be for humanity. Animal experimentation has its proper place, but in my opinion animal standardization as it is being carried out today is not right. We are not interested in killing the cat or dog or frog or the gold fish. We are interested in obtaining certain therapeutic effects upon a pathologic heart, being either functional or organic. I believe that the clinicians are coming more and more to rely upon advertised articles merely because there is a claim for them of certain therapeutic value. Dr. Hatcher is to be congratulated for his very ingenious and praiseworthy efforts in regard to the action of digitalis, showing that the chloroform-soluble and the water-soluble portions are entirely distinct groups in their action, and if they are distinct in their action on the animal it is fairly reasonable to assume that they may be much more distinct in their action on the human being. I was delighted to hear that Dr. Hatcher will insist upon clinical observations. After all that is the only test. It is true that we cannot use men for standardization, but we certainly can use them for clinical observation. Upon that and that alone should we base our final answer. It is too bad that we cannot find the certain dose, but from personal observation I might state that I still use digitalis by the mouth and I frequently obtain very satisfactory results.

HERBERT C. HAMILTON: Speaking on the line that Dr. Diner has just discussed, I think there is a misconception possibly among pharmacologists, a misconception as to what standardiza-

tion and testing means. A pharmacist takes a solution containing an alkaloid and he titrates or shakes it out with chloroform or ether or something like that and his test has absolutely no relation to the therapeutic value of the drug. I have always contended that a biological test is the standardization test comparable to a chemical test, chemical or pharmaceutical, and that there is no necessity of there being any relationship between a standard test dose and the therapeutic dose. A therapeutic dose is something that must be determined by clinicians; a standardization dose may be entirely different and may bring about an entirely different set of reactions. I think, of course, if there could be a determined relationship between the two, it would be very nice, but when any one asks what is the relationship between a standard test dose for a cat, a dog, a guinea pig, a gold fish, or a human being, I think everybody would admit that it is rather absurd that there could be any relationship between them. I always have contended that the cat method was merely another of the toxicity tests with no definite point to indicate whether the death of the animal was due to digitalis. Of course, with careful work there would be no reason for suspecting anything to be present in digitalis or strophanthus that did not have direct action on the heart. Still there is always the possibility of decomposition products being present and producing the death of the animal instead of the principle of therapeutic value. The frog method always gives one the opportunity of examining the heart to see, by the position of the heart, whether the death of the frog was due to digitalis or not.

OTTO RAUBENHEIMER: This is evidently the age of learning, and Dr. Hatcher is going to revolutionize not only the therapeutics but also the chemistry of digitalis. Up to now the theories have always been that the higher the alcoholic content of the menstruum, the better the glucosidal preparations keep. This is the reason we are using ninety-five percent of alcohol for strophanthus. This is the reason we are using seventy percent alcohol for tincture of digitalis. Now Dr. Hatcher comes along and says—I hope he is right; he is always right—he says that water extracts it all. What cheaper solvent can you get than water? Why, pharmacists will all be happy making tincture of digitalis with water, and extracting all the virtues of digitalis. Dr. Hatcher is to be complimented on his experiments. He has kept on for ten years, as long as I have known him. I believe he will after all reach that conclusion which has been well established for years and years, that *wild grown* digitalis is the most active drug.

HENRY KRAEMER: Fortunately there are so many observers at the present time, and we see this subject from our experience in a good many different ways, I want to just interject a thought to Dr. Raubenheimer, that in my experience the wild grown digitalis is not by any means equal to that which is cultivated. I had an experience last summer in growing—I forget how much we did grow but it was considerable—several hundred pounds of digitalis. In fact, my plants grew so fast that I was at a loss to know whether I could bring them in or let them go to waste. All that I could do was to bring the digitalis in and let it dry as best it could, taking the *whole* plant and stringing it on wires, and so on. That digitalis is three times the strength of any digitalis on the market, as far as known.

I want to bring to your attention one thought in connection with chloroform extract. I have been working for fifteen or twenty years with these things, with chlorophyl, etc. Here is my point for you to think about. This chloroformic extract will look different if its alcoholic solution is reduced at some point with zinc. Furthermore, if that reduction product is kept from the air by inverting the bottle you will be surprised what a change it will make. Doctor, that is a very important contribution, because we will never formulate a preparation of digitalis until we know more about these constituents.

OTTO RAUBENHEIMER: I still maintain that the digitalis that Dr. Kraemer spoke about was wild, because he said he neglected its cultivation. It must have been wild.

HENRY KRAEMER: I did not neglect the cultivation. I did not pay any attention to all those modern methods that are sometimes assumed to be necessary in the harvesting of digitalis. I did not mean to infer that my own method of the preparation of digitalis was not probably more scientific than the other.

PAUL S. PITTENGER: First of all I wish to state that my observations agree with Dr. Kraemer's, namely, that cultivated digitalis as a whole is very much more active than the wild or uncultivated drug. At our Glenolden farms we have been able, through cultivation, to produce for the past several years hundreds of pounds of digitalis, containing two, three and even four times our standard activity. Next, I would like to ask Dr. Hatcher if he made any tests to

determine what proportion of the entire activity of the drug was contained in each of his two extracts and whether the activity of the one extract added to the activity of the other would equal that of an extract of the whole drug?

ROBERT A. HATCHER: Whether the separate constituents represented the entire drug?

PAUL S. PITTINGER: Yes, whether there were any comparisons made between the activity of your extracts and a tincture made from the same drug.

ROBERT A. HATCHER: In one effort to get rid of the chlorophyll I lost ninety percent of it in refining it. I did not always get the total, but it comes out this way. For this experiment I used six hundred and ten grammes of powder to make the infusion. The total mixture of all of these came out seventy-nine hundred cat units for the total six hundred and ten grammes. A total of the separate substances, I think, came out something like seventy-one hundred. I only made a few tests. The separate infusions came out seventy-nine hundred. I believe this came out one-tenth short, but that was a loss I was not particular about because in these precipitates I did not make any effort to get out the last trace.

PAUL S. PITTINGER: In reference to the cat method for general standardization purposes, I find that fairly accurate results can be obtained with this method, but our principal trouble is the same as with the other workers, namely, the difficulty in obtaining enough cats to carry out our assays. In fact, in Philadelphia it is almost impossible to get cats. I can get dogs. I send men away with dogs; not so with cats.

Now as to the time. Granted that a single test by the cat method takes less time to carry out than the frog, guinea pig or gold fish method, I do not think that that is true when you have a number of tests to carry out at the same time. We often have from fifteen to twenty samples at one time. With either the frog, guinea pig or gold fish method you can work on the whole series at one time. You can give all your frog or guinea pig injections in fifteen or twenty minutes, after which, in the case of the guinea pig method, there is nothing to do until the next day, or, with the frog method, for an hour. In this way you can work on fifteen or twenty tests at one time. With the cat method you can only work on one animal at a time, and it therefore takes a great deal more instead of less time. I think Dr. Rowe is to be congratulated on his constant temperature tank for frogs, because that is something the practical laboratory needed for quite a long time.

LYMAN F. KEBLER: I have been interested in this discussion. I confess that there still seems to be so very much that is unsatisfactory in these methods. We, of course, in our work are asked to pass on the quality and character of goods imported into the country and especially from one state to another. We have tried to use some of these physiological and biological tests, as you call them, and then run up against exactly these various propositions, and the result frequently is that the goods have to be released, and, therefore, they come on the market probably not coming up to the strength called for by manufacturer A or manufacturer B. It is very interesting to find that after you do release some of these products or drugs, manufacturer A finds them perfectly satisfactory but manufacturer B does not find them satisfactory at all. He calls them unreliable and we are criticized for letting them in. Here is the other proposition: Suppose that we have these methods and we run up against these snags—these apparently unsatisfactory conditions that our friends record here—what are we to do about it? Are we going to hold up a man's goods until these things are digested? We cannot do that. As a matter of fact, the situation now is that we have to let the goods in under the conditions that obtain. I certainly hope that something will be done to rectify the situation. Probably the criticism sometimes comes that we let in and permit shipment of low-grade adulterated goods. That may be under the conditions by which we are operating. That not only holds for these biological tests but some of the other tests that we run up against. Dr. Kraemer reported some article with fifty percent adulteration. We should take that up and see where we stand.

ROBERT A. HATCHER: May I say that my ambition is to see this done. We are really going the wrong way around about the whole method of the examination of tinctures. We are going at it in a positively silly fashion. At the outbreak of the war I was in communication with the medical branch of the War Department, and had about gotten a promise to have enough crude digitalis leaves assembled in one single lot which was to be mixed thoroughly and then tested, after which all the tincture of digitalis of the United States Army was to be made from that single lot. In this way, no matter where a physician went from camp to camp, wherever

he might be he would have the same tincture to deal with. That was carried out partially. The Government assembled six hundred pounds at Minneapolis and six thousand pints of tincture digitalis was made from that one single lot. But unfortunately it did not supply the whole Army. Previous to this on testing again and again specimens for the Army in different camps, I could find no activity, and they could not get any effect, and that was simply because the digitalis was of inferior grade.

AMBROSE HUNSBERGER: I am in sympathy with Dr. Hatcher's suggestions because the question of digitalis has been one that interested me particularly during the past year. I was also interested in Professor Kraemer's statement regarding the digitalis that he grew, comparing it with the digitalis on the market at the present time. I was wondering whether he compared it with the digitalis that he bought on the market during the past year or whether he found it two or three times as strong as the U. S. P. standard.

OBSERVATIONS ON DIGITALIS SIBIRICA.*

BY HEBER W. YOUNGKEN.

About two years ago, the writer received a number of samples of medicinal plant seeds from the Bureau of Plant Industry of the United States Department of Agriculture. Among these was a generous supply of the seeds of *Digitalis Sibirica* Lindley.

Some of these seeds were sown in a seed pan in the greenhouse of the Philadelphia College of Pharmacy. They were found for the most part viable, for ere long they germinated into a goodly number of seedlings. These seedlings were later transplanted to boxes on the roof garden containing ordinary garden soil. Here they thrived so well, forming, in most instances, a good rosette of leaves at the end of the season, that his attention became more concentrated upon them.

He next conceived the idea of determining how the pharmacodynamic properties of their leaves compared with those of *Digitalis purpurea* Linne. The results of a biologic assay, performed by testing the tincture of the leaves (prepared in accordance with the U. S. P. method prescribed for Tincture of Digitalis) on normal frogs at a temperature of 22° C. by the one-hour frog method, showed the tincture to be three-quarters over the strength required for the U. S. P. Tincture of Digitalis. Moreover, in every case where the dose was toxic, the heart was found to have stopped in systole. The last effect is the same as has been recorded for all the members of the Digitalis series of cardiac tonics.

As yet he has not had the opportunity to study the pharmacotherapy of the leaves, but, judging from the results of the biologic assay, they may later be found at least as efficient as those of *Digitalis purpurea* L.

Upon searching the literature for botanical references, only one of any value could be found. This was a short article by Lindley in "Digitalium Monographia" published in 1821, in which he pictures the plant in colors, mentions a few of its macroscopic characteristics, and states that its habitat is Siberia and Tartary.

The meagre data on this plant up to the present, linked with the facts that it is so easily grown and has strong prospects, on account of its pharmacodynamic properties, of becoming one of our valued cardiac tonics, inspired the writer to make a botanical investigation, the results of which are hereby presented.

*Read before Scientific Section, A. Ph. A., New York meeting, 1919.

MATERIALS.

The material used in this investigation included seeds and first and second year plants of *Digitalis Sibirica* Lindley. The seeds were procured from Dr. W.



Digitalis Sibirica, Lindley.—Aerial portion of first year's growth.

W. Stockberger of the Bureau of Plant Industry, United States Department of Agriculture. From these were raised first and second year plants in ordinary garden soil, on the roof garden of the Philadelphia College of Pharmacy. Additional material in the shape of leaves and plants of the second year's growth was furnished by the Bureau of Plant Industry from its Arlington farms. A part of this material was studied in its natural condition, a part pickled in 50% alcohol for additional observation, and the balance made up into tincture. The leaves employed in the biologic assay (*vide supra*) were obtained from plants of the first year's growth. They were air-

dried by placing them in weak sunlight for four consecutive days, at the end of which period they were perfectly dry. The leaves were then ground to a No. 60 powder and a tincture prepared from them in accordance with the U. S. P. IX method prescribed for Tincture of *Digitalis*.

DESCRIPTION OF PLANT.

Digitalis Sibirica Lindley is a biennial plant indigenous to Siberia and Tartary, but readily adapting itself to cultivation in the latitudes of Washington and Philadelphia. From an underground fibrous root system, there appears, before the close of the first season, a rosette of leaves showing the following macroscopic characteristics: Oblanceolate; 6 to 14 cm. in length, 2 to 5 cm. in breadth; summit mucronate; base somewhat cuneate, tapering into a winged petiole, 2 to 6 cm. long; margin, coarsely serrate in upper portion, becoming distantly serrate in lower; upper surface dark green, becoming on drying olive-green, lower surface paler green, nearly glabrous; venation, pinnate-reticulate, midrib prominent and brown, the brownish veins of the first order slightly elevated and diverging from the midrib at angles of 23° to 33° , anastomosing near the margin; very slightly pilose along veins, particularly in the lower part of lamina and along the margin of the petiole; texture membranous becoming fragile upon drying; taste bitter; odor resembling but fainter than leaves of *D. purpurea*.

During the early autumn of the first year the leaves perish, but the root system lives over the winter. The following spring it becomes more extensive, producing numerous additional branches. During this same season an aerial stem sprouts forth which elongates until by mid summer it may attain a length of 6 dm. This stem bears several branches. Both main stem and branches are green, sparsely hairy and quadrangular with prominent ridges between the angles. These bear foliage leaves below and green bracts and flowers above. The foliage leaves have

the following characteristics: Oblanceolate and winged petiolate and more or less crowded below, resembling the leaves of the first year's growth, oblong-ovate to ovate lanceolate above, becoming gradually shorter toward the summit of the inflorescence; alternate; 6 to 17.5 cm. in length, 2 to 4 cm. in breadth; exstipulate; apex acute or mucronate; base somewhat cuneate; margin, serrate above, becoming distantly serrate, sometimes denticulate, and usually entire toward the base; upper surface dark green, both surfaces only slightly pilose; venation pinnate-reticulate, midrib prominent and brown, the veins of the first order diverging at angles of 23° to 40° , anastomosing near the margin; texture membranous to subcoriaceous; taste bitter; odor resembling but fainter than the leaves of *Digitalis purpurea*.

The inflorescence is an elongated raceme which bears numerous bracts and yellow, tubular, drooping, slightly irregular flowers. The bracts are foliage-like below but gradually diminish in size as the inflorescence axis is ascended, until near the summit they become only 4 mm. long and 1 mm. broad. The hermaphrodite flowers are borne singly on the

ends of villose pedicels. The calyx is composed of 5 slightly gamosepalous sepals which are subulate and villose. The corolla consists of a yellow inflated, gamopetalous, hirsute tube with a projecting lower lip. The upper lip and portion of inner surface are marked with purplish red spots. The androecium consists of four didynamous stamens with good anthers. The gynoecium is bicarpellate and consists of a two loculed ovary with central placenta, bearing numerous small ovules, an elongated terminal style and a bilobed stigma. The fruit is a two-celled woody capsule 10 to 13 mm. in length, with calyx adherent. The seeds are small, numerous, brown in color, and richly albuminous.

The second season's growth of the plants under cultivation in Philadelphia died to the ground about the middle of July. From the root system there then sprang forth a rosette of long, light green lanceolate leaves. Whether another floral stem also arises, the writer has not yet been able to determine. No evidence of the same has appeared up to August 9th.

HISTOLOGY OF THE LEAF.

Dorsoventral and surface sections of the leaf show the following microscopic peculiarities:

The upper epidermis is composed of a layer of cells which vary in outline from rounded to ovate to somewhat elongated, as observed in dorso-ventral sections. The outer walls of these cells are more or less convex and covered by a thickened

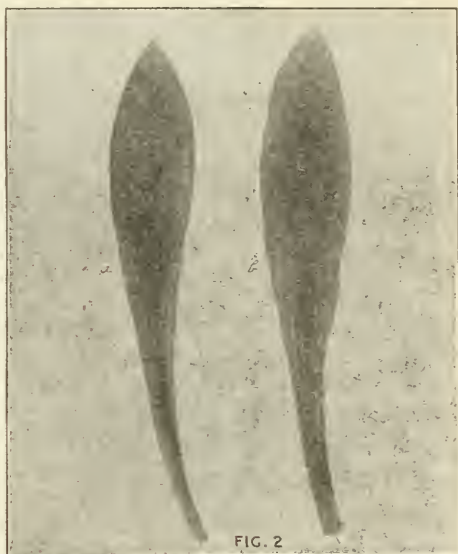


FIG. 2
Digitalis Sibirica, Lindley—Two leaves from first year's rosette, ventral aspect (a), dorsal aspect (b).

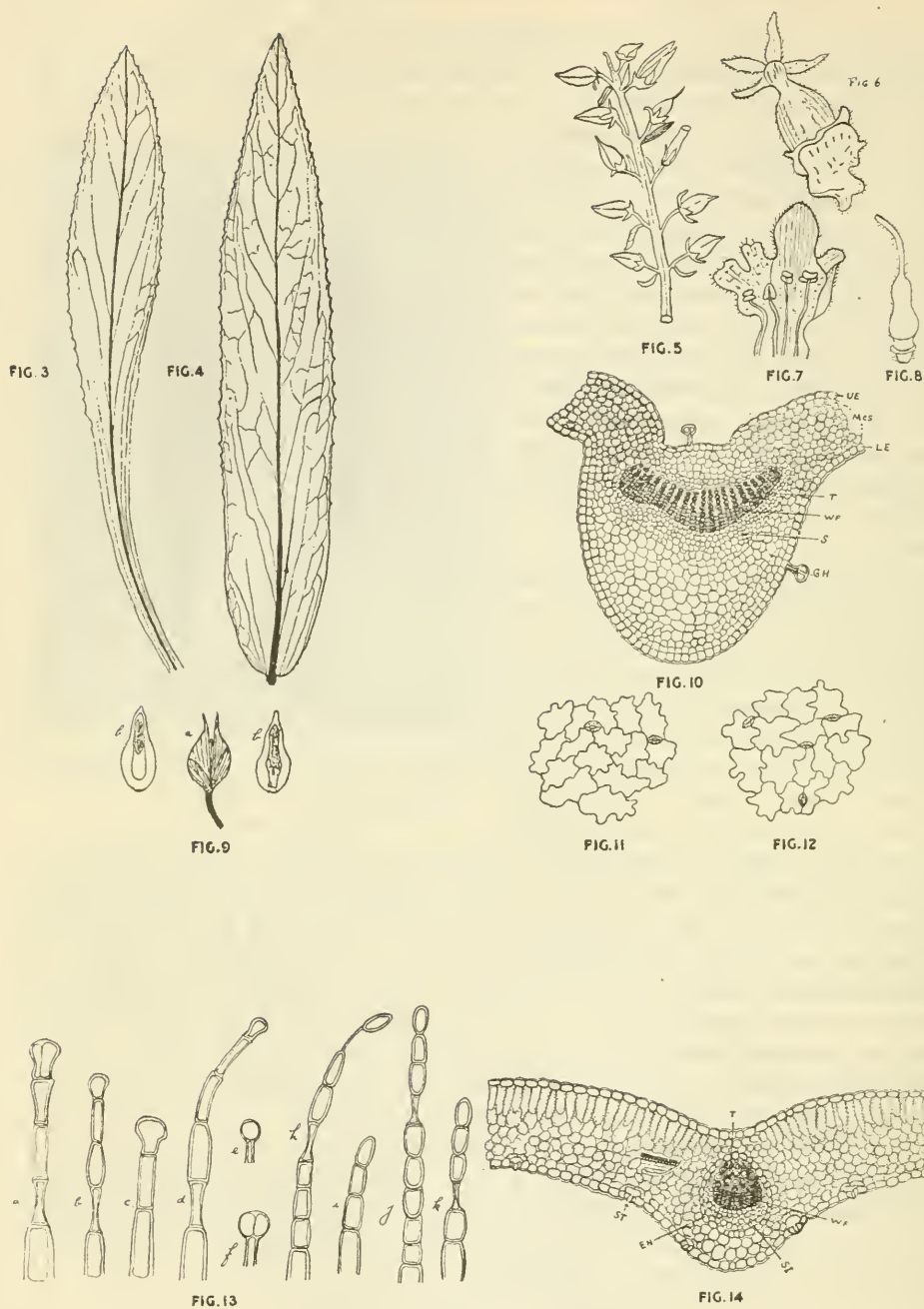


Fig. 3.—Leaf from basal portion of stem of second year's growth of *Digitalis Sibirica*. Note the winged petiole. Fig. 4.—Leaf from portion of stem higher up of *Digitalis Sibirica*. Fig. 5.—Terminal portion of inflorescence of *Digitalis Sibirica*. Fig. 6.—Flower of *Digitalis Sibirica*. Fig. 7.—Corolla tube dissected, showing stamens within. Fig. 8.—Pistil of *Digitalis Sibirica*. Fig. 9.—Fruit of *Digitalis Sibirica* in process of dehiscent (a); valves of same separated exposing septum, placenta and seeds (b). Fig. 10.—Transverse section through midrib region of leaf of *Digitalis Sibirica* showing upper epidermis (UE), lower epidermis (LE), mesophyll (MES), tracheae (T), wood fibers (WF), leptome (S) and glandular hair (GH) (highly magnified). Fig. 11.—Surface view of portion of upper epidermis of leaf of *Digitalis Sibirica* (highly magnified). Fig. 12.—Surface view of portion of lower epidermis of leaf of *Digitalis Sibirica* (highly magnified). Fig. 13.—Several types of glandular hairs found on leaves of *Digitalis Sibirica* (a, b, c, d, e, f); various forms of non-glandular hairs found on same (h, i, j, k) (highly magnified). Fig. 14.—Transverse section of portion of lamina outside of midrib of leaf of *Digitalis Sibirica*, showing upper epidermis (UE), palisade parenchyma (P), spongy parenchyma (SP), lower epidermis (LE), stoma (ST), trachea (T), wood fibers (WF), sieve tissue (SI), and endodermis, surrounding fibrovascular tissue of vein (EN) (highly magnified).

cuticle which appears to be crenulated along the outer margin. The vertical walls of the epidermal cells are wavy, as observed in surface view. Scattered here and there amongst the regular epidermal cells are slightly elevated stomata which appear in the material examined to be more numerous on this epidermis of the lower leaves than on the upper ones.

The cells of the lower epidermis are similar in character to those of the upper epidermis but many more stomata are evident. Glandular and non-glandular hairs are present on both lower and upper epidermis as outgrowths of individual cells. They are present in fewer numbers on the upper than on the lower epidermis. The glandular type appears to predominate. There are four kinds of these, *viz.*: (1) a one-celled stalk and a one-celled glandular head, (2) a one-celled stalk and two-celled glandular head, (3) a uniseriate stalk and a one-celled glandular head, and (4) a uniseriate stalk and a two-celled glandular head. The second type far outnumbers the others. The third type attains a length of 356.5μ .

The non-glandular hairs appear less abundant along the margin of lamina and petiole but never in large numbers such as are found in *D. purpurea*. As in *D. purpurea* certain cells in the course of the hairs frequently have collapsed walls. The length of these hairs appears to range from 65μ to 564μ .

The mesophyll between upper and lower epidermis is differentiated into upper palisade and spongy parenchyma regions. The palisade region consists of a zone of long and short columnar shaped cells, one to two layers thick, which, in the regions of the midrib and stronger veins, become more or less spheroidal in character. The spongy parenchyma region consists of more loosely arranged irregularly spheroidal to spheroidal shaped cells with prominent intercellular spaces between various components. Through this region course branched collateral fibro-vascular bundles, each of which is surrounded by a distinctly clear endodermis. In these bundles xylem is uppermost, phloem beneath. The spiral type of trachea predominates in the xylem. The phloem is entirely devoid of bast fibers.

The midrib contains a broad somewhat semilunar-shaped area of fibro-vascular elements in which xylem is uppermost, phloem beneath. The xylem region contains chains of radically arranged spiral and pitted tracheae and thick walled, angular, wood fibers. The latter are always beneath the tracheae. The phloem is crescent-shaped and devoid of bast fibers. No sclerenchyma are present. The parenchyma cells above and below the fibro-vascular area are pitted, for the most part clear, and of rounded to polygonal outline. Occasionally, by no means always, those near the upper and lower epidermis and above and below the fibro-vascular region become slightly collenchymatic. The mesophyll cells of the lamina immediately adjacent to the midrib are not differentiated into palisade and spongy parenchyma.

HISTOLOGY OF THE STEM.

When examined microscopically, this organ shows the following characteristics, passing from periphery toward the center:

1. A protective epidermis whose cells, as seen in transverse view, vary from irregularly spheroidal to slightly tangentially elongated, with convex outer and inner walls and which, when examined in surface view, possess irregularly rectangular to elongated polygonal outlines. The outer walls of these cells are cutinized,

the cuticle in transverse view attained a thickness of 10μ . Stomata are found here and also a scattering of glandular and non-glandular hairs.

2. A cortex of varying thickness, depending upon the age of the portion of stem examined, and consisting of more or less tangentially elongated cortical parenchyma cells with simple pored walls and small to moderate sized, angular intercellular-air-spaces. The cortex cells become larger then smaller as the pericycle is approached.

3. A pericycle consisting for the most part of an irregular, interrupted circle of sclerenchyma fibers with strongly lignified walls, varying at different points in thickness from one to two or three layers of cells.

4. A phloem composed of sieve tubes, companion cells, and phloem parenchyma, but no bast fibers. Narrow, thin walled medullary rays separate this region into numerous patches.

5. A cambium of meristematic cells, forming an irregular circle.

6. A xylem about three and a half times as broad as the phloem region and composed of closely set radially arranged groups of wood fibers and spiral and pitted tracheae, separated by narrow medullary rays (1 cell wide) whose walls, like those of the wood fibers and tracheae are strongly lignified. The outer region of the xylem arms is composed for the most part of woody fibers with but few tracheae. The tracheae gradually increase in number until the inner portions of the arms show more of those structures than wood fibers.

7. Conjunctive tissue composed of cells having lignified, pitted walls separates the xylem from the next region or,

8. Pith, a broad central zone of more or less isodiametric to elongated parenchyma cells with pitted walls. Some of these cells, especially in the outer region, have lignified walls.

HISTOLOGY OF THE ROOT.

This organ, in its secondary growth, shows the following structural peculiarities, passing from periphery toward the center:

1. Several layers of tabular cork cells with brownish walls.

2. A cork cambium of meristematic cells.

3. A secondary cortex of numerous layers of tangentially elongated more or less parallel phloem patches, composed of sieve tubes, phloem cells and companion cells, alternating with narrow phloem medullary rays.

4. A cambium of irregular circular outline, composed of meristematic cells.

5. A xylem, comprising a broad central porous cylinder of numerous narrow xylem arms alternating with medullary rays, one cell wide. Each xylem arm is composed of many spiral and pitted tracheae, wood fibers with oblique slits in their walls, and wood parenchyma cells. All of the xylem elements have lignified walls.

MAINTAINING FROGS FOR TEST PURPOSES.*

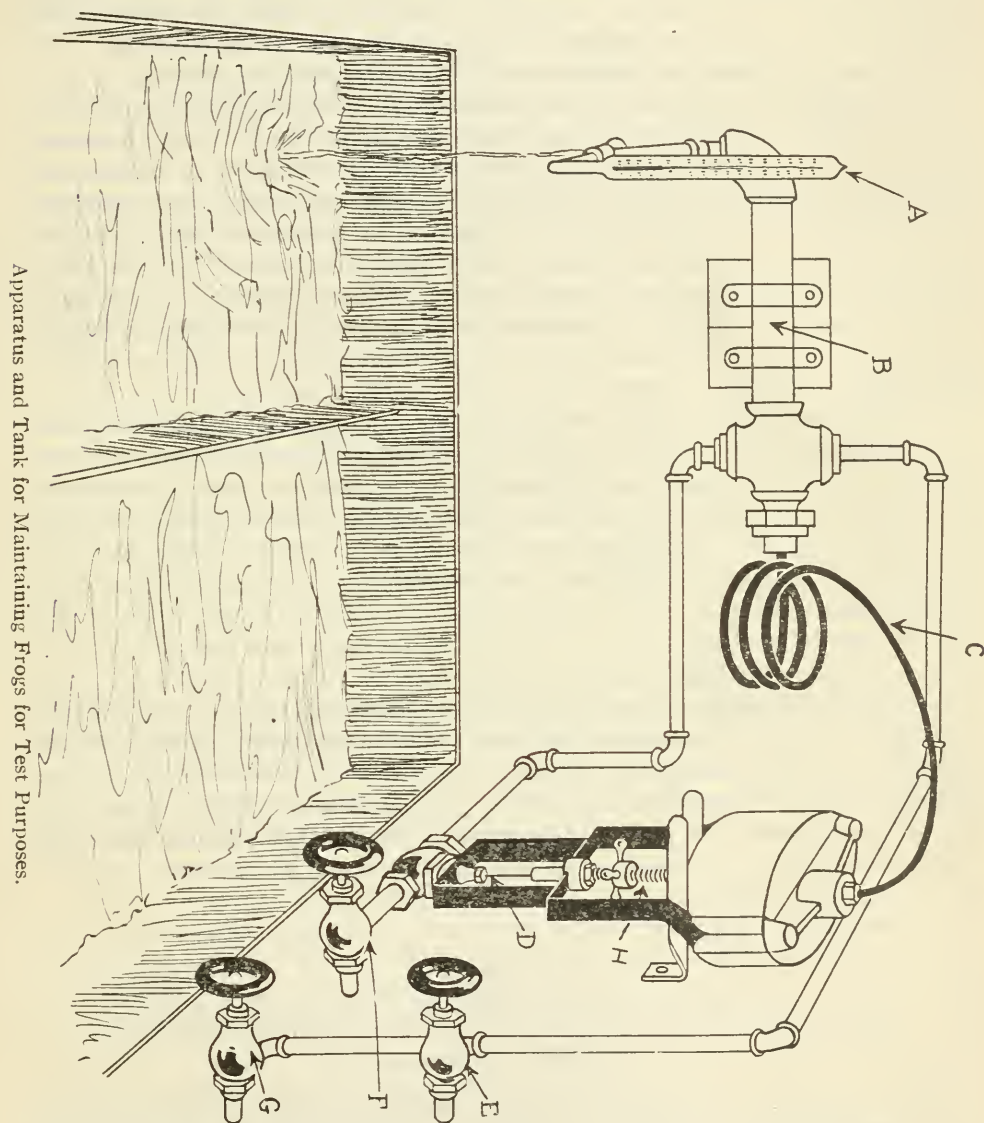
BY L. W. ROWE.

The proper maintenance of a supply of normal frogs throughout the year, when fresh supplies are not available daily, requires special facilities to avoid excessive losses and to insure uniform results when standardizing preparations of heart tonics of the digitalis series by the frog methods.

The chief source of trouble lies in the variation in temperature of the water in which the frogs are stored. In the summer the tap-water in the mains rises to 24° and 27° C., which is too warm, causing epidemics of disease to flourish among

*Read before Scientific Section, A. Ph. A., New York meeting, 1919.

the frogs. In the winter the temperature of the tap-water goes as low as 4° C. and at this temperature the frogs are too sluggish. Furthermore, in the winter the sudden change of the frogs from the very cold water to that in which the tests are conducted is not uniformly responded to even if they are placed in the warmer water an hour or two before injections are made.



It was, therefore, thought desirable in our laboratory to control the temperature of the water entering the frog tank so that it would be the same during the entire year. The task becomes more complicated when it is realized that the tap-water must be artificially cooled in the summer and warmed in the winter.

The sketch represents the arrangement of the apparatus and the tank. The tank itself is made of copper and placed in a chamber 4 ft. \times 4 ft. \times 4 ft., five

sides of which are sealed and insulated from room temperature by a thick layer of cork board. The sixth side is a tight fitting refrigerator door with three spaced panes of glass. Since the door is opened only two or three times a day the air in the chamber is maintained at approximately the same temperature as the incoming water. From the sketch it can be seen that three pipe lines, for hot water (E), tap-water (G), and ice-cooled water (F), respectively, supply the tank. The refrigerator for cooling the water is located below the sealed chamber. The thermometer (A) shows the temperature of the water entering the tank.

The apparatus which controls the temperature of the water which enters the tank, is known as the Sylphon Tank Regulator and is made by the American Radiator Co. A bulb containing a liquid with a high coefficient of expansion is situated in a metal jacket (B) through which the final mixture of warm and cold water must pass. This metal jacket is connected by pressure tubing (C) with a needle valve (D) in the ice cooled line. The expansion or contraction of the liquid in the bulb controls the amount of cold water which is admitted by opening or closing the valve. A spring (H) connected with the needle valve can be tightened or loosened so that any desired temperature will be necessary to open or close the needle valve.

In summer the hot water is not used at all but enough ice-cooled water is let in by the needle valve to cool a small stream of tap water to the desired temperature. In winter the temperature of the tap-water is raised to a point a little above that required, by opening the hot water valve slightly, then the needle valve lets in enough water from the cold water line (which in the winter is equivalent to a tap-water line since no ice is placed in the refrigerator) to cool the stream to the desired temperature.

To comply with specifications in the U. S. P., frogs must be kept at 15°C until wanted for immediate use.

It has been found in this laboratory that this temperature (15°C) is well suited to the proper storage of normal frogs and with the apparatus described above and the arrangement of it in the sealed chamber we are able to maintain this temperature to within about 1°C throughout the entire year, if necessary. While very sensitive to improper handling it is equally susceptible to proper adjustment and has been found satisfactory for maintaining an even temperature at all seasons.

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PARKE DAVIS & COMPANY,
DETROIT, MICH.

PHARMACEUTICAL EDUCATION AND OPPORTUNITIES.*

BY HENRY J. GOECKEL.

The entrance of the United States of America into the "World War" no doubt, brought before the educators and other leaders in pharmacy the fact that our colleges have not prepared graduates along certain lines within the legitimate fields of the profession. The war requirements of the United States Army in particular have brought this to the fore.

To those who have looked upon pharmacy and practiced the same as an im-

* Read before Section on Education and Legislation, A. Ph. A., New York meeting, 1919.

portant branch of medical science and art, the experience of the past two years is no surprise. For years past we have occasionally read in our periodicals discussions on "What is the matter with pharmacy?" and "Why is pharmacy declining as a profession?"

Has it declined? Or, has it failed to recognize part of its mission and legitimate field of growth?

The writer is, possibly, one of a decided minority who think it has failed to read and understand the signs of the times sufficiently and accurately.

The war experience has brought out very clearly that our medical colleges cannot load up the minds of their students with excessively detailed courses of instruction in the technical, biologic and chemical branches of medical science without impairing their grasp of the clinical or physical diagnostic phases, which are the most important and probably the most difficult. Without a correct recognition of the subtle lapses from normal and a resulting correct interpretation of the same, all else is valueless. A correct diagnosis is the most important thing in medicine.

It is the writer's firm conviction, based on his experience, that the clinical pathology or laboratory diagnosis, and pharmacology are pursuits which in their requirements or qualities come more appropriately within the realm of pharmacal medicine rather than in that of clinical medicine. These diagnostic methods and the understanding of the qualities of remedial measures are such as to require a more thorough pharmaceutical and chemical knowledge than is imparted in colleges of medicine.

The training given in the usual three years of pharmaceutical education and the experience of prescription compounding are a better preliminary than the pre-medical and medical courses as given at our colleges of medicine. It may, perhaps, be contended that medical students receive adequate training in their two years' pre-medical chemistry. Teaching a future physician chemistry from an industrial and engineering view, as is done in some university departments of science, is a very poor preliminary for one whose whole life's work will be in the realm of physiologic pursuits. From the writer's own experience, he believes that most of those who teach these subjects have no understanding of the requirements for such students.

Many of our colleges of pharmacy give a sort of a course in urine analysis, etc., and in bacteriology. It would, perhaps, be better if they failed to give any, as these courses certainly do not qualify their recipients, and account for the many failures among those attempting to branch out in medical laboratory work. Many of these courses at colleges of pharmacy are not as good as some of the leading training schools for nurses are giving to their students, whom they aim to qualify as office nurses or as laboratory technicians. Such graduate nurses will probably pre-empt the field for laboratory technicians, as they have a better understanding of hospital requirements than do others.

A thorough training in the field of laboratory diagnosis, etc., will better qualify graduates of colleges of pharmacy for positions in biological production and standardization, and as pharmacologists. Such training can probably only be undertaken by a limited number of our colleges of pharmacy, as part of the work must be given by the medical faculties. Such colleges of pharmacy can give all

the training for a Doctor of Pharmacy (Phar.D.) in biology and chemistry excepting a course in gross anatomy; courses in normal and pathological histology and neurology.

If the college has a well-equipped department of biology it can perhaps give the course in embryology. If it has a well-equipped department of physiologic chemistry under the direction of a trained and experienced physiological chemist and clinical pathologist, it can give the courses in these two subjects, supplementing the same by experience in hospital laboratories as do medical colleges. Otherwise these, likewise, should be given by the medical faculty. The bacteriology can better be given under pharmaceutical auspices, as the course at medical colleges are too narrow. They dwell on the pathogenic organisms, and neglect the industrial, sanitary and agricultural phases. They give sufficient for a medical doctor (M.D.), but not for a doctor in pharmacy (Phar.D.).

With the rapid advance in biological and physiological research, the time is not far off when a trained pharmacologist will be one of the regular staff of every first-class hospital. His duties will be to advise the staff as to what remedies, and what particular form of the same and what method of application are advisable. Such a hospital or community pharmacologist will also need to see that the various preparations are correctly prepared by the supply house, hospital apothecary or nurse, as the occasion requires. In October 1918, there were in the United States 4,927 hospitals with from 10 to 100 beds, and 1518 with from 100 to 500 or more beds.

A few illustrations from the writer's experience will perhaps shed light upon the gap between clinical medicine and pharmacy.

Take the white lotion, or *Lotio Alba Comp.*, used extensively in the local treatment of acne. The success in the use of this lotion depends upon its correct pharmaceutical preparation. If the zinc sulphate is in excess, or if the sulphurated potash is of poor quality, instead of a bland lotion you will have a caustic and irritant due to the excess of zinc sulphate. No reasonable amount of manipulation of sublimed sulphur in a mortar, with or without the aid of alcohol, will reduce it to an impalpable powder. The use of precipitated sulphur is not as efficient therapeutically. I know of an instance where a physician noted the caustic action and thought to eliminate this danger by prescribing zinc sulphide in place of the usual interacting substances. A dried insoluble precipitate of this type is about as impalpable as pumice.

While an apothecary at one of the larger hospitals, the writer prepared this lotion so as to produce an impalpable precipitate. This was accomplished by saturating an aqueous solution of the sulphurated potash with sublimed sulphur, on a hot water bath. It was filtered while hot, and then precipitated in the usual manner. This was employed on hundreds of clinic cases without adverse comment. My successor prepared this lotion in the usual manner, and was promptly taken to task because of the marked difference in the results when applied. A knowledge of the therapeutic requirements was essential for the proper application of pharmaceutical knowledge.

I have seen a case where a compound zinc oxide ointment was prepared with a high grade oxide, on an ointment slab. A lot was then prepared by another prescriptionist with the usual cheaper grade of zinc oxide, and manipulated in a

mortar. The result, due to a gritty preparation, was an aggravation of the cutaneous symptoms, instead of the improvement obtained with the previous lots. It also resulted in some undesirable publicity for the pharmacy.

More recently (at an excellent clinic on burns, treated by the paraffin method), the chief of the clinic reviewed the various methods employed to treat burn cases. Among the methods was the use of warm water baths. He mentioned those claiming marked success and those reporting failure. To one with a pharmaceutical basis to a biological education it would immediately be patent that the success or failure will depend upon the temperature of the water and upon the length of time and frequency of application.

I recently saw a physician prescribe the Carrel-Dakin solution as a wet dressing on a bandaged hand. The result was an intense burn, as anyone with a good pharmaceutical and pharmacological knowledge would have expected from the group characteristics of the halogens.

These few examples tend to show that there is a gap between the physician and the pharmacist, and aid to locate the same. This is a gap which should be bridged by the pharmaceutical profession.

This is not presented as a criticism of our pharmacy graduate (Ph.G.) courses, which answer a definite need of the community. Nor to minimize the industrial and chemical fields of endeavor for which the colleges aim to qualify their graduates.

I would even urge that the commercial courses, as presented in the Ph.G. years, be made a prerequisite for such advance courses to teach value and methods, thereby to help eliminate the waste and extravagance which is so conspicuous in many hospital and clinical laboratories.

Bridging this gap will redound to the interest of pharmacy and the welfare of the community. The physician looks chiefly to the hospital for knowledge. Such training will also preëminently qualify pharmacists for success in the field of public health and sanitation. It will make untrue any charges that American pharmacy is not qualified to shoulder its responsibilities, be it in times of war or in times of peace.

CLINICAL AND PATHOLOGICAL LABORATORIES,
MUHLENBERG HOSPITAL, PLAINFIELD, N. J.

ABSTRACT OF DISCUSSION.

L. GERSHENFELD: The author has made two remarks in his paper which seem to be contradictory. He states that courses in urine analysis and bacteriology in schools of pharmacy should be optional, and then further on states that bacteriology should be taught in pharmacy schools and not in medical colleges.

H. J. GOECKEL: I said in the paper that some of our colleges of pharmacy give a sort of a course in urine analysis and in bacteriology and that it would perhaps be better if they did not give any of these courses because they did not qualify their recipients.

R. P. FISCHER: I must take exception with reference to some of the courses given in the institutions of Philadelphia. I know that the students who qualify in these courses are certainly fitted to do bacteriological work.

H. J. GOECKEL: I still maintain that the graduates of colleges of pharmacy, speaking from my experience, are not qualified properly for this work.

R. P. FISCHER: I must protest against such statement going out from this Association unless there is a basis for it. I know bacteriologists who are graduates of these very courses of

which I speak who hold important positions and have shown that they are well trained for the work.

H. J. GOECKEL: I am basing my remarks on my own experience, and I would like to have Dr. Jacob Diner speak on the subject, as I know he is thoroughly acquainted with it.

JACOB DINER: I can only agree with Dr. Goeckel in part. The teacher of the subject should have not only a theoretical knowledge of it but a thorough practical experience and he must everlastingly keep at his work. It is a mistake to make a sweeping remark to the effect that the subjects and courses cannot be given in a school of pharmacy or are not being given. Pharmacists are often better qualified for this work than the average physicians. To them it is scientific work; to many medical students it is drudgery, a subject from which they hope to pass on to what, in their estimation, is more important work. The pharmacist considers such work a privilege, in which he participates with the physician and is imbued with the responsibility involved. In my opinion the educated pharmacist is eminently qualified for this work, and in the selection of teachers regard should be had for their training and experience.

WHERE ARE PHARMACISTS TEN YEARS AFTER GRADUATION FROM COLLEGE?*

BY ZADA M. COOPER.

At various times in discussions arising in this Section or in sessions of the American Conference of Pharmaceutical Faculties, the statement has been made that, if we insist upon high school entrance requirements, graduates of colleges of pharmacy will not remain in retail pharmacy. In other words, a man or woman with four years of preparatory work and two or more years in college will be too ambitious to be satisfied with retail pharmacy, in consequence of which the clerk shortage will become more acute and the proprietor more and more overworked. It would be conceded, perhaps, by most of us, that most localities would be better off with fewer drug stores, even though the reduction in numbers were the direct result of inability to get clerks, but that is not the question. Rather, *is* it true that pharmacists who have graduated from our high schools will not remain in retail pharmacy?

Because I always doubted the probability of their leaving pharmacy to any considerable extent, and to verify my belief, I have gathered together a few figures from the College of Pharmacy of the State University of Iowa. Of course, I know that one can make statistics prove anything and I know, too, that what is true in Iowa may not be true in any other state in the Union. However, I suspect that all of the neighboring states of the upper Mississippi valley would show pretty much the same state of affairs.

During the ten year period ending with June 1918, 10.8 percent of our graduates had not been graduated from high schools, though only during the last three years of the period was there a high school entrance requirement. During the other seven years large percentages were voluntarily high school graduates. The investigation might almost have ceased at this point, for, if they chose to come to a college of pharmacy after having high school preparation one would hardly expect them to quit after graduation to go into something else.

What then actually became of these graduates? This is what I found: only 7 percent are out of the profession, 6 percent probably permanently. Closer examination of these figures revealed the fact that one-fourth of them are practicing

* Read before Section on Education and Legislation, A. Ph. A., New York meeting, 1919.

physicians, one-fourth are women who married and gave up pharmacy, one-fourth never practiced, and most of this group were not high school graduates, the last fourth practiced pharmacy for some time but had then gone into other business ventures or retired altogether. So much for those who have gone into other fields of endeavor.

Nine percent are in manufacturing or analytical lines. All of these had high school preparation and most of them have had Ph.C. degrees, but not all. Between 2 and 3 percent are teaching and these all had high school preparation or more; 3 percent have held hospital positions; 76 percent are in retail pharmacy either as clerks, managers or owners; insufficient records make it impossible to classify the remaining 2 percent. Of the whole number, 10.3 percent have had advanced work, a figure a little below the combined percentage of those who are in manufacturing or analytical work or teaching.

Probably statistics covering a twenty year period would show somewhat different results, for, naturally, more people would be retiring during the second ten years than the first. On the other hand, to go much more than a decade back would give us conditions less like those that exist now. That is particularly true of education, and conclusions drawn from a period more than ten years ago would not be of much value in present day conditions.

Perhaps some one may be wondering what became of students who did not graduate. Now that we have a prerequisite law, that is of no special concern, but before its enactment approximately one-third of the students who matriculated did not graduate. I haven't statistics as to their preparatory work, but no doubt the number of high school graduates was somewhat less than in the other groups. Records are in every way less dependable than among graduates, but I find that 75 percent stayed in the profession, 18 percent are out of it, and the whereabouts of 7 percent are unknown. A comparison of these figures indicates at least two and one-half times as many out of the profession as in the group who remained in college to take their degrees. Where I have had personal acquaintance with this group, it is evident that many of these were misfits who stayed only a short time. Of the 75 percent who continued to be druggists, many did poorly in school and quit early in the year, or at the end of one year, because of being conditioned in one or more studies. Almost none were of the sort that would spend much time in any sort of education nor were they individuals with great ambition, the reverse rather. The fact that those who did not graduate show a higher percentage of low entrance preparation, did poorer work in college, landed in plugging schools or took board examinations after short preparation and still a slightly smaller percent remained in retail pharmacy surely does not disprove our original statement. Of course we must grant that such material added just that many so-called pharmacists, if that alone is the desideratum.

Again, if a high school requirement is too high, it should keep young people from entering pharmacy at all and that such an argument is advanced we are all well aware, though that is not a question to be discussed in this connection, except incidentally. Instead of choosing something else as we might expect them to, the record in states where it is in force shows that if there has been a falling off at all, it has only been a temporary one with an early return to normal attendance and with a much more desirable class of people.

A few facts about the enrollment of the year just past may be of interest. It was a strange year in many ways and perhaps not typical, but so far as preparatory work went it did not differ much, if at all, from that of other recent years. Of the whole enrollment including the S. A. T. C., 22 percent had had one or more years of liberal arts work in addition to the required four years in an accredited high school; 8 percent did Ph.C. work. One cannot predict what they will do when they get out of college, or how long they will stay in pharmacy, but a good proportion of them intend to go into retail pharmacy. Doubtless not all of them will remain in that branch of it, for some are sure to take more college work, if not immediately then a few years later.

To come back to the original thesis, that high school graduates do not stay in retail pharmacy: granting that 7 percent leave the profession isn't that rather a small number?—and granting also that 15 percent become analysts or manufacturers or hospital pharmacists or teachers, is that not a fair ratio? Where are these branches of the profession to get new recruits if not from the output of colleges of pharmacy? Is it not better that they take their training with that end in view than that they should go into retail pharmacy and, later, when they have put all their thought and all their energy into retail problems decide to transfer? No one believes in a narrow individual and the retail experience is good to have and will make anyone bigger and broader, but the goal should be in mind from the beginning and its realization should not be too long deferred. Whatever skill they have acquired by the years of retail practice is skill that is hardly applicable to other different problems only in so far as all training is good discipline.

Again, do not the existing percentages indicate a fair ratio of retailers to other workers? I have no statistics, but I fancy it is not far from correct, and if it is wrong I wonder if it does not err in the wrong direction; that is, should we not be supplying a larger number of men and women to manufacturing and analytical laboratories? Is not the shortage there just as acute as in the retail business?

If this present ratio is about right why should we make entrance requirements low to be sure that we do not lack for clerks and trust to those who have more preparation to supply other branches? It seems obvious that such procedure would be a scaling down of quality all along the line.

“FOR THE GOOD OF THE PUBLIC”—THE SLOGAN FOR SUCCESSFUL LEGISLATION.*

BY W. H. ZEIGLER.

Webster defines the word “slogan” as the “war cry,” gathering—or watchword of a clan in Scotland.

I have selected as the title for this paper “For the Good of the Public,” because after years of experience on a legislative committee intrusted with pharmaceutical affairs, I believe it is the slogan or watchword to be used in all legislative matters.

I am from a State that has been first in a great many historical events, and while we cannot boast of having been the first to pass a prerequisite pharmacy law,

* Read before Section on Education and Legislation, A. Ph. A., New York meeting, 1919.

we are proud of the fact that we have always been able not only to block objectionable legislation but get everything we ask for.

The secretary of this Section, in making his report last year, wondered how South Carolina accomplished so much. I made up my mind at that time to tell you this year how we do it. Now, I assure you there is no trick in it, no graft, nor do we use some hypnotic power. What we have accomplished can be duplicated by every other pharmaceutical organization.

First of all it is absolutely necessary that you have as president of your Association a live, active man; one who is a 100 percent pharmacist, who has the good of pharmacy at heart, and is not ashamed of, or is constantly making excuses for, the profession he represents; one who does not mind the sacrifices he has to make—who is always on the job. We have had several, but for the past two years we have had one of the livest wires that has ever sat in a president's chair. And as a result we have had a good organization.

We do not boast of a large membership, for while there are in South Carolina 940 registered pharmacists, only 443 are members of the state association. But what we lack in quantity we make up in quality.

We have been fortunate also in having a strong legislative committee—one made up of men who are willing to leave their places of business and go to the Capital and stay there until they get what they want. And when they go before the Committee of Medical Affairs in the Senate or House they do their best to convince them that what they are asking for is for the good of the public—that the public must be protected. They realize that not for one moment must they allow these gentlemen to entertain the idea that it is self-interest which prompts them to ask for their endorsement.

A third factor that has played an important part in our success has been that our college is a State institution, having several members of the Legislature as trustees; and we have always coöperated with the Association and sent committees to the Legislature who worked hand in hand with them. I might mention, also, that we have in the House a graduate pharmacist, who has been of great assistance to the committee.

Last month closed the first year of our prerequisite law—the best law of its kind in the Union. An applicant must be a graduate of a school or college of pharmacy, meeting the requirements of the American Conference of Pharmaceutical Faculties, and have at least two years of high school work.

I attended the last meeting of the board of examiners, by invitation. A large number of applicants appeared for examination but only four were accepted as meeting the requirement. The total number for the first year of the prerequisite law was 15 applicants, of whom 12 were successful.

It is of interest to note that in 1914, 77 applicants were accepted for examination, 45 were successful, and 32 failed to pass. I believe this was about the average number that applied previous to the passage of the prerequisite law. Of course I found men present at the meeting this year who blamed this law for the scarcity of druggists, and wanted it repealed. Certainly the law has had a great deal to do with it, but we know that the war also played an important part.

I am satisfied, though, that the status of pharmacy in South Carolina is better than it has ever been. The pharmacists are more prosperous, not because of

the general wave of prosperity, but because there are fewer corner drug stores, less competition, and better pharmacists.

I am satisfied that the prerequisite law is the keynote of the whole pharmaceutical problem. Standardization of schools of pharmacy is necessary, no one will deny, but as long as an applicant for a license to practice pharmacy is allowed to come up for examination without high school requirements,—with a knowledge of pharmacy obtained from quiz compends and correspondence schools,—practical experience that consists of having sold patent medicines, seeds, paints, soda water, etc., pharmacy will never take its place with the other professions.

This Association should not be content until every state in the Union has a strong prerequisite law. If necessary, let us send representatives into the states without such laws, work in them, one at a time, until prerequisite legislation is enacted.

This Association has accomplished great things for pharmacy, but what we need is coöperation. We need a larger membership. We should start a campaign to enlist every pharmacist in America in the cause. I believe the South, for instance, is not well represented. Now, how are we going to accomplish this much-desired end. We made a start in South Carolina this year. The President, in his address, urged the members to join this Association, calling their attention to some of the advantages, and when he asked all who would join to stand up,—30 signified their intention of doing so. Probably very few of these men will ever attend a meeting of this Association, unless we keep in touch with them and show them why they are necessary to the success of pharmacy.

If we could get the American pharmacist to look to the American Pharmaceutical Association as the physician looks to the American Medical Association, the success of pharmacy would be assured. Why is it that on the train last month, going to Atlantic City to attend the American Medical Association meeting, there were 12 or 15 physicians from Charleston alone, while there are probably only two pharmacists from the whole State of South Carolina here to-day. Certainly it is not because the meetings are not interesting enough, or because we are not doing a great work.

I believe one of the reasons is because we do not use propaganda. It takes money, I know, but "money talks." And money spent in this manner will undoubtedly draw compound interest in the upbuilding of pharmacy.

We may as well face the facts. We meet together every year, make good resolutions, hear the reading of interesting papers and reports, but we only represent a few of the pharmacists of America. Why is the American Medical Association such a power in medical affairs? We know it is because of the large membership and the wonderful organization they have. It is because of this membership and organization that they have been able to place medicine on its present high plane.

South Carolina is with you. This year we divided our State into 14 districts, and we have already begun their organization. We are going to enlist every South Carolina pharmacist in the cause. Next year we are going to the Legislature stronger than ever. We are going to ask for \$3,000 to defray the expenses of the Board of Examiners. We are going to ask for protection against the merchant who sells all kinds of drugs and brings discredit upon the honest druggist by offer-

ing for sale intoxicants in the disguise of medicines, and we expect to get this legislation passed, and perhaps more. We are going to accomplish these things by propaganda, using the newspapers, and educating not only the pharmacist, but the public as well, to the importance of pharmaceutical legislation, always keeping before them the slogan—"For the good of the Public."

I acknowledge that the ideas suggested in this paper are not new, for we have from time to time discussed the prerequisite and other laws and this Association has been of great assistance. I have only attempted to emphasize the importance of keeping forever at it, and to inform you of what we are doing in the old Palmetto State.

SELLING AND THE PHARMACEUTICAL PROFESSION.*

BY HERBERT W. HESS.¹

We are gathered together at this time to discuss the problems of selling as related to the possible future growth of those who find themselves known as pharmacists or druggists.

You have honored me upon this occasion with the privilege of approaching your field of economic endeavor in the spirit of analysis, criticism and vision. It is my purpose, then, to attempt so to visualize your present activities that the principles involved will bring greater individual power and a corresponding commercial success.

VISION.

Let us first approach the question of your commercial growth from the personality point of view. It is literally true that "As a man thinketh in his heart so is he." The vision which you as an individual now hold worthy of realization is the motif power of your activity. If your vision is narrow, limited, or perverted due to wrong thinking, laziness, fear, distrust, failure, or a lack of self-confidence, the future picture which you realize cannot but reflect these factors. On the other hand, the extent to which you are plastic as an individual, the extent to which you are susceptible to new ideas combined with ability to think in terms of principle, these elements are fundamental and constitute a sane growth. I take it for granted that your presence here indicates an inner urge on your part to realize a personal feeling of greater power through an interchange of ideas. A convention of this kind is but the gathering together of individual influences which in the intermingling should produce a feeling of inspiration as well as a new individual vision. It is your ability to estimate value and to convert these ideas into business policy which is to give you prestige as a successful pharmacist.

Selling is the driving force of modern business effort. If greater profit is the dominant concept of our present system the executive druggist will succeed according as he comes to think in terms of those factors which bring increased sales.

The location of your store, the selection of your help, the arrangement of your cases and show windows, all these combine to draw passing humanity into your store for purchasing purposes.

*An address before the Section on Commercial Interests, A. Ph. A., New York meeting, 1919.

¹ Professor of Commerce, Wharton School of Business Science, University of Pennsylvania.

Selling as a force involving persuasion and educational processes has not yet brought the mass of humanity to appreciate the necessity, value or possibility of its use of all things related to the drug business. When humanity comes to know just what it wishes or what it is possible as well as necessary to possess in order to realize itself in the realm of "thing" attainment and uses, then business competition will have ceased and our present system be converted into one of supplying mere demand, which is no more than order-taking. In the meantime expediency demands a scientific conception of the selling approach.

The modern drug store in its process of evolution has as its mission in a selling sense to supply the community of which it is a part with prescriptions where disease is involved, and to supply the necessities of the person where health, comfort, and immediate convenience are concerned. It is an institution built on uncertain human moods and frailties where personal desire insists upon immediate satisfaction. The drug business touches the privacy of individual life in its tragic as well as its happy moments. From the cradle to the grave—in birth, in sickness, in love, in health, in marriage, in fête and in sorrow and finally in death, with an incidental postage stamp and a necessary telephone call—in these issues has the modern drug store been conceived. I do not know of a business where the necessities of individual joy or sorrow force the multitudes so often as to the modern drug store. In reality you are a servant of the community. Your mission is service.

PROFESSIONAL VIEW POINTS.

Now the modern drug store presents a peculiar problem from the so-called professional point of view. In any analysis I am led to believe that a so-called professional or ethical idea prevails which often tends to inhibit the commercial possibilities of many. These men are so constituted mentally that they regretfully dispense their soda, look askance at their neighbor who serves lunches and utter protest against advertising efforts of doubtful remedies which the public demands. Thus caught in the influx of public demand, changing economic conditions, and their own desire for professional serenity and dignity they are exceedingly perturbed at the symbolic flow of events. What is actually happening is that all business is becoming professional. All business is having superimposed upon its activity consciousness of a right and just way of doing things. But the motif urge is created of greater demands for a greater profit. Any movement is subject to inconsistencies and evil according as that movement is subject to growth. Our conservative friends see the evil but not the growth. Again, not a business organization to-day but is subject to change in relation to growth according as human desire *en masse* demands things. From the enormous by-product commercial activities of a modern packing plant to the combined restaurant, grocery and meat market the law of growth shows the marvellous ingenuity of human vision to realize individual initiative and larger satisfaction on the part of humanity in obtaining things of use. So I would say that the history of your chain stores, the marvellous distributing system of manufacturers, the far-reaching influence of multitudes of advertisers, these influences represent real 20th century power. And that pharmacist who fails to grasp the possibility of their use in satisfying the increased demand and desire of human beings is a mere order-taker and an aristocrat. He has failed to detect the wisdom elements of modern business life.

It is true that evil is inherent in many of our relations. But as in this instance of prohibition, the day will come when the evil will finally work itself out and when the lessons learned in the ousting will but open new business possibilities. It is perfectly true that in the case of drugs society can be thought of as being served without selling initiative and endeavor. But, the druggist will no longer have the right to expect individual reward or greater financial success with unlimited possibilities of economic attainment. The pharmacist will then have limited his activity to the advice of physicians. His store will pass into a city drug department. He will have lost the zest of business.

On the other hand, I should say that the modern pharmacist who thinks in terms of satisfying the healthy factors of individual desire along with the prescription department is combining a set of forces which tend to give growth to the individual and satisfaction to the community.

Modern business is becoming professional in that we are all compelled to think in terms of principle. Everything has its use and its place. Anything is either good or evil in the life of humanity. Modern life asks for such organizations as will feed the wholesome desires of ourselves. And the druggist is professional according as he begins to eradicate the evil factors of his business with the help of others. To sell the right thing at the right time to the right person is being professional. So to organize your experiences as to interpret your store in terms of satisfying as well as creating human desire is the work of business genius. Business genius always thinks in terms of larger sales through scientific organization. Scientific organization implies getting the right help, classifying their activities and bringing such individual pressure to bear as will result in a hearty coöperation from the soda dispenser to the management itself. Each is a part of a machine, and each must do his work in order that the entire machine may do its part. Business organization always knows when to let the other fellow do his part. Business organization thinks in terms of coöperation in relation to an ideal. Individual initiative consists in the freedom of a system which constantly holds the good-will and hearty coöperation of each one in the organization. And the modern drug store brings success unto itself according as the director of its activities comes to think in these terms.

THE SCIENCE OF SALESMANSHIP.

Selling has a threefold functioning process in its relation to its customers; namely, advertising, salesmanship and an analysis of merchandizing problems. The modern druggist has the privilege of making profits from the advertising of great numbers of manufacturers. But from an immediate selling point of view advertising should be an incessant and changing force in the general store spirit. Drug stores change their spirit too little from a selling point of view. With so much done for them by others they are often neglectful of their own possibilities of increasing sales. The fact of its taking time and money constantly to change the store spirit is no argument. Many window dressers are languishing away because they are not given a chance to display their technique in the commercialization of your articles.

An expenditure on the creation of store atmosphere simply means increased profits. Advertising is so tremendously cumulative in its power that it should

not be looked upon as an expense. It is the force of selling effect which makes one's business think in terms of the future with its visions rather than being memory or a bad venture. Scientific selling will create an atmosphere which gives meaning and spirit to those who enter your store. Suggestion then does its work and desire is being established.

Scientific salesmanship is not mere order-taking. And yet how many co-workers in drug stores are simply order-takers. To hand over goods that have been asked for is not professional business. To educate people with respect to the possibility of human satisfaction in all that you possess and which they do not at the time know about is the future profit-making flowering of incessant selling effort. To know your patrons, to know their standards of living, to understand their peculiarities, to get them to think in terms of your store as the one place to which they desire to come,—these are the necessary human motives back of business as a profession. Selling is basically getting the individual or the many to appreciate your analysis of what constitutes their needs as you, an expert, see it. And every salesman should come to think of himself as an expert of the goods which he handles. The druggist has the possibility of education regarding the merits of goods which in no manner involves competition or unethical relations to the manufacturer. The extent to which the public is wrong in its judgment of many articles which it purchases, just to that extent are all druggists bound through conventions of this kind to bring such pressure to bear through publicity and policy as will at least give the public the facts. "Truth" is the advertising motto of the Associated Advertising Clubs of the World. And each business becomes truly professional according as its final sale of anything, as well as the personal services of the physician, is interpreted in terms of the facts with respect to truth and service.

Salesmanship as a science needs careful consideration within Schools of Pharmacy. Salesmanship is a profession when it attempts to unfold the possibilities of the use of things to others. And a true salesman can become influential only as he trains his own faculties. Courses of scientific salesmanship in Schools of Pharmacy would help considerably to professionalize the practical selling efforts of the future pharmacist. A course which got one to see the dignity, necessity and privilege of salesmanship would set loose new energy and new ideals for conceptions of organization non-practical without the experience. A scientific vision of the drug business would realize new conceptions of organization.

For instance, the modern drug store does an enormous soda water business. Now there are too many high grade minds performing this service in the average store. I am sure then, were I interested in the minimum of effort with maximum returns, that a system of training of youth for this work could be accomplished for entire communities. It is only when we allow the expert, through our larger institutions of learning which represent the universal application of principle, to give his contribution to each man's business that many of these selling problems will be solved.

An expert is impersonal and scientific in his analysis. He interprets things in terms of the future. When he is defective he often fails to sympathize with the past or the immediate. Nevertheless without vision we perish, and when youth in our colleges can be made to feel the selling problems of your business at the time

of life when economic traits can be built into their consciousness the drug business will have reached another plane of possible activity. Courses involving advertising, salesmanship, merchandizing, statistics and business management are vital in the creative distributive efforts of the modern drug business.

MERCHANDIZING PROBLEMS.

Selling also demands an intensive analysis of so-called merchandizing problems. Have you analyzed the possible maximum desires of your locality? If located in large cities can you get the community to feel that they can do just as well in your store as down town? Or if down town, in the spirit of wholesome competition what new conceptions of increasing individual desire can you devise? Merchandizing means an analysis of the objective factors of your community with a view to increasing the sale of goods in your community. If you sell candy, you may not sell at the right price, or the flavor may not be liked by the community. If you sell perfumery, the community does not know it. If your store is too small, what are you doing to get another? Are you located with respect to the flow of trade? What persistent ideas are you insisting that the community hold? What new line of goods could be introduced? What method of demonstrating might be introduced? And so the questions might multiply. Merchandizing is eternally analyzing the factors of the present to detect the most effective next move. The technique of mastering these principles should be given to young men during their pharmaceutical training.

Drug store architecture based on the conception of an institution serving the delights of the community as well as administering to its sickness has great possibilities. The soda fountain with its incessant drawing power; the possibility of music as a decided factor in assisting digestion—so that they will want more; the caprice of the crowd when holidays roll around; the possibility of creating a constantly new atmosphere through decoration for the season;—these are mere suggestions of the possibility of the future.

The force of the drug store is now an absolute part of the consciousness of every member of the community. The druggist is now led to supply needs rather than to feel the marvellous transforming power of raising the standard of the community in creative endeavor through his own efforts. The modern drug store can become an institution catering to those factors which please and delight the social whims of an ever-changing humanity. At least this is the analysis of what the public wants. In so far as the executive of the future attempts to correlate such desires as are increasingly pleasing to the people; in so far as service is extended consciously to the community; just to that extent has the modern pharmacist raised his possible power of expression to a new creation non-predicable at the present time. A non-scientific and bigoted period of life will always fail to see professionalism in creative processes. A knowledge of economic principles is bringing the remarkable concept that all business is professional when it thinks in terms of service in relation to supply and demand. Modern life is also revealing that professionalism is virile in its activities. Business, as such, through analysis, vision and will power gives us virility; professionalism emphasizes logic and ethics; both give us growth and attainment in the satisfaction of human desire. The individual is successful and the multitudes made happier. Such, as I see it,

are the implications wrapped up in the picture of your possible future as pharmacists.

CAPITAL—ITS RELATION TO BUSINESS.*

BY H. S. NOEL.

The amateur writer usually prefaces his composition with a dictum. The wide use of the word "capital," assigned to me as a subject, caused me to seek the dictionary, not in an effort to define the word but to determine, if I could, what liberties might be taken in covering a topic so broad in scope and character.

I find that capital refers to the amount of property owned at a specified time or used for business purposes. It is commonly referred to as an aggregation of economic goods used to promote the productivity of other goods. It is, therefore, at once patent that in such brief time as I have at my disposal only certain phases can be touched upon. The subject is a fascinating one; before starting a study of its ramifications one wonders what he will say, and after he becomes well launched he wonders where to leave off.

Capital in its relation to pharmacy is in no respect greatly different from its relation to any other business. Advertising is capital, good will is capital, a good clerk is capital, the appearance of the store is capital, service is capital, personality is capital, a good window display is capital. Only a few days ago I learned of a doctor named Fuller who passed to the great beyond and had placed on his tombstone a very fitting epitaph: "Here lies Fuller's earth." The doctor was capitalizing his death.

Most of us look upon capital as closely related to money, and yet character is more closely related to capital by far.

It is generally conceded that credit is the keystone of the arch—success. Credit is capital. Good business men know this and pride themselves on the maintenance of commercial integrity. The man who plays fair with the public and bears a reputation for integrity has an investment beyond price. The unsuccessful, the unprogressive have a hard time when credit is needed unless they can show evidence of character, ability or money. But character comes first. Given two men of equal financial resources, and other things being equal, the man of the strong character will always survive the conflict of competition and financial stress. Why? Because those men who are in a position to be of help to him understand the value of such assets as fixed principles and business integrity.

George Eliot says: "Our deeds determine us as much as we determine our deeds."

Page, in *Trade Morals*, says: "Business men require character as the chief criterion of credit."

The retailer's banking relations have greatly changed. In fact deposit banking is comparatively a modern institution. The earlier exchange of commodities was accomplished without money consideration. One class of merchandise was merely exchanged for another. Retailing has changed in other ways. Time was when long credits were in vogue. Of this was born the cash discount. Our own

* Read before Section on Commercial Interests A. Ph. A., New York meeting, 1919.

government at one time allowed four years' credit for land sales and from a year to a year and a half for custom duties.

Before the Civil War retailers made periodical trips to market. Long credits took the place of the advantages which retailers now look for in quick turnover. Bad debts were frequent, but profit margins, of course, were large. Inability to collect accounts was frequently the cause of bankruptcy.

Then came the traveling man, who made little pretense of selling goods. His visits were for the purpose of investigating credits, to make collections, etc. Manufacturers found such representatives expensive. Later came the mercantile agency, at that time unwelcome and hailed as an imposition. It was many years before the mercantile agency found favor in the eyes of merchants.

There is further evidence that we cannot refer to capital as money alone. Merchandise is capital. From the exchange of merchandise was born the money transaction—as a convenience. It is interesting to note the evolution of commercial affairs because of the relation it bears to present day methods of buying and selling. It was during the uncertain period after the Civil War that extended credit became a gamble, and the producers, anxious to secure business, yet fearful of heavy losses, began the practice of cash discounts for prompt settlements. This condition of affairs ramified into discounts for payment in ten days, thirty days and often more, and then inducements to buy in quantities through offering free goods. It would seem that the producers, anxious to maintain output and profits, were eager to dispose of the goods to the retailer regardless of the latter's ability to dispose of them. And the resulting effect on the dealer was to load his shelves, tie up his capital and involve his credit and profits.

Many manufacturers realized this and established the one-price to all plan regardless of the quantity.

There is no gainsaying the advantages of the quantity deal to the buyer who can readily turn his capital invested into cash. Unfortunately, one of the great factors that retards the progress of retailers is the lack of buying judgment that causes them to yield to the temptation of free goods and extra discounts at the cost of good credit relations with their banks, due to inability to meet current obligations, due in turn to capital tied up in stocks that not only are without profit but in time cost money to maintain.

Stocks represent capital, but are not always readily convertible. With a limited amount of cash on hand it may become necessary to borrow money in order to maintain stocks or to meet current obligations. Immediately the interest charges become a burden against stock on hand in the form of extra costs. It takes but a short time to do away with buying advantages that looked profitable when legal rates of interest are accruing against the merchandise. The returns from capital depend largely upon the use to which capital is put.

It is only in recent years that merchants have come to realize the great value of turnovers as a source of profit. Merchandising evolved through a period of poor transportation, faulty distribution, extended credits, cash discounts, free goods, etc. We are now entering into the period of a better realization of the profit-making possibilities of quick turnover. Merchants are coming to see the opportunities in range of stock rather than quantities. As distribution improves and replenishment of stocks makes it more practical, success is being measured on

the basis of how much it is possible to make one dollar earn all by itself in a given period of time. Turnover is the method by which the question is solved. Actual profits come only when goods are disposed of.

Service to the public, profit to the enterprise, may be said to be the two chief ends of business. No special skill is required at certain times to conduct business at a profit, if conditions are right. It is very probable, however, that at no time in the history of the drug business was greater care ever required than at present.

The National Association of Credit Men advises its members to study turnover. Economists everywhere, men of national reputation, strongly advise hastening the turnover as a source of profits. Druggists have told me that they believed in it, but in buying in comparatively small quantities they so frequently found themselves short of stocks. If that be true, there is something wrong with the system; such stores lack efficiency, and the condition should be remedied. As well say that one knew the windows sold goods, but it was such a bother to trim them.

Manufacturers are studying efficiency, how to make departments produce to capacity. Many of them find that turnover, the art of keeping capital working to the utmost, is their only salvation. In other words, efficiency is but a means to an end that will enable them to produce products that will produce capital, that will produce profits quickly and repeatedly. It is up to the retailer to do the same and make stocks produce the exchange medium, cash, which will, in turn, produce profits as often as possible. He may succeed fairly well without working his capital hard, but what business man is not in business to get all that he can out of it legitimately?

A wholesale salesman with an eye to the profits in the drug business recently remarked that any investment in business should not exceed its quarterly receipts. It is a good thought to retain but a modest statement because it only represents three turnovers a year, not at all what might be called a fine showing, but probably near the average. It is well to remember that the only right way to figure turnover is to divide sales *at cost*, not at selling price, by the average amount of stock on hand for a given period of time.

This salesman had listed for sale a store with receipts exceeding \$36,000. The price asked for the store was \$6,000. We can easily determine therefore a turnover of almost four, granting that sales at cost were 65 percent of the total volume and the average inventory \$6,000.

By contrast this same wholesale salesman visits a retailer who boasts the largest stock in that part of the country—over \$25,000. Annual sales will not exceed \$60,000. This retailer buys extravagantly. He does not find it necessary to watch stock very carefully. He throws out his chest, talks big and buys big, makes a showing. Quite recently, according to this wholesale salesman, this retailer purchased five gross of a certain product, which it was rumored would be hard to secure later on. He saved 15 percent on the deal. He enjoys a turnover of less than two while the other druggist takes a profit on his capital invested almost four times a year. The first makes 60 percent on his money invested, the second makes 24 percent. A Rhode Island druggist said to me one time, "Yes, but at ten percent the man with the big store made a net profit of \$6,000 on his sales while the other only made a net profit of \$3,600." I said, "But look at the

difference in the capital invested." "Yes, I know," he replied, "But just the same the big fellow made more."

Somehow it reminded me of the newsboy who was told by a millionaire in a haughty manner to get out of the way and not to make so much noise. The street urchin replied in this way:

"You big stiff," he said, "you needn't be so ugly about it. There ain't so much difference between you and me. You're making your second million and I'm starting my first, that's all."

This observing wholesale salesman tells of a retail druggist in his territory who was for a long time the director of a bank. This druggist was a large buyer. Four years ago he was elected president of the bank. Two years ago he asked this salesman if he could manage to call once a week. He said he had learned that it paid big returns to buy oftener and not so much at a time. At present this druggist's orders are very small in size and yet the wholesaler's books show that the yearly volume increased materially. Why did he do it? Short of capital? No: He confesses that his experience in banking has taught him how to make money with money. This banker druggist learned that his bank had a thirty, sixty, ninety day turnover, and he saw a chance to try the same principle out in the store and he did.

A new store often starts with a limited amount of capital. Business prospects may seem good. The ambitious proprietor makes a big effort to capitalize every opportunity to increase business. At the end of the first year he will have a time to take inventory and to study the results of his efforts. The first twelve months roll around. His credit at the bank is sound. He has had occasion now and then to try it out. He has borrowed money to discount bills. His training as a clerk in a well-managed store serves him well. But the inventory does not appear as flattering as he had hoped it would. The young proprietor begins to realize that he has not been doing a capacity business. That is he could have handled so many more thousands during the year without proportionately increasing overhead expense. Nystrom in "Economics of Retailing" refers to this in a discussion of three phases of storekeeping. The first is that of increasing returns in proportion to outlay, the second is the stage of constant returns and the third that of diminishing returns. There is little satisfaction to be derived in making sales that cost more to produce than the gross profits amount to.

Authorities agree that the turnover is the source of the biggest profits. Strange as it may seem, however, comparatively few retail druggists are alive to the profitability of the turnover. True, many retailers buy in small quantities, so also do retailers carry dead lines. The small orders are not always due to skilful merchandising ability by any means, but to lack of demand for the goods; that is, the druggist knows up to a certain point that it will be foolhardy to buy more because the product will get stale or old or soiled or totally unsalable. Let the smooth salesman come along with a novelty and promise of free advertising and a 10 and 5 percent discount looks like a small gold mine. The thought I would convey is that while there may be a vague idea of the value of capitalizing turnover, quantity discount appeals immediately, is a great temptation and the smaller the dealer the greater the temptation. The quantity discount road always looks

inviting; the quick turnover path requires effort and buying judgment; it takes time to demonstrate its practicality.

Some one recently related to me the story of a country merchant who hibernated in the winter and enjoyed himself. In the summer the vacationists kept him fairly busy. His town became quite a summer place in time and someone persuaded him to do a little decorating. Among his art purchases was a Japanese lantern which he hung in the middle of the store.

A woman customer saw the lantern, admired it and asked the price. The dealer said he hadn't bought it to sell, but he guessed he could get another. The woman took the lantern; he bought another. A customer purchased the second lantern. The third was disposed of, and the fourth, and then the merchant lost all patience. He stocked no more. A visitor inquired for one of the pretty lanterns. The dealer said: "Yes, I had 'em, but I ain't going to get any more of 'em. Th're too durned hard to keep in stock." That attitude seems true of many retailers. Ordering six months' supply saves the work of reordering, repricing, etc. I used to wonder when I first started in the drug business why we did not purchase everything in gross quantities. It would have saved me a whole lot of work.

I know that many clerks feel that way about it, and not a few proprietors give little thought to how long it is going to take to dispose of a quantity that they were induced to buy to effect the tremendous saving of a dozen free with a gross order. I talked with a druggist recently who had taken advantage of a soap deal. He had enough to last a solid year and he boasted that he had been able to get a good price. He never for a moment gave the matter of turnover a thought. I talked with still another druggist who was loaded up on stationery under very similar conditions. From questions I put to each one of these retailers I know full well that each of them felt that he had acted the part of the shrewd buyer, that he would be able to make a window display and have sales and make bigger profits and be spared the bother of ordering and reordering from the wholesaler.

Occasionally one meets a small retailer who is extremely shrewd in such matters, who buys the quantity, gets liberal discounts and, fully aware of his profits from turnover, gets rid of the lot in a store in which one would never think it could be done. But these druggists are exceptions, as investigations plainly show.

The thought that is uppermost in the eyes of the chain and the cut price stores is this same idea of turnover of stock. They find it possible to narrow the profits down almost to a vanishing point, yet because of rapidity of turnover they are able to make good profits. And not only do they derive them from the turn-overs, but they have the advantage of all of the concessions of quantity purchases. And to be able to buy in quantities is a fine idea—provided, always provided the turnover can be maintained. Ask the successful buyer, the big business man and the auditor. They all agree as to its advantages. The question is an individual one; and every retailer should ask himself whether or not it is a good thing for him—before he buys.

Failures in the drug business are generally thought of as bankruptcy cases. As a matter of fact, this is not true. Any man who embarks in business and is unable to make a salary commensurate with his ability, plus a fair rate of interest

on the capital invested is literally a failure. Numerous as they are, they are not listed as such.

When a druggist defrays his overhead expenses out of his capital he is headed in the wrong direction and it is only a question of time before he will come to grief. Many unsuccessful merchants realize this and get out from under before the crash. Since they do not, as a rule, own the ground or building upon which the store is located, getting out is a comparatively easy matter, made more so by reason of the fact that they have very little invested in the first place.

It so happens quite frequently that failures of this kind not only involve a loss of all that a dealer has invested but a part of the whole of capital loaned him and represented by stocks and fixtures.

