

mum effect with a minimum irritation. In such a medicament the crystals must be small and uniform and readily suspended upon agitation. If the crystals are too large they will irritate the surrounding tissue producing fibrosis and induration. If they tend to clump they form irritating masses with the same effect. In either case absorption is materially interfered with. On the other hand if a uniform suspension cannot be obtained, it is impossible to withdraw a sample containing the proper dose of bismuth.

The examination of bismuth subsalicylate suspensions therefore consists of two types of analysis, chemical and microscopic. The former is a quantitative determination of bismuth as set forth in the official assay, the latter method is here described. The sample is thoroughly agitated to produce a uniform appearance of suspension, and a thin glass rod is used to secure a drop and transfer it to a slide. A cover glass is immediately placed on top of the drop of suspension and gently rotated and pressed until a thin uniform smear lies between the slide and the cover slip. These smears are then examined under a magnification of about 450 diameters. The number and size of clumped areas may serve as a basis for a system of grading such as is used for milk sediments, or permanent records may be made by taking photomicrographs.

Six samples, representing well-known brands that are offered to the physician in Maryland, were analyzed by the foregoing procedure. In every case the quantitative requirements for bismuth were met, however the microscopic fields varied considerably. One sample was superior to all the rest, four samples were given intermediate ratings, while still another was distinctly inferior. Thus the microscopic test demonstrates, that, in a group of bismuth subsalicylate preparations, all of which have essentially the same composition, and