Mercantile agencies show only the failures in which creditors are losers. Comparatively few retailers reach that stage of failure. They either sell out or are taken over by a wholesaler, who probably has nursed the account along with an eye to the final outcome. The part that wholesalers play in keeping some stores going is a heroic one, and it frequently happens that what apparently is a failure turns out to be a success due to change of management. A prominent wholesale druggist recently remarked that in the past it was not an unusual occurrence for a wholesaler to supply financial backing anywhere from one-third to three-quarters of the amount involved. Due far more frequently to the human element involved than to the store location it often happens that the store will change hands two or three times before being put on a self-sustaining basis. It has been clearly demonstrated that the judgment of the wholesaler in so far as location is concerned is seldom wrong; but to find proper management, good buying judgment and druggists with a fundamental knowledge of business system, is not an easy matter.

In these days the concessions made by wholesalers are not as extensive as they formerly were. The wholesalers' field, however, is still one of advisory service, and many a young druggist owes a big debt to some wholesaler who has nursed him along through trials and business difficulties until he was able to do for himself. One of the chief requisites that the wholesalers ask of customers to whom they grant favors is sound character and business integrity. It, therefore, comes home to us again that character is capital.

A banker confirmed the wholesaler's remarks in speaking of the willingness of bankers to do everything possible to assist merchants in their struggle for success. The banker cited instances of service rendered customers who needed help, and for the most part it will be found that the banker will be eager to help the business man who can prove his integrity and right to the concessions that sound character warrants.

Bankers regret to see a business man fail. To wholesalers bankruptcy is a source of disappointment. They would much prefer to extend credit than to close a store. There is always hope for a store that keeps going. Once it closes it ceases to have potential possibilities.

Both wholesalers and bankers whom I have interviewed on this subject lay stress upon two great principles that are helpful in successful merchandizing: The first is the value of sterling character and business integrity and the second

the importance of a knowledge of business system and with it a definite comprehension of the possibilities of turnover.

Buying is an art; the man who can not resist the wiles of smooth salesmen, who finds it impossible to say "No" either because of innate inability or because of a desire to effect what he believes to be economies, is not a good merchandising man. There is no greater source of profits than those that have their source in capital wisely expended. There is no more rapid road to failure than the one traveled by the unwise buyer. With profit margins diminishing, quick turns are the only solutions to the problems of cut-price competition and rising markets.

Sammons, in his book "Keeping up with Rising Costs," says that in hundreds of successful stores investigated, records of turnover, sales and purchases are recorded. Every one of these stores knows its limits, beyond which it is unsafe to buy. They capitalize past experience, not by guess work but by actual records. The outlays are held down to the most profitable figures; the stocks are restricted to a prescribed number of turns.

I am told by bankers that it is this lack of specific information that handicaps the small retailer so badly. The place for profits is in the cash drawer. Time and effort are worth while in perfecting one's self on a subject that will teach how to foster the growth of profits and to stabilize stocks to a point consistent with quick turns.

There is such a thing as overdoing this question of turnover. We can afford, however, to pass it with a mention because it is not the fault of the average retail druggist.

It is not an easy thing in a discussion of this kind to clarify certain points, due to the fact that they are so closely related to other phases of storekeeping, which lack of time does not permit us to take up. It must be taken for granted that certain other conditions obtain; it must be conceded that the druggist is aware of certain other fundamentals necessary to success.

If it seems to you that I have developed my subject along a single line, it is solely because I much prefer to deal with a few basic ideas specifically, than to indulge in generalities and leave with you only a vague notion of what it is all about.

There is seldom anything new to be said on a subject of this kind. There is always food for thought, however, that may bring to the fore the necessity of changing methods or the need of greater vigilance in safeguarding certain business assets.

It is given to a very few men to cash in on themselves to the full extent of their latent abilities. The greatest liability that any merchant ever assumed is that of complacency. The men who have achieved the greatest successes are those who always looked ahead to the possibilities of greater things even after success, apparently, was theirs.

I have never ceased to admire the skill that caused a pile of bricks, sand, lime, steel and glass to become a beautiful building. The designer is the man who deserves most of the credit. And it seems to me that the creative force necessary to build a big business where there was only a small business, or none at all, is equally admirable. Only in building a business it is not the merchandise I see in the store front, nor the fixtures—it is the man back of it all.

A man's store only reflects the man.

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"Trade Morals."—Page.

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"The Manual of Successful Storekeeping."—Hotchkiss.

"Failure Statistics—Their Meaning and Utility."—Bradstreet.

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The Kiefer-Stewart Drug Company—Indianapolis.

The People's State Bank—Indianapolis.

E. F. Alexander.—Kansas City.

TO MAKE ALCOHOLIC PREPARATIONS UNFIT TO DRINK.

The Bureau of Internal Revenue has announced that beginning December 1, and during the week following, a series of conferences will be held between bureau officials and the manufacturers of certain alcoholic preparations to devise means to make unfit for beverage purposes such of them as cannot be legally manufactured if found suitable for drinking. The inquiry will be directed particularly to include barbers' supplies and perfumes, liquid medicinal compounds and flavoring extracts.

The enforcement of the provisions of the wartime prohibition act was restrained by a temporary injunction issued by U. S. Judge Arthur L. Brown, Rhode Island, November 12.



L. A. SELTZER,
Detroit.



F. W. NITARDY,
Brooklyn.



C. H. PACKARD,
East Boston, Mass.

THE THREE PRESIDENTIAL NOMINEES OF AMERICAN PHARMACEUTICAL ASSOCIATION FOR 1920-21.

SECTION ON COMMERCIAL INTERESTS
AMERICAN PHARMACEUTICAL ASSOCIATION.*

ABSTRACT OF THE MINUTES OF THE SESSIONS HELD IN NEW YORK CITY, AUGUST 28 AND 29, 1919.

FIRST SESSION.

The first session of the Section on Commercial Interests, A. Ph. A., was called to order by Chairman E. Fullerton Cook, August 28, at 9:30 A.M. All the officers were present. Otto Raubenheimer presided during the presentation of the Chairman's address.

Address of Chairman E. Fullerton Cook:

In deciding upon plans for this year's program, an embarrassment of material presented itself. One side, the market and trade situation, was of unusual importance because of post-war conditions, with its many adjustments, and an effort has been made to briefly cover this commercial interest.

Another specific field offered was that of the highly commercialized, department, drug store with its large financial, managerial, selling, and general business problems, which is rapidly demanding a place in the retail business world. While this phase of pharmacy appeals to many who have been trained as pharmacists, it finds its problems better and more fully covered by purely trade conventions, and therefore has not been specifically considered.

The side of commercial pharmacy, however, which finds a place in the interest of every pharmacist is that of scientific business training and the activities of the Section this year have, therefore, been concentrated upon such a program. Much discussion has been indulged in recently, and in fact for years past, over the old question of whether the druggist is a professional or a business man. The proposition has been advanced that two classes be established and a sharp line drawn in which the professional pharmacist is presumably to forego all business contaminations and live up to the dictionary definition of a profession, namely, "possess a liberal education or its equivalent and perform mental rather than manual labor."

To the other class is to be turned over the trading features of the modern drug business, accompanied, it is inferred, by a lower standing in the pharmaceutical, social world, but with financial returns to partially compensate for the social inequality. We are living in an age, however, where such distinctions are foolish and futile. This is a land of opportunity and the best man wins in the final contest, whether he bear the stamp of social distinction or has fought his way from the bottom, against great odds.

The discredit some would cast on business belongs to the past. To-day honesty, ability, liberal education, energy, and distinction may all be synonymous with the most successful business, and there is no place where mental rather than manual labor is in greater demand. The profession of medicine has been held up as an example of pure professionalism from which the commercial is eliminated but we need but think of the greatest medical men in America to-day, the Mayo Brothers, and see joined, hand in hand, splendid professional service and the keenest and most capable business activities.

The test of real men to-day is "service" and "purpose" rather than an artificial standard of social inequality from the past, and if pharmacy, in any of its varied phases, really serves humanity, honorably, then it is worthy of the utmost respect and a place among the best.

This academic discussion, therefore, of "professionalism" versus "commercialism" need be of little concern to the busy man who is honestly filling the place that circumstances have created.

Scientific business training in pharmacy is as important as professional training, and this combination in every college, whether of two, four or six years, will produce the trained pharmacist of greater ability. The most important universities of the land have accorded a place to scientific business in their curriculum and why should pharmacy fear its contamination, even for those fortunate few who can secure the Bachelor or Doctorate degrees in their scientific training?

The Commercial Section has, therefore, endeavored to present the basis for a scientific business training for pharmacists and has enlisted the coöperation of men who speak with authority. The papers are necessarily condensed but aim to give the essentials of the subject and to

*Papers with discussions will, hereafter, be printed apart from the minutes. It is understood, unless otherwise stated, that the papers were referred to the Publication Committee.

inspire an interest which will mean further investigation. Your Chairman has had in mind also the possibility that this series of papers might form the basis for a reference or text book on commercial pharmacy for druggists, to be edited by a committee of the Association, published by the Association, and offered to the colleges for use in their commercial departments.

I therefore suggest that the Section recommend to the Council of the American Pharmaceutical Association that a committee be appointed to prepare a copy for a text book on commercial pharmacy, using such material as may be available from papers presented to the Association in this Section, during this and former years, of course giving due credit, and adding what may be necessary, and that the Association then publish this book for use in the commercial departments of our colleges of pharmacy and for general sale. It is further recommended that any profit derived from its sale be used for the publicity work of the Association.

If pharmacists could have figures at their command which indicated the average relationship existing in the retail drug store between sales, first cost, expenses and net profit, especially if by departments, it would prove of tremendous value in controlling and adjusting business. I therefore recommend that a committee be appointed by the Chairman of this Section to collect such information as is available on this subject and report at the next annual meeting.

It is gratifying to note the development of pharmacy along scientific lines, and that this has already been made a commercial success in many places. Every encouragement should be given to this development and where it has been practicable to start clinical and bacteriological laboratories, trained pharmacists have been found ready to take up the work.

The most ultra scientific in pharmacy may also look with pride upon the record pharmacy has made in its response to the large moral questions of the day, which are so closely related to the business. Narcotic control, the campaign against venereal disease and its improper treatment, large sanitary community and home problems, and the prohibition situation, have all faced the pharmacist and in not one has he failed to respond actively and on the right side. Government officials have repeatedly praised pharmacy for its coöperation and valuable aid in the endeavors to enforce these laws and the right.

Following the recommendations of the By-Laws of the Association related to Sections (Chapter IX, Article VII) last year's Chairman proposed a subject for presentation to all state association meetings for discussion, with the request that a report be made of the discussion and this presented to the A. Ph. A. at this session. The subject suggested was "Pharmacy and Pharmacists after the War." As conditions were so materially changed by the unexpected signing of the armistice, officers of the Section this year felt that it would be unwise to ask for general discussion on this subject and therefore took no action.

Your Chairman has also felt that the plan possessed little merit and will therefore leave it to the Section to take such action this year as they may think proper concerning this recommendation of the By-Laws.

Respectfully submitted,

E. FULLERTON COOK.

On motion of C. H. LaWall, which met with a second, the Chairman's address was referred to a special committee of three.

The following papers were read, discussed and referred to the Publication Committee:

"Review of the Drug Market," by Harry B. French.

"A Workable Drug Store Policy that Will Win Success," by Henry E. Hynson.

"The Essentials of Accounting," by C. P. Couchman.

"Records—A Key to Business Success," by E. Fullerton Cook.

"Closer and More Profitable Relations between the Pharmacist and His Bank" (See p. 750, September issue), by Clarence O. Bigelow.

"Capital—Its Relation to Business" (see this issue of the JOURNAL), by H. S. Noel.

The Chairman appointed the following Nominating Committee: R. P. Fischelis, C. O. Lee and Jacob Diner.

The following committee was appointed on the Chairman's Address: Charles W. Holzhauser, C. H. Stocking and E. G. Eberle.

The first session of the Section on Commercial Interests was then adjourned.

SECOND SESSION.

The second session of the Section on Commerical Interests convened August 29 at 9:30 A.M. Chairman E. Fullerton Cook presided.

The following papers were read, discussed and referred to the Publication Committee:

"Possibilities of Manufacturing in the Retail Drug Store," by George M. Beringer, Jr.

"The Business Points in Establishing a Diagnostical Laboratory in the Pharmacy," by Jacob Diner.

The report of the Committee on the Chairman's Address was read by C. H. Stocking; on motion, being duly seconded, the report was adopted. It follows:

REPORT OF COMMITTEE ON CHAIRMAN'S ADDRESS.

The address of the Chairman of this section contains two recommendations. The first of these reads as follows:

"I therefore suggest that the Section recommend to the Council of the A. Ph. A. that a committee be appointed to prepare copy for a text book on commercial pharmacy, using such material as may be available from papers presented to the Association in this Section, during this and former years, of course giving due credit, and adding what may be necessary, and that the Association then publish this book for use in the commercial departments of our colleges of pharmacy and for general sale. It is further recommended that any profit derived from its sale be used for the publicity work of the Association."

In compliance with the suggestions set forth in the above recommendation, the committee recommends that the matter be referred to the Council of the Association for its consideration.

The second recommendation reads as follows:

"If pharmacists could have figures at their command which indicated the average relationship existing in the retail store between sales, first cost, expenses and net profit, especially if by departments, it would prove of tremendous value in controlling and adjusting business. I therefore recommend that a committee be appointed by the chairman of this Section to collect such information as is available on this subject and report at the next annual meeting."

It is recommended that such a committee be appointed and instructed to carry out the provisions of this recommendation.

(Signed), CHARLES W. HOLZHAUER,
E. G. EBERLE,
CHARLES H. STOCKING.

The reading of papers was continued:

"The New Employee—How to Select Him and Improve the Personnel of an Organization," by Earl H. Cone.

"Insurance for Druggists" (see p. 832, October issue *THIS JOURNAL*), by S. S. Huebner.

"Conservative Investments," by Homer H. Pace.

"Selling and the Professions," by Herbert W. Hess.

"Drug Store Advertising," by Robert P. Fischelis.

"Buying—How, When and Where—for a Retail Drug Store" (see p. 837, October issue *THIS JOURNAL*), by Charles W. Holzhauer.

The Nominating Committee presented its report, which was accepted; thereupon the ballot was spread and the following officers elected for the ensuing year: *Chairman*, H. S. Noel, Indianapolis, Ind.; *Secretary*, C. O. Lee, LaFayette, Ind.; *Associates*, A. B. Nichols, Phila., Pa.; Wm. P. Harrison, Richmond, Va.; Russell, Blackwood, Phila., Pa.

Mr. Blackwood expressed his appreciation of the work done during the year and at the Convention by the officers of the Section on Commercial Interests. He stated that these sessions had been the most successful he had ever attended, and moved a vote of thanks for the retiring officers. Charles W. Holzhauer assumed the chair for the time, and put the motion, which was seconded, and unanimously carried.

The Section on Commercial Interests was then adjourned.

SECTION ON PRACTICAL PHARMACY AND DISPENSING
AMERICAN PHARMACEUTICAL ASSOCIATION.*

ABSTRACT OF THE MINUTES OF THE SESSIONS HELD IN NEW YORK CITY, AUGUST 27 AND 28, 1919

FIRST SESSION.

Chairman R. W. Terry called the first session of the Section on Practical Pharmacy and Dispensing to order at 2 P.M., August 27. Secretary Edward Davy was not in attendance at the Convention, and E. A. Ruddiman was selected to act as Secretary, *pro tem*. The address of Chairman Robert Wood Terry follows:

A glance at the program indicates there are so many able contributors to the activities of this Section that I feel it would be a waste of valuable time and an imposition on the members present for me to deliver a lengthy address, however much I might desire to do so.

Much has been said regarding the evils of "commercialized pharmacy" and the inroads it has made upon "ethical pharmacy." No one can contradict this; but we must not have family quarrels, as that will do nothing but retard progress and work against us. Pharmacy must co-operate with itself.

Peculiar as it may seem, I welcome all this commercialism, simply because it hastens the day when the public will see the necessity for the separation of commercial pharmacy from ethical pharmacy. The initiative must come from the ranks of pharmacy itself, but the public must be willing, and will therefore have to be educated to the necessity for the changes.

I am convinced that in the average pharmacy the prescription department is not a financially remunerative department, and that it is kept up merely from custom and weight of public opinion. Figuring in dollars and cents the store would be better off if it discontinued this department, so that the space, money invested, and expensive professional clerk hire could be devoted to more profitable work. Let those who desire to practice commercial pharmacy, which is as honorable as any other line of human activity, do so. Commercial pharmacy is an absolute necessity, hence it is here to stay; but the ethical pharmacy can exist only when the commercial store will absolutely discontinue the prescription department and discontinue the sale of all but simple packaged remedies. It must be a get-together community proposition, and then the one who desires to practice professional pharmacy could afford to discontinue all side-lines and put all his energy and resources in one line. This would be a benefit to all parties concerned, particularly the public.

It will then in course of time be necessary for the various state boards of pharmacy to have a double standard for pharmacists. One might be so radical as to predict the necessity for periodic examination of those who desire to practice ethical pharmacy. This would be raising the standard of the profession far above anything ever before contemplated.

The thoughts regarding the separation of ethical and commercial pharmacy have been enumerated many times before and by persons far more competent than I, and I might continue, but what is more desirable is *action*. I truly hope that some community will have a meeting composed of pharmacists, physicians and representative business men, and try this plan. I am confident of its success.

I desire to call your attention to the necessity for more prompt delivery of papers or titles, intended for the annual meetings, to the Section officers. The officers of these Sections are under a heavy strain from work and worry, endeavoring to obtain sufficient papers for the program. I sincerely trust that in the future contributors will respond early to the letters of the Section officers.

In closing, I again desire to thank the Section for its confidence in conferring upon me this high honor; but I must say that if these meetings are successful the credit is due to the contributors of these valuable papers, and I take this opportunity to heartily thank them for their co-operation.

ROBERT WOOD TERRY.

During the reading of the address, Samuel L. Hilton presided. On motion of Otto Raubenheimer, and a second by William H. Glover, the address was referred to the Publication Committee.

*Papers with discussions will, hereafter, be printed apart from the minutes. It is understood, unless otherwise stated, that the papers were referred to the Publication Committee.

Chairman Otto Raubenheimer, of the Committee on A. Ph. A. Recipe book, presented his report (see Minutes of Third Council Session for 1918-1919, November 1918 issue of *THIS JOURNAL*). The report was referred to the Council.

The following papers were read, discussed and referred to the Publication Committee:

"Fluidextract of Licorice," by Anthony Armentano.

"The Function of Glycerin in Some U. S. P. and N. F. Preparations," (see *THIS JOURNAL*, October 1919, p. 818), by E. A. Ruddiman.

"A Prescription Clinic," by Ivor Griffith and A. B. Nichols.

"Standardization of Dispensing Pharmacies," by L. E. Sayre.

"Practical Pharmacy and Dispensing in Relation to the Medical Profession," by F. E. Stewart.

"Inorganic Incompatibilities of Organic Drugs," by Carl Braubach.

"Protective Ointments Against Mustard Gas" (see *THIS JOURNAL* for October, p. 824), by John M. Williams.

"Tincture of Cantharides," by F. W. Nitardy.

"Proposed Changes in the Soaps of the Pharmacopoeia" (see October issue of *THIS JOURNAL*, p. 813), by E. V. Kyser.

"The Use of Hydrogenated Oils and Fats in Pharmacy" (see p. 816, October issue of *THIS JOURNAL*), by C. A. Mayo and E. V. Kyser.

"Some Suggestions for National Formulary Revision" (see *THIS JOURNAL*, September issue, p. 745), by W. L. Scoville.

Nominations for officers of the Section were called for. E. A. Ruddiman, of Nashville, Tenn., was nominated for *Chairman*. Ivor Griffith, of Philadelphia, was nominated for *Secretary*. F. W. Nitardy, of Brooklyn, N. Y., and W. R. White, of Nashville, Tenn., were nominated for Associates of the Section.

SECOND SESSION.

The second session of the Section on Practical Pharmacy and Dispensing was called to order at 2.30 P.M., August 28, by Chairman R. W. Terry.

Owing to the illness and absence of Professor H. P. Hynson, the contribution on "One Thousand Consecutive Prescriptions in 1919, Compared With An Equal Number in 1859, 1879 and 1899," was not presented.

The paper, "A Study of the Pendent Drop," by John Uri Lloyd, was read by title and referred to the Committee on Publication.

The following papers were read, discussed, and referred to the Publication Committee:

"Notes on the Precipitation of Magnesium Hydroxide," by Robert W. Terry and E. D. Davy.

"Notes on the Suspension of Solids in Liquids," by F. W. Nitardy.

"The Abuse of the Shake Label," by J. Leon Lascoff.

"A Suitable Non-Alcoholic Solvent for Acetylsalicylic Acid," by I. A. Becker.

"Solution of Cresol Compound" (see September number *THIS JOURNAL*, p. 759), by S. L. Hilton.

"Camouflage" (see September issue *THIS JOURNAL*, p. 752), by S. L. Hilton.

"Dreuw's Paste or Ointment or Vienna Paste," by Otto Raubenheimer.

"Ferrum Reductum," by Charles H. LaWall and J. W. E. Harrison.

The following papers were read by title and referred to the Publication Committee:

"A Prescription Difficulty," by P. J. Kolb.

"The Refractive Index and Optical Rotation of Commercial Volatile Oils," by Azor Thurston.

"The Extraction of Cascara and Senna," by William R. White.

"Solution of Chlorinated Soda, U. S. P., from 1840 to 1920," by H. A. Langanhan and F. W. Irish.

"A Standard Screen Scale for Testing Sieves," by U. S. Bureau of Standards.

The Section approved of the tentative standards and referred the latter paper to the Council.

The following paper was presented by F. W. Nitardy: "Alcohol and Prohibition." After

considerable discussion the Section passed a motion that this paper be referred to the Council with the recommendation that the formulas be submitted to the U. S. Treasury Department.

ALCOHOL AND PROHIBITION.

BY F. W. NITARDY.

With the advent of prohibition the status of alcohol as industrial and medicinal material should receive careful consideration. The nation has declared itself in favor of prohibition and as interested parties in the use of alcohol for purposes other than beverage we owe a duty to ourselves and the public in seeing that the legitimate use of alcohol is safeguarded as well as that it and its preparations are not misused to the end of defeating the prohibition amendment.

Whether or not alcohol as such is of sufficient importance as a remedial agent to make it desirable to preserve its use to the public and with it its almost certain abuse by the public, is a matter for the medical profession to decide. It is, however, well within the province of Pharmacy to suggest a modified form of alcohol of such composition that it cannot readily be used as, or converted into a beverage and is at the same time fit for external use as liniment or bathing alcohol. We should even consider the inclusion of such a preparation in the coming issue of the Pharmacopoeia or National Formulary. The restriction of the public to alcohol of such a nature will simplify the question of abuse and relieve the pharmacist of undesirable responsibility.

We should be able to learn from and profit by the experience and actions taken by states who have been dry for some time and have definitely fixed the status of alcohol by law, and in this connection desire to call your attention to the Alcohol Law of Colorado. It provides for the sale to the public of alcohol in two modified forms only—one consisting of grain alcohol containing one-tenth of one percent of croton oil, the other consisting of a mixture of alcohol and water containing one-tenth of one percent of tartar emetic. The latter is especially intended for bathing purposes.

The formulas were adopted after joint and careful consideration of the subject by Medical and Pharmaceutical Associations of the State and have to the best of my knowledge proven satisfactory to all parties concerned.

As such alcohol is thoroughly denatured, it seems that it may even be possible to have these formulas recognized by the Revenue authorities as satisfactory for tax free alcohol.

I understand that there is a bill before Congress concerning industrial alcohol with the object to provide for less restriction in use of tax-free alcohol. I also understand that the Government is ready to receive suggestions in relation to this subject. Pharmacy is vitally interested in the matter and we should see to it that legislation of this nature receives the careful attention from us that it needs.

A communication from Chairman I. A. Becker, of the Sub-Committee on Photographic Formulas A. Ph. A. Recipe Book, entitled "Some Fundamental Considerations in Dispensing Photographic Formulas," was read and referred to the Publication Committee.

Then followed open discussion on the forthcoming revision of the U. S. Pharmacopoeia and National Formulary.

The paper on "Oral Hygiene and Oral Antiseptics," by W. F. Gidley, was read by title and referred to the Publication Committee, also a paper on "Ointment Difficulties," by William Gray (see p. 746, September issue of THIS JOURNAL).

Further nominations for officers of the Section were called for, but none were presented. The following were elected officers for the ensuing year:

Chairman, E. A. Ruddiman, Nashville, Tenn.; *Secretary*, Ivor Griffith, Philadelphia, Pa.; *Associates*, F. W. Nitardy, Brooklyn, N. Y., and William R. White, Nashville, Tenn.

The officers were installed by the retiring Chairman, R. W. Terry, following which the Section on Practical Pharmacy and Dispensing was adjourned.

FLUIDEXTRACT OF GLYCYRRHIZA.*

BY ANTHONY ARMENTANO.

Fluidextract of Glycyrrhiza has always been a source of much trouble and annoyance on account of the fact that precipitation has been so copious and has continued for so long a time, and filtration has always been so slow and difficult, and had to be resorted to a second or third time as the fluidextract aged.

Precipitation has always been copious whenever ammonia water has been a part of the extracting menstruum, no matter what proportions of alcohol, water and glycerin have been used, and seems to be the disturbing factor, probably by its saponification or solution of inert material consisting chiefly of a resinous body, which, upon the aging of the finished fluidextract is thrown out of solution and causes difficulty in filtration. In every case when alcohol has been used in the extracting menstruum this difficulty has perhaps been increased.

The present official method consists of extracting the drug with a mixture of ammonia water and chloroform water and alcohol is added to the concentrated percolate in sufficient quantity to throw out a portion of inert matter and to preserve the product. The finished fluidextract is directed to be set aside seven days, the clear liquid decanted and the balance filtered and the filter washed with enough of a mixture of alcohol and water in proper proportion to make up the original volume. Here is where the difficulty arises, and one filtration never suffices.

Various methods of exhausting glycyrrhiza with water have been tried. The method of the British Pharmacopoeia is to treat the drug by maceration and expression, repeated once, with cold chloroform water. This produces a preparation of good flavor and is easily filtered but does not exhaust the drug. Repeated maceration and expression will accomplish this, but the volume of water required is so great as to consume too much time when conducted on a large scale and requires great care to prevent souring.

Experiments were conducted using water at 150° F. to exhaust the drug. This was a great improvement, but it was finally found that the best results were obtained by the use of boiling water. The drug should not be boiled with the water, but the water should be at the boiling point when the drug is mixed with it and should be boiling when poured upon the drug contained in a percolator.

For convenience in describing the exact method used for making a fluidextract as above referred to it will be assumed that it is required to make a lot of ninety-six pints.

Moisten 100 pounds of coarsely ground glycyrrhiza with 100 pints of boiling water. Cover tightly and macerate overnight. Pack in a percolator in which the diaphragm is perfectly covered with good filter paper and about three inches in depth of clean sand distributed evenly over it. The drug should be firmly but not tightly packed. A diaphragm should be placed upon the top of the drug and weighted down with large pebbles or other convenient device.

Boiling water should now be poured upon the drug and the percolate allowed to run about 100 pints per day until the drug is exhausted. About 500 pints will be sufficient.

If the percolate cannot be evaporated at once, one-half percent of chloroform should be agitated with it to preserve it, but the best practice is to evaporate as soon as possible. It is

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New York meeting, 1919.

necessary also in making the preparation in large quantities to sprinkle the drug with a little chloroform when packing and to use a little more each day.

The percolate should be evaporated *in vacuo* or on a water bath to 76 pints, cooled, 20 pints of alcohol added and allowed to stand 24-48 hours, and filtered. Product 96 pints.

An assay of this fluidextract as to the glycyrrhizin content and total extractive gives results equal to those of a fluidextract made by the official process.

A sample is submitted of a fluidextract made May 26, 1919, and filtered on the day made to determine how much precipitation would occur under the most favorable circumstances.

One item of interest is that the fluidextract filters very rapidly and leaves very little residue on the filter.

To a sample of the same lot of fluidextract was added a few drops of ammonia water. This caused an increased precipitation without corresponding advantage and was discarded.

It must be borne in mind that in making this preparation in quantities of 1000 mls the physical conditions will be somewhat different as, for instance, the drug will become quite cold in macerating overnight, and this small amount will not keep as hot as a larger volume will, so a larger amount of percolate will have to be run out.

The initial easy filtration and the subsequent freedom from precipitation recommend this process and product as all that can be desired.

LABORATORIES OF
E. R. SQUIBB & SONS.

ABSTRACT OF DISCUSSION.

MR. RAUBENHEIMER: It has always been my opinion that in order to extract the glycyrrhizic acid from the licorice, we use ammonia water. From my own experience, I find the addition of a small amount of ammonia water to any licorice preparation always improves that preparation; I have no trouble whatsoever with any precipitation.

MR. HEARN:¹ The method I use, and it has been very satisfactory, is the percolation of the drug with thirty percent alcohol and then a consequent driving off of the alcohol, bringing up the liquor left in the still to the volume required. Percolation with 30 percent alcohol extracts the licorice, and leaves the inert material in the drug without any precipitation. Frothing is avoided, as there will be no frothing until all the alcohol has been distilled off.

DREUW'S PASTE OR OINTMENT OR VIENNA PASTE.*

BY OTTO RAUBENHEIMER.

The announcement of the paper "Ointment Difficulties," by William Gray, for the second session of the Section on Practical Pharmacy and Dispensing, prompts me to write this short paper on the day previous, namely, on Wednesday, August 27, 1919. The subject herewith presented is of great importance to the practical pharmacist, as it presents three different kinds of "Ointment Difficulties," *i. e.*, 1, as to proper formula; 2, as to method of dispensing; 3, as to confusion of names.

¹ This is the name reported by the Secretary of the Section and also by the reporter.

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New York meeting, 1919.

CORRECT FORMULA.

This ointment has been originated by Prof. Dreuw, the successor of the celebrated Berlin dermatologist, Dr. Lassar. Many formulas have been published, some entirely different from the original. A Formula Book published by a pharmaceutical journal gives a formula under the title *Dreuw's Paste* containing salicylic acid, pyrogallol, purified wood tar, zinc oxide, soft soap and anhydrous wool fat. Only lately an American drug journal copied a formula from the *Journal Suisse de Pharmacie* as "Unguentum Dreuw" containing yellow petrolatum. These two examples (and no doubt there are many more) prove again that a reliable book of formulas is needed, badly needed, such as proposed in the A. Ph. A. Recipe Book.

The following formula was given to me by a physician, who took a postgraduate course of dermatology under Professor Dreuw:

Salicylic Acid.	10 Gm.
Oil of Birch Tar, Chrysarobin, of each.	20 Gm.
Wool Fat, Soft Soap, of each.	25 Gm.

To make 100 Gm.

Dreuw's Ointment is extensively used by dermatologists, quite especially in the treatment of psoriasis.

DISPENSING.

This ointment is a "sticker," and many a portion have I thrown away and other portions, unfit to use on the human skin, have I applied to a "mangy" dog, and with success. The principal trouble or incompatibility exists in the action of the salicylic acid on the soft soap. This conclusion was arrived at from the fact that when the salicylic acid was omitted or, on the other hand, when the soft soap was left out, no trouble was experienced in preparing a smooth paste. After numerous experiments I found the following method the best to produce a nice homogeneous soft ointment. It consists of three steps: A. Incorporate the finely powdered salicylic acid with the oil of birch tar and then gradually mix in the chrysarobin. B. Mix together the wool fat and soft soap. C. Mix B and A and dispense in a jar or wide mouth bottle.

CONFUSION OF NAME.

Dreuw's Ointment, for some reason unknown, very likely to coin a euphonious name, easy to remember, was christened "Vienna Paste" by the physicians in a large dermatologic hospital in New York City. From here, the "would-be" center of medical science, this name has spread or will spread throughout the United States. However, it should be remembered that "Vienna Paste" is a well-known synonym for Potassa cum Calce, official in N. F. This is a mixture of equal parts of potassium hydroxide and calcium oxide and is a strong caustic which, of course, should not be dispensed when Dreuw's Ointment is ordered under the name of "Vienna Paste." The results would be almost as disastrous as when "Roach Sault" is dispensed when "Rochelle Salt" is wanted. After all, let carefulness be the chief motto of the dispensing pharmacist!

NOTES ON THE SUSPENSION OF SOLIDS IN LIQUIDS.*

BY F. W. NITARDY.

Pharmaceutical practice occasionally requires the suspension of powders in an oily or fatty vehicle. When such powders are of greater specific gravity than the vehicle and the latter is liquid, semiliquid or not solid at all temperatures at which it is apt to be stored, separation by settling usually occurs. Such separation may prove very annoying, especially in soft ointments and oily suspensions intended for hypodermic use. This separation, however, may be avoided, if the presence of water in the mixture is not objectionable, by the emulsification of the vehicle which makes a practically permanent suspension possible. In other words, the suspension of water in oil or oil in water acts as an effective barrier to the settling out of a finely divided solid even though the latter be quite heavy. Let me explain further by taking a practical example under consideration.

Mercuric salicylate is frequently prescribed for hypodermic or intramuscular injection in oil suspension. If powdered mercuric salicylate is triturated with almond oil so that each mil of the mixture will contain 0.13 gramme of the drug, settling becomes evident immediately on standing. In an hour about one-third of the powder will be deposited, while practically all of it will be deposited in twenty-four hours.

If the same mixture is made, except replacing a portion of the oil with anhydrous lanolin and water representing 20 and 5 percent of the finished volume respectively, no settling of the powder is noticeable, even on standing several weeks. On prolonged standing, a trace of clear oil will usually separate at the top but this is easily re-incorporated by shaking.

For the purpose of comparing the relative stability of the above described suspension, 10 mls of each were placed in a small graduated cylinder and kept under observation for a time. The result is shown in the following table:

Observation taken.	Mercuric salicylate in almond oil.	Mercuric salicylate in almond oil, containing 20% lanolin and 5% of water.
30 minutes.....	0.15 mil mercuric salicylate deposited on bottom	.....
1 hour.....	0.25 mil mercuric salicylate deposited on bottom	.....
3 hours.....	0.45 mil mercuric salicylate deposited on bottom	.....
5 hours.....	0.55 mil mercuric salicylate deposited on bottom	.....
6 hours.....	0.58 mil mercuric salicylate deposited on bottom	0.2 mil oil on top
7 hours.....	0.60 mil mercuric salicylate deposited on bottom	0.25 mil oil on top
24 hours.....	0.78 mil mercuric salicylate deposited on bottom	0.3 mil oil on top
2 days.....	0.75 mil mercuric salicylate deposited on bottom	0.6 mil oil on top
3 days.....	0.75 mil mercuric salicylate deposited on bottom	0.8 mil oil on top

At the end of 3 days there was practically no mercury salicylate left in suspension in the oil and it required vigorous shaking for about five minutes to re-incorporate the powder which had settled out. No precipitation of mercury salicylate is visible in the mixture containing lanolin and water, even on standing several months, and the small amount of oil separating at the top is easily re-incorporated by shaking. Further, the emulsion could be so adjusted that no oil will separate from it.

LABORATORIES OF E. R. SQUIBB & SONS.

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New York meeting, 1919.


COMMITTEE REPORTS


REPORT OF COMMITTEE ON PHYSIOLOGIC ASSAYING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Owing to several unavoidable delays, the Committee was not completely organized until February of this year, and after organization the exigencies of abnormal conditions due to the war resulted in such an enormous increase in regular routine work that it was impossible for the members of the Committee to attempt any researches which were not absolutely essential.

We beg, however, to submit the following report of our work to date:

The incorporation of the chapter on "Biologic Assays" in the U. S. P. IX is epochal in the history of standardization and it is to be hoped that with this start a much wider publicity and experience will be gained so that the next Committee of Revision will readily be able to select from the proposed methods and make official the methods and technique which prove to be the most satisfactory and convenient for each drug.

 The Committee is unanimous, however, in its opinion that the biologic assay methods of the U. S. P. IX are unsatisfactory, due to the fact that in many cases *they lack the details* which workers in the practical laboratory have found essential in order to obtain accurate results.

 In other words, the methods are in many instances *not as accurate and up-to-date* as the methods in common use at the present time in the commercial laboratories.

Specific criticisms of the U. S. P. methods are given in the following four papers by members of this Committee:

"Biologic Standardization, by H. C. Hamilton. *Amer. Jour. of Pharm.*, Feb. 1917.

"The Physiologic Standardization of Cannabis," by W. A. Pearson, J. A. PH. A., Nov. 1916, p. 1194, and Oct., 1917, p. 876.

"Biologic Standardization of the Heart Tonic Preparations." By H. C. Colson, Jr. J. A. PH. A., 1918, Vol. 7, No. 1.

"Biologic Assay Methods of the U. S. P. IX." By Paul S. Pittenger, J. A. PH. A., Oct. 1917, p. 865.

The above papers show very conclusively that many of the shortcomings of the U. S. P. Biologic Methods are due to the fact that the Revision Committee failed to give due consideration to the viewpoint of the manufacturer.

"The importance of this feature is in the fact that the manufacturers were in many instances the originators of the tests in use, and had of necessity developed them from scientifically interesting facts to a practical working basis. These manufacturers through years of experience were in a position to eliminate the non-essentials and to arrive at some common ground by compromise. A method which under certain conditions can be made fairly satisfactory may fail entirely when attempts are made to apply it under practical working conditions." (Hamilton).

Owing to the facts stated, very little attention has been paid to the methods of the U. S. P. IX as all evidence tends to prove that they are less accurate and reliable than the methods in common use.

It is only natural that pharmacologists should differ in their opinions as to which reaction more nearly represents the activity of a drug, when it has more than one therapeutic use, and that each worker should be partial to the method with which he has had the most experience.

Your Committee feels, therefore, that it bears the responsibility of a very important part of the work of this Association and that *it is the duty of its members to coöperate in a thorough, impartial investigation as to the relative applicability, degree of accuracy and ways of improving the various biologic assay methods.*

It was decided that we first adopt a definite plan of work for the Digitalis series and after this was well under way that we decide upon definite plans of work for Epinephrin and products of the Suprarenal gland, Liquor Hypophysis, Cannabis, Ergot, etc.

The Chairman compiled a tentative plan of work and submitted the same to the Committee for further criticisms and suggestions.

The tentative plan was changed accordingly, and we are now in position to submit the following plan of work for this Committee:

SUGGESTED PLAN OF WORK ON DIGITALIS.

1. Compare the accuracy and practicability of M. L. D. Frog Heart Method, One Hour Frog Heart Method, Cat Method and Guinea Pig Method for the heart tonics and depressants.

(a) A Tincture of Digitalis will be prepared by the Chairman, and samples of this tincture sent to the other members of the committee. The samples will be sufficiently large for further investigations as to deterioration, etc.

(b) The M. L. D. of this sample should be estimated by the different members, using Ouabain as a standard which will also be supplied by the Chairman, in order to find out if concordant results can be obtained by the One Hour Method. If the results are satisfactory, the tincture should be diluted according to the results obtained, and

(c) To this diluted tincture, the other methods should be applied together with the M. S. S. method.

These experiments will test the accuracy of the method and at the same time convert the standards of the Pharmacopeia into terms of the M. L. D. Frog Heart and Guinea Pig Method, and thus enable each member to compare the U. S. P. standard with the standards adopted by his laboratory and to state whether in his opinion the U. S. P. standards are O. K. or whether they should be raised or lowered.

2. As a difference of opinion exists as to the proper substance for standardizing animals which are subject to seasonable variation, chemical and pharmacological tests for the identity and purity of both Ouabain and Kombe Strophanthin should be studied with the object of deciding which is the better standard.

3. In order that the methods of standardization and rate of deterioration may be considered at one and the same time, and with minimum labor, a sufficient quantity of Tinctures of Digitalis and Ouabain will be submitted for No. 2 that the tests may be repeated at intervals of 4 months for a period of two years.

(a) A summary of the results obtained will be valuable in determining the rate of deterioration of Digitalis preparations and in enabling us to come to a conclusion as to the choice of methods.

Accordingly, the Chairman prepared a lot of Tincture of Digitalis and distributed it together with a sample of Ouabain to each member of the Committee with a request that laboratory work be conducted according to the above outline.

To date, three members of the Committee have assayed the Tincture by the "One Hour Frog Method" and reported as follows:

H. C. Hamilton.....	102.8%
H. C. Colson.....	101.5%
P. S. Pittenger.....	108.3%

You will note, therefore, that there is a variation of only 6.8 percent in the results obtained with the "One Hour Frog Method" by the three different workers.

These results are indeed very satisfactory and encouraging, especially when we consider the fact that non-standardized tinctures of Digitalis vary hundreds of percent in activity.

I would call your particular attention to the above results as only too frequently we hear rather caustic criticisms of the value of biologic assaying, which leave the impression that biologic assay methods are practically valueless because the results obtained by different workers vary from 50 to 100 percent, whereas this report shows a variation of only 6.8 percent in the results obtained by workers in three different laboratories.

These results would indicate, therefore, that if the experiment is properly conducted, very reliable results can be obtained by the "One Hour Frog Method."

The Committee will continue its work according to the above plan during the next year, and hope to be in a position to make some definite recommendations to the Association at its next annual meeting.

Respectfully submitted,

H. C. HAMILTON,
H. C. COLSON, JR.
W. A. PEARSON,
PAUL S. PITTENGER,

Chairman.

REPORT OF COMMITTEE ON U. S. PHARMACOPOEIA, AMERICAN
PHARMACEUTICAL ASSOCIATION.*

A number of the members of the committee responded to the call of C. H. LaWall, Chairman of the Committee of Revision, for suggestions and criticisms, which accounts in a measure for a somewhat shorter report. The purpose of this report is to briefly call attention to a number of features which should be considered by the next Pharmacopoeial Convention. Extended discussions do not seem necessary.

THE ALCOHOL PROBLEM.

There probably has not been a single question that has received more consideration in matters pharmacopoeial than alcohol. The present nation-wide movement to limit the use of alcohol to very restricted lines is well recognized and receives the approbation of both the medical and pharmaceutical professions. The present Pharmacopoeial Committee deleted from the last revision of the Pharmacopoeia not only a number of preparations which would lend themselves to beverage purposes, but also such as were beverages in themselves. Even whiskey and brandy were eliminated. In other instances the percentage of alcohol was materially reduced. It is believed the time is now at hand when additional reductions in alcohol content should be made wherever practicable. At a meeting in Washington during the war for considering a restricted use of alcohol it was contended by some that the alcohol content of the present Pharmacopoeial products could not possibly be reduced; others believed some reduction might be effected in some cases. Whatever our personal views may be in these matters there is no question but that existing conditions should, and must, receive very careful consideration and appropriate action. It is not a theory that confronts us but a condition. Every effort should be made to reduce the percentage of alcohol to the amounts necessary for extracting medicinal principles, or keeping the medicaments in solution, or preserving the preparations, etc.

METHODS OF ANALYSES.

It is self-evident that no method of analysis should be included in the Pharmacopoeia which will not give fairly concordant results in the hands of experienced workers. Any other course is liable to lead to complications under existing laws and the trade generally. If a method is used which is liable to material variation and commodities are handled on the basis of the results obtained by such methods, it can readily be seen that not only may manufacturers be penalized and chemists liable to censure but a considerable amount of monetary loss may result. The variations should not exceed the limits prescribed by the present Pharmacopoeia or such limits as may be adopted in a future revision. No method should be considered for possible inclusion which in a try-out varies more than 20 percent in the hands of skilled workers.

ONE MAN METHOD.

In the past it has happened that a method worked out by a single individual has been adopted without giving it thorough consideration. It is not believed that a one-man method should be adopted in a book that has the standing in law the Pharmacopoeia has. Furthermore, it is not believed desirable to adopt any method that has been tried out only in one laboratory. All methods should be carefully and fully tried out by a number of workers before receiving recognition.

CHANGE METHODS AND STANDARDS.

If the present Pharmacopoeia provides a good standard and good methods for determining such a standard they should not be changed unless better ones are at hand. They should never be changed for individual or personal reasons. A frequent changing of methods and standards is an economic loss. They require manufacturers to adjust products on a new basis and the analyst is compelled to spend time and material to become acquainted with the new elements involved. It can readily be seen, therefore, that changes in methods and standards cost time, money and labor, and unless something is to be gained, the loss seems unnecessary.

BIOLOGIC TESTING.

More and still louder criticisms of this form of testing are in evidence. What has been said above in conjunction with methods of analysis, generally, applies to this form of testing

*New York meeting, 1919.

drugs. Every possible effort should be made to establish methods of biologic testing of drugs which will give fairly concordant results in the hands of skilled pharmacologists.

DEFINITIONS TO BE CAREFULLY CHOSEN.

When it is recalled that the various food and drug laws cover everything between the covers of the Pharmacopoeia, it can be readily seen how important it is to carefully formulate definitions. If, for example, a definition for *asafoetida* prescribes that this drug comes from a given source, this portion of the standard contained in the Pharmacopoeia in and of itself may control the purity of the drug. In the past it has happened that *asafoetida* was adulterated with resinous material which would provide the amount of alcohol soluble material called for by the Standard but it was clearly established by tests other than those contained in the Pharmacopoeia that the *asafoetida* was actually adulterated and contained material which was not derived from the plant source called for by the definition in the Pharmacopoeia. Such products based on the definition alone are not *asafoetida*. Another case that comes to mind is an alleged balsam of Peru which complied with all of the tests prescribed by the U. S. Pharmacopoeia, excepting that defining the source of the commodity.

If the definition should include a geographic source, this, of necessity, if the law is strictly construed, would constitute a part of the standard. It is therefore plainly evident that no geographic name should be used unless it is carefully established that such a term is needed in order to secure the proper quality of drug.

LIMITS OF ASH, STEMS, WORMY AND INFECTED MATERIAL SHOULD BE CAREFULLY PROVIDED.

The present Pharmacopoeia provides ash limits in a goodly number of drugs. Some of these should be carefully revised. The question of limiting the presence of stems and other foreign materials should also receive additional careful consideration. In some instances (*belladonna* leaves; *ipecac* root) a larger percentage of stems may be included because such stems contain material amounts of the active ingredients and lessen the expense of the drugs. Wormy material or material contaminated with excrement of vermin, insects, etc., is not specifically covered. These features should also be carefully considered and made parts of the standards. It is perfectly true that when such drugs are powdered or made into the finished preparations the ultimate consumer will not be any the wiser but it is manifestly unfair to take advantage of the consumer because of his ignorance of matters of this character. He should be protected.

LIMIT TESTS.

In the case of chemicals, many limit tests are introduced. Some of the wording of these tests is very obscure, involved and unsatisfactory. For example, in the case of testing for chlorides after setting out a method of procedure we find that the personal equation is liable to enter into the ultimate conclusion very materially. The acceptance or the rejection of a chemical may depend upon such indefinite adjectives as "turbidity," "opalescence," "faint precipitate," etc. One chemist may have formulated in his mind what a "slight turbidity" might mean; another analyst might have an entirely different idea in his makeup. Cases have actually occurred where disputes have arisen regarding the quality of chemicals because of these indefinite elements. It is believed that when such terms are used methods should be provided for determining how to arrive at them so that different chemists working in different laboratories could readily inform themselves as to what the terms actually mean.

ARTICLES TO BE INCLUDED.

This is one of the difficult points to determine upon. The drugs included in the Pharmacopoeia are intended for the use of the medical profession in the treatment of the sick. Physicians or groups of physicians have different conceptions as to the value of various drugs. One is satisfied that a given drug gives excellent results in his practice; another feels equally positive that the drug is of little use. The function of the Pharmacopoeia is not to determine whether or not one physician or a set of physicians is correct. Its primary purpose is to provide standards which will insure that uniform and reliable drugs are placed in the hands of the medical man for the treatment of his patients. It is believed the day will come and is near at hand when the number of drugs used by the medical profession will be materially reduced, but until such time does arrive it is believed that the members of the medical profession should have a large voice in the drugs to be recognized by the Pharmacopoeia.

INTERVAL BETWEEN TIME OF ISSUE AND TIME OF BECOMING EFFECTIVE.

The last decennial revision of the U. S. Pharmacopoeia had hardly reached the hands of druggists, manufacturers and analysts before it became effective. It is clearly evident that such a short interval of time is inadequate for the trade, analysts and others to adjust matters affected by the new publication. The conditions existing at the time the last Pharmacopoeia became effective compelled those in charge of the enforcement of the Food and Drugs laws to take upon themselves the responsibility of not enforcing the standards contained in the book until the trade had had sufficient time to adjust itself to the new conditions. In some cases this required at least a year. It is believed that at least a year should elapse between the time the next edition of the Pharmacopoeia is placed on the market and the time it becomes effective. This would enable the trade and all others affected to adjust themselves to the new standards. They would then not be entitled to the excuse so often met with that the new book had been thrust upon them so suddenly that they had not been able to adjust themselves to the new standards and requirements. It is believed that such a course as the one outlined above would be fair and just, not only to the trade, but also to the chemists, the physicians and the consumer.

DO MOST OF WORK BEFORE NEXT CONVENTION.

It is believed to be a mistake to practically discontinue activities after the book has been made available. It is believed the work should be as aggressive between the time the new edition appears and the time for the next Pharmacopoeial Convention as any other time in the revision of the publication. If such a course were adopted the Committee would be prepared, to a large extent, to place it in the hands of the newly-appointed organization to proceed on definite plans and lines based on the results provided by the work of the former Committee. It is believed that such a course would materially reduce the length of time now necessary to issue a new edition.

PAY FOR WORK AS FAR AS POSSIBLE.

This feature is considered not with the idea of criticizing the excellent work done in past years voluntarily, but with a view of calling attention to the fact that it is asking too much of many of the busy men to give up a large amount of time to the work and receive no compensation therefor. Some can afford the time and labor only at the expense of health. In many instances the workers would not accept remuneration under any circumstance, but they often can ill afford to give the time for it. It is, therefore, believed that the best way to solve this problem is to employ suitably paid workers and exact from them due returns for the compensation revision.

IMITATIONS AND SUBSTITUTES.

Proprietary preparations through advertising and merit at times gain for themselves a useful place as remedial agents. In some instances an effort has been made to introduce into the Pharmacopoeia what might be called an imitation or a substitute. It is believed that if a manufacturer or dealer through investigation, expenditure of money and time produces a product which is of value to the public and especially the sick he is entitled to some consideration both morally and legally. After a given time it should become public property. In no case should the Pharmacopoeial Committee introduce into the Pharmacopoeia what might be looked on as a substitute or an imitation for such product. Attention at this point is called to the fact that the Food and Drugs Act forbids the placing on the market of imitation drugs.

SCIENTIFIC LITERARY EDITOR.

The wording of the methods of analyses, the limit tests and standards are sometimes obscure, indefinite or susceptible of more than one construction. All this should be rectified. It is believed that a large part of these shortcomings can be eliminated by having everything carefully edited, keeping in mind particularly brevity, clarity and definiteness.

NOMENCLATURE.

All names should be carefully chosen so as to avoid confusion and mistakes. Ferric Phosphate means a definite chemical but this name in the Pharmacopoeia refers to a mixture of iron phosphate and sodium citrate. In short, everything introduced into the Pharmacopoeia should be made as definite and specific as possible.

Respectfully submitted,

L. F. KEBLER, *Chairman*

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

CHICAGO.

The one hundred and fourth monthly meeting of the Chicago Branch American Pharmaceutical Association was held at the LaSalle Hotel, Friday evening, October 24, 1919, at eight o'clock. The meeting was preceded by a dinner, which was well attended.

The first speaker of the evening, Julius H. Riemenschneider, presented a pleasing review of the Rochester meeting of the National Association of Retail Druggists. He said that 1000 delegates and visitors were registered at the meeting, that the druggists of Rochester entertained lavishly in their beautiful city, and that the business meetings were well attended and very profitable.

Splendid talks were given by C. A. Mayo on the Edmonds' Bill, Attorney Brokmeyer on the absolutely essential need of publicity, and Wayne B. Wheeler, Attorney for the Anti-Saloon League, on the sale of intoxicants by the druggist. The Association adopted a resolution urging druggists to discontinue entirely the sale of liquors, even on prescriptions. Very recently, Mr. Riemenschneider said, word has come from the Government that druggists will be permitted to sell preparations containing alcohol of *strictly U. S. P. and N. F. Standard*, but right here is where the Government will "get" the unscrupulous among pharmacists. Mr. H. P. Hynson, of Baltimore, was a strong advocate for the A. Ph. A., and a resolution on closer coöperation between the N. A. R. D. and A. Ph. A. was enthusiastically adopted.

Professor C. M. Snow presented most admirably the "doings" of the A. Ph. A. meeting at New York. His praise of Local Secretary Schaefer and his committee was endorsed by all present who had been at the New York meeting. In Professor Snow's review he mentioned especially that for the first time in years all three of the nominees for the next president are retail druggists, Charles

H. Packard of Boston, Fred. W. Nitardy, now of Brooklyn, and L. A. Seltzer of Detroit.

W. B. Day, Secretary of the Illinois Pharmaceutical Association, reported the June meeting of this Association. Over 500 were registered and the business sessions were well attended. Illinois now boasts the largest membership, 1600, among the state pharmaceutical associations, especially those with voluntary membership. New members this year totalled 400. The President's address was excellent, and Secretary Samuel C. Henry of the N. A. R. D. gave an able address on the narcotic situation. A resolution against liquor selling was adopted.

The question of publishing extracts of pharmaceutical literature in up-to-date monthly form, which was raised by the chairman of the Scientific Section at the recent New York meeting and which received much discussion before the Council of the Association, has now been brought to the attention of the Local Branches by the recent action of the New York Branch, as follows:

"BE IT THEREFORE *Resolved*, that the New York Branch of the American Pharmaceutical Association respectfully urge upon the Executive Committee and the Council a speedy submission of the problem to the entire membership of the Association in the shape of a special post-card referendum, said post-card ballot to give to each member the opportunity to vote on one of the following options:

(a) Raising A. Ph. A. dues to \$7.50 a year and instituting a monthly abstract journal to replace the present Year Book.

(b) Raise A. Ph. A. dues to \$6.00 a year and continue the present Year Book.

(c) Keep the A. Ph. A. dues at \$5.00 a year and abolish the Year Book.

(d) Keep the A. Ph. A. dues at \$5.00 a year, abolish the JOURNAL as well as the Year Book, and publish bound copies of the combined Proceedings and Progress of Pharmacy, same as prior to 1912.

After full discussion before the Chicago Branch the following motions were adopted:

1. A referendum vote should be taken from the members of the A. Ph. A. on the question of publication of pharmaceutical literature in a monthly abstract journal or in an annual volume.

2. The options or questions to be placed on the referendum ballot as suggested by the New York Branch are not approved, for they are too complicated and could not result in a decisive vote.

3. The referendum should consist of but two questions only:

(a) Do you favor our Association publishing abstracts of pharmaceutical literature in monthly form in an abstract journal? or

(b) Do you favor our Association publishing abstracts of pharmaceutical literature in annual form as is now being done in the Year Book?

The list of the arguments advanced in favor of these motions was as follows:

(a) As long as the question is up and there seems to be a real difference of opinion among a considerable portion of the membership, it should be settled, preferably by ballot.

(b) The question of increasing the dues of the Association is entirely foreign to the question of how the abstracts shall be published. If the cost of publishing an abstract journal increases the expense of the Association, let that be an argument in favor of the Year Book, and if the advocates of such a journal can demonstrate that the cost would not exceed or be less than the present cost of the Year Book, so much more an argument in their favor. If the need of increasing the dues of the Association is considered imperative by the Executive Committee of the Council, then the dues must be increased and a referendum thereon is useless. In any event, the By-Laws must be amended before the dues can be increased and such amendment can only be made at the annual meeting.

(c) To be effective a referendum should contain no more than a pro and con of one question, that can be answered "Yes" or "No" without qualification of any kind. A referendum such as proposed by the New York Branch with four diverse questions and two great policies to be considered could not be decisive; furthermore, there should be no idea presented in the referendum of discontinuing any of the present service features of the Association unless something better take the place of the discontinued feature.

E. N. GATHERCOAL, *Secretary*.

DETROIT.

The first meeting of the 1919-'20 season of the Detroit Branch A. Ph. A. was called to order at 8.30 P.M. October 17, by President E. R. Jones.

The minutes of the preceding meeting were read and approved.

The President then called Vice-President W. H. Brome to the chair while he read an address, presenting three resolutions, which was attentively received.

The first resolution: That hereafter our meetings commence at 8.15 P.M. to be followed by a buffet lunch in the judgment of the officers, except where the particular case demands a dinner at 6.30 precede. Supported. Carried.

The second recommendation: That the Branch get behind Mr. Seltzer's candidacy for the Presidency of the A. Ph. A. was amended by asking the Secretary to write each member of the A. Ph. A. in Michigan, urging Mr. Seltzer's election. Supported. Carried.

The third recommendation: That the Branch endeavor to get a prerequisite law passed by the next legislature, was amended by adding that a committee be appointed, consisting of President, Secretary and Chairman of Program Committee, to undertake the necessary work in conjunction with a similar committee from the D. R. D. A. to consider the appointment of the committee to do the work. Carried.

Mr. Chase made an appeal for ideas on topics that would be interesting to the Branch, and spoke regarding the World War Veterans Branch of the A. Ph. A. and the free membership accorded veterans of the war for one year.

Mr. Chase presented a motion that the meeting date be changed to the second Friday of every month. This motion is tabled until our next meeting according to our By-Laws.

Mr. Seltzer moved that our November meeting be held on the second Friday. Carried.

Mr. O. A. Farwell was then introduced, who read a paper on "A New Preservation for Biological Specimens." A saturated solution of chloretoone, being the new vehicle employed, has proved to be most satisfactory and equal in all respects to alcohol.

The President then introduced Dr. Byington of the State Public Health Service, who spoke on the new Michigan Venereal Disease Law. He explained the purpose and the workings of the law quite clearly. An interesting discussion then followed.

Mr. Webster suggested that the druggists be supplied with instructive literature to give to those who ask for venereal remedies.

F. F. INGRAM, JR., *Secretary*.

NEW YORK.

The October, 1919 meeting of the New York Branch of the American Pharmaceutical Association was called to order in the lecture hall of the New York College of Pharmacy Building, on Monday evening, October 13th, at 8.15 P.M.

Thirty-five members were present.

Minutes of the preceding meeting were read and approved.

Member of the Council.—Prof. Jeannot Hostmann brought in no report.

Fraternal Relations.—Dr. Leon Lascoff brought in no report.

Audit Committee.—Dr. Jacob Diner reported all bills paid.

Education and Legislation.—Mr. E. J. Kennedy brought in no report.

Communications.—A letter was read from Mr. Sigmund Kopald regarding the proposed revision of Schedule C. of the Pharmacy Law. This letter was ordered filed. A letter was read from Mr. Louis Berger, Secretary of the New York Pharmaceutical Conference, requesting our delegates to the Conference to be instructed as to what action should be taken with regard to the demands of the drug clerks. After some discussion it was moved, seconded and carried that since the Local Branch is not a representative body of pharmacists the Branch delegates to the Conference shall not take any definite stand regarding the clerk question and that Mr. Berger be so informed by the Secretary. A letter was read from Chairman Robert P. Fischelis of the War Veterans Section of the A. Ph. A. requesting that action should be taken to get as many war veterans as possible into the new Section of the A. Ph. A. It was moved, seconded and carried that the Secretary of the Branch be instructed to send applications to each and every member of the Branch with the notice of the next meeting.

NEW BUSINESS.

After a discussion of the action taken by the Council with regard to the Year Book, raising of dues, etc., the following resolutions were adopted:

WHEREAS, The question of the fate of the Year Book brought up at the New York

meeting of the American Pharmaceutical Association, through the proposition to convert it into a monthly abstract journal, has developed into several propositions including one to abolish it altogether, and

WHEREAS, This question will never be satisfactorily settled until a clear-cut referendum be had including all propositions and arranged to bring the largest possible response from our membership, and

WHEREAS, Efforts in this direction made at the meeting of the A. Ph. A. Council held on August 29th have been postponed by reference of the problem to the newly created Executive Committee;

Be It Therefore Resolved, That the New York Branch of the American Pharmaceutical Association respectfully urge upon the Executive Committee and the Council a speedy submission of the problem to the entire membership of the Association in the shape of a special post-card referendum, said post-card ballot to give to each member the opportunity to vote on one of the following options:

(a) Raising A. Ph. A. dues to \$7.50 a year and instituting a monthly abstract journal to replace the present Year Book.

(b) Raise A. Ph. A. dues to \$6.00 a year and to continue present Year Book.

(c) Keep the A. Ph. A. dues at \$5.00 a year and abolish the Year Book.

(d) Keep the A. Ph. A. dues at \$5.00 a year, abolish the JOURNAL as well as the Year Book, and publish bound copies of combined Proceedings and Progress of Pharmacy, same as prior to 1912.

And Be It Further Resolved, That copies of these resolutions be sent the Secretary of the A. Ph. A., the Secretary of the Council of the A. Ph. A. and the Secretary of each Local Branch of the A. Ph. A.

The second half of the meeting was devoted to the reading of a paper on Commercial Health Insurance by Dr. J. J. O'Reilly. This paper was followed by considerable discussion at the conclusion of which it was moved, seconded and carried that a committee be appointed to attend the joint meeting of the New York Medical and Pharmaceutical organizations to be held on October 16th at the Chemists' Club. The committee appointed consisted of Dr. Geo. Hohman, Mr. Robert S. Lehman, Dr. Joseph L. Mayer.

After considerable discussion a vote of thanks was tendered the speaker.

Under regular procedure the meeting was declared adjourned.

HUGO H. SCHAEFER, *Secretary*.

PHILADELPHIA.

The October meeting of the Philadelphia Branch of the American Pharmaceutical Association was held Tuesday evening, October 14, 1919 at the Philadelphia College of Pharmacy.

Being the first meeting of the 1919-1920 season the business matters consisted largely of discussion of plans for well attended, interesting and enthusiastic meetings for this season. A number of very helpful suggestions were made and it was agreed that the meetings shall be held always the second Tuesday of each month at 8 P.M. in the Philadelphia College of Pharmacy.

The Membership Committee submitted a report that an intensive membership campaign had been started with members of the parent body who were not members of the Branch.

The World War Veterans Section was discussed at length and the local branch agreed that all pharmacists entitled to membership in the parent body under the special arrangements in force would also be members of the local branch without charge for the first year's dues.

The President appointed Josiah C. Peacock, W. L. Cliffe and E. G. Eberle a committee to draft and forward to Mrs. Frank M. Apple resolutions of sympathy on account of the death of Mr. Apple, a long time and faithful member of the Local Branch.

The entertainment of the evening consisted of very able reports of the various conventions held this summer, as follows:

The American Pharmaceutical Association, by E. G. Eberle.

The National Association of Retail Druggists, by Ambrose Hunsberger.

The Pennsylvania Pharmaceutical Association, by Prof. Julius Sturmer.

The Pennsylvania State Medical Association, by F. E. Stewart.

The evening's program was concluded with refreshments served by a local caterer.

ELMER H. HESSLER, *Secretary*.

ST. LOUIS.

The monthly meeting of the St. Louis Branch was held at the St. Louis College of Pharmacy, Thursday, September 18th.

Major F. L. McCartney, a pharmacist in charge of purchasing medical supplies, during

the war, delivered the address of the evening. Major McCartney, who is connected with the New York Branch of the Association, gave in detail the methods used by the Government in supplying the enormous demand for medical and surgical supplies during the big drive in Europe. All bids and awards were made publicly, which prevented any possibility of one firm being favored in preference to another. In a great many instances, especially during the early months of his appointment, price was a secondary factor, whereas time of delivery was considered first.

Although the demand was exceedingly large, the Government experienced little trouble due to shortage. This Major McCartney attributed to the hearty coöperation of the manufacturing pharmacists and the retail druggists economizing on the supplies needed by the Government. The shortages of medical supplies experienced by the various camps was due, in a majority of cases, to delay in ordering and misjudging the amount of supplies needed for a certain period.

A rigid watch was kept on the quality of drugs offered, and those that did not answer the requirement were rejected, and suggestions offered to remedy the error in the method of manufacture. Major McCartney concluded by answering many questions asked by the members.

Dr. H. M. Whelpley told many interesting details about the meeting in New York and the pleasure experienced through personal contact with his many friends and associates there. Dr. Whelpley attributes the life and success of the Association to the cordiality and friendship among the members as well as to the interest in pharmaceutical affairs.

Mr. J. M. Noble gave a report on the Scientific Section in which most of his time was spent while attending the New York meeting. He incidentally remarked that the number of young men at the convention was an agreeable surprise.

Vice-President St. John officiated in the absence of President Berg, who last month accepted a position with Burrough Brothers in Baltimore.

One application for membership was reported to have been turned over to the Treasurer. Leslie Prichard was appointed to succeed President Berg as Chairman of the Membership Committee. Before adjournment, October 16th was selected for the next meeting.

LESLIE E. PRICHARD, *Secretary*.

COUNCIL BUSINESS

MINUTES OF THE THIRD SESSION OF THE COUNCIL, 1918-1919.

The third session of the Council of the American Pharmaceutical Association for 1918-19 was held at the Hotel Pennsylvania, New York, on Wednesday, August 27, 1919, the meeting being called to order at 8 p.m. by Vice-Chairman S. L. Hilton, who presided.

Present: Messrs. H. V. Army, James H. Beal, George M. Beringer, Wm. B. Day, Alfred R. L. Dohme, Clair A. Dye, E. G. Eberle, F. R. Eldred, J. W. England, E. N. Gathercoal, J. G. Godding, S. L. Hilton, Wortley F. Rudd, Clyde M. Snow, Dr. F. E. Stewart, R. W. Terry, Dr. H. M. Whelpley, J. A. Koch and C. H. LaWall.

On motion, the reading of the minutes of the previous sessions was dispensed with.

Applications for membership from 521 to 572 inclusive were presented and favorably acted upon. The list was:

- No. 521. John Mueller, Cor. 25th and Holmes St., Kansas City, Mo., rec. by Jacob Diner and G. Horstmann.
- No. 522. Uriel Russin, 1764 Weeks Ave., New York, N. Y., rec. by G. Horstmann and Jacob Diner.
- No. 523. Charles Lincoln Gately, 1002 Candler Bldg., Atlanta, Ga., rec. by G. Horstmann and Jacob Diner.
- No. 524. Mrs. Fannie Lamar Rankin Gately, 960 Peachtree St., Atlanta, Ga., rec. by Jacob Diner and G. Horstmann.
- No. 525. Stephen Oscar Blair, Monroe, N. C., rec. by H. M. Whelpley and J. W. England.
- No. 526. John William Dysle, 128 Front St., Marietta, Ohio, rec. by Frank H. Freericks and Wm. B. Day.
- No. 527. Wm. L. Huning, c/o Monsanto Chemical Works, 12 Platt St., New York, N. Y., rec. by F. L. McCartney and Charles E. Caspari.
- No. 528. Walter S. Goff, c/o Monsanto Chemical Works, 12 Platt St., New York, N. Y., rec. by F. L. McCartney and Chas. E. Caspari.
- No. 529. A. C. Robertson, c/o Monsanto Chemical Works, 12 Platt St., New York, N. Y., rec. by F. L. McCartney and Chas. E. Caspari.
- No. 530. James Edgar Shepherd, 12 Audrey Ave., Oyster Bay, N. Y., rec. by G. Horstmann and Jacob Diner.
- No. 531. Jacob J. Franz, 184 E. 125th St., New York, N. Y., rec. by G. Horstmann and Jacob Diner.
- No. 532. Carl Clark Gray, 22 Highland Ave., Houlton, Me., rec. by Wm. B. Day and J. J. Bradley.
- No. 533. William Dulany Ogletree, Troupe, Texas, rec. by R. H. Walker and Wm. B. Day.
- No. 534. Ole P. Ronning, Main St., Waubay, So. Dakota, rec. by D. P. Jones and A. A. Zieske.
- No. 535. Thomas A. Findlay, Westhope, N. D., rec. by W. P. Porterfield and E. L. Newcomb.
- No. 536. Carl McDonald Thompson, Tower City, N. D., rec. by W. P. Porterfield and E. L. Newcomb.
- No. 537. Andrew Martin Reite, Portal, N. D., rec. by W. P. Porterfield and E. L. Newcomb.
- No. 538. Sister M. Conchessa, St. John's Hospital, Fargo, N. D., rec. by Oscar Hallenberg and W. P. Porterfield.
- No. 539. George James McCabe, Nekoma, N. D., rec. by W. P. Porterfield and E. L. Newcomb.
- No. 540. Ziba Fred. Hamilton, Hunter, N. D., rec. by E. L. Newcomb and J. W. England.
- No. 541. Paul Bilden, Northwood, N. D., rec. by E. L. Newcomb and J. W. England.
- No. 542. Peter O. Bugge, Bisbee, N. D., rec. by W. P. Porterfield and E. L. Newcomb.
- No. 543. Joseph A. Belanger, York, N. D., rec. by W. P. Porterfield and E. L. Newcomb.
- No. 544. Thomas Spencer Harris, Hettinger, N. D., rec. by W. P. Porterfield and E. L. Newcomb.
- No. 545. Georg Lockett, Wimbledon, N. D., rec. by W. P. Porterfield and E. L. Newcomb.
- No. 546. Herbert E. White, Jamestown, N. D., rec. by W. P. Porterfield and E. L. Newcomb.
- No. 547. Samuel N. Rinde, Lankin, N. D., rec. by W. P. Porterfield and E. L. Newcomb.
- No. 548. William Arthur Roehm, Garrison, N. D., rec. by W. P. Porterfield and E. L. Newcomb.
- No. 549. John J. Keen, 506 Dok Ave., Wahpeton, N. D., rec. by E. L. Newcomb and J. W. England.

- No. 550. John C. Macphail, Buffalo, N. D., rec. by Oscar Hallenberg and W. P. Porterfield.
- No. 551. S. C. Hoel, Milnor, N. D., rec. by Oscar Hallenberg and W. P. Porterfield.
- No. 552. Hjalmar C. Hendrickson, Luverne, N. D., rec. by Oscar Hallenberg and W. P. Porterfield.
- No. 553. Oscar Zuercher, Kenmare, N. D., rec. by W. P. Porterfield and E. L. Newcomb.
- No. 554. Henry B. Smith, 536 Fifth Ave., Brooklyn, N. Y., rec. by J. Leon Lascoff and Geo. C. Diekman.
- No. 555. Ernest Friedhoff, 63 Fort Green Pl., Brooklyn, N. Y., rec. by C. F. Fischer and J. Leon Lascoff.
- No. 556. Charles H. Van Buren, Third Ave. and 18th St., New York, N. Y., rec. by C. F. Fischer and G. Horstmann.
- No. 557. Walter Weld Figgis, 46 Barclay St., New York, N. Y., rec. by Hugo Kantrowitz and Robt. Lehman.
- No. 558. Howard F. Brownell, 1152—55th St., Brooklyn, N. Y., rec. by F. W. Nitardy and C. DeJonge.
- No. 559. William E. Fay, Flushing, N. Y., rec. by F. W. Nitardy and C. DeJonge.
- No. 560. Ray E. Schoetzow, 82 Montague St., Brooklyn, N. Y., rec. by F. W. Nitardy and Wm. B. Day.
- No. 561. Harry R. Cary, 19 Woodruff Ave., Brooklyn, N. Y., rec. by F. W. Nitardy and Wm. B. Day.
- No. 562. Adolph Schmidt, 267—4th St., Hoboken, N. J., rec. by Jeannot Hostmann and Wm. B. Day.
- No. 563. Henry Buch, 661 Columbus Ave., New York, N. Y., rec. by Robt. Lehman and Hugo Kantrowitz.
- No. 564. Selma V. Temliak, 1503 Madison Ave., New York, N. Y., rec. by H. V. Arny and Wm. B. Day.
- No. 565. Herman Reaske, 498 Second Ave., New York, N. Y., rec. by Jeannot Hostmann and Wm. B. Day.
- No. 566. Charles H. Schmidt, 320 Washington St., Hoboken, N. J., rec. by Jeannot Hostmann and Wm. B. Day.
- No. 567. Charles Tuffiash, 59 South Muner Ave., Newark, N. J., rec. by E. N. Steine and Jeannot Hostmann.
- No. 568. Walter Andrew Blaesser, Paullina, Iowa, rec. by Wilber J. Teeters and G. Horstmann.
- No. 569. Albert Koehler, 188 St. Nicholas Ave., New York, N. Y., rec. by J. Leon Lascoff and Geo. E. Schweinfurth.
- No. 570. Frank W. McIntosh, Farmville, Va., rec. by W. F. Rudd and A. Bolenbaugh.
- No. 571. George Bliss Upham, Walker, Minn., rec. by E. L. Newcomb and J. W. England.
- No. 572. William T. Kerfoot, 7th and L Sts., N. W., Washington, D. C., rec. by E. G. Eberle and J. W. England.

Applications for the membership of 139 soldier, sailor and marine pharmacists (under Motion No. 30 of Council Letter No. 23) were presented, as follows:

- S. S. No. 1. Conwell Forinan Dirickson, 27th and Chestnut Ave., Newport News, Va., Sgt. first class, Charge Dispensary Base Hospital, Camp Lee, Va., discharged March, 18, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 2. Henry Mark Wiley, 905 Washington Blvd., Beaumont, Texas, Inf. Co. K., 360 Inf., 90th Div., discharged June 21, 1919, rec. by W. C. Wiley and J. W. England.
- S. S. No. 3. Harley G. Davenport, Chewelah, Wash., 364 F. H. Co., 316 San. Tr., 91st Div., discharged May 10, 1919, rec. by E. G. Eberle and J. W. England.
- S. S. No. 4. Edgar Morgan Baker, 627 11th Street, Huntington, W. Va., Medical Dept., B. H. No. 69, U. S. A., discharged July 23, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 5. Robert F. Fuelleman, 1302 Eastern Ave., Janesville, Wisc., Medical Department, Lavanna Pro. Grd., Ill., discharged June 23, 1919, rec. by W. M. Pfenning and J. W. England.

- S. S. No. 6. Harold L. Ernest, General Hospital 43, National Soldiers Home, Va., Medical Department, Hospital Sgt., still in the service, rec. by D. M. Roberts and J. W. England.
- S. S. No. 7. Calvin Frank Pate, Huntsville, Texas, Medical Department, unassigned, discharged December 6, 1918, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 8. Max Colton, 63 Peshine Ave., Newark, N. J., Medical Detachment, 7th American Train, discharged July 24, 1919, rec. by S. A. Kamper and S. Katchers.
- S. S. No. 9. William H. Grebe, Brenham, Texas, Medical Department U. S. Army, General Hospital 32, discharged February 13, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 10. Charles Bryan Allison, Farmersville, Texas, Hospital Corps of the Navy, still in the service, rec. by Chas. H. Owen and Frank H. Freericks.
- S. S. No. 11. Thomas George Barnes, Bellville, Texas, 111 Ammunition Train, discharged April 1, 1919, rec. by A. E. Carter and Frank H. Freericks.
- S. S. No. 12. Malcolm Graham Frazier, Watertown, Tenn., U. S. Navy, discharged June 12, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 13. Lester E. Webber, 14 Rand St., Central Falls, R. I., 7th Sanitary Train, discharged July 9, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 14. David Botteter Peters, Navy Recruiting Station, Arcade Building, Columbia, S. C., Surgeon (Assist.) Navy, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 15. Edward B. Knight, Bamberg, S. C., Co. K, 318th Inf., 80th Div., discharged June 5, 1919, employed by Mack's Drug Store, Bamberg, S. C., rec. by F. B. McCrackin and J. W. England.
- S. S. No. 16. Triz. Van. Cockfield, Johnsonville, S. C., Navy Medical Branch, still in service, rec. by B. H. Carroll and J. W. England.
- S. S. No. 17. Francis Souter Blair, Chesterfield, S. C., Medical Department, Evacuation Hospital No. 8, discharged June 20, 1919, rec. by Frank H. Freericks and B. L. Gathings.
- S. S. No. 18. James Frank Agnew, Spartanburg, S. C., Main and Church Sts., Medical Department attached Dev. Branch No. 2, Camp Wadsworth, S. C., discharged, December 14, 1918, rec. by Lt. R. H. Brice and J. W. England.
- S. S. No. 19. James T. Troxell, 621 Main St., Gallitzin, Pa., Medical Department, discharged July 31, 1919, rec. by John E. Reed and J. W. England.
- S. S. No. 20. Paul LeBaron Springer, 118 S. Front St., Sunbury, Pa., Motor Field Hospital 44, discharged August 7, 1919, rec. by H. V. Crawford and Frank H. Freericks.
- S. S. No. 21. George Leo Smith, 516 Jones St., Hollidaysburg, Pa., Medical Department, 125th Inf., discharged May 29, 1919, rec. by John P. Jacobs and H. I. Davis.
- S. S. No. 22. Henry Sage Ostrander, 1319 13th St., Altoona, Pa., Medical Department, discharged July 5, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 23. John James O'Donnell, 1225 Creedmoore Ave., Pittsburgh, Pa., Priv. Medical Corps, 320th Inf., 80th Div., discharged June 7, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 24. Mathew Clarence Meagher, 362 Main St., Slatington, Pa., Medical Department, Columbus Barracks, O., discharged April 14, 1919, rec. by David F. Bentley and Frank H. Freericks.
- S. S. No. 25. Michael Joseph Leshinsky, 333 Vine St., Old Forge, Pa., Medical Department, C. A. C., Fort Dupont, Del., discharged soon, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 26. Elwood J. Kern, 742 N. 6th St., Allentown, Pa., Quartermaster Corps, U. S. A., discharged May 27, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 27. Harry Hamilton Johnson, 3124 Haverford Ave., Philadelphia, Pa., Medical Corps Hospital, discharged Feb. 22, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 28. Abraham Davidson, 1718 S. 7th St., Philadelphia, Pa., Co. A., 316th Infantry, 79th Division, discharged in February, rec. by B. Steiner and E. J. Lupin.

- S. S. No. 29. Edward D. Bruce, c/o Winand's Pharmacy, 6th and Main Sts., Darby, Pa., Medical Department, 310th Engineers, North Russia, discharged July 24, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 30. Frank Neal Britcher, 211 Locust St., Hanover, Pa., Medical Detachment, Base Hospital, Camp Lee, discharged July 3, 1919, rec. by F. L. Ziegler and Frank H. Freericks.
- S. S. No. 31. Clifton Ernest Bell, U. S. Louisiana, League Island Navy Yard, Philadelphia, Pa., Hospital Corps, U. S. Navy, still in service, rec. by Worton W. Baker and A. Jay White.
- S. S. No. 32. Earl W. Stephens, Hastings, Okla., Field Hospital No. 141, 111 Sanitary Tr., discharged June 19, 1919, rec. by Abe Levite and Carl R. Welden.
- S. S. No. 33. George Bernard Sahn, Main St., Okeene, Okla., Co. C., 19th Infantry and Medical Department, Base Hospital, discharged January 11, 1919, rec. by B. C. Sahn and Frank H. Freericks.
- S. S. No. 34. Eugene John Wierster, 1407 6th St., Portsmouth, O., Medical Corps, 335 Field Hospital, discharged May 6, 1919, rec. by J. Geo. Wurster and Frank H. Freericks.
- S. S. No. 35. Maurice William Sheehy, 1033 Chapel Road, Dayton, O., Air Service, 2nd Mobile Group, discharged February 7, 1919, rec. by J. F. Gallagher and R. Hall.
- S. S. No. 36. Mark Allen Kidd, 125 S. Main St., Dayton, O., Debarkation Hospital No. 5, discharged May 29, 1919, rec. by J. F. Gallagher and Frank H. Freericks.
- S. S. No. 37. Forrest Lee Glenn, 114 Courtland St., Painesville, O., U. S. Navy, Medical Corps, discharged July 10, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 38. Robert Raymond Fitzpatrick, 908 Sunset Ave., Cincinnati, O., Medical Detachment, B. H. Camp, Sherman, O., still in service, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 39. Thomas Leroy McBride, P. O. Box 135, Marshville, N. C., 321st Inf., 81st Div., discharged June 27th at Camp Lee, Va., rec. by B. C. Griffin and H. C. Ashcraft.
- S. S. No. 40. Guy Elliott Brookshire, 126 Montana Ave., W. Asheville, N. C., Medical Evacuation Hospital No. 14, discharged May 15, 1919, rec. by R. S. Finley and W. B. Wilson.
- S. S. No. 41. Frederick A. Weiss, 2408 Silver St., Brooklyn, N. Y., Q. M. Corps, Instructor, O. T. S., Camp Johnston, Fla., Asst. Supply Officer, 151st Depot Brigade, Camp Devens, Mass., discharged July 28, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 42. Perry Hibbard Wedge, 29 Lake St., Owego, Tioga Co., N. Y., 310th Inf., 78th Division, discharged June 6, 1919, rec. by W. C. Gallagher and Frank T. Ogden.
- S. S. No. 43. Alexander Platosky, 68 Graham Ave., Brooklyn, N. Y., Medical Dept., U. S. G. H. No. 1, Bronx, discharged June 27, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 44. Fred Ortenberg, 794 6th Ave., New York, N. Y., Medical Corps, Governor's Island, discharged March 25, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 45. Joseph Futterman, 44 W. 66th St., New York, N. Y., Medical Corps, discharged April 26, 1919, rec. by David Barker and Louis Barker.
- S. S. No. 46. Isidore Fisher, 601 W. 178th St., New York, N. Y., Medical Dept., 407th Telegraph Br., discharged May 12, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 47. Joseph C. Fagan, U. S. Naval Medical Supply Depot, Pearl and Sands Sts., Brooklyn, N. Y., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 48. Louis Wilbur Zucker, 126 Washington St., Hoboken, N. J., 76th Field Artillery, Medical Corps, discharged June 21, 1919, rec. by David L. Abrams and B. F. Zuckner.
- S. S. No. 49. Oscar K. Whipple, Jr., 65 Broad St., Bridgeton, N. J., Medical Department, 104 Engineers, discharged May 29, 1919, rec. by O. K. Whipple and Henry A. Jordan.
- S. S. No. 50. Ira Isaac Schwartz, 887 Broad St., Newark, N. J., Navy, Columbia Naval Unit, U. S. N. R. F., discharged December 20, 1918, rec. by Frank H. Freericks and J. W. England.

- S. S. No. 51. Michael Vincent McFadden, 305 Broadway, Camden, N. J., Navy Base Hospital, Unit No. 5, expect discharge September 1, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 52. Oscar Samuel Katz, 148 Spruce St., Newark, N. J., Co. E, N. Y. U. S. A. T. C., discharged December 19, 1918, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 53. Frank Joseph Dassing, 334 S. 12th St., Newark, N. J., Hospital Corps, U. S. N., still in service, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 54. Paul Styer Cutter, 40 E. Federal St., Burlington, N. J. Medical Supply Depot, Army, discharged, April 29, 1919, rec. by Edgar R. Sparks and Frank H. Freericks.
- S. S. No. 55. Lewis Wellington LeDuke, Jr., 344 E. High St., Manchester, N. H., Medical Dept., U. S. A., discharged August 9, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 56. LeRoy Earl Whitford, Smithfield, Neb., Infantry 89th Division, discharged June 3, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 57. Waldo Wm. Stevenson, Broken Bow, Neb., Base Hospital No. 49, Medical Department, discharged June 19, 1919, rec. by H. Porter and A. H. Souders.
- S. S. No. 58. Ervin J. Haeberle, 1003 9th Ave., Broken Bow, Neb., 3rd Bn., Co. N, Chem. War Service, discharged December 30, 1918, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 59. Roy Whitehurst, 3605 Montgall Ave., Kansas City, Mo., rec. by E. W. Larkin and L. Rowe, U. S. Navy Hospital Corps, discharged August 14, 1919.
- S. S. No. 60. William Fred True, Henning, Minn., U. S. Navy, U. S. S. Powhatan, discharged July 2, 1919 as Pharmacist Mate, 3rd Class, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 61. Tom A. Masucci, 518 Holmes St., Kansas City, Mo., Medical Corps, discharged July 22, 1919, rec. by L. Laureng and Louis Freworth.
- S. S. No. 62. Alvin V. Bartelsmeyer, Mt. Vernon, Mo., M. D., Base Hospital No. 131, discharged June 13, 1919, rec. by W. R. Gahring and W. W. Marbal.
- S. S. No. 63. Thurman Thos. Justice, Krebs Ave., Pascagoula, Miss., Medical Department, 142 Infantry, discharged June 27, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 64. Howard H. Phipps, Paynesville, Minn., Medical Department, U. S. A., General Hospital No. 43, National Soldiers Home, Va., rec. by D. M. Roberts and Frank H. Freericks.
- S. S. No. 65. Thomas Gordon Bracking, Y. M. C. A., Minneapolis, Minn., Medical Corps, Surgical Service, discharged July 31, 1919, rec. by E. P. Quain and M. S. Chatfield.
- S. S. No. 66. Clifton James Muir, Elizabeth Apartment, F. W. Ridge, Marquette, Mich., Sanitary Corps, U. S. A., on duty Camp Hospital, Camp Grant, Ill., rec. by Chas. S. C. Muir and Frank H. Freericks.
- S. S. No. 67. John Kay, 1241 Hamilton Blvd., Detroit, Mich., Base Hospital No. 17, discharged May 17, 1919, rec. by Gertrude M. Palmer and Frank H. Freericks.
- S. S. No. 68. Claude W. Behrens, Big Rapids, Mich., Medical Department, 57th U. S. Infantry, discharged April 3, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 69. William John McCannon, 239 Linden St., Wellesley, Mass., Hospital Corps, U. S. N. R. F., discharged July 31, 1919, rec. by Patrick J. Fitzpatrick and Frank H. Freericks.
- S. S. No. 70. John Henry Hansen, 2524 Dulaney St., Baltimore, Md., still in service, rec. by Benjamin Hu and Frank H. Freericks.
- S. S. No. 71. Charles Edmund McHale, 1014 First St., New Orleans, La., Navy Hospital, discharged February, 1919, rec. by E. A. Walsdorf and G. W. McDuff.
- S. S. No. 72. Merle Arna Dunn, Meadville, Mo., U. S. Naval Station, New Orleans, La., discharged June 10, 1919, rec. by E. A. Ruddiman and W. D. Gleaves.
- S. S. No. 73. Clovis J. Bouvier, 2137 Fern Cor. Sycamore St., New Orleans, La., Hospital Corps, U. S. N. R. F., discharged April 14, 1919, rec. by Jos. Ipser and F. S. Harvey.

- S. S. No. 74. Burr C. Wright, Terrell, Iowa, Co. G., 2nd Infantry Repl. Troops, discharged December 31, 1918, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 75. Robert Royem, 2014 Lakeport St., Sioux City, Ia., Q. M. Corps, Ft. Des Moines, discharged May 2, 1919, rec. by P. A. Brecht and Lloyd Castle.
- S. S. No. 76. Glenn Arthur Jones, Coon Rapids, Iowa, Medical Department, U. S. Army Base Hospital, discharged March 5, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 77. Clement John FitzGerald, c/o Brady Drug Co., Mason City, Ia., 816 Aero Squadron, 6th Detachment, A. S. A. P., discharged March 18, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 78. Frank Morris Cravens, French Lick, Ind., Medical Detach., 335th Infantry, 84th Division, discharged February 22, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 79. Ivan Lloyd Thomson, 5301 Broadway, Chicago, Ill., Hospital Corps, U. S. N., U. S. S. Mercy, discharged April 22, 1919, rec. by H. C. Stigall and Frank H. Freericks.
- S. S. No. 80. George Fred Masongarb, Geneseo, Ill., Medical Department, Attending Surgeon, Washington, D. C., discharged May 31, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 81. Ferdinand J. Leigh, 4338 West End Ave., Chicago, Ill., Base Hospital, Det., Camp Jackson, S. C., discharged March 12, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 82. Leo Anthony Lanigan, 2034 N. Kenneth Ave., Chicago, Ill., 58th F. A. Brigade, discharged as Captain June 25, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 83. Marco Adrogha, 3349 Monroe St., Chicago, Ill., 33rd Field Hospital. In service as patient at Ft. Sheridan Hospital, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 84. Charles Carter, Shoshone, Idaho, 361st Field Hospital, 316 Sanitary Tr., discharged May 8, 1919, rec. by E. W. Sinclair and J. Wesson.
- S. S. No. 85. Chas. Franklin Turner, Tallapoosa, Ga., discharged December 17, 1918, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 86. Chas. Newton Gunter, Washington, Ga., Hospital Corps, U. S. Navy. In service, rec. by G. W. Shepard and C. G. Terrell.
- S. S. No. 87. Wayne A. TenEyck, 703 E. 5th St., Ocala, Fla., Q. M. C. Truck Tr., discharged July 16, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 88. Joseph Trager, 871 Briggs Ave., Brooklyn, N. Y., Chemical Warfare Service, Washington, D. C., discharged December 5, 1918, rec. by Frank H. Freericks and A. N. Gilbert.
- S. S. No. 89. Lewis Veola Grismond, 5626 Conn. Ave., N. W., Washington, D. C., 164th Ambulance Co., 41st Div., A. E. F., discharged March 1, 1919, rec. by T. L. Gill and Frank H. Freericks.
- S. S. No. 90. Joseph A. Moakley, 452 Edgewood Ave., New Haven, Conn., Sanitary Detachment, 111th Mach. Gun Bn., discharged May 28, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 91. John James Currans, 143 Green St., New Haven, Ct., Medical Det. 5th Balloon Co., discharged July 16, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 92. Joseph Henry Braschek, Del Norte, Col., Medical Corps, Col. Agr. College, discharged January 5, 1919, rec. by Chas. Dowman and Frank H. Freericks.
- S. S. No. 93. Orville Wellington Brothers, 3220 Curtis St., Denver, Colo., Infantry Co. D., 354 Reg., 89th Division, discharged March 1, 1919, rec. by C. J. Sethel and John Martin.
- S. S. No. 94. Henry C. Grinager, 555 North Towne St., Pomona, Cal., Mobile Hospital No. 12, A. E. F., discharged soon, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 95. Hannes S. Hernonen, 1613 Spring St., Little Rock, Ark., Army Field Clerk, Adjutant General's Dept., discharged July 1, 1919, rec. by Felix W. McClarkin and Frank H. Freericks.

- S. S. No. 96. Lee Clyde Gammill, 508 Central Ave., Hot Springs, Ark., Hospital Corps, U. S. Navy, discharged as Optm., U. S. N., June 5, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 97. Joseph Bauer, U. S. Army, General Hospital No. 20, Whipple Barracks, Ariz., Medical Department, Sgt. first class, still in service, rec. by M. B. Levin and Frank H. Freericks.
- S. S. No. 98. Jesse Jared Coleman, Pollard, Ala., Medical Dept., U. S. N., still in service, rec. by R. E. Ledbetter and L. Pachetker.
- S. S. No. 99. Ray F. McMullen, P. O. Box 1048, Tonopah, Nev., Medical Corps, Medical Det., 314 Tr. Headquarters, 89th Division, discharged June 12, 1919, rec. by Jos. C. Pierry and G. A. Hoffman.
- S. S. No. 100. Clifton V. Berry, 1637 N. W. 10th St., Washington, D. C., 368 Infantry, Hosp. Dept., discharged, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 101. Leo Elis Kesselman, 3134 Euclid Ave., Philadelphia, Pa., Chem. Warfare Service, U. S. A., discharged January 6, 1919, rec. by R. L. High and Frank H. Freericks.
- S. S. No. 102. Dougal H. McCall, 824 Roscoe St., Chicago, Ill., U. S. Navy Hospital Corps, discharged February 24, 1919, rec. by John E. Woods and Frank H. Freericks.
- S. S. No. 103. Arthur Leonard Mathison, Bisbee, N. D., Evacuation Hospital No. 15, A. E. F., discharged June 25, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 104. William Peter Terhaar, Mt. Angel, Ore., Infantry, Misc. Detach. (Med. Dept.), discharged May 23, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 105. John Freislinger, 4952 N. Oakley Ave., Chicago, Ill., 26th Co., U. S. Marines, discharged May 31, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 106. Pugh Bryan Harris, 427 N. 3 Notch St., Troy, Ala., U. S. Gen. Hospital No. 6, Medical Dept., still in service, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 107. Harold Clifton Wing, York Village, Me., Phar. Mate, 1 cl., Med. Corps., U. S. N., still in service, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 108. Francis Joseph Calla, 223 8th St., Jersey City, N. J., Artillery, discharged June 12, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 109. Alfred H. Rocheleau, 38 W. High St., Franklin, N. H., U. S. A. Laboratory, Med. Dept., discharged, June 21, 1919, rec. by D. F. Wettlin and Frank H. Freericks.
- S. S. No. 110. Geo. Aubrey McMullen, 412 Franklin St., Tampa, Fla., Medical Detachment, 11th C. Ar., discharged December 6, 1918, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 111. Robert Edward Drawing, 656 So. 20th St., Lincoln, Neb., Hospital Corps, still in service, rec. by G. S. Davidson and Frank H. Freericks.
- S. S. No. 112. George I. Phillips, Chamberlain, S. D., Medical Evacuation Hospital No. 48, discharged December 28, 1918, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 113. Joseph George Concialdi, Jr., New St., Rockaway, N. J., Chem. Warfare Service, discharged December 16, 1918, rec. by Lewis Concialdi and Frank H. Freericks.
- S. S. No. 114. Leo F. Feindt, 184 Valley St., South Orange, N. J., U. S. N. R. F., discharged February 6, 1919, rec. by Garrett Byrnes and Frank H. Freericks.
- S. S. No. 115. Hunter Huddle, Orange Drug Co., Orange, Texas, Medical Department, Base Hospital, discharged March 8, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 116. Archie LeRoy Worthington, 265 North St., Rochester, N. Y., Medical Department, U. S. Army, discharged April 28, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 117. Oliver Wendell Lomady, 2317 E. Sergeant St., Philadelphia, Pa., Medical Dept., 320th Infantry, 80th Div., discharged June 7, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 118. George Charles Curtis, 26 Churchill St., Little Falls, N. Y., Chief Pharmacist's Mate, U. S. N., U. S. S. Warrington, rec. by M. J. Coats and Dr. John Hurley.
- S. S. No. 119. Rudolph Weiss, 104 Prospect St., Winfield, L. I., N. Y., Hospital Corps., U. S. N., still in service, rec. by R. S. Lehman and P. Jaffe.

- S. S. No. 120. Henry Craif Hamilton, Durango, Colo., Hospital Corps, U. S. N., discharged June 19, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 121. Charles Pleasant Clark, U. S. Receiving Ship, Dispensary R., Norfolk, Va., Medical Dept., U. S. S. Wheeling, still in service.
- S. S. No. 122. Clell D. Miller, Vivian, La., Sanitary Squad No. 54, Medical Dept., discharged June 13, 1919, rec. by C. H. McEachem and Claude S. Posey.
- S. S. No. 123. Charles Kingsley Williams, Port Allegany, Pa., U. S. N. Hospital Corps, still in service, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 124. Douglas D'Mare, 37 Sherman St., Newport, R. I., U. S. Navy Med. Dept., still in the service, rec. by John D. Milligan and R. E. Ledbetter.
- S. S. No. 125. Lloyd Cecil Rath, 312 Huntington Ct., Madison, Wis., Medical Corps, 107 T. M. B., discharged December 31, 1918, rec. by Edward Kremers and Nellie Wakeman.
- S. S. No. 126. Edward George Lehman, 229 S. Elm St., Fairmont, Minn., First Bn., Intelligence Section, 310th Infantry, discharged July 28, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 127. Gust Silberberg, 531 W. Division St., Chicago, Ill., Navy Hospital Corps, discharged August 8, 1919, rec. by A. Muscahof and E. John Mark.
- S. S. No. 128. Harry Marshall Green, 3217 N. Carlisle St., Philadelphia, Pa., Medical Department, U. S. Army, discharged June 12, 1919, rec. by B. J. Hanington and Benj. Krehl.
- S. S. No. 129. Walter Finch Flayhart, Fairmount Ave., Towson, Baltimore, Md., Medical Department, U. S. Navy, still in service, rec. by B. H. Carroll and A. R. Marsh.
- S. S. No. 130. George Francis Colombe, 5422 Garfield St., New Orleans, La., Radio operator, inactive service list., rec. by L. C. Falker and J. Fred Colombe.
- S. S. No. 131. Fred C. Mink, Cassville, Wis., Chief Pharmacist's Mate, U. S. Navy, still in service, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 132. Raymond Francis Murray, River Falls, Wis., Medical Department, 161 Depot Brigade, discharged April 1, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 133. Malcolm Conant Davis, The Rexall Store, Oilton, Okla., Evacuation Hospital 7, discharged, Camp Pike, May 28, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 134. Henry Clay Newsome, Mooresville, N. C., Medical Dept., 306 Am. Tr., 81st Division, discharged June 26, 1919, rec. by Frank H. Freericks and J. W. England.
- S. S. No. 135. Roy Everett Enloe, U. S. A. Emb. Hospital No. 1, Hoboken, N. J., Medical Department, U. S. Army, in the service, rec. by T. C. Duck and H. C. Mowery.
- S. S. No. 136. William D. Walters, 161 E. McMiken Ave., Cincinnati, O., San. Corps, Capt. Medical Supt. Office, discharged at once, rec. by Frank H. Freericks and G. Horstmann.
- S. S. No. 137. Louis Paul Schubert, R. F. D. No. 2, Bound Brook, N. J., Medical Department, U. S. A. General Hospital No. 5, still in service, rec. by Joseph Zrubek and Frank H. Freericks.
- S. S. No. 138. Robert Franklin Ligan, 189 S. Front St., Steelton, Pa., Medical Det., 103rd Supply Tr., discharged May 20, 1919, rec. by Charles H. LaWall and Jos. E. Harrison.
- S. S. No. 139. Sam W. Via, Senath, Mo., Bat. F., 342nd F. A. and Medical Department, discharged January 16, 1919, rec. by Frank H. Freericks and J. W. England.

The subject of the election of these applicants and their status in the Association was discussed, the previous action being reconsidered.

On motion of Dr. A. R. L. Dohme, seconded by J. H. Beal, the applicants were duly elected members.

J. A. Koch moved, seconded by H. V. Army, that the dues of such members up to January 1, 1921 be remitted.

As a substitute motion, George M. Beringer moved, seconded by C. M. Snow, that the Council appropriate the sum of five dollars for dues for each member elected, the members to receive the publications of the Association.

The substitute for the original motion failed of passage, and the original motion, on being put, carried.

The Secretary asked for instructions as to the disposition by him, as Secretary of the Council, of future applications for membership, from soldier, sailor and marine pharmacists, received after the adjournment of this annual meeting; and, on motion of J. A. Koch, seconded by Dr. A. R. L. Dohme, he was directed to send out all such applications in Council Letters for election by mail as for regular members.

The Report of the Committee on Recipe Book was presented and action on its recommendations postponed until a future meeting.

The report was as follows:

REPORT OF COMMITTEE ON RECIPE BOOK.

To the members of the Council:

That the War has even hampered the progress of the A. Ph. A. Recipe Book can be seen from the non-publication of formulas in the Journal, much to the regret of its editor, as well as other editors, who were in the habit of copying these formulas.

Owing to the fact that the Chairman's son served in the Medical Corps of the Army and his clerk in the Hospital Corps of the Navy, he was compelled to do three men's work at the rate of 18 hours per day during more than a year. This is his excuse for the apparent neglect on the work of the Recipe Book, as well as other activities, pharmaceutical and chemical.

A meeting of the Committee on Recipe Book will be held on the boat on Friday P.M. and the work will be resumed at once. Members are asked to attend this meeting and to present plans. That the formulas published thus far have been of use to the pharmaceutical profession can be seen from the fact that they are frequently quoted in pharmaceutical journals and books. It is, however, to be regretted that due credit is not always given.

At present the Committee consists only of fourteen members, due to the loss of the immortal Martin I. Wilbert. To restore the original "Fifteen Committee" the Chairman recommends that the Council appoint another member, time to expire in 1920. I would suggest the appointment of a member acquainted with formulas frequently called for by retail pharmacists throughout the United States.

Respectfully submitted,

OTTO RAUBENHEIMER, *Chairman*,
E. FULLERTON COOK,
IRWIN A. BECKER,
CHARLES H. LAWALL,
CURT P. WIMMER.

The Report of the Committee on Standards was presented by Chairman J. A. Koch, as follows:

REPORT OF COMMITTEE ON STANDARDS.

To the Council of the American Pharmaceutical Association:

The work of the Committee on Standards of Drugs and Chemical Products has been practically at a standstill for the greater part of the last year, the conditions prevailing at the time of the last report of the Committee having continued until a short time ago when active work on the part of the members was again resumed. It is hoped that substantial progress will be made from now on.

Copies of the only monographs adopted during the year are appended.

The terms of four members of the Committee, Elmer E. Wyckoff, E. L. Newcomb, L. D. Haverhill and J. A. Koch expire this year and it will be necessary for the Council to elect their successors.

Respectfully submitted,

J. A. KOCH, *Chairman*.

STRONTIUM LACTAS.

STRONTIUM LACTATE.

1. Hydrated strontium lactate ($\text{Sr}(\text{C}_3\text{H}_5\text{O}_3)_2 + 3\text{H}_2\text{O} = 319.76$) containing, after drying to constant weight at 120°C ., not less than 98 percent of anhydrous strontium lactate ($\text{Sr}(\text{C}_3\text{H}_5\text{O}_3)_2 = 265.71$). Preserve it in well-closed containers.
2. Strontium Lactate occurs as a white, odorless powder, almost tasteless.
3. It is freely soluble in water; very slightly soluble in alcohol.
4. An aqueous solution of the salt (1:20) is neutral, slightly acid or slightly alkaline to litmus, but it is not reddened by phenolphthalein T. S.
5. The salt imparts to a non-luminous flame a crimson color. With calcium sulphate T. S. its aqueous solution (1:20) slowly forms a white precipitate; the precipitation occurs quickly with a solution of sodium or potassium sulphate or diluted sulphuric acid.
6. Mix 5 mls of an aqueous solution of the salt (1:20) with 10 mls of diluted sulphuric acid, add potassium permanganate and warm the mixture; the odor of acetaldehyde is evolved.
7. Dissolve 1 Gm. of Strontium Lactate in 5 mls of distilled water; filter the solution if necessary and add one drop of acetic acid and 5 drops of potassium dichromate T. S.; no turbidity is produced within 3 minutes (barium).
8. Ignite 1 Gm. of the salt, treat the residue with 20 mls of diluted nitric acid, filter and wash the residue with hot water. Evaporate the filtrate and washings to dryness on the water-bath, dry the residue at 100°C , then powder it and digest with 15 mls of dehydrated alcohol for half an hour. Filter, evaporate the filtrate to dryness on the water-bath and dry at 100°C . The weight of the residue is not more than 0.01 Gm. (Calcium, magnesium).
9. An aqueous solution of the salt (1:50) does not respond to the U. S. P. test for heavy metals.
10. Stir about 0.5 Gm. of the salt with 2 mls of sulphuric acid; the mixture does not emit the odor of volatile fatty acids even on warming.
11. Dried to constant weight at 120°C the salt loses not more than 16.91 percent of its weight.
12. Incinerate about 2 Gm. of the salt, previously dried to constant weight at 120°C and accurately weighed, dissolve the residue by boiling with 50 mls of half-normal hydrochloric acid, cool, and titrate the excess of acid with half-normal sodium hydroxide, using methyl orange as indicator. It shows not less than 98 percent of anhydrous Strontium Lactate. Each ml of half-normal hydrochloric acid corresponds to 0.05393 Gm. of anhydrous Strontium Lactate.

POTASSIUM GUAIACOLSULPHONAS.

POTASSIUM GUAIACOLSULPHONATE.

1. The potassium salt ($\text{C}_6\text{H}_3\text{OHCH}_3\text{OSO}_3\text{K} = 242.23$) of guaiacolsulphonic acid. Preserve it in well-closed containers protected from light.
2. Potassium Guaiacolsulphonate occurs in white crystals or as a white crystalline powder; odorless and having a bitter taste. On exposure to air and light it slowly acquires a pink or brownish color.
3. One Gm. dissolves in about 5 mls of water; it is insoluble in alcohol.
4. An aqueous solution of the salt (1 in 20) is neutral or slightly alkaline to litmus, but 10 mls of the solution are not reddened by a drop of phenolphthalein T. S.
5. To a non-luminous flame Potassium Guaiacolsulphonate imparts a violet color. Sodium Bitartrate T. S. produces in its aqueous solution (1 in 20) a white crystalline precipitate which is soluble in aqueous solutions of alkali hydroxides or carbonates and in diluted mineral acids.
6. Ferric chloride T. S. colors its aqueous solution (1 in 100) deep violet-blue.
7. The addition of silver nitrate T. S. to 10 mls of an aqueous solution of the salt (1 in 100) produces no immediate turbidity (Chloride); but after a few minutes the solution becomes turbid due to separation of metallic silver.
8. Barium chloride T. S. when added to 10 mls of its aqueous solution (1 in 20) previously acidulated with 3 drops of hydrochloric acid causes at most only a slight turbidity (Sulphate); but if the salt be first ignited, the residue treated with hot water and filtered, the filtrate when acidulated with hydrochloric acid yields with barium chloride T. S. a copious white precipitate.

9. An aqueous solution of the salt (1 in 50) does not respond to the U. S. P. test for heavy metals.

10. Dried to constant weight over sulphuric acid, the salt loses not more than two percent of its weight.

11. Ignite about 1 Gm. of Potassium Guaiacolsulphonate, previously dried to constant weight over sulphuric acid and accurately weighed in a porcelain crucible or dish until most of the carbonaceous matter has burned off, cool, add to the residue a few mls of diluted sulphuric acid, evaporate and cautiously ignite to constant weight. The weight of the potassium sulphate so obtained corresponds to not less than 35.3 percent nor to more than 36 percent of the weight of the dried Potassium Guaiacolsulphonate taken.

On motion of W. B. Day, seconded by J. G. Godding, the report was received and ordered spread upon the minutes.

Chairman H. V. Arny, of the Committee on Research, requested action on the following recommendations:

(1) That when a "grant" is made the successful contestant shall be notified; that the results of his work shall be published first in the Journal of the Association. Carried.

(2) That when published in the Journal the article shall be accompanied by the statement that the work was done by grant of the American Pharmaceutical Association and that if republished elsewhere it must be accompanied by such statement, credit being given, also, to the Journal. Carried.

(3) That it shall be the duty of the Committee on Research to report annually both to the Council and to the Scientific Section, the two reports to be not the same, necessarily. Carried.

On motion of C. H. LaWall, seconded by Dr. A. R. L. Dohme, the Reporter on the Progress of Pharmacy was authorized to present an annual report at one of the general sessions of each annual meeting of the Association.

R. W. Terry suggested the desirability of giving in the Journal of the American Pharmaceutical Association a bibliography of pharmaceutical literature of other pharmaceutical journals.

Editor E. G. Eberle stated that he believed this would be desirable and could readily be done.

On motion of J. W. England, seconded by E. G. Eberle, the subject of having a pharmaceutical bibliography in the Journal was referred to the Committee on Publication with a favorable recommendation.

Wortley F. Rudd stated that he would like an opportunity to discuss the policy of the Journal and it was decided to have the discussion on this question at the meeting of the Council to be held on Thursday, August 28, 1919.

Adjourned until Thursday, August 28, 1919 at 4.30 P.M.

J. W. ENGLAND, *Secretary*.

FOURTH SESSION OF THE COUNCIL, 1918-1919.

The fourth session of the Council of the American Pharmaceutical Association for 1918-19 was held at the Hotel Pennsylvania, New York, on Thursday, August 28, 1919 at 5 P.M., Chairman L. C. Hopp presiding.

Present: Messrs. H. V. Arny, James H. Beal, G. M. Beringer, Theo. J. Bradley, W. B. Day, Dr. A. R. L. Dohme, E. G. Eberle, F. R. Eldred, J. W. England, E. N. Gathercoal, John G. Godding, S. L. Hilton, Lewis C. Hopp, E. F. Kelly, E. H. La Pierre, F. W. Nitardy, W. F. Rudd, Dr. F. E. Stewart, Dr. H. M. Whelpley, C. M. Snow, Caswell A. Mayo, J. A. Koch, C. H. LaWall and C. E. Caspari.

On motion of J. W. England, seconded by W. B. Day, the usual order of business was suspended and the floor was given to Chairman James H. Beal to present the report of the Commission on Proprietary Medicines.

(Report will be printed hereafter.)

On motion of J. W. England, seconded by S. L. Hilton, the report was received and the recommendation that a questionnaire, regarding the subject of formula disclosure, be mailed to pharmacists, was approved.

The minutes of the previous meeting were read and approved.

The Report of the Committee on Drug Store Classification was presented by Chairman Jacob Diner. It was as follows:

Report of Special Committee "To consider and report on the question of two classes of pharmacies and corresponding courses in colleges of pharmacy."

To the members of the Council:

Even a superficial consideration of the subject brings out the enormity of the task which this committee undertook. Nor do we harbor the belief that our report is complete. It is, at best, but a mere outline containing the suggestion of many men and is submitted with the hope that a free discussion will enable us to formulate a complete outline of both the classification of pharmacies and the college courses, to the end that pharmacy may at last claim a well-deserved position among the professions.

Your Committee feels that the question of the advisability of separating Drug Stores and Pharmacies should be answered by the pharmacists themselves. We are certain, however, that whatever the answer may be no success can be looked for unless the whole-hearted backing of the N. A. B. P., the A. C. of Ph. F. and legislative committees can be secured of the State Pharmaceutical Associations of the U. S. P.

Assuming that there is need for separation and classification of pharmacies the following suggestions are submitted for your consideration:

A. DRUG STORES.

A. Drug store.

1. *Scope*.—The sale of all articles now commonly found in pharmacies excepting poisons not used for commercial or household purposes (such as paris-green, oxalic acid and the like).

2. *Qualifications*.—(a) Owner to be a graduate from a recognized school or college of pharmacy, requiring four years High School as preliminary education and not less than two years' attendance at the school previous to graduation. Provided, however, that this restriction shall not hold against any person possessing the proper degree as at present understood at the time that the act becomes effective, nor against any person at that time matriculated for such a degree in a recognized school or college.

(b) Owner must be licensed in the state in which he conducts his business.

3. *Assistants*.—Non-licensed assistants may make sales of all goods not used as remedial agents without direct supervision of a licensed pharmacist, and may sell remedial agents ONLY under direct supervision of a licensed pharmacist.

4. *Equipment*.—(a) Latest edition of U. S. P. N. F. and Dispensatory.

(b) Scales and complete sets of weights of both systems.

(c) Graduates or measuring glasses of both systems.

(d) A sufficient assortment of all other utensils necessary to carry on the business of pharmacy.

B. PHARMACIES.

1. *Scope*.—(a) Preparation of galenicals and other pharmaceutical products.

(b) Compounding prescriptions and sale of poisons.

(c) Examination of drugs, foods, body-fluids.

(d) Preparation and sale of biological products.

(e) Sale of sick-room appliances.

2. *Qualifications*.—(a) Individual ownership.

(b) Owner to be a graduate from recognized school or college of pharmacy having a four years' High School preliminary requirement and not less than four years' professional training course.

(c) Owner must be licensed by the state to practice pharmacy.

3. *Assistants*.—While unlicensed assistants or such having lesser qualifications than those required of owner may be employed they are not permitted to take charge of a pharmacy nor to perform work mentioned under *a* to *d* (inclusive) except under the direct supervision of a fully qualified pharmacist.

4. *Equipment*.—To include in addition to those generally found in pharmacies:

(a) A compound microscope with oil immersion lens.

(b) An incubator with thermo-regulator.

- (c) Sterilizers: steam, hot air, autoclave.
- (d) Electric centrifuge.
- (e) Analytical balance sensitive to not less than 0.1 mg.
- (f) A working library to include latest edition of U. S. P., N. F. and Dispensatory.

SCHOOLS AND COLLEGES.

1. A school may engage in the teaching of both the proposed courses and in the turning out of both classes of graduates.

2. The work of the lower course may subsequently be accepted as the first part of the higher course. A graduate of the lower course may, by attendance at the school, make up that part of the first two years' higher course which is not included in the lower course and then be admitted for advanced standing in the higher course.

COURSES.

Course 1, leading to degree of Ph.G. Requirements.—Four years' high-school preliminary education, or its equivalent as accepted by the Regents or Education Department of the state in which school is located.

Course.—Two years, in two different calendar years, of three days each week, 30 weeks each year, and not less than a total 1200 hours.

Curriculum.—As outlined in the Pharmaceutical Syllabus.

Course 2, leading to degree of B.S. in Pharmacy. Requirements.—Four years preliminary as for Course 1.

Course.—Four years, during four different calendar years, of 30 weeks each year, five and a half days each week and not less than 800 hours each year.

This course may be divided into two equal periods of two years each. During the first two years the course in pharmacy may follow the outline of the Pharmaceutical Syllabus and in addition the following subjects are to be included:

Advanced English; a foreign language; Mathematics; Laboratory Physics; History, including the history of pharmacy and chemistry.

The last two years are to include:

(a) Pharmacy; The making of more complex preparations, not taken up in Course 1; Testing and assaying of galenicals.

(b) Chemistry, physical chemistry, advanced inorganic including analytical, synthetic and analytical organic chemistry, biological chemistry, including that of body fluids.

(c) Materia Medica; Advanced Physiology; Botany and Pharmacognosy; Pharmacodynamics.

(d) Bacteriology; general; special (the pathogenic bacteria); Immunology, including the preparation of vaccines.

(e) Clinical Diagnosis; chemical and microscopical.

(f) Food and Drug analysis; chemical, bacteriological and microscopical.

In conclusion, we wish to extend our heartfelt thanks to all those who coöperated in the outline and especially to Drs. Rusby, Jordan, Kelly, LaWall, Bradley, Kraemer and Stewart, who gave us many valuable suggestions and constructive criticisms, much of which is embodied in this report.

Respectfully submitted by the Joint Committee of the American Pharmaceutical Association and the American Conference of Pharmaceutical Faculties.

JACOB DINER, *Chairman.*

F. E. STEWART,

E. F. KELLY,

C. VON HERMAN.

On motion of J. H. Beal, seconded by F. E. Stewart, the report was received and referred to the Committee on Publication.

Applications for membership from Nos. 573 to 577 inclusive were presented and favorably acted upon. The applications were:

No. 573. Harry Zwilling, 108 Pitt St., New York, N. Y., rec. by Jacob Diner and G. Horstmann.

No. 574. Robert J. Gordon, 176 Varet St., Brooklyn, N. Y., rec. by Joseph L. Mayer and E. G. Eberle.

N o. 575. Harry Kaminsky, 79 Graham Ave., Brooklyn, N. Y., rec. by Joseph L. Mayer and E. G. Eberle.

No. 576. Welland, John Orchard, 25 First Ave., West, Dickinson, N. D., rec. by W. P. Porterfield and E. L. Newcomb.

No. 577. Leo Waldeman Geisler, 53 Fulton St., East Orange, N. J., rec. by Hugo Kantrowitz and Geo. C. Diekman.

The report of the Committee on Soldier and Sailor Pharmacists was presented by Chairman Frank H. Freericks, (See October, 1919 Journal A. Ph. A., page 862).

On motion of F. E. Stewart, seconded by H. V. Army, the report was received and referred to the Committee on Publication.

On motion of H. V. Army, seconded by E. G. Eberle, the Committee on Soldier and Sailor Pharmacists was continued for another year.

On motion of H. V. Army, seconded by E. G. Eberle, a rising vote of thanks was directed to be given to Chairman Freericks and his Committee for the splendid service they had rendered, which was done.

Three applications for membership from soldier and sailor pharmacists were submitted and favorably acted upon. These were:

S. S. No. 140. Paul Joseph Fiorentino, 343 E. 11th St., New York, N. Y., rec. by C. O. Bigelow and R. P. Fischelis.

S. S. No. 141. Joseph Cagnasso, 336 W. 26th St., New York, N. Y., rec. by C. O. Bigelow and R. P. Fischelis.

S. S. No. 142. Joseph Sieke, 2494 Elm Place, New York, N. Y., rec. by G. Horstmann and J. W. England.

F. W. Nitardy presented a recommendation from the Section on Practical Pharmacy and Dispensing that certain formulas for medicated alcohol proposed by the Section be approved by the Council and submitted to the Treasury Department for consideration. Carried.

On special order of business, W. F. Rudd discussed the policy of the Journal of the Association, and made a number of suggestions.

On motion of E. F. Kelly, seconded by W. R. White, the subject was referred to a special committee of three, to be appointed by the incoming president of the Association, to act in conjunction with the Committee on Publication, as a joint committee, to consider the suggestions proposed with power to act.

On motion of H. V. Army, seconded by F. R. Eldred, the previous action of the Council at this meeting on the subject of special formulas for medicated alcohol for submission to the Treasury Department, was directed to be reconsidered.

On motion of James H. Beal, seconded by Clair A. Dye, the further consideration of this motion was postponed for the present.

R. P. Fischelis reported the organization of the World War Veterans Section on August 26, 1919 and submitted proposed by-laws for the government of the Section, together with certain resolutions, and asked approval of the same by the Council.

(See October, 1919 Journal A. Ph. A., pages 866 to 870.)

On motion of J. W. England, seconded by W. B. Day, the organization of the Section was approved and the proposed by-laws and resolutions were received and referred to the Committee on Revision of Constitution and By-laws with power to act after consultation with the officers of the World War Veterans Section.

On motion of H. V. Army, seconded by W. R. White, a special committee of three was directed to be appointed to consider the subject of the financing of the propaganda for membership proposed by the World War Veterans Section, this committee to confer with the officers of the Section on World War Veterans, the committee to report later. Chairman Hopp named the following committee: Messrs. James H. Beal, H. M. Whelpley and J. A. Koch.

W. B. Day submitted a copy of the revised by-laws of the Women's Section of the American Pharmaceutical Association and asked, on behalf of the Women's Section, for approval by the Council, which was granted.

(To be Continued.)

"THEY ARE BUDDIES OF MINE."

BY CLYDE L. EDDY.*

Late in the afternoon of November 9, 1918, a heavy touring car, bearing the insignia of the General Staff on its wind shield, was ploughing along through the mud on the highway between Toul and First Army Headquarters up at Souilly. It was raining—as it almost always was over there—and the fine mud fairly sprayed from the wheels of the car as the party pushed ahead through the slow moving convoys in an effort to reach Ligny before dark.

Suddenly the machine swung around a curve in the road and overtook a detachment of doughboys plodding along with full packs on their shoulders. The rain dripped from the brims of the steel helmets they were wearing and poured in tiny streams from the down-turned muzzles of their rifles. As the car approached them the officer in charge of it leaned over toward the chauffeur and said, "Drive slowly going by these boys and don't splash any mud on them; *they are buddies of mine.*"

That officer had important business at headquarters and if the car had gone roaring by like an express train, showering the men with mud, there would have been no complaint from them. *C'est le guerre.* It is all a part of war. But he knew that he could reach his destination in time even if he lost a few minutes along the way and he was not willing to add any to the hardships of those buddies of his.

The fine spirit that made "buddies" of us over there—and over here—during the war should hold us together now. As pharmacists, we have much in common aside from our memories of "gold fish," "monkey meat," "K. P." and *beaucoup boue*. There is much we can do if we choose to work together. The American Pharmaceutical Association has organized a War Veterans' Section and every pharmacist who served in any capacity in the Army, Navy or Marine Corps or who did his, or her, bit in welfare work, is eligible, this year, to join the new section *and the association* without the payment of dues.

Among other things the section is compiling a record of the work done by pharmacists during the war with the view to proving that the duties many of them performed were of sufficient importance to warrant the creation of a commissioned pharmaceutical corps in the Army. Facts are required and the men best qualified to furnish those facts are the men who did pharmaceutical service during the war. Other work will be taken up later and every pharmacist who is eligible to join the new section should indicate his desire to do so now by communicating with the secretary, W. D. Walters, Fifth and Pike Streets, Cincinnati, Ohio. There is no red tape connected with it—a postal card will do. Let's Go!

* Chairman, Publicity Committee, World War Veterans Section, American Pharmaceutical Association.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Committee on Publication: J. W. ENGLAND, *Chairman*; G. M. BERINGER, CASWELL A. MAYO, H. B. MASON, E. L. NEWCOMB, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on the Progress of Pharmacy, *ex-officio*.

SODIUM CACODYLATE IN A MODIFIED DONOVAN'S SOLUTION.

E. Crouzel, in *Repertoire de Pharmacie*, 30, 129, 1919, proposes the substitution of sodium cacodylate for the arsenious oxide employed in the French formula. It is contended that a more stable preparation results; the quantities of the constituents are, one gramme each of sodium cacodylate, potassium iodide and mercuric iodide and 97 grammes of water.

ISOTONIC SOLUTIONS FOR HYPODERMIC INJECTION.

v. Itallie (*Pharm. Weekbl.*) holds that the injurious by-effects, such as pain, etc., occasionally produced when applying alkaloidal solutions hypodermically, usually result from the solutions not being isotonic. He, therefore, recommends using only such solutions as have the average freezing point of human blood serum. This freezing point can either be estimated experimentally or can be calculated in the usual way. The amounts of sodium chloride necessary to be added to alkaloidal solutions of definite strength in order to obtain isotonic solutions are given as follows:

A 1 percent morphine hydrochloride solution requires the addition of 0.76 percent of sodium chloride.

A 1½ percent morphine hydrochloride solution the addition of 0.69 percent of sodium chloride.

A 2 percent morphine hydrochloride solution, 0.62 percent of sodium chloride.

A 3 percent morphine hydrochloride solution, 0.48 percent of sodium chloride.

A 1 percent cocaine hydrochloride solution requires the addition of 0.74 percent of sodium chloride.

A 6 percent cocaine hydrochloride solution does not require any addition of sodium chloride.

A 1 percent novocain hydrochloride solution requires the addition of 0.69 percent of sodium chloride.

A 2 percent novocain hydrochloride solution, 0.51 percent of sodium chloride.

A 1 percent atropine sulphate solution requires the addition of 0.79 percent of sodium chloride.

A 1 percent emetine hydrochloride solution requires the addition of 0.82 percent of sodium chloride.

A 3 percent emetine hydrochloride solution, 0.68 percent of sodium chloride.

A 5 percent emetine hydrochloride solution, 0.45 percent of sodium chloride.

A ½ percent arecoline hydrobromide solution requires the addition of 0.80 percent of sodium chloride.—Through *Druggists Circular*.

THE FATE OF SALICYLATES IN THE BODY.

One of the fundamental requisites in the rational, as contrasted with the purely empiric, use of drugs is a knowledge of precisely what happens to them in the organism, as well as of what pharmacologic effects they exert. In the long run, the influence of a potent substance may depend not only on its immediate manifestations but also on delayed reactions due to accumulations of an active compound. Some foreign substances are very promptly excreted; others tend to be stored to a greater or less extent, so that they can manifest cumulative effects; still others are in some measure destroyed within the organism. Scientific therapy must be based on a knowledge of the fate of the drugs that it employs.

The older literature on the salicylates, one of the most widely used groups of therapeutic agents, gives the impression that the salicyl radical leaves the body virtually unchanged.¹ According to the more recent investigations of Hanzlik² and his collaborators at the Western Reserve University School of Medicine, however, about 20 percent of salicylate administered to normal human individuals is de-

¹ Nencki, M., *Arch. f. exper. Path. u. Pharmacol.*, 20, 367, 1886. Mosso, *Ibid.*, 26, 267, 1889.

² Hanzlik, P. J., Scott, R. W., and Thoburn, T. W., *J. Pharmacol. & Exper. Therap.*, 9, 247 (Feb.) 1917.

stroyed, since the loss cannot be accounted for in sweat and feces, or by retention in the body. According to the view of Hanzlik and Wetzel,³ this destruction is not associated with any special organs, but appears rather to be dependent on the general functions of metabolism. It goes on in excised organs and apparently in tissue pulp. The power to destroy salicylates is by no means limited to the organs of the higher animals; for Hanzlik and Wetzel have recently ascertained that weak solutions of sodium salicylate gradually deteriorate unless they are protected from microbiotic forms by means of efficient antiseptics. Yeasts and fungi can destroy the drug.

If the destruction of the salicyl group is a function of metabolic activity in general, it might be expected that the disappearance of salicylates will be facilitated wherever metabolism itself is augmented. In harmony with such a hypothesis, Hanzlik and Wetzel note increased loss of administered salicylate in fevers, principally in rheumatism and tuberculosis. In nephritis, in which the retention of the drug because of diminished renal excretory capacity might expose it to a greater chance of destruction by the tissues, the theory seems to be confirmed by the observed facts. Drug habitués addicted to the use of alcohol and morphine were found to excrete much less salicyl than normal persons, owing perhaps to an acquired power of their organisms for increased destruction of drugs.

It is in fact familiar to therapeutics that a low concentration of salicyl in the blood and tissues which must be the result of smaller doses of salicylates and related compounds, is not an effective antiseptic within the body. The destruction of the drug may afford the reason for this and also indicate why large doses are required to secure therapeutic effects. —Editorial *J. A. M. A.*

THE ACIDITY OF CHAULMOOGRA OIL.

In a recent letter (*Pharmaceutical Journal*, August 23, p. 195) Mr. F. F. Shelly pointed out the wide divergence in the acidity of commercial samples of Chaulmoogra Oil, and showed that the limits set by the British

Pharmacopœia are unsatisfactory. In order to further elucidate this matter, a search was made in the literature on the subject, and a few experiments performed to determine the influence of the method of preparation, and of time, on the acidity of the oil.

A full account of the earlier work on Chaulmoogra is given by Lepage ("Papers on the Plant *Gynocardia odorata*," 1878), and reference to subsequent literature is made by Schindelmeister (*Deutsch. Pharm. Ges. Ber.*, 14, 164, 1904), but although many of these papers deal with the constituents of the oil, no information is given as to the amount of free acid present. The table below gives the acid value as found by later investigators:

Author.	Source.	Acid val.	Periodical.
Hirschsohn..	Cold-pressed	26.84	<i>Pharm. Centralbl.</i> , 44, 627, 1903
Hirschsohn..	Warm-press'd	25.54	<i>Pharm. Centralbl.</i> , 44, 627, 1903
Hirschsohn..	Extracted c. petrol ether.	21.14	<i>Pharm. Centralbl.</i> , 44, 627, 1903
Hirschsohn..	Commercial A	87.33	<i>Pharm. Centralbl.</i> , 44, 627, 1903
Hirschsohn..	Commercial B	34.44	<i>Pharm. Centralbl.</i> , 44, 627, 1903
Hirschsohn..	Commercial C	70.56	<i>Pharm. Centralbl.</i> , 44, 627, 1903
Hirschsohn..	Commercial D	37.60	<i>Pharm. Centralbl.</i> , 44, 627, 1903
Power and Gornall....	Expressed	23.0	<i>J. Chem. Soc. (Tr.)</i> , 85, 843, 1904
Power and Gornall....	Extracted	9.5	<i>J. Chem. Soc. (Tr.)</i> , 85, 843, 1904
Schindelmeister...	Cold-pressed	25.2	<i>Loc. cit.</i>
Reinsch.....	Commercial	25.04	<i>Chem. Zeit.</i> , 35, 77, 1911

Of the five commercial samples analyzed, it will be seen that only one has an acid value satisfying the b. p. requirements, but it should be mentioned that some of the oils analyzed by Hirschsohn may have been, and probably were, adulterated.

Further information on the subject is found in Evans' "Analytical Notes" (1910-1913), the values for the acidity of Chaulmoogra Oil therein given varying between 9.5 and 56.0.

A similarly wide range was observed in a few samples examined in the laboratories of the Society of Apothecaries; in the table below other analytical figures are given, besides the acidity, to show that the oils were genuine:

³ Hanzlik, P. J., and Wetzel, N. C.: The Salicylates, XI, The Stability and Destruction of the Salicyl Group under Biological Conditions, *J. Pharmacol. & Exper. Therap.*, 14, 25 (Sept.) 1919.

No.	Source.	Acid value.	Iodine value.	M. Pt.
1	Expressed from seeds...	8.3	100.9	25-26°
2	Extracted from seeds...	7.7	98.3	24°
3	Commercial A.....	31.0	101.2	...
4	Commercial B.....	58.7	100.7	28°
5	Commercial C.....	52.9	96.8	...
6	Commercial D.....	18.5	101.8	25°
7	Commercial E.....	39.6	102.0	26°
8	Commercial F.....	76.7	100.3	31°

The seeds from which the first two oils were obtained had been imported from India, and their genuineness checked at the Royal Botanic Gardens.

The acidity of samples 1, 2, 4 and 6 was determined subsequently after the lapse of various periods of time, with interesting results:

No.	Acid Number.				
	When obtained.	After 2 weeks.	After 4 months.	After 8 months.	After 1 year.
1	8.6	8.6	9.2	....	19.2
2	7.7	...	...	....	10.1
4	18.5	...	...	22.1	....
6	58.7	...	...	....	61.4

These results show beyond doubt that the acidity of the oil increases with time, but the change is not regular. The increase in the acidity of Chaulmoogra oil on keeping had previously been observed by Marcon (*Thèse*, Montpellier, 1886), who remarks that the oil expressed in the cold keeps well, while the hot-expressed oil, as well as that obtained by maceration of the seeds in boiling water, soon becomes rancid.

As regards the influence of the method of preparation, oils extracted by means of solvents have, in general, a lower acidity than expressed oils. No investigation appears to have yet been made on the oil obtained by maceration of the seeds in hot water, although much of the commercial drug is possibly prepared in this way (cf. U. S. Dispensatory, p. 759, new ed.). In order to determine what influence this process has on the acidity of the oil, a quantity of seeds were crushed and boiled with water; the oil rose to the surface in the form of a coarse emulsion, from which it was extracted by means of ether. Its acid value was 15.6, as compared with 7.7 for the extracted and 8.6 for the expressed oil, from the same seeds.

In conclusion:

(1) The acidity of Chaulmoogra oil varies with time and with the method of preparation; it is, therefore, useless for purposes of identification.

(2) The limits set by the present Pharmacopoeia (British), are much too narrow and

indefensible, seeing that no method is specified for the preparation of the oil; they should be altered or preferably left out altogether.

The above work was carried out in the Analytical Laboratories of the Society of Apothecaries (London). My thanks are due to Mr. F. F. Shelley, Ph.C. (Vic.), F.I.C., for initiating this investigation.—Victor Cofman, B.Sc. (London), M. P.S., in *Pharmaceutical Journal*, September 27, 1919, p. 269.

DEATH OF JOHN CHARLES UMNEY, AN EX-PRESIDENT BRITISH PHARMACEUTICAL CON- FERENCE.

J. C. Umney, president of the British Pharmaceutical Conference in 1913, died at his home (Berea Court, Yapton, Arundel, England), October 9, aged 51 years. His apprenticeship in pharmacy was served with William Martindale; he passed the Minor examination in 1889, the Major in 1890, in which year he also entered the Bloomsbury Square School of Pharmacy and here he received the bronze and silver medals in practical pharmacy. In a number of his researches he was engaged with Professor Dunstan, on the alkaloids of *Aconitum Napellus*, the salicylates, etc. In 1910, he established the *Perfumery and Essential Oil Record*, and he was the author of the monograph on essential oils in Thorpe's "Dictionary of Applied Chemistry." He contributed largely to the last revision of the British Pharmacopoeia. In 1914 he was awarded the Silver Medal of the Royal Society of Arts; other reference to honors and achievements might be made. At the time of his death he was member and director of Wright, Layman & Umney, Ltd.

NEW OFFICERS OF E. FOUGERA & CO., INC.

Upon the death of Mr. Louis V. Heydenreich, president of E. Fougera & Company, it became necessary to elect new officers and at a meeting held recently the following officers were chosen: Montaigu M. Sterling, President and General Manager; Charles M. Russell, Vice-President and Counsel; William H. Ball, Treasurer, Rudolph Wirth, Secretary.

Mr. Sterling has been the Secretary and Treasurer of the company since its incorporation; Mr. Ball has been associated for 37 years and was head of the Financial Department; while Mr. Wirth has spent 44 years of

his life with the concern, having been until recently Sales Manager.

DEATH OF WILLIAM MUENCH.

William Muench, well and favorably known druggist of Syracuse, N. Y., is dead. Deceased settled in Syracuse in 1867, engaging in the drug business. He was associated in other activities and interested in civic and fraternal organizations. In 1873 he married Elizabeth C. Baumer, who, with their eight children, survives. Mr. Muench joined the American Pharmaceutical Association in 1899.

MEMORIAL TO PROFESSOR BOWER T. WHITEHEAD.

The alumni of the School of Pharmacy presented to the South Dakota State College of Agriculture and Mechanic Arts, a bronze memorial tablet in memory of the late Bower Thomas Whitehead, the first Professor of this School of Pharmacy. The tablet was presented at the Commencement exercises on June 2, 1919, by Professor Serles, a former student and assistant of the deceased, and was received by Dr. G. L. Brown, acting President of the College.

W. G. Crockett, who since his discharge from the Chemical Warfare Service has been employed as a chemist with E. I. du Pont de Nemours & Co., Wilmington, Del., was recently elected professor of pharmacy in the College of Pharmacy of Baylor University, Dallas, Tex.

Ex-President and Mrs. Henry H. Rusby announce the marriage of their daughter Ruth to Mr. Maximilian von Hoegen. Members of the A. Ph. A. will learn of the event with much interest not only because of their esteem for the parents of the bride, but because the latter has been a visitor during several of the annual conventions.

Ernest E. Stanford, for some time connected with the Pharmacognosy Laboratory, Bureau of Chemistry, U. S. Department of Agriculture, is now professor of pharmacognosy in the Cleveland School of Pharmacy.

Verne C. Nichols, formerly professor in the pharmacy department of the University of Oklahoma, is now director of the Era Course in Pharmacy.

Arthur P. Schlichting, who has been professor of pharmacy in the North Dakota Agricultural College for several years, has been appointed assistant professor of pharmacy in the University of Michigan and will teach the same subjects formerly conducted by Dean Stevens.

M. Jadin, heretofore professor at Montpellier College of Pharmacy, France, has been nominated Director and Professor of Chemical Pharmacy at the Superior School of Pharmacy, Strasbourg. Professor Jadin was one of the vice-presidents of the International Congress of Pharmacy held in Paris in 1900. Professor Masson, Director of the Montpellier School of Pharmacy, has been nominated a Chevalier of the Legion of Honor.

Revision of the Codex is under consideration at the present time in France. M. Cabannes publishes some interesting suggestions. In his opinion a number of new medications should be included, among these sterilized camphorated oil for hypodermatic use. The question of extracts and the equivalent of extracts in tinctures and menstrea enter into the discussions relative to the revision; also the inclusion of statements relative to physiological action of medicaments. There seems to be a desire for a schedule of medicaments which can be supplied by pharmacists without prescriptions.

SOCIETIES AND COLLEGES.

THE EXPOSITION NUMBER OF THE CHEMICAL BULLETIN, CHICAGO.

The Exposition Number of the *Chemical Bulletin*, published by the Chicago Section, is one of the most elaborate efforts in chemical journalism ever undertaken by members of a local section. There are over one hundred pages of text and advertising matter, including complete programs of the Exposition and the meeting of the various scientific societies held

in conjunction with the Exposition. Among the contributors are: W. H. Nichols, Chas. H. Herty, Julius Stieglitz, L. V. Redman, H. E. Howe, John Arthur Wilson, and many others. The vast amount of detailed work connected with the publication of this number must have demanded no small sacrifice from the editors.—*The Catalyst*, Philadelphia.

TO RESTORE BARTRAM'S GARDENS.

Bartram's Gardens, Philadelphia and the home there of the noted naturalist are to be

restored to their original condition under plans announced by the Philadelphia Chapter of the Institute of Architects.

Funds have been turned over to Horace Wells Sellers, chairman of the committee on the Preservation of Historic Monuments, by a "public-spirited Philadelphian" sufficient to defray the expense involved in preparing drawings for the restoration.

Mr. Sellers has announced that the committee will give its services in making the necessary researches and in directing the preparation of the plans, as in the restoration of the State House group of buildings. The restoration of the garden, in West Philadelphia, with as much of its original planting as can be determined from existing records, is now under consideration. As an appreciation of the naturalist's work and an added interest to the visitor in this city, the local Chapter of Architects has issued an appeal that civic organizations cooperate in the restoration.

GEORGE D. ROSENGARTEN, A NOMINEE FOR PRESIDENT AMERICAN CHEMICAL SOCIETY.

The nomination of Dr. Geo. D. Rosengarten has received endorsement. The candidate is favorably known in the American Pharmaceutical Association. He contributed largely to the success of the Peace Meeting of the American Chemical Society.

OFFICERS OF ASSOCIATION OF DAIRY, FOOD AND DRUG OFFICIALS.

The Association of Dairy, Food and Drug officials at the meeting in New York City, during the week of September 8, adopted resolutions urging the appointment of a legislative committee of three to cooperate with the legislative committee of National and State organizations of trades with a view of securing uniform food and drug laws for all the States.

The committee of three was requested to recommend to Congress that provisions contained in paragraph F. section 7, of the National Food and Drug Act be amended. It was contended that under this provision the sale of drug preparations is permitted differing in strength and other qualities from the respective pharmacopoeia and formulary standard, although sold under names recognized by the United States Pharmacopoeia and National Formulary. It is claimed that this has proved unfortunate in its operation in that it has

avored the development of variation in the strength of pharmaceutical preparations.

The following officers were elected for the ensuing year: Guy G. Frary, Food Commissioner of South Dakota, president; James Sorenson, of Minnesota, first vice-president; R. E. Rose, of Florida, second vice-president; Fred L. Woodworth, of Michigan, third vice-president; George L. Weigle, of Wisconsin, treasurer, and John B. Newman, of Illinois, Secretary.

The members of the executive committee are: A. M. G. Soule, of Maine; George B. Flanders, of New York, and E. F. Ladd, of North Dakota. On the Committee of Cooperation are: J. S. Abbott, chairman; R. E. Rose and Fred L. Woodworth.

THE ANNUAL MEETING OF THE NATIONAL WHOLESALE DRUGGISTS' ASSOCIATION IN NEW ORLEANS.

While the annual convention of the National Wholesale Druggists' Association will have adjourned prior to the mailing of the November issue of the JOURNAL OF THE A. Ph. A., it is impossible to include a report. The indications at this writing are for a big meeting; in fact, the transportation provisions previously made proved inadequate for the number desiring reservations, necessitating increased accommodations.

The Pelican has for several months past been conveying news of progress to the members.

OFFICERS OF NATIONAL ASSOCIATION OF RETAIL DRUGGISTS FOR 1919-1920.

President, Theo. F. Hagenow, St. Louis, Mo.

First Vice-President, Wm. O. Oren, Indianapolis, Ind.

Second Vice-President, Elmer E. Chilson, Rochester, N. Y.

Third Vice-President, Chas. J. Clayton, Denver, Col.

Secretary, Samuel C. Henry, Chicago, Ill.

Treasurer, John J. Posschl, Milwaukee, Wis.

New Members of the Executive Committee (3 Years):

J. H. Riemenschneider, Chicago, Ill.

Charles F. Harding, Cincinnati, O.

Some of the resolutions adopted by the N. A. R. D. at the annual convention, recently held in Rochester, are in part as follows:

PHARMACISTS IN U. S. SERVICE.

Resolved, that the N. A. R. D. heartily endorse the spirit of the Edmonds' bill and strongly urge the passage of a similar bill to advance the standing of pharmacists in the Army and also heartily endorse the introduction and passage of a suitable bill to reorgan-



THEODORE F. HAGENOW, *President*
N. A. R. D., St. Louis, Mo

ize the Hospital Corps of the Navy and grant higher rating and advanced commissions to the pharmacists in that corps.

Resolved, that every effort and influence at our command be exerted toward the enactment of H. R. 4760, which proposes to provide a permanent commission to members of the

Hospital Corps in the United States Navy and that it is but just and right that the honorable and praiseworthy services rendered by many pharmacists in this branch of the service be suitably recognized.

NO LIQUOR PERMITS.

Resolved, That in view of the pending and proposed legislation to prohibit the sale of alcoholic liquors, the N. A. R. D., in convention assembled, is of the opinion that such legislation should not provide for the sale by the pharmacists of the country of such alcoholic liquors for any purpose and urges every retail druggist to refrain from taking out a liquor permit.

HARRISON ANTI-NARCOTIC LAW.

Resolved, That the N. A. R. D. express its intense disapproval of the classification of dealers under the Harrison anti-narcotic law which makes it necessary for the retail druggists to register in two or more classes.

NO COMPULSORY HEALTH INSURANCE.

Resolved, That the N. A. R. D. continue its efforts to prevent the enactment of compulsory health insurance legislation, either by the legislatures of the several states or by the Congress of the United States.

COÖPERATION.

Resolved, That it is the sentiment of this convention that methods should be adopted to insure the closer coöperation of the two parent national organizations of retail pharmacists and that a committee be appointed by the N. A. R. D. with instructions to co-operate with a similar committee of the A. Ph. A. in order to devise the best ways and means toward the accomplishment of this end.

THE PHARMACIST AND THE LAW.

ARMY REORGANIZATION—PROPOSED SECTION RELATING TO MEDICAL SERVICE CORPS.

A Medical Service Corps is hereby established, which shall be a part of the Medical Department, and shall consist of a commissioned force and an enlisted force.

The commissioned force of the Medical Service Corps shall consist of officers, the total number of whom shall approximately be equal to one for every 2,000 of the total enlisted strength of the Regular Army authorized from time to time by law, and shall be dis-

tributed by grades as follows: Majors, 25 percent; captains and first lieutenants, 75 percent: *Provided*, That if by reason of a reduction by law of the authorized enlisted strength of the Regular Army the total number of officers in the Medical Service Corps commissioned previously to such reduction shall for the time being exceed the equivalent of one for 2,000 of such reduced enlisted strength, the total number of said officers shall be reduced to said equivalent in the manner prescribed by the first proviso of section 10 of the National Defense Act approved June 3, 1916

(39 Statutes at Large 166), respecting the Medical Corps: *Provided further*, That the number of majors in the Medical Corps authorized by section 10, of the National Defense Act, approved June 3, 1916 (39 Statutes at Large 166), shall be diminished by the number of majors in the Medical Service Corps, and the number of captains and first lieutenants in the Medical Corps shall be diminished by the number of captains and first lieutenants in the Medical Service Corps: *Provided, however*, That nothing in the last preceding proviso shall be held or construed so as to discharge any officer from the Medical Corps of the Regular Army or to deprive him of the commission which he now holds therein.

The officers of the Medical Service Corps shall be utilized so far as practicable in the performance of the business and administrative functions of the Medical Department, to wit, as adjutants of Medical Department units, registrars of hospitals, pharmacists, medical property and supply officers, medical finance officers, hospital mess officers, and in other positions where the special professional training of medical officers is not required.

Officers of the Medical Service Corps shall be appointed by the President, by and with the advice and consent of the Senate, from among the noncommissioned officers of the Medical Service Corps and of the Veterinary Corps who shall have served not less than 5 years in one or both of said corps, including service in the Hospital Corps and in the enlisted force of the Medical Department, and not less than 3 years in noncommissioned grades, who shall at the date of appointment be citizens of the United States and not more than 32 years old, and who shall have been found qualified by a board of not less than three officers of the Medical Department for the duties of commissioned officers of the Medical Service Corps upon such examination as shall be prescribed by the Secretary of War: *Provided*, That persons who, having previously been enlisted men in the Medical Department of the Army for not less than 5 years, shall have served honorably as commissioned officers in the Army of the United States during the war with Germany, shall until July 1, 1920, be eligible regardless of age for appointment to original vacancies in any grade in the Medical Service Corps created by this section.

The enlisted force of the Medical Department is hereby merged into the Medical

Service Corps, and from and after the passage of this act shall constitute and be known as the enlisted force thereof. The total strength of the enlisted force of the Medical Service Corps shall be approximately equal to, but not exceed, except as provided in section 10 of the national defense act approved June 3, 1916 (39 Stat. L., 166), the equivalent of $5\frac{1}{4}$ percent of the total enlisted strength of the Regular Army authorized from time to time by law, and shall include the grades of chauffeur and wagoner. Chauffeurs and stable sergeants of the Medical Service Corps shall have the same rank, pay, and allowance as sergeants of the Medical Service Corps, and wagoners the same pay and allowances as wagoners of Infantry. Privates first class of the Medical Service Corps shall be eligible for ratings as surgical assistant, laboratory assistant, X-ray assistant, dispensary assistant, dental assistant, or nurse, each at \$5 a month: *Provided*, That no enlisted man shall receive more than one rating for additional pay under the provisions of this section, nor shall any enlisted man receive any additional pay under such rating unless he shall have actually performed the duties for which he shall be rated.

Except as hereinbefore provided, original appointments in the commissioned force of the Medical Service Corps shall be in the grade of first lieutenant, and first lieutenants shall, subject to the prescribed examination, be promoted to the grade of captain after five years' service in the commissioned force of the Medical Service Corps: *Provided, however*, That the period during which any first lieutenant of the Medical Service Corps shall have served between April 6, 1917, and July 1, 1920, as a commissioned officer in the Army of the United States, shall be counted as a portion of the period of service required to make him eligible for promotion to the grade of captain.

Except as hereinbefore provided, the laws governing promotion in the Medical Corps shall so far as applicable govern promotion in the commissioned force of the Medical Service Corps.

Officers of the Medical Service Corps shall exercise command only in their own corps: *Provided*, That nothing in this act or any other law shall be held to deny or abridge the right of officers of the Medical Corps to exercise command in and over the Medical Service Corps.

Surgeon General Ireland favors the incorporation of this section.

WHOLESALE AND RETAIL LIQUOR DEALERS' SPECIAL STAMP TAXES.

Under existing internal revenue laws, persons who qualify as wholesale dealers in distilled spirits, whether for beverage or non-beverage purposes, are required to pay a Federal stamp tax of \$100 per year, as wholesale liquor dealers. This tax covers those dealers who sell alcohol in quantities of five gallons or more. A stamp tax of \$25 per year as retail liquor dealer is required of those who sell alcohol in quantities of less than five gallons. If a wholesale drug house sells less than five gallons at a time and also five gallons or more it is necessary to pay both special taxes and keep such records as are required for dealers selling in quantities of five gallons or more.

Owing to the confusion that followed the enactment of the Food Control Act of August 10, 1917, differentiating between beverage and non-beverage alcohol, and the inauguration of the bond and permit system, collectors of internal revenue in some localities have failed to enforce the tax requirements universally.

The following is reprinted from a letter of Attorney W. L. Crounse to Secretary F. E. Holliday of the N. W. D. A.:

"In view of the general misunderstanding which appears to prevail, not only among wholesale druggists but among collectors of internal revenue and their subordinates in certain districts, concerning liability of wholesale druggists to pay a special tax as wholesale liquor dealers if they handle spirits, even though their operations may be confined to the purchase and sale of non-beverage alcohol, the following facts are presented:

"When Congress first differentiated non-beverage alcohol from beverage alcohol and provided different rates of tax thereon, the Internal Revenue Bureau officials informally decided that dealers handling non-beverage alcohol, but not handling beverage spirits of any kind, could not be exempted from the provisions of the law requiring them to pay a special tax either as wholesaler or retailers, according to the quantities dealt in. This ruling was not formally promulgated: hence many dealers did not have it brought to their attention at the time.

"When it became necessary to revise Treasury Decision 2788, the bureau officials decided to incorporate therein a specific provision holding parties selling non-beverage alcohol to be liable to special tax as liquor dealers.

This provision in T. D. 2788 as revised and approved February 26, 1919, follows:

"17. Special tax as retail or wholesale liquor dealer must be paid by all persons who sell beverage or non-beverage distilled spirits or wines as such, including homeopathic potencies, attenuations and dilutions; with the exception that under the provisions of section 3246, revised statutes, special tax will not be incurred by wine-makers who sell wine produced by them at the place where produced or at one general business office."

"Notwithstanding the incorporation of this provision in T. D. 2788 a number of wholesale druggists and a few collectors of internal revenue have evidently remained in ignorance of its existence. Certain collectors have quite recently advised wholesale druggists that if their dealings in spirits were limited to non-beverage alcohol they were not liable for a special tax.

"The Internal Revenue Bureau adheres strictly to the provision in section 17, T. D. 2788, above quoted, and calls attention to the fact that the statute is retroactive as to any period for which the tax has not been paid, and further points out that failure to pay the tax within thirty days after same became due involves a penalty of 50 percent of the tax. It is understood, however, that where dealings have been limited strictly to non-beverage spirits and where the circumstances of the case, as indicated by the collectors' report thereon, show that the delinquent dealers have acted in good faith and were in fact ignorant of the requirement of the law and regulations, the penalty will be waived.

"It should be understood that the liability of a dealer to pay a special tax depends upon the quantities in which spirits are sold. Dealers selling less than five gallons in a single transaction are liable as retailers, and those selling five gallons or more, as wholesalers, while those whose sales include both more and less than five gallons must qualify as both wholesalers and retailers."

MEDICINAL STANDARDS FOR ALCOHOLIC OR WINE PREPARATIONS.

The Bureau of Internal Revenue has expressed its requirements for medicinal preparations in which non-beverage alcohol or non-beverage wine are used, as follows:

Any preparation in which an alcoholic menstruum is used, whether distilled spirits or wine, if the same contains in each fluidounce

a dose as a whole, or in compatible combination of one or more agents of recognized therapeutic value, and that contains no agents either chemically or physiologically incompatible with the active medicinal agents upon which the medicinal claims are based and only sufficient alcohol for extraction, solution and preservation, will be held to be a bona fide medicine if made and sold in good faith, as such. Any such preparation will be properly entitled to the use of non-beverage alcohol or non-beverage wine.

MANUFACTURERS LIABLE WHEN PREPARATIONS ARE SUB-STANDARD.

Where flavoring extracts and toilet articles have been manufactured and marketed otherwise than strictly according to regulations (see T. D. 2788), the manufacturer will be subjected to the taxes and penalties provided, despite any lack of evidence of bad faith or neglect on his part. This is the practice of the Commissioner of Internal Revenue as outlined in recent instructions to collectors. It is necessary, therefore, that every manufacturer sees to it that his preparations are at all times made in accordance with prescribed standards and regulations and marketed under conditions that will assure him of their legitimate consumption.

HARRISON NARCOTIC LAW.

The amendments to the Harrison Anti-Narcotic Law went into effect on February 25, 1919, and under the provisions of those amendments manufacturers, wholesalers, retailers, physicians and general stores were all placed in separate classes, each to pay a different license fee.

The fees for special taxes are as follows:

Manufacturers, importers, etc.	\$24.00 per year
Wholesalers.....	12.00 per year
Retailers.....	6.00 per year
Physicians, hospitals, colleges, etc.....	3.00 per year
General store (selling exempted articles).....	1.00 per year

The wholesaler is defined as a dealer in original stamped packages.

The retailer is one who dispenses from an original stamped package on the prescription of a duly registered physician.

The manufacturing class covers any one who imports, compounds, produces or manufactures any opium, coca leaves or any of their salts, derivatives or compounds, provided such preparations or compounds contain a larger quantity of narcotic than is specifically exempted by section 6 of the law as amended.

The definition of manufacturer caused some difficulty among retailers who occasionally compound preparations or repack preparations to be sold on an official order form. Such acts render the retailer liable for the manufacturer's special tax.

Similarly the sale of a single stamped package of narcotics to a hospital or physician renders the retailer liable for the wholesaler's special tax of \$12 per year.

Special records for each class of registrant must be kept and returns rendered monthly to the collector of internal revenue, forms for such returns to be embodied in the regulations of the Commissioner of Internal Revenue.

Retailers may, however, without incurring liability as a manufacturer or as wholesale dealer, furnish upon a properly made out order form of a registered person an aqueous, narcotic solution, not to exceed one ounce.

The ruling on this subject is as follows:

The office has decided that a person registered as a retail dealer can furnish upon the properly prepared order form of a registered person, an aqueous narcotic solution in an amount not to exceed one ounce, without incurring liability as a wholesale dealer.

No change has been made in regard to the sale on order forms of other narcotic drugs in small quantities. In such case liability is incurred by the druggist as wholesale dealer, if he sells in the original package, or as a manufacturer if he repacks and sells on an order form a quantity less than an original stamped package.

H. M. GAYLORD,
Deputy Commissioner.

FIRST-AID IN FRANCE.

Recently a French pharmacist was requisitioned by the municipal authorities of Grenoble to attend a wounded man. The pharmacist refused to do so, and the case was taken into court, where judgment was rendered against him. Seemingly the case was to try out the legality of giving first aid in pharmacies.

BOOK NOTICES AND REVIEWS.

Pharmacopoea Nederlandica. Editio Quarta. Supplenda et mutanda. Typis J. H. de Bussy—Amstelodami, MCMX. The fourth edition of the *Pharmacopoea Nederlandica* was published in 1905 and became official on July 1, 1906. In 1910 this supplement was published. It was compiled by a committee of ten, consisting of six university professors, three pharmacists and one medical officer of the army. The supplement is divided into two parts, part I containing additional articles to the *Pharmacopoeia* and part II changes in the texts of the official descriptions. The rapid progress in the manufacture of synthetic drugs as well as the omission of some much-used drugs necessitated the adoption of nine chemicals such as aspirin, veronal, pyramidon, adrenalin, etc., of one emulsion (cod liver oil), one fluidextract (kola), two drugs (lavender flowers and kola nut), one solution (adrenalin solution 1 : 2000), one reagent (Million's) and one volumetric solution ($n/10$ potassium iodide solution).

Part II of the Supplement contains about eighty changes in the descriptions of the official drugs and preparations, their requirements and standards.

The Supplement, like the *Pharmacopoeia*, is written in Latin.

A second supplement, written in Dutch, and published by Gebr. Belinfante in 's Gravenhage in 1914, was compiled by a committee of thirteen, six of whom were university professors while the remaining seven were either pharmacists or were engaged in their capacity as pharmacists in Government work. This Supplement gives eight additional chemicals (such as organic silver preparations, collargol and protargol, calcium and sodium glycerophosphates, novocain, tropacocaine, etc.), one organo-therapeutic drug (thyroid gland), one drug (adonis), one oil (chaulmoogra oil) and one paste (zinc paste). A list of reagents comprising methyl red, ammonium molybdate is also added.

In part II twenty-three changes in the description and standards of official drugs and preparations are given.

The scarcity of fats in Holland during the war necessitated the issuing of a third supplement which was published in 1918 by the publishers of the second supplement. It is written in Latin and directs that crude oleic acid be used for making lead plaster, soft soap and tincture of soap. A description of the

acid and the requirements for it are given. Formulae are given for making glycerin ointment and glycerin ointment with sulphur, replacing fats, vaseline or paraffin, by starch paste.

These three official supplements give valuable information on the subjects they contain and make the *Pharmacopoea Nederlandica* an up-to-date book which compares favorably with all the modern pharmacopoeias.

Supplement op de vierde Uitgave der Nederlandsche pharmacopoe. Uitegeven door het Departement Rotterdam de Nederlandsche Naatschappij ter bevordering der pharmacie, De Gebroeders van Cleef, Publishers. 's Gravenhage. 1914.

In addition to the above three official supplements to the *Pharmacopoea Nederlandica*, a very comprehensive supplement has been published by the Dutch Society for the Advancement of Pharmacy. It is written in Dutch, is compiled by a committee of six and contains more than 400 additional subjects to the official *Pharmacopoeia*. In part I of the Supplement about 100 chemicals, 34 of which are official in the U. S. P. and 3 in the N. F., were added; further, 28 alkaloids, alkaloidal salts and glucosides, 9 of which appear in the U. S. P. and 2 in the N. F. It was found necessary to describe 36 new remedies, mostly synthetics, now in general use. Fifty-seven vegetable drugs were added; 12 of these are described in the U. S. P. and 10 in the N. F. The greatest number of additions is in the line of pharmaceutical preparations. There were added 5 vinegars, 21 waters, 33 fluidextracts and solid extracts, 15 pills, 18 powders, 10 medicated soaps, 24 syrups, 16 solutions, 6 species, 11 spirits, including 3 beverages (rum and two kinds of brandy), 41 tinctures, 20 ointments and 4 wines. Of these additions more than 100 are official in the U. S. P. and about 40 in the N. F. Corrosive sublimate tablets are made from equal parts of mercuric chloride and sodium chloride and are colored red with eosin.

In part II of the book 24 reagents for qualitative analysis and five volumetric solutions were added to those described in the *Pharmacopoeia*. Further, 28 reagents generally used for microscopic examinations, 18 of which are properly directed to be kept protected from light. Then follow lists of such poisonous substances as should be kept under lock and of such drugs as should be plainly

marked as poisons. A list of chemicals and solutions for filling galvanic batteries and finally a list of antidotes in cases of poisoning are given.

This supplement, together with the Pharmacopoeia, corresponds to our two dispensaries, although it covers fewer subjects than these. It is a very comprehensive compilation of modern pharmaceutical knowledge and is of great value to all engaged in pharmaceutical work.

Codex Medicamentarius Homœopathicus Nederlandicus. Edidit Vereeniging van Homœopathische Geneesheeren in Nederland. J. H. de Bussy. Amstelodami. 1913. Up to 1913 Holland was without a homœopathic pharmacopoeia and was almost entirely dependent on the German, the British and American homœopathic pharmacopoeas. It was originally intended to publish a supplement to the Pharmacopoeia Nederlandica which should contain all those drugs and preparations used in homœopathic practice. A committee for preparing this supplement was nominated by the Government in 1904. In 1910 when the committee had completed its work it was decided not to attach this homœopathic part to the Pharmacopoeia but to publish it under a separate title, the *Nederlandisch Homœopathisch Artsenijboek*. The committee consisted of five members, and had the coöperation of the majority of the homœopaths in Holland.

The Codex is a very comprehensive work and includes all the drugs and preparations used in homœopathic practice. It contains about 70 chemicals, about 90 vegetable drugs and 3 drugs of animal origin, 55 essences, 35 homœopathic tinctures, but only three alkaloidal salts. Explicit directions are given for making the pharmaceutical preparations, such as essences, globules, triturations, etc.

In part II of the book are six tables, giving the percentages of alcohol in hydro-alcoholic mixtures by volume and weight, the percentage of juice and solid matter in fresh vegetable drugs, reagents used in qualitative analysis and atomic weights.

The Codex compares very favorably with other publications of this kind and should be in the library of every pharmacist engaged in dispensing homœopathic preparations. Although practically all the drugs and preparations in the Codex are given in the American homœopathic pharmacopoeia also, the description of the subjects in the former differs somewhat from that in the latter. The text is written in Latin.

Formularium Medicamentorum Nederlandicum. F. M. N. This pocket edition of pharmaceutical formulae compiled by a committee of five, two of whom were nominated by the Dutch Society for the Advancement of Medicine and three by the Dutch Society for the Advancement of Pharmacy, is a very useful book. The book was compiled in order that an authoritative and uniform recipe book might be had to replace those used in different parts of Holland. The booklet contains about 120 recipes for internal use, comprising 21 decoctions, 6 emulsions, 10 infusions, 20 mixtures, 25 pills, 30 powders, etc. In part II about 60 preparations for external use are given, among these 4 injections, 4 liniments, 6 lotions and 20 ointments. A tablespoonful is given as containing 15 mils, a dessertspoonful 8 mils and a teaspoonful 3 mils. In nearly all of the preparations the amount of drug in one teaspoonful, tablespoonful, wine-glassful, etc., respectively, is given. The booklet is written in Dutch and published in 1908 by Schletema and Holkema's Bookstore in Amsterdam.

H. E.

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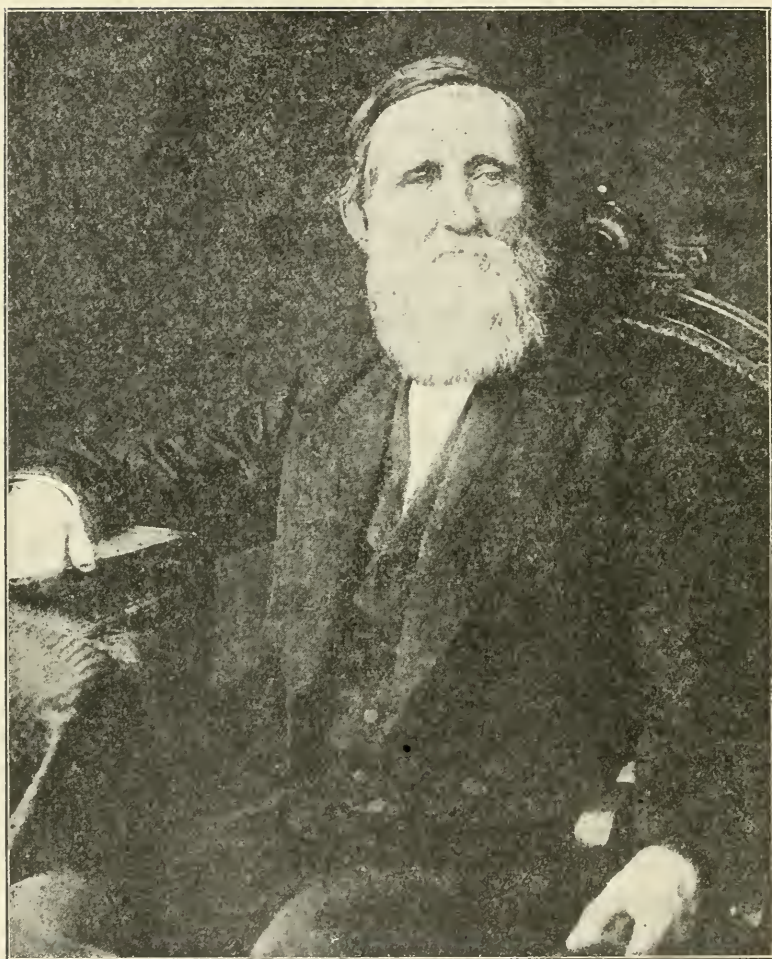
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CRAWFORD WILLIAMSON LONG, M.D.
PHYSICIAN-PHARMACIST OF JEFFERSON, GA.

Discoverer of General Anesthesia by use of ether.

Born at Danielsville, Ga., November 1, 1815; died at Athens, Ga., June 6, 1878.



CRAWFORD WILLIAMSON LONG

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

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CRAWFORD WILLIAMSON LONG, DISCOVERER OF ETHER- ANESTHESIA; A PHYSICIAN-PHARMACIST.*

Crawford W. Long's American ancestry dates back to 1762, when his great-grandfather emigrated from Ireland and came to Pennsylvania. Captain Samuel Long, grandfather of the subject of this sketch, settled in Georgia in 1792. Crawford W. Long, son of James and Elizabeth (Ware) Long, was born at Danielsville, Ga., November 1, 1815. He received his academic education in Franklin College, Athens, Ga., and studied at Transylvania University, Lexington, Ky., in 1836, and thereafter in the Medical Department of the University of Pennsylvania, graduating in 1839. After gaining experience in New York hospitals, Dr. Long returned to Georgia and began his practice of medicine and surgery in Jefferson. It was here, on March 30, 1842, that he performed the first surgical operation under a general anesthesia, using ether. While Dr. Long was a physician he conducted a drug store for many years and devoted himself to the interests of pharmacy. In 1851 he removed to Athens, Ga., where he practiced medicine until the year of his death, 1878.

To this great man's credit be it said that he sought no other reward than acknowledgment of priority as discoverer of ether-anesthesia and the service rendered thereby to humanity.

E. G. E.

*These data are taken from the paper by Joseph L. Jacobs, PROCEEDINGS, A. PH. A., Vol. XLV, pp. 315-322, and that on Boston's Ether Monument before Section on Historical Pharmacy, A. Ph. A., New York meeting, 1919, by Charles M. Ford. We are indebted to the former author for the use of the photograph for the frontispiece and for other courtesies to Lewis and Coffee, of Atlanta, Ga.

THE GREAT PHARMACIST.

BY CHRISTOPHER MORLEY.

God—however you choose to name Him—

Blended a potion maddening strong:
Gave it to man, and can you blame him
If he cry with a fevered song?
Beauty beyond his tongue's describing,
Tints of dust on the tawny hills,
Crystalline lungs of air imbibing,
Cold wet cheeks where the rain-cloud spills!

Song made him shiver, and windy spaces
Turned his heart to a wordless flame—
Haunted and stricken by golden faces,
Through the tumultuous years he came.
Dream and doubt and folly and passion,
Each he grappled, assured of Truth;
Drained or tasted, after his fashion,
This, the elixir that men call Youth.

God—however your priests devise Him—
Blended a magic wild and new:
Gave it to man, and thus He tried him
Whether his fiber is false or true.
Trembling looks, and his heart is shaken—
Lo, the answer of all desires!
Undreamed paradoxes awaken
A tender flame to halt fiercer fires.

Eyes that had scanned the world's far turnings
Enter glad through a homely door;
See, with sudden and painful yearnings,
Childish toys on the bedroom floor,
He that was frantic can never be lonely,
But unguessed pangs in his breast will
move—
Such is the riddle he meets, he only,
This is the magic men call Love.

God—however your creed defines Him—

Blended a sirup rich and clear:
And, as a tonic to man, assigns him
This new draught for the passing year.
Gives him peace, and relief from doubting,
Practiced eye and the word well-weighed;
Quiet hearth-fires apart from shouting,
Sunset light as the vistas fade.

Yet is his mind all quick to ponder,
Hot to grapple the problem shrewd,
Watching, as he grows softer, fonder,
Youth with its lusty hunger crude,
He, with an infinite affection,
Watches the torment, stage by stage—
Knowing no goal, he points direction:
This is the sirup men call Age.

God—however your mind conceives Him—
Blended the physic unexplained:
As for the drinker, one task He leaves him—
The manner in which the cup is drained.
Yet it seems but a surly gesture
Toward this liquor so sweet and wild,
Toward this earth's bright comely vesture,
To face it like an unwilling child.

Maddening draught of young veins' crazing,
Eyes that linger, eyes that evade,
Half-seen glimpses that find no phrasing,
Pangs and passions so quick to fade—
Speechless appeal of human faces,
Strife unwinnable, but still strife,
Lilac dusk on the mountain places—
This is the physic that men call Life!

EDITOR'S NOTE: The above was written for and printed November 19, 1919, in the "Chaffing Dish," a department of the Philadelphia *Evening Public Ledger*, in charge of the author.

EDITORIAL

E. G. EBERLE, Editor

253 Bourse Bldg., PHILADELPHIA

CHRISTMAS.

THE following lines of Eugene Field, written nearly a quarter of a century ago, are applicable to every year of our country's history:

"So long as he's American, it mattereth not the least
Whether his crest be badger, bear, palmetto, sword or pine.
His is the glory of the stars that with the stripes combine;
Where'er he be, what'er his lot, he's eager to be known,
Not by his mortal name, but by his country's name alone."

The following is part of an introduction prepared by the late Hamilton W. Mabie for a volume of Christmas pieces, and carries the same thought in the wider application of the Spirit of Christmas:

"The long line of Christmas fires glows like a great truth binding the fleeting generations into a unity of faith and feeling. When we light our fire we are one with our ancestors of a thousand years ago; we evade the isolation of our time and escape its provincial narrowness; we re-join the race from whose growth we have unconsciously separated ourselves; we open long-unused rooms and are amazed to find how large the house of life is and how hospitable. It has hearth room for all experience and for every kind of emotion; for the thoughts that move in the order of logic; for the emotions that rise and fall like great tides that flow in from the infinite; for the vigor that is born of will, and for the power evoked by discipline. It is when the different ages, with their diversities of interest and growth, send their children to sit together before the Christmas fire, that we realize how wide life is and how impossible it is for any age to compass it. The faith against which one age shuts the door stands serene and smiling in the center of the next age; the joy which one generation denies itself lies radiant on the face of a later generation; the imagination which the reign of logic in one epoch sends into the wilderness returns with full hands to be the master of a wiser period."

The famous paragraph of Robert Louis Stevenson's "Christmas Sermon," "To be honest, to be kind, to earn a little, and to spend a little less," is particularly applicable to the present times.

The quotations given from masters of English language make comment insignificant, but as on preceding occasions, the object is to make us think of our Association, the ties that bind us not only to those we are associated with, but to the Association's founders and those who are earnestly engaged in pharmacy throughout the world; for the uplift of pharmacy and a wider sphere of its usefulness to humanity.

Just now the world seems to be suffering from a moral and spiritual disease; physicians must study the remedy which pharmacists are to compound. In our opinion legislative drugs are contraindicated; what is needed is a different outlook upon life, a better understanding of our neighbors, and a clearer realization of our duty to society.

Our Christmas wish is expressed in applying the preceding thought to pharmacy and the Association; we need to look upon the greater possibilities of pharmacy, develop a better understanding among pharmacists and a clearer realization of our duty as pharmacists to society. As was said last year, we should acquire a morale that signifies belief in one another.

It is true that the problems of pharmacy to-day are different from those that have preceded; new conditions confront us and new emergencies surround our paths. We must meet them; how—depends upon our vision and understanding, but there is a way out of every difficulty. Let us realize our part in the work and credit our associates with honest efforts. He is valuable to the Association who strives for a self-improvement which enriches his fellows.

A Merry Christmas!

E. G. E.

THE YEAR BEFORE US.

“**H**E who can see in the cocoon the butterfly, in the addled egg the bird, in the decaying seed the flower, in the weltering chaos the new creation, is a prophet; he who can interpret his vision to his age and inspire it with hope encourages it to go forward.”—*The Outlook*.

In reviewing the days and the deeds of the year that is passing it is not difficult for pharmacists to give expression in words indicative of satisfaction and in phrases signifying disappointment. Business has been good but the ever-increasing number of laws and regulations have multiplied the troubles and dangers of and in it. Having become more or less familiar with and accustomed to the various tax measures, pharmacists must now study with even greater care the regulations applying to the sale of preparations containing alcohol. Much that has been written relative thereto might be repeated; pharmacists would gladly remove preparations from their stock which come under regulations of the prohibition enactment, but they realize their duty in serving the public. Statements made at the hearing in Washington during the first week of December give reasonable assurance of sincere coöperation between officials of the Bureau of Internal Revenue and the retail, wholesale and manufacturing drug industries. The attitude and spirit are all-important.

Nineteen nineteen has been one of the most successful years of the Association in a large accession of membership, and the Treasurer's report, in this issue, speaks of its financial status. We have before us a year that will be affected by “H. C. L.” Coöperation and coördination are essential for successfully promoting the Association's affairs. Accomplishment is as important as are ways and means—this is the paramount thought which should possess the members and actuate them with a devotion to activities that will serve to strengthen the Association and further its purposes. Reward comes to them from a consciousness that they are contributing according to their best ability to a common good.

As individuals. “let us recognize the present unrest as a refining process, a struggle which gives moral strength and higher purpose to those who engage in it on the side of justice and righteousness;” that we derive benefits from the Association according as we give to it in service.

Best wishes for 1920!

E. G. E.

QUERY: THE YEAR BOOK OR AN ABSTRACT JOURNAL, WHICH?

ANSWER: BOTH.*

BY J. W. ENGLAND.

Your Chairman has asked me to discuss the resolutions recently passed by the New York Branch, copy of which has been sent to the Philadelphia Branch, and I hesitate to do so because of my position as Secretary of the Executive Committee of the Council; but since the question at issue is being publicly discussed, the following personal opinion is presented.

The resolutions of the New York Branch are, in brief, as follows:

"That the Executive Committee and Council take speedy action to submit the proposition of issuing either the Year Book or a monthly Abstract Journal to a vote of the membership of the Association in the form of a special post-card referendum, and that the post-card ballot give to each member the opportunity of voting on one of several options, such as keeping the annual dues at \$5.00, or raising them to \$6.00, or to \$7.50, each under certain specified conditions regarding the issuance or non-issuance of the publications of the Association.

"The proposal of a referendum is not new. It was proposed at the New York meeting, both by the Association and by the Council. The Association first favored a referendum on an increase in dues. Later, the Council first decided for a referendum on an increase in dues with reference to the issuance or non-issuance of a monthly Pharmaceutical Abstract or the Year Book, and the next day it reconsidered its action and referred the question to the Executive Committee for consideration and report to the Council. The minutes of this meeting of the Council were read at the final session of the Association (August 30) and amended by the Association as follows:

"That the Association reconsider its action in the matter of a referendum on an increase in dues, and that the question *in all its bearings* be referred to the newly created Executive Committee of the Council for investigation and report to the Council for approval, and later, report its findings at the first general session of the Association next year."

"The minutes of the Council, as amended, were then approved." (JOUR. A. PH. A., Oct., p. 848, 1919.)

Obviously, the Association having decided against a referendum in the matter of increase in dues "in all its bearings," which includes the issuance of publications, it is hardly in order, now, for the Council or its Executive Committee to take a special post-card referendum on the subject, and the question must await decision until the next annual meeting of the Association in 1920. The Council cannot supersede the Association.

Hence, it is not necessary to discuss the question of taking a referendum vote, but it is entirely in order to discuss the future of the Year Book and the proposition to replace it with a monthly Abstract Journal.

Personally, I believe that Mr. Gathercoal's suggestion of a monthly Abstract Journal has much to commend it. The pharmaceutical research workers of the Association are entitled to the promptest possible information of all developments

* Read before the Philadelphia Branch, A. Ph. A., November 11, 1919.

in pharmaceutical research, but is it necessary to abandon the Year Book to give this?

R. W. Terry has suggested that the JOURNAL give, each month, a bibliography or list of titles of articles of current pharmaceutical literature and H. V. Army has suggested that the JOURNAL give an "Index Pharmaceuticus" or index of articles of current pharmaceutical literature, but why not give in the JOURNAL, monthly, a list of the titles of original articles of the pharmaceutical periodicals, foreign and domestic, *together with the briefest possible description of their scope* analogous to the Chemical Abstracts of the American Chemical Society, but even briefer, and also, continue the publication of the present Year Book?

Such a procedure would be entirely practicable. The field of pharmaceutical research work in pharmacy is comparatively limited and it would not take many pages of the JOURNAL, each month, to cover the field. It would be less expensive, also, to utilize the JOURNAL as the medium of expression, than to publish a separate periodical, while to the practical worker the manner of publication would be immaterial so long as he got the gist of the matter and could refer to the original promptly. Such a department of the JOURNAL could be called "Pharmaceutical Abstracts" or "Current Pharmaceutical Literature."

The function of a Year Book is radically different from that of an Abstract Journal. The object of the Year Book is to give an annual, systematic review or digest of pharmaceutical progress in orderly, logical sequence, fully and completely.

It is unthinkable that the Year Book be abandoned. It fills a niche occupied by no other book in pharmacy as a work of reference. For sixty-seven years, the Association has published its "Report on the Progress of Pharmacy" as contained in its former Proceedings and its present Year Book, and these volumes constitute the history of the development of American Pharmacy and give to the American Pharmaceutical Association a prestige that is international as well as national.

The Association cannot afford to discontinue the publication of the Year Book which, under the able and brilliant editorship of H. V. Army, Reporter on the Progress of Pharmacy, is maintaining the highest traditions of the Association. Its continued publication is essential, not only for the sake of the pharmaceutical research workers of to-day, but also, as a duty the Association owes to posterity in furnishing a recorded history of the development of American Pharmacy.

The solution of the problem of the Year Book *vs.* an Abstract Journal would, therefore, seem to be to publish both—the former, as heretofore, and the latter as a department of the JOURNAL.

But the question arises: "Can the Association afford the increased expense?" And I am frank to say that I do not believe it can without increased revenue, but I do believe that increased revenue can be readily gotten by sufficiently increased membership, provided the present system of annual dues, which is the same to-day as it was in 1852 when the Association was founded, be properly modified.

As a matter of fact, the question of the finances of the Association is the crux of the whole situation. In the first place, it should be stated that the finances

of the Association are in excellent shape—they have never been better, but the expenses of the Association are constantly increasing.

In common with individuals everywhere, the Association has felt the pinch of the high cost of living, and its activities have been restricted, instead of being expanded, as they should be. As President LaWall has well said, "There is no question as to the value of our organization to the majority of the members who belong to it. There is no doubt either, as to the great increase in the overhead costs to the Association, and if things continue in the same proportion, we shall soon have a deficit in the treasury."

It may be of interest to state that, during 1918, the receipts of the Association, excluding those belonging to the A. Ph. A. Research Fund (which were covered into the Fund on January 1, 1919) and the interest on investments, were but slightly in excess of the disbursements; there was no deficit.

Of these receipts about 60 percent came from the annual dues of members, about 25 percent from Journal advertisements and about 10 percent from the National Formulary, and the balance from other sources.

If the receipts from interest and other sources be taken into consideration the Association may be said to be in excellent financial condition; but the point is that *there is a positive need for more revenue if the Association is to do the kind and volume of work it must do to progress.*

A largely increased membership is most desirable, not only because it will mean increased revenue and relatively less "overhead expenses," but also because it will make the Association more fully representative of American Pharmacy, give it greater influence and prestige and enable it to better promote the objects for which it stands. Hence, the necessity for "a nation-wide, intensive drive for increased membership, utilizing every agency at the command of the Association, but all working under one head," as suggested by E. L. Newcomb. Such a drive should be, of course, "modern, strongly organized, efficiently managed and adequately financed" and along broad, comprehensive lines and in close coöperation with the State Associations (on the 51 percent basis plan recently adopted) and with the War Veterans' Section.

But something more than this is needed. What the Association needs to-day most of all, it seems to me, is an entire revision of its system of membership, *so that the dues shall be graded by the cost of the service rendered to each member.*

For example, I do not believe that the 3000 members of the Association want or use the Year Book; hence, every book printed and distributed in excess of those needed is just so much money needlessly spent. Why print 3000 books and waste say, 2000? Why not require the 1000 who want the book to pay, say, \$2.50 each for it? By so doing, the book would cost the Association nothing, and the Association would save several thousands a year.

It may be claimed that the membership can be increased to a point where the present dues of \$5.00 would pay for all that is now given for that amount, because with increased membership the relative overhead expense would be "cut" and more net revenue obtained; but the difficulty is that the present *fixed* cost of each member (and this is constantly rising) is so high, that an exceedingly large number of new members would have to be gotten to yield the revenue desired, and this is improbable. On the other hand, if the annual dues are in-

creased to \$7.50 for *all* members for *all* publications, as proposed, many will resign and fewer new members will be gotten than could be otherwise.

The logic of the situation, therefore, suggests that the Association establish several classes of members, as follows:

(1) Members or Active Members who will pay \$5.00 dues and receive the JOURNAL only.

(2) Contributing Members who will pay \$7.50 dues and receive both the JOURNAL and the Year Book.

(3) Corporation Members who will pay \$25.00 dues and receive special services in the way of information, reprints, etc. (similar to that offered by the American Chemical Society).

(4) Associate Members who will pay \$3.00 dues and receive no publications; this could include drug clerks, soldier and sailor pharmacists, etc., who wish affiliation for prestige only.

Some such plan as this would be modern and business-like. It would mean a square deal both for the membership and the Association. Each member would get only what he wants and is willing to pay for and the Association would get what it pays for the service it renders to its members; and it would have a reasonable sum of money for "overhead expense" that would permit an expansion of its activities limited only by the size of its membership.

But, as you know, the whole question of annual dues, finances, membership, etc., is now in the hands of the Executive Committee for consideration and report to the Council and later to the Association, and I feel that I am but expressing the wishes of the Committee when I say that the latter will gladly welcome any and all suggestions reflecting the wishes of the membership to the end that the fullest light may be had on the subject and a satisfactory decision reached.

THE ASSAY OF CALABAR BEANS AND PREPARATIONS OF CALABAR BEANS.

BY GEORGE E. ÉWE.

The U. S. P. 7th did not prescribe the assay of calabar beans and its official preparations. Many manufacturers, however, standardized their output of these preparations.

Probably the most popular method of assay at that time was the ordinary gravimetric "shake out" method; using sodium bicarbonate and ether to extract the alkaloids from the drug or its preparations; extracting the alkaloids from the ether solution by means of dilute sulphuric acid; liberating the alkaloids again by means of sodium bicarbonate; extracting the liberated alkaloids with ether; evaporating the ether in a tared flask; drying the alkaloidal residue to constant weight and correcting this weight by dissolving the alkaloidal residue in dilute sulphuric acid, collecting and weighing the acid-insoluble matter and subtracting its weight from the original weight of the alkaloidal residue.

This method being applied to both the drug and the preparations made from the drug established uniformity in the alkaloidal content of the preparations.

It is a rule of drug assay laboratories to give preference to volumetric methods

if possible, therefore when the U. S. P. 8th included a volumetric method of assay for calabar beans and preparations of calabar beans preference was given to that method. The U. S. P. 8th required calabar beans and preparations of calabar beans to be assayed by liberating the alkaloids with a solution of sodium bicarbonate in the presence of ether and extracting the alkaloids with ether; the ether solution of alkaloids then being extracted by very small portions of dilute acid; the alkaloids being liberated again by a solution of sodium bicarbonate and finally extracted with ether, which was evaporated to obtain the alkaloids. The alkaloids were finally titrated. This method was soon found to be open to the objection that the quantities of acid and ether specified for extraction of the alkaloids were entirely too small for the purpose and, as a consequence, low results were obtained.

The above-mentioned defects in the assay method of the U. S. P. 8th were ably pointed out also by A. H. Salway, D. Sc., Ph.D., in the *American Journal of Pharmacy* for February 1912. Salway found that the methods of obtaining the alkaloids from calabar beans in use by alkaloid manufacturers returned twice as much alkaloid as was indicated by the U. S. P. method of assay when applied to the crude drug. He also concluded that the defects were due to insufficient quantities of acid and ether used for extraction.

This laboratory was cognizant of these defects and followed the practice of using sufficient acid and ether in the extractions to obtain all of the alkaloids. The process was extremely tedious since at least 6 extractions were required for complete extraction.

Radical changes were made in the assay process for calabar beans when the U. S. P. 9th was issued.

The U. S. P. 9th process reads as follows:

Assay: Introduce 15 Gm. of *Physostigma* in No. 60 powder into a flask of about 250 mils capacity and add 150 mils of ether. Stopper the flask, shake it well and allow it to stand ten minutes, then add 10 mils of an aqueous solution of sodium bicarbonate (1 in 20) and shake the mixture vigorously at intervals during four hours. Now add 15 mils of distilled water, again shake the flask well, and, when the drug has settled, decant 100 mils of the ether solution representing 10 Gm. of *Physostigma*. Filter the solution through a pledget of purified cotton into a beaker and rinse the graduate and cotton with ether. Add 20 mils of tenth-normal sulphuric acid V. S. and evaporate off the ether, stirring during the evaporation with a rubber-tipped glass rod. After the resinous and fatty matter has agglutinated, pour off the acid solution through a wetted filter into a separator. Redissolve the residue in the beaker in about 15 mils of ether, add 2 mils of tenth-normal sulphuric acid V. S., evaporate off the ether with continued stirring as before and pour the acid solution on the filter. Repeat this operation until all of the alkaloid is extracted and then wash the filter with distilled water until it is free from alkaloids. Collect the solution and washings in a separator, add sufficient sodium bicarbonate to make the solution decidedly alkaline to litmus and completely extract the alkaloids by shaking it out repeatedly with ether. Wash the combined ether solutions with 10 mils of distilled water, separate the water completely and filter the ether solution, washing the container and filter with ether. Evaporate the ether solution to dryness, dissolve the alkaloids from the residue in exactly 5 mils of tenth-normal sulphuric acid V. S., and titrate the excess of acid with fiftieth normal potassium hydroxide V. S., using cochineal T. S. as indicator.

Each mil of tenth-normal sulphuric acid V. S. consumed corresponds to 27.52 milligrams of the alkaloids of *Physostigma*. (See Part II, Proximate assays, No. 15.)

This U. S. P. 9th method has not yielded satisfactory results in our hands, the results in all cases being extremely low. We have not traced the exact cause of the low results, but believe the loss to be due partly to incomplete extraction

and partly to decomposition of the alkaloids by the numerous manipulations and vigorous heating treatments prescribed and by the long exposure to light required in carrying out the process. This latter belief is supported by the fact that the aqueous alkaloid extractions both when acid and alkaline develop quite intense pink colors.

Very satisfactory results have been obtained, however, by the following extremely short method which was devised in these laboratories.

CALABAR BEANS.

Assay for alkaloids: Sample, 20 Gm. *finely powdered*. Place in dark, glass bottle, add 180 Cc ether, shake 10 minutes, add 10 Cc saturated solution sodium bicarbonate. Shake 4 hours. Allow to stand over night. Filter off through fluted filter paper as large an aliquot as obtainable. Place aliquot in an Erlenmeyer flask. Evaporate ether just to dryness. Dissolve residue of alkaloids in a mixture of 15 Cc of standard acid and 15 Cc water, using a little chloroform and heating to drive off the chloroform. Titrate back with standard alkali, using methyl red.

In using this method, there is no possibility of the ether extraction containing any sodium bicarbonate in solution and thereby being counted in as alkaloid as we have repeatedly run blank determinations which in no case used up any standard acid in the titration process. In a few cases a slight acidity has been indicated. This we ascribe to experimental error and, therefore, consider it advisable to run a blank in each assay in order to correct for variation due to this cause. In no case has the acidity gone above 0.07 Cc of $\frac{N}{10}$ acid.

The value of this method for the assay of calabar beans and preparations of calabar beans was proven by mixing physostigmine sulphate with oak sawdust and then assaying the mixture by this method, using the U. S. P. factors in the calculations.

The physostigmine sulphate employed was made by Hoffman-LaRoche and was the usual medicinal variety. It conformed to all of the requirements of the British Pharmacopoeia. It was prepared for the experiments by being dried to constant weight at 80° C in an air-oven, care being taken to protect it from the light by keeping its container enclosed by black paper at all times. A weighed portion of the anhydrous physostigmine sulphate was placed directly into a blue-glass bottle containing 10 Gm. of oak sawdust; 200 Cc of ether was then measured into the bottle, followed by 10 Cc of saturated solution of sodium bicarbonate. The rest of the process was conducted as outlined in the process mentioned above.

The following results indicate the value of this process for the assay of calabar beans and preparations of calabar beans:

Experiment. No.	Theoretical amt. of alkaloid in aliquot, Gm.	Amt. of alkaloid found upon titration Gm.	Percentage of theoretical, %.
1.....	0.0679	0.0651	95.4
2.....	0.0595	0.0577	97.0
3.....	0.0720	0.0650	90.3
4.....	0.0631	0.0607	96.2

Average 94.7

That this method yields more certain results than the method of the U. S. P. IX is shown by the following comparisons:

* Experiment. No.	Sample.	U. S. P. IX method, %.	Direct evap. of aliquot, %.
1.....	Drug	0.2	0.14
2.....	Drug	none	0.13
3.....	Drug	0.11	0.37
4.....	Fldest.	0.070	0.133
5.....	Fldest.	0.059	0.178
6.....	Fldest.	0.0821	0.150
7.....	Tincture	0.00218	0.00611
8.....	Tincture	0.00290	0.01305

Fluidextract of Calabar Bean is not official in the U. S. P. 9th and therefore no method of assay is prescribed. In the above-mentioned experiments the fluid-extract was prepared for assay by placing it upon 10 Gm. of oak sawdust, drying the impregnated sawdust spontaneously in a darkened place and then assaying the impregnated sawdust as though it was crude drug.

As a result of these experiments the following methods are to be recommended as preferable to the method of the U. S. P. IX for the assay of calabar beans and preparations of calabar beans:

CALABAR BEANS.

Assay for alkaloids. Sample, 20 Gm., *finely powdered*. Place in a dark, glass bottle, add 180 Cc ether and 10 Cc of saturated solution of sodium bicarbonate. Shake 4 hours, allow to stand over night. Shake for 15 minutes. Allow to settle. Carefully filter off as much as possible and as quickly as possible through a fluted filter, collecting the filtrate in a 200 Cc graduated cylinder. Measure the aliquot and pour into an Erlenmeyer flask. Recover the ether on the steam bath. Remove the flask from the steam bath just as soon as all of the ether is off. Place 15 Cc of standard acid on the alkaloidal residue in the flask followed by 15 Cc of water and 3 Cc of chloroform. Boil off chloroform completely on the steam bath. Titrate back with standard alkali; use methyl red as indicator. Run a blank and make correction, if necessary.

1 Cc. $\frac{N}{10}$ acid = 0.02752 Gm. alkaloids.

FLUIDEXTRACT OF CALABAR BEAN.

Assay for alkaloids. Sample, 20 Cc. Evaporate spontaneously on 10 Gm. oak sawdust contained in an evaporating dish, in a darkened place. Treat impregnated sawdust like the drug, cleaning the evaporating dish with 10 Cc of saturated solution of sodium bicarbonate.

POWDERED AND SOLID EXTRACTS OF CALABAR BEAN.

Assay for alkaloids. Sample, 3 Gm. Mix with 15 Cc alcohol in an evaporating dish. Add 10 Gm. oak sawdust. Mix well. Evaporate spontaneously in a darkened place. Treat impregnated sawdust like the drug, cleaning the evaporating dish with 10 Cc of saturated solution of sodium bicarbonate.

TINCTURE OF CALABAR BEAN.

Assay for alkaloids. Sample, 200 Cc. Pour on 10 Gm. oak sawdust contained in an evaporating dish. Dry on a covered steam bath out of direct contact with the steam, mixing well occasionally. Treat impregnated sawdust like the drug, cleaning the evaporating dish with 10 Cc of saturated solution of sodium bicarbonate.

In the case of powdered and solid extracts occasionally the ether extract will contain so much colored matter that it is difficult to observe the end-point under the conditions of the method as stated above. Under these circumstances it is necessary to dilute the solution of the alkaloidal residue in standard acid to such a degree that the color is diminished to a point where it will not interfere with observation of the end reaction. This dilution treatment necessitates the use of a larger amount of methyl red indicator and the running of a blank using the same water and same volume of water as used in the assay.

PARTIAL ANALYSES OF 330 AMERICAN CRUDE DRUGS.*

BY JOSEPH F. CLEVINGER AND CLARE OLIN EWING.†

For a number of years necessity has been felt for analytical data on authentic specimens of American grown crude drug products for use in connection with the enforcement of the Food and Drugs Act. Because of lack of data of this kind, numerous occasions have arisen where an accurate opinion could not be formed regarding the quality of certain products. Even some official products have insufficient standards of purity, and data are oftentimes altogether lacking regarding a vastly larger number of vegetable products, especially American products, which have at one time or another been used in medicinal preparations.

A number of investigators¹ have hitherto reported analyses of a more or less limited number of crude drugs, both of foreign and domestic origin, but these data have almost invariably been based on commercial samples, the history of which was often uncertain or altogether lacking. These samples in many instances were received in the powdered condition, which rendered them in a measure unsuitable for the acquisition of authentic data. The reported analyses refer largely to imported drugs, while those of domestic drugs are more meager. It seemed desirable, therefore, to secure more comprehensive data regarding domestic

* Read before Scientific Section, A. Ph. A., New York meeting, 1919. Motion passed to have the paper printed, see minutes of the Scientific Section, p. 788, October issue of the JOURNAL.

† Since the undersigned has recently severed his connection with the Pharmacognosy Laboratory, and since the accompanying paper is one of the last which will appear from that Laboratory under this joint authorship, he deems it an appropriate opportunity to express his indebtedness to his friend and colleague, Dr. Arno Viehoveer, Pharmacognosist of the Bureau of Chemistry. The memory of our four years of joint labor and the valuable lessons and experience gained will not soon be forgotten, and although our immediate paths have parted, the writer hopes that future years may bring further opportunities for coöperation in the fields of pharmacognosy and pharmaceutical chemistry—C. O. EWING.

¹ Digests of Comments on the Pharmacopoeia of the United States and on the National Formulary. Published by the Hygienic Laboratory, Treasury Department, United States Public Health Service.

LaWall and Bradshaw, "Ash Standards in Drugs—Are They Necessary," *Proc. Am. Pharm. Assoc.*, 58, 750, 1910.

Maines, "Ash Constants of Crude Drugs," *J. Am. Pharm. Assoc.*, 3, 423, 1914.

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Rippetoe and Minor, "The Examination of Some Drugs with Special Reference to the Anhydrous Alcohol and Ether Extracts and Ash," *A. J. of Pharm.*, 84, 433, 1912.

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Thurston and Thurston, "Powdered Vegetable Drugs," *Proc. Ohio State Pharm. Assoc.*, 1911, p. 69.

Thurston and Thurston, "Ash and Moisture Constants of Powdered Vegetable Drugs," *J. A. Ph. A.*, 2, 474, 1913.

Wilbert, M. I., "Proposed U. S. Pharmacopoeia Limitations for the Ash Content of Drugs," *Amer. Jour. of Pharm.*, 86, 456-60, 1914.

crude drug products. It was felt that such data might prove useful, first, as a criterion of cleanliness, second, as an indication of therapeutic strength, third, as an aid in the detection of adulteration, and fourth, as an aid in the identification of species in certain instances where confusion existed.

During a recent investigation of the crude drug industry of the Blue Ridge mountains, some salient points of which have previously been reported in this JOURNAL,² an opportunity presented itself to secure a considerable number of samples of crude drug products, derived chiefly from the wild growing plant species of that region. The samples so obtained furnished the basis for securing analytical data, a portion of which is reported in this paper. (A few samples from other sources have been included, *e. g.*, cascara sagrada, eridictyon, and eucalyptus, from the Pacific coast.)

Some of these products, it is quite true, have little or no standing among therapeutists, and few of us, perhaps, would place any considerable faith in their efficacy. They are sold, nevertheless, for medicinal use, some of them in considerable amounts. It is worthy of note that a catalogue recently issued by one of the leading New York wholesale drug houses quoted prices on no less than 211 articles mentioned in the attached tabulation. Since so little data have been published regarding authentic American crude drug products of this nature, it is thought that our results are of common interest and are worthy of public record.

THE DETERMINATIONS.

General.—The samples were first examined as to identity and cleanliness. A representative portion was then reserved as a reference sample and the remainder ground to a millimeter powder. The powder was then thoroughly mixed before drawing samples for analysis. All analytical determinations were made on the air-dried material.

The data herein presented include 1, the botanical identity of the specimen, 2, the part used, 3, the color of the powdered drug, 4, total ash, 5, ash insoluble in 10 percent hydrochloric acid, 6, total ether extract, 7, volatile ether extract, 8, odor of ether extract and 9, color of ether extract.

Scientific Name.—The determination of botanical identity has been chiefly based upon Britton and Brown, "Flora of the Northern United States and Canada" (1913). Supplementing this, use has been made of Small's "Flora of the South-eastern United States" (1903), and the botanical descriptions of the National Standard Dispensatory (1916), credit for which is largely due to Rusby. In a number of instances recourse was also had to the National Herbarium in the Smithsonian Institution, Washington, D. C. The data are recorded in the alphabetical order of the scientific names. In the case of official drugs the name adopted in the United States Pharmacopoeia or the National Formulary has been given. In other cases the nomenclature of Britton and Brown has been followed; in the few instances of species which are not recorded by Britton and Brown, Small has usually been followed. In several instances it was only possible to determine the generic name. In such cases we have referred to the sample in question as a "species" of the genus. In several other cases, where the specific identity was

² Ewing and Stanford, "Botanicals of the Blue Ridge," J. A. PH. A., 8, 16, 1919.

probable but could not be absolutely ascertained because of lack of authentic material for comparison, the generic name has been given and the specific name followed by an interrogation point. It will be noted that in a few instances the trade name given a certain sample does not correspond with any of the "common" names usually reported for that species. The few discrepancies are probably due to errors on the part of collectors.

Part Used.—Inasmuch as several parts of the same plant are sometimes used in medicine, it has been necessary to mention that upon which the analytical data was obtained. In the cases of leaves and herbs, the percentage of stems present is indicated in parentheses immediately following the part used. When no statement regarding stems is made, it implies that an inspection showed that obviously less than 10 percent were present. The apparent condition of the sample as regards cleanliness is noted under "Remarks."

Color of Powdered Drug.—Color alone is by no means to be considered as a distinctive characteristic of crude drugs, but for analytical purposes it is sometimes of assistance in preliminary determination of the class to which a powdered drug belongs. In fact, Kraemer³ uses this characteristic as the basis of a key for the analysis of powdered drugs.

Color varies somewhat with different specimens of the same drug. These variations may be partially attributed to variable soil and climatic conditions or difference in age. In the case of leaves, herbs and flowers it is due largely to variations in curing and to conditions and length of storage. The color of leaves may vary through all shades of green to brown; the greater the admixture of the latter, the poorer, usually, is the sample. As for underground parts, such as roots, rhizomes, etc., the color of the soil in which the material has grown sometimes influences the color of the powder, although differences are not so pronounced as in the case of leaves, herbs, and flowers. The colors of different specimens do not vary sufficiently to prevent the use of this characteristic as an indicative factor. The colors were not sufficiently constant, however, to warrant in our opinion exact comparison with a definite color chart, such as Ridgeway's "Color Standards and Nomenclature" (1912). We believe, moreover, that, to the average analyst, who frequently has not access to such standards, expressions in the terms of common colors and shades is preferable to the frequently little-known definitives of the charts.

Ash.—Total ash was determined according to the method of the United States Pharmacopoeia IX (1916), p. 590, using platinum dishes and an electric muffle heated to low dull redness. The value of this determination as a method of judging the cleanliness of crude drugs is generally acknowledged. It is generally conceded too, that variations in analyses due to differing moisture content are less than those found in different samples of the same product grown under different climatic conditions and collected at different times. For this reason also analytical figures regarding these determinations are not significant beyond the first decimal point, and have therefore not been carried out further. The color of the ash in the various samples was noted, but the variations were so slight as to be unworthy of specific comment. The colors varied from nearly pure white, *e. g.*,

³ Kraemer, "Scientific and Applied Pharmacognosy," 1915, p. 825.

corn silk (*Zea mays*), through different shades of bluish and reddish grays to reddish brown and even black, *e. g.*, scouring rush (*Equisetum hyemale*). In general, the greater the admixture of a red shade, the greater the uncleanness of the sample. Overheating of the ash is generally indicated by a greenish cast because of the very common occurrence of manganese.

Ash Insoluble in 10 Percent Hydrochloric Acid.—The value of an acid insoluble ash determination as supplementary evidence in confirming the cleanliness of crude drug products has been less emphasized than has the determination of total ash. That its value equals, and frequently exceeds that of the total ash determination has been pointed out recently in this JOURNAL.⁴

Its extreme usefulness in connection with the judgment of the cleanliness of crude drug products will be perceived upon making a study of the figures for acid insoluble ash taken in connection with the data given regarding the cleanliness of the sample. A quick, serviceable method for this determination was outlined in the paper mentioned above.

Total Ether Extract.—Total and volatile ether extracts are standard determinations in the analyses of many vegetable crude drug and spice products, and have therefore been included. The method given in the United States Pharmacopoeia IX, pp. 591-2, was followed. It was expected that in many instances the results would not be of any considerable value. At the same time, one never can predict what valuable information may come to light. As an instance thereof may be cited the cases of wahoo root bark (*Euonymus atropurpureus* Jacq.) and wafer ash root bark (*Ptelia trifoliata* L.). A commercial specimen of wahoo was recently called to the writers' attention which consisted of approximately 90 percent of wafer ash. Youngken,⁵ in a recent article, reporting also this adulteration, points out certain differentiating characteristics of the whole barks, among them the solitary rhombohedral crystals of calcium oxalate in the bark of *Ptelia*. While we observed these microscopic characteristics, it appears from limited experiments that their value, especially in powdered mixtures, is restricted. The analytical figures in the accompanying tabulation indicate that the total ether extract should readily serve to detect the addition of wafer ash to wahoo. Based on the figures found—wahoo about 4 percent, wafer ash nearly 25 percent—the adulteration of wahoo with as little as 20 percent of wafer ash could be easily detected by this means.

Volatile Ether Extract.—The volatile constituents of drugs are oftentimes important, especially in the case of the *Labiatae* and several others, and these have therefore been included for all products. The method given in the United States Pharmacopoeia IX, pp. 591-2 was followed. In these determinations an apparatus for rapid evaporation⁶ very much facilitated the volatilization of the ether extracts without the necessity of heating with its possible resultant loss of volatile extractive. The determinations were made at the present time because

⁴ Ewing and Viehoever, "Acid Insoluble Ash Standards for Crude Vegetable Drugs," J. A. Ph. A., 8, No. 9, pp. 725-30, 1919.

⁵ Younken, Heber W., "Wafer Ash Bark as an Adulterant for Euonymus," Amer. J. of Pharm., 90, No. 3, pp. 160-65, 1918.

⁶ Merrill and Ewing, "Laboratory Apparatus for Rapid Evaporation," J. Ind. and Eng. Chem., 2, 230, 1919.

volatile constituents are of course probably the most variable and subject to loss during storage. It is conceded that the relative rates at which the various volatile constituents are driven off are different. Nevertheless, in an empirical determination of this type, since conditions affecting the results are held constant, they afford a common basis for comparison. The age of the samples will in a measure account for some of the discrepancies in the several samples of the same product, such as in the case of sassafras, certain of the mints, Canada snakeroot, etc.

Color of the Ether Extract.—The remarks regarding variations in color of the crude drug apply as well to variations in color of the ether extract. They may, however, sometimes be of value, and even in those instances where their value is doubtful, the data have been included in the interest of completeness. In some instances the color of the extract taken in conjunction with the color of the original powder may afford strong presumptive evidence regarding identity. For example, powdered comfrey root (*Symphytum officinale* L.), which is brownish gray in color, yielded a light red extract. No other product displaying this particular combination of color was noted, so that the two together are a pretty strong indication of comfrey root. While the nature of this color was not further investigated at the present time, it is of interest to note that this species is a member of the N. O. *Borraginaceae*, many species of which yield colored extracts, notably the well-known alkanet (*Alkanna tinctoria* L.), and macrotomia root (*Macrotomia cephalotes* D. C.) so-called "Syrian Alkanet."⁷

Odor of Ether Extract.—In many instances the odor of the volatile extract is characteristic of the product and so well known that it can not readily be described by any other term.⁸ Other odors, while not exactly characteristic, sometimes suggest a certain resemblance to those of other well-known substances, although not precisely comparable thereto; in the accompanying tabulation the term "suggestive of" should be interpreted in this fashion. In many instances the material is practically odorless, or at least the odor is lacking in any describable characteristic; where this was the case the column is left blank. In several instances the odor, while difficult to describe in technical terms, carried such a strong suggestion that mention is made thereof in the table. A striking example is the Red Lady Slipper root (*Cypripedium parviflorum* Salisb.) which is described in the National Formulary IV, as having "a distinct heavy odor;" Wall⁹ states that the odor is sickening; Sayre¹⁰ describes it as somewhat valerian-like; Rusby¹¹ states that "the odor is heavy, peculiar, or somewhat like valerian.

DISCUSSION OF RESULTS.

It would of course be impracticable to discuss all the results in detail. A few examples have already been cited to illustrate the usefulness of certain of the

⁷ Ewing and Clevenger, "*Macrotomia cephalotes* D. C., So-Called Syrian Alkanet," J. A. Ph. A., 7, 591, 1918.

⁸ For data regarding the odoriferous constituents of the various species, reference may be made to Wehmer, "Die Pflanzenstoffe," 1911; Gildemeister and Hoffman, "Die Atherischen Öle," 1910; and Parry, "Chemistry of Essential Oils," 1918.

⁹ Wall, "Handbook of Pharmacognosy," 1917, p. 219.

¹⁰ Sayre, "Organic Materia Medica and Pharmacognosy," 1917, p. 130.

¹¹ Rusby, "National Standard Dispensatory," 1916, p. 565.

determinations made, but for the most part the figures and the data given must speak for themselves. It will not be inappropriate, however, to point out an additional limited number of the more striking examples and indicate in a general way the manner in which the data already acquired have fulfilled the expectations along the lines mentioned in an introductory paragraph.

1. *Cleanliness*.—Total ash and acid insoluble ash are the important data required in the judgment of cleanliness. As a general rule, the difference between the total ash and the acid insoluble ash (that is to say, the *acid soluble ash*) is fairly constant and any considerable deviation from normal should be looked upon with suspicion. While the number of samples examined is too limited on which to base appropriate standards of purity, the fact that the analyses were made upon normal specimens of known authenticity rendered the data useful in an indicative way. Since the majority of the U. S. Pharmacopoeia vegetable drugs are of foreign origin, whereas those of the National Formulary are largely domestic, the data obtained in this investigation are especially appropriate to the latter. Thus, in the case of National Formulary drugs, they indicate that the ash standards for the following are rather liberal:

Aletris	Dioscorea	Gossypium	Leptandra
Calendula	Euonymus	Iris Versicolor	

that the ash standards for the following are probably satisfactory:

Angelica	Caulophyllum	Hamamelidis Folia	Passiflora	Rumex
Aralia	Cimicifuga	Helonias	Pinus Alba	Sambucus
Asarum	Convallariae Radix	Inula	Quercus	Scoparius
Castanea	Coptis	Juglans	Rhus Glabra	Stillingia
Cataria	Delphinium	Fraxinus	Rubus	Trifolium

and that the ash standards for the following are probably too exacting and should be further studied with a view to setting more reasonable limits:

Chionanthus	Geranium	Lappa	Trillium
Cornus	Hydrangea	Solanum	Xanthoxyli Fructus
Eupatorium	Juniperus	Thuja	

With respect to U. S. P. drugs, the reported figures indicate that the ash standards for Humulus, Lobelia, Podophyllum, and Spigelia should be further investigated since, on the basis of the data obtained, they appear to be too exacting. The standard for sassafras, however, needs drastic revision downward. Not one of the samples examined yielded over 7 percent of total ash, as against the U. S. Pharmacopoeia limit of 20 percent.

The figures indicate, too, that such drugs as Aletris, Aristolichia, Spigelia, Verbascum, etc., are difficult to obtain commercially in a very clean condition and that considerable latitude should therefore be allowed in their standards. These data may prove useful too, in the cases of many non-official drugs, such as horehound, tansy, pennyroyal, etc., and also with respect to official drugs for which no standard exists, such as *Cascara sagrada*, *Hydrastis*, *Mentha piperita*, *Mentha viridis*, *Prunus serotina*, *Sanguinaria*, *Viburnum prunifolium*, *Viburnum opulus*, *Zea mays*, etc.

In conclusion, attention may be called to *Cypripedium*, *Caulophyllum*, *Cimicifuga*, *Eupatorium purpureum*, *Hedeoma*, etc., to show that an occasional very dirty sample may appear. As a means for detection of adulteration of this kind the determination of the acid insoluble ash is of immense value.

2. *Therapeutic Strength*.—The original plan contemplated examination for glucosides and alkaloids and quantitative determination of the latter. Due, however, to temporary cessation of the work, the only present data of value in this connection are those referring to drugs whose activity depends upon resinous principles and volatile oils. As illustrative instances where the data may prove useful may be mentioned *Aristolochia*, *Asarum*, *Humulus*, *Podophyllum*, *Sassafras*, *Viburnum*, etc. Referring to *Viburnum prunifolium*, for instance, the activity of this drug is generally considered to be due to fatty acids and esters, especially valeric. These are present in the volatile ether extract, which may therefore be considered somewhat in the light of a criterion of therapeutic strength. From such a standpoint it appears not improbable that some samples of tree bark may be as therapeutically active as the root bark, although the latter commands a much higher price; it appears too, that tree bark of *Viburnum nudum*, an unofficial species, may be perhaps more valuable than the official *Viburnum prunifolium*; at any rate it deserves further study. *Humulus* is well known to vary widely in its resin content and volatile acids; the table indicates how extreme these variations may be.

3. *Detection of Adulterants*.—The interesting example of *Euonymus* and *Ptelia* has already been cited. Several others noted involve confusion of species and may therefore be considered under the following heading.

4. *Differentiation of Species*.—The errors due to confusion of species are generally due to superficial resemblance of different drugs or to the application of the same common name to several species. As an example of the first type mention may be made of a root submitted as "White Lady Slipper," *Cypripedium candidum* Willd. All of the analytical data cast suspicion upon its being a *Cypripedium*; a histological investigation indicated it to be a *Smilax* species, very probably *Smilax herbacea* L.

Examples of the second type are more numerous, but it will suffice to cite three examples. The name "Samson's Snakeroot" is applied to both *Dasystephana saponaria* and *Psoralea pedunculata*. The latter is the one of medicinal value and may readily be distinguished in powdered form by means of its very much larger total and volatile ether extracts. "Blazing Star" is another common name applied to several different species. Samples obtained under this label consisted of roots of *Aletris farinosa*, *Chamaelirium luteum* and *Lacinaria squarrosa*. The data given may be of aid in the determination of the specific identity of a ground sample.

TABLE I.—PARTIAL ANALYSES OF 330 AMERICAN CRUDE DRUGS.

Lab. No.	Scientific.	Name.	Part employed.	Color of powder.	Ash.		Ether extract.			Remarks.
					Total.	Acid-insoluble.	Total.	Volatile.	Color.	
2599	<i>Abies balsamea</i> (L.) Mill.	Balsam	Tree bark	Medium brown	2.0	0.2	5.78	0.40	Light brownish yellow	Terebinthinate, cedar-like, slightly fatty
2416	<i>Acer negundo</i> L.	Box Elder	Tree bark	Light reddish brown	5.2	0.6	4.94	0.24	Cream	Pleasant, sweetish
2073	<i>Acer negundo</i> L.	Maple Ash	Tree bark rossed	Light reddish brown	9.6	2.9	2.94	0.26	Cream	Pleasant, sweetish
2000	<i>Acer spicatum</i> L.	Mountain Maple	Tree bark	Med. light brown	3.8	0.1	5.38	0.70	Light brown-green	Raw, woody
2001	<i>Acer spicatum</i> L.	Mountain Maple	Tree bark	Med. light brown	3.9	0.1	4.66	0.70	Light brown-green	Raw, woody
2418	<i>Achillea millefolium</i> L.	Yarrow	Leaves (35% stems)	Brownish green	8.0	0.4	5.22	0.39	Dark green	Sweetish, aromatic, suggestive of dog fennel
2498	<i>Achillea millefolium</i> L.	Yarrow	Tops	Brownish green	10.3	0.9	5.48	0.56	Dark green	Sweetish, aromatic, suggestive of dog fennel
2289	<i>Acorus calamus</i> L.	Calamus (Sweet Flag)	Rhizomes	Light grayish brown	5.7	1.4	6.86	1.00	Medium green-brown	Characteristic
2356	<i>Acorus calamus</i> L.	Calamus (Sweet Flag)	Rhizomes	Light grayish brown	4.2	0.4	10.27	0.90	Medium green-brown	Characteristic
2614	<i>Acorus calamus</i> L.	Calamus (Sweet Flag)	Rhizomes and roots	Medium brown	15.4	9.6	7.62	1.20	Medium green-brown	Characteristic
2274	<i>Adiantum pedatum</i> L.	Maidenhair fern	Frond	Olive-green	9.4	4.0	6.80	0.10	Very dark brownish green	Sweetish, somewhat unpleasant
2441	<i>Adiantum pedatum</i> L.	Maidenhair fern	Frond (25% pedicels)	Olive-green	7.4	2.6	6.64	0.27	Very dark brownish green	Sweetish, somewhat unpleasant
2621	<i>Adiantum pedatum</i> L.	Maidenhair fern	Frond	Olive-green	11.2	4.9	4.20	0.14	Very dark green	Sweetish, somewhat unpleasant
2070	<i>Adiantum pedatum</i> L.	Maidenhair fern	Rhizomes and roots	Dark brown	18.5	14.7	0.76	0.08	Light yellow-green	Dirty
2035	<i>Aesculus (pavia)</i> L.	Buckeye	Tree bark, rossed	Light yellowish brown	7.7	0.3	4.14	0.10	Light brown	Rancid
2685	<i>Aesculus (pavia)</i> L.	Buckeye	Seeds	Light brownish gray	5.2	0.1	3.38	0.20	Brownish cream	Penetrating, suggestive of formic acid
2648	<i>Agave americana</i> L.	False Aloe	Root	Medium brown	5.2	2.5	1.38	0.14	Light yellowish green	Fatty, slightly rancid
2288	<i>Agrimonia gryposepala</i> Wallr.	Agrimony	Herb	Brownish green	10.2	1.3	5.65	0.39	Med. brown-green	Aromatic, sour
2401	<i>Agrimonia gryposepala</i> Wallr.	Agrimony	Herb	Brownish green	8.3	0.5	6.06	0.42	Med. brown-green	Aromatic, sour

Lab. No.	Scientific.	Trade.	Part employed.	Color of powder.	insoluble.		Total.	Vola- tile.	Color.	Odor.	Remarks.
					Total.	ble.					
2507	<i>Agrimonia gryposepala</i> Waltr.	Agrimony	Herb	Brownish green	7.7	0.4	5.66	0.30	Medium greenish brown	Aromatic, sour, somewhat leather-like	Clean
2734	<i>Agropyron repens</i> L.	Couchgrass	Stolons	Light grayish brown	5.7	2.5	1.30	0.16	Very light green	Sweetish, slightly suggestive of vanilla	Quite clean
2094	<i>Agropyron repens</i> L.	Couchgrass	Stolons	Medium grayish brown	3.6	1.2	0.36	0.12	Very light green	Sweetish, slightly suggestive of vanilla	Clean
2693	<i>Ailanthus glandulosus</i> Desp.	Ailanthus	Root bark	Light yellowish brown	5.9	1.7	2.04	0.14	Light green-brown		Clean
2097	<i>Aletris farinosa</i> L.	Aletris	Rhizome and roots	Grayish brown	13.5	10.5	8.94	1.06	Very light brownish yellow	Fatty	Somewhat dirty
2096	<i>Aletris farinosa</i> L.	Aletris	Rhizome and roots	Grayish brown	14.4	9.8	6.50	0.72	Very light brownish yellow	Fatty	Somewhat dirty
2059	<i>Aletris farinosa</i> L.	Unicorn	Rhizome and roots	Grayish brown	23.5	19.1	6.90	0.90	Very light brownish yellow	Fatty	Dirty
2312	<i>Aletris farinosa</i> L.	Blazing Star	Rhizome and roots	Grayish brown	13.8	9.5	8.50	0.64	Very light brownish yellow	Fatty	Somewhat dirty
2431	<i>Alnus rugosa</i> (DuRoi's) Spreng	Red or Tag Elder	Tree bark	Medium brown	5.7	0.1	6.24	0.62			Clean
2487	<i>Alnus rugosa</i> (DuRoi's) Spreng.	Red or Tag Elder	Tree bark	Medium brown	5.9	0.6	5.76	0.58	Yellowish green		Clean
2069	<i>Alsine media</i> L.	Chickweed	Herb (30% stems)	Light greenish brown	21.6	3.7	1.98	0.24	Med. brown-green	Raw, dusty	Clean
2608	<i>Alsine media</i> L.	Chickweed	Herb (40% stems)	Light brownish green	22.4	3.5	2.86	0.12	Med. green-brown	Rancid, earthy	Clean
2500	<i>Althea rosea</i> L.	Hollyhock	Flowers	Medium reddish brown	12.7	3.3	2.52	0.18	Light yellowish brown		Clean
2358	<i>Althea rosea</i> L.	Hollyhock	Flowers	Medium reddish brown	12.5	2.5	3.14	0.34	Light yellowish brown		Clean
2676	<i>Amaranthus hybridus</i> L.	Princess Feather	Flowering tops	Light grayish brown	14.1	2.3	2.40	0.06	Medium green	Pleasant, acidic	Fairly clean
2027	<i>Ambrosia elatior</i> L.	Ragweed	Flowering tops (50% stems)	Light greenish brown	9.2	1.0	3.50	0.15	Medium brownish green	Somewhat suggestive of pepper and creosote	Clean
2026	<i>Amygdalis persica</i> L.	Peach Tree	Bark	Very light yellowish brown	5.5	0.45	4.84	0.38	Light brown-green		Clean
2683	<i>Amygdalis persica</i> L.	Peach Tree	Leaves	Brownish green	11.5	2.25	7.68	0.18	Mottled brownish green	Slightly sour	Clean
2269	<i>Angelica (villosa, B. S. P.?</i> <i>Walt.)</i>	Angelica	Root	Very light grayish brown	4.9	0.7	7.40	0.90	Brown	Characteristic; slightly suggestive of celery	Clean

2395 <i>Angelica (villosa, Walt.)</i> B. S. P.?	Angelica	Root	Very light grayish brown	5.9	1.1	5.62	0.80	Brown	Characteristic; slightly suggestive of celery	Clean
2521 <i>Angelica (villosa, Walt.)</i> B. S. P.?	Angelica	Root	Very light grayish brown	6.8	1.6	5.50	0.80	Brown	Characteristic; slightly suggestive of celery	Clean
2645 <i>Aplectrum hyemale</i> L.	Adam and Eve	Cornus	Light gray	4.2	1.3	0.58	0.08	Brownish gray	Somewhat suggestive of old pipe	Dirty
2612 <i>Apocynum androsaemifolium</i> L.	Bitterroot	Root	Light grayish brown	4.4	1.8	4.76	0.24	Light green-yellow	Somewhat suggestive of old pipe	Fairly clean
2607 <i>Apocynum cannabinum</i> L.	Black Indian Hemp	Root	Light grayish brown	4.9	1.6	6.00	0.30	Very light yellow	Pleasant, slightly aromatic	Fairly clean
2590 <i>Apocynum cannabinum</i> L.	Black Indian Hemp	Root	Light grayish brown	8.1	5.0	7.48	0.26	Very light yellow	Pleasant, slightly aromatic	Somewhat dirty
2338 <i>Aralia nudicaulis</i> L.	American Sarsaparilla	Root	Light brownish gray	5.0	0.7	2.94	0.22	Light yellowish brown	Fatty, slightly rancid	Clean
2278 <i>Aralia nudicaulis</i> L.	American Sarsaparilla	Root	Light brownish gray	9.5	1.4	3.12	0.30	Light brownish yellow	Fatty, slightly rancid	Clean
2555 <i>Aralia nudicaulis</i> L.	White Sarsaparilla	Root	Light brownish gray	6.5	0.7	2.10	0.14	Light brownish yellow	Fatty, slightly rancid	Clean
2360 <i>Aralia racemosa</i> L.	Spikenard	Root	Light brownish gray	8.1	2.8	10.68	0.88	Medium brown	Characteristic, slightly suggestive of elecampane	Clean
1972 <i>Aralia racemosa</i> L.	Spikenard	Root	Light brownish gray	5.9	0.8	11.54	1.40	Medium brown	Characteristic, slightly suggestive of elecampane	Clean
2261 <i>Aralia racemosa</i> L.	Spikenard	Root	Light brownish gray	6.6	2.5	10.62	1.18	Medium brown	Characteristic, slightly suggestive of elecampane	Clean
2602 <i>Aralia racemosa</i> L.	Spikenard	Root	Light brownish gray	5.3	0.9	14.28	1.40	Med. light brown	Characteristic, slightly suggestive of elecampane	Clean
2014 <i>Aralia spinosa</i> L.	Prickly Elder	Root bark	Light grayish brown	6.8	1.8	3.20	0.16	Med. light brown	Fatty, acid-like	Clean
2591 <i>Aralia spinosa</i> L.	Prickly Elder	Tree bark	Light grayish brown	5.1	0.2	7.04	0.96	Med. light brown	Slightly suggestive of bay rum and wild ginger	Clean
2302 <i>Ardium lappa</i> L.	Burdock	Root	Medium brown	9.1	1.2	2.80	0.40	Light greenish yellow	Unpleasant	Clean
2350 <i>Ardium lappa</i> L.	Burdock	Root	Medium brown	10.7	1.9	2.54	0.32	Light greenish yellow	Unpleasant	Clean
2586 <i>Ardium lappa</i> L.	Burdock	Root	Medium brown	11.9	7.6	1.52	0.22	Light greenish yellow	Unpleasant	Somewhat dirty
2652 <i>Ardium lappa</i> L.	Burdock	Leaves	Dark olive-green	8.0	2.9	5.16	0.22	Very dark brownish green	Suggestive of dried herring	Clean
1986 <i>Ardium lappa</i> L.	Burdock	Seed	Medium gray	3.8	0.2	20.98	0.26	Light yellowish-green	Nutty	Clean
2169 <i>Arctostaphylos Uva</i> (L.) Spreng.	Bearberry	Leaves	Yellowish green	3.9	0.4	12.44	0.32	Mottled brownish creamy green	Somewhat aromatic	Clean

Lab. No.	Name.		Part employed.	Color of powder.	Ash.		Ether extract.			Remarks.	
	Scientific.	Trade.			Total.	Acid insoluble.	Total.	Vola- tile.	Odor.		
2219	<i>Aristolophylus Uva Ursi</i>	Bearberry	Leaves	Yellowish green	3.4	0.1	11.06	0.36	Mottled brownish creamy green	Somewhat aromatic	Clean
2263	<i>Arisaema triphyllum</i> (L.) <i>Torr.</i>	Indian Turnip	Corn	Very light gray	4.4	0.5	1.14	0.12	Very light brown		Clean
2704	<i>Arisaema triphyllum</i> (L.) <i>Torr.</i>	Indian Turnip	Corn	Very light gray	6.1	1.6	1.02	0.10	Very light yellow		Clean
2386	<i>Aisaema triphyllum</i> (L.) <i>Torr.</i>	Indian Turnip	Corn	Very light gray	7.1	2.1	1.38	0.10	Very light yellow		Clean
2739	<i>Aristolochia serpentaria</i> L.	Serpentaria	Roots	Medium brown	15.3	9.9	5.70	1.26	Med. dark brown	Characteristic; strong-ly terebinthinate, slightly camphor-aceous	Rather dirty
2342	<i>Aristolochia serpentaria</i> L.	Black Snakeroot	Roots	Medium brown	15.4	10.4	6.58	0.78	Med. dark brown	Characteris.ic; strong-ly terebinthinate, slightly camphor-aceous	Somewhat dusty
1981	<i>Aristolochia serpentaria</i> L.	Virginia Snakeroot	Roots	Medium brown	16.9	10.8	3.44	1.18	Light brown	Characteristic; strong-ly terebinthinate, slightly camphor-aceous	Rather dusty
2694	<i>Aristolochia serpentaria</i> L.	Virginia Snakeroot	Roots	Medium brown	12.7	6.9	4.96	1.36	Medium brown	Characteristic; strong-ly terebinthinate, slightly camphor-aceous	Fairly clean
1980	<i>Aristolochia reticulata</i> Nutt.	Texas Snakeroot	Roots	Medium brown	16.5	12.5	5.22	0.96	Medium brown	Characteristic; strong-ly terebinthinate, slightly camphor-aceous	Very dusty
2405	<i>Armoracia armoracia</i> (L.) <i>Britton</i>	Horseradish	Roots		6.4	0.2	1.78	0.30			Clean
2573	<i>Armoracia armoracia</i> (L.) <i>Britton</i>	Horseradish	Leaves	Greenish brown	17.6	1.1	2.46	0.20	Medium green	Sour	Clean; ash very high in carbon-ates
2450	<i>Armoracia armoracia</i> (L.) <i>Britton</i>	Horseradish	Leaves	Greenish brown	14.2	0.7	2.89	0.20	Medium green	Sour	Clean; ash very high in carbon-ates
2709	<i>Artemisia abrotanum</i> L.	Southernwood	Herb	Greenish brown	7.1	1.0	8.28	1.20	Dark brownish green	Characteristic; sour, slightly suggestive of dog fennel	Clean

2001 <i>Artemisia abrotanum</i> L.	Southernwood	Leaves	Greenish brown	12.6	0.9	8.16	0.75	Dark green	Characteristic; sour, slightly suggestive of dog fennel	Clean
2266 <i>Asarum canadense</i> L.	Canada Snakeroot	Rhizomes and root	Med. dark brown	9.3	1.3	4.33	0.80	Brownish green	Suggestive of ginger; peppery	Fairly clean; probably old sample
2383 <i>Asarum canadense</i> L.	Wild Ginger	Rhizomes and root	Med. dark brown	12.2	0.9	2.36	0.66	Brownish green	Suggestive of ginger; peppery	Fairly clean; probably old sample
2638 <i>Asarum canadense</i> L.	Southern Wild Ginger	Rhizomes and root	Med. dark brown	10.0	0.5	5.60	3.38	Brownish green	Suggestive of ginger; peppery	Fairly clean
2639 <i>Asarum canadense</i> L.	Southern Wild Ginger	Rhizomes	Med. dark brown	12.5	0.6	7.14	3.88	Brownish green	Suggestive of ginger; peppery	Fairly clean
2883 <i>Asarum canadense</i> L.	Wild Ginger	Rhizomes and root	Med. dark brown	21.5	0.5	8.06	4.33	Brownish green	Suggestive of ginger; peppery	Freshly collected
2616 <i>Asclepias incarnata</i> L.	White Hemp	Root	Light grayish brown	13.5	8.8	1.96	0.12	Nearly colorless; greenish tinge	Raw, slightly rancid, peppery	Somewhat dirty
2038 <i>Asclepias syriaca</i> L.	Silkweed	Root	Very light gray	5.4	0.3	2.32	0.18	Nearly colorless	Faint; suggestive of sabal or cocoanut oil	Clean
2422 <i>Asclepias tuberosa</i> L.	Butterfly or Pleurisy Root	Root	Very light brownish gray	5.1	0.9	3.46	0.14	Nearly colorless	Somewhat bland, nutty	Clean
2689 <i>Asclepias tuberosa</i> L.	Butterfly or Pleurisy Root	Root	Very light brownish gray	7.1	2.0	4.64	0.10	Nearly colorless	Somewhat bland, nutty	Clean
2262 <i>Asclepias tuberosa</i> L.	Butterfly or Pleurisy Root	Root	Very light gray	3.5	0.4	2.37	0.12	Nearly colorless	Fatty, faintly aromatic	Clean
2533 <i>Asparagus officinalis</i> L.	Asparagus	Root	Medium brown	9.7	3.5	3.66	0.34	Light yellow, almost colorless	Suggestive of raw peanuts; also earthy	Fairly clean
2528 <i>Aster puniceus</i> L.	Red Stalk Aster	Root	Medium brown	38.4	32.5	1.54	0.22	Med. light brown	Earthy	Very dirty
2488 <i>Athyrium filix foemina</i> (L.) Roh.	Backache Brake	Root	Dark reddish brown	7.1	2.7	0.36	0.04	Very light yellow-green		Somewhat dirty
2077 <i>Baptisia tinctoria</i> (L.) R. Br.	Wild Indigo	Roots	Light yellowish brown	1.9	0.2	1.30	0.10	Med. brown-yellow	Sweetish, smoky,	Clean
1993 <i>Benzoin acutide</i> (L.) Nees.	Spicewood	Leaves	Dark gray	8.6	1.7	5.84	0.28	Med. brown-green	earthy, pleasant, somewhat cedar-like	Somewhat dusty
2093 <i>Berberis</i> sp.	Oregon Grape	Root	Light greenish yellow	5.6	0.1	0.32	0.08	Light greenish yellow		Clean
2319 <i>Betula lenta</i> L.	Black Birch	Bark	Light reddish brown	2.5	0.1	1.96	0.20	Light cream	Wintergreen-like	Clean
2436 <i>Betula lenta</i> L.	Sweet Birch	Bark	Light reddish brown	4.1	0.0	2.04	0.16	Light cream	Wintergreen-like	Clean
2572 <i>Betula lenta</i> L.	Mahogany Birch	Bark	Light reddish brown	3.8	0.3	2.30	0.10	Colorless	Wintergreen-like, fatty, acidic	Clean
2013 <i>Betula nigra</i> L.	Red Birch	Leaves	Medium greenish brown	4.5	0.5	8.26	0.36	Dark green-brown	Sour and somewhat suggestive of olive oil	Clean

Lab. No.	Name.		Part employed.	Color of powder.	Ash.		Ether extract			Remarks.
	Scientific.	Trade.			Total.	Acid-insoluble.	Vola- tile.	Color.	Odor.	
2381	<i>Bicuculla canadensis</i> (Goldie) Millsp.	Turkey Corn	Corns	Dark yellowish brown	5.2	2.9	0.70	0.08	Light greenish yellow	Dirty; slight admixture of <i>B. cucullaria</i> (L.) Millsp., not over 10%
2000	<i>Bicuculla canadensis</i> (Goldie) Millsp.	Turkey Corn	Corns	Dark yellowish brown	2.8	0.5	0.42	0.02	Light greenish yellow	Clean; slight admixture of <i>B. cucullaria</i> (L.) Millsp., not over 10%
2506	<i>Botrychium virginianum</i> L.	Moonwort	Herb	Brownish green	10.0	1.4	2.90	0.30	Dark green	Somewhat suggestive of cumin
2543	<i>Bursa bursa-pastoris</i> (L.) Britton	Shepherd's Purse	Herb	Light grayish green	9.6	1.0	2.90	0.12	Dark green	Slightly fetid, somewhat pepper-like
2585	<i>Bulneria florida</i> (L.) Kearney	Carolina Allspice	Tree bark	Reddish brown	5.0	1.7	4.66	0.46	Med. brown-green	Pleasant, aromatic, suggestive of ginger
2703	<i>Buxus sempervirens</i> L.	Boxwood	Leaves	Light olive-green	6.2	0.6	4.64	0.12	Medium green	Tea-like
2411	<i>Calendula officinalis</i> L.	Marigold	Flowers	Dark golden brown	7.4	0.3	10.54	0.60	Orange-brown	Clean
2713	<i>Calendula officinalis</i> L.	Marigold	Flowers	Dark golden brown	6.7	0.9	5.40	0.30	Med. dark brown	Clean
2696	<i>Calendula officinalis</i> L.	Marigold	Flowers with tops	Dark greenish brown	6.6	1.0	7.98	0.54	Orange-brown	Clean
2609	<i>Calycanthus floridus</i> L.	Spice Bush	Leaves	Dark greenish brown	5.1	0.2	9.50	0.94	Dark brown, nearly black	Slightly suggestive of bay
2581	<i>Castalia odorata</i> (Dryand) Woodw. and Wood	White Pond Lily	Root	Light grayish brown	3.6	0.5	3.82	0.08	Light green-yellow	Suggestive of ensilage; ethereal
2292	<i>Castanea dentata</i> (Marsh) Borkh.	Chestnut	Leaves	Olive-green	5.1	0.3	5.42	0.42	Very dark green, nearly black	Aromatic, slightly sour
2082	<i>Castanea dentata</i> (Marsh) Borkh.	Chestnut	Leaves	Olive-green	5.0	0.6	7.74	0.28	Very dark green, nearly black	Aromatic, slightly sour
2341	<i>Castanea dentata</i> (Marsh) Borkh.	Chestnut	Leaves	Olive-green	4.0	0.2	7.78	0.28	Very dark green, nearly black	Aromatic, slightly sour
2034	<i>Castanea dentata</i> (Marsh) Borkh.	Chestnut	Tree bark, rossed	Light reddish brown	4.5	0.1	6.08	0.14	Light brown-yellow	Clean
2280	<i>Caulophyllum thalictroides</i> (L.) Michx.	Blue Cohosh	Root	Medium gray	4.1	1.1	12.8	0.06	Creamy white	Clean
2618	<i>Caulophyllum thalictroides</i> (L.) Michx.	Blue Cohosh	Root	Medium gray	4.6	1.8	1.44	0.1	Creamy white	Clean

2340 <i>Caulophyllum thalictroides</i> (L.) Michx.	Root	Medium gray	32.5	2.2	1.18	0.08	Creamy white	Very dirty
2630 <i>Ceanothus americanus</i> L.	Leaves	Medium greenish brown	4.2	0.2	5.70	0.30	Medium green	Clean
2287 <i>Ceanothus americanus</i> L.	Root	Medium reddish brown	2.3	0.5	0.63	0.04	Whitish	Clean
2657 <i>Ceanothus americanus</i> L.	Root	Medium reddish brown	3.6	1.48	0.94	0.06	Creamy white	Clean
2544 <i>Cephalanthus occidentalis</i> L.	Tree bark	Light reddish brown	4.1	0.4	3.42	0.20	Light yellowish green	Clean
2678 <i>Cercis canadensis</i> L.	Tree bark	Medium reddish brown	9.0	0.7	3.54	0.20	Light yellowish green	Clean
2687 <i>Chenolobus undulatus</i> (Walt.) Small	Root	Medium brown	2.8	0.7	0.26	0.02	Very light yellow	Clean
2490 <i>Chamaecyparis thyoides</i> (L.) B. S. P.	Leaves	Medium greenish brown	6.3	0.5	8.70	0.56	Dark green	Clean
2717 <i>Chamaelirium luteum</i> (L.) A. Gray	Rhizome	Light brownish gray	3.0	0.5	3.10	0.16	Medium brown	Clean
2647 <i>Chamaelirium luteum</i> (L.) A. Gray	Rhizome & roots	Light gray	4.4	2.1	3.58	0.20	Light green yellow	Clean
1977 <i>Chamaelirium luteum</i> (L.) A. Gray	Rhizome	Light gray	3.7	1.2	5.04	0.16	Light green-yellow	Clean
2270 <i>Chamaelirium luteum</i> (L.) A. Gray	Rhizome & roots	Light gray	7.6	3.3	2.76	0.05	Light green-yellow	Somewhat dirty
2123 <i>Chamaelirium luteum</i> (L.) A. Gray	Rhizome	Light gray	4.6	2.1	3.64	0.24	Light green-yellow	Clean
2316 <i>Chelone glabra</i> L.	Herb	Medium brownish green	8.4	2.0	5.46	0.45	Med. dark green	Clean
2040 <i>Chelone glabra</i> L.	Herb	Medium brownish green	8.9	1.3	3.36	0.30	Dark brown-green	Clean
2400 <i>Chelone glabra</i> L.	Leaves	Medium brownish green	8.9	2.7	3.86	0.38	Med. dark green	Clean
2062 <i>Chenopodium ambrosioides</i> L.	Leaves	Medium brownish green	15.2	2.8	3.48	0.42	Medium green	Somewhat dusty; ash very high in carbonates
2491 <i>Chenopodium ambrosioides</i> L.	American Wormseed or Jerusalem Oak	Medium brownish green	19.5	1.8	2.12	0.30	Medium green	Somewhat dusty; ash very high in carbonates
2661 <i>Chenopodium ambrosioides</i> L.	Wormseed	Medium brownish gray	10.0	2.6	7.96	0.85	Olive-green	Chaffy
1976 <i>Chenopodium ambrosioides</i> L.	American Wormseed	Dark brownish gray	22.3	14.7	5.80	0.60	Medium brown	Dirty
2339 <i>Chenopodium ambrosioides</i> L.	American Wormseed or Jerusalem Oak	Medium brownish gray	8.7	1.3	5.24	0.96	Med. brown-green	Somewhat dusty

Lab. No.	Name.		Part employed.	Color of powder.	Ash.		Ether extract.			Remarks.	
	Scientific.	Trade.			Total.	Acid insoluble.	Volatile.	Color.	Odor.		
2659	<i>Chimaphila maculata</i> (L.) Pursh.	Ratsbane	Herb (40% stems)	Med. green-yellow	4.6	0.7	9.50	0.42	Medium greenish brown	Slightly aromatic; very faintly suggestive of pennyroyal	Clean
2145	<i>Chimaphila umbellata</i> (L.) Nutt.	Pipsissewa	Herb (20% stems)	Medium greenish brown	9.6	0.7	10.32	0.58	Dark brown	Slightly aromatic	Clean
2157	<i>Chimaphila umbellata</i> (L.) Nutt.	Prince's Pine	Herb (15% stems)	Medium greenish brown	5.3	0.8	10.06	0.78	Dark brown	Slightly aromatic	Clean
2361	<i>Chionanthus virginica</i> L.	Fringe Tree	Root bark	Light grayish brown	5.9	0.9	2.02	0.18	Light greenish brown		Clean
2080	<i>Chionanthus virginica</i> L.	Fringe Tree	Root bark	Light grayish brown	4.4	0.4	3.72	0.14	Very light greenish brown		Clean
2284	<i>Chrysanthemum leucanthemum</i> L.	Ox-Eye Daisy	Flowers	Yellowish brown	9.9	1.7	6.02	0.42	Medium greenish brown	Sweetish, dusty, slightly suggestive of chamomile	Clean
2718	<i>Chrysanthemum leucanthemum</i> L.	Ox-Eye Daisy	Flowers	Yellowish brown	8.3	0.2	5.14	0.60	Medium greenish brown	Sweetish, dusty, slightly suggestive of chamomile	Clean
2334	<i>Chrysanthemum leucanthemum</i> L.	Ox-Eye Daisy	Flowers	Yellowish brown	10.4	0.8	6.30	0.52	Medium greenish brown	Sweetish, dusty, slightly suggestive of chamomile	Clean
2083	<i>Chrysanthemum parthenium</i> (L.) Pers.	Feverfew	Herb	Medium brownish green	13.7	2.3	5.96	0.30	Very dark greenish brown	Sweetish, suggestive of dog-fennel and Roman chamomile	Clean
2420	<i>Chrysanthemum parthenium</i> (L.) Pers.	Feverfew or Feverfew	Flowering tops	Medium brownish green	14.9	3.6	6.48	0.88	Medium dark greenish brown		Clean
2654	<i>Chrysanthemum parthenium</i> (L.) Pers.	Feverfew or Feverfew	Flowering tops (30% stems)	Medium brownish green	12.4	0.9	5.88	0.53	Medium dark brownish green	Very aromatic, suggestive of dog-fennel and Roman chamomile	Clean
2283	<i>Cimicifuga racemosa</i> (L.) Nutt.	Black Cohosh	Root	Medium brownish gray	8.9	3.0	1.80	0.24	Light orange-yellow low	Raw	Clean
2688	<i>Cimicifuga racemosa</i> (L.) Nutt.	Black Cohosh	Root	Medium brownish gray	7.5	1.4	1.80	0.14	Light yellow	Raw, somewhat nutty	Clean
2344	<i>Cimicifuga racemosa</i> (L.) Nutt.	Black Cohosh	Root	Medium brownish gray	11.7	6.8	2.88	0.18	Light orange-yellow low	Raw, somewhat suggestive of parsnips	Considerable dirt
1983	<i>Cimicifuga racemosa</i> (L.) Nutt.	Black Cohosh	Root	Medium brownish gray	18.2	11.3	2.58	0.18	Light yellow	Slightly raw, fatty	Very dirty
2371	<i>Collinsonia canadensis</i> L.	Stoneroot	Rhizomes & roots	Grayish brown	5.2	2.3	0.78	0.10	Light cream		Slightly dusty
1984	<i>Collinsonia canadensis</i> L.	Stoneroot	Rhizomes & roots	Grayish brown	3.3	0.5	0.56	0.06	Light cream		Clean

2279	<i>Collinsonia canadensis</i> L.	Stoneroot	Rhizomes & roots	Grayish brown	3.4	0.3	0.44	0.02	Light cream	Clean
2627	<i>Collinsonia canadensis</i> L.	Stoneroot	Rhizomes & roots	Grayish brown	12.7	9.1	0.68	0.06	Light cream	Dirty
2525	<i>Complonia perigrina</i> (L.) Coult.	Sweet Fern	Leaves (30% stems)	Medium brown	2.7	0.5	5.0	0.49	Dark green	Clean
2102	<i>Convallaria majalis</i> L.	Lily of the Valley	Root	Medium brownish gray	10.3	3.7	2.22	0.20	Orange-red	Fairly clean
2613	<i>Coptis trifolia</i> L.	Goldthread	Herb	Yellowish brown	5.1	0.6	2.98	0.20	Med. dark green-brown	Clean
2435	<i>Corallorrhiza</i> (Willd.) Nutt.	Crawley Root	Root	Med. dark brown	7.9	3.1	2.42	0.15	Red-brown	Fairly clean
2569	<i>Corallorrhiza</i> (Willd.) Nutt	Crawley Root	Root	Med. dark brown	16.5	9.6	0.84	0.10	Red-brown	Dirty
2556	<i>Cornus amomum</i> Mill	Red Ozier	Stem bark	Reddish brown	5.2	0.7	4.64	0.26	Med. brown-green	Clean
2702	<i>Cornus florida</i> L.	Dogwood	Stem bark	Reddish brown	6.3	0.3	2.46	0.06	Bright yellow	Clean
1999	<i>Cornus florida</i> L.	Dogwood	Root bark	Reddish brown	10.6	1.6	7.58	0.20	Cream	Clean
2075	<i>Cornus florida</i> L.	Dogwood	Leaves	Brownish gray	10.3	2.3	3.22	0.18	Med. light green	Clean
2662	<i>Cornus florida</i> L.	Dogwood	Flowers	Light brownish gray	9.7	0.7	7.42	0.24	Brown-yellow	Clean
2009	<i>Cornus rugosa</i> Lam.	Green Ozier	Stem bark	Medium grayish brown	15.5	10.4	3.62	0.32	Light yellowish green	Somewhat dirty
2017	<i>Cracca virginiana</i> L.	Hoary Pea (Devil's shoestring)	Root	Light yellowish gray	3.5	0.9	3.38	0.24	Very light brown	Clean
2349	<i>Cunila origanoides</i> (L.) Britton	Dittany	Herb (35% stems)	Medium brownish green	5.4	1.2	4.96	0.52	Medium dark green	Clean
2705	<i>Cunila origanoides</i> (L.) Britton	Dittany	Herb (45% stems)	Medium brownish green	5.7	0.3	4.67	0.65	Med. dark green	Clean
1997	<i>Cucurbita citrullus</i> L.	Watermelon	Seed	Light yellowish gray	2.7	0.2	22.52	0.00	Light yellow-green	Clean; ether extract gained when heated
2425	<i>Cucurbita pepo</i> L.	Pumpkin	Seed	Light yellowish gray	4.0	0.0	27.94	0.00	Light yellow	Clean; ether extract gained when heated
2064	<i>Cynoglossum officinale</i> L.	Hound's Tongue	Roots	Med. dark brown	13.6	1.9	0.52	0.08	Medium reddish brown	Clean; ash very high in carbonates
2522	<i>Cypripedium parviflorum</i> Salisb.	Red Lady Slipper	Root	Medium grayish brown	43.3	33.9	2.02	0.12	Dark brown	Very dirty

Lab. No.	Scientific.	Trade.	Part employed.	Color of powder.	Insoluble.		Volatile.		Color.	Odor.	Remarks.
					Total.	ble.	Total.	tile.			
2033	<i>Cytisus scoparius</i> Koch.	Scotch Broom	Herb (mostly stems)	Medium brownish green	3.3	0.1	3.18	0.20	Dark green	Sour	Clean; large percentage of stems normal
2724	<i>Dasystephania saponaria</i> (L.) <small>Small</small>	Samson's Snake-root	Root	Very light yellowish brown	5.8	1.6	3.84	0.10	Brownish orange	Suggestive of spike-nard	Clean
2294	<i>Datura stramonium</i> L.	Stramonium	Leaves	Medium green	16.1	0.9	5.40	0.20	Dark brownish green	Sour, nauseous	Clean; ash very high in carbonates
1974	<i>Datura stramonium</i> L.	Stramonium	Leaves	Olive-green	16.7	1.1	3.20	0.20	Dark brownish green	Sour, nauseous	Fairly clean; ash very high in carbonates
2406	<i>Datura stramonium</i> L.	Jimson-weed	Leaves	Olive-green	11.7	0.2	4.18	0.38	Dark brownish green	Sour, nauseous	Clean; ash very high in carbonates
2643	<i>Datura stramonium</i> L.	Jimson-weed Purple	Leaves	Medium green	18.6	3.1	4.32	0.32	Very dark brownish green	Sour, nauseous	Clean; ash very high in carbonates
2424	<i>Datura stramonium</i> L.	Jimson-weed	Seed	Very dark brown	6.4	3.5	16.22	0.12	Med. green-brown	Fatty, somewhat rancid	Fairly clean
2056	<i>Daucus carota</i> L.	Wild carrot	Root	Light brownish gray	5.0	0.6	1.04	0.14	Light yellow	Fatty acid	Clean
2634	<i>Daucus carota</i> L.	Wild carrot	Flowering tops	Medium green	15.1	1.1	3.72	0.22	Dark brown-green	Slightly suggestive of chrysanthemum herb	Clean; ash high in carbonates
2673	<i>Delphinium consolida</i> L.	Larkspur	Seed	Very dark gray	5.7	0.9	36.32	0.14	Pale straw	Bland, fatty	Clean
2265	<i>Dioscorea villosa</i> L.	Wild Yam	Root	Light brownish gray	3.7	0.4	0.78	0.12	Very light greenish brown	Slightly aromatic; sweetish	Clean
2085	<i>Dioscorea villosa</i> L.	Wild Yam	Root	Light brownish gray	2.9	0.7	1.14	0.12	Light greenish brown	Slightly aromatic; sweetish	Clean
2368	<i>Dioscorea villosa</i> L.	Wild Yam	Root	Light brownish gray	4.1	0.3	1.58	0.20	Light greenish brown	Slightly aromatic; sweetish	Clean
2006	<i>Diospyros virginiana</i> L.	Persimmon	Tree bark	Medium dark reddish brown	9.5	0.3	3.16	0.10	Dark orange	Sweetish	Clean
2698	<i>Diphyletia cymosa</i> Michx.	Umbrella Leaf	Root	Medium light yellowish brown	6.6	4.1	5.40	0.26	Bright yellow	Fatty, bland	Slightly dirty
2553	<i>Elephantopus tomentosus</i> L.	Elephant's Foot	Leaves	Medium grayish green	11.8	2.3	6.18	0.20	Dark green	Sour	Clean
2025	<i>Elephantopus tomentosus</i> L.	Elephant's Foot	Root	Grayish brown	13.7	7.4	4.10	0.20	Light brown	Sour	Somewhat dirty
2403	<i>Epigaea repens</i> L.	Gravel Plant	Herb (65% stems)	Medium grayish brown	5.5	3.7	2.93	0.18	Mottled creamy and med. green	Raw, slightly sour	Fairly clean; large amount of stems normal

2072 <i>Epigaea repens</i> L.	Gravel Plant	Herb (50% stems)	Medium brown	grayish	2.6	0.6	3.66	0.25	Mottled creamy and med. green	Raw, slightly sour	Clean; large amount of stems normal
2003 <i>Equisetum hyemale</i> L.	Scouring Rush	Herb	Light green	grayish green	16.4	11.3	2.42	0.20	Med. dark brown-green	Slightly sour	Clean; high in soluble ash due to silicates normally present
2538 <i>Erechtites hieracifolia</i> Raf.	Fireweed	Leaves	Med. dark brown	12.7	1.2	8.64	0.34		Medium green	Sour	Clean
2174 <i>Eriodictyon californicum</i> (H. and A.) Greene	Yerba Santa	Leaves	Light green	yellowish	5.4	0.2	22.04	3.86	Medium brownish green	Pleasant, aromatic, characteristic	Clean
2156 <i>Eriodictyon californicum</i> (H. and A.) Greene	Yerba Santa	Leaves	Medium green	grayish green	7.1	0.5	19.36	4.18	Medium brownish green	Pleasant, aromatic, characteristic	Clean
2644 <i>Eryngium aquaticum</i> L.	Water Eryngo	Roots	Medium brown	14.4	5.1	2.56	0.50		Light green-yellow	Slightly rancid; suggestive of oilcloth	Fairly clean
2218 <i>Eucalyptus globulus</i> Labillardier	Eucalyptus	Leaves	Med. light green	4.6	0.4	16.28	2.10		Dark brown-green	Characteristic	Clean
2171 <i>Eucalyptus globulus</i> Labillardier	Eucalyptus	Leaves	Medium green	4.5	0.3	16.38	2.20		Dark olive-green	Characteristic	Clean
2656 <i>Euonymus atropurpureus</i> Jacq.	Wahoo	Old stem bark	Light gray	12.5	0.8	3.86	0.20		Light brownish green	Slightly aromatic, sweetish	Clean
2444 <i>Euonymus atropurpureus</i> Jacq.	Wahoo	Young stem bark	Medium greenish gray	4.3	0.2	4.02	0.16		Medium brownish green	Slightly aromatic, sweetish, fatty	Clean
2030 <i>Euonymus atropurpureus</i> Jacq.	Wahoo	Young stem bark	Medium greenish gray	6.5	0.4	4.00	0.18		Medium brownish green	Slightly aromatic, sweetish	Clean
2640 <i>Euonymus atropurpureus</i> Jacq.	Wahoo	Twigs	Medium greenish gray	12.7	0.1	3.16	0.10		Brown-green	Slightly aromatic, sweetish	Clean
2721 <i>Euonymus atropurpureus</i> Jacq.	Wahoo	Root bark	Light gray	9.1	3.7	3.82	0.18		Light brownish yellow	Fatty, slightly acid and aromatic	Fairly clean
1998 <i>Euonymus atropurpureus</i> Jacq.	Wahoo	Root bark	Medium brown	8.0	2.1	4.98	0.18		Reddish orange	Fatty, slightly sweetish, aromatic	Fairly clean
2534 <i>Euonymus atropurpureus</i> Jacq.	Wahoo	Root bark	Medium brown	4.0	0.8	2.18	0.14		Reddish orange	Fatty, slightly sweetish, aromatic	Clean
1995 <i>Eupatorium capillifolium</i> (Lam.) Small	Hogweed	Leaves	Dark brown	greenish brown	11.9	0.8	3.02	0.26	Med. brown-green	Musty, aromatic	Clean
2377 <i>Eupatorium perfoliatum</i> L.	Boneset	Herb	Medium green	7.5	0.8	13.74	1.60		Dark green	Sweetish, aromatic, characteristic	Clean
2519 <i>Eupatorium perfoliatum</i> L.	Boneset	Flowering tops	Medium green	15.3	7.1	12.20	1.30		Med. dark green	Sweetish, characteristic, slightly suggestive of buchu	Fairly clean
2293 <i>Eupatorium purpureum</i> L.	Queen of the Meadow	Root	Light brown	grayish brown	11.2	5.6	4.02	0.76	Very light greenish brown	Sweet, fruity, very aromatic	Fairly clean
2051 <i>Eupatorium purpureum</i> L.	Queen of the Meadow	Root	Light brown	grayish brown	30.7	25.4	1.98	0.52	Very light green yellow	Musty, sawdust, butyric	Dirty, very poor sample
2364 <i>Eupatorium purpureum</i> L.	Queen of the Meadow	Root	Light brown	grayish brown	12.1	4.7	5.08	1.10	Very light greenish brown	Sweet, fruity, very aromatic	Fairly clean

Lab. No.	Scientific.	Name.	Part employed.	Color of powder.	Ash.		Ether extract.			Remarks	
					Total.	Acid insoluble.	Volatil.	Color.	Odor.		
2375	<i>Eupatorium purpureum</i> L.	Queen of the Meadow	Leaves	Dark green	7.85	1.6	11.28	0.62	Dark green	Slightly aromatic	Clean
2499	<i>Eupatorium purpureum</i> L.	Queen of the Meadow	Leaves	Dark green	10.5	1.6	10.18	0.74	Dark green	Slightly aromatic	Clean
2593	<i>Eupatorium urticaefolium</i> Reichenard	White Sanicle	Root	Medium brown	10.1	4.5	5.66	0.18	Light yellow	Earthy	Rather dirty
2660	<i>Fagus grandifolia</i> Ehrh.	Beech	Leaves	Medium brown	5.6	1.0	4.36	0.10	Med. dark green	Suggestive of rose	Clean
2535	<i>Fragaria vesca</i> L.	Strawberry	Leaves	Medium dark greenish brown	4.9	0.7	8.36	0.64	Very dark green	Aromatic; somewhat suggestive of Yerba Santa	Clean
2635	<i>Frasera valleri</i> Michx.	Amer. Colombo	Root	Brownish yellow	4.7	0.5	3.64	0.20	Bright yellow	Similar to lightning bugs, hydrastis	Clean
2002	<i>Fraxinus americana</i> L.	White Ash	Root bark	Light brown	9.4	2.0	3.40	0.16	Whitish, nearly colorless	Fairly clean	
2536	<i>Fraxinus americana</i> L.	White Ash	Tree bark, rossed	Very light brown	4.5	0.3	2.40	0.14	Whitish, nearly colorless	Clean	
2290	<i>Galium aparine</i> L.	Cleavers	Herb (largely stems)	Greenish gray	12.8	1.8	3.26	0.05	Dark green	Slightly aromatic	Clean; large amount of stems normal
2511	<i>Galium aparine</i> L.	Cleavers, 6 leaf	Herb (largely stems)	Greenish gray	11.0	0.7	2.48	0.12	Dark green	Slightly aromatic	Clean; large amount of stems normal
2503	<i>Galium tinctorium</i> L.	Cleavers, 4 leaf	Herb (largely stems)	Medium brown	6.9	1.1	4.96	0.10	Medium green	Aromatic, suggestive of coumarin	Clean; large amount of stems normal
2565	<i>Gaultheria procumbens</i> L.	Wintergreen	Herb (40% stems)	Medium green	2.8	0.1	5.67	0.20	Medium green	Characteristic, methyl salicylate	Clean
2715	<i>Gelsemium sempervirens</i> Ait.	Jessamine	Root	Light brownish gray	2.7	1.2	2.02	0.14	Light yellow-green		Clean
2561	<i>Gelsemium sempervirens</i> Ait.	Jessamine	Leaves	Medium brownish green	4.7	0.9	9.08	0.22	Medium green	Suggestive of coumarin	Clean
2028	<i>Gentiana quinquefolia</i> L.	Blue Gentian	Herb (60% stems)	Medium brownish green	4.3	0.7	3.69	0.12	Medium green	Slightly acid Strong, somewhat unpleasant	Clean; large amount of stems normal
2273	<i>Geranium maculatum</i> L.	Cranesbill	Root	Light reddish brown	8.2	0.3	1.20	0.04	Light orange		Clean
2055	<i>Geranium maculatum</i> L.	Cranesbill	Root	Light reddish brown	10.7	1.0	0.64	0.04	Light orange		Clean

2351 <i>Geranium maculatum</i> L.	Cranesbill	Root	Light reddish brown	10.1	2.9	0.80	0.08	Light brownish orange	Slightly dirty
2366 <i>Glecoma hederacea</i> L.	Ground Ivy	Root (40% stems)	Medium brownish green	16.8	5.3	5.16	0.26	Very dark brownish green, nearly black	Slightly dusty; large amount of stems normal
2277 <i>Glecoma hederacea</i> L.	Ground Ivy	Root (45% stems)	Medium brownish green	15.0	1.7	5.12	0.32	Very dark brownish green, nearly black	Clear; large amount of stems normal
2651 <i>Glecoma hederacea</i> L.	Ground Ivy	Root (45% stems)	Medium brownish green	16.7	3.0	3.82	0.15	Very dark brownish green, nearly black	Faint, similar to catnip
2078 <i>Gleditsia triacanthos</i> L.	Honey Locust	Tree bark	Medium light brown	9.4	2.0	4.00	0.14	Light brown	Sweetish, pleasant, aromatic
2052 <i>Gleditsia triacanthos</i> L.	Honey Locust	Leaves	Medium greenish brown	8.2	0.8	5.80	0.16	Medium dark green	Clean
2299 <i>Gnaphalium obtusifolium</i> L.	Life Everlasting	Flowering tops (35% stems)	Medium grayish brown	5.5	0.7	3.80	0.21	Medium brownish green	Slightly aromatic, somewhat suggestive of spikenard and elecampane
2043 <i>Gnaphalium obtusifolium</i> L.	Life Everlasting	Flowering tops (40% stems)	Medium light greenish brown	7.8	1.5	4.94	0.10	Medium brownish green	Clean; larger amount of stems normal
2430 <i>Gnaphalium obtusifolium</i> L.	Life Everlasting	Flowering tops (35% stems)	Medium light greenish brown	5.7	0.6	4.57	0.26	Medium brownish green	Slightly aromatic, somewhat suggestive of spikenard and elecampane
2037 <i>Gordonia lasianthus</i> L.	Loblolly Bay	Bark	Medium reddish brown	4.1	0.3	2.80	0.28	Yellow-orange	Clean
2412 <i>Gossypium herbaceum</i> L.	Cotton	Root bark	Medium brown	4.4	1.2	3.14	0.28	Reddish brown	Clean
2691 <i>Gossypium herbaceum</i> L.	Cotton	Root bark	Medium brown	5.0	0.7	3.28	0.28	Reddish brown	Earthy, sawdust-like
2321 <i>Hamamelis virginiana</i> L.	Witch Hazel	Leaves	Light olive-green	5.4	1.0	4.04	0.20	Dark green	Earthy, sawdust-like
2670 <i>Hamamelis virginiana</i> L.	Witch Hazel	Leaves	Light olive-green	5.1	1.0	3.04	0.08	Dark green	Aromatic, tea-like, sour
2402 <i>Hamamelis virginiana</i> L.	Witch Hazel	Leaves	Light olive-green	6.9	2.7	5.76	0.14	Dark green	Aromatic, tea-like, sour
2065 <i>Hamamelis virginiana</i> L.	Witch Hazel	Tree bark, rossed	Light brown	5.0	0.5	1.30	0.18	Light brownish green	Fairly clean
13 <i>Hamamelis virginiana</i> L.	Witch Hazel	Tree bark	Medium grayish brown	4.8	0.1	3.40	0.34	Light green	Clean
2029 <i>Hedeoma pulegioides</i> (L.) Pers.	Pennyroyal	Leaves	Light olive-green	8.0	0.7	6.72	0.36	Very dark olive-green	Sourish, faintly aromatic
2311 <i>Hedeoma pulegioides</i> (L.) Pers.	Pennyroyal	Leaves	Medium grayish green	6.2	0.6	5.56	0.33	Medium dark green	Characteristic, strong
2410 <i>Hedeoma pulegioides</i> (L.) Pers.	Pennyroyal	Leaves	Medium grayish green	7.3	1.0	3.78	0.44	Medium brownish green	Characteristic, strong

(To be concluded)

TINCTURE OF CANTHARIDES.*

BY F. W. NITARDY.

The original and first five revisions of the U. S. P. directed the use of diluted alcohol as a menstruum for tincture of cantharides. In the sixth revision the menstruum was changed to alcohol. While the present menstruum has been the official one for nearly forty years, an examination of the tincture produced by the official formula will reveal that there is some room for improvement in the preparation. Various investigators, in fact, have found that alcohol is not a very good solvent for cantharidin or the oily constituents which probably are equally responsible with the cantharidin for the vesicant properties of the drug.

Some time ago the writer had various lots of Tinctures of Cantharides, obtained through the regular channels of trade from five well-known pharmaceutical manufacturing houses, examined, and found that they were practically inactive. As the assay for cantharidin is rather unsatisfactory, actual tests of the vesicant properties of the tinctures were employed instead and carried out as follows: The inner side of the forearm was carefully washed with soap and water and, thereafter, with diluted acetic acid; the tincture was applied to a space about $\frac{1}{2}$ " in diameter and the surface protected by fastening a crucible cover over the spot with a piece of adhesive tape. None of the tinctures examined produced a reddening of the skin. Fifty mils of each tincture were then evaporated spontaneously to a soft extract and the extract applied in the same manner. Only one of the extracts yielded a blister; the others produced but slight irritation.

These results led to an investigation and a review of the literature on this subject. The most notable article found was a paper by Dr. E. R. Squibb published in the Proceedings of the A. Ph. A. of 1871 (Vol. 19, page 457). In this article Dr. Squibb recommends the use of a hydro-alcoholic menstruum containing sufficient potassium hydroxide to combine with the cantharidin and saponify the oil present, for preparing a fluidextract. The paper goes into considerable detail and states that a very active preparation results from the process given.¹ Later R. Rother recommended the use of potassium hydroxide in the preparation of tincture.

In a discussion on the activity of potassium cantharidate by Dr. E. R. Squibb, Charles L. Eberle and others at the 1872 meeting of the American Pharmaceutical Association, some doubt was thrown on the activity of potassium combinations with the active principles of cantharides, but I found no further papers or records which cleared up the question. In a discussion of W. L. Scoville's paper on "Tincture of Cantharides" at the A. Ph. A. Convention in 1910, C. S. N. Hallberg recommended the use of potassium hydroxide in producing an active cantharides preparation.

To determine the value of potassium hydroxide in this connection a tincture was prepared by a method adapting the Squibb process for fluidextract of cantharides as outlined in Dr. E. R. Squibb's paper.² The tincture so obtained was

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New York meeting, 1919.

¹ *Proc. A. Ph. A.*, 25, p. 109.

² *Ibid.*, 19, p. 457.

tested for vesicating properties in the same manner as outlined above. It produced a nice blister in six hours, which indicated that the method would yield a satisfactory product. Further batches were then made, tested for vesicant properties and observed for a time to see if they would keep. All were found satisfactory and apparently stable. In fact, the product seemed so good that I feel justified in recommending the following formula as a substitute for the present official one.

TINCTURE OF CANTHARIDES.

Cantharides in No. 60 powder.....	100	Gm.
Potassium hydroxide.....	6.8	Gm.
Alcohol 7 volumes	} Sufficient quantity.....	
Water 3 volumes		

To make, 1000 mls

Dissolve the potassium hydroxide in 300 mls of water and add it to the powdered cantharides. Mix well, then add 700 mls of alcohol and place the mixture in a well covered container. Allow to macerate for one week, stirring daily. Transfer it to a percolator which has previously been stoppered and after the drug has settled allow to percolate until all the tincture has drained from the drug. Then continue percolation with a menstruum consisting of alcohol 7 volumes, water 3 volumes until a total of 1000 mls of tincture has been obtained.

Description: One lot of tincture made by the above process was examined and gave the following constants:

Alcohol.....	65.45 percent
Extractive.....	3.04 Gm. per 100 mls
Free K O H.....	None
Cantharidin.....	0.099 Gm. in 100 mls

The tincture has a greenish brown color and soapy cantharidal odor. It is miscible with diluted alcohol, yields a slight precipitate when mixed with 95 per cent alcohol, but the latter re-dissolves on standing over night. It will mix with an equal quantity of water with little or no cloudiness. As the finished preparation is neutral to litmus paper, there should be no objection to the use of potassium hydroxide in its preparation.

As tincture of cantharides is largely used in hair tonics, miscibility with preparations containing about 50 percent of alcohol is a very desirable property. The present U. S. P. tincture will make a clear mixture only with U. S. P. alcohol.

LABORATORIES OF
E. R. SQUIBB & SONS.

ABSTRACT OF DISCUSSION.

W. L. SCOVILLE: The question is whether adding potassium hydroxide in making a tincture of cantharides will always produce a vesicant preparation. I tried one tincture made that way but did not get a satisfactory preparation. In the first place, cantharidin is not an acid nor does it combine with alkalis in any definite proportion so far as I know. I have tried to titrate it but without success. If cantharidin combines with an alkali in any definite proportion, we should certainly be able to estimate it by titration. I notice that Mr. Nitardy's tincture of cantharides is neutral. This might be due to neutralization from a free organic acid that may be present in cantharides. I do not know if this is the case, but it should be an easy thing to prove. To my mind the only way to test tincture of cantharides fairly is to make a quantitative estimation of the cantharidin it contains. The fact that it will blister only shows that it has vesicating properties which are better than those of the U. S. P. tincture.

F. W. NITARDY: I stated the assay in my paper. The tincture contains ninety-nine milligrams of cantharidin in 100 mls of tincture.

W. L. SCOVILLE: Do you know how much of cantharidin was present in the free state, if any?

MR. NITARDY: It was not estimated with this point in view. We assumed that all existed in combined form.

The questions in my mind are, first, whether potassium cantharidate is really active; second, whether the alkali can be so adjusted as to always obtain a neutral tincture. It seems that the oil is likely to vary. In fact I did expect that the amount of alkali required would have to be varied with different lots of drugs, but practical experience so far has shown that no variation is necessary and the amount of alkali used is in accordance with that recommended by Doctor Squibb in 1871.

We have succeeded in making a tincture much more active than has been possible by any other method. I have never seen tincture of cantharides, except the one made by this formula, which will actually raise a blister. I believe the vesicating qualities of the tincture are due not only to its cantharidin content, but also to the oil present in cantharidin and which is rendered soluble by the use of KOH. I have given the formula with complete detail and hope others will try it and determine the quality of the preparation they obtain.

OTTO RAUBENHEIMER: There is no doubt that Mr. Nitardy's work is constructive and it may result in a change in the pharmacopoeial formula for this preparation. There is a question in my mind regarding Mr. Nitardy's suggestion and that is, Is tincture of cantharides supposed to be a vesicant? I have never heard of its being used as a vesicant.

W. L. SCOVILLE: The best solvent for cantharidin is acetone; the next best chloroform, the next acetic acid, then acetic ether. It is very slightly soluble in most solvents. I will agree with Mr. Nitardy that the U. S. P. process does not give a tincture which shows activity in any way. The question is, do we want a tincture which will present cantharidin in acid condition or in neutral or alkaline condition? The thing that surprises me is the activity that he obtains from a tincture made with an alkali. If its process will always yield an active tincture it is probably the easiest and most economical method for making it; otherwise we can make it by the use of acetic acid, acetic ether, chloroform, acetone or various other solvents.

F. W. NITARDY: I did not mean to leave the impression that it would not be possible to produce an active tincture of cantharides by some other means, but I did not like to use acetic acid in the proportion necessary, because I believed that the finished product would be too acid for practical purposes, nor did I like to use chloroform, ether, acetone or a similar solvent, because it would render the tincture less miscible with preparations containing water, such as hair tonics. The tincture offered is clearly miscible in any proportion with dilute alcohol preparations.

As to whether we expect tincture of cantharides to be vesicant or not, I do not believe that this is within the province of the pharmacist to decide; that is a question for the medical profession. Tincture of cantharides should represent the drug in the proportion in which it is used. That is, a liter of tincture should represent the total activity of 100 Gm. of cantharides.

GEORGE M. BERINGER: Tincture of cantharides is one of the puzzling problems of the Pharmacopoeia. The cantharidin content in the drug is very difficult to extract; the process of heating and macerating was adopted because it was believed that it yielded the best solution that could be obtained in an alcoholic menstruum. The use of acetone, chloroform, etc., to the extent in which it would be necessary to make a good tincture, did not seem practicable to the Revision Committee.

I am surprised that Mr. Nitardy's tincture assays so high; the assay for cantharidin is not an easy matter. I should like to see Mr. Nitardy's method tested out very thoroughly. I have made some experiments along that line myself but they were not entirely satisfactory and that is one of the reasons why they were not recommended for consideration in the previous Pharmacopoeia.

A MICROSCOPICAL METHOD FOR THE QUANTITATIVE DETERMINATION OF VEGETABLE ADULTERANTS.*

BY FANCHON HART.

The following method for the quantitative determination of vegetable adulterants is based upon the observation that the percentage of the various

* Read before Scientific Section, A. Ph. A., New York meeting, 1919.

tissues composing any one part of the plant, is at all times the same for a particular species.

Although the microscope has been used in the qualitative analysis of vegetable drugs, it has rarely, if ever, been adapted to quantitative analysis.

Hartwich and Wichmann have devised a counting chamber for estimating the amount of an adulterant in a powdered mixture, but I have found this method inaccurate, inasmuch as different degrees of fineness will give varied results for the same percentage of adulterant.

Careful examination of several drug powders showed the following method to be accurate and practical.

The first powder selected was black pepper, an article most commonly adulterated with pepper shells. The method of procedure is as follows:

Five grammes of whole pepper fruit were deprived of pericarp or shell, the latter separated from the kernels and both reduced to a No. 80 powder.

Each powder was examined microscopically to determine its composition. The shells are composed almost wholly of sclerenchymatic tissue and the kernels of starch.

Since a thorough mixture of both powders will obviously contain all the tissues of the whole fruit, a microscopical examination of a small portion of this mixture was used for the quantitative analysis of the various tissues.

The area of each piece of tissue is obtained by the aid of an ocular micrometer, used in conjunction with a stage micrometer. In this way, measurements may be taken of all of the mounted material.

To obtain the total amount of shell present, the areas of sclerenchymatic tissue are noted in one column, while the kernels are measured in terms of starch masses and placed in a separate column.

After examination of all the material on the slide, each column is totaled and the figure representing the total area of sclerenchymatic tissue is divided by the figure obtained by the addition of the total areas of both columns.

For example, the total area of stone cells is 50 microns and the total area of starch masses is 200 microns. Therefore, 50 divided by 250 represents the percentage of shells in the whole fruit.

Repeated examination by this method gave me an average of 3.2 percent of shells. In order to check these results, I measured the powdered shells in a 10-minim graduate and compressed the powder evenly in the cylinder with a 20-gramme weight. I next added the powdered kernels on top of the shells and compressed the whole. The shells measured 1.4, the kernels 3.1. The percent of shells is therefore equal to 0.03222, which is practically the same as the results obtained by the microscope.

It is interesting to note that by weight, the shells amounted to 3.3 percent, and that by the ashing process, the residue which is largely composed of stone cells, weighed 3.1 percent. These figures should not be taken into consideration when checking the results obtained by means of the microscope, as the microscopical results are based entirely upon relative areas and not relative weights.

In drugs, such as colocynth, in which the pulp, although greater in amount, is so much lighter in weight, an answer based upon weight is entirely wrong and cannot be used in checking the results obtained by measurement.

The results obtained in the determination of the four samples examined are as follows:

Pepper:

Percentage of shells by weight.....	3.3%
Percentage of shells by ash.....	3.1%
Percentage of shells by cylinder measure.....	3.22%
Percentage of shells by microscopical analysis.....	3.2%

Colocynth:

Percentage of seeds by cylinder measure.....	4.3%
Microscopical analysis, with the aid of Millon's reagent.....	4.61%
The same, with the aid of chlor-zinc iodide.....	4.7%

Buchu:

Percentage of stems by weight.....	17%
Percentage of stems by Cylinder measure.....	16.1%
Percentage of stems by Microscopical analysis.....	16.2%

Saffron:

Percentage of yellow tissue by weight.....	23.0%
Microscopical analysis.....	23.7%
Cylinder measure.....	23.0%

BOSTON'S ETHER MONUMENT TO THE UNNAMED DISCOVERER OF GENERAL ANESTHESIA.*

BY CHARLES M. FORD.

Prior to March 1842, there is no evidence extant that any surgical operation had ever been performed under a general anesthesia; that is, by means of an agent producing paralysis of the sensory nerves, as well as the nerves of motion, notwithstanding the fact that sulphuric ether was known to chemists and pathologists for two centuries. But the world at large was not informed of the properties of ether as a general anesthetic until after a demonstration in the Massachusetts General Hospital at Boston, October 16, 1846.

Rival claimants to the honor of discovery with sordid zeal were instrumental in heralding to humanity everywhere the discovery of this greatest blessing to mankind, medical or otherwise.

How proud we should be that this great blessing was conferred by an American in America. How natural that the State of Georgia when called upon to name its two most distinguished sons, to be immortalized in the Hall of Fame at Washington, should have given one of these places to Crawford Williamson Long as the author of painless surgery. Harvey, the discoverer of circulation of the blood; Jenner, in saving the world from the scourge of small-pox, are dwarfed in the presence of the modest dignified physician-pharmacist, who, in the little hamlet of Jefferson, Ga., performed a surgical operation with general anesthesia induced by ether. And the greatest act in the career of the brilliant Dr. Jackson—whom the scientific world would have loved to honor as the first to make use of ether as a general anesthetic—was, when after a painstaking investigation, he, in 1861, placed the crown of original discoverer upon the brow of Crawford Williamson Long.

*Read before Section on Historical Pharmacy, A. Ph. A., New York meeting, 1919. Illustrated by lantern slides.

The medical world, at all periods, seems to have been content in the delusion that pain and surgery were inseparable, mitigated only by the use of some narcotic drug such as poppy, henbane, conium, belladonna, cannabis, etc. Freezing of the part to be operated was sometimes resorted to, it having been observed that in war the frozen limbs of soldiers were painlessly amputated. Alcoholic intoxicants, to a degree producing complete insensibility, were resorted to. Carbonic acid gas to produce partial suffocation with attendant unconsciousness was reported on in 1828. In 1800, Sir Humphrey Davy proclaimed the peculiar properties of Nitrous Oxide and suggested its use for painless dentistry and surgery. Chloroform, first produced in its pure state at Sacketts Harbor, by Guthrie in 1831, was not employed by the surgeon until 1847. Though a close rival of ether, and possessing some marked advantages, the large number of fatalities following in its wake, with that everpresent dread of danger, have retarded the use of chloroform and given ether, to this day, an easy precedence.

It is not possible for the people of this generation to realize the blessings of ether. It is necessary to have lived in a period preceding its use in surgery, to have heard the groans of thousands of soldiers upon the field of battle, and to have known the sufferings of thousands in private life who were forced against the surgeon's steel. As we contemplate the limitations placed upon surgery by the interference of pain we are able to measure the sufferings of a vaster number, deterred from obtaining that relief which surgery would surely bring them. It is true we have made progress in the use of local anesthetics; it is also true, that chloroform, ethyl chloride, and nitrous oxide are at present dividing the honors with ether, still it is beyond dispute that modern surgery, with its almost super-human achievements, rests squarely upon the use of sulphuric ether.

It is significant that one of the earliest uses made of ether was to allay the pains of parturition. A twilight sleep for the agonizing mothers of humanity—*there* is pain in a class by itself, the most awful the race is made to endure, and not remotely approximated by any experienced in surgery. As we behold the vastness of the agony and torture, that have been banished by ether, we are able to appreciate its blessings with everlasting gratitude.

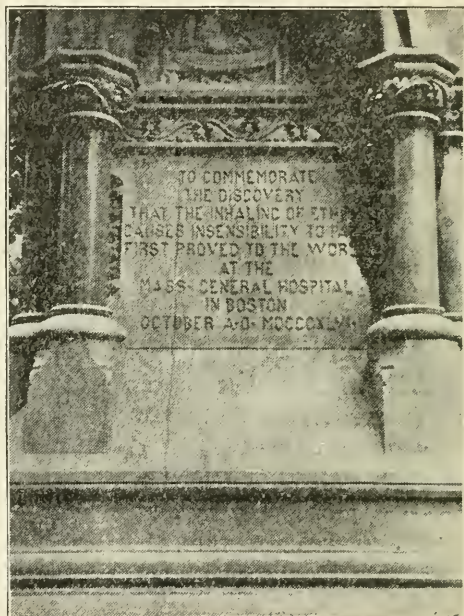
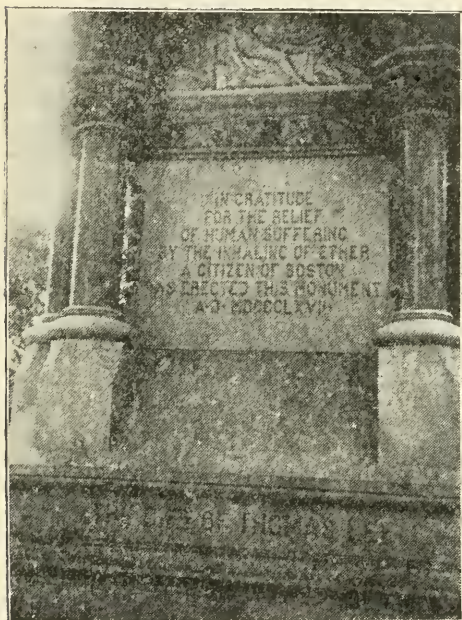
How natural, therefore, the impulse that prompted the erection of a most magnificent monument in the Public Gardens of Boston to Ether. Although standing, as it does, in the heart of the City of Boston, it may easily have escaped the notice of a majority of the pharmacists visiting that city, where so much that is historic is to be seen. Here resistance to England's domination first took concrete form on this continent, and in this region the first gun was fired for American Liberty, which was heard around the world.

Boston and its environs have in no wise neglected to perpetuate the memory of the leading part which those early settlers took in the founding of an American Nation. Their deeds are fittingly inscribed on tablets of bronze and marble, and upon shafts of everlasting granite. No writer of American history is competent, and no student can even have commonplace knowledge, who has not visited Boston. A short course at Boston should be a prerequisite for teachers of history in our public schools.

The Public Gardens in which the Ether Monument stands are an extension of the famous Boston Common, the most highly prized piece of public land held

within the confines of any city of the world, and therefore, Boston's foremost attraction. It is well named the Common, for all who enter it are upon a level, no means of locomotion being permitted, except that which nature most equitably bestowed upon us all. The ubiquitous automobile, that Juggernaut of the reckless rich, is not able to invade this sacred and hallowed playground of the people.

The monument need be but briefly described here, as it is so completely shown in the slides that are placed before us. It was dedicated in 1868; the donor was Thomas Lee, a public spirited citizen, of Boston. It is a granite and red marble structure rising thirty feet in height from a square basin into which, from the four sides of a cubical base, spouting lions gush forth streams of water. Sculptured water-lilies and other aquatics adorn this base. At the summit of the structure



Two Views of the Boston Ether Monument.

rests a group representing the Good Samaritan giving aid to a wounded sufferer; the capitals are carved with poppies and oak leaves. In each of its four canopied sides is built a marble slab bearing an appropriate inscription and surmounting an allegorical bas-relief.

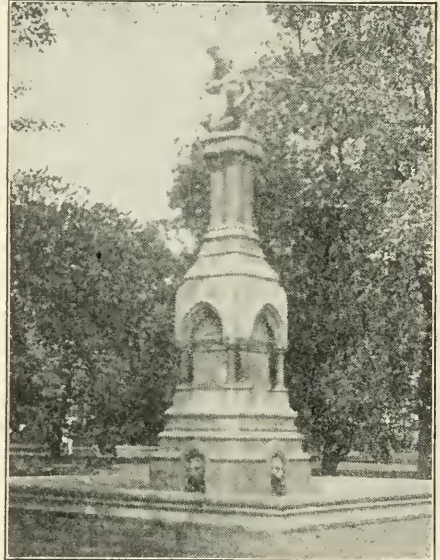
The principal inscription the monument bears is as follows:

"To commemorate the discovery that the inhaling of ether causes insensibility to pain, first proved to the world at the Massachusetts General Hospital, in Boston, October, A. D., 1846."

The stranger within the gates of Boston, viewing the ether monument for the first time, is struck by the absence of the name of any person in connection with the discovery or administration of the agent to whom credit might be given, and the inquiry arises, who administered the ether on October 16, 1846?

Thereby hangs a tale, a real drama, with its scenes extending over two continents, and both houses of our National Congress, through several sessions, vigorously debating in detail the rights of the various claimants, and the principles of anesthesia. As pharmacists we have more than a passing interest in that controversy, and it is a matter that this Section of the American Pharmaceutical Association may properly take cognizance of since Dr. Long, whose title to being an original and independent discoverer of General Anesthesia is now undisputed, was a pharmacist of repute as well as a physician. The only cloud on his title to being the earliest original discoverer was placed there by the foremost Boston claimant, Dr. C. T. Jackson, who stated that he had observed general anesthetic properties of ether sometime during the winter of 1841-2, while inhaling the vapor at his laboratory, though he was unable to give the exact date of this observation and had never then or subsequently administered it to another or witnessed its use in surgery.

Dr. Jackson was a scientist of world-wide repute with attainments to appropriately grace the discoverer of the greatest boon ever given to humanity. He was graduated from Harvard Medical College in 1829, and spent the three following years in study and travel abroad. Upon his return to this country he reported upon 200 autopsies of cholera victims in Europe. The human body was not a large enough subject for Jackson. Geology and chemistry of minerals attracted him. While his professional card announced that he conducted a chemical and geological laboratory at 32 Somerset Street, Boston, the area of his activities was unbounded.



The Boston Ether Monument.

The states of Maryland, Maine, New Hampshire, Rhode Island, as well as his native state of Massachusetts, made use of his distinguished services. He was called even to the upper peninsula of Michigan, at that time beyond the frontiers of Commerce, to report upon the copper deposits found there. The British Government sent him to Nova Scotia and other provinces to make investigations. His published papers, reports, maps and surveys were voluminous and of the highest order. His fame was international. It is known that he was to some extent a collaborator of Morse, and not unwilling to share in the honor of discovering the electric telegraph. In 1873 the light became dimmed in the dome of this great intellect, his mind gave way, and he died in Massachusetts General Hospital, August 28, 1880.

Among the students in Jackson's laboratory was a young dentist named W. T. G. Morton, who graduated in dentistry at Baltimore Dental College in 1842, at 23 years of age. He came to Boston to practice dentistry, and for a time lived in Dr. Jackson's home. He also registered for a course in medicine in 1844. Pain-

less dentistry was a hobby with Morton, and nitrous oxide gas did not fully satisfy him. He learned of ether, and used it successfully in the extraction of teeth. Perhaps he was indebted to Jackson for his knowledge of ether, though Jackson never had said so at the time, and was apparently willing that Morton should have all the glory and gain for making use of ether in his dental practice. How natural it is that young Morton should have suggested the use of ether in surgery; the fact in all probability being unknown to him that it was already in use, and had been for four years in Georgia, for this fact was not even known to the management of the Massachusetts General Hospital, who willingly arranged an opportunity for a demonstration of the properties of ether. The first operation October 16, 1846, the removal of a tumor from the neck, was sufficiently successful to convince all present that the era of painless surgery had arrived. The second operation, the removal of a tumor, was even more satisfactory, and the third operation was a successful amputation above the knee.

Though Dr. Jackson was not present at these, and had never even witnessed the use of ether in surgery, he comes forth with a statement that during the winter of 1841-2 (his favorite way of giving that date), he had observed the properties of ether as a general anesthetic, by inhaling its vapor, while seated in a rocking chair in his office, and he marshals his friends to testify to his having mentioned the fact in their hearing. But he was not able to convince the management of the hospital. With reason they asked why he had not for four years proclaimed its usefulness in surgery and directed attention to the vast amount of pain needlessly endured because of his neglect. The hospital authorities sustained Morton in his contention, and have never wavered.

Immediately following the splendid performance at the Massachusetts General Hospital, the activities of Dentist Morton take on a strange turn. Philanthropy and science are cast to the winds, opportunity to make a name for himself highest among the benefactors of mankind ignored, and we see him in the rôle of a promoter, bent only upon capitalizing his superficial knowledge. He circularizes the dental and medical professions throughout the country, offering to license at a certain schedule of royalties the use of his compound, which he christened "Letheon," beautifully suggestive of that "river of forgetfulness" from which the gods were wont to drink, and places attorneys at once to work securing a U. S. patent. While criticizing Morton for his methods we may temper our condemnation when mindful that the great Behring sought to limit and control, with a U. S. patent, the use of antitoxins in combating diphtheria and tetanus and, the foremost medical mind of the age, the great Ehrlich who, following those valuable researches which led to the discovery that certain carbon compounds of arsenic were powerfully antagonistic to the syphilis spirochete, gave the use of his name and a laboratory number to a gang of daylight robbers. But why blame individuals for what is but the natural avarice of our species, while Uncle Sam authorizes the extortion and protects it with an iron hand?

Morton was a testimonial getter, and able to induce members of the staff of the Massachusetts General Hospital to sign up for the merits of his alleged secret compound. A queer code of ethics, to say the least, that must have prevailed in those days. Dr. Jackson was willing to accept a modest one-tenth interest in the patent, which was duly issued, November 12, 1846, within one month

after the ether demonstration in Boston. What visions of wealth must have disturbed the slumbers of the crowd that put that patent through. Every family was sure to have the luxury of a painless surgical operation. Each individual with thirty-two teeth, and a pain in every one; oh, what a revenue! but there was a miscalculation somewhere. Ether was a common article of commerce, and the people used it instead of sending to Boston for Letheon. The patent yielding no return, the adventurous Morton petitioned Congress to award him \$100,000, as a public benefactor, and he spent years of his life in this fruitless endeavor.

He was able to secure the support of some of the ablest members of Congress, and the Congressional debates of those years upon the properties of ether afford even now very interesting reading.

Stephen A. Douglas, then in the Senate, and later defeated by Lincoln for the Presidency of the United States, was an ardent champion of Morton, while W. H. Seward, afterwards Secretary of State during the Civil War, vehemently opposed his claims. Other contestants, with their special champions in Congress, opposed Morton, in the hope of profiting by the award, with the exception of Dr. Long, who sought none of the monetary benefits, being content to have shown himself to be the earliest known, original and independent discoverer of general anesthesia.

The Great Academy of Science of Paris was induced to take notice of the ether controversy, there being no such institution in this country, and no national medical organization at that time. The claims of Jackson and Morton only were before the French Academy; though the former was well known and highly esteemed for his writings and scientific attainments, the best he was able to secure in the contest before the Academy might be termed a "draw." The sum of twenty-five hundred francs and a medal was voted to each of the two contestants, the French way of putting it being, "that it was the hand of Morton, but the head of Jackson."

It is easy now to see why the people of Boston believed neither Jackson nor Morton worthy of having his name upon the Ether Monument. The inscriptions were wisely ordered and record the exact truth, because the world at large was not informed of the properties of ether until after the demonstrations at Boston, October 16, 1846. The pursuit of gain or glory by the various claimants gave the needed publicity. The monument, however, should record the fact of an earlier independent discoverer, in the person of Crawford W. Long, and this could be added, without in the least marring a word or a thought of the original inscription.

To the credit of Dr. Jackson it must be stated that he publicly declared "if he had known of the claims of Dr. Long at the time he would have presented them to the Academy of Sciences in Paris." The prospects of immense revenue or Congressional award brought forth several claimants, who had little or nothing on which to base a claim. Most persistent among these was Horace Wells, a young dentist of Hartford. He had had some experience with nitrous oxide of an empirical nature, but little or no knowledge or experience with ether. Yet after his death in 1848 his friends were able to secure valiant spokesmen in Congress in his behalf, and the state of Connecticut erected in the city of Hartford a monument to his memory, as the discoverer of surgical anesthesia.

Probably the most exhaustive investigation into the claims of the various

contestants for the honor of first having used ether was that by J. Marion Sims, and published in the Virginia Medical Monthly in 1877. Dr. Sims gave the force of his great name and character to an unqualified indorsement of the claims of Dr. Long.

Knowing that Dr. Joseph Jacobs, of Atlanta, an honored member of the American Pharmaceutical Association, had in his youth been apprenticed in the pharmacy of Dr. Long, and throughout the life of the latter continued on terms of closest friendship, he was appealed to for particulars in the career of this great man. Through the three daughters of Dr. Long, still living in Athens, Ga., this section is furnished with an authentic biographical sketch.

Ether being a leading article of manufacture of the firm with which I have the honor to be associated, makes its history of special interest, and it was with no little emotion, when business duties carried met hither, that I found myself in the home town of one of the world's greatest benefactors, and permitted to look upon the instruments used by Dr. Long, among which were those first used in painless surgery.

Dr. Crawford Williamson Long's immediate ancestors were Irish; his great grandfather, James Long, emigrated from Donegal County in 1762, with his wife, who was Ann Williamson of the same county, together with his nine-year-old son, to Carlisle, Pa. This son afterward became Captain Samuel Long, who fought throughout the Revolutionary War, and in 1792 moved to Madison County in Georgia. Here his son, James Long, the father of Dr. Crawford W. Long, grew up to manhood, and when established in business in Danielsville, married Elizabeth Ware. The discoverer's maternal ancestors were from Albermarle County, Virginia, and settled in Georgia after rendering service in the War for Independence.

Thus we find that Crawford Williamson Long was born at Danielsville, Ga., November 1, 1815, and of an ancestry from which to inherit vigor, intelligence and gentle instincts.

His academic education was received at Athens, Ga., in old Franklin College, afterward made a part of the University of Georgia. He graduated at the University of Pennsylvania as a medical student in 1839, after a course of two years' study, having previously attended for a year Transylvania University at Lexington, Kentucky. From Philadelphia he went to New York City, and spent one and a half years in the hospitals of that city, familiarizing himself with all branches of painful surgery. His sensitive nature was doubtless shocked very often by the agonies of patients, with no agent to destroy or lessen the keen and awful attendant sufferings.

On his return to his native State, Dr. Long elected to settle and establish practice in a county adjoining that in which his *Alma Mater* is situated, and it was thus at the county seat of Jackson County, in the town of Jefferson, he made his debut as a general practitioner of medicine, with special attention paid to surgery.

A form of amusement among the people for which Dr. Long was responsible was known as the "ether party." A number of young people would meet in some hospitable home to observe the peculiar actions of those exhilarated by ether. Doubtless at these frolics a sufficient quantity of ether was occasionally given to produce general insensibility. How natural that the keen mind and kindly soul

of Dr. Long should have seen the possibilities of painless surgery. He was soon to have an opportunity of putting his theory into practice.

James M. Venable, Esq., a friend and patient afflicted with tumors located on the back of his neck, agreed on March 30, 1842, to inhale ether and give his consent to the removal of one of the tumors while under the influence of the anesthetic. Venable was required to allow a towel saturated with ether to be held over his mouth and nose, and, while continuing to inhale the ether, Dr. Long made the necessary incisions and cuts and removed an encysted tumor. Mr. Venable afterwards stated that he had suffered no pain whatever. The facts of this operation as here related are attested by Dr. Long's written and published statement, and the affidavit of James M. Venable, Esq., now treasured by Dr. Long's daughters at Athens, also by dozens of sworn statements made by physicians, neighbors and citizens who had personal knowledge of the facts of the operation and its freedom from pain, all giving particulars as to time, place and other essential circumstances.

This event marks the first surgical operation, known in history, to have been performed with a general anesthesia, and the day, March the 30, 1842, one of the most important in medical annals.

A second operation, removing another tumor from the neck of Mr. Venable, was performed by Dr. Long, June 6, 1842. Proof of the date and manner and painlessness of these operations is sustained by verified statements of William H. Thurmond, Esq., J. E. Hayes, Esq., and E. S. Rawls, Esq., kept in a bank vault at Athens by members of Dr. Long's family.

The third operation under ether which Dr. Long performed was the amputation of the toe of a negro boy, without pain to the patient.

The preserved testimony of Mr. William Vinson shows that Dr. Long, September 9, 1842, removed from the head of Mrs. Mary Vinson three wens, two of them without ether, causing great pain, and the third free from pain, when the patient submitted to the use of ether.

Milton Bailey, Esq., and G. L. Thompson, Esq., credible men, swear that Dr. Long amputated two fingers of a negro boy, one without ether and with much pain, and the other without pain while under ether. This was during the summer of 1846.

In 1851 Dr. Long removed to Athens, Ga., where he resided and practiced his profession until his death on June 6, 1878.

A monument stands on the public square at Jefferson, Jackson County, Ga., in honor of the great discoverer, unveiled in 1910, by the Medical Association of Georgia. His *Alma Mater* in medicine, the University of Pennsylvania, has placed in its medical building a bronze medallion bearing the following inscription:

"To the memory of Crawford W. Long, who first used ether as an anesthetic in surgery, March 30, 1842."

PHARMACY AND MEDICINE OF GEORGE ELIOT.*

BY A. W. LINTON.

Relatively few Twentieth Century Americans find time to read the stories of English provincial life written in the middle of the last century by Marian Evans, better known to the world as George Eliot. The reader of George Eliot must indeed be blessed with patience, for in most of her tales the plot develops very slowly, and the most trifling details in the lives of the numerous characters do not escape attention. But George Eliot's works will be read long after most of the "best sellers" of to-day have passed into oblivion.

Many of the characters of George Eliot's stories are patterned closely after persons in real life; friends and acquaintances of her own girlhood days. Most of the others, while not actually copied from life, are true portraits, since they live and think and act just as real persons in their respective stations in life and living in the England of George Eliot's time would have done. While other novelists may portray a character by describing his dress, mannerisms and actions, George Eliot allows the reader to look into the very soul of the persons in her stories. To the reader they become living, breathing, characters, each with weaknesses and sins; creatures in a measure of heredity, of association, and environment, but fighting more or less successfully against the difficulties which beset them.

Adam Bede, the village carpenter and cabinet-maker in the story of the same name, was so true a representative of the rural English mechanic of his day that a cabinet-maker who happened to secure from a relative in Blackwood's, George Eliot's publisher, the privilege of reading the manuscript of the book, could not believe that the author, at that time supposed by the world to be a man, was not a cabinet-maker by trade. This George Eliot regarded as a tribute of the highest order. No matter what the subject dealt with in her novels she spared herself no pains or labor in perfecting every detail. This is just as true in references to medical matters as in any other. George Eliot did not count a physician among her intimate acquaintances, but in creating the character of Doctor Lydgate in *Middlemarch* she spent an enormous amount of time in reading medical literature and histories of medicine.

In *Felix Holt, Radical* we find but little reference to medical men and regular practice, but Holt's Cathartic Pills play an important part in the story. The father and mother of Felix Holt have for years gained an humble livelihood by making and vending these and other sovereign remedies. The worthy Mrs. Holt relates her share in the manufacture of the Pills and Panacea in characteristic language. "And when everybody gets his due, and people's doings are spoke of on the housetops, as the Bible says they will be, it'll be known what I've gone through with those medicines—the pounding, the pouring and the letting stand, and the weighing—up early and down late, there's nobody knows yet but One

* The pseudonym "George Eliot" was adopted by Mary Ann (or Marian) Evans for most of her writings. She was born November 22, 1819. The centenary year, fast coming to a close, prompts the inclusion in this number of the Journal A. Ph. A., of the article on "Pharmacy and Medicine of George Eliot" by A. W. Linton, read before Section on Historical Pharmacy, New York meeting, A. Ph. A., 1919.

that's worthy to know, and the pasting o' the printed labels right side upwards. There's few women would have gone through with it, and its reasonable to suppose it will be made up to me."

The son, Felix, had been apprenticed to a country apothecary, and it had been the hope and expectation of his parents that he would continue the medicine business established by his father. But Felix developed an acute conscience, and distressed his mother by a most inconvenient habit of thinking for himself about all sorts of matters, political and religious as well as pharmaceutical. "My father was ignorant," said Felix bluntly. "He knew neither the complication of the human system nor the way in which drugs counteract each other. Ignorance is not as damnable as humbug, but when it prescribes pills may do more harm. I know something about these things. I was 'prentice for five miserable years to a stupid brute of a country apothecary, my poor father left money for that, he thought nothing could be finer for me. No matter. I know that the Cathartic Pills are a drastic compound that may be as bad as poison to half the people who swallow them; that the Elixir is an absurd farrago of a dozen incompatible things, and that the Cancer Cure might as well be bottled ditch water."

The philosophy of Felix is not a comfortable one, and it brings him into conflict with all sorts of accepted beliefs and institutions. He finds that "truth vendors and medicine vendors usually recommend swallowing. When a man sees his livelihood in a pill or a proposition he likes to have orders for the dose and not inquiries." Mrs. Holt in combating this iconoclastic attitude of Felix, if not entirely sound in her therapeutics, displays a knowledge of the keeping qualities of plaster mustard. "His father believed it was gospel truth, and it's presumptuous to say it wasn't. For as for curing, how can anybody know? There's no physic'll cure without a blessing, and with a blessing I know I've seen a mustard plaster work when there was no more smell nor strength in the mustard than so much flour. And reason good—for the mustard had laid in paper nobody knows how long—so I'll leave you to guess."

Romola is unique among the novels of George Eliot, for in it the author turns aside from the English towns and villages which she knew so well and lays the scene of her story in another land and another age, namely in Florence at the close of the 15th century. In *Romola* we are shown the Florence of the Renaissance, the Florence of Lorenzo de Medici, the Florence of the days of the invasion of Charles VIII, the Florence of Savonarola. George Eliot did not essay to write *Romola* until after many months of the closest study of Florentine history of the period involved. Every authority, no matter how lengthy, was carefully read, and in Florence itself she spent more than a month in observation and research. Some critics have adjudged *Romola* to be the greatest historical novel ever written, others have considered that the author made a mistake in leaving the rural England, whose life she could interpret so accurately, for an unfamiliar field.

However, we cannot hope to do justice to the literary values of *Romola*, but must be content with one or two references to things medical. Evidently in the Florence of the 15th century, as in America of the 20th, the barber shop was a place where one might hear a discussion of everything of interest in the community. The loquacious barber Nello is made to comment on the apothecary's shop as follows: "But what sort of inspiration can be got from the scent of

nauseous vegetable decoctions? To say nothing of the fact that you no sooner pass the threshold than you see a doctor of physic like a gigantic spider disguised in fur and scarlet waiting for his prey, or even see him blocking up the doorway inspecting saliva—besides your druggist who herborizes and decocts is a man of prejudices, he has poisoned people according to a system and is obliged to stand up for his system to justify the consequences.”

The bitter rivalry which existed between physicians and surgeons in that period is illustrated by the retort made on a certain occasion by the doctor to Nello the barber. “Is it your Florentine fashion to put the masters of the science of medicine on a level with men who do carpentry on broken limbs and sew up wounds like tailors, and carve away excrescences as a butcher trims meat? Via! A manual art such as any artificer might learn and which has been practiced by simple barbers like yourself on a level with the noble science of Hippocrates, Galen and Avicenna, which penetrates into the occult influences of the stars and plants and gems—a science locked up from the vulgar.”

The learned doctor, it will have been noted, made reference to the use of gems or precious stones in the treatment of disease. This is referred to at length in Chapter VI in which Romola speaks to Bardo, an eminent citizen of Florence, in regard to the belief which her father has in the use of rings as a defence against pains in the joints. Bardo replies, “Bartolammeo has overmuch confidence in the efficacy of gems—a confidence wider than is sanctioned by Pliny, who clearly shows that he regards many beliefs of that sort as idle superstitions, though not to the utter denial of medicinal virtues in gems. Wherefore I myself, as you observe, wear certain rings which the discreet Camillo Leonardi prescribed to me by letter when two years ago I had a certain infirmity of sudden numbness.”

George Eliot's *Middlemarch* gives in great detail the doings of the people of a typical English provincial town of the middle of the last century. There are really two sets of characters and two stories, more or less interwoven. One of the prominent characters is Lydgate, a young physician, who having obtained his medical education in Paris and Edinburgh comes to Middlemarch to begin his career. There are few instances in fiction in which the hopes and aspirations, the trials and temptations of a physician have been more vividly painted than in the character of Lydgate created by George Eliot. Here again she spared no pains to secure accuracy in every reference to professional matters.

Lydgate comes to Middlemarch brimful of youthful fire for the uplift of medical practice, and enthusiastic in regard to proposed research which he believes will make him famous. Although he longs for fame, he is sincere in his desire to use his profession for the benefit of humanity. He glories in his calling and believes it to be the noblest. “If I had not taken that turn when I was a lad,” he thought, “I might have got into some stupid draught horse work or other, and lived always in blinkers. I should never have been happy in any profession that did not call forth the highest intellectual strain, and yet keep me in good warm contact with my neighbors. There is nothing like the medical profession for that, one can have the exclusive scientific life that touches the distance, and befriend the old fogies in the parish too!”

Early in his practice Lydgate was fortunate in effecting some rather unusual cures, and soon found himself becoming a man of prominence in Middlemarch.

"There was a general impression that Lydgate was not altogether a common country doctor, and in Middlemarch at that time such an impression was significant of great things being expected of him." He develops plans for a new fever hospital which he thinks "might be the nucleus of a medical school here, when once we get our medical reforms, and what could do more for medical education than the spread of such schools over the country." Some of the substantial citizens are interested in Lydgate's plans for a hospital, and arrangements are made to build it and put it under his direction. He believes that he sees placed within his hands an instrument that will enable him to render splendid service to the people of Middlemarch, and at the same time give opportunity for the investigation he loves.

But alas for Lydgate's dreams of research and of medical reforms. He falls in love with the beautiful but selfish and shallow daughter of a substantial Middlemarch merchant. Rosamond saw in Lydgate, as she thought, a young physician of unusual promise, who bade fair to win in not too long a time high social standing and ample income. Lydgate soon found it impossible to keep up his practice and hospital work and at the same time satisfy Rosamond's demands for social engagements. The research was more and more neglected. His difficulties were increased by the fact that he was not politic enough to carry favor with the various factions of the social and economic life of Middlemarch, and his sincerity made him many enemies. He was thoughtless enough to argue that the office of coroner should be filled by a medical man, stating that "the coroner ought not to be a man who will believe that strychnine will destroy the coats of the stomach if an ignorant practitioner happens to tell him so." This made for Lydgate a bitter enemy of Mr. Chicely, a lawyer who held the office in question.

Lydgate lost some of his adherents also because he refused to dispense medicine, which it was customary at that time for all but physicians of the highest standing to do. He tried to explain to his patients that it could only be an injury to them if his only mode of getting paid was by making out long bills for draughts, boluses and mixtures. But Mrs. Mawmsey could not accept Dr. Lydgate's viewpoint. "Does this Mr. Lydgate mean to say there is no use in taking medicine?" said Mrs. Mawmsey, "I should like him to tell me how I could bear up at Fair time, if I didn't take strengthening medicine for a month beforehand."

Still further criticism Lydgate brought upon himself by his zeal for science. Mrs. Goby having died of a disease not clearly expressed by symptoms, he asked of her relatives permission to conduct a post-mortem. This proposition caused a widespread scandal. "Mrs. Dollop became more and more convinced by her own assertion that Doctor Lydgate meant to let the people die in the hospital, if not to poison them, for the sake of cutting them up without saying by your leave; for it was a known 'fac' that he had wanted to cut up Mrs. Goby, as respectable a woman as any in Parley Street, who had money in trust before her marriage; a poor tale for a doctor who if he was good for anything should know what was the matter with you before you died and not want to cut into your inside after you were gone."

Poor Lydgate under these difficult conditions received no support from his wife. For Rosamond had been disillusioned since her marriage, and found that

a young physician might be very busy and still have an income quite inadequate to supply her with all the beautiful things she desired. Lydgate tried to arouse in his wife an interest in his investigations, and a willingness to wait with him for the fame and fortune that would come. "I am thinking," he told her, "of a great fellow who was about as old as I am, three hundred years ago and had already begun a new era in anatomy. His name was Vesalius. And the only way that he could get to know anatomy was by going to snatch bodies at night from graveyards and places of execution. No wonder the medical fogies in Middlemarch are jealous when some of the greatest doctors living were fierce upon Vesalius because they had believed in Galen and he showed them that Galen was wrong!" At another time when Rosamond remonstrated because Lydgate spent so much time poring over his microscope he replied: "Haven't you ambition enough to wish that your husband should be something better than a Middlemarch doctor? What I want Rosy, is to do worthy the writing and to write out myself what I have done. A man must work to do that, my pet." But this appeal failed to fire Rosamond with an interest in the things which meant so much to Lydgate.

Lydgate now passed through dark days. "He certainly had good reason to reflect on the service his practice did him in counteracting his personal cares. He had no longer free energy enough for a spontaneous research and speculative thinking, but by the bedside of patients through direct external calls upon his judgment and sympathies brought the added impulse necessary to draw him out of himself. It was not simply that beneficial harness of routine which enables silly men to live respectably and unhappy men to live calmly, it was a perpetual claim on the immediate fresh application of thought, and of the consideration of another's need and trial. Many of us looking back through life would say that the kindest man we have ever known has been a medical man. . . . Some of that twice blessed mercy was always with Lydgate in his work at the Hospital or in private houses, serving better than any opiate to quiet and sustain him under his anxieties and his sense of mental degradation."

Harassed by debt, annoyed by scurrilous attacks from jealous medical men, tortured by the knowledge that the wife whom he still loved dearly gave him no love in return, and sick at heart at the failure of all his plans for investigations, Lydgate was subject to every temptation that can come to a man and a physician. Like many another medical man he tried opium as a palliative for his mental anguish, but had strength sufficient to prevent his becoming a slave. He drank heavily at times but carried his wine well and did not become a drunkard. He even tried gambling.

The story of Lydgate's life and practice is too long to give even an outline. His griefs and disappointments were bitter. His troubles were due in part to influences over which he had no control, in part to his own weaknesses. George Eliot was too honest an author to depict a character as free from faults. In time Lydgate gained an excellent practice and a substantial income. By the world he was regarded as a successful man but he considered his life a failure because the dreams of his early life were never realized.

Sir James Paget, one of the most eminent British surgeons of the last century, after reading *Middlemarch* declared that the insight displayed by the author into

medical life is so deep and accurate that he could hardly believe that there was no biographical foundation for the character.

Every careful reader of *Middlemarch* will agree that George Eliot has sensed as few writers of fiction have done the peculiar difficulties which confront the medical man who seeks to be true to himself and his profession. Although the practice of medicine has undergone many changes since the time in which George Eliot wrote, human nature is much the same now as then, and many of the problems which confront the young physician of to-day are similar to those of Lydgate.

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THE REMEDY.

A NATURAL AND REASONABLE PRESCRIPTION PROMISING RELIEF FROM UNJUST AND VEXATIOUS TAXATION.

BY SEWARD W. WILLIAMS.

The pharmacist, as a professional man, is always interested in remedies designed to prevent, relieve or cure the ills of the community. The druggist, as a business man, should be no less favorably disposed toward a remedy promising him relief from annoying and unjust taxation.

The world's leading sanitarian, Surgeon General W. C. Gorgas (retired), says.¹

"I feel confident that the most sanitary measure that any community could adopt would be a taxation on land values." (Note "land *values*" not land.)

Dr. S. S. Cohen, of Philadelphia, one of the best friends Pharmacy ever had in the medical profession, and well known to members of the A. Ph. A. as one of America's foremost physicians and deepest thinkers, says:²

* * * "Tax vacant land equally with adjoining land put to wise use, and remove taxes from the improvements made by the farmer, the manufacturer, miner, etc., and you will revolutionize not only industry but health. Rents will fall, and profits of the farmer, the manufacturer and the merchant, the wages of the workman, will alike increase. In other words, labor, whether mental or physical, will receive its due reward; and legal ground-blackmail—which is what the holding of land out of use amounts to—will cease."

Now the pharmacist, as an analyst, will recognize that the remedy alluded to is the "Singletax" advocated by that great philosopher, Henry George. But we must not allow the mere name of a valuable remedy to prejudice our minds against the medicine itself. The expert in prescriptions realizes the importance of dosage and writes it on the label. He would laugh at anyone who refused the prescription because the whole bottle couldn't be comfortably taken at once.

Thus, with the remedy under consideration, he may prefer the title "singletax

¹ *Jour. Am. Pharm. Ass'n*, March 1916, p. 284.

² *Ibidem*, p. 285.

limited." "Land value" or "Site value taxation" is better terminology but the term employed on the original prescription holds in general usage.

Passing now from the public health to the health of business—the druggist's business and in fact all business except that of the land speculator and the landlord—let us consider the bearing of site value taxation on the druggist's own interests.

If public revenues were derived by taxing values which the public creates the druggist would not be taxed on what he sells or what he earns. The community would be taking for public use from values created by the community, leaving to the individual, practically untouched, values made by the individual and rightfully belonging to him.

It would be unwise to take the whole bottle of Georgian elixir at once, safe as it is, but in graduated doses it would certainly be good for what ails us.

As a nation we are apparently on a toboggan headed for socialism and may be unable to stop where we should, at the possibly reasonable limit of public utilities. With human nature as it is there seems grave danger in socializing industry; for as David Harum says, "There's as much human nature in some folks as in others, if not more."

Mankind has rejected the simple golden rule of Christ for 1900 years, and, despite the fact that its adoption would have made a heaven out of earth, will probably go on disregarding it until finally it has to be accepted as the one and last resort.

With things as they are we should gradually modify our taxation laws so as to throw an increasing burden on unearned incomes, decreasing the unreasonable load now resting on the honest earnings of the individual. We can't realize too quickly that at present we are blindly taxing things so as to discourage what we want to encourage and *vice versa*.

Land speculators are probably the only ones who have not borne a reasonable share of war expense. Their incomes may be deferred until others have largely or fully paid the debt; then the speculators can pocket a colossal profit on the "unearned increment" of their land which they held out of use when, as the source of food and other necessary products, it was most needed.

The National Economic League (President, W. H. Taft; Vice-Presidents, C. E. Hughes and Frank A. Vanderlip) asks: "Instead of taxing the income or rent of real estate, ought all land, irrespective of improvements or use, be taxed by our Government for the payment of war debts, so as not to discriminate in favor of vacant real estate and thereby penalize the use of property?"³

John Stuart Mill, English philosopher and political economist, was interested in forming the "Land Tenure Reform Association," which in 1870 commenced a definite program of propaganda for "the interception by taxation of the *future* unearned increase of the rent of land."⁴

In New York City alone, during nine years, 1906-15, land values increased more than a billion and a quarter dollars.⁵

Col. Theodore Roosevelt, in the *Century Magazine* for October, 1913, declared

³ *The Public*, Aug. 2, 1919, p. 812.

⁴ Prof. Arthur N. Young's (Princeton Univ.) "Single Tax Movement in U. S.," p. 22.

⁵ Report of N. Y. City Dept. of Taxes and Assessments, 1915, p. 20.

for municipal self government in taxation and the heavier taxation of the unearned increase in the value of land.⁶

Had Texas cities enjoyed municipal self government in taxation, the experiment of Tax Commissioner Pastoriza in Houston, which was proving a great success, would doubtless have culminated in a demonstration of the benefits of site value taxation and led other places to adopt a similar plan.

Canada, Australia and New Zealand have applied the idea successfully in a limited way. In this country Pittsburgh and Scranton are gradually effecting better conditions along this line.

As everybody knows, our present system of taxing personal property places a premium on perjury. "Ability to pay" too often carries with it not only the ability but the disposition to evade.

Benjamin Ide Wheeler, classical scholar, educator and author, says:⁷

"Whenever you find singletaxers you will find men and women who are interested in what is going on in the world for reasons other than personal reward. They are earnestly seeking the good for its own sake and for what they believe to be the good of the country."

Lewis Jerome Johnson, Professor of Civil Engineering, Harvard University, says:⁸

"The Singletax sounds Utopian only because our conceptions are distorted by long contemplation of nothing but economic maladjustment. When its reasonableness is once seen, effective steps toward its realization cannot long be delayed."

About nine-tenths of our newspapers and magazines appear to regard the subject as a forbidden topic.

Somehow we are reminded of Macaulay's sarcastic remark that "the law of gravitation might not be generally accepted to this day were important interests concerned in disputing its truth." (Or ignoring what cannot successfully be disputed.)

However, Industry—the natural union of capital and labor—is bound soon to press its case against the privileged monopoly of land and its natural resources.

The Provisional Committee of Manufacturers on Federal Taxation says:

"A bill to tax the privilege of land holding was laid before the Ways and Means Committee by Jackson Ralston and has received much favorable comment.

By this plan it is believed that the present Federal tax burden upon producing industries may be reduced at least 25%, or a total of \$1,000,000,000. * * *

The value of land is half of the entire property of the United States, and it pays *no Federal taxes*." * * *

But the object of this article is not so much to argue the case as to persuade the reader to investigate the subject for himself and form his own conclusions.

Francis Neilson's new book, "The Old Freedom," and a booklet by Emil O. Jorgensen, "The Next Step Towards Real Democracy," are worth reading; and the attention of every druggist who has not read it should be called to the excellent article on "Untaxing Industry" by Charles G. Merrell, appearing on pp. 631-33 of the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION for August.

After reading Louis F. Post's remarkably clear little book, "The Taxation of

⁶ Young's S. T. Movement in U. S., p. 243.

⁷ *Single Tax Review*, Mar.-Apr. 1911, p. 37.

⁸ *American Journal of Public Health*, June 1914.

Land Values," the pharmacist may well ask the reason for the complicated and petty taxes imposed by the Revenue act of 1918.

REPORT OF THE COMMISSION ON PROPRIETARY MEDICINES TO
THE AMERICAN PHARMACEUTICAL ASSOCIATION
AUGUST 1919.*

During the period since its last report the Commission on Proprietary Medicines has continued the study of the several problems assigned to its consideration, but has not been able to bring any of the particular investigations to a sufficient degree of completeness to warrant a final report thereon. The present therefore may be regarded as a report of progress.

Continued Decrease of Alcohol Content of Patent Medicines.—The report of the Commission for 1916 set forth the results of its investigation of the alcohol content of 1108 proprietary medicines commonly handled by the retail drug trade. Of these 29.40 percent were found to contain alcohol in excess of one percent, as compared with 48.25 percent of U. S. P. preparations and 47.65 percent of National Formulary preparations which contained alcohol in excess of one percent.

Since then hearsay reports not yet confirmed, but probably correct, indicate that proprietary manufacturers generally are making strenuous efforts to find substitutes for the alcohol in their preparations, and that some of them are considering the change of their products from liquid to solid form, their efforts in these directions no doubt being stimulated by radical prohibition legislation and by the increasing cost of alcohol.

Reports continue to come of the use of a certain hair tonic as a beverage liquor substitute in dry territories, some enterprising experimenter having discovered the preparation to be good for inward as well as for outward application. From information received there is reason to believe that the abuse of this preparation in this manner will soon be brought to an end.

As is well known the U. S. Internal Revenue Bureau publishes a list of excessively alcoholic preparations that have been discovered from time to time through a long series of years. From the fact that the Internal Revenue Bureau is known to be one of the most efficient of government agencies and that it has a highly efficient secret service at its command, it may be inferred that but few preparations of this character have escaped its attention. A careful examination of the Internal Revenue list shows the names of comparatively few preparations that are handled by the regular drug trade, and it is to be hoped that even this small number will soon cease to be found in the stock of any reputable drug house.

On the whole it may be said that the regular drug trade, both wholesale and retail, is gratifyingly free from the sale of proprietary medicines containing alcohol in excess of what might reasonably be considered necessary for the solution of their medicinal constituents or to ensure them against spoilage by fermentation or freezing.

* Presented and accepted New York meeting American Pharmaceutical Association, 1919.

It should be noted that this statement refers specifically to preparations commonly handled by the legitimate drug trade and not to such as are distributed through other channels, such as advertising physicians who do a mail order business, or by other indirect methods.

The National Wholesale Druggists' Association has requested of its members that they refuse to handle proprietary preparations that are excessively alcoholic or which contain habit-forming drugs in such proportions as to render them objectionable, and it is believed that the wholesale trade is very generally complying with this request.

Habit-Forming Drug Content of Proprietary Medicines.—As regards the use of habit-forming drugs in proprietary medicines the Commission is able to report the same gratifying improvement as has been noted in the case of alcohol.

Of two preparations discovered by the Commission several years ago as being used by opium habitues, one has been entirely withdrawn from the market, and the formula of the other has been revised so as to omit the opium which it formerly contained.

There is some reason to believe that preparations containing habit-forming drugs are still being distributed by certain advertising physicians who do a mail order business, but who distribute them in such a way as to avoid coming into conflict with either the Food and Drugs Act or the Harrison Act. The evidence as to this is mainly hearsay, and the Commission is therefore not prepared to positively assert that the charge is correct.

Some evidence has been received indicating that certain proprietaries prepared exclusively for physicians' use and not advertised to the general public are being used by habitues to replace the opium and morphine formerly employed. So far as the Commission has been able to discover the pharmaceutical manufacturers who issue such preparations are in no way responsible for their misuse. Most, if not all, of the regular pharmaceutical houses refuse to sell such preparations to dealers in excess of such quantities as they could reasonably be expected to require for legitimate dispensing purposes.

Injuries Resulting from the Use of Patent Medicines.—Since its last report rumors have continued to come to the Commission of injuries resulting from the use of proprietary medicines, but attempts to secure reliable information regarding such cases have been as unsuccessful as formerly. Several of the persons who were reported to have said that they possessed such information denied that they had made the statements attributed to them. Others claimed that their information was of a confidential nature and could not be revealed, while still others never replied to requests for information, although the requests were accompanied by return postage.

While not prepared to deny the existence of cases of injury resulting from the use of proprietary medicines, the failure of the Commission to obtain any reliable information of such injurious effects would seem to indicate that they can not be very numerous or its inquiries, widely published in drug journals, would have been more productive of definite results.

Effect of the Pure Food and Drugs Act.—Throughout its investigations the Commission has constantly been impressed with the comparative efficiency of the federal food and drugs act in clearing interstate commerce of undesirable prepara-

tions and in enforcing a considerable measure of decency in the character of those which remain.

Whereas the market at one time admittedly contained many worthless or fraudulent preparations, such preparations now seem to be the exception rather than the rule, especially as respects the class of articles commonly distributed in interstate commerce through the regular drug trade. The majority of the preparations now distributed in interstate commerce probably possess some degree of merit when properly used in the class of ailments for which they are designed.

Probably the most deserving of censure at the present time are the preparations put in circulation by firms which do an exclusively mail order business. Such firms are usually composed of licensed physicians or have licensed physicians in their employ, and establish communication with their patients by advertising in the public press. Their business being carried on as a variety of the regular practice of medicine and entirely outside of regular drug trade channels, and their medicines being distributed as compounded prescriptions it is, of course, not easy to deal with them under the provisions of the food and drugs act.

Though the drug trade has not always been in perfect agreement with the rulings of the Bureau of Chemistry it must in fairness be said that the enforcement of the Food and Drugs Act has on the whole been of very great benefit to the public in protecting it from fraudulent preparations, and to the drug trade in freeing it from the responsibility for the distribution of such compounds.

Disadvantages of Local Legislation.—Every year brings forth a fresh crop of legislative measures designed for the regulation of the sale of proprietary medicines, ranging from proposed state laws to ordinances by State Boards of Health or other local authorities. Some of these measures no doubt possess merit, but the majority of them would inflict undue hardship upon the drug trade without any compensating benefit to the public. Even if all of them were meritorious, they would still lack uniformity, and if they were enacted the trade would be subjected to a large variety of local laws no two of which would be in agreement and many of which would be conflicting in their provisions.

In the opinion of the Commission any further legislation found necessary should be in the nature of an amendment or supplement to the existing Federal Food and Drugs Act. If the field of interstate commerce could thus be covered there is strong probability that all subsequent local and state legislation would be shaped to correspond thereto, and thus federal and state laws and local ordinances would have substantial uniformity.

Formula Disclosure.—Most of the proposed measures for the regulation of proprietary medicines include some variety of formula disclosure, either complete or partial.

Those who have studied the conclusions of the British Parliamentary Commission after devoting several years to a careful investigation of this subject can readily understand that formula disclosure is not likely to prove the complete remedy for the evils connected with the exploitation of patent medicines that some imagine it would be.

As a matter of fact formula disclosure is a large subject, reaching far beyond the manufacture and distribution of patent medicines, and the collateral and

possibly embarrassing effects of such legislation upon other pharmaceutical products are deserving of serious attention.

One requirement frequently proposed is that all of the active ingredients of a proprietary medicine shall be plainly printed upon the package, as is now required in the case of alcohol and certain other drugs.

Another proposition is that the manufacturer be required to disclose his formula, or the names of its active ingredients, to some public official or board which is to preserve the information thus obtained as an official secret.

The Commission is not prepared at present to give its unqualified endorsement to either of these methods of formula disclosure. In so far as it has any preference it would favor a proposition to require the publication upon the package of a list of the ingredients upon which the manufacturer bases his claims of therapeutic value as the most simple and direct requirement, as the least liable to evasion, and as the most unlikely to impose unnecessary hardship and responsibility upon dealers who handle such preparations in good faith.

Before making any specific recommendations regarding formula disclosure, however, the Commission desires the advice of the association upon the subject, probably the most important of all the questions which the Commission has been called upon to consider.

Respectfully submitted,

(Signed) J. H. BEAL, *Chairman*,
S. C. HENRY,
CHARLES E. CASPARI,
JOHN C. WALLACE,
W. H. COUSINS.

CHLORETONE WATER: A NEW PRESERVATIVE OF BIOLOGICAL SPECIMENS.

BY OLIVER ATKINS FARWELL.

During the early part of this summer (1919) it was suggested to me by Dr. T. B. Aldrich to try out chloretone water as a vehicle in which to preserve vegetable material for permanent biological exhibits and as a means of keeping in a fresh condition vegetable material designed for early laboratory work. He told me that he had animal organs in chloretone water that had been kept for several years and that they were apparently in good condition. He saw no reason why vegetable matter could not be equally well preserved. I therefore carried chloretone water on my botanical excursions and collected various plants, such as Green Algae, Water Lily stems, etc., and put them in the chloretone water. Plasmolysis has not occurred in any of the plants collected, which included both aquatic and

terrestrial plants. It acts as a good fixing agent for filamentous algae but I have not tested it out along these lines on denser tissues or structures. It gives promise of being as good a fixing agent if not better than any now in use and bids fair to outrival alcohol as a general preservative in both cheapness and efficiency. It kills all but the most resistant spore bearing bacteria so that no growth occurs in any media that contains a small quantity of chloretone.

A few grammes inclosed in a collector's bottle permanently quieted small moths in less than one minute and a large blue bottle fly in two minutes. It is therefore equal to chloroform in efficiency for the entomological collector. If a few grammes were placed in the bottom of the collector's bottle and held in place beneath a pledget of cotton batting, they probably would last throughout a whole season, or several seasons, provided the bottle were not left uncorked unnecessarily, and possibly prove to be cheaper than chloroform. An aqueous solution from $\frac{1}{4}$ to $\frac{1}{2}$ of 1 percent might answer their purpose equally well and be much cheaper in the bargain. Flies and yellow jackets after remaining for two months in a saturated solution had not lost their colors. Chloretone is soluble in water to the extent of from 0.5-0.8 percent. A saturated aqueous solution of chloretone might cost anywhere from 1 to $1\frac{1}{2}$ dollars a gallon, depending largely on where the chloretone was procured. Samples of the fleshy Purslane (*Portulaca oleracea*) kept in an aqueous solution of 0.25 percent strength have shown no signs of degeneration. Potamogetons taken from the Rasin river and corked up in a bottle full of the river water had, in the course of two months, largely become disorganized and much of it had disintegrated to such an extent as to have been transformed into sediment. It may be worthy of notice to state here, as an illustration of the tenacity of life under unfavorable conditions, that a single frond of *Spirodela* accidentally collected along with the Potamogetons had continued to grow and had increased to 4 fronds during the same length of time and that the terminal point of one of the Potamogetons produced a new growth exceeding 3 inches in length. I have detected no changes of any kind in the organization of any of the plants preserved in chloretone water. They will, however, lose their color.

Laboratory trials and tests will fix the strength of the solution necessary for its varied uses. If the weaker solution is sufficient for killing and fixing, its cheapness will be about on a par with that of the chromacetic acid combination but it will be much more satisfactory as a general fixing agent as it will save much time now lost in the lengthy washing process necessary when the chromacetic fixer is employed. I strongly recommend to the scientific world, and especially to histological and morphological investigators, the use of an aqueous solution of chloretone for a thorough investigation as a substitute for alcohol as a preservative, and for killing and fixing agent.

DEPARTMENT OF BOTANY,
PARKE, DAVIS & Co.,
DETROIT, MICH.

SECTION ON EDUCATION AND LEGISLATION, AMERICAN
PHARMACEUTICAL ASSOCIATION.*

ABSTRACT OF THE MINUTES OF THE SESSIONS HELD IN NEW YORK CITY, AUGUST 27 AND 28, 1919.

Chairman W. F. Rudd called the first session of the Section on Education and Legislation to order, Wednesday, August 27, 1919, at 2.00 P.M. Secretary C. A. Dye presided while Chairman W. F. Rudd read his address; which follows:

ADDRESS OF THE CHAIRMAN OF THE SECTION ON EDUCATION AND
LEGISLATION, A. PH. A.

The spirit of *laissez-faire* so dominant in a large majority of those responsible for the well-being of pharmacy during the past generation has, within the past two years, received a rebuke that has shaken the very bed rock of our conservatism. As never before, the scales are falling from our eyes. Old ideas about pharmacy and old ideals of what we ought to be have been shattered. Slowly, but surely, we are beginning to see ourselves as others see us. It seems highly probable that the greatest humiliation we have ever suffered, will, within the next decade, prove to be the greatest blessing in the long history of our profession.

Individuals are seldom able to make a correct diagnosis of their own troubles, whether physical, mental, moral or what not. The same is true of groups of individuals. The cold judgment of disinterestedness is the only safe arbiter. Sometimes it is even good to know what our most critical friends and, perhaps, our enemies think of us. It has taken a world cataclysm to give us the right perspective, but we are getting it. All of this is a most circuitous way of saying that the failure of pharmacists to obtain recognition in the Army has taught us the lesson we needed most to learn.

In a general letter sent recently to the druggists of Missouri, Dr. H. M. Whelpley made the following statement: "Also raise the minimum of preliminary education in Missouri so that the pharmacists themselves, as well as the public, will feel the dignity of the calling. The United States Army would have had a pharmaceutical corps before now if the rank and file engaged in compounding medicines measured up to the educational standard that the calling deserves." Is this the correct diagnosis? What about the claims that envy or jealousy or ignorance on the part of those having the power to make or break us was to blame for our humiliation? I doubt that any of us would give these charges more than a passing thought. I believe Dr. Whelpley is right. We failed because we have persistently refused to set for ourselves standards that were already set in similar lines of endeavor.

We have camouflaged in Pharmaceutical Education. Many of our colleges of pharmacy (my own among the number) have been saying to the youth of the country for years, we can take you after one or two years in high school, put you through our mill and turn you out a professional man. Some of our respectable drug journals conduct and advertise quiz courses to fit men to pass State boards. A "question and answer" system sold to promising young men and women under the guise of education! Many of the same bright young men and women, naturally having confidence in the leaders in pharmacy, have gone out into the world believing themselves educated because we told them they were. Imagine their state of mind when they find out the truth.

In many, many instances they have been led to accept the form for the substance. Little wonder is it that we find so much discontent and unrest among those so misled.

Referring again to the statement made above about our failure to obtain recognition in the Army, I am led to say that in my judgment it is already the biggest single impetus to a thorough house-cleaning that we have ever had. Truly, the treatment has been of a most heroic type, but a radical and permanent cure seems to be in the making.

In the first place, a great many of us are now willing to admit for the first time that the low average of professional education and standards constituted our heaviest handicap. This is rapidly bringing a determination on the part of many of the very conservative among us, that from now on we are unwilling to be connected with any type of professional education

* Papers, with discussions thereon, will be printed apart from the Minutes. The report of the Secretary will be printed in a succeeding issue, time not permitting for this number, on account of considerable statistical matter relative to legislation, schools, etc.

that is not fundamentally sound. With this phase of the situation on a safe basis (and no stream ever rises higher than its source) the outlook for the future takes on a radically different aspect. If these premises be correct, how will the impulses which have been thus begotten function into an improved condition of things pharmaceutical? How will it all work its way out in a practical, every day way? It seems to me there isn't but one answer. It is the same answer that thoughtful, competent men have always given to this question.

Every president of the Conference and every chairman of this Section has said the same thing in one form or another. It is this, sound, thoroughgoing, practical education of every man and woman going out to practice pharmacy will ultimately take care of all the problems that now give us so much trouble. There is probably not one here who will not in the main agree with this statement. But you ask at once, with only about one-third of the States requiring college training as a prerequisite for board examinations, how is the thing to be done? What changes must be made in our old methods of organization and effort? Is it possible to accomplish in the next five years as much as has been done in the past twenty-five? If so, how?

This brings me to the first recommendation in my address as Chairman of this Section.

In my judgment, prerequisite legislation in every State, based upon four years of high school training, is entirely feasible, at least within the next decade. Those of us who have passed through the throes of legislative fights on this matter know full well of the nerve-racking, heart-breaking hours when a measure hangs in the balance. So far as I am informed, up to the present time each State has fought it out and lost or won, as an individual State. There has been no organized effort among the States to back-stand one another in those trying hours. We have, it seems to me, thus lost a great opportunity to lend the weight of a great nation-wide organization at times when help was sorely needed. To make available at such critical times the influence of all the forces (state and national) and to give the utmost publicity to the needs of such legislation I desire to recommend the following plan:

FIRST RECOMMENDATION.

The employment by the American Pharmaceutical Association and the American Conference of Pharmaceutical Faculties of the best man in America to give all of his time to prerequisite legislation until it is an accomplished fact in every State of the Union. He should be a man of varied talents, a good speaker and writer, an organizer, tactful, enthusiastic, energetic, nationally known in pharmaceutical circles, and universally trusted. His salary should be ample. Working in collaboration with such a nation-wide organizer, should be the most influential man in pharmacy in each state of the Union. These men should not receive salaries, but should possess, as far as possible, all the qualifications, potentially at least, outlined above. Once such an organization gets under way, its influence will be irresistible. Any State could send out the Macedonian Call and competent, thoroughly informed help would be furnished promptly. How different from the methods now employed—each State fighting alone. It will take money. So does everything that brings results that are worth while. But in what better way could a substantial part of the funds at the disposal of the organizations named be spent? I do not believe this plan is a pipe dream. It seems to me highly feasible. I believe it will do the job, and do it promptly.

Coming now to another and an entirely different part of this paper, I desire to preface it with a sentence from a very striking address delivered before the State Pharmaceutical Association of Indiana by President Stone of Purdue University. Please hear his opening sentence; he says, "I cannot help associating in my mind the profession of the pharmacist with that of the physician. It seems to me that they are inseparably connected with each other." He says this not as the president of a university having a pharmacy school, but as a scientific man taking a broad view of the whole situation. Just a little further along he says this: "But it is apparent that this association between Medicine and Pharmacy is not so close as it used to be, that the profession of Pharmacy has not kept pace with the profession of Medicine on its scientific side. At least this is my impression."—There seems to be a very marked tendency on the part of a great many good men in pharmacy to criticize and antagonize the medical profession publicly whenever occasion offers. Personally, I greatly deprecate this; I think there is probably no more dangerous spirit among us. The success of the medical men of this country

in outlining a plan of action and of perfecting an organization for carrying it out to a most successful consummation is a monument to their far-sightedness and ability. They have done this while we pharmacists were floundering around and criticizing them. It seems to me a great pity that we, as pharmacists, do not avail ourselves of every opportunity to get in closer touch with the organized medical forces of this country. I have no patience whatever with those who claim that the interests of the physician and the pharmacist are in any essential way antagonistic. I believe that medicine is a four-fold profession, Medicine, Dentistry, Pharmacy and Nursing, and that the four are intimately interdependent.

At the present time there is much more sanity and clearness of vision among physicians than among the other three branches. They saw twenty-five years ago what changes both Medical Education and the Practice of Medicine would have to undergo. They made their plans deliberately and thoroughly and we know to-day what they have done. It is simply marvelous. The number of men in medical colleges to-day is probably less than half what it was ten years ago. The result? Well a much better class of doctors, and a decent living for practically every one of them. What have we done in pharmacy in those same ten years? We have made just as many potential proprietors as we possibly could; the result? A cut-throat policy and working conditions often intolerable. Instead of using our energy in criticizing and antagonizing it would be much wiser to emulate their type of organization and education. To this end, I desire to make a second recommendation:

SECOND RECOMMENDATION.

A committee should be appointed from this body to coöperate, with the Council on Pharmacy and Chemistry of the A. M. A. Its function should be to coördinate, so far as possible, all the problems common to the two professions, and to bring about a feeling of common purpose and aims between Medicine and Pharmacy.

The third and last matter that I desire to bring to your attention has to do with Pharmacopoeial Revision. In a large measure this has gotten in a rut. Every ten years the convention is held, a revision committee elected, and five or six years later the Pharmacopoeia comes out. Realizing that under existing conditions such a plan could hardly be changed, I sent out a questionnaire to a large number of prominent men throughout the country to ascertain, if possible, if they thought a discussion of the whole matter of Revision would be apropos at this time. The answers were so overwhelmingly favorable to the plan that such a symposium has been made a part of this program. As you see, one whole session is given up to it, and those taking part are certainly among the most representative men in pharmacy in America. In the case of a large number of those on the program I have no idea what they are going to say. Judging, however, from the enthusiastic manner in which they have helped to make the program a live one, the things they have planned are going to be worth while.

Anticipating somewhat the conclusions that may be reached from this discussion, as this will be my only opportunity to make a recommendation in a form where it will receive due consideration.

THIRD RECOMMENDATION.

I recommend, that a committee of five be appointed to consider fully the whole matter of revision in the light of what may be said here and any other information that they may be able to obtain, and to have ready at Washington next May a practical working plan for doing one of the biggest jobs we have to handle.

The address was on motion referred to a committee consisting of Edward Spease, *Chairman*, R. A. Lyman and W. L. Scoville.

(This committee reported at the second session of the Section, but for convenient reference the report is printed here, with action thereon.—EDITOR.)

REPORT OF THE COMMITTEE ON THE CHAIRMAN'S ADDRESS.

"We approve of the spirit of Recommendation No. 1, and recommend that it be put into effect, providing funds are available for its execution."

H. M. Whelpley moved the adoption of the Committee's report, seconded by W. C. Anderson.

W. G. Gregory asked whether Chairman Rudd had made any suggestions as to the method of raising funds. Chairman Spease stated there were none in the address. The question was called for, and the report of the Committee adopted.

"Owing to difference of opinion of the members of the Committee, Recommendation No. 2 is referred to the Section for action."

After some discussion the subject was referred to a Committee of Three to consider the recommendation and report to the incoming Chairman of the Section. Carried.

"We approve of Recommendation No. 3, and, if adopted by this Section, we suggest that adoption carry with it (1) appointment of the committee at once, in order that they be alert to the matter presented on the subject at this time, and (2) that the committee have full power to draft a plan and submit it to the Pharmacopoeial Convention, without first reporting to this Section."

After considerable discussion the recommendation was referred to the Committee on United States Pharmacopoeia, A. Ph. A.

The report of Secretary C. A. Dye was presented in abstract by him, and, on motion being carried, referred for publication.

(The report will be printed in a succeeding issue of the JOURNAL.)

The following papers were read, discussed and referred to the Publication Committee:

"Where are Pharmacists Ten Years After Graduation from College?" by Miss Zada M. Cooper.

"Pharmaceutical Education and Opportunities," by Henry G. Goeckel.

"Reconstruction Applied to Commercial Pharmacy," by Charles O. Lee.

"Pharmacodynamics in Schools and Colleges of Pharmacy," by A. R. Bliss, Jr.

Chairman Rudd named the following as members of the Committee on Nominations: Miss Zada M. Cooper, C. B. Jordan and F. F. Kelly.

After the reading of a paper by W. H. Ziegler, on "The Slogan for Successful Legislation," the first session of the Section on Education and Legislation was adjourned.

SECOND SESSION.

Chairman W. F. Rudd called the second session of the Section on Education and Legislation to order at 2.30 P.M., August 28, 1919. He stated that the papers to be presented related to the revision of the U. S. Pharmacopoeia.¹

Papers of Symposium on U. S. P. Revision are as follows:

"Scope of Revision," by C. H. LaWall. Discussion by Henry Kraemer.

"Who Shall Do the Work, and Why?" by R. P. Fischelis. Discussion by Charles E. Caspari and A. G. DuMez.

"Methods of Saving Time in Revision," by Jacob Diner. Discussion by W. G. Gregory, W. L. Scoville and H. V. Army.

"U. S. P. and N. F. Financing," by A. R. L. Dohme. Discussion by H. M. Whelpley and J. A. Koch.

"Best Methods of Getting Results Among the Various Interests Taking Part in the Revision," by E. Fullerton Cook.

Chairman W. F. Rudd called for the report of the Committee on Chairman's address, and asked Secretary C. A. Dye to preside.²

Chairman Rudd assumed the chair and called for the report of the Committee on Nominations.

Chairman Zada M. Cooper reported the following nominees: For Chairman, C. A. Dye, of Ohio; for Secretary, Edward Spease, of Ohio; for Associates, E. L. Newcomb, of Minnesota, W. H. Ziegler, of South Carolina and Charles O. Lee, of Indiana.

There being no further nominations, it was moved that Charles LaWall cast a unanimous vote for the nominees, and they were declared elected.

¹ It is contemplated to publish the papers on U. S. P. Revision, beginning with the February issue of the JOURNAL. The discussions on the papers will also be printed at that time.

² The report and action thereon by the Section is printed under Minutes of the first session; see preceding pages.

The Section adjourned to convene in joint session with the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy.

JOINT SESSION OF THE SECTION WITH THE AMERICAN CONFERENCE OF
PHARMACEUTICAL FACULTIES AND THE NATIONAL ASSOCIATION
OF BOARDS OF PHARMACY.

President John Culley of the National Association of Boards of Pharmacy called the Joint Session of the Section on Education and Legislation, A. Ph. A., the American Conference of Pharmaceutical Faculties and National Association of Boards of Pharmacy to order at 4.00 P.M. Thursday, August 28.

The report of the Fairchild Scholarship Committee was called for and presented by Chairman E. G. Eberle, as follows:

REPORT OF THE CHAIRMAN OF THE FAIRCHILD SCHOLARSHIP COMMITTEE.

NEW YORK, August 25, 1919.

TO THE JOINT SESSION OF THE SECTION ON EDUCATION
AND LEGISLATION, AMERICAN PHARMACEUTICAL
ASSOCIATION, THE AMERICAN CONFERENCE OF
PHARMACEUTICAL FACULTIES, AND NATIONAL AS-
SOCIATION OF BOARDS OF PHARMACY:

The first plan of award formulated by the Fairchild Scholarship Committee was not so very different from that approved by the British Fairchild Scholarship Committee. In Great Britain an award of a Fairchild Scholarship has been made annually for a number of years; as far as the Chairman knows, the method has been satisfactory.

Under the first plan formulated by our Committee there were a number of applications and an award was made. Under the present demands, adopted at the Convention in Indianapolis, there have been no applicants and hence no further awards.

The scholarship should be made available for a student, or prospective student, of pharmacy; unquestionably, that was the object of the donor. In order to do this it may be necessary to change existing requirements, and so that the matter may be brought up for consideration the Chairman has taken the liberty of handing a copy of this report to the Chairmen of the respective bodies represented here in Joint Session.

Copies of the transactions relating to the Fairchild Scholarship were sent to the schools of the Conference and a request made that they indicate whether the present plan was satisfactory, or, if not, to submit suggestions for award of the Scholarship to the Secretary, Theodore J. Bradley; these are made part of the report. The first letters received are included in the printed folder; typewritten copies of the others are attached.

Should you decide that the present requirements be continued the Committee will act accordingly; if you deem it advisable that a change be made, the Chairman would be pleased to have your instructions.

Hoping that the subject may have your consideration,

Respectfully submitted,

E. G. EBERLE, *Chairman.*

Chairman E. G. Eberle explained that while the Fairchild Scholarship Committee was not appointed by any of the bodies represented in the Joint Session, it was made up of the presiding officers of these and the editor of the JOURNAL A. PH. A. He stated that there were eleven letters from Schools of the Conference expressing their views relative to the award of the Fairchild Scholarship; of these four were in favor of the award being made for post-graduate work, and seven that the Scholarship be awarded to a second year student and that the candidates have the endorsement of their school.

Chairman John Culley stated that he had proposed a plan of award as President of the National Association of Boards of Pharmacy and this had been adopted by that Association. (See p. 879, October 1919, issue of JOURNAL A. PH. A.)

R. A. Lyman stated that he was responsible for the present method of award; that it made no great difference whether one or more persons go into pharmacy or not, but it did make

a great deal of difference whether pharmacy as a science was developed. He said that conditions had been unfavorable in the last two years, and that he would like to see the present plan of award continued so it might be given a fair trial, and therefore moved that the present plan of award be continued another year. Motion was seconded by C. B. Jordan, and so announced.

C. B. Jordan inquired as to how the Scholarship would be awarded under the plan as at present. J. W. Sturmer, Chairman of the Committee of Award, said that the conclusions of the Committee were, inasmuch as the Scholarship should go to a research worker, that the candidate be selected, not by examination, because this is not feasible, but by past record, and there were three specific points to be observed; his non-pharmaceutical record was to be taken into account, his professional pharmaceutical record, and then the research work done, set forth in papers, published in Journals, by thesis, deposited in colleges, etc.

W. G. Gregory moved that the plan of award adopted by the National Association of Boards of Pharmacy be approved by this Joint Session.

R. A. Lyman asked the privilege of accepting the Board's suggestion in the place of his own, with the consent of his second.

Theodore J. Bradley offered the suggestion that the candidates show their qualification for doing research work by submitting a thesis embodying the results of an original investigation.

The motion as accepted by R. A. Lyman was put to vote and carried. The suggestion of T. J. Bradley was referred to the Fairchild Scholarship Committee.

R. A. Lyman suggested that in view of the fact that the catalogs bearing the announcement of the Fairchild Scholarship had been issued the award for this year be made on present basis, and for next year the new method now adopted should apply. Agreed.

Secretary Theodore J. Bradley presented the report of the Proceedings of the American Conference of Pharmaceutical Faculties. (See p. 877, October issue JOURNAL A. PH. A.)

Secretary Bradley called attention to two recommendations of the President's address, namely, numbers 3 and 6: "That the Executive Committee take steps to have the Conference coöperate with other organizations to suitably memorialize the service rendered by pharmacists in the great war;" "That the Conference appoint a special committee to collect and distribute information on prerequisite legislation to aid in the securing of such legislation in States not yet having a prerequisite in pharmacy, this committee on the A. C. of P. F. to act jointly with a similar committee of the National Association of Boards of Pharmacy."

A motion was made to adopt the report, which carried.

E. L. Newcomb explained the Minnesota prerequisite law.

Jacob Diner inquired whether he had understood rightly that one year of college work was accepted as one year of practical experience in a drug store, *i. e.*, 7 months at college as the equal of 12 months in a drug store. He was informed that this was the case. Dr. Diner continued, that in New York the relation was month for month, up to a certain period, but that 48 months of practical experience in a drug store must be shown. He moved the adoption of the report. Carried.

Frantz Berg, of St. Louis, moved that not less than two years of practical experience be required for registration as a fully registered pharmacist.

This motion was concurred in.

Secretary H. C. Christensen read an abstract report of the proceedings of the National Association of Boards of Pharmacy. (See p. 878, October 1919, issue of the JOURNAL A. PH. A.) The report was on motion accepted, and the Joint Session of the Section on Education and Legislation A. Ph. A., the American Conference of Pharmaceutical Faculties and National Association of Boards of Pharmacy was adjourned.

SECTION ON HISTORICAL PHARMACY, AMERICAN
PHARMACEUTICAL ASSOCIATION.*

Abstract of the Minutes of the Sessions held in New York, August 28 and 29, 1919.

The first session of the Section on Historical Pharmacy was called to order by Chairman Hugo Kantrowitz on Thursday, August 28, at 10.20 A.M. The first order of business was the reading of the Chairman's address, which follows:

ADDRESS OF CHAIRMAN HUGO KANTROWITZ.

In calling the Historical Section of the American Pharmaceutical Association to order, I take this opportunity to thank the members for the high honor they have conferred upon me. The chairmanship came to me through no seeking on my part. Rather, as our fellow member Bodemann said at our last meeting, it was forced upon me as a "penalty" for being interested in the work of the Section. I am afraid, however, when the full significance of the penalty is understood, the members of the Section will feel that they have been "penalized," while I, the culprit, may not be able to show that the infliction of the penalty has brought about as many returns to pharmacy as some of the members might have reason to expect.

But I must confess that I am intensely interested in the work of the Section. The student of history has delved into the records of the past and evolved therefrom the story of mankind. He has discovered that where a nation has for many centuries occupied the same territory, the human plant yields to the influence of its own earth, air and sky, and the result is a new variety with its own characteristics. In a similar manner the growth of pharmacy may be likened to the development of a nation. Pharmacy is made up of many streamlets, each of which had flowed in its own narrow valley for a long time ere it joined any other. Sometimes the streams flowed side by side, yet unmingled and distinct. Sometimes there may have been the noise of contending forces, but gradually, so far as pharmacists are concerned, the streamlets lost their identity, and were merged into the mightier stream of pharmacy as we know it to-day.

In fact, so thoroughly have the varied elements of our origins blended in the composite operations of our profession that we now endeavor by the aid of the chronicler, collector and specialist to write and preserve for all time the real history of American pharmacy. Historic study is no new thing, and if we are to have a comprehensive grasp of the various ramifications and time-honored customs of our calling, we must in some way obtain a knowledge of what the past has contributed to the present, even if this knowledge can be given only in rough outline. Indeed, to piece together the acquisitions so obtained, and to coördinate the facts thus acquired so that they shall correctly represent our undertaking requires the conjoint efforts of many. It is in this direction the work of this Section has most to do. As the late Dr. Charles Rice, for many years Chairman of the United States Pharmacopoeial Revision Committee, said, "the future historian of American Pharmacy may be yet unborn," but I think we may readily believe that when he does appear, and does begin to portray with gifted pen the story of our origins and development, he will necessarily revert to the accomplishments of this association, and particularly to the work of this Section, which in the material it has already collected will furnish the structural foundation for more than one interesting chapter.

That the history of pharmacy should be taught in our colleges, seems to me most important. A study of the evolution of the United States Pharmacopoeia and the National Formulary is necessary if one would get a full understanding of what these books mean to the pharmacist and the places they occupy in our statutory legislation. Representative of a great republic in that they are not compiled and issued by royal or governmental edict, we have in them definitions and standards which reflect the spirit of Democracy and the majority conclusions of American scientific workers.

The history of pharmaceutical education in this country would furnish a number of interesting chapters to the present and future student of pharmacy. Early in our national life pharmacists became aware of the lack of facilities for pharmaceutical instruction and banded themselves together to found colleges. Later, the work was taken up by the various State universities, adding another chapter to educational methods. The apprentice system combined with the preceptor method, valuable as it was and is, gave way to the inroads of a new dispensation.

* Papers, with discussions thereon, will be printed apart from the Minutes.

Then followed the era of State organizations, whose primary object in most cases was to secure pharmacy legislation, and this once obtained, gave birth to boards of pharmacy. With their advent, came restrictive legislation and other measures relating to pharmacy, which proceeded in an undiminished volume, carrying in its wake such enactments as the Food and Drugs law, the Harrison narcotic act, with a whole host of State measures, such as reciprocal registration, and other legislation specifically relating to pharmacy and pharmacists in the various commonwealths. A line of continuity runs through all of our legislation, and to grasp the full significance and understand its full bearing on pharmacy requires much study from the viewpoint of pharmaceutical history.

So the work of this Section along various lines might be emphasized. There is every reason for the continuance of this body. Even now we are making history, and in the reconstruction period through which we are passing pharmacy is bound to be represented. Organized pharmacy is a unit for better recognition of its colleagues in the Government service, and this effort constitutes an epoch in our development. To a large extent the dominating rules of the future are evolved from the impulses and experiences of the past. The heroic age of America is said to have begun when civilization first set up its standard as a permanent ensign in the Western Hemisphere to plant a new empire. It was a period when the nation's first physical and moral conquests were achieved, and rude society, with all its impurities, was fused and refined in the crucible of progress. Pharmacy as part and parcel of this development has felt the effects of this refining process, which even now is under way. Take it all in all, the true pharmacist should find in the study of history, as exemplified by the work and materials collected by this Section, an intellectual diversion, which will contribute not a little to his general knowledge, and greatly emphasize his love for his calling.

I shall not attempt to weary you by continuing further. We are glad to welcome you to the Metropolis of the New World, for, had you the time and desire, you would here find much to illustrate the historical side of pharmacy. The program presented for this Section embodies a number of interesting subjects.

There being no recommendations in the address, it was accepted and referred to the Publication Committee.

The Historian then read his report, which follows:

REPORT OF THE HISTORIAN, AMERICAN PHARMACEUTICAL ASSOCIATION.

NEW YORK, August 28, 1919.

DEAR FELLOW MEMBERS:

The present condition of the drug business and of pharmacy is, in a degree, the consequence of the past, and accordingly history enables us to inquire as to the sources of the changes. Then, if we are wise, the lessons of the past will be utilized by us in shaping the future of pharmacy and the drug business; in other words, history is the depository which may be drawn upon for ideas and information of those who labored in pharmacy before our time.

The word "research" implies investigation and study of the past as well as making deductions for further possibilities. The historical significance of standards is admitted by supplementary work in the library with that of the laboratory. While the related investigations receive consideration in other Sections of the Association, there have been papers, valuable for reference and research work, presented in this Section on Historical Pharmacy. Researchers not infrequently have matter they do not deem of such immediate importance as suggests papers for other Sections; these should be submitted here. The Encyclopaedic Pharmaceutical Dictionary now being edited on the card system by the Wisconsin Pharmaceutical Experiment Station is designed for reference and research, and mention is made in this report because of the valuable historical data therein. A reproduction of one of these cards was printed in the June Journal of the A. Ph. A., page 516. In an article, "Looking Backward—Thinking Forward," our honored fellow member J. U. Lloyd has depicted very briefly but interestingly the development of a few of the American pharmaceutical manufacturing establishments. (See August Journal A. Ph. A., page 605). In the June number, page 451, the same author reviews the earlier history of pharmacy.

There is reason to believe that American Pharmacy will receive better recognition from the Government than heretofore, but it remains an historical record that pharmacy did not

receive due credit for its contribution to the medical service of the military forces. First of all, it was an injustice, but somewhat due to the fact that insufficient use was made of historical data of our war with Spain. It is important that the part of pharmacy and the work of pharmacists be included in the war history. The War Department desires data relative to the activities of pharmacy and pharmacists in the war. Such communications are to be addressed to the Historical Department of the War Department, Col. C. W. Weeks, Chief, or Major Frederick L. Paxson, Chief, Economical Section, Historical Branch.

Some State Pharmaceutical Associations have prepared historical reports and, likewise, schools of pharmacy. The part pharmacists have had in the war and their activities, under conditions that did not fit their training, speaks of their nobility and patriotism, and we may well have pride in their records. The question of establishing a Section for them in the American Pharmaceutical Association will come up at this meeting. It is not out of place here to commend the splendid work accomplished by the A. Ph. A. Advisory Committee for Soldier and Sailor Pharmacists. Through these sources there ought to come to this Section much pharmaceutical history, and which should be in our archives for reference. Neglect of these opportunities handicaps pharmacy.

It is to be regretted that none of the contributions to this Section thus far are serviceable for a display in the Smithsonian Institution. A pharmaceutical exhibit should be made possible and planned for its historical value. The committee having the matter in charge should be constituted of members residing in Washington. All schools have articles of historic interest relating to pharmacy; some can contribute from their collection of mortars and apparatus, while others could loan the products of plant analyses made in their laboratories, others preparations made by distinguished pharmacists or lines of preparations showing their development. It might be well for such committee to consult with those in charge of the Smithsonian Exhibit, and then correspond with schools, colleges and manufacturing houses relative to the possibility of arranging an exhibit that will have real value and reflect credit on pharmacy. Bi-weekly notes are issued by the Institution for information of its employees. Quoting, for example, from several:

"123 specimens of homeopathic medicinal preparations have been received, which are to be used in illustrating the fundamental principles of homeopathy."

"For the purpose of illustrating the large number of medicines from a single member of the vegetable kingdom, nux vomica, contributions have been received from pharmaceutical and chemical manufacturing houses."

"Equipments of a drug store—to this, apparatus, balances, etc., have been contributed."

"The office of the Surgeon General has contributed considerable material to illustrate hospital and medical treatment during the war."

The latter reference suggests that there is much material in the hospitals and storehouses of the Government that could be arranged to serve the purpose of the Exhibit. Much of this material will be disposed of at a loss. The extent of drug supplies used in the war is shown in the paper by our former member, Major George L. Burroughs, on "The American Red Cross Pharmacy in Paris," page 291 of the April 1919 issue of the Journal A. Ph. A. Incidentally, such display would show the kinds and forms of medications employed. Repetition is made, that the arrangement and purpose of the exhibit should be carefully studied, so that it may have educational, economic and historical value. Your attention is also directed to the report of "A National Pharmaceutical Collection" by the Acting Curator, F. L. Lewton, of the Division of Medicine, National Museum, page 44, January issue of the Journal A. Ph. A.

The sand of time runs; Death is untiring and blind; he takes away the young and the old, regardless of those for whom the living of his victims meant happiness and welfare, and on whose labors others looked to receive pleasure and profit during coming years.

According to the information that has come to the Historian, forty-six members died since the last report was made, and a number of our members have been bereaved of loved ones. In remembering those that have departed they are not wholly lost to us. May I therefore ask, in conformity with precedent, that we stand in silence for a moment in honor and memory of these departed and the pharmacists who made the supreme sacrifice during the World War.

Whenever reports were obtainable brief sketches of the deceased have been printed in the JOURNAL. The names of the deceased members follow:

Shulmyer, Chas. J., Providence, R. I.
 Dunn, John Augustus, Brooklyn, N. Y.
 Schmidt, Frederick M., Chicago, Ill.
 Kleinau, George, New York, N. Y.
 Gallagher, John C., Jersey City, N. J.
 Robertson, David, Governor's Island, N. Y.
 Talbott, W. A., Warren, Penna.
 Hall, Joseph P., Suffolk, Va.
 Drake, Charles, Woodbridge, N. J.
 Niece, Frederick E., Queens Village, L. I.
 Latham, Thomas, New York, N. Y.
 Hodges, Jesse D., Little Rock, Ark.
 Heidbreder, Albert H., Quincy, Ill.
 Lutz, Carl Wm., Ottawa, Ill.
 Kramer, J. E., Rochester, N. J.
 Snow, Charles Wesley, Syracuse, N. Y.
 Fuller, Charles, Chicago, Ill.
 Pegg, Henry Wilson, Kingston, Pa.
 Miller, Clifford O., Baltimore, Md.
 Peters, T. H., Plains, Penna.
 Rupp, Peter, Algiers, La.
 Walker, J. P., New Orleans, La.
 Vordick, A. H., St. Louis, Mo.

Cooper, James W., Plymouth, Mass.
 Mayer, Peter, Marshalltown, Iowa.
 Wolf, M. F., Baltimore, Md.
 Burge, James Oscar, Nashville, Tenn.
 Martin, J. F., Bourbon, Ind.
 Block, Mitchell, Excelsior Springs, Mo.
 Haney, E. R., Philadelphia, Pa.
 Patton, John F., York, Penna.
 Kahn, Joseph, Brooklyn, N. Y.
 Ziegler, P. M., Reading, Pa.
 Deck, L. C., Girard, Ill.
 Good, James M., St. Louis, Mo.
 Perry, F. W. R., Detroit, Mich.
 Stone, Clarence G., Mt. Vernon, N. Y.
 Thome, Edgar R., Jackson, Mich.
 Schmid, Miss Rose P., Chicago, Ill.
 Hauser, Chas. A., Covington, Ky.
 Jacobs, J. F., Dyersburg, Tenn.
 Kettler, E., Jr., Milwaukee, Wis.
 Apple, Franklin M., Philadelphia, Pa.
 Etzel, John L., Clear Lake, Iowa.
 Holmes, Clayton W., Elmira, N. Y.
 Cornell, Edward A., Williamsport, Pa.

From the sketches that have appeared it will be discerned that the departed served not only the Association but their State organizations and pharmacy. We lost two Ex-Presidents, John F. Patton and James M. Good; both had passed the three score and ten by many years, and still, until their departure, they were active in pharmacy. One of the deceased was an Honorary President, James O. Burge; no member was more deeply concerned in the welfare of the Association than he. Franklin M. Apple, an Ex-Vice-President, died July 12; few knew how deeply he loved this Association, but all of those who knew him realized his earnestness in every laudable undertaking for pharmacy. To make further references to the deceased would necessitate that none be overlooked, for all of them did splendid service, and that would require many pages and a repetition of much that has been said about them in print.

Lieutenant-Colonel E. F. Harrison, head of the British Chemical Warfare Service, who died November 6, 1918, was a prominent and beloved British pharmacist and active in the affairs of the British Pharmaceutical Society.

The Section on Historical Pharmacy is indebted to many contributors; the writer will be pardoned, on account of the large and interesting number of contributions, for specifically mentioning those made by Dr. H. M. Whelpley. As heretofore, the contributions were of photographs, clippings and sketches. They have been scheduled and filed in the office of the Historian. The list is submitted. We have received 204 photographs and prints; 4 photographs and sketches; 8 sketches, no photographs; and a large number of clippings relating to pharmacy and pharmacists.

The growing interest in this Section evidences its importance, and the possibilities that are before it have been pointed out to stimulate our efforts.

Thanking you, and with the assurance that I am always glad to be of service.

Respectfully submitted,

E. G. EBERLE, *Historian*.

The report of the Historian was referred to the Publication Committee.

The first number of the program was an illustrated lecture by Dr. H. M. Whelpley, on "The History of the American Pharmaceutical Association and its Presidents." The lecture was extremely interesting on account of the many lantern slides; most of the pictures of the ex-Presidents were taken while not engaged in their duties for the Association and some of them were not aware of the camera's record. A vote of thanks was extended to the lecturer, and also to Mrs. Whelpley, who contributed to the program by her work on the lantern slides.

Ex-President John F. Hancock presented "Some Observations on Pharmacy Since 1854." These are to be prepared in the form of a paper and presented to the Section at a later date. The following sketch of the late James O. Burge was presented by E. A. Ruddiman:

JAMES OSCAR BURGE.

Mr. J. O. Burge died at his home in Nashville, Tennessee, February 6, 1919. This came as a surprise to many of his friends although those who saw him frequently during the last year realized that he was failing.

He was born near Bowling Green, Ky., March 27, 1848, where he received his preparatory training. After spending several years in a drug store, he attended the Philadelphia College of Pharmacy, graduating with honors in 1876. He returned to Bowling Green and bought a drug store and later owned one in Franklin, Kentucky. In 1885 he moved to Nashville, where he had several stores at different times. Later he was chemist for Berry, Demoville & Co., resigning from this position in 1918 to give his time to the Wharton Chemical Company which he had organized some years before.

Mr. Burge was always an active member of the Tennessee Pharmaceutical Association, serving as its president for two years. He was a strong supporter of the bill which became the first pharmacy law in this state. He was a life member of the American Pharmaceutical Association, joining in 1878.

In 1877 he married Miss Nannie B. Hill of Nashville. She and two sons survive him. One of the sons is not married and lives with his mother.

A few personal words regarding Mr. Burge. My acquaintance with him began nearly thirty years ago. One of the first things he did for me was to ask me to join the A. Ph. A. I have him to thank for starting me in this Association. This Association lay very close to his heart. If we were together at any time for a little chat, sooner or later mention would be made of it. There was nothing he would not undertake in order to get new members in and to keep old members from dropping out. He gave much thought and time to its advancement and welfare.

He was the soul and life of the Nashville Branch and among the last words to some of us he urged that we keep the Branch alive and active. It was one of his keenest disappointments to be sick at the time this National Association met in Nashville.

I doubt if many of you realize the pleasure you gave him and the good you did when you made him our honorary president and I know that we honored ourselves by that action.

Always quiet, lovable, and undemonstrative, ever ready to put himself out to serve, he had an abiding faith and love for this Association. His ideals were of the highest and his efforts to obtain these for his chosen profession were untiring. The Association in losing him has lost one of its staunchest supporters.

Chairman Kantrowitz appointed the following Nominating Committee: E. G. Eberle, C. B. Lowe and W. O. Richtmann.

The first session of the Section on Historical Pharmacy was then adjourned, to meet on Friday, August 29th.

SECOND SESSION.

The second session of the Section on Historical Pharmacy was called to order by Chairman Hugo Kantrowitz on Friday, August 29, at 10.20 A.M.

The following papers were read and referred to the Publication Committee:

"The Pharmacy and Medicine of George Eliot," by A. W. Linton.

"Galen," by Louis Gershenfeld.

"A Continuation of the History of the New Jersey Pharmaceutical Association," by E. A. Sayre.

"Medals in Pharmacy and the Allied Sciences," by Caswell A. Mayo. The author of the latter paper first explained the types of the medals in general, and then individual medals in greater detail. Several collections were exhibited. (The paper will be printed in a later issue of the JOURNAL.)

Dr. Curt P. Wimmer delivered an address on "Urinary Examination in the Middle Ages," which he illustrated by lantern slides.

Charles M. Ford presented an illustrated paper on the "Boston Ether Monument Erected

to the Unnamed Discoverer of General Anaesthesia." (The picture of Dr. Long, physician-pharmacist, the discoverer of general anaesthesia, is used as a frontispiece in this issue of the JOURNAL, and it is hoped to print the paper by Mr. Ford in this number also.)

A paper entitled "The Pioneer Drug Store of the Wisconsin Historical Museum" was presented by Edward Kremers.

F. E. Stewart read a paper on "Some Observations Concerning the Origin and Evolution of Pharmacy and Drug Therapeutics," following which Ambrose Hunsberger moved that the paper by Dr. Stewart be referred to the President of the Association, with the request that he appoint a special committee to consider the question of reorganizing the American Pharmaceutical Association on the basis of making it a delegate body. After considerable discussion it was moved to refer the paper and recommendation to the Council; the latter motion was carried.

The Nominating Committee reported the following nominees: W. O. Richtmann, of Madison, Wis., for *Chairman*, and Curt P. Wimmer, of New York, for *Secretary*. There being no further nominees it was moved that the Chairman cast the ballot of the Section for the nominees. This was carried, and the nominees declared elected.

After installation of the officers the Section was adjourned.

REPORT OF THE GENERAL SECRETARY.

TO THE PRESIDENT AND MEMBERS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION:

Year Book.—Since the last convention the sixth volume of the Year Book has been issued and distributed. Copies have been sent to the leading pharmaceutical journals for review.

Remainders of the Proceedings, Year Book and Journal.—formerly stored at Cincinnati, have been removed to Chicago and stored temporarily in the College of Pharmacy building. The reasons for this removal have already been published in Council Letter No. 10 (see JOURNAL A. PH. A., February 1919, pp. 1571-58). An inventory of the property thus stored together with recommendations for its disposal has been published in Council Letter No. 12 (see JOURNAL A. PH. A., March 1919, p. 232). These recommendations were approved with some modifications in Council Letter No. 15. (see JOURNAL A. PH. A., May 1919, p. 433). With the assistance of an advertisement in the Journal the sales from this stock have been somewhat increased, as indicated in the report which follows:

National Formulary.—As expected, the sales of the N. F. IV continued to fall during the year 1918 and only 3251 copies were sold, yielding an income of \$4408.97. However, the tide seems to have turned and as conditions are becoming normal, an increased sale for 1919 is indicated. The total sales of N. F. IV to July 1, 1919, were 26,850 copies, yielding a gross income of \$46,655.49. A detailed report follows:

Badges and Bars.—Attention is called to the greatly increased cost of badges and bars. Fortunately our stock of badges is sufficient for present needs, but bars which cost us 85c each in 1917 and \$1.18 each in 1918 now cost \$1.58 each. However, there seems no alternative but to charge a proportionate increase and continue to supply the bars. The sales, as might be expected, have fallen off somewhat.

A. RECEIPTS AND EXPENDITURES ON ACCOUNT OF NATIONAL FORMULARY IV.

JANUARY 1, 1918 TO DECEMBER 31, 1918, INCLUSIVE.

I. Expenditures.

Journal A. Ph. A.—reprints	\$ 6.50
J. B. Lippincott Co.—publication	604.00
Transferred to the A. Ph. A. Research Fund	
(Net income 1917)	4,059.24
Total expenditures	\$4,669.74

*Presented at second General Session of the Association, New York meeting, 1919, adopted and ordered to be printed.

II. Receipts.

Quarter ending March 1, 1919.....	\$918.26	
Quarter ending June 1, 1918.....	1,083.49	
Quarter ending September 1, 1918.....	407.22	
Quarter ending December 1, 1918.....	2,000.00	
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Total remitted to Treasurer.....		\$4,408.97

B. SUPPLEMENTARY REPORT.

RECEIPTS AND EXPENDITURES ON ACCOUNT OF NATIONAL FORMULARY IV.

JANUARY 1 TO JULY 1, 1919.

I. Expenditures.

J. B. Lippincott Co.—publication.....	\$ 230.25	
Transferred to the A. Ph. A. Research Fund (net income 1918).....	1,976.49	
<hr/>		
Total expenditure 1919—first half.....		\$2,206.74

II. Receipts.

Quarter ending December 1, 1918 (balance).....	\$964.51	
Quarter ending March 1, 1919.....	1,040.91	
Quarter ending June 1, 1919.....	1,159.35	
<hr/>		
Total remitted to Treasurer.....		\$3,164.77

C. SUMMARY OF QUARTERLY REPORT OF SALES.

March 1, 1918:			
Bindings.....	Copies sold.	Price.	Amount.
Muslin.....	460	\$ 1.605	\$ 738.30
Buckram.....	93	1.935	179.955
Interleaved.....			
<hr/>			
Total.....	553		\$918.26
Remitted to Treasurer.....			\$918.26
June 1, 1918:			
Muslin.....	516	\$ 1.605	\$828.18
Buckram.....	126	1.935	243.81
Interleaved.....	4	2.875	11.50
<hr/>			
Total.....	646		\$1,083.49
Remitted to Treasurer.....			\$1,083.49
September 1, 1918:			
Muslin.....	112	\$1.605	\$179.76
Buckram.....	122	1.935	236.07
Interleaved.....	4	2.875	11.50
<hr/>			
Total.....	238		\$ 427.33
Less freight.....			20.11
Remitted to Treasurer.....			\$407.22
December 1, 1918:			
Bindings.....	Copies sold.	Price.	Amount.
Muslin.....	1,662	\$1.605	\$2,667.51
Buckram.....	152	1.935	294.12
Interleaved.....	1	2.875	2.875
<hr/>			
Total.....	1,815		\$2,964.505
Remitted to Treasurer.....			\$2,964.51.

(N. B.—Of this amount \$2,000.00 was received December 19, 1918, and the balance, \$964.51, January 15, 1919, and remitted to the Treasurer on those dates.)

March 1, 1919:

Muslin.....	475	\$1.605	\$762.375
Buckram.....	138	1.935	267.03
Interleaved.....	4	2.875	11.50

Total.....	617		\$1,040.905
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Remitted to Treasurer.....			\$1,040.91
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June 1, 1919:

Muslin.....	525	\$1.605	\$842.625
Buckram.....	179	1.935	346.365
Interleaved.....	6	2.875	17.250

Total.....	710		\$1,206.240
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Credit for 5 interleaved copies returned.....			14.375
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\$1,191.87

Less freight.....			32.52
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\$1,159.35

Remitted to Treasurer.....			\$1,159.35
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D. COMPLETE SUMMARY OF COPIES OF N. F. IV PRINTED AND BOUND.

By J. B. LIPPINCOTT Co., JULY 1, 1919.

Series.	Muslin.	Buckram.	Interleaved.	Total.
Series A.....	4,500	5,000	500	10,000
Series B.....	5,700	4,100	200	10,000
Series C.....	4,000	1,000	5,000
Series D.....	2,700	200	2,900

Total bound.....	16,900	10,300	700	27,900
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Series E. In loose sheets (printed but not bound.).....				100
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Total printed.....				28,000
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F. COMPLETE SUMMARY OF COPIES OF N. F. IV. RECEIVED AND SOLD BY THE
MIDLAND PUBLISHING Co.

Sales.

Year.	Muslin.	Buckram.	Interleaved.	Total.
1916.....	7,993	7,279	487	15,759
1917.....	4,472	1,975	76	6,523
1918.....	2,750	493	8	3,251
1919 (1st 6mo.).....	1,000	317	5	1,322

Total.....	16,215	10,064	576	26,855
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(Includes 48 copies distributed as complimentary.)

Stock at Midland Publishing Co., June 1,

1919.....	191	197	157	545
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In transit from Lippincott to Midland....	500			500
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Total copies received.....				27,900
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G. TOTAL RECEIPTS FROM N. F. IV.

July 1, 1916 to June 1, 1919 Inclusive.

(Remitted to Treasurer.)

Year:

1916.....		\$28,108.69
1917.....		10,973.06
1918.....		4,408.97
1919 (6 months).....		3,164.77

Total.....		\$46,655.49
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H. ACCOUNT OF N. F. III. FOR THE YEAR 1918.

Receipts—Sales and Collections.....	\$1.50
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I. STOCK ON HAND OF N. F. III.

Cloth bound, plain.....	148
Cloth bound interleaved.....	34
Sheep bound plain.....	9
Sheep bound interleaved.....	28

Total.....	219
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J. ACCOUNT OF PROCEEDINGS AND YEAR BOOKS.

I. Receipts:

Sales January 1, 1918 to December 31, 1918.....	\$63.10
Supplementary:	
Sales January 1, 1919 to July 2, 1919.....	84.05

II. Expenditures January 1, 1918 to December 31, 1918.

Year Book Vol. V.....	\$2,950.81
Storage in Cincinnati on Stock of Year Books and Pro-	
ceedings.....	25.00

Supplementary:

January 1, 1919 to July 1, 1919:

Year Book Vol. V.....	9.58
Bringing stock and Year Books and Proceedings to Chicago	290.81

III. Stock of Proceedings (approximately only.)

Cloth bound.....	3,000
Paper bound.....	1,200
Unbound.....	2,000

IV. Stock of Year Books (approximately only.)

Vol. 1, 1912.....	200 (copies.)
Vol. 2, 1913.....	350 (copies.)
Vol. 3, 1914.....	400 (copies.)
Vol. 4, 1915.....	270 (copies.)
Vol. 5, 1916.....	310 (copies)

K. ACCOUNT OF BADGES AND BARS.

January 1, 1918 to December 31, 1918.

I. Receipts from sale of Badges.....	\$18.80
(12 Chicago — \$1.25—2 Indianapolis — 90c, 1 Badge \$2.50).	

II. Expenditures:

A. H. Fetting, 25 Chicago Bars.....	\$29.62
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III. Stock on hand July 1, 1919:

Gold badges.....	10
Gold bars.....	88

L. SUMMARY OF RECEIPTS.

January 1, 1918 to December 31, 1918, Inclusive.

Date of Remittance 1918:	Badges and Bars.	Proc. and Year Book.	N. F. IV.	Misc. (N. F. 3).	Total.
Mar. 1.....		\$7.20	\$918.26		\$925.46
April 1.....		13.60			13.60
June 4.....		4.00	1,083.49		1,087.49
July 1.....		23.30			23.30
July 31.....		2.00			2.00
Aug. 31.....	13.80	5.00			18.80
Sept. 10.....	2.50		407.22		409.72
Dec. 30.....	2.50	8.00	2,000.00	\$1.50	2,012.00
Total.....	18.80	\$63.10	\$4,408.97	\$1.50	\$4,492.37

JOURNAL OF THE

M. SUPPLEMENTARY.

SUMMARY OF RECEIPTS.

January 1, 1919 to July 2, 1919.

Date of Remittance 1919:	Proc. and Year Book.	N. F. IV.	Miscellaneous.	Total.
Jan. 15.....	\$2.50	\$964.51		\$967.01
Feb. 28.....	3.00		1.20(N.F. 2.)	4.20
Mar. 8.....	4.00	1,040.91	12.00(Bull-	1,056.91
Apr. 30.....	17.35		7.50 etin.)	24.85
May 31.....	7.60		(Waste paper.)	7.60
June 6.....		1,159.35		1,159.35
July 2.....	43.60			43.60
Total.....	\$78.05	\$3,164.77	\$20.70	\$3,263.52

Respectfully submitted,

WM. B. DAY, *General Secretary.*

AMERICAN PHARMACEUTICAL ASSOCIATION FINANCES.

JANUARY 1 TO AUGUST 15, 1919.*

BY HENRY M. WHELPLEY.

(Addenda to the treasurer's report for the fiscal year, 1918, published in the Journal of the A. Ph. A., Volume VIII, No. 8, August 1919, p. 654.)

The funds in the hands of the treasurer may be classified as follows:

- a. Six Permanent Funds.
- b. Two Current Funds.
- c. Four Trust Funds.
- d. One Special Committee Fund.

Life Membership Fund.—Provision for the first permanent fund was made in 1856 when the association adopted a by-law, defining life membership and directing that the fees be invested as a separate fund. In 1870, the treasurer stated that 476 had relinquished their life membership and 96 had declined to do so. In order to help out the finances, the life members had been requested to become contributing members. No mention of a Life Membership Fund appears until 1880 when (Proc. A. Ph. A., 1880, p. 524) the treasurer reports \$75.00 to the credit of this fund. It is evident that the spirit of the by-laws was ignored so far as the fund was concerned up to 1880.

During the thirty-nine years since that small beginning, the fund has grown from seventy-five dollars to \$24,562.21. The interest income from the fund has increased from nothing in 1880 to \$762.87 for 1918. The sum of seventy-five dollars from fees was also added to the fund in 1918.

Permanent Funds.—We now have six permanent funds with a total investment of \$55,501.07. The interest on the six permanent funds during 1918 was \$1,449.27. This is equal to the annual dues of 290 members and comes without expense.

However, only the interest of the Life Membership Fund is at present available for the current expenses of the association (See Constitution, Article IV). When the A. Ph. A. Endowment Fund which is now \$7,616.89 reaches \$25,000, then one half of the annual income from that fund may be used for any purpose deemed wise by the Association (See A. Ph. A. Proc., 1906, p. 99).

Ebert Legacy Fund.—It is possible that the interest from the Ebert Legacy Fund may annually be used for current expenses when the fund reaches \$10,000.00. (See Council letter No. 8, February 18, 1910.) The fund is now \$4,625.08. When the interest is available it may be used for such purpose as the council considers will best commemorate the founder.

* Presented at the New York City meeting, American Pharmaceutical Association, August 26, 1919.

The *Ebert Prize Fund* which was \$500.00 when founded in 1873 has reached \$1,262.76. The interest for 1918 was \$48.67. By the action of the Council, the prize was made \$25.00 for a number of years in order to have the fund increase to \$1,000.00. The last award was \$40.00.

The *Current Funds* are two in number, both available for current expenses. One is carried under the name, "General Fund," and consists of \$10,000.00 face value in St. Louis 4% Gold Bonds. The interest of \$400.00 is annually placed in the checking account in the International Bank of St. Louis. This checking account is the other current fund and now amounts to \$23,296.30. The money draws 3% on the daily balance which amounted to \$544.35 for the year 1918. Thus, the interest on the Current Funds, during the past fiscal year was \$944.35 or the equivalent of annual dues from 190 members. The total Current Funds to-day are \$33,296.30.

I recommend that the treasurer be authorized to transfer a sum not exceeding \$15,000.00 from the checking account in the International Bank of St. Louis to the Boston Penny Savings Bank where the money will earn $4\frac{1}{4}\%$ interest compounded semi-annually.

On January 1, 1916, the cash in the Current Fund was \$87.25. The growth to \$23,296.30 on August 15, 1919, is largely due to profit on the National Formulary and interest on the Current Funds.

The war made a marked impression on the annual payments for 1918. We have now practically as many payments for 1919 as were made for 1918. The increased expense for printing and the high cost of living brought up the general expenses of the association for 1918. The interest on the Life Membership Fund was \$814.96 and is an available and legitimate part of the membership contribution. But in 1918, the total sum received from annual dues was \$875.74 less than the overhead expense, plus the net cost to the Association of the Year Book and Journal. Perhaps there is some consolation in learning that in 1869 the Association expense per member was \$6.41 and the dues were only \$3.00. There is certainly satisfaction in knowing that the showing for 1919 is much more favorable. Also, that we have \$33,296.30 to our credit for a rainy day.

Trust Funds.—The Association holds four funds in trust. The money for some of them was raised for specific purposes. The others came to the A.Ph.A. without definite conditions.

The *Wm. Procter, Jr., Monument Fund* was established in 1904, to place a monument in the Smithsonian grounds. The exigencies of the war and other untoward conditions have prevented the conditions being carried out. The fund is now \$9,509.40. The interest for 1918 was \$280.44. The fund is thus growing from interest in addition to occasional contributions.

The *College Prize Fund* is now \$42.58. It was originally \$25, given the A. Ph. A. in 1905, to pay for five prize memberships. The prizes have never been claimed.

I recommend that the entire amount be added to the Endowment Fund and thus increase the interest and save some of the expense of caring for the fund.

The *Rice Memorial Fund* of \$191.97 is another stray trust. It was left over from a fund which served its full purpose. The Board of Trustees of the United States Pharmacopoeial Convention passed it on to the A. Ph. A. in order to dispose of it.

I recommend that the full amount be added to the Endowment Fund.

The *Joseph P. Remington Honor Medal Fund* of \$1,021.25 is the most recent of the Trust Funds. A special report on it will be made by the secretary of a special committee of the New York Branch which established the Fund in 1918.

The *Soldier and Sailor Fund* of \$693.57 is a special committee fund raised and being expended for a specific purpose. The chairman of the committee will report on the same. I do not hold this fund as treasurer of the A. Ph. A. but as an individual member of the A. Ph. A., who happened to be selected as treasurer for the committee. I thought best, however, to mention the fund here.

A Summary of the Funds.—A detailed financial statement of each A. Ph. A. Funds will appear elsewhere in this report. A summary follows here:

<i>Funds.</i>	<i>August 15, 1919.</i>	<i>January 1, 1919.</i>	<i>Gain.</i>
Permanent.....	\$55,501.07	\$51,467.14	\$4,033.93
Trust.....	10,765.20	10,468.56	296.64
Current.....	33,296.30	29,716.91	3,579.39
	<hr/>	<hr/>	<hr/>
	\$99,562.57	\$91,652.61	\$7,909.96

Auditing the Treasurer's Report.—The 1917 report was audited by a registered accountant but a committee of the Association was assigned the duty of auditing the 1918 records. The auditors were very painstaking and went carefully over all the details. Not being able to work continuously, the audit was extended over several weeks. This prevented publishing the financial record for 1918 earlier than in the A. Ph. A. Journal for September 1919. It is an imposition on our members to ask them to audit such extensive records as we now have in the office of the treasurer. Only those who have had the work realize what it means to check up the \$100,000 in the small amounts handled by the A. Ph. A.

I recommend that the rules of finance be so amended that provision be made for the audit of the treasurer's account by a professional auditor. Below is a copy of the report of the committee for 1918.

ST. LOUIS, MO., July 14, 1919.

To The Officers and Members of the American Pharmaceutical Association:

Your committee appointed to audit the books of Treasurer H. M. Whelpley for the fiscal year of 1918 begs to report that it has very carefully examined the books, vouchers and accounts of the treasurer and has found them to be correct in every detail. The buttons and pins of the association on hand were counted and checked with the number on hand, January 1, 1918, and the number sold from January 1, 1918, to July 8, 1919. The safe deposit box of the association at the American Trust Co., in St. Louis, was examined and found to contain the following bonds called for by the Treasurer's Books:

Procter Memorial Fund.

U. S. Liberty Bond—2nd 4% Registered.....	No. 7,840	\$1,000
U. S. Liberty Bond—2nd 4% Registered.....	7,841	1,000
U. S. Liberty Bond—2nd 4% Registered.....	7,842	1,000
U. S. Liberty Bond—2nd Conv., 4 $\frac{1}{4}$ % registered.....	3,393	5,000

\$8,000

Ebert Legacy Fund.

1 St. Louis Pub. Bldg. & Imp. Regis. Gold Bond.....	No. 766	\$2,000
U. S. Liberty 2nd 4% Reg. Bond.....	7,838	1,000
U. S. Liberty Bond Registered.....	7,839	1,000

\$4,000

Joseph P. Remington Honor Medal Fund.

1 U. S. Liberty Loan Bond 3rd Conv. 4 $\frac{1}{4}$ % registered.....	No. 91,879	\$1,000
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\$1,000

Centennial Fund.

1 Mass. State 3% Reg. Bond 3%.....	No. 1,705	\$1,000
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\$1,000

Life Membership Fund.

1 Mass. State 3% Reg. Bond.....	No. 1,701	\$10,000
1 Mass. State 3% Reg. Bond.....	1,702	1,000
1 Mass. State 3% Reg. Bond.....	1,703	1,000
1 Mass. State 3% Reg. Bond.....	1,704	1,000

\$13,000

Endowment Fund.

U. S. Liberty Bond 4th 4 $\frac{1}{4}$ % Registered.....	No. 6,605	\$5,000
U. S. Liberty Bond 4th 4 $\frac{1}{4}$ % Registered.....	95,909	1,000
U. S. Liberty Bond 4th 4 $\frac{1}{4}$ % Registered.....	95,910	1,000

\$7,000

A. Ph. A. Research Fund.

U. S. Liberty Bond 2nd 4% Registered.....	No. 646	\$5,000
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\$5,000

General Fund Bonds.

St. Louis City Bond Registered.....	No. 705	\$1,000
St. Louis City Bond Registered.....	706	1,000
St. Louis City Bond Registered.....	707	1,000
St. Louis City Bond Registered.....	708	1,000
St. Louis City Bond Registered.....	709	1,000
St. Louis City Bond Registered.....	717	5,000

\$10,000

CHARLES E. CASPARI,

FRANCIS HEMM.

FRED W. SULTAN, *Chairman.*

Bonds Held by the A. Ph. A.—The above report lists \$49,000 of bonds, face value, in the association safe deposit box on January 1, 1918. Acting under authority of the Council at the 1918 meeting and by approval of the Committee on Finance, the Treasurer has since invested several of the funds in Fourth Liberty Loan 4 $\frac{1}{4}$ % Gold Bonds. This has increased the bonds in the safe deposit box to \$75,500 face value. The list on August 15, 1919, is as follows:

General Fund.....	\$10,000
Life Membership Fund.....	24,200
Ebert Prize Fund.....	1,200
Centennial Fund.....	3,300
Endowment Fund.....	7,600
Ebert Legacy Fund.....	4,600
Research Fund.....	14,000
Wm. Procter, Jr., Fund.....	9,500
Chas. Rice Memorial Fund.....	100
Jos. P. Remington Honor Medal Fund.....	1,000

Total on hand, August 15, 1919.....	\$75,500
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Registered Bonds.—All bonds of \$1,000 denomination or more have been registered in the name of the "American Pharmaceutical Association." The state and the city bonds are all registered and specify the fund to which they belong. The government refuses to register bonds in the name of a fund unless the fund is controlled by trustees. The registered bonds cannot be sold nor hypothecated without formal action by the Council of the A. Ph. A.

The Coupon Bonds are negotiable in the market.

I recommend that the bonds of small denomination be held for the present in coupon form. Some are \$50's, others \$100's. They are distributed in the funds, as follows:

Life Membership Fund.....	\$200
Ebert Prize Fund.....	200
Centennial Fund.....	300
Endowment Fund.....	600
Ebert Legacy Fund.....	600
Procter Monument Fund.....	500
Rice Memorial Fund.....	100

Total Coupon Bonds.....	\$2,500
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The Purchase of Bonds in 1919.—In buying bonds, the Treasurer has watched the market and endeavored to purchase at the most opportune time. We have been fortunate in saving the usual commission on nearly all of the bonds. Several of the funds were on time deposit and the withdrawals were made at or near interest periods. The 4 $\frac{1}{4}$ % interest is based on the face value of the bonds, all of which were bought at a discount. With the Permanent Funds, the total

discount was \$754.06 and for the Trust Fund, \$70.14, making \$824.20 for the \$16,500 of bonds purchased since January, the close of the fiscal year, 1918.

Thus, the $4\frac{1}{4}\%$ Liberty Bonds give a better rate of income than did the money at $4\frac{1}{4}\%$ interest in the Boston Penny Savings Institution. The rate on the bonds is insured for a longer period than is money on deposit.

Investment in U. S. Liberty Bonds, 1919.

<i>Permanent Funds.</i>	<i>Market price.</i>	<i>Investment (face value).</i>	<i>Gain.</i>
Life Membership Fund.....	\$1,120.93	\$1,200.00	\$79.07
Centennial Fund.....	2,187.36	2,300.00	112.64
Ebert Prize Fund.....	1,145.87	1,200.00	54.13
A. Ph. A. Research Fund.....	8,557.72	9,000.00	442.28
A. Ph. A. Endowment Fund.....	560.00	600.00	40.00
Albert E. Ebert Legacy Fund.....	574.06	600.00	25.94
	<hr/>		
	\$14,145.94	\$14,900.00	\$754.06
<i>Trust Funds.</i>			
Wm. Procter, Jr., Monument Fund.....	\$1,434.06	\$1,500.00	\$65.94
Chas. Rice Memorial Fund.....	95.80	100.00	4.20
	<hr/>		
	\$1,529.86	\$1,600.00	\$70.14
<i>Summary.</i>			
Wm. Procter, Jr., Monument Fund.....	\$1,434.06	\$1,500.00	65.94
Chas. Rice Memorial Fund.....	95.80	100.00	4.20
	<hr/>		
	\$1,529.86	\$1,600.00	\$70.14
<i>Summary.</i>			
Permanent Funds.....	\$14,145.94	\$14,900.00	\$754.06
Trust Funds.....	1,529.86	1,600.00	70.14
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	\$15,675.80	\$16,500.00	\$824.20

The Bank, Savings and Safe Deposit Accounts.—The Association has twelve accounts in the International Bank of St. Louis and five in the Boston Penny Savings Bank. Not being able to check against a savings account, it became necessary to open some new accounts in the International Bank of St. Louis in order to have the money available when purchasing bonds for certain funds. Thus, we now have a total of seventeen bank and savings accounts. These, together with the ten separate funds in the safe deposit box, make a total of twenty-seven records to handle. The investments in bonds have reduced the money in bank and savings but multiplied the number of records.

Cash in Funds.—We now have \$766.27 of cash in the various Permanent and Trust Funds left after the bond investments to date. To this will be added more than \$2,000 interest due in October and November on bonds. Will the Association continue to buy bonds?

I recommend that the treasurer be authorized to make further purchases of United States Bonds as the money accumulates in the funds in sufficient sums to justify such investments.

The Association Assets, August 15, 1919,

St. Louis City Bonds 4%.....	\$10,000.00
Cash in International Bank of St. Louis (This includes 1919 receipts from N. F. IV).....	23,296.30
	<hr/>
Available Assets.....	\$33,296.30
Permanent Funds.....	55,501.07
Funds held in Trust.....	10,765.20
	<hr/>
Total A. Ph. A. Assets.....	\$99,562.57
Soldier and Sailor Committee Fund.....	693.57
	<hr/>
	\$100,256.14

The Association assets, January 1, 1919, were \$91,652.61. If we omit the Soldier and Sailor Fund which is in the hands of a special committee and not an Association fund proper, we have a gain in assets of \$7,909.96 since the first of the year. Of this amount, \$824.20 is a difference between the price paid for bonds and the face value of the same. It should also be noted that we have not yet paid for the Year Book, published in 1919. Quite independent of the fluctuations of receipts for dues and the expenditures to meet overhead expenses, the cost of the Year Book and the small expense of the Journal, we are jogging along with an annual income of four thousand dollars or more from interest on our various funds.

The Treasurer's Bond.—The treasurer is bonded for \$15,000. The total funds handled since January 1, 1919, are \$99,562.57 and the year is not over. Of this amount \$23,296.30 is in cash in the Current Account and \$2,500 represents coupon bonds in the safe deposit box.

Should the bond of the treasurer be increased?

Summary of A. Ph. A. Disbursements, January 1 to August 15, 1919.

Salaries.....	\$3,512.50	
Year Book.....	8.98	
Printing, postage and stationery.....	298.15	
Clerical expenses, Secretary's office.....	288.00	
Miscellaneous expenses.....	349.09	
Committee on membership.....	12.10	
National Drug Trade Conference.....	61.00	
Certificates.....	5.00	
Historical section.....	2.00	
Women's section.....	11.20	
Section on scientific papers.....	16.00	
Section on Commercial Interests.....	6.75	
National formulary.....	362.75	
Journal (a).....	\$3,551.21	
Journal (b).....	326.30	
Journal (c).....	117.07	
Journal (d).....	78.67	
	\$4,073.25	\$9,006.77
Life Membership Fund.....	\$1,826.63	
Ebert Prize Fund.....	1,176.69	
Centennial Fund.....	2,361.29	
Endowment Fund.....	710.57	
Ebert Legacy Fund.....	708.56	
A. Ph. A. Research Fund.....	10,785.20	
Jos. P. Remington Honor Medal Fund.....	21.25	
Wm. Procter, Jr., Monument Fund.....	1,634.59	
Rice Memorial Fund.....	99.92	
College Prize Fund.....	.87	
		\$19,325.57
		\$28,332.34

A. Ph. A. Receipts from January 1 to August 15, 1919.

Cash on hand, January 1, 1919 (International Bank of St. Louis).....		\$19,716.91,
Annual dues and Journal for 1917.....	\$5.00	
Annual dues and Journal for 1918.....	70.00	
Annual dues and Journal for 1919.....	6,475.00	
Annual dues and Journal for 1920.....	310.00	
Annual dues and Journal for 1921.....	5.00	
	\$6,865.00	

Dues only of the A. Ph. A. for 1919.....	80.00	
Miscellaneous dues, A. Ph. A., for 1919.....	4.00	
1 Parchment Certificate of Membership @ \$5.00.....	5.00	
National Formulary IV.....	3,165.97	
Journal Advertising.....	2,940.16	
Journal Subscriptions.....	208.44	
Proceedings.....	57.05	
Year Book.....	33.60	
4 Plated pins and buttons @ 25 cents.....	1.00	
18 Gold pins and buttons @ \$1.00.....	18.00	
Miscellaneous.....	381.98	
Interest on St. Louis City Bonds for Current Funds...	400.00	
Interest on Deposits in International Bank of St. Louis	396.55	
Index (General).....	5.40	
Bank Exchange.....	.50	
		<hr/>
		\$14,562.65
Life Membership Fund.....	\$1,826.63	
Ebert Prize Fund.....	1,176.69	
Centennial Fund.....	2,361.29	
Endowment Fund.....	710.57	
Ebert Legacy Fund.....	708.56	
A. Ph. A. Research Fund.....	8,808.71	
Jos. P. Remington Honor Medal Fund.....	21.25	
Wm. Procter, Jr., Monument Fund.....	1,634.59	
Rice Memorial Fund.....	99.92	
College Prize Fund.....	.87	
		<hr/>
		\$17,349.08
Total receipts, January 1 to August 15, 1919....		\$51,628.64

The Membership.—From the Treasurer's point of view, the membership we have to-day is in better shape than was that of any previous year. This is a subject I would like to amplify were it opportune in a report of this nature. My work has been directed by an inflexible determination to follow the letter of the by-law, calling for the prompt payment of dues. I may not have found the best plan but my methods become more workable, year by year. Conditions, immediate and prospective, indicate a continued upward trend of the curve. We now have 323 members who owe for 1919. A year ago, the number who owed for 1918 was 381. The total number paying for 1918 was 2228. We have to date received dues for 1919 from 2184 or only 44 less than the total payments for all of last year. Sixty-two have paid ahead for 1920 and one sent in dues for 1921. It is ancient history but interesting in this connection to note that in 1869 the treasurer reported 356 delinquents at the September meeting and stated that the total contributing membership was not over 600 (Proc., 1869, p. 40).

Our older members have learned that it is either pay up promptly or be suspended. The newer members come in with that understanding. It is pleasing that the delinquents receive my urgent appeals in the spirit in which they are made. A fair example of the good nature is a letter from a delinquent who returned my communication with \$10.00, paying one year ahead of time. He underlined a pointed paragraph in my letter and wrote on the margin, "Never again." Some delinquents exhibit a vein of humor. One said, "It was not account of the war that I haven't paid before now."

Invested and Trust Funds Annual Statement.—The rules of Finance call for an annual statement from the Committee on Invested and Trust Funds. The report to be in detail and read in full at a general session of the annual meeting. It has been customary for the treasurer, who is a member of this committee, to prepare and present this information. The following covers the period from January 1 to August 15, 1919:

Life Membership Fund (Established, 1870).

On hand, January 1, 1919, Mass. State Reg. Bonds, 3%	\$13,000.00
4th U. S. Liberty Loan, 4 $\frac{1}{4}$ % Registered.....	10,000.00

Cash in Boston Penny Savings Bank January 1, 1919 ..	\$534.56	
Interest on Massachusetts State Registered Bonds....	195.00	
Interest on Deposits Boston Penny Savings Bank.....	11.35	
Total amount deposited Boston Penny Savings Bank		740.91
Withdrawn to deposit in International Bank of St. Louis to invest in Liberty Bonds.....		700.00
Balance on hand in Boston Penny Savings Bank, August 15, 1919.....		40.91
On hand, January 1, 1919 in International Bank of St. Louis.....	242.88	
Interest on U. S. Liberty Bonds.....	202.00	
From Boston Penny Savings Bank.....	700.00	
Life Membership Fee (Chas. Schaffer).....	100.00	
Interest on Mass. State Registered Bonds.....	195.00	
Interest on Deposit International Bank of St. Louis....	2.35	
Total Deposit International Bank of St. Louis...	\$1,442.23	
Invested in 4th 4 $\frac{1}{4}$ % U. S. Liberty Bonds.....	1,120.93	
Balance on hand in International Bank of St. Louis August 15, 1919.....		\$321.30
4th 4 $\frac{1}{4}$ % U. S. Liberty Bonds (face value).....		1200.00
On hand, August 15, 1919.....		\$24,562.21
<i>Albert E. Ebert Prize Fund. (Established 1873.)</i>		
On hand January 1, 1919, Boston Penny Savings Bank	1,181.94	
Interest on deposit Boston Savings Bank.....	1.72	
Total deposit in Boston Penny Savings Bank..	\$1,183.66	
Withdrawn from Boston Penny Savings Bank and deposited in International Bank of St. Louis to invest in U. S. Liberty Bonds.....		1,150.00
Balance in Boston Penny Savings Bank, August 15, 1919		\$33.66
Deposited in International Bank of St. Louis to invest in U. S. Liberty Bonds.....	\$1,150.00	
Interest on U. S. Liberty Bonds.....	22.22	
Commission refunded on Bond purchased.....	2.75	
Total deposit International Bank St. Louis....	\$1,174.97	
4th 4 $\frac{1}{4}$ % U. S. Liberty Bonds.....	1,145.87	
Balance in International Bank of St. Louis, August 15, 1919.....		\$29.10
4th 4 $\frac{1}{4}$ % U. S. Liberty Bonds (face value).....		1,200.00
Total on hand, August 15, 1919.....		1,262.76
<i>Centennial Fund. (Established 1877.)</i>		
On hand, January 1, 1919, Massachusetts State Regis- tered Bonds 3%.....		\$1,000.00
Cash on hand Boston Penny Savings Bank.....	\$2,176.67	
Interest on Massachusetts State Bonds.....	15.00	
Interest on deposit Boston Penny Savings Bank.....	4.06	
Total deposit in Boston Penny Savings Bank...	\$2,195.73	
Withdrawn to deposit in International Bank of St. Louis	2,150.00	

Balance on hand in Boston Penny Savings Bank, August 15, 1919.....		\$45.73
Deposited in International Bank of St. Louis from Bos- ton Penny Savings Bank, February 17, 1919.....	\$2,000.00	
Deposited in International Bank of St. Louis from Bos- ton Penny Savings Bank May 6, 1919.....	150.00	
Interest on Liberty Bonds.....	42.42	
Interest on deposit International Bank of St. Louis.....	.25	
Interest on Massachusetts State Bonds, January 1, to July 1, 1919.....	15.00	

Total in International Bank of St. Louis.....	2,207.67
Invested in 4th 4 ¹ / ₄ % U. S. Liberty Bonds.....	2,187.36

Balance in International Bank of St. Louis, August 15, 1919.....	20.31
4th 4 ¹ / ₄ % U. S. Liberty Bonds (face value)	2,300.00

Total on hand, August 15, 1919.....	\$3,366.04
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A. Ph. A. Endowment Fund. (Established 1906.)

On hand, January 1, 1919, 4th U. S. Liberty Bonds @ 4 ¹ / ₄ %.....		\$7,000.00
Cash on hand Boston Penny Savings Bank, January 1, 1919.....	\$359.12	
Interest on deposit Boston Penny Savings Bank.....	7.63	

Total in Boston Penny Savings Bank.....	\$366.75
Withdrawn from Boston Penny Savings Bank and de- posited in International Bank of St. Louis.....	360.00

Balance in Boston Penny Savings Bank, August 15, 1919		6.75
On hand, International Bank of St. Louis, January 1, 1919.....	\$69.00	
Interest on U. S. Liberty Bonds.....	141.39	
Deposited in International Bank of St. Louis from Bos- ton Penny Savings Bank.....	360.00	
Interest on deposit International Bank of St. Louis.....	.65	

Total in International Bank of St. Louis.....	\$571.04
Invested in 4th 4 ¹ / ₄ % U. S. Liberty Bonds.....	560.90

Balance in International Bank of St. Louis, August 15, 1919.....	10.14
4th 4 ¹ / ₄ % U. S. Liberty Bonds (face value).....	600.00

Total on hand, August 15, 1919.....	\$7,616.89
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Albert E. Ebert Legacy Fund. (Established 1909.)

On hand January 1, 1919, St. Louis Pub. Building and Imp. Gold Bonds.....		\$2,000.00
2nd Conv. 4 ¹ / ₄ % U. S. Liberty Bonds (Reg.).....		2,000.00
Cash in International Bank of St. Louis January 1, 1919.	\$504.64	
Interest on St. Louis City Bonds.....	40.00	
Interest on U. S. Liberty Bonds.....	50.10	
Interest on Deposits International Bank of St. Louis.	4.40	

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Total amount in International Bank of St. Louis..	\$599.14	
Invested in 4th 4 ¹ / ₄ % U. S. Liberty Bonds.....	574.06	
		<hr/>
Balance in International Bank of St. Louis, August 15, 1919.....	25.08	
4th 4 ¹ / ₄ % U. S. Liberty Bonds (face value).....	600.00	
		<hr/>
Total on hand, August 15, 1919.....	\$4,625.08	
<i>A. Ph. A. Research Fund. (Established 1917.)</i>		
On hand, January 1, 1919, 2nd Conv. U. S. Liberty Bonds @ 4 ¹ / ₄ %.....	5,000.00	
Cash on hand International Bank of St. Louis, January 1, 1919.....	\$6,398.33	
Balance from overhead expenses of National Formulary IV.....	1,976.49	
Interest on U. S. Liberty Bonds @ 4 ¹ / ₄ %.....	221.19	
Interest on Deposit International Bank of St. Louis....	29.80	
		<hr/>
Total deposit International Bank of St. Louis...	\$8,625.81	
Invested in 4th Liberty Bonds @ 4 ¹ / ₄ %.....	8,557.72	
		<hr/>
Balance in International Bank of St. Louis, August 15, 1919.....	68.09	
Investment in U. S. Liberty Bonds (face value).....	9,000.00	
		<hr/>
Total on hand, August 14, 1919.....	14,068.09	
<i>Jos. P. Remington Honor Medal Fund. (Established 1918.)</i>		
On hand, January 1, 1919, U. S. Liberty Bond.....	\$1,000.00	
Interest on U. S. Liberty Bond @ 4 ¹ / ₄ %.....	21.25	
		<hr/>
Total on hand, August 15, 1919.....	\$1,021.25	
<i>College Prize Fund. (Established 1873.)</i>		
On hand Boston Penny Savings Bank, January 1, 1919	\$41.71	
Interest on deposit Boston Penny Savings Bank.....	.87	
		<hr/>
Total on hand, August 15, 1919.....	\$42.58	
<i>Chas. Rice Memorial Fund. (Established 1913.)</i>		
On hand International Bank of St. Louis, January 1, 1919	\$183.65	
Interest on U. S. Liberty Bond @ 4 ¹ / ₄ %.....	2.02	
Interest on deposit International Bank of St. Louis....	2.10	
		<hr/>
Total in International Bank of St. Louis.....	\$187.77	
Invested in 4th 4 ¹ / ₄ U. S. Liberty Bond.....	95.80	
		<hr/>
Cash on hand International Bank of St. Louis, August 15, 1919.....	\$91.97	
4th 4 ¹ / ₄ % U. S. Liberty Bond (face value).....	100.00	
		<hr/>
Total on hand, August 15, 1919.....	\$191.97	
<i>Wm. Procter, Jr., Monument Fund. (Established 1904.)</i>		
On hand, January 1, 1919, U. S. Liberty Bonds @ 4 ¹ / ₄ %	\$8,000.00	
Cash in International Bank of St. Louis.....	\$1,243.20	
Interest on U. S. Liberty Bonds 4 ¹ / ₄ %.....	192.51	
Interest on deposit International Bank of St. Louis....	7.75	
		<hr/>

Total in International Bank of St. Louis.....	\$1,443.46	
4th 4 ¹ / ₄ % U. S. Liberty Bond.....	1,434.06	
Balance in International Bank of St. Louis.....		9.40
4th 4 ¹ / ₄ % U. S. Liberty Bond (face value).....		1,500.00
Total on hand, August 15, 1919.....		\$9,509.40
<i>A. Ph. A. Soldier and Sailor Fund. (Established 1918.)</i>		
Contributions received.....	\$2,075.15	
Interest December 1918, to July 1919.....	14.35	
Total received to August 15, 1919.....		\$2,089.50
Disbursed by check.....	\$1,384.63	
Bank Exchange.....	11.30	
Total disbursement.....		\$1,395.93
Balance on hand International Bank of St. Louis, August 15, 1919.....		\$693.57

The Ebert Jewelry.—Several pieces of jewelry were a part of the Albert E. Ebert estate. The executors sold some of the jewelry and turned the rest over to the treasurer. The pieces had been appraised for the executors. The valuation was much higher than can be realized in the market. The property has been held for final disposition. I recommend that the treasurer be authorized to sell the Ebert jewelry and turn the proceeds into the Ebert Legacy Fund.

All the above is submitted as a volunteer report not required by the by-laws. It brings the financial records up to the time of this annual meeting. The figures will be useful for consideration in connection with the reports of the Committee on Publication, the editor of the Journal and the Report of the Committee on Membership. All of these reports are made at the annual meeting and do not correspond with the fiscal year as does the regular report of the Treasurer designated in the by-laws.

EDITOR, THE JOURNAL OF THE A. PH. A.,
Philadelphia, Pa.

Dear Sir:

In order to be able to assist one of our students, majoring in art, who is making a special study of pharmaceutical book plates, I take the liberty to ask all persons or associations that have book plates to send specimen copies. Your kind coöperation in publishing this notice, as well as theirs, will be greatly appreciated. If librarians and other book lovers who know of such book plates, old as well as new, will kindly advise the writer of their discoveries, it should be possible to make the catalogue of pharmaceutical *ex libris* much more complete than would otherwise be the case. Trusting that this appeal may meet with many a response, I remain,

Very truly yours,

EDWARD KREMERS.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

CHICAGO.

The 105th meeting of the Chicago Branch of the American Pharmaceutical Association was held Tuesday evening, November 18, at the City Club, Chicago. At about 6.30 o'clock one hundred or more sat down to the dinner, and this number was largely augmented for the meeting. The occasion was the reunion of the pharmaceutical ex-service men resident in and near Chicago.

Mr. H. C. Christensen presented the Service Roll of Illinois pharmacists who served in the Army, Navy or Marine Corps during the recent war. The roll contains seven hundred names and complete data of service, so far as it was possible to obtain it, for each man. This list was suggested a year ago at a meeting of the Chicago Branch. Mr. F. C. Dodds, Superintendent of Registration of Illinois, was asked to enclose with the certificates to Illinois pharmacists a blank form for information regarding such service. This information was then tabulated by Secretary E. N. Gathercoal, of the Chicago Branch, and prepared for printing by Secretary W. B. Day of the Illinois Pharmaceutical Association, which organization is having a large number of copies printed for distribution.

Dr. Robert P. Fischelis, of Philadelphia, on behalf of the American Pharmaceutical Association, presented to each ex-service man present, not already a member of the Association, a membership for 1920.

The audience very highly appreciated, and was deeply stirred by, "The Story of the War" as told by seven of the boys, who described some of their actual experiences. The first young man told about "Going Across," the next followed with "Waiting for the Firing Line," then came "The Barrage," "Scouting in the Air," "Over the Top," "The Boy Who Didn't Get Across," and "Back Home." A complete program follows:

PROGRAM.

A. H. CLARK, CHAIRMAN.

"The Service Roll of Illinois Pharmacists," Francis W. Shepardson, Director of Department of Education and Registration, Springfield.

"Going Across," R. S. Allen, Ambulance Co. No. 130, 33d Division.

"Waiting for the Firing Line," Chas. J. Foucek, Sergt. Med. Det. 132d Inf., 33d Division.

"The Barrage," Clarence H. Tanner, Batt. A., 5th Field Artillery, 1st Division.

"Scouting in the Air," Arthur Peetz, 2nd Lieut. Air Service.

"Over the Top," W. R. Fallon, Machine Gun Line Combat Co. C, 20th Inf.

"The Boy Who Didn't Get Across," Sidney Schmidt, Sergt. Co. I, U. of I., Med. Dept., S. A. T. C.

"Back Home," Moses Covnot, Corp. Med. Dept., Co. A, Ft. Sheridan.

"The War Veterans Section," Dr. Robert P. Fischelis, President Pennsylvania Pharmaceutical Association.

Dr. Shepardson was unavoidably prevented from being present, much to his regret. Mr. H. C. Christensen, Secretary of the National Association Boards of Pharmacy, and Chairman of Pharmacy Examiners of the Illinois Department of Registration and Education, very ably took his place. He said in part:

On behalf of the Department of Registration and Education, I wish to extend a heartfelt welcome to those of our returned boys who are here this evening, to those who are home but could not be here, and to extend deepest sympathy to the friends of those who paid the supreme price and whose faces are forever hidden.

Something over a year ago it was suggested at one of the meetings of the Chicago Branch that an effort be made to compile a Service

Roll of Illinois Pharmacists. Combined efforts by the State of Illinois Department of Registration and Education, the Illinois Pharmaceutical Association, the Chicago Branch of the American Pharmaceutical Association and the Retail Druggists' Association have resulted in getting together a list of names even more complete than we had hoped. It was more of an undertaking than anyone would realize. I think few of us have any conception how much work it entailed, especially on the part of Dr. F. W. Shepardson, Mr. F. C. Dodds, and Professors W. B. Day and E. N. Gathercoal to collect even a fairly complete list. The combined efforts of those interested, however, made the effort a success. The State Department of Registration and Education went to no small expense, as well as work, in sending out the original blank forms for names of those in the Service. Credit for a great deal of help and coöperation must be given to the Chicago Retail Druggists' Association, which through its C. R. D. A. News, and otherwise, assisted materially with publicity and securing names. Secretary Gathercoal, of the Chicago Branch of the American Pharmaceutical Association, compiled the names of the list, and Secretary Day, of the Illinois Pharmaceutical Association, prepared the list for publication.

It is the cause of a great deal of pride that such a large number from the ranks of our profession responded to the country's need; nearly 700—possibly more, if the list could be complete. It is evident, that a comparatively small cross section of the total pharmacists of the State were eligible for service; that is, men between the ages of 21 and 30, so when, as is a fact, nearly 10 percent of the total pharmacists, assistant pharmacists, and apprentices of the state responded for service, there is no room to question the loyalty of pharmacy to its country's need.

There were approximately 350 Illinois Registered Pharmacists, 150 Assistants, and close to 200 Apprentices, in the different branches of the Service. A few were scattered in the Marine Corps, Merchant Marine, Aviation, Radio Service, Polish Army, Canadian Army, etc. It is of interest and satisfaction that so many were active in some way connected with medicine. More than 250 were in the Army Medical Department and 75 in the Hospital Corps of the Navy, as well as 15 in Chemical Warfare Service.

You have a long and interesting program

ahead of you. It would be wholly selfish on my part to consume more of your time, but I do want to extend the sincere hope and wish—and I'm sure I represent Dr. Shepardson's sentiments in this matter—that this preliminary association formed of the Service men at this gathering may become a permanent one; that the lessons of coördinate effort which you learned from your experiences may be carried with you into civilian life, and that you may form a solid unit for the betterment of yourself and pharmacy in general, and that the inspiration of this meeting may follow you into your daily work, and that you will always look upon the American Pharmaceutical Association, into which you are being inducted, as the logical medium through which you, individually and collectively, express your ideas for the advancement of our profession. And when the roll of the Association is called, ten years hence, twenty years hence, that the names to-night inscribed on the membership roll will still be there.

A fine appreciation was received from Governor F. O. Lowden, as follows:

To the Chicago Branch of the American Pharmaceutical Association:

I have heard of the very fine memorial to be dedicated tomorrow evening of the services rendered to their country by members of the pharmaceutical profession. These fine young men have earned the right to be remembered by future generations, and I congratulate you upon the zeal and promptness with which you are giving them recognition.

I wish it might be possible for me to be present and add my word of tribute, but official duties hold me here.

Very sincerely yours,

FRANK O. LOWDEN.

The meeting was honored by the presence of members of the Executive Committee of the National Association of Retail Druggists, including:

Theodore F. Hagenow of St. Louis, President.

Charles H. Huhn of Minneapolis, Minn., Chairman.

S. C. Henry of Chicago, Secretary.

J. F. Finneran of Boston, Mass.

R. J. Frick of Louisville, Ky.

Charles F. Harding of Cincinnati, Ohio.

E. C. Brokmeyer of Washington, Attorney.

The following is the poem by Sgt. Sidney Schmidt, on

"THE BOY WHO DIDN'T GET ACROSS."

It was just about a week and a year ago to-day,

As we were still in camp in the U. S. A.,

That the word came back from across the sea

That the last shot was fired and guns had
grown cold.

The whole world was happy, and all were
thankful

And proud of the deeds of our men;

But the boys in Service both in Khaki and
Blue,

On this side of that extent of sea,

While rejoicing and gay, were just a little bit
blue,

For they felt downright sad that they did
not get a chance at the Kaiser, too.

O! What wouldn't we have given to be with
the boys

Who fought in the Argonne Wood,

And the chaps who showed what they could do

At Chateau Thierry and at Verdun.

And many of them are back home and happy
again,

With the Croix de Guerre and the bright V.C.

And many of us did all we could as our bit,

In hospitals and chemical plants in this
fight for democracy.

And while we're mighty proud of what

All the boys we know have done on land and
sea,

You can just bet that in the next fight for
Justice and Liberty

We will be right there with the first next time.

Now you just wait and see!

E. N. GATHERCOAL,

Secretary.

CINCINNATI.

The Cincinnati Branch A. Ph. A. opened its season 1919-20 with a banquet at the Chamber of Commerce in honor of World War Veterans in Pharmacy of Cincinnati and vicinity. We entertained about fifty of these veterans, who were men who served in every branch and in all ranks. No matter where they served, nor in what capacity, whether on the battle line, in the supply service, in Siberia, at Archangel, or in the United States, whether as pharmacists, as dispensers, as first-aid men, as medical supply officers, or as combatants, whether as privates or as officers, all these men will have in common the memory of the fact that when the liberty of the world was at stake they offered their lives to make that liberty secure.

The World War Veterans Section of the A. Ph. A. offers an opportunity to every pharma-

cist who served his country, no matter in what capacity, to become a member of the A. Ph. A. without the payment of any initiation fee and without any dues for the first year.

Among the first of these veterans to respond was Major F. L. McCartney, of New York, who was the principal purchasing officer in the Surgeon General's office at Washington; he graphically describes the elaborate, painstaking and thoughtful precautions that are taken in his part of the Service to insure proper, healthful and efficient supplies for the Army and Navy. Major McCartney is a graduate of the School of Pharmacy, Maryland University.

Lieut. F. A. Federer, B. S., Ph.G., graduate of the School of Pharmacy, University of Wisconsin, served as Senior Officer Control Laboratory, Surgeon General's Office, Washington; he described the extreme care and precaution taken by the Government to insure pure and efficient medical supplies to the Army.

Next we had a Navy man, J. B. Meade, Chief Pharmacist U. S. N. from the University of Louisiana. He has been seven years in the Navy, was with the landing party which captured the capital of Nicaragua in 1912, also with landing party capturing Vera Cruz in 1914, with landing party capturing Hayti in 1915, with Sixth Marines in Belleau Woods, Chateau Thierry and Thiacourt, besides having had nine months' service on transports. The various experiences related by this naval man proved interesting and instructive to his auditors.

Then we had one of our own Cincinnati boys, Edward A. Lehr, Ph.G., who served with the 330th Regiment, 83d Division, in France as Regimental Steward. His work in the Service was both arduous and hazardous and he feels glad to be back safe in dear old Cincy.

Another Cincinnati, who served with the Cincinnati Base Hospital Unit both here and in France, was O. C. Reifschneider, Ph.G., who makes light of danger and narrates his experiences in his own humorous style.

Capt. W. D. Walters, Secretary of the World War Veterans Section, and now connected with the William S. Merrell Co. of Cincinnati, was the next speaker. He has been fourteen years in the regular Army, rose to rank of Major in Medical Supply Service, asked for transfer and served as line Captain in Second Division of the regular Army overseas. He particularly addressed our guests, the World War Veterans, urging them to become better

acquainted with the A. Ph. A. No matter whether their service was in the medical department or outside, no matter whether it was as a teamster, a runner, a machine gunner, a hospital dispenser, a hospital orderly or a medical supply officer, the mere fact that he is a pharmacist or a student of pharmacy, that he served his country and that he has not been dishonorably discharged, puts him into the class of men who receive a cordial invitation from the oldest pharmaceutical association in the world, to become an honored member without cost.

CHARLES A. APMEYER,
Secretary.

NASHVILLE.

A joint meeting of the Nashville Drug Club and the Nashville Branch of the American Pharmaceutical Association was held in the parlors of the Commercial Club Thursday, October 30th, D. J. Kuhn presiding.

After the minutes had been read and approved the Membership Committee reported that the Club had 38 members and the Branch 19. Mr. S. C. Davis reported a balance in the hands of the Entertainment Committee of \$506.25, which was turned over to the treasurer of the Club. By a unanimous vote the treasurer was instructed to pay the expenses of D. J. Kuhn to the N. A. R. D. Convention at Rochester.

The subject of the taxation of toilet soaps and aspirin tablets was discussed, with a difference of opinion, after which the Secretary was instructed to write to Attorney Brokmeyer for a decision.

The secretary then read the resolutions passed by the N. A. R. D. Convention, which were considered seriatim.

The amendment proposed by Assistant Surgeon General Pierce to the Steenson Vene-real Bill, which seeks to bar from the mails all advertisements pertaining to blood, skin and kidney remedies, was then discussed, after which a resolution was passed authorizing the secretary to send a telegram to Congressman J. W. Byrns, asking him to oppose it.

The recent effort of the Surgeon General to have a service corps formed in the Army instead of a hospital corps was discussed by Messrs. Clark, Pully, Ruddiman and Davis. On motion Messrs. Davis, Clark and Pully were appointed as a committee to send telegrams to our Congressmen and Senators re-

questing them to oppose the formation of a service corps.

Dr. E. A. Ruddiman invited the members to attend a series of lectures to be given at Vanderbilt University by Mr. O. V. R. Smith, of Chicago, as follows: Nov. 3rd, Antitoxins, illustrated by slides; Nov. 4th, Smallpox, Vaccine Virus and Vaccination, illustrated; Nov. 5th, Vaccines, Tuberculin, Phylacogens; chalk talk giving essentials that druggists should know; November 6th, Drug Standardization, illustrated. Dr. Ruddiman stated that Mr. Smith was formerly a retail druggist, and that these lectures should prove very helpful to all retailers. President Kuhn accepted this invitation, expressing his appreciation of this opportunity.

The election of officers of the Branch was postponed until next month.

W. R. White then read a report of the A. Ph. A. Committee on the conservation of drugs, which contained many helpful suggestions. He also announced that any pharmacist who had served in the recent war was entitled to membership, without publications, in the A. Ph. A. for one year without the payment of dues.

WILLIAM R. WHITE,
Secretary.

PHILADELPHIA.

The November meeting of the Philadelphia Branch of the American Pharmaceutical Association was held in the Philadelphia College of Pharmacy, Tuesday evening, November 11, 1919, at 8 P.M., President Ivor Griffith in the chair.

The minutes of the previous meeting were read and approved. The Committee on resolutions on the death of F. M. Apple reported the following resolutions:

WHEREAS, on July 14, 1919 Death did claim our fellow-member, Franklin Muhlenberg Apple, and whereas his interest and activity in the work of the Philadelphia Branch of the American Pharmaceutical Association have long been recognized and appreciated;

Be it therefore resolved by this Branch, that mention of our loss through his death be made upon the minutes;

And as a further token of our appreciation of his interest and activity, be it further resolved that a copy of this resolution be forwarded to Mrs. Franklin M. Apple, to whom in so doing we extend the

sincere sympathy of the Philadelphia Branch of the American Pharmaceutical Association.

E. G. EBERLE,

W. L. CLIFFE,

J. C. PEACOCK,

Committee.

The Membership Committee reported eighteen new members directly due to the recent drive among A. Ph. A. members not affiliated with the Local Branch. The Chairman, J. C. Peacock, was complimented on his excellent work, and a motion was adopted directly that a copy of his letter appealing for memberships be mailed to the Secretaries of all the Local Branches of the A. Ph. A.

A communication was read from W. D. Walters, Secretary of the World War Veterans' Section calling attention to the work of the Section and asking for coöperation.

A resolution from New York Branch on the question of A. Ph. A. dues and publications was read and was the basis of considerable discussion. The resolution urged action to induce the Executive Committee and the Council to submit the problem of A. Ph. A. dues and publications to the entire membership in the form of a post-card referendum giving each member the opportunity of choosing one of several options.

The discussion was opened by a paper by J. W. England, entitled "Query: The Year Book or an Abstract Journal, Which? Answer: Both."

Mr. England emphasized that his paper embodies personal opinions only. He felt that a referendum vote was out of order at this time on account of the action taken at the New York Convention. His suggestion that, inasmuch as the entire problem was essentially one of finances, it could be solved best, perhaps, by a classified membership with certain services, each class with certain dues.

Charles H. LaWall thought that Mr. England's paper was an excellent analysis of the whole subject, and in an entirely new light, and he approved the suggestions made.

Robert P. Fischelis discussed the paper and thought it a mistake to make any change except raising the dues. He did not believe that memberships for prestige only would be beneficial to the members or the Association. He expressed the thought also, that abstracts printed in the Journal monthly would practically duplicate the Year Book.

Julius W. Sturmer spoke for a continuance

of the present system, and for raising the dues to \$7.50; also, that if the abstracts were printed in journal form they would in most cases never be bound and thus end in waste paper, whereas the Year Book was a bound volume and most useful as a permanent reference book. Concerning the proposition of associate members who would receive no Journal or other service, he believed it would not be useful because the Association would not be kept in touch with such members.

E. G. Eberle in discussing the paper made a motion that a copy of Mr. England's paper be sent to all the Local Branches and the executive Committee of the Council, and this was amended by Charles H. LaWall that an abstract of the discussion be sent also. This motion carried.

Edward T. Hahn expressed his opinion in favor of one fixed membership at a fixed amount of dues, this amount to be in keeping with the expenses incurred in rendering the members service, whether or not this service included the Year Book.

Charles H. LaWall made a motion that Mr. England's paper be received and that the resolution of the New York Branch be referred without recommendation to the Executive Committee of the Council, the opinion being expressed that a referendum vote at this time would be out of order as the Association at its last general session had referred the entire matter to the Executive Committee. The motion carried.

The scientific program followed. E. Fullerton Cook presented the subject "Notes on Some of the Newest Remedies." The paper included a very interesting discussion of the use in pharmacy of Benzyl Benzoate, Benzyl Alcohol and also the Zinc Chloride treatment of Wounds by Babcock.

Louis Gershenfeld very interestingly presented "Demonstrations in Clinical Technic." This subject was one of a series to be presented if the attendance warrants the elaborate preparation necessary. The estimation of hemoglobin and the counting of blood cells were explained and demonstrated by the various instruments used in such work. A short discussion followed which resulted in a vote of thanks to the contributors to the program and a desire for more meetings equally interesting.

Robert P. Fischelis presented the following resolution which was adopted and directed

to be sent to the Secretaries of the Local Branches for action.

WHEREAS, the pharmacist is so frequently alluded to as a retail liquor dealer in public print and especially so since the enforcement of wartime prohibition, and WHEREAS, no pharmacist has ever been licensed to dispense liquors because of his being a pharmacist, and

WHEREAS, pharmacists may not dispense liquors even on prescription except according to certain Federal regulations, be it therefore

RESOLVED, that the Philadelphia Branch

of the American Pharmaceutical Association go on record as opposing such allusion in public print and protest to the proper authorities against misleading classification in regulations covering the use and sale of liquors, and be it further

RESOLVED, that this resolution be sent to the Secretaries of the Local Branches of the American Pharmaceutical Association and to the Collector of Internal Revenue at Washington.

Adjourned.

ELMER H. HESSLER,
Secretary.

COMMITTEE REPORTS

REPORT OF THE COMMITTEE ON COMPULSORY HEALTH INSURANCE OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.*

THE PRESENT STATUS OF COMPULSORY HEALTH INSURANCE.

It seems rather unnecessary in this report to discuss the details of compulsory health insurance. The purpose of the movement has been clearly outlined in previous reports of the Committee, and it is presumed that members of the Association are familiar with the situation.

Suffice it to say, therefore, that compulsory health insurance is a scheme by which practically three-fifths of the people would be insured against disease at their own expense partly, but chiefly at the expense of their employers and the state. It is *not* a plan, you understand, by means of which any business man may voluntarily put into effect a system of health insurance for the benefit of his employees—a system that he could watch and control and regulate. This is something that is to be imposed from above, with all the might and force of the state. It would be compulsory. It would be inevitable. The employer would have to go into the scheme whether he wanted to or not—and pay his heavy share of the burden. The employee would likewise have to be involved whether he wanted to be or not, and he would have to use the physician, not usually his own choice, but of the state's choice.

As has been said so frequently before, this would mean a political machine of vast proportions. It would give places to thousands of henchmen in every state. It would compel free Americans to adopt the methods of paternalistic Europeans. It would mean, and has meant in Europe, cheap drugs, poor drugs, and inefficient medical service. It would mean an enormous increase in state taxation, and an enormous addition likewise to the expense carried by every employer of labor.

At the outset of this movement physicians were inclined to favor it. It looked as though it would greatly increase their importance in the community and considerably enhance their income. Further investigation has convinced them, however, that the whole thing is a mirage, that it is not what it seems to be, that it is misbranded, that it would be wasteful and uneconomic, and that we should in America repeat the experience of Germany where the public health has been injured instead of improved as the result of compulsory health insurance.

Hence we find the medical profession at the present time arrayed almost solidly against the movement. Druggists naturally oppose it also—first because it is contrary to public policy, and secondly because it would be disastrous to the drug business itself. The state would become a competitor of the druggist, and the druggist would find more than half his business in medicinal supplies cut off at the very outset.

Bills providing for compulsory health insurance have been introduced during the last four or five years in the legislatures of sixteen different states. The issue has been more or

* Presented and adopted in Second General Session, A. Ph. A., New York meeting, 1919.

less acute in all of these states—and it will continue to be acute. In two states, however, the fight has been particularly keen. We refer to California and New York.

The danger in California has been averted for the time being. It will be recalled that in California it was found impossible to enact a bill providing for compulsory health insurance until the State Constitution had first been amended. An amendment was accordingly submitted to the voters last summer, and it provoked a State-wide campaign almost sensational in character. The scene was presented of a State commission, presumably unbiased in character, and paid out of State funds, spending large sums of money for literature, speakers, and meetings designed to push the amendment through. Fortunately the forces of sanity and reason were marshaled to the rescue, and when the vote was finally taken it was found that the people of the State in their might and majesty had rejected the idea by a very large majority.

Defeated for the moment in California, the advocates of this movement concentrated their attack during the last winter on the State of New York. It was a vigorous attack, too. The so-called Davenport measure, fathered by Senator Davenport, once a famous Bull-moose Progressive, was pushed with great vigor and narrowly escaped success. It was passed by the senate, but at the eleventh hour was killed in the assembly. At one of the hearings no fewer than twenty-five hundred people were present. The labor interests claimed to have one thousand men in the audience, and the physicians of the State were represented by three hundred of their number. The hearing lasted four hours and was dramatic and spectacular in many of its features.

Usually organized labor is to be found in opposition to compulsory health insurance. The American Federation of Labor, headed by Samuel Gompers, has throughout opposed the movement, but now and then smaller divisions of labor are seduced into support of the plan by the specious arguments and promises of its promoters. This seems to be the situation in New York State. Even the New York Commissioner of Labor, although himself a State employee, did not hesitate to go out and work actively in behalf of the Davenport measure.

Some of the labor forces in New York State are therefore behind the present movement, and it is certain that the fight will be renewed at the forthcoming session of the legislature. In the meantime the physicians, the dentists, and the nurses of the State are organizing themselves in opposition. In some counties they have consolidated, held frequent meetings, and have sought to do everything possible to marshal opposition to compulsory health insurance. The drug interests of New York State should combine with these groups, and in fact everywhere the pharmacists of the country should awaken themselves to this great danger.

If compulsory health insurance succeeds in a single State, a wedge will have been entered. It will then be easier to drive it home. It is imperative, therefore, that the Davenport or any similar measure shall be fought vigorously when it makes its appearance in the New York legislature this coming winter.

As a matter of fact, compulsory health insurance attacks the question of public health from the wrong angle. Here is an instance where prevention is far better than cure. What ought to be done is to preach and practice the gospel of health conservation. Every State should have a much more comprehensive health code than it now enjoys, together with well-trained and well paid health officers, well organized corps of nurses, diagnostic clinics, and the like. This would eventually place the science of medicine and the facilities for the prevention and cure of disease accessible to the laboring classes, and it is the only rational correction for the considerable prevalence of sickness among the lower strata in the community.

A step in this direction was taken when the so-called Hughes law was enacted at the last session of the Ohio legislature. Among other things this provided for full-time district health officers, visiting nurses, etc. It set up machinery by means of which sanitary measures may be practiced and disease may be avoided. A bill having practically this object was likewise introduced in the New York legislature last winter. It was drawn up by the Associated Manufacturers and Merchants of New York State. This bill failed of adoption, but in the meantime it commended itself to the authorities in several other States, and it is quite likely that similar measures will be introduced during the coming winter in different legislatures. The New York bill was particularly approved by the State Investigation Commission of Wisconsin, and this commission reported to the legislature that one million dollars spent in health conservation

would accomplish far more than twenty million dollars spent in erecting a compulsory health insurance system.

HUGH CRAIG,
C. A. MAYO,
FRANK H. FREERICKS,

J. H. BEAL,
W. C. ANDERSON,
HARRY B. MASON, *Chairman*.

REPORT OF THE COMMITTEE ON STATUS OF PHARMACISTS IN THE GOVERNMENT SERVICE.*

TO THE PRESIDENT AND MEMBERS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION:

The Committee on Status of Pharmacists in the Government service submits the following report:

While we cannot report progress of a more definite nature than we did last year the eleventh hour has developed some new facts and also a willingness on the part of the Surgeon-General of the Army to make recommendations to Congress looking to some recognition of Pharmacy, and providing for a limited number of commissioned pharmacists as a part of a Medical Service Corps in the reorganized medical department of the Army on a peace basis. He proposes to make this recommendation to Congress but he is not yet willing to endorse the establishment of a separate pharmaceutical corps.

Our endeavors during the past year in favor of the Edmonds' bill apparently went for naught, due to the determination of Surgeon General Gorgas, that "pharmacy was a non-essential service in the Army." This statement reflected largely the views of the older men in the medical department, while the younger officers are desirous of having the assistance of trained educated pharmacists.

The National Drug Trade Conference at its meeting in January 1919, discussed the question of establishing a pharmaceutical corps in the Army and unanimously went on record favoring such action. Further, they prepared a brief and went as a body and presented the same to acting Surgeon General Richards, General Gorgas then being in Europe.

Since his return to this country and appointment as Surgeon General, Surgeon General Ireland has had more than any one man could possibly look after. For this reason we felt that it would be unwise to further burden him with the question of the recognition of Pharmacy until the size of the Army on a peace basis had been determined upon. We assume that Surgeon General Ireland has obtained vast experience abroad and has had ample opportunity of observing the workings of the several foreign Army Pharmaceutical Corps, and will give early consideration to the creation of a similar corps in the American Army.

The Edmonds' Bill, further than the hearing, failed to receive any consideration by the Committee on Military Affairs during the 65th Congress, and died by limitation when this Congress adjourned. Mr. Edmonds has re-introduced the bill and it has again been referred to the Committee on Military Affairs.

In our opinion the only way that we can make any progress or have a chance to succeed in securing the merited recognition of Pharmacy in the Army is to work along with the Surgeon General and those in authority in the Medical Department and endeavor to secure their approval and coöperation as an aid to their department.

THE NAVAL BILL.

H. R. 4760, introduced by Mr. Darrow to increase the efficiency of the Medical Department of the United States Navy and improve the status and efficiency of the Hospital Corps of the U. S. Navy, has the approval of Surgeon General Braisted of the Navy and should have our undivided support. If enacted into law it will establish in the Hospital Corps the ranks of Lieutenant Commander, Lieutenant and Ensign, all of which shall be commissioned from the chief pharmacists and pharmacists now existing and established, thus continuing the recognition and advanced standing accorded to naval pharmacists during the war.

This bill has not yet received the approval of Secretary Daniels or of the Bureau of

* The report and recommendations therein were adopted by the Association in General Session, New York meeting, 1919.

Navigation, which bureau passes upon all measures affecting the personnel. The Hospital Corps men are the only class required to pass a general educational examination as well as an examination in their special branch on entrance and for promotion in the Navy. As a body of men they are generally well educated and have performed excellent work or they would not have received temporary commissions in the Medical Corps when we entered the war. They need our assistance to secure this much-merited recognition and unless we do something for them they will be demoted to the ranks of warrant officers. We therefore should use our best endeavors to secure the proper recognition for Pharmacy in the United States Navy and to convince Secretary Daniels of the need for his approval of this bill.

We recommend that our Association approve H. R. 4760 and that the Association use every means at its command to secure the passage of this bill. Further, that a brief be prepared and submitted to Secretary Daniels pointing out the advantages to the Service that will follow if this bill becomes a law and request his approval of the measure and his recommendations to Congress to enact such legislation.

THE PUBLIC HEALTH SERVICE.

The Public Health Service needs pharmacists; the Civil Service Commission has no eligibles that can be certified. Under existing conditions graduates in pharmacy are not entering this service. Unless provisions are made for proper ranking, better remuneration, the correcting of many existing conditions and providing for the placing of pharmacists on waiting orders, the Service will not be able to obtain any pharmacists.

While promises have been made, as yet they have not been fulfilled, but it is hoped that the situation in this department may be satisfactorily adjusted. We must lend a helping hand here to advance Pharmacy and the pharmacists in the Service as far as possible.

Recommendation. We recommend that a committee of three be appointed to coöperate with similar committees appointed by other pharmaceutical organizations to present to the Surgeon General of the Army the need of modern pharmaceutical service in the Medical Department and to further the aims of pharmacy in the other branches of the Government Service.

WM. B. DAY,
GEORGE M. BERINGER,

S. L. HILTON, *Chairman*,
E. G. EBERLE.
CASWELL A. MAYO.

REPORT OF THE COMMITTEE ON PATENTS AND TRADEMARKS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.*

For a great many years your Committee on Patents and Trademarks has, in its annual report, reiterated the basic factors controlling the proper handling of patents and trademarks in the United States. From time to time we have shown how the laws governing patents and trademarks have been flagrantly violated and we have brought to you the decisions of courts in various patent and trademark suits for guidance in your interpretation of these laws. The recent war has demonstrated clearly how foreign nations have been able to take advantage of the loose interpretation of our patent and trademark laws on the part of the Patent Office, to the detriment of our American industries. It has been shown that the granting of patents and trademarks has been reduced largely to a matter of routine so that anyone who designed to evade the law has been able to do so with comparative ease.

Now we are engaged in the work of reconstruction, our country wants a chemical industry established on a fair and sound basis and we want to stop unfair monopolies on medicinal chemicals and dyes. It is generally believed that in order to accomplish these objects, we must have more intelligent supervision of the granting of patents and trademarks through the employment of experts in various technical lines in the Patent Office at Washington.

It should be understood that the patent and trademark laws, like all other laws, are primarily designed to benefit the public at large and only secondarily intended to benefit the individual. The object of the Patent Law as defined in the Constitution of the United States

* The report and recommendations therein were adopted by the Association in General Session, New York meeting, 1919.

is to promote progress in science and in the useful arts. The object of the Trademark Law is to standardize and regulate the use of brand marks of all kinds and thus protect the public from fraudulent substitution of one brand of goods for another. There are some who assume that the object of the Patent Law is to protect inventors in their so-called natural right to the exclusive manufacture and sale of their inventions and the object of the Trademark Law is to protect and foster monopolies. Nothing is further from the truth. The objects of the Patent and Trademark Laws are altruistic and not egoistic. When the Patent Law is so interpreted and applied as to hinder progress in science and the useful arts in this country, the patent system becomes a menace to the prosperity of the country; and when the Trademark Law is perverted for the purpose of creating and fostering monopoly, a system of monopoly is established never intended by the framers of the Constitution of the United States.

Various schemes have been practiced for circumventing the patent laws in the past, but little attention has been paid to such schemes until we found how grossly our recent enemies had offended in this direction. For example, we have been informed through the daily press that the government discovered that many patents had been obtained by German subjects for dye processes on statements which deliberately omitted an absolutely essential ingredient without which the patents were totally valueless, excepting to the patentees. In other words, the patentee by withholding the information referred to, enjoyed a complete monopoly on his product not only during the term of his patent but also after the term of the patent expired, for it was valueless to any American who cared to take up the manufacture of the patented product, because such patent did not reveal the necessary information for preparing the product. It has been estimated that frauds of this character represented property worth from \$75,000,000 to \$150,000,000.

Much study was given to the subject of patents and trademarks in their relation to dyes and medicinal chemicals by former Alien Property Custodian A. Mitchell Palmer, now the Attorney General of the United States, and the present Alien Property Custodian, Francis P. Garvan. Out of these investigations there has come a great deal of good and we now have what is known as the Chemical Foundation, Inc., organized to assist in building up our medicinal and dye chemical industries. The following quotation from the *Chemical Age* of July 1919, page 3, is of interest in this connection:

"Favored by the rules of our Patent Office, Germany used some 4,500 German-owned American patents to thwart the development of a native industry and made our Patent Office an outpost in her far-flung plan to dominate world trade. By means of these patents she prevented effectually imports of competing dyes of English, French and Swiss origin. If Germany could do this with a tool of our creation, why could not the same instrument in the hands of Americans be used against her as well? Accordingly, Chemical Foundation, Inc., was organized with Francis P. Garvan as President, who is credited with the execution of the plan. The Alien Property Custodian sold the German patents to Chemical Foundation, Inc., whose stock is owned by the members of the industry and whose management makes it a public institution whereby any qualified American manufacturers, regardless of stock ownership, may secure the benefits of the patents on fair and equal terms.

"By the exercise of power incidental to ownership, Chemical Foundation, Inc., is in a position to prevent the importation of foreign-made competing dyes (and medicinal chemicals), which power can be made effectual in action at law for infringement upon patents owned by it and licensed to American manufacturers."

This plan of what may be designated as "compulsory license," if properly carried into effect, may overcome the serious objections pertaining to our system of so-called "product patents," by which the first inventor of a process for producing a chemical compound hitherto unproduced, by patenting both product and process, has been able to prevent all future inventors from marketing the same product until the expiration of the original patent. It has been contended that a patent system which makes it impossible for the inventor of an entirely new and original process of manufacture to employ the same in producing the product of his process until the original patent has expired, defeats the very object of the Patent Law. This scheme has been protested again and again by the American Pharmaceutical Association, also by the

· National Retail Druggists' Association, and other professional and commercial organizations.

Attention had been called to the fact that most foreign countries have recognized the dangers of such a system, and that medicines have been excluded from patent protection in most foreign countries, including Germany, France, Austria Hungary, Italy, Japan, Norway, Denmark, Sweden, Portugal, Russia, and a number of other countries; also that many foreign countries exclude from protection, foods, chemical products and inventions relating to war materials.

Before the United States confiscated the German patents there were on the market, among other patented medicinal chemicals, advertised under names registered as trademarks, the following: Salvarsan, Neosalvarsan, Novocain and Veronal.

All of these products were known to chemical scientists under their long chemical names. The chemical name for Salvarsan, for example, is *dioxydiamidoarsenobenzol*. It is not surprising, therefore, that the medical profession and the drug trade adopted the short so-called commercial names or trademark names as the true names of the articles themselves. This is what the German houses intended that they should do, but they intended at the same time to control these names commercially by claiming them to be trademarks or brand names. They hoped thereby to maintain their commercial control over the names after the patents for the products expired, in spite of the decision of the United States Supreme Court in the Singer Sewing Machine Case, and similar decisions; and also in spite of the fact that these names by that time would have become completely incorporated into the language.

After the war was declared and the United States Government had confiscated the patents for these products, the Government coined names for them and licensed American chemical houses to produce these products in America. The Government name for Salvarsan is Arsphenamine; for Neosalvarsan, Neoarsphenamine. Procaine is the Government name for Novocain, and Barbitol for Veronal. Several American houses have used these names and added some distinguishing name to denote their particular brands. Several questions of importance should be considered by the professions before endorsing the plan adopted by the Government in this connection.

In the first place, what will be the status of the names Salvarsan, Neosalvarsan, Novocain and Veronal, after the expiration of the product patents now owned by the Chemical Foundation, Inc.? They have already been extensively incorporated into the common language as nouns. Is it the intention to allow these names to remain permanently under the control of the manufacturers now claiming them as trademarks, and thus permit them to hold a permanent ownership in the common nouns of the language? Why deny the other manufacturers of Procaine, for example, the right to coin names for their brands of Procaine, and register them as trademarks? Of course, that would probably result in the adoption of as many names for Procaine as there would be manufacturers, resulting in the making of the confusion worse confounded. There are, for example, already fourteen names for hexamethylenamine.

It has again been definitely shown that the right to the exclusive use of a registered name of a patented product expires with the patent on that product. The opinion handed down last November by the Examiner of Interferences of the U. S. Patent Office in the Application of the United Drug Company to cancel the registration of the word "Aspirin," claimed to be the property of the Farbenfabriken of Elberfeld Co., on the basis of registration under the Trademark Act of 1881 is the foundation for this statement.

The examiner states:

"The respondent (Farbenfabriken of Elberfeld Co.) has not the right to the exclusive use of the word "Aspirin" for the substance disclosed in Patent No. 644,077, and that it has not been used by the respondent as a trademark within meaning of the record ground of Section 13 of the Trademark Act of Feb. 20, 1905."

It is therefore recommended that the registration of the word "Aspirin" be cancelled. A limit of appeal was set and as no appeal was taken, the word "Aspirin" may be applied by any manufacturer of the monoacetic acid ester of salicylic acid.

There are now before Congress two bills H. R., 5011, entitled "A bill to establish a Patent and Trademark Office independent of any other department and to provide for com-

pensation and infringement of patents in the form of general damages, and for other purposes," and H. R. 5012, entitled "A bill to establish a United States Court of Patent Appeal, and for other purposes." Both bills were introduced by Mr. Nolan and are intended to reorganize the Patent Office on such a basis that its business may be expedited and conducted in a manner so as to avoid careless issuing of patents and a repetition of the frauds discovered when we severed relations with the Central European Powers. A separation of the Patent Office from the Interior Department, which is provided in one of these bills, and making it a separate entity, is undoubtedly a step in the direction of cutting superfluous red tape and permitting this office to conduct its business without interference from a higher authority.

The Commissioner of Patents, under the new bill, is appointed by the President, with the consent of the Senate, and holds his office during the pleasure of the President. The Commissioner is bonded to the sum of \$10,000 conditioned for the faithful discharge of his duties and is responsible to the proper officers of the Treasury for a true account of all moneys received and disbursed by virtue of his office. He is charged with superintending and performing all duties respecting the granting and issuing of patents and the registration of trademarks, prints and labels directed by law, and has charge of all books, papers, records, models, machines and other things belonging to the Patent and Trademark Office. He is charged with performing all acts previously provided by law to be performed by the Secretary of the Interior or the Commissioner of Patents, or both, with respect to the Patent and Trademark Office. He will have the power to establish regulations not inconsistent with law for the conduct of proceedings in the Patent and Trademark Office. He is empowered to purchase for the use of the Patent and Trademark Office a library of legal, scientific and technical works and periodicals, both foreign and domestic, as may aid the officers in the discharge of their duties. He is authorized to continue printing patents for inventions and designs issued by the Patent and Trademark Office, certificates of trademarks and labels registered in the Trademark Office, the Official Gazette of the United States Patent and Trademark Office, the semi-annual report of the Commissioner of Patents to Congress, pamphlet copies of the rules of practice, pamphlet copies of Patent Laws and pamphlet copies of the laws and rules relating to trademarks and labels, and circulars relating to the business of the office. He is also authorized to publish an annual volume of the decisions of the Commissioner of Patents and of the United States courts in patent cases, indexes to patents, etc.

From this synopsis of the bill it can be very readily seen that the importance of the Patent has been realized and if the proper administrative officers are selected, there should be a decided improvement in our methods of supervising the granting of patents and trademarks.

The other bill before Congress provides for the creation of a United States Court of Patent Appeals consisting of seven judges, a chief justice to be appointed by and with the advice and consent of the Senate. This Court shall have jurisdiction to hear and determine appeals and writs of error from final judgments and decrees in the District Courts of the United States, in cases arising under the laws of the United States relating to patents and inventions, and from final judgments and decrees in cases arising under the laws of the United States relating to patents for inventions rendered by any other court having jurisdiction under the laws of the United States to hear and decide such cases in the first instance provided, however, that it shall have no jurisdiction in cases originating in the Court of Claims. The decisions of the United States Court of Patent Appeals in all cases within its appellate jurisdiction shall be final, excepting that it shall be competent for the Supreme Court of the United States to require by certiorari or otherwise, any such cases to be certified to for its review and determination with the same power and authority in the case as though it had been carried by appeal or writ of error from the trial court directly to the Supreme Court.

It is to be presumed that the judges appointed to this court will be particularly well versed in the Patent Law and thus, for the first time, we will have a tribunal which will be in a position to decide fairly on all cases, not only from an inherent judicial standpoint, but also from a standpoint of expert knowledge of the law and the technicalities involved.

Your Committee would recommend unqualified endorsement by the American Pharmaceutical Association of both these measures and that telegrams of such endorsement be sent at once to Mr. Nolan and the Committee on Patents of the House of Representatives. When these bills are passed, every influence should be used by this Association to secure the appoint-

ment of men in the various departments of the Patent Office who are technically trained and understand the sciences as well as the law. Efforts should also be made to secure the appointment of judges whose experience covers a wide field of patent investigation.

Respectfully submitted,

W. A. PUCKNER,
SAMUEL C. HENRY,

F. E. STEWART, *Chairman*,
C. L. ALSBERG,
ROBERT P. FISCHER.

COUNCIL BUSINESS

MINUTES OF THE FOURTH SESSION OF THE COUNCIL, 1918-1919 (*Concluded*).

BY-LAWS OF THE WOMEN'S SECTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

ARTICLE I.

Name and Object.

SECTION 1. This Section shall be known as the Women's Section of the American Pharmaceutical Association.

SEC. 2. The object of this Section shall be to emphasize the right and capability of women to engage in pharmaceutical pursuits as a means of livelihood; to unite the women employed in pharmaceutical pursuits for mutual encouragement and assistance; to labor for the improvement of legislation regulating the registration as pharmacists, of the women employed in the practice of pharmacy in hospitals and other public institutions; to unite the women members of the American Pharmaceutical Association and the women of the families of members of the American Pharmaceutical Association in a Section for social purposes; and to coöperate in the promotion of the general progress of pharmacy and of the American Pharmaceutical Association.

ARTICLE II.

Membership.

SEC. 1. Members of this Section shall consist of the women who are regular members in good standing of the American Pharmaceutical Association, and the women who are of the families of regular members in good standing of the Association.

ARTICLE III.

Officers.

SEC. 1. The officers shall consist of a President, three Vice-Presidents, a Secretary-Treasurer, and a Historian, all of whom shall be elected by ballot annually, and shall hold their respective offices for one year and until their successors shall have been elected and qualified. Their duties shall be such as are prescribed in the parliamentary authority of the Section and in these by-laws.

SEC. 2. It shall be the duty of the President to preside at the annual meeting, to appoint all committees not otherwise provided for, to see that the by-laws are observed, and to perform such additional duties as may be delegated to her by the Section or by the Executive Board.

SEC. 3. It shall be the duty of the Vice-Presidents to preside in their order in the absence of the President, and to perform such additional duties as may be imposed from time to time by the Section or by the Executive Board.

SEC. 4. The Secretary shall keep the minutes of the meetings and the records of the Section and of the Executive Board; shall conduct the general correspondence; shall notify all committees of their appointments and of any special duties which may be imposed; and shall also notify officers not present at the time of their election, of their election.

SEC. 5. The duty of the Treasurer shall be to receive and keep an account of the funds of the Section, and pay them out on the order of the Secretary countersigned by the President.

SEC. 6. It shall be the duty of the Historian to record the progress and activities of women engaged in pharmaceutical pursuits in the several states, and to present a report of the matter accumulated at each annual meeting of the Section.

SEC. 7. An Honorary President for the year may be elected at each annual meeting by a vote of two-thirds of the women who are present.

ARTICLE IV.

Executive Board.

SEC. 1. The Executive Board shall consist of the President and the Secretary ex-officio, and three elected members, one of whom shall be elected by ballot at each annual meeting to serve for three years.

SEC. 2. It shall be the duty of the Executive Board to direct the affairs of the Section in the interim between the annual meetings, to arrange the program for the annual meetings and to perform such additional duties as may be imposed upon it by the Section. The Board shall have authority to conduct its business by mail. All acts of the Executive Board shall be subject to revision by the Section. It shall be the duty of the Chairman of the Board to assign and supervise the work of the Standing Committees so that the work may be definite and uniform.

ARTICLE V.

Standing Committees.

SEC. 1. The Committee on Membership and Press, the Outlook Committee, and the Hospital Committee shall constitute the standing committees of the Section.

SEC. 2. The Committee on Membership and Press shall consist of eleven members of the Section, composed of a Chairman, elected by the Section, and ten active workers, who shall be appointed by the President.

SEC. 3. The Outlook Committee shall consist of nine members of the Section, appointed by the President, whose duty it shall be to investigate and report on the work of the women pharmacists, to investigate the education of women students wishing to take up the study of pharmacy and to cooperate with women's clubs.

SEC. 4. The Hospital Committee shall consist of four members of the Section, appointed by the President, whose duty it shall be to investigate and report on conditions of pharmacists in institutional pharmacy.

SEC. 5. The members of all special committees shall be appointed by the President, unless the Section shall prefer to elect.

ARTICLE VI.

Meetings.

SEC. 1. The Section shall hold one regular annual meeting during the annual meeting of the American Pharmaceutical Association, and such additional meetings or sessions as the Section shall determine.

SEC. 2. On the first day of the annual meeting the President shall appoint from the members of the Section a nominating committee of five, and not less than four tellers, to count and report the ballots at the annual election. The Nominating Committee shall report on the same day or a succeeding day, as the Section may direct, nominations for all the officers, for the member of the Executive Board, and for Chairman of the Committee on Membership and Press. Additional nominations may be made from the floor. The elections shall be by ballot, unless, where there is but one candidate for an office, it is dispensed with by unanimous consent. The officers elected who are present shall be installed at the close of the annual meeting.

SEC. 3. Special meetings of the Section may be called by the President at her discretion, and shall be called by her upon written request of the Executive Board, or upon the written request of any five members of the Section.

SEC. 4. Seven members shall constitute a quorum at any meeting of the Section.

ARTICLE VII.

Parliamentary Authority.

Except as herein provided, the proceedings of the Section shall be governed by the general rules of parliamentary law as stated in Robert's Rules of Order, Revised.

ARTICLE VIII.

Amendments.

Amendments to these by-laws shall be proposed in writing at one meeting and balloted for upon a subsequent day, when upon receiving the vote of two-thirds of the members present, they shall become a part of the by-laws.

On motion of J. W. England, seconded by W. B. Day, the following amendment to the by-laws of the Council was presented and in accordance with the by-laws of the Council was directed to be considered at a subsequent session of the Council.

Amend the by-laws of the Council by changing the numbers of Chapters VI, VII and VIII to VII, VIII and IX and inserting a new chapter to be known as Chapter VI entitled "Of Executive Committee," the new Chapter to read as follows:

CHAPTER VI.

Of Executive Committee.

ARTICLE I. The Executive Committee shall consist of three members of the Council holding no other office, to be elected annually by the Council, and the President, General Secretary, Treasurer, Chairman of the Council and Secretary of the Council. The Chairman of the Council shall be the Chairman of the Committee and the Secretary of the Council the Secretary of the Committee.

ARTICLE II. The Executive Committee shall be the executive body of the Council. It shall make recommendations to the Council for the good of the Association and shall have the power to act for the Council when so directed. The Secretary shall report its actions to the Council. When deemed necessary to the Committee, it shall hold meetings at a convenient place between the times of annual meetings, and the traveling expenses of its members shall be paid.

The following resolution was presented by the New York Branch of the American Pharmaceutical Association.

"It is the sentiment of the New York Branch of the American Pharmaceutical Association that the parent body should consider the advisability of going on record as favoring the regulations of the narcotic drug evil, not only by federal and state laws, but also, and particularly, by international agreements had by the U. S. Government with foreign countries."

On motion of H. V. Army, seconded by J. G. Godding, the Council acceded to the request of the New York Branch.

Chairman Hopp announced the appointment of the following Committee on Nominations to submit later, to the Council, a list of nominations for the standing committees of the Council: Messrs. W. B. Day and J. W. England.

Adjourned until Friday, August 29, 1919 at 2 P.M.

J. W. ENGLAND, *Secretary.*

FIFTH SESSION OF THE COUNCIL, 1918-1919.

The fifth session of the Council of the American Pharmaceutical Association for 1918-19 was held on the Steamboat "Taurus" en route to Coney Island, New York, on Friday, August 29, 1919 at 2.30 P.M., Chairman L. C. Hopp presiding.

Present: Messrs. H. V. Army, G. M. Beringer, Theo. J. Bradley, E. Fullerton Cook, Wm. B. Day, Clair A. Dye, E. G. Eberle, J. W. England, E. N. Gathercoal, J. G. Godding, S. L. Hilton, L. C. Hopp, Hugo Kantrowitz, E. F. Kelly, J. A. Koch, C. H. LaWall, W. T. Rudd, Clyde M. Snow and H. M. Whelpley.

Applications Nos. 578 to 581 inclusive were presented and favorably acted upon. These were:

- No. 578. Leo A. Whittemore, Grand Rapids, Minn., rec. by E. L. Newcomb and J. W. England.
- No. 579. Sidney C. Yeomans, c/o American Druggists Syndicate, Long Island City, N. Y., rec. by H. M. Whelpley and Wm. B. Day.
- No. 580. A. P. Bethel, 330 E. 2nd St., Oklahoma City, Okla., rec. by J. Leon Lascoff and Charles S. Herron.
- No. 581. Otto Philip Gilbert, 282 City Island Ave., City Island, N. Y., rec. by Hugo Kantrowitz and Hugo H. Schaefer.

The amendment proposed to the by-laws of the Council at the meeting of the Council held August 1919 providing for an Executive Committee of the Council, was considered for final action.

On motion of G. M. Beringer, seconded by E. G. Eberle, the prefatory paragraph, making the necessary changes in the numbers of the Chapters of the by-laws of the Council, was adopted as read.

Articles I and II of Chapter VI were each, on motion of H. M. Whelpley, seconded by S. L. Hilton, adopted as read.

On motion of G. M. Beringer, seconded by W. B. Day, the proposed changes in the by-laws of the Council were adopted as a whole.

The following resolution in reference to Dr. Stewart's contribution was adopted by the Historical Section:

"That Dr. F. E. Stewart's paper be referred to the Council with a request that a special committee be appointed to consider the question of reorganizing the A. Ph. A. to become a delegate body ruled by a House of Delegates."

On motion of W. F. Rudd, seconded by H. V. Arny, the question was referred to a special committee of three on reorganization to consider and report to the Council at the next annual meeting.

The following recommendations of Chairman E. N. Gathercoal, of the Scientific Section, in his annual address, were adopted by the Section at its second session on Thursday, August 28, 1919, and referred to the Council:

"That the Scientific Section endorsed and recommended to the Council the following:

1. That an accurate modern index of the 9 volumes of the Proceedings since the fifty-year index be authorized; and that plans be laid for an index of the Year Book and a decennial index of the Journal.

2. That the Association discontinue the Report of the Progress of Pharmacy in the Year Book, but publish the same in monthly installments as a part of the Journal of the Association, or in a new journal, and that all abstracts be published as soon as possible after the publication date of the original paper."

With reference to the first recommendation, the following action was taken:

Moved by G. M. Beringer, seconded by H. V. Arny, that the Association compile and publish an index of the publications of the Association covering the Proceedings from 1902 to 1911 inclusive, and the Year Book from 1912 to 1919 inclusive.

With reference to the second recommendation:

On motion of H. V. Arny, seconded by E. G. Eberle, it was decided that when the ballots are sent out to the members in November next, for the annual election of officers, etc., a referendum vote be taken on the following questions:

- (1) Do you favor raising the annual dues from \$5 to \$7.50 with the understanding that special service features, that are now in contemplation, be established, notably, a monthly publication of Pharmaceutical Abstracts, which shall replace the present Year Book?

- (2) Do you favor increasing the annual dues from \$5 to \$6 to include the Year Book?

G. M. Beringer contended that the main question before the Council was: "Shall the Year Book be continued or not?"

The Chairman ruled the point well taken.

G. M. Beringer moved that the recommendations for the discontinuance of the Year Book be laid on the table. Carried.

A division was called for, but the motion prevailed.

The motion made by H. V. Arny, and seconded by E. G. Eberle, was then reconsidered and passed.

An additional motion was made by H. V. Arny, seconded by E. G. Eberle, that the annual dues be five dollars but without the Year Book; this was not carried.

On motion of H. V. Arny, seconded by E. G. Eberle, it was directed that a committee of three of the Council be appointed to carefully prepare the ballot for the referendum vote, and submit the same to the Council for approval before it was sent out.

The question was asked as to the result in the event that a member voted "No" on both

queries, numbers (1) and (2), and the agreement was that it should indicate that the present system shall be continued.

On motion of H. M. Whelpley, seconded by C. A. Dye, it was agreed that an appropriation of \$250 be made for clerical assistance in the Treasurer's office for the next year.

Adjourned to meet Saturday, August 30, 1919 at 9.00 A.M.

J. W. ENGLAND, *Secretary*.

SIXTH SESSION OF THE COUNCIL, 1918-1919.

The sixth session of the Council of the American Pharmaceutical Association for 1918-19 was held at the Hotel Pennsylvania on August 30, 1919 at 9.30 A.M., Chairman Hopp presiding.

Present: Messrs. H. V. Army, T. J. Bradley, C. E. Caspari, E. Fullerton Cook, E. G. Eberle, J. W. England, J. G. Godding, S. L. Hilton, L. C. Hopp, Jeannot Hostmann, E. F. Kelly, J. A. Koch, C. H. LaWall, W. F. Rudd, Hugo H. Schaefer, C. M. Snow, Henry M. Whelpley, Wm. B. Day and Hugo Kantrowitz.

The minutes of the previous meeting were read and approved.

On motion of J. W. England, seconded by C. H. LaWall, the action of the Council on August 29, 1919 on the question of referendum vote and ballot on motions offered by H. V. Army, and seconded by E. G. Eberle, were reconsidered and referred to the incoming Executive Committee for consideration and report to the Council.

On motion of E. G. Eberle, seconded by W. R. White, it was decided to publish the book of Unofficial Formulas, proposed by the Committee on Publication, as soon as feasible, and to adopt the recommendations of the Committee in relation thereto.

The following application for membership was presented:

No. 582. Joseph Hollingsworth, Mount Airy, N. C., rec. by E. G. Eberle and J. W. England. The application was favorably acted upon.

Moved by Henry M. Whelpley, seconded by S. L. Hilton, that the salary of the Reporter on the Progress of Pharmacy be increased from \$600 to \$750.

At the request of H. V. Army, Reporter on the Progress of Pharmacy, the motion was withdrawn.

On motion of W. F. Rudd, seconded by C. H. LaWall, the Committee on Program was requested, in preparing the program for the annual meeting, to provide that the meeting for the reorganization of the new Council shall be effected at the earliest feasible time after the election of the new Chairmen of the Sections.

Adjourned.

J. W. ENGLAND, *Secretary*.

COUNCIL MEETING, 1919-1920.

The first or re-organization session of the Council of the American Pharmaceutical Association for 1919-20 was held at the Hotel Pennsylvania on Saturday, August 30, 1919, at 10.15 A.M., Chairman L. C. Hopp, presiding.

Present: Messrs. H. V. Army, James H. Beal, G. M. Beringer, T. J. Bradley, Chas. E. Caspari, E. Fullerton Cook, Wm. B. Day, E. G. Eberle, J. W. England, J. G. Godding, S. L. Hilton, L. C. Hopp, Jeannot Hostmann, E. F. Kelly, J. A. Koch, E. H. LaPierre, C. H. LaWall, C. A. Mayo, Clyde M. Snow, F. E. Stewart, Henry M. Whelpley, William R. White, W. O. Richtmann, H. S. Noel, Lucius E. Sayre, Harry Whitehouse, E. A. Ruddiman, and Jacob Diner.

Nominations for general officers of the Council for the ensuing year were made and the following elected:

Chairman—Lewis C. Hopp.

Vice-Chairman—Charles H. LaWall.

Secretary—J. W. England.

Nominations for officers of the Association were made and the following elected:

General Secretary—William B. Day.

Treasurer—Henry M. Whelpley.

Reporter on the Progress of Pharmacy—Harry V. Arny.

Editor of the Journal—E. G. Eberle.

Local Secretary—Samuel L. Hilton.

At the suggestion of Chairman L. C. Hopp, Alviso Burdette Stevens, of Ann Arbor, Michigan, was unanimously elected Honorary President of the Association.

Clyde B. Wheeler, Esq., General Counsel of the Anti-Saloon League of America, was introduced by James H. Beal, and invited to address the Council, which he did. He spoke on the legitimate sale of liquors for medicinal use by pharmacists in relation to the prohibition measures now pending of passage in Congress and expressed the opinion that no legitimate pharmaceutical interest would suffer by reason of the passage of such legislation nor be seriously inconvenienced by its administrative features. He expressed his warmest appreciation of the legitimate pharmacist and his service to the general public, and earnestly asked his coöperation in exposing liquor dealers who masquerade as pharmacists and prostituted the profession of pharmacy.

The Committee on Nominations, W. B. Day, *Chairman*, asked for suggestions relative to the Committee on National Formulary and after a number of suggestions had been made, submitted a list of nominees for the committees of the Council for 1919-20, which, on motion of Jacob Diner, seconded by E. G. Eberle, was approved as read.

The list is printed in Council Letter No. 1.

It was agreed that the Committee on National Formulary elect its Chairman and Vice-Chairman.

R. P. Fischelis referred to the resolutions of the War Veterans Section submitted to the Council on August 28, 1919, which were referred to the Committee on Revision of the Constitution and By-Laws, and asked that the action on the resolutions be reconsidered, which was done.

On motion of C. H. LaWall, seconded by H. V. Arny, the resolutions were approved as read.

Adjourned.

J. W. ENGLAND, *Secretary*.

A. PH. A. COUNCIL LETTER NO. 1.

PHILADELPHIA, PA., September 15, 1919.

TO THE MEMBERS OF THE COUNCIL:

The following is a list of the members of the Council for 1919-20:

MEMBERS OF THE COUNCIL 1919-20.

Arny, H. V., 115 W. 68th St., New York, N. Y.
 Beal, James H., 801 W. Nevada St., Urbana, Ill.
 Beringer, George M., 5th & Federal Sts., Camden, N. J.
 Bradley, Theo. J., Mass. College of Pharmacy, Boston, Mass.
 Caspari, Charles E., 2108 Locust St., St. Louis, Mo.
 Cook, E. Fullerton, 145 North 10th St., Philadelphia, Pa.
 Day, Wm. B., 701 South Wood St., Chicago, Ill.
 Diner, Jacob, 316 W. 84th St., New York, N. Y.
 Dohme, Alfred R. L., Pratt & Howard Sts., Baltimore, Md.
 Dye, Clair A., Ohio State Univ., Columbus, Ohio.
 Eberle, Eugene G., Bourse Building, Philadelphia, Pa.
 Eldred, Frank R., 3325 Kenwood Ave., Indianapolis, Ind.
 England, Joseph W., 415 North 33rd St., Philadelphia, Pa.
 Fennel, C. T. P., 614 W. Court St., Cincinnati, Ohio.
 Fischelis, R. P., ex Matos Adv. Co. Inc., Philadelphia, Pa.
 Fuller, H. C., 1845 B St., N. W., Washington, D. C.
 Godding, John G., 278 Dartmouth St., Boston, Mass.
 Hensel, Samuel T., Hotel West Court, 1415 Glenarm St., Denver, Colo.
 Hilton, Samuel L., 1033 22nd St., N. W., Washington, D. C.
 Hopp, Lewis C., 1104 Euclid Ave., Cleveland, Ohio.
 Hostmann, Jeannot, 115 W. 68th St., New York, N. Y.
 Kelly, E. F., Lombard & Green Sts., Baltimore, Md.

Koch, J. A., Bluff & Pride Sts., Pittsburgh, Pa.
 LaPierre, E. H., 80 River St., Cambridge, Mass.
 LaWall, C. H., 39 South 10th St., Philadelphia, Pa.
 Mayo, Caswell A., care W. S. Merrell Co., Cincinnati, Ohio.
 Nitardy, F. W., 66 Orange St., Brooklyn, N. Y.
 Noble, Merner J., 500 North Commercial St., St. Louis, Mo.
 Noel, H. S., 3124 Kenwood Ave., Indianapolis, Ind.
 Richtmann, W. O., 1721 Van Hise Ave., Madison, Wis.
 Roehr, Clarissa M., University Hospital, San Francisco, Calif.
 Ruddiman, E. A., 1916 Adelicia St., Nashville, Tenn.
 Rudd, Wortley F., 1716 Grove Ave., Richmond, Va.
 Sayre, L. E., University of Kansas, Lawrence, Kans.
 Seltzer, L. A., 32 Adams St., W., Detroit, Mich.
 Snow, Clyde M., 701 South Wood St., Chicago, Ill.
 Stevens, A. B., Escondido, Cal.
 Stewart, Francis E., 11 W. Phil-Ellena St., Philadelphia, Pa.
 Whelpley, Henry M., 2342 Albion Place, St. Louis, Mo.
 White, William R., 314 Hancock St., Nashville, Tenn.
 Whitehouse, Harry, Johnson City, Tenn.
 Wulling, F. J., University of Minnesota, Minneapolis, Minn.

The following committees have been elected by the Council for 1919-20:

COMMITTEES OF THE COUNCIL.

Committee on Finance.

J. A. Koch, *Chairman*, Pittsburgh, Pa. Chas. E. Caspari, St. Louis, Mo.
 G. M. Beringer, Camden, N. J.

Committee on Publication.

J. W. England, *Chairman*, Philadelphia, Pa. C. A. Mayo, Cincinnati, Ohio.
 George M. Beringer, Camden, N. J. H. B. Mason, Detroit, Mich.
 E. L. Newcomb, Minneapolis, Minn.

Ex-Officio Members—The Editor, Reporter on the Progress of Pharmacy, General Secretary and Treasurer.

Committee on Invested and Trust Funds.

Wm. B. Day, *Chairman*, Chicago, Ill. Frederick J. Wulling, Minneapolis, Minn.
 E. G. Eberle, Philadelphia, Pa. H. M. Whelpley, *Ex-Officio*, St. Louis, Mo.

Committee on Centennial Fund.

A. R. L. Dohme, *Chairman*, Baltimore, Md. Wm. B. Day, Chicago, Ill.
 J. A. Koch, Pittsburgh, Pa.

Committee on Transportation.

H. H. Schaefer, *Chairman*, New York, N. Y. J. L. Lengfeld, San Francisco, Cal.
 Lewis C. Hopp, Cleveland, Ohio. E. Floyd Allen, Minneapolis, Minn.
 H. M. Whelpley, St. Louis, Mo. F. C. Godbold, New Orleans, La.
 Charles G. Merrell, Cincinnati, Ohio. S. S. Jacobs, Atlanta, Ga.
 E. F. Kelly, Baltimore, Md. C. Herbert Packard, E. Boston, Mass.
 W. B. Day, Chicago, Ill. Chas. J. Clayton, Denver, Colo.

The General Secretary and Local Secretary, *ex-officio* members.

Committee on National Formulary.

W. L. Scoville, *Chairman*, Detroit, Mich. E. Fullerton Cook, Philadelphia, Pa.
 Clyde M. Snow, Chicago, Ill. H. A. B. Dunning, Baltimore, Md.
 Otto Raubenheimer, Brooklyn, N. Y. Samuel L. Hilton, Washington, D. C.
 Leonard A. Seltzer, Detroit, Mich. Charles H. LaWall, Philadelphia, Pa.
 Harry V. Arny, New York, N. Y. George M. Beringer, Camden, N. J.
 H. Engelhardt, Baltimore, Md. P. Henry Utech, Meadville, Pa.
 E. L. Newcomb, Minneapolis, Minn. Bernard Fantus, M. D., Chicago, Ill.
 O. A. Farwell, Detroit, Mich.

Committee on Standards.

Henry Kraemer, Ann Arbor, Mich.....	Term expires 1920
Eustace H. Gane, New York City.....	Term expires 1920
B. L. Murray, Rahway, N. J.....	Term expires 1920
W. A. Puckner, Chicago, Ill.....	Term expires 1920
John G. Roberts, Philadelphia, Pa.....	Term expires 1921
Otto Raubenheimer, Brooklyn, N. Y.....	Term expires 1921
George D. Rosengarten, Philadelphia, Pa.....	Term expires 1921
O. A. Farwell, Detroit, Mich.....	Term expires 1921
George M. Beringer, Camden, N. J.....	Term expires 1922
H. H. Rusby, Newark, N. J.....	Term expires 1922
F. R. Eldred, Indianapolis, Ind.....	Term expires 1922
John M. Francis, Detroit, Mich.....	Term expires 1922
Elmer E. Wyckoff, Brooklyn, N. Y.....	Term expires 1923
J. A. Koch, <i>Chairman</i> , Pittsburgh, Pa.....	Term expires 1923
L. D. Havenhill, Lawrence, Kans.....	Term expires 1923
E. L. Newcomb, Minneapolis, Minn.....	Term expires 1923

Committee on Unofficial Formulas.

Otto Raubenheimer, <i>Chairman</i> , Brooklyn, N. Y.....	Term expires 1920
F. W. Nitardy, Denver, Colo.....	Term expires 1920
C. H. LaWall, Philadelphia, Pa.....	Term expires 1920
W. L. Scoville, Detroit, Mich.....	Term expires 1921
W. H. Glover, Lawrence, Mass.....	Term expires 1921
Curt P. Wimmer, New York, N. Y.....	Term expires 1921
John K. Thum, Philadelphia, Pa.....	Term expires 1922
I. A. Becker, Chicago, Ill.....	Term expires 1922
Clarissa M. Roehr, San Francisco, Cal.....	Term expires 1922
Clarence G. Spalding, New Haven, Conn.....	Term expires 1923
E. Fullerton Cook, Philadelphia, Pa.....	Term expires 1923
William Gray, Chicago, Ill.....	Term expires 1923
J. Leon Lascoff, New York, N. Y.....	Term expires 1924
H. A. B. Dunning, Baltimore, Md.....	Term expires 1924
P. Henry Utech, Meadville, Pa.....	Term expires 1924

Commission on Proprietary Medicine.

J. H. Beal, <i>Chairman</i> , Urbana, Ill.....	Term expires 1920
W. H. Cousins, Dallas, Texas.....	Term expires 1921
John C. Wallace, New Castle, Pa.....	Term expires 1922
Charles E. Caspari, St. Louis, Mo.....	Term expires 1923
S. C. Henry, Chicago, Ill.....	Term expires 1924

American Pharmaceutical Research Committee.

F. R. Eldred, Indianapolis, Ind.....	Term expires 1920
Wilbur L. Scoville, Detroit, Mich.....	Term expires 1920
George M. Beringer, Camden, N. J.....	Term expires 1921
Henry Kraemer, Ann Arbor, Mich.....	Term expires 1921
Julius A. Koch, Pittsburgh, Pa.....	Term expires 1922
Edward Kremers, Madison, Wis.....	Term expires 1922
Charles H. LaWall, Philadelphia, Pa.....	Term expires 1923
H. V. Arny, <i>Chairman</i> , New York, N. Y.....	Term expires 1923
George D. Beal, Urbana, Ill.....	Term expires 1924
H. M. Whelpley, St. Louis, Mo.....	Term expires 1924

Committee on Conservation.

Hugo H. Schaefer, <i>Chairman</i> , New York, N. Y.....	J. A. Becker, Chicago, Ill.
Theodore J. Bradley, Boston, Mass.....	H. A. B. Dunning, Baltimore, Md.
H. C. Fuller, Washington, D. C.	

Advisory Committee for Soldier and Sailor Pharmacists.

Frank H. Freericks, *Chairman*, Cincinnati, Ohio. Edward Spease, Cleveland, Ohio.
Clarence O. Bigelow, New York, N. Y. H. C. Christensen, Chicago, Ill.
Charles E. Caspari, St. Louis, Mo.

Committee on Drug Store Classification.

Jacob Diner, *Chairman*, New York, N. Y. F. E. Stewart, Philadelphia, Pa.
E. F. Kelly, Baltimore, Md. E. Von Hermann, Chicago, Ill.
L. A. Seltzer, Detroit, Mich.

415 NORTH 33RD STREET.

J. W. ENGLAND, *Secretary*.

A. PH. A. COUNCIL LETTER NO. 2.

PHILADELPHIA, PA., September 19, 1919.

TO THE MEMBERS OF THE COUNCIL:

The following report has been received from Hugo H. Schaefer, Chairman of the Committee on Conservation:

"The question of conservation of drugs, chemicals, etc., so much discussed during the past years of the war, has of late aroused comparatively little interest, yet it is the opinion of this Committee that the subject is still a most vital one and that the work so well begun should not be allowed to reach the dormant stage. The prices of most of the articles in question have not been materially reduced and, therefore, their conservation will save just as much to-day in actual value as it would have done a year ago. If practical conservation was advisable in time of war when waste is to be expected, it is certainly still more advisable in times of peace when the wasteful conditions caused by war are to be remedied. Especially now that the work on the new U. S. Pharmacopoeia is to be begun suggestions ought to be presented to the incoming Revision Committee. With this in view the following outline of possible directions in which practical conservation might be carried out after careful consideration and experimentation, is presented.

Preparations now in the U. S. P. and N. F.: Up to the present it has been impossible to vary from the prescribed formulas since to do so would have meant a violation of the law and possible prosecution no matter how meritorious such changes might be. It is, of course, always dangerous to suggest tampering with old established formulas yet in a good many cases these preparations were originated when conditions were entirely different from what they now are. Some of the ingredients may have since become very scarce while other substances which might advantageously have entered the preparation were absolutely prohibitive in cost years ago; since then, however, becoming abundant and cheap. Changes in formulas causing saving in ingredients might be carried out in a number of ways. First by simply omitting substances which may have simplified the manufacture of the preparation without actually being of any distinct value as, for instance, instead of using Spirit of Peppermint for Mixture of Rhubarb and Soda, the straight oil might be used or possibly equal parts of oil and alcohol thus effecting a distinct saving in alcohol. There are many more illustrations of such omissions which would conserve without lowering quality, but all examples given here are type examples only. Another phase would be that of substituting cheaper ingredients for more expensive ones. Glucose for glycerin in Mixture of Rhubarb and Soda. Diluted acetic acid in place of alcohol in Tincture of Larkspur. Diluted alcohol in place of the pure solvent in a good many spirits and tinctures. The question of including weaker forms of preparations already in the Pharmacopoeia should also be considered. As for instance, a 3 1/2% Tincture of Iodine and a 10% Camphorated Oil could no doubt be used in a good many cases just as effectively as the stronger preparations.

The question of the conservation of crude drugs, however, opens a field larger in opportunities than probably any other. The U. S. P. up to the present has set very high standards, especially in its percentage requirement for ingredients. The result has been that large quantities of otherwise excellent drugs have not been available. Is this proper? Would it not be better to lower the requirements for many drugs and then take correspondingly more for making the preparations? If this were done, however, the high grade drugs would necessarily have to

be diluted with some inert material in order to obtain uniformity. More attention should also be given the requirements calling for the use of only certain portions of a plant, since in a number of cases it has been proven that very often other parts of the same plant are physiologically just as effective.

Assays: Another large saving in money could possibly be obtained by carefully revising the tests and assays in the U. S. P. Most of these as they now stand are probably satisfactory to the manufacturer and wholesaler, but entirely too expensive to the retailer. The former standardize lots which were usually very large and therefore the percentage-cost of assay is small, but the pharmacist buying a small quantity would use entirely too much drugs and reagents as compared to the cost of the original article. The "aliquot" portion method now employed almost exclusively in the U. S. P. IX necessitates throwing away an average of the drug and solvent. Here a saving could be made. Ether and chloroform are used mostly as solvents where probably less expensive volatile chemicals would answer the purpose just as well. The quantity of the substance to be assayed could also in a good many cases be reduced.

Packages: Probably one of the largest savings in the drug trade during the war was caused by standardizing packages and reducing their number. It has been found entirely practicable to abolish many of the less popular sizes of packages of very many preparations and articles of merchandise carried by the retail drug trade. This causes not only a saving to the manufacturer, but also to the retailer, who can thereby carry on his business with less stock and is usually able to sell a more profitable sized article.

In conclusion the Committee respectfully suggests that the following resolution be adopted by the Association:

Resolved: That the suggestions embodied in this report with reference to official preparations be submitted to the Pharmacopoeial Committee for their careful consideration.

Respectfully submitted,

E. FULLERTON COOK,
THEODORE J. BRADLEY,
HUGO H. SCHAEFER.

The Committee on Conservation is a Council committee. The report was not presented to the Council while in recent session at New York, but it can be considered by the Council by mail just as have the reports of other Council committees.

Apparently, the preferable procedure will be to receive the report and refer it to the Committee on U. S. Pharmacopoeia of the Association, rather than directly to the U. S. P. Committee on Revision or to the U. S. Pharmacopoeial Convention.

It is, therefore, moved by W. B. Day, seconded by J. W. England, that the report be received and referred by the Council to the Committee on U. S. Pharmacopoeia.

This will be known as *Motion No. 1 (Report of Committee on Conservation)*.

J. W. ENGLAND, *Secretary*.

A. PH. A. COUNCIL LETTER NO. 3.

PHILADELPHIA, PA., September 20, 1919.

TO THE MEMBERS OF THE COUNCIL:

At the recent annual meeting of the American Pharmaceutical Association held at New York, the following by-law was adopted:

CHAPTER VI *of Executive Committee.*

ARTICLE I. The Executive Committee shall consist of three members of the Council holding no other office, to be elected annually by the Council, and the President, General Secretary, Treasurer, Chairman of the Council and Secretary of the Council. The Chairman of the Council shall be the Chairman of the Committee and the Secretary of the Council the Secretary of the Committee.

ARTICLE II. The Executive Committee shall be the executive body of the Council. It

shall make recommendations to the Council for the good of the Association and shall have the power to act for the Council when so directed. The Secretary shall report its actions to the Council. When deemed necessary by the Committee, it shall hold meetings at a convenient place between the times of annual meetings, and the traveling expenses of its members shall be paid.

No action was taken at the New York meeting to elect the three non-official members of the Executive Council and it is now in order for the Council to so elect.

Nominations are called for, each member of the Council to nominate not more than three within ten days. The list of nominees will then be submitted to the Council for vote, the three receiving the highest vote to be the ones elected.

415 N. 33RD STREET.

J. W. ENGLAND, *Secretary*.

A. PH. A. COUNCIL LETTER NO. 4

PHILADELPHIA, September 24, 1919.

TO THE MEMBERS OF THE COUNCIL:

Motion No. 2 (Election of Active Members). You are requested to vote on the following applications for active membership:

- No. 1. J. Greenville DeLoeme, 17 Main St., Sumter, S. C., rec. by D. T. Riley and E. G. Eberle.
- No. 2. Herbert Clifton Easterday, 700 N. J. Ave., N. W., Washington, D. C., rec. by H. E. Kalusowski and S. L. Hilton.
- No. 3. Thomas Benjamin Smith, 111 R. R. Ave., Florence, S. C., rec. by D. T. Riley and E. G. Eberle.
- No. 4. Albert C. Grant, St. Thomas, N. D., rec. by W. P. Porterfield and Wm. B. Day.
- No. 5. Mrs. Catherine C. Hickey, 501 3rd Ave., Seattle, Washington, rec. by C. Osseward and J. F. McGogy.
- No. 6. Edwin Whitney Fenlon, Box 43, Seattle, Wash., rec. by C. Osseward and J. F. McGogy.
- No. 7. Joseph Hermann Greenwood, 913 Bergen St., Newark, N. J., rec. by Edward A. Wickham and Wm. B. Day.
- No. 8. Amil P. Lenhart, 402 Main St., Bismark, N. D., rec. by W. P. Porterfield and Wm. B. Day.
- No. 9. Gustave C. Horns, Mormarth, N. D., rec. by W. P. Porterfield and Wm. B. Day.
- No. 10. David A. Blackburn, Hansboro, N. D., rec. by W. P. Porterfield and Wm. B. Day.
- No. 11. Thomas R. Williams, Larimore, N. D., rec. by W. P. Porterfield and Wm. B. Day.
- No. 12. Clarence Thompson, 146 Main St., Sanford, Me., rec. by Theo. J. Bradley and J. G. Godding.

- No. 13. Ana J. Trillo Carballo, Moron, Camaguey, Cuba, rec. by Jose G. Diaz and G. J. Fajardo.
- No. 14. Eduardo G. Montero Taquechel, Moron, Camaguey, Cuba, rec. by Jose G. Diaz and G. J. Fajardo.
- No. 15. G. Wallace Grosse, 13972 Clifton Blvd., Lakewood, Ohio, rec. by Edward Spease and A. L. Flandermeyer.
- No. 16. Allan L. Ritch, 1045 Ocean Ave., Brooklyn, N. Y., rec. by F. W. Nitardy and C. D. Jonge.
- No. 17. Jacob Buckstein, 14128 Lake Shore Blvd., Cleveland, Ohio, rec. by A. L. Flandermeyer and Wm. B. Day.
- No. 18. Otto F. Profant, 420 N. Parkside Ave., Chicago, Ill., rec. by Wm. B. Day and Frank Kraemer.
- No. 19. Hilson H. Whyte, 426 S. 13th St., Philadelphia, Pa., rec. by Paul S. Pittenger and F. E. Stewart.
- No. 20. Erich Kather, 212 Main St., Wiliston, N. D., rec. by W. P. Porterfield and E. L. Newcomb.
- No. 21. Joseph S. Carlitz, 159 N. 2nd St., Philadelphia, Pa., rec. by Charles H. LaWall and Elmer H. Hessler.
- No. 22. R. G. Minnick, Brooksville, Fla., rec. by W. O. Lemasters and M. M. Taylor.
- No. 23. Furman Butler McCrackin, Bamberg, S. C., rec. by D. T. Riley and E. G. Eberle.

Motion No. 3 (Election of Soldier and Sailor Members). You are requested to vote on the following applications for Soldier and Sailor membership:

- S. S. No. 1. Michael Alfred Murphy, 204 Lemon St., Palatka, Fla., rec. by Frank H. Freericks and J. W. England.

- S. S. No. 2. Leonard J. Wanous, Glencoe, Minn., rec. by Frank Kadlee and F. H. Freericks.
- S. S. No. 3. Denis A. O'Neill, 519 George St., Norristown, Pa., rec. by J. C. Scott and A. J. Smith.
- S. S. No. 4. William Holden Woodward, 17 St. & Greenfield Ave., North, Chicago, Ill., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 5. William James Danforth, 9 Commonwealth Rd., Watertown, Mass., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 6. Charles F. Grove, 204 So. Jackson St., Mobile, Ala., rec. by John G. Adam and John Brothers.
- S. S. No. 7. William Meehan, 327 Crescent Ave., San Francisco, Cal., rec. by Jas. J. Horgan and Frank H. Freericks.
- S. S. No. 8. Floyd Ely Weeks, 503 Clinton Ave., Kalamazoo, Mich., rec. by J. F. Staley and Frank H. Freericks.
- S. S. No. 9. Ernest Kelly Skinner, c/o Grimes and Hurst, Beaumont, Texas. rec. by Frank H. Freericks and J. W. England.
- S. S. No. 10. Thomas Joseph Porra, 3716 N. 26th St., Tacoma, Wash., rec. by A. Faunholt and Frank H. Freericks.
- S. S. No. 11. Albert White, 27 Phillips St., Boston, Mass., rec. by J. B. Pascoe and Frank H. Freericks.
- S. S. No. 12. Thomas Edward Thorpe, Mayer, Ariz., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 13. Charles Sumner Wilkinson, 1202 S. 21st St., Philadelphia, Pa., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 14. Edgar George Woodward, 7106 Monticello St., Pittsburgh, Pa., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 15. Harold Edward Frank, 149 Euclid St., Jamestown, N. Y., rec. by Geo. E. Johnson and Frank H. Freericks.
- S. S. No. 16. Frederick Ness, Dawson, Minn., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 17. James E. Miller, 4777 Moneta Ave., Los Angeles, Cal., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 18. Albert B. Ware, Mayo, Fla., rec. by G. H. Dees and Frank H. Freericks.
- S. S. No. 19. Adolph Prussin, 1208 Fifth Ave., New York, N. Y., rec. by B. Jones and A. Wexler.
- S. S. No. 20. Edwin A. Fricke, Plattsmouth, Neb., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 21. William Francis O'Daniel, Hunnewell, Mo., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 22. Louis Segel, 114 Washington St., Elmira, N. Y., rec. by H. W. Sigmund and O. K. Lindquist.
- S. S. No. 23. F. Elmer Berg, 736 Rebecca Ave., Wilksburg, Pa., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 24. Ralph Andrew Carr, 1714 Jefferson St., Philadelphia, Pa., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 25. Oswald Rudolph Carlander, 1029 E. 68th St., Seattle, Wash., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 26. Andrew Ferdinand Engberg, Salem, Utah, rec. by John E. Booth and Joseph Ray Jansen.
- S. S. No. 27. Thomas Jehu Stennis, c/o Brewster's Drug Store, Meridian, Miss., rec. by H. H. Brewster and J. H. Stribling.
- S. S. No. 28. Louis Albert Corstillon, Jr., 705 Ursuline St., New Orleans, La., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 29. Morya Howard Anthony, Ft. Lyon, Colo., rec. by M. H. Ames and Frank H. Freericks.
- S. S. No. 30. David Friedlander, 636 E. 36th St., Los Angeles, Cal., rec. by Mr. Moffit and Mr. Dallinger.
- S. S. No. 31. Joel Virgil McCourt, Cotton Plant, Arkansas, rec. by V. J. McComb and Frank H. Freericks.

- S. S. No. 32. Leonard Albert Meierkord, Waukon, Iowa, rec. by G. J. Carter and L. H. Herman.
- S. S. No. 33. Claude Wright Kemp, Woodlark Blvd., Portland, Ore., rec. by Louis F. Clarke and Frank H. Freericks.
- S. S. No. 34. Guy Clark Dewey Andrews, 187 North Main St., Barre, Vt., rec. by H. C. Heilman and I. Jerder.
- S. S. No. 35. Joseph Sendeci, 14 Marsh St., Newport, R. I., rec. by B. Larson and Frank H. Freericks.
- S. S. No. 36. Waldemar A. Koelbel, 3144 S. Park Ave., Chicago, Ill., rec. by F. G. J. Stielber and Wm. B. Day.
- S. S. No. 37. James Fillmore Smith, 14 King Ave., Florence, S. C., rec. by R. F. Zeigen and D. T. Riley.
- S. S. No. 38. Bruce E. Clark, 115 Beuton Blvd., Kansas City, Mo., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 39. Walter Henry Micklesen, Hudson, Wis., rec. by E. E. Gatchell and H. C. Micklesen.
- S. S. No. 40. William Perry Taylor, Minco, Okla., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 41. Ira J. Smith, 98 State St., Hammond, Ind., rec. by Jos. A. A. Weis and C. R. Niswander.
- S. S. No. 42. Ernest J. Hess, Albion, Neb., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 43. Adolph Arthur Mantey, R. F. D. c/o R. R. Mantey, Fanguane, Tuscaloosa Co., Mich., rec. by Harry Reynolds and Malachi Coombs.
- S. S. No. 44. Charles Bercaw Hutsenpiller, Burgettstown, Pa., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 45. Albert Louis Larsen, 1315 2nd East St., Salt Lake City, Utah, rec. by W. B. Kelling and Frank H. Freericks.
- S. S. No. 46. Leland Nelson Brown, 5547 Chester Ave., Philadelphia, Pa., rec. by H. B. Hallam and Frank H. Freericks.

- S. S. No. 47. Richard Calvin Shepherd, Carrollton, Ala., rec. by L. A. Welsh and C. R. Anderson.

J. W. ENGLAND,
Secretary.

415 N. 33RD STREET.

A. PH. A. COUNCIL LETTER NO. 5.

PHILADELPHIA, October 7, 1919.

To the Members of the Council:

Motion No. 1 (Reference of Report of Committee on Conservation to Committee on U. S. Pharmacopoeia), Motion No. 2 (Election of Active Members applications Nos. 1 to 23 inclusive) and Motion No. 3 (Election of S. and S. Members; applications Nos. 1 to 47 inclusive), have each received a majority of affirmative votes.

Chairman L. C. Hopp has named the following Committee on Re-organization, directed to be appointed at the Council meeting held August 29, 1919; Dr. F. E. Stewart, J. A. Koch and S. L. Hilton.

Council-Representation by World War Veterans Section: At the recent New York meeting, the World War Veterans Section was established by resolution of the Council; but not by amendment to the by laws of the Association.

The by laws of the Association (Chapter IX) specify the numbers and names of the Sections and define the duties of each, and state, also, that upon approval of the Council additional Sections may be organized from time to time as necessitated; and under Chapter VII, Article II, provide that the Chairmen of the Sections shall be *ex-officio* members of the Council.

The question has, therefore, arisen: "Has a Section created by resolution of the Council and not by amendment to the by laws of the Association the right of Council-representation?"

As the question is without precedent, it was referred to Chairman L. C. Hopp, who rules that the World War Veterans Section is part and parcel of the Association and the Chairman of the Section is an *ex-officio* member of the Council.

Election of Non-Official Members of the Executive Committee: The time-limit having expired for nominations for the three non-official members of the Executive Committee, the election is now in order. The names of the nominees, given alphabetically, are as follows:

H. V. ARNY,
JAMES H. BEAL,
GEORGE M. BERINGER,
THEO. J. BRADLEY,
CLAIR A. DYE,
F. G. EBERLE,
JOHN G. GODDING,
J. A. KOCH,
CASWELL A. MAYO,
H. H. RUSBY.

Each member of the Council is to vote for three—voting card enclosed—the three receiving the highest vote to be elected. The election is for the official year of 1919-20, that is, until the close of the next annual meeting.

The following communication has been received:

RICHMOND, VA., September 9, 1919.

To the Council of the American Pharmaceutical Association:

During the recent annual meeting of the American Pharmaceutical Association, the Virginia delegation organized a branch to be known as the Virginia Branch. John E. Jackson, of Tazewell, Va., was made Chairman and C. F. Walker, 1801 Hull Street, Richmond, Va., Secretary. We now desire to make formal application to the Council for recognition, with the above named officers and W. F. Rudd as our Council-representative.

John E. Jackson, Chairman, Charles F. Walker, Secretary; Morris Phipps; Albert Bolenbaugh; Eugene C. Wilson; Philip F. Fackenthall; Lloyd C. Bird; W. F. Rudd; C. H. Beach; W. W. Rolston; J. Richard Pryde; William W. Thomas; Andrew G. Briggs; R. E. Monroe; E. G. Johann; William P. Harrison; Julian Lichtenstein; E. L. Brandis; A. L. I. Winne; Samuel Weinstein; R. M. Parker; T. F. Martin; D. E. Seagle; R. S. Hopkins; G. E. Thompson and T. F. Knock.

Motion No. 4 (Organization of Virginia Branch). Moved by E. G. Eberle, seconded by J. W. England, that the organization of the Virginia Branch as above reported be approved.

J. W. ENGLAND,
Secretary.

415 N. 33rd Street.

A. PH. A. COUNCIL LETTER NO. 6.

PHILADELPHIA, October 20, 1919.

To the Members of the Council:

Motion No. 4 (Organization of Virginia Branch) has received a majority of affirmative votes.

Election of Members of Executive Committee:

The three non-official members of the Executive Committee elected for 1919-20 (Council Letter No. 5) are: James H. Beal, E. G. Eberle and George M. Beringer.

Atlanta Representative of Committee on Transportation: At the first session of the Council for 1919-20 in New York, the Committee on Transportation was elected, and W. S. Elkins, Jr., was named as the representative of Atlanta, Ga. Mr. Elkins is no longer a member of the Association and, therefore, cannot serve as the Atlanta member of the Committee. To fill the vacancy W. B. Day nominates Sinclair S. Jacobs of Atlanta. Are there further nominations?

The American Pharmaceutical Association is a member of the Joint Committee on Horticultural Nomenclature. It has been the custom of the Association to make an annual contribution to the Committee of \$25 and Dr. H. H. Rusby, Chairman, asks that this be done for the year.

Motion No. 5 (Appropriation of \$25 to Joint Committee on Horticultural Nomenclature). Moved by W. B. Day, seconded by J. W. England, that an appropriation of \$25 be made to the Joint Committee on Horticultural Nomenclature.

Attention has been called to the fact that the item of traveling expenses of the budget of appropriations for 1919 is practically exhausted, and it is moved by J. A. Koch, seconded by W. B. Day, that \$78.06 be appropriated to this item. General Secretary Day writes: "So far as I know there will be no further charges against this budget item this year."

The above motion will be known as *Motion No. 6 (Appropriation of \$78.06 for Traveling Expenses of Budget of Appropriations for 1919).*

Motion No. 7 (Election of Active Members). You are requested to vote on the following applications for active membership.

- No. 24. Louis A. Robertson, 5912 Page Blv., St. Louis, Mo., rec. by L. E. Prichard and J. Merner Noble.
- No. 25. Henry Rushing Deason, 423 8th St., Nashville, Tenn., rec. by William R. White and E. A. Ruddiman.
- No. 26. Phil. D. Johnson, 729 4th Ave. S., Nashville, Tenn., rec. by E. A. Ruddiman and William R. White.
- No. 27. Wilbur E. Prann, Timber Lake, So. D., rec. by D. P. Jones and J. M. Stanley.

- No. 28. Herman Peter Reif, 1204 W. Johnson St., Madison, Wis., rec. by H. A. Langenhan and Edward Kremers.
- No. 29. B. Frank Hays, 80 Beekman St., New York, N. Y., rec. by F. W. Nitardy and C. D. Jonge.
- No. 30. Isaac F. Hilliard, Wilmar, Ark., rec. by M. A. Eissele and Frank Schachleiter.
- No. 31. Paul V. Weismiller, Box 49, E. E. Y. M. C. A., Pittsburgh, Pa., rec. by J. A. Koch and Carl Saalbach.
- No. 32. Henry Bennett, 260 Scott St., Wilkes-Barre, Pa., rec. by Walter Banker and E. R. Owens.
- No. 33. A. D. Morgan, 582 S. Franklin St., Wilkes-Barre, Pa., rec. by Walter Banker and E. R. Owens.
- No. 34. Arthur Price, 11201 St. Clair Ave., Cleveland, Ohio, rec. by A. L. Flandermeier and Edward Spease.
- No. 35. William T. Barnett, 116 E. Main Street, Blytheville, Ark., rec. by M. A. Eisele and Frank Schachleiter.
- No. 36. Will Elmer Nixon, 1200 Main Street, Little Rock, Ark., rec. by M. A. Eisele and Frank Schachleiter.
- No. 37. Paul Hertzberg, 379 Greene Ave., Brooklyn, N. Y., rec. by Wm. B. Day and J. W. England.
- No. 38. Florenz Charles Godt, 422 S. 18th St., Ft. Smith, Ark., rec. by M. A. Eisele and Frank Schachleiter.
- rec. by William R. White and E. A. Ruddiman.
- S. S. No. 53. Richard Henry Kirby, 2113 Church St., Nashville, Tenn., rec. by William R. White and E. A. Ruddiman.
- S. S. No. 54. James Wharton Brown, 2509 Oakland Ave., Nashville, Tenn., rec. by William R. White and E. A. Ruddiman.
- S. S. No. 55. Otto Louis Schroeder, 84 Moffat St., Brooklyn, N. Y., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 56. Norval Burnis Fast, 438 College St., E. Liverpool, Ohio, rec. by T. C. Flock and W. S. Henderson.
- S. S. No. 57. Henry Clyde Hisey, Main St., Shenandoah, Va., rec. by C. Clifton Crukman and E. Y. Hudson.
- S. S. No. 58. Ellsworth Peter Marshall, 83 Center St., Perth Amboy, N. J., rec. by J. J. Buckley and Jean L. A. Hammell.
- S. S. No. 59. Harry Raymond Greenleaf, Downingtown, Pa., rec. by Adley B. Nichols and Charles H. LaWall.
- S. S. No. 60. Edward Sheridan Sullivan, 108 Main St., Gloucester, Mass., rec. by Francis J. Long and H. Cooper.
- S. S. No. 61. Samuel Shrewsbury Lewis, R. F. D. No. 2, Sta. B, Bonabel Place, New Orleans, La., rec. by W. G. Steachnan and Frank H. Freericks.
- S. S. No. 62. John B. Bustetter, Elm & Canal Sts., Y. M. C. A., Cincinnati, O., rec. by Frank H. Freericks and J. W. England.
- S. S. No. 63. Manual Schwartz, 1700 N. 5th Ave., Birmingham, Ala., rec. by W. E. Manning and Frank H. Freericks.
- S. S. No. 64. Charles S. Gutzeit, 362 Jackson St., Philadelphia, Pa., rec. by Elmer H. Hessler and Ivor Griffith.
- S. S. No. 65. Melvin O. Peck, Coloma, Mich., rec. by A. W. Baker and Fred L. Scott.
- Motion No. 8 (Election of Soldier and Sailor Members).* You are requested to vote on the following applications for soldier and sailor membership:
- S. S. No. 48. Paul Joseph Mackay, 2306 East 103rd Street, Cleveland, Ohio, rec. by Edward Spease and R. E. Potter.
- S. S. No. 49. Morris Aaron Aarons, Mass. and Atlantic Ave., Atlantic City, N. J., rec. by M. R. Ost and Frank H. Freericks.
- S. S. No. 50. Rafael Rivera, Casa Blanca, San Juan, Porto Rico, rec. by F. Emmanuelli and J. M. Baptiste.
- S. S. No. 51. William Edward Hooser, 910 4th Ave. S., Nashville, Tenn., rec. by William R. White and E. A. Ruddiman.
- S. S. No. 52. Lloyd Scudder Cummins, 915 Russell St., Nashville, Tenn.,

S. S. No. 66. Paul Joseph Mackay, 2306 East 103rd Street, Cleveland, Ohio, rec. by E. Spease and R. E. Potter.

S. S. No. 67. Samuel J. Kellett, Manning, S. C., rec. by Frank H. Freericks and J. W. England.

S. S. No. 68. Bloomfield Sisom, 137 W. Broad St., Burlington, N. J., rec. by E. W. Adams and J. W. England.

J. W. ENGLAND,
Secretary.

415 North 33rd Street.

A. PH. A. COUNCIL LETTER NO. 7.

PHILADELPHIA, November 12, 1919.

To the Members of the Council:

Motion No. 5 (Appropriation of \$25 to Joint Committee on Horticultural Nomenclature), Motion No. 6 (Appropriation of \$78.06 for Traveling Expenses of Budget of Appropriations for 1919), and Motion No. 7 (Election of Active Members; numbers 24 to 38 inclusive) and Motion No. 8 (Election of S. and S. Members; applications Nos. 48 to 68 inclusive), have each received a majority of affirmative votes.

Motion No. 9 (Election of Atlanta Representative of Committee on Transportation). Moved by W. B. Day, seconded by E. G. Eberle, that Sinclair S. Jacobs of Atlanta, Ga., be elected the Atlanta representative of the Committee on Transportation for 1919-20.

At the final general session of the Association for 1918-19 held at New York on August 30, 1919, H. M. Whelpley stated that he was a member of a committee, appointed by the Council, to confer with the officers of the newly formed World War Veterans' Section relative to continued work in behalf of the soldier and sailor pharmacists. The speaker said that the committee of which he was a member was to have had another session, but time did not permit, prior to adjournment of the Association. The officers had summarized the situation

and made a request for two thousand dollars for carrying on the work during the year. Instead of looking ahead twelve months, he, individually, recommended that, with the approval of the Council and the Finance Committee, five hundred dollars be provided for carrying on the work of the Section. If at the end of three months the work is such that the Council feels justified in making further appropriations, this can be done.

Caswell A. Mayo moved that the recommendation made by H. M. Whelpley be referred to the Council, seconded by Hugo Kantrowitz. Carried.

The appropriation proposed has received the approval of the Finance Committee.

Motion No. 10 (Appropriation of \$500 to War Veterans Section). Moved by E. G. Eberle, seconded by C. H. LaWall, that five hundred dollars be appropriated for carrying on the work of the Section for three months as provided for in recommendation made to the Association on August 30, 1919.

A communication has been received from Prof. Alexander Tschirch of Bern, Switzerland, Honorary Member of the American Pharmaceutical Association, asking if the University of Bern could be supplied with certain numbers of the Year Book and Journal which had not been received by reason of War conditions. The missing Year Books are Vol. I to 6, and of the Journal are, Vol. I, No. 1 to 10; Vol. II, No. 8 to 11; Vol. III, No. 1 to 7, 9 to 11; and Vol. IV, No. 2 to 6.

Section No. 11 (Donation of Year Books and Journals to University of Bern). Moved by Dr. A. R. L. Dohme, seconded by W. B. Day, that the Year Books and Journals desired by Prof. Tschirch for the University of Bern be forwarded to him with the compliments of the American Pharmaceutical Association.

J. W. ENGLAND,
Secretary.

415 North 33rd Street.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Committee on Publication: J. W. ENGLAND, *Chairman*; G. M. BERINGER, CASWELL A. MAYO, H. B. MASON, E. L. NEWCOMB, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on the Progress of Pharmacy, *ex-officio*.

FIND NEW SOURCE OF SUGAR.

The U. S. Department of Agriculture has devised new uses for both the potato and the esculent yam. Experiments have proven that even though potatoes have decayed they are a source of starch.

The shortage of sugar has encouraged the manufacture of syrups from new sources, thus the sweet potato is said to be one of these and farmers can become manufacturers. The following is given as the process:

"The sweet potatoes are washed, placed in a kettle with plenty of water and boiled until thoroughly soft, requiring about two hours. The potatoes are then mashed in the kettle in the water in which boiled, adding more if necessary to form a thick, smooth, mushy liquid. The temperature of the mixture is then brought to 140 degrees and a quantity of ground malt added equal to $3\frac{1}{2}$ per cent of the weight of the original sweet potatoes. The mixture is thoroughly stirred and allowed to stand for a few minutes at a temperature of 140 degrees, and the temperature is then brought, with constant stirring, to a temperature of 150 degrees, the source of heat removed, and the mass allowed to stand, with occasional stirring, for an hour. The mixture, known technically as the "mash," is pressed in cloths to separate the liquid and solid portions. The juice flows out readily and is boiled down to syrup in an ordinary kettle."

The further purpose of this writing is to encourage the cultivation of cane by those requiring large quantities of sugar, as manufacturers of syrups for the soda fountain, to free themselves from the uncertainties of the sugar market.

We have, long ago, realized that the day of the small manufacturer has passed, but the pendulum is swinging back; the day is coming, and has dawned, when the manufacturer will in a larger measure produce the crudes for his manufactory.

PROPOSITION TO FORBID VIVISECTION IN THE DISTRICT OF COLUMBIA.

The attempt to forbid vivisection comes up again and again. There is narrowness in other

lines than legislation; viewpoints differ and change. It is not unlikely that those advocating measures against vivisection participate in fox hunts and steeple-chases or drive automobiles beyond safety limitations, applaud their favorite foot-ball team, etc.

The measure referred to was a subject of hearing before the Senate Judiciary Subcommittee when Dr. Carl L. Alsberg told the Committee that some drugs must be standardized by animal experimentation. Deleteriousness of foods must often be determined by tests on animals. Dr. Erwin F. Smith testifying before the Committee said Pasteur could not have discovered his method of treating hydrophobia if there had been a law against dog vivisection in France.

NERVOUS BREAKDOWNS.

It is said that as a result of strenuous debate and tests of political strength a number of our national legislators have suffered from nervous breakdowns. The question may arise, would these conditions have come about if a little less attention was given to politics and parties? And another also—are legislators elected to display their abilities in debate or make results possible that will be beneficial to their constituents, the citizens of this country and the world?

There is evidence of resentment from the conservatives and radicals anent enacted legislation that disturbs and discourages, and the failure to adjust international affairs so that the American industries can resume and progress. Precious time has been lost in extending American trade.

THE HIGH PRICE OF CAMPHOR.

About the first of this month Japan was buying camphor in this country, responsive to a higher price in Japan than here, namely \$4.15 per pound. This figure is deserving of a record in this Journal and should encourage further study of the possibilities of manufacture. The synthetic product offers greater possibilities in this country than natural production.

OIL FROM GRAPE SEEDS.

In a paper read before the Division of Industrial Chemists and Engineers of the

American Chemical Society, Dr. J. H. Shrader of the Bureau of Plant Industry, U. S. Department of Agriculture, pointed out that grape seeds have always been a waste product and could be utilized for the fixed oil which, the author stated, could be used in cooking.

He presented an estimate for the necessary plant to be erected at the grape pressing centers. Owing to the shortness of the season, September to November, the plant suggested is only large enough to dry and press the seeds during the winter months. According to Dr. Shrader, \$24 per ton will cover charges of all description, including all overhead and management charges but excepting property rental and interest charges of real estate investment.

Efficiency of the oil plants can be increased, according to the Government expert, by extracting oil also from tomato, pumpkin, and other vegetable seeds.

CASTOR BEAN GROWING DURING THE WAR MAY COST UNITED STATES \$3,000,000.

As a news item the readers have read of the suit brought against the U. S. Government by claimants through Attorney Eugene L. Culver; this brief reference is simply for a record.

Hearings were held in Washington and much detailed testimony was submitted by Dr. W. W. Stockberger of the Bureau of Plant Industry regarding the prospectuses sent to the farmers by Colonel van Way of the Signal Corps, which appear to have been over-enthusiastic as to the measure of beans which could be produced to the acre. Pests in the form of growths destroyed the vitality of the beans. Evidence as to the yield are far from that which farmers were led to expect and, therefore, they ask for reimbursements.

SPECIFICATIONS FOR REAGENTS

In the belief that a valuable service can be rendered both to the manufacturers and users of reagents and apparatus, through standardization, the American Chemical Society appointed a committee which is now organized and at present is collecting data regarding the quality of reagents on the market.

It seems that in general the experience of users agrees with that of the Bureau of Chemistry as reported by H. E. Buc in the December number of the *Journal of Industrial and Engineering Chemistry*. The chief complaints appear to be in regard to the lack of reliability of the analyses rather than unsatisfactory purity of the reagents themselves. It is also

evident that in many instances impurities which have caused dissatisfaction could have been removed by exercising sufficient care in production.

Insufficient knowledge on the part of the producer, both as to requirements and acceptable methods for testing, has been one cause for any dissatisfaction relative to reagents. Some makers have signified a willingness to follow standard specifications and methods of testing, and the committee therefore proposes to begin work on the specifications for sulphuric, nitric, and hydrochloric acids and ammonia. This will be followed with specifications for other reagents.

It is requested that suggestions be sent to the Secretary of the committee, W. D. Collins, Bureau of Chemistry, Washington, indicating the specifications which would be acceptable, the uses to which the reagents are put in any special case, and the methods which are satisfactory in determining the purity of the reagents and the presence and amount of objectionable impurities.

In the near future coöperation in the standardization of laboratory apparatus will be sought.

IS DISPENSING A SALE?

A suit in the British Courts involved the question, whether a pharmacist rendered a service in compounding or whether the transaction of filling a prescription constituted a sale and, in this instance, was subject to the Profiteering Act. The only point which came before the Court was whether or not an article dispensed on a prescription by a pharmacist was sold to the customer for whom it was dispensed. The Court held that every sale involved skill and work. The judge declared that he could not distinguish the case before him from an order for a pair of boots to be made. The defendants, Boots, Ltd., and others asked for a ruling on the ground that making up a prescription was a service, and therefore did not come within the Profiteering Act. The judge stated that to give effect to the argument by defendants would render the Profiteering Act of no value in practice. The rule asked by defendants was denied.

SOCIALIZATION OF SAXON PHARMACIES.

According to *Drug Topics* the Coöperative Union of Socialist Pharmacies has submitted to the Saxon Minister of Economy a proposal for the socialization of pharmacies. All existing

pharmacies are recommended for incorporation in the Union, the present owners to receive compensation based on actual value. The number of pharmacies may be increased or reduced, according to local requirements. Senior pharmacists will act as managers, the salary being 400m. (nominally \$100) a month with an extra 100m. (nominally \$25) for managerial duties.

The pharmacists will become officials, and in each district will elect a committee to act as supervising authority. The doctor's right of inspecting pharmacies will be abolished, and the manufacture of specialties reduced. In each district a central laboratory and warehouse is to distribute supplies to pharmacists, and a laboratory for urine, blood, sputum and food analyses will be attached to the central laboratory.

PROMOTION OF DRUG CULTURE IN ITALY.

The Italian national committee to promote the cultivation of medicinal plants in Italy, which was formed in 1915, has recently distributed 40,000 copies of a booklet explaining how to grow the plants and how to market them, also giving instructions as to harvesting; this information is being particularly brought to the notice of the inhabitants of the mountainous parts of Italy. The economic side of this question is not lost sight of, and as examples it is pointed out that the price of belladonna leaves has risen from 60 to 700 lire, ergot from 350 to 1,000 lire and hydrastis from 3,500 to 10,000 lire per hundredweight.

PHILADELPHIA ARBORETUM TO BE EXTENDED.

The acquisition of ground contiguous to the Awbury Arboretum in Germantown, so that Philadelphia would have one of the finest botanical gardens in the country, has been urged by William Draper Lewis before the survey committee of Councils. The committee approved the proposition. This adds fourteen acres to the arboretum.

PRIESTLEY HOME TO BE PLACED ON THE CAMPUS AT STATE COLLEGE (PENNSYLVANIA).

The home and laboratory of Dr. Joseph Priestley, which is on the banks of the Susquehanna River at Northumberland, Pa., was purchased recently by graduate chemists of the Pennsylvania State College, who plan to

move it to the campus here and make it a lasting memorial to the great scientist.

Priestley came to this country in 1794 and settled at Northumberland where he built the mansion referred to, lived here and continued his studies until his death in 1804. In 1874 a large number of chemists gathered at his home to celebrate the 100th anniversary of the discovery of oxygen; these chemists formed the nucleus of what is now the American Chemical Society.

CAN PHARMACY INDUCE DONA- TIONS OR ENDOWMENTS?

A "mysterious Mr. Smith" has pledged four million dollars for the endowment fund of the Massachusetts Institute of Technology provided the alumni contribute a like amount. This will probably be no great undertaking because there are quite a number among them who have prospered.

Vanderbilt University Medical Department will receive a four million dollar donation through the generosity of John D. Rockefeller; will the pharmacy department benefit? Undoubtedly there are men possessed of fortunes who could be persuaded to give to pharmaceutical education and advancement; if not during their life-time then by their wills. In memory of one of our Honorary Presidents, the beloved and lamented Thomas F. Main, a memorial fund of \$75,000 is to be provided for the benefit of New York College of Pharmacy by the National Wholesale Druggists' Association.

APPLIED PHARMACY.

If every pharmacist would publish once or twice in his life-time some fact relating to pharmacy, not generally known, but proven by experiment and practice, much valuable information would be collected. If every pharmacist would apprise one of the laity with means, of the service rendered by pharmacy and which might be augmented, both humanity and pharmacy would benefit. Some pharmacists may write too much; many more publish too little. Few pharmacists speak of the mission of pharmacy; the majority are silent on the subject.

WILL AMERICAN PHARMACY WAKE UP?

The following timely comment is taken from the *Northwestern Druggist*:

"The unfortunate part of the whole situation is that thus far only a small percentage of

the pharmacists of the country have come to fully realize the absolute necessity for active membership in our national pharmaceutical associations. This applies with even greater force to the A. Ph. A. than the N. A. R. D. The average retail pharmacist complains because our national associations are not gaining adequate recognition for pharmacy. Our associations complain because pharmacists do not affiliate and assist in gaining such recognition.

What American pharmacy needs in both the A. Ph. A. and the N. A. R. D. is a vastly increased membership. This must be obtained through a national campaign carried on simultaneously in every state, city and town of the country. Spasmodic membership drives which each of these national associations has conducted in different sections of the country show that the heart of the retail druggist is in the right place and that when properly organized and conducted national membership drives are launched he may be safely counted upon to join with his fellow pharmacists in making our national associations truly representative of American pharmacy. We feel confident that a membership of from twenty to thirty thousand is entirely within the reach of each of these organizations. Will American Pharmacy Wake Up?"

ADDITIONS AND CORRECTIONS U. S. PHARMACOPOEIA 9TH REVISION.

Since the printing of the first Series of the U. S. P. IX it has been found necessary to alter the original plates in a few instances because of slight discrepancies which were pointed out by users of the book. Many of these alterations will be found in copies of the Pharmacopoeia now in use; in fact, most of the changes were made after the printing of the first two thousand copies.

Leaflets containing these additions and corrections are now available for distribution to owners of the U. S. P. IX desiring them. They may be had upon application to P. Blakiston's Son and Company, Philadelphia, Pa., Agents, or from any of the following Sub-agents:

New York, Paul B. Hoeber, 67 East 59th Street.

Chicago, Chicago Medical Book Co., Congress and Honore Streets.

St. Louis, Lewis S. Matthews and Co., 3563 Olive Street.

San Francisco, H. S. Crocker Co., 565 Market Street.

COMMITTEES FOR REVISION OF FRENCH CODEX.

M. E. BOURQUELOT, *Chairman.*

Sub-Committee No. 1. Inorganic acid and bases: Messrs. Guerbet, Breteau, Poulenc, and Lebeau. *Sub-Committee No. 2. Metallic salts:* Messrs. Moureu, Héret Moreigne, Melliére, and André. *Sub-Committee No. 3. Organic acid, bases, and neutral substances:* Messrs. Léger, Behal Cousin, Fourneau, Tiffeneau, and Leroux. *Sub-Committee No. 4. Soaps, oils, fats, resins, gum resins, cerates, plasters, glycerols, liniments:* Messrs. Bourquelot, Voiry, Cordier, Vicario, and Lesure. *Sub-Committee No. 5. Alcohol, ether, chloroform, and distillation products:* Messrs. Patein, Moureu, Fourneau, Gallois, and Valeur. *Sub-Committee No. 6. Simple and compound powders, pulps, medicinal waters:* Messrs. Collin, Viron, Carette, Dumesnil, and Lemeland. *Sub-Committee No. 7. Infusions, decoctions, mucilage, emulsions, potions:* Messrs. Crinon, Dumouthiers, Lefèvre, Hérissé, and Bourdier. *Sub-Committee No. 8. Tinctures, alcoholates, wines, vinegars, and beers:* Messrs. Grembert, Gaillard, Vaudin, Thibault, and Pépin. *Sub-Committee No. 9. Extracts, syrups, honeys, oxymels, electuaries, opiates, jellies, pastes, sugars, pastilles, and lozenges:* Messrs. Vigier, Bichault, Berlioz, Choay, and Michel. *Sub-Committee No. 10. Species, pills, granules, capsules, compressed tablets, gargles, ampoules, injections:* Messrs. Lafay, Lepinois, Javillier, François, and Bernier. *Sub-Committee No. 11. Introductory Notes:* Messrs. H. Martin, Bougault, Lacroix, Guillaumin, and Huerre. *Sub-Committee No. 12. Materia Medica:* Messrs. Collin, Perrot, Sommelet, Goris, and Guérin. *Sub-Committee No. 13. Simple substances, chemical products, and colloids:* Messrs. Dufau, Valeur, Delépine, Lebeau, and Carette.

PARAFFIN-COATED STARCH AS A COMPLEMENT TO LACTIC FER- MENT TREATMENT.

When it is desired to induce lactic-acid fermentation in the large intestine it is not always sufficient, as Metchnikoff and his school have taught, merely to introduce an abundance of lactic ferment into the intestinal canal. It is also necessary to give starch, to act as a medium for the organisms. Unfortunately, when ordinary starch is administered very little reaches the large intestine. It is practi-

cally all hydrolyzed and absorbed in the higher portion of the digestive canal. The author has found that by coating starch granules with hard paraffin, m. p. 45°C , a successful lactic fermentation may be started in the lower bowel by giving at the same time active lactic ferment. It is important that the m. p. of the paraffin should be 45°C . If it is higher it passes through the system unchanged. If lower, it fails to protect the starch from the action of the amylolytic enzymes of the upper bowel. One part of paraffin must be used for five parts of starch. If less is employed the protection is inefficient. The paraffin is dissolved in a "suitable neutral solvent" (presumably ether); the starch is moistened with this solution in a closed vessel. The solvent is then distilled off in the cold. The author does not specify the kind of starch to be used, nor the actual solvent to be employed for the paraffin. This protected starch is administered in doses of 50 Gm. per diem. It is claimed that excellent results have been obtained with this, and with much greater certainty than with the original Metchnikoff method.—*Doumer (Gaz des Hospit; J. Pharm. Chim., through Chem. and Drug, 20, 188, 1919.)*

ISOTONIC EYE LOTION.

An eye lotion to yield the best results should be isotonic with the tears. Such tonicity is represented by a solution of sodium chloride of 1.4 percent strength. A one percent solution of cocaine hydrochloride solution should contain 125 percent of sodium chloride. Zinc sulphate requires 0.027 percent of sodium sulphate to a one percent solution, and silver nitrate needs 0.01552 percent of sodium nitrate for proper isotonicity. The following prescriptions are recommended:

Cocaine hydrochloride, 0.5 Gm.; sodium chloride, 0.625 Gm.; distilled water, to make 50.0 Cc; zinc sulphate, 0.5 Gm.; Sodium sulphate, 0.135; distilled water, to make 50.0 Cc; silver nitrate, 0.5 Gm.; sodium nitrate, 0.00776; distilled water, to make 50.0 Cc.

A 2 percent solution of boric acid (*i. e.*, half the strength of a saturated solution) requires no addition, being practically isotonic, a fact which probably accounts for the popularity of boric acid as an eye-lotion.—*The Prescriber*, November 1919, 209.

HELIANTHUS A QUININE SUBSTITUTE.

Helianthus, probably of the ordinary sunflower variety, is used as a substitute for

quinine in Siberia. It is said an extract is made of the leaves and stems. Returning prisoners of war from Russia report that as a prophylactic and also as a remedy for malaria the extract is efficacious and of great value.

DR. F. F. FRIEDMANN SELLS TURTLE-SERUM RIGHTS.

Press reports state that Dr. Frederick Franz Friedmann, tuberculosis specialist, has sold the rights to his turtle-tuberculosis serum to two prominent Social Democrats (capitalists, names not given).

Doctor Friedmann created something of a sensation seven years ago with his turtle serum. As a result, however, of a visit to this country in the spring of 1913 and tests made here the serum was pretty thoroughly discredited as a cure for tuberculosis.

Doctor Friedmann refused to give the United States Public Health Service the information requested about the serum, and Dr. John F. Anderson, (at that time of the Public Health Service) in a report to the National Association for the Study and Prevention of Tuberculosis, stated that the effects of the Friedmann treatment on the patients treated under the eye of the government's board "do not justify the confidence in the remedy which has been inspired by widespread publicity," and that "harm may have been done."

JAMES M. GOOD MEMORIAL SERVICES.

A memorial meeting in memory of the late Prof. James M. Good and in recognition of his services to pharmacy will be held at the St. Louis College of Pharmacy November 19, at 11 A.M. Prof. Good was perhaps equally known as a pharmaceutical educator and an influential retail druggist. He was an ex-president of the A. Ph. A., one of the organizers of the N. A. R. D., and active in local pharmaceutical bodies.

MOB DOES DAMAGE TO PHARMACY OF J. LEON LASCOFF.

A violent mob, excited by the preachings of one Jean Jacques Coronell, an ex-drug clerk, who is said to be one of the "red birds" with "yellow wings," held on \$20,000 bail during the war with Germany, caused serious damage to the well known and reputable drug store of J. Leon Lascoff, Eighth-third street and Lexington avenue, New York City, on Tuesday November 11. This demonstration was an outcome of the unsuccessful drug clerks' strike

in New York City and vicinity.—*Drug and Chemist News*.

Dr. J. W. Shipley has been appointed assistant professor of chemistry at the University of Manitoba, Winnipeg. He graduated at that institution in 1908, winning the silver medal in science. He pursued his studies in chemistry at Harvard and obtained his M.A. in 1910 and his Ph.D. in 1913. Subsequently he became assistant professor of chemistry at Ohio State University and was more recently professor of chemistry at the Manitoba Agricultural College.

Dr. Harry E. Barnard, for 14 years Food and Drug Commissioner of Indiana, has resigned to become director of the American Institute, Baling. Ivy L. Miller, for seven years a chemist in the Food and Drug Division, has been selected to succeed Dr. Barnard.

Edward Miller, Eric Miller, Max E. Vitaly and Paul Doran have gone to Shanghai, China, where they have accepted positions with the American Drug Company. They are graduates of the Albany College of Pharmacy.

Dr. J. W. Mellor has been engaged for the last twelve years on the preparation of a compendious survey of inorganic and general chemistry. This has been described as the most comprehensive work on the subject in the English language. The first instalment is just on the press.

Charles L. Freer, at one time president of Parke, Davis & Co., and whose will has been admitted to probate in Detroit, has bequeathed

the famous Freer art collection to the Smithsonian Institution and provided also \$1,250,000 for a building to house it.

Ivor Griffith, Instructor in Pharmacy at Philadelphia College of Pharmacy, has been appointed associate pathologist to the Stetson Hospital, Philadelphia. He has charge of the routine laboratory work done in the hospital.

Honorary President O. F. Fuller, A. Ph. A. for 1918-1919 recently celebrated his 91st birthday. The occasion was an event at a recent meeting of the Chicago Veteran Druggists' Association of which the venerable druggist is the honorary president. Wilhelm Bodemann spoke words of love and esteem and presented Mr. Fuller with a silver-mounted cane on behalf of the members. Others spoke their appreciation and the venerable birthday child responded feelingly.

George H. Meeker, M.D., member of the A. Ph. A., is dean of the Graduate School of Medicine, University of Pennsylvania, which opened in October.

Drug Topics is now a trade journal and the publisher is the well and favorably known editor of the publication, Jerry McQuade. Those who attended the New York A. Ph. A. Convention will remember the interesting number of *Drug Topics* devoted to the meeting. The publication was begun in 1883 and continued from that time forward without a miss. The brilliancy and sparkle of wit of the editor characterize *Drug Topics* and the snappy merchandising stories are distinctive for their style and value to the readers.

SOCIETIES AND COLLEGES.

NATIONAL PHARMACEUTICAL SERVICE ASSOCIATION.

We are quoting from a letter of President Charles T. Southern in the following:

"The National Pharmaceutical Service Association, sponsor for two bills in Congress, one providing recognition for pharmacists in the army and the other for making the commissioned rating of pharmacists in the navy a permanent thing, has entered upon its third year of activity in the interest of justice to American pharmacy in the army and navy.

"No determined effort had been made before the war to secure proper ranking for pharmacists in military service, and it is not surprising that in the magnitude of the war preparation

we could not secure the change in existing machinery for which we asked, but the time for securing this needed legislation is right now, as both navy and army plans are in a state of reorganization.

"Our interviews with both the Surgeon Generals of the Army and Navy in the past few months have indicated a marked advance in the situation. Surgeon General Ireland has received the assurance of the general staff and of the Military Affairs Committee that a Medical Service Corps, including commissioned pharmacists, will be acceptable in the reorganized army and the details have been drafted by Dr. Ireland.

"Surgeon General Braisted, of the Navy, is

actively supporting the Hospital Corps Bill, and our interview with Secretary Daniels recently, resulted in a conference between Surgeon General Braisted and Secretary Daniels, and a request for a new report from the Bureau of Navigation."

PROPOSED SERVICE CORPS.

Surgeon General Ireland's draft for a Medical Service Corps was printed in the November JOURNAL A. PH. A., p. 991 *et seq.* Secretary E. Fullerton Cook, in a communication sent to pharmaceutical publications, states that it is understood Dr. Ireland presented this plan to the general staff and received their approval and it is confidently believed, therefore, that it will be embodied in the bill for Army reorganization when that is presented in Congress.

Commenting on the Darrow Bill, Secretary Cook advises that the Surgeon General of the Navy, Dr. Braisted, has strongly endorsed the principles embodied in this Bill, which is to provide permanent commissions for members of the Hospital Corps, up to the rank of Lieutenant Commander. A committee from the American Pharmaceutical Association and one from the National Pharmaceutical Service Association, presented this bill to Secretary Daniels in October and it is known that he has given it careful consideration and has been in conference with the Surgeon General. The Army and Navy officials are endeavoring to coöperate in the establishment of those organizations, and the Hospital Corps of the Navy and the Medical Service Corps of the Army would practically embrace the same class of activities.

Pharmacy proper would be but one phase of various duties required in either organization. The filling of prescriptions and the manufacture of preparations may become a part of the duty of any member of the Corps, who is properly qualified, but in addition to this, as has been explained in a number of articles appearing during the war, the members of the Hospital Corps are expected to qualify for the buying of supplies, including not only drugs but every kind of supply for hospitals, such as food, equipment, and materials for surgical work. They are required to be first aid men, chemists, bacteriologists, X-ray experts, stenographers, bookkeepers, commissary experts, executives, and competent aids in every department of the medical service. The question whether this work is called professional need not concern pharmacists. Much of it we know

is work of which pharmacy may be proud and which does require scientific training and is properly classed as professional, but other work required by the Corps will be non-professional. This has been done in the past by the medical officers, who are conceded to be professional men, but the doctors did not change the work to professional work, nor can it be changed in the future. Without question the pharmacist will be given credit for the professional work he does, as it is now conceded by the medical men of the Navy, and his standing will not be injured by the non-professional work required.

Secretary Cook concludes his communication by saying, if both the bill proposed by Dr. Ireland and the Darrow Bill become laws, a pharmaceutical organization will be built up which will have a counterpart in the reserve corps and in those civil pharmacists will have an opportunity to enlist and receive training, and can advance as reserve officers, so that should war again occur, the reserve officers of the Hospital Corps and of the Medical Service Corps of the Army would be in line for rapid promotion. It is within the jurisdiction of the Surgeon Generals of both branches of the military service to give recognition for technical training received outside of the Army or Navy.

"While it is not known just what recognition will be given graduate pharmacists in these corps, there are hundreds of cases on record in the Navy where a graduate pharmacist advanced in 18 months to Chief Pharmacist's Mate with the pay of about \$100 a month and all living expenses in addition. A similar opportunity will no doubt be provided in the Army and although five years of service is a requirement in the bill before commissions are granted, exceptions can be made if found practicable through a ruling of the Surgeon Generals, as has been done in the past. It must not be overlooked, however, that many other qualifications are necessary in addition to a technical pharmaceutical training and among these the personal qualities are important. The ability to assume command and administer an important office, becomes a prime requisite for advance.

"The situation at least is encouraging and with this start, pharmacy will have every opportunity to develop in the work of the Army and the Navy during the years ahead and we believe that it can thoroughly demonstrate its importance and efficiency and that

we need never again be ashamed of the place held by pharmacy in either branch of the Service.

"If these bills are reported favorably to Congress, ask your Congressman to give it support, as a united pharmacy at this time will be necessary to the completion of this programme and securing the recognition of pharmacy in our military organizations."

NATIONAL WHOLESALE DRUGGISTS' ASSOCIATION.

The forty-fifth annual meeting of the National Wholesale Druggists' Association was held in New Orleans, November 3-7. The meeting was largely attended. The officers for the ensuing year are:

President: R. H. Bradley, Toledo, Ohio.

Vice-Presidents: Lucien E. Lyons, New Orleans; Adam Pfromm, Philadelphia; H. J. Frank, Portland; C. J. DeWoody, Dallas; Charles F. Cutler, Boston.

Board of Control: For one year, L. D. Sale, Los Angeles, Calif., H. D. Faxon, Kansas City, Mo., B. A. Jackson, Providence, R. I., G. B. Moxley, Indianapolis, Ind.

For two years, F. C. Groover, Jacksonville, Fla., R. R. Ellis, Memphis, Tenn., W. T. Harper, Ottumwa, Iowa, S. D. Andrews, Minneapolis, Minn.

For three years, L. M. Hutchins, Grand Rapids, Mich., W. E. Greiner, Dallas, Tex., Walter V. Smith, Philadelphia, Pa.

Mr. Sale was elected chairman of the Board of Control.

Secretary: F. E. Holliday; assistant secretary, C. H. Waterbury.

Cincinnati was chosen as the meeting place for the convention next year.

The following report is quoted from *Drug and Chemical Markets*:

Vigilant coöperation of the members in enforcing the prohibition laws was urged by Arthur D. Parker, retiring president of the Association, who commented on reports that plans were being formed by unscrupulous physicians and druggists to supply the public with whiskey, and said in conclusion: "We do not want five cents of this dirty profit, and I am sure I speak for every member of the association when I pledge our support in the enforcement of the prohibition law and also the Harrison anti-narcotic act."

Resolutions embodying these sentiments were un-animously adopted.

The subject was discussed by the Commit-

tee on Legislation in its report to the convention through George W. Lattimer, chairman; as follows:

"No state in the Union which has legislated upon the prohibition question has passed a law so well balanced and affording so satisfactory a measure of protection to legitimate interests as that which has been placed on the Federal records. It has been the concern of this committee to safeguard the drug trade against radical and unnecessary restrictions that might be imposed in connection with Federal legislation for the enforcement of both war-time and constitutional prohibition.

"It is with the deepest satisfaction we are able to report Congress has enacted a law designed to put an end to the beverage liquor traffic in the United States, but which contains carefully devised exemptions provided for the use of non-beverage spirits for legitimate purposes of the drug and allied trades. This committee succeeded in having the phrase 'unfit for use as intoxicating beverages' substituted for the phrase 'non-potable and incapable of being used for beverage purposes.' The latter phrase as applied to flavoring extracts, some toilet preparations, and even some medicinal preparations, would have deprived manufacturers of these articles of the protection to which they are entitled and which the proposed law intended to give them.

"The Senate committee struck out that part of the act demanding toilet articles and other preparations of a like nature be marked with their alcoholic contents, as it was urged by the representatives of the druggists that degenerates demanding alcohol in some form might read the labels as index to preparations of highest alcoholic content, to use for beverage purposes. The manufacture of non-beverage alcohol will be standardized and cheapened to an extent that should have a material effect in reducing the cost."

"American ships flying the American flag to carry American drugs and other goods everywhere," was advocated by the Board of Control in a statement which said:

"America is now independent in the manufacture of drugs. Under the stress of war we learned to do without German chemicals and drugs by making them ourselves. This independence will be permanent so far as domestic use is concerned. But the question is whether we shall be in a position to establish our dominion in the drug trade over Latin America and other places formerly controlled by Ger-

many. We can do this if we can have adequate transportation, the report stated."

The convention by unanimous vote demanded the return of the railroads to private ownership. Members were urged to cooperate in an effort to have all freight cars loaded to capacity to relieve the congestion owing to inadequate transportation facilities, and to prevent delay in loading and unloading.

It was voted to begin a campaign to raise \$75,000 for a memorial endowment to the College of Pharmacy of Columbia University in memory of Thomas F. Main, of New York, a former president of the Association.

The Committee on Export and Transportation urged the development of the Merchant Marine.

Resolutions were passed condemning the proposal for the repeal of the recent zone ad-

vances in postal rates of advertising pages of periodicals, declaring that even with these rates the expense of the postal service falls too heavily upon first class mail. Reciting that the \$75,000,000 gained annually on first mail is only a portion of the amount lost on second and third class postage, the resolutions insist that the members petition their Congressmen that no change be made until protesting publishers offer another way for raising the amount.

NATIONAL DRUG TRADE CONFERENCE CONVENED IN WASHINGTON, NOVEMBER 24 AND 25.

It is hoped to have a report of the meeting of the National Drug Trade Conference in the January issue of the Journal. The meetings were held at the New Willard, November 24 and 25.

THE PHARMACIST AND THE LAW.

EVERYTHING FIXED FOR US BY THE GOVERNMENT.

Whether for good or for bad we have nationalized. Jefferson's star has gone down, Hamilton's star is ascending. We are close to the day when the Government will fix everything and the people will carry out life's program according to printed schedule. We are approaching the time when the working hours, quantity production, even sermons will be metered; merit system and individuality are rapidly being done away with. The old doctrine that those are best governed who are least governed has gone to the discard.

CONTROL OF NARCOTICS IN CUBA.

A Cuban law dated July 25 regulates the importation into and production and sales in Cuba of narcotic products. The law provides that only legally established pharmacists and druggists attached to a hospital, clinic or other similar institution may import or produce the following narcotic drugs and their preparations: Opium, Indian hemp, chloroform, sulphuric ether, chloral hydrate, morphine, narceine, heroin, dionine, peronine, cocaine, novacain, tropocaine, eucaine, stovaine, mariquane and other products specified by the competent Cuban authorities as being prejudicial to health.

The restriction applies to the products in question, whether pure or made up as specialties, extracts, tinctures and other medicinal

preparations; also to hypodermic ampoules, and tablets containing the products, either alone or combined; to all pills, pilules, tablets, pastilles, syrups, elixirs or other pharmaceutical forms containing the products; and to certain specific products containing them. Other provisions of the law deal with the production and sale of the products in Cuba, and with the keeping of special records of the amounts manufactured, imported or in stock.

DISTRICT OF COLUMBIA DRUG SELLERS INDICTED.

The grand jury of the District of Columbia on November 6 returned indictments charging twenty-eight drug users with alleged violation of the law prohibiting the use of narcotics for other than medicinal purposes. Internal revenue agents working in conjunction with Pharmacy Inspector Robert A. Sanders have for some time been actively engaged in discovering evidence against the accused, among which are four women and a negro physician. It is asserted that the use of narcotics has increased to an alarming extent since the prohibition laws became effective, and persons addicted to the drug habit are resorting to any extreme to satisfy the craving; while agents employ most ingenious methods of bartering their illicit wares. The Internal Revenue Service is receiving complaints in great number from practically every large city.

OPPOSING OPINIONS ON SACCHARIN IN CONGRESS.

Senator Gay of Louisiana has inserted in the *Congressional Record* a letter from Dr. Carl Alsberg, chief of the Bureau of Chemistry, Department of Agriculture, protesting against the use of saccharin in food and drink on the ground that it is an adulterant, has no food value and is uneconomical in use.

In answer to it Senator Spencer, of Missouri, who recently introduced a resolution asking the Senate Committee on Agriculture to investigate the suggested substitution of saccharin for sugar, has inserted in the Record a supplemental report of the so-called Referee Card on Foods and Drugs, of which Prof. Ira Remsen was chairman, upon the subject of saccharin. The Referee Card reported that small quantities of saccharin are not injurious; that it is not an adulterant if used in food, and that its addition to food does not affect the quality or strength of such food.

Besides the Alsberg letter, Senator Gay also put into the *Record* copies of the Food and Drug report against saccharin, issued in 1911 and 1912. There was also inserted a statement by Dr. Alsberg in which it appears that the saccharin question is pending in suits before the courts which now will be tried as a result of the return of important government witnesses from France. Dr. Alsberg also makes the point that soda water, soft drinks, etc., are food, although they may not be consumed with the idea that they are food. Therefore, he takes issue with representatives of certain chemical industries that even if saccharin has no food value its use in such articles should not be prohibited since they are not taken as food.

Dr. Alsberg points out in the statement that there are various other substitutes for sugar that have food value and which can be used in sweetening soft drinks, sodas, etc. In that connection he wrote Chairman McNary of the Senate Sugar Investigating Sub-Committee a letter, which also was put into the *Record* by Senator Gay, referring to the work done by the department along these lines, with reference to the use of glucose, refiners' syrup, maltose syrup, corn sugar, honey, etc., in making soft drinks and the like.—*P. O. and Drug Reporter*.

THE FEDERAL PROHIBITION COMMISSIONER.

Hon. John F. Kramer is Federal prohibition commissioner in charge of the government's

prohibition enforcement field force. Mr. Kramer, of Mansfield, O., was formerly assistant attorney general of his state. He was also minority floor leader of the Ohio Legislature.

Commissioner of Internal Revenue Daniel C. Roper has announced the appointment of the following committee to work out and assist in inaugurating a plan of organization for the enforcement of national prohibition throughout the country:

Deputy Commissioner H. M. Gaylord, chairman; Revenue Agents David A. Gates, of Arkansas; Thomas E. Stone, of Ohio; S. R. Brame, of Virginia; Daniel J. Gantt, of Georgia; Daniel L. Porter, of New York; and John L. Considine, of California. Judge Charles J. Orbison of Indianapolis is associated with the committee in an advisory capacity.

PERMITS.

Pharmacists holding permits may retail alcohol medicated according to Standards of the Internal Revenue Bureau in quantities not exceeding one pint, and sell spirits and wines on physicians' prescriptions. Duly licensed physicians may obtain permits without giving bond for the purchase of not more than two quarts of alcohol or alcoholic preparations during a period of one year. Physicians and pharmacists must keep records.

NON-BEVERAGE ALCOHOL TAX RULING AMENDED BY NEW DECISION.

A recent treasury decision amends the former ruling regarding the tax on non-beverage alcohol to read as follows:

Non-beverage Alcohol.—Non-beverage distilled spirits or alcohol tax paid at the rate of \$2.20 per gallon may be used in filling physicians' prescriptions in accordance herewith whether the spirits or alcohol is medicated or denatured so as to render it unfit for beverage use or whether it is not so medicated or denatured. Any regulations or instructions inconsistent herewith are hereby revoked.

MODIFIED REGULATIONS FOR USE AND SALE OF DISTILLED SPIRITS.

Articles 15(a), 15(b) and 18(c), of T. D. 2940, approved October 29, 1919, are modified to read as follows:

Article 15(a).—All holders of permits issued prior to Nov. 1, 1919, are required to give a new bond on form herein prescribed, not later than December 31, 1919; provided, however,

that no new bond need be filed where a satisfactory bond was filed prior to November 1, 1919, on the latest revised form 738, published in treasury decision 2788 or treasury decision 2940, in a sufficient penal sum to meet the requirements of Section 15(f) of treasury decision 2940, and in no case less than \$1,000. All existing permits expire on December 31, 1919, unless such new bond is furnished where required as above.

Article 15(f).—The basis of the penal sum of bond, form 738 or form 738A, covering the use or sale of non-beverage spirits, is \$4.20 per proof gallon on the quantity of spirits which will be received during any quarterly period of the calendar year, plus the amount of non-beverage spirits on hand at the end of the preceding quarter.

The penal sum of bonds covering wines will be computed at the rate of \$100 for each 200 gallons, or any fractional part thereof, which will be received during any quarterly period of the calendar year, plus the amount on hand at the end of the preceding quarter.

The penal sum of a bond to cover both non-beverage spirits and wines shall be the aggregate sum of the amounts required for each. Provided, however, that the penal sum of any bond shall be not less than \$1,000 nor more than \$100,000.

Article 18(c).—After December 1, 1919, the vendor must, under no circumstances, deliver wines (except for sacramental purposes, after receipt of forms 801 or 802), or non-beverage spirits, unless on receipt of application form 739, duly certified by the prohibition enforcement officers, as set forth herein.

IMPORTANT.

After December 31, it will be impossible for wholesale druggists to fill requisitions for non-beverage alcohol unless same have previously been certified by the internal revenue or prohibition officer in the district in which retailer is located.

THE USE OF NON-BEVERAGE ALCOHOL FOR FLAVORING EXTRACTS.

Non-beverage alcohol will be approved in any so-called imitation lemon extract if the same contains not less than 2 percent citral, such citral being derived either from oil of lemon or from other sources, the alcohol being only in amount sufficient for solution and preservation. Any such extracts may also contain lemon oil or other flavoring constituents

simulating lemon in addition to the contents of citral above noted, provided the finished product is in fact an imitation lemon flavor and not a disguised drink.

Non-beverage alcohol will be approved in any so-called imitation vanilla, made from coumarin or vanilla, or both, which contains not less than 3 grains of vanillin and coumarin per fluidounce or 0.69 Gm. per 100 Cc. This is the amount of vanillin and coumarin stated in the formula for essence of vanillin, National Formulary, third edition, the alcoholic content of this to be only sufficient for solution and preservation.

Non-beverage alcohol will be permitted in any so-called imitation vanilla extract made by a mixture of the vanillin and coumarin compound, stated above, and a true tincture of vanilla bean, provided the mixture of the two is the equivalent of a full strength product. In other words, a 5 percent extract of vanilla bean would require $1\frac{1}{2}$ grains of vanillin and coumarin per fluidounce in order to produce what the office holds to be a full strength extract, the alcohol being only sufficient for the purposes of solution and preservation.

Non-beverage alcohol will be permitted in any so-called imitation fancy fruit flavors, such as banana, peach, pineapple, raspberry, strawberry, maple, pistachio, apricot, apple, blackberry, nectarine, etc., provided they contain not less than 2 percent by volume of essential oils, ethers, esters, plant extractives or other flavoring bodies and only sufficient alcohol for solution and preservation. The term plant extractives or other flavoring bodies, it is understood, applies more particularly to maple, pistachio and the like.

CONFERENCES OF DRUG INDUSTRIES WITH BUREAU OF INTERNAL REVENUE OFFICIALS.

During the week of December 1, the Bureau of Internal Revenue held a series of Conferences with the representatives of the Associations, of various Drug Industries and of manufacturers of alcoholic preparations.

The hearings were held as follows:

On barbers' supplies and perfumes—Monday, December 1, 10 A.M. to 1 P.M.

On liquid medicinal compounds—Wednesday, December 3, 10 A.M. to 1 P.M. and an adjourned meeting on Thursday, December 4.

On flavoring extracts—Friday, December 5, 10 A.M. to 1 P.M.

TARTAR EMETIC NOT APPROVED AS A
MODIFYING AGENT.

The representatives of the first class mentioned went on record as opposed to the suggestion regarding the use of one-fourth grain of tartar emetic per fluidounce of bay rum as a satisfactory modifying agent for bay rum for the following reasons:

1. Its physiologic or emetic dosage appears to be too close to its toxic dosage to be safe as such a modifying agent.

2. Tartar emetic is tasteless and therefore offers no warning to the would-be consumer of bay rum for beverage purposes.

3. This fact and also the further fact that tartar emetic does not always produce emesis and is known to be a cumulative poison might result in the severe poisoning and death of the user.

4. It has been found that small doses of the drug have caused death when administered for its anti-toxicant effects. The meeting requests information from the Bureau of Internal Revenue as to where the moral and legal responsibility would rest in case any one should suffer death from the use of bay rum modified with tartar emetic.

It was the consensus of opinion that the Commissioner be asked to refrain from making the use of tartar emetic compulsory. The meeting also expressed the view that the Commissioner of Internal Revenue permit the different manufacturers to submit alternative modifying agents which would render unfit for beverage purposes any of their particular preparations likely to be used for beverage purposes. It was also suggested that the Commissioner be requested to grant as much time as possible for the development of suitable and satisfactory modifying agents for the different preparations in question, same to be submitted to the Commissioner at the earliest possible date with full data as to their efficiency as special modifying agents in each case, for his approval.

It was suggested that the names of materials such as zinc salts, cadmium salts, formaldehyde, saccharin and salicylic acid be submitted to the Commissioner as having been used by different manufacturers as possible modifying agents for different preparations, such as bay rum, hair preparations, etc. In the absence of any specific scientific or pharmacological data other than the limited practical experience of the users, it was the desire of the meeting to obtain an expression of opinion from the tech-

nical staff of the Commissioner as to the possibility of developing the use of any one of these or any other materials for the purposes specified.

It was the unanimous view of the meeting that all legitimate perfumes and toilet waters when properly compounded were unfit for beverage purposes as such and therefore they should not be required to contain any special modifying agent.

OFFICIAL PREPARATIONS THAT MAY
BE OR HAVE BEEN USED FOR
BEVERAGE PURPOSES.

The following list of U. S. P. and N. F. preparations was submitted by the Bureau of Internal Revenue to the representatives of the Drug Industries. It was stated that those preparations marked with an asterisk had been used for beverage purposes and that the others might be used for like purposes. The list follows:

Elixir Aromaticum (Aromatic Elixir).

Elixir Glycyrrhizae (Elixir of Glycyrrhiza).

*Spiritus Juniperi Compositus (Compound Spirit of Juniper).

Tinctura Cardamomi Composita (Compound Tincture of Cardamom).

Tinctura Lavendulae Composita (Compound Tincture of Lavender).

*Tinctura Zingiberis (Tincture of Ginger).

*Cordiale Rubi Fructus (Blackberry Cordial).

Elixir Anisi (Elixir of Anise).

Elixir Aromaticum Rubrum (Red Aromatic Elixir).

Elixir Aurantii Amari (Elixir of Bitter Orange)

Elixir Cardamomi Compositum (Compound Elixir of Cardamom).

Elixir Taraxaci Compositum (Compound Elixir Taraxacum).

*Spiritus Myrciae Compositus (Compound Spirits of Myrcia).

Tinctura Aromatica (Aromatic Tincture).

Tinctura Caramellis (Tincture of Caramel).

Vinum Aurantii Compositum (Compound Wine of Orange).

*Vinum Carnis (Wine of Beef).

*Vinum Pepsini (Wine of Pepsin).

Vinum Pruni Virginianae (Wine of Wild Cherry).

Elixir Glycyrrhizae Aromaticum (Aromatic Elixir of Glycyrrhiza).

Elixir Gentianae Glycerinatum (Glycerinated Elixir of Gentian).

*Vinum Carnis et Ferri (Wine of Beef and Iron).

Tinctura Amara (Bitter Tincture).

Immediately following the adjournment of the Conference on December 3, a meeting was held by the technical and scientific representatives of the various associations and firms whose names are appended hereto. The following advisory resolutions relating to the tentative list of U. S. P. and N. F. Elixirs, Spirits, Tinctures, Wines, etc. submitted to the Conference by the Commissioner were unanimously adopted, and the same were respectfully submitted for the consideration of the Honorable Prohibition Commissioner.

RESOLUTIONS:

Resolved, (1) That it is the sense of this meeting that none of the U. S. P. or N. F. preparations appearing in the list submitted by the Commissioner of Internal Revenue be eliminated until such time as it is proven that they are being generally used for beverage purposes, especially in view of the fact that revisions of the U. S. P. and N. F. will shortly be made.

(2) That we endorse the practice of the Bureau of Internal Revenue requiring a label to be affixed to all medicinal preparations which might be used for beverage purposes, stating clearly that non-beverage alcohol is used in the preparation and that it is a violation of the law to sell or use the same for beverage purposes.

(3) That sales by wholesalers and manufacturers of Elixirs on this list be made only to those holding permits for the use and sale of non-beverage spirits and duly licensed physicians.

(4) That sales of Elixirs on this list be made to the consumer only when properly medicated so as to make them unfit for beverage purposes or upon a physician's prescription.

(5) That *Spiritus Juniperi Compositus* (Compound Spirit of Juniper) and *Spiritus Myrciae Compositus* (Compound Spirit of Myrcia) be sold to the consumer in the unmodified form only on a physician's prescription.

(6) That *Tinctura Cardamomi Composita* (compound Tincture of Cardamom), *Tinctura caramellis* (Tincture of Caramel), *Tinctura Aromatica* (Aromatic Tincture), and *Tinctura Amara* (Bitter Tincture) be sold to the consumer in the unmodified form only on a physician's prescription.

(7) That *Tinctura Lavandulae Composita* (Compound Tincture of Lavender) and *Tinctura Zingiberis* (Tincture of Ginger) be sold in the unmodified form to the consumer in quantities of not more than two fluidounces at one time and not more frequently than once in

ten days to the same purchaser excepting on a prescription of a physician.

(8) That *Cordiale Rubi Fructus* (Blackberry Cordial) be sold in the unmodified form to the consumer in quantities of not more than four fluidounces at one time and not more frequently than once in ten days to the same purchaser excepting upon a physician's prescription.

(9) That the sale of *Vinum Aurantii Compositum* (Compound Wine of Orange), *Vinum Carnis* (Wine of Beef), *Vinum Pepsini* (Wine of Pepsin) and *Vinum Pruni Virginianae* (Wine of Wild Cherry) be made to the consumer only when properly medicated so as to make them unfit for beverage purposes or upon a physician's prescription.

(10) That *Vinum Carnis et Ferri* (Beef, Iron and Wine) be sold in quantities of not more than one pint and only upon the prescription of a physician.

The following is a list of the Associations and Firms present at the Conference, at which the above resolutions were unanimously adopted:

ASSOCIATIONS.

1. American Pharmaceutical Association.
2. The Proprietary Association of America.
3. The U. S. P. Revision Committee.
4. The N. F. Revision Committee.
5. The Philadelphia Drug Exchange.
6. Philadelphia Association of Retail Druggists.
7. American Drug Manufacturers' Association.
8. Pennsylvania Pharmaceutical Association.
9. New Jersey Pharmaceutical Association.
10. National Wholesale Druggists' Association.
11. National Association of Retail Druggists.
12. National Drug Trade Conference.

FIRMS.

1. Parke, Davis & Co.
2. McKesson & Robbins.
3. Larkin Company.
4. Eli Lilly & Co.
5. H. K. Mulford Company.
6. Royal Manufacturing Company.
7. Frederick Stearns & Company.
8. William S. Merrell Company.
9. Sharp & Dohme.
10. Bristol Meyers Company.
11. Upjohn Company.
12. Norwich Pharmacal Company.
13. Strong, Cobb & Company.
14. W. & H. Walker Company.
15. Combes Chemical Company.
16. Smith, Kline & French Company.

BOOK NOTICES AND REVIEWS.

A Text-book of Chemistry Intended for the Use of Pharmaceutical and Medical Students. By Samuel P. Sadtler, Ph.D., L.L.D., Virgil Coblenz, Ph.D., F.C.S., and Jeannot Hostmann, Ph. G. Fifth edition revised and rewritten. Pp. 751. Price \$5.50.

When a chemistry text-book survives twenty-four years of existence and passes through five large successive editions, there is doubtless a good reason for it, the good reason in this case being that the volume has successfully fulfilled its mission as a text in elementary chemistry for students of pharmacy and medicine.

The respective authors have had extended experience as teachers of pharmaceutical and medical students and in analytical and industrial practice, and this is exhibited in the selection and arrangement of materials and in the discussion of the particular topics considered. As a consequence the subject-matter of the volume has a distinct pharmaceutical and medical trend, a method of arrangement that will commend itself to those who have had experience in directing the chemical studies of these classes of students.

Part One, comprising something over 100 pages, is devoted to a review of the general principles of elementary physics.

While it may be contended that students should have a sufficient preparation in this branch before beginning the study of pharmacy and medicine, as a matter of fact many of the graduates even of the better class of preparatory institutions begin their professional studies with such a hazy knowledge of physics that a preliminary review of the subject is needed to enable them to enter profitably upon the study of chemistry.

This introductory review is devoted to a presentation of the general properties of matter and of the laws of physics, but with appropriate special emphasis upon such portions of the subject-matter as have a special relation to the work of the pharmacist and physician, as the specific gravities of liquids and solids, the general properties of gases, thermometry, the effects of heat on states of aggregation, electricity, light, the laws of optics, and the principles involved in the construction of the compound microscope, spectroscope and polariscope.

Part Two opens with an extended chapter on the general principles and laws of chemistry.

This theoretical introduction is well written and is as comprehensive as could be expected in a volume of its size. Among the topics considered are chemical notation and nomenclature, equations, valency, classification of the common inorganic acids and salts, reversible reactions, mass action, electrolytic dissociation, the laws of combination in simple and multiple proportions, Avogadro's hypothesis, the colloidal state, catalysis, stoichiometric calculations, etc., etc.

Though necessarily brief, the presentation of the topics dealt with in this introductory chapter is wholly satisfactory, the authors having wisely refrained from the introduction of topics for the comprehension of which the beginning student is in no wise prepared.

The remainder of Part Two is devoted to a systematic description of the non-metals and their compounds, with the description of reactions which can easily be made the basis of illustrative laboratory experiments.

The arrangement is in such sequence that each new element is considered in its combinations with the elements that have successively preceded it. The student is thus kept in constant touch with the knowledge previously acquired, and each new chapter thereby presents and enforces a review of the properties and combinations of the elements already passed over. In but few elementary text-books on chemistry is this sequence so carefully worked out and so fully adhered to as in the present volume.

Hydrogen is the first element considered, then the halogens, then the combinations of the halogens with hydrogen, then oxygen and its combinations with hydrogen and the halogens. The remaining non-metals are each presented in the same manner: first the element, then its combinations successively with hydrogen, with the halogens, and with the remaining elements previously considered.

The study of the non-metals thus serves as an introduction to Part Three, which is devoted to an exposition of the properties and compounds of the metals, most stress of course being placed upon metals and compounds which have important medical and pharmaceutical uses.

Part Four is devoted to the organic compounds of carbon, the classification adopted being one that serves for the convenient presentation of such classes of compounds as

are of special pharmaceutical and medical importance. The industrial manufacture of many of the compounds is described and illustrated, and separate chapters are devoted to such specially important pharmaceutical groups as the alkaloids, the terpenes and their derivatives, glucosides and bitter principles, etc. Part Four concludes with a chapter on the general subject of electrolysis and its applications. The general usefulness of the volume is added to by an appendix comprising tables of equivalents of weights and measures, of weight and volume relations, thermometric equivalents, atomic weights, etc.

The descriptive portions of our volume leave little to be desired, the reactions selected for particular discussion are wisely chosen, and the text is enlivened with appropriate illustrations, many of them showing industrial applications.

The work of revision in the 5th edition has been well done; many of the articles have been largely rewritten, and considerable new matter has been introduced.

Though intended primarily as a student's text-book, the volume possesses many features which will make it a valuable addition to the library of the practicing pharmacist or physician.

J. H. B.

The Condensed Chemical Dictionary. A reference volume for all requiring quick access to a large amount of essential data regarding

chemicals and other substances used in manufacturing and laboratory work. Compiled and edited by the Editorial Staff of the Chemical Engineering Catalog. F. M. Turner, Jr., Technical Editor; Assistant Editors, D. D. Berolzheimer, W. P. Cutter and John Helfrich. 8 vo., 525 pages, New York. Chemical Catalog Company, Inc. Price, buckram, \$5.00; flexible, thumb index, \$6.00.

The work is intended mainly to supply the need for detailed information regarding chemicals and chemical products of the large number of persons other than chemists whom the increased importance of the chemical industries has brought in contact with these industries. The book is cosmopolitan in scope, being a dictionary not merely of chemical compounds but also of plant drugs and their products and preparations, minerals, etc. While the space accorded each substance is of necessity small, the information is well chosen and relatively complete, including such unusual information as "grades," "containers," "fire hazard," and "railroad shipping regulations."

A glance at the list of references consulted in the preparation of the book insures that the information is the best and most up-to-date available. As a quick and handy source of information the book becomes indispensable after a few days' use, not only to the non-technical user but also to the busy chemist because of its time-saving qualities.

J. A. K.

THE GOVERNMENT.

A recent editorial in the Philadelphia *Public Ledger* said :

"The government is the will of the people. That will is expressed and enforced through regularly chosen officers whose duty is to make it effective.

The government is not an abstract thing apart from the people.

It is not a group of men who impose on the people their own will.

It is the agent of the people with the power of attorney to act for the people in every emergency.

In essence it is the people themselves in action."

We add, that the day will come when national and state governments will keep the people better advised relative to business and proposed legislation and seek their advice in matters that deeply concern them. Much confusion and injustice will thereby be avoided, and "playing politics" with highly important questions will cease to be amusing.

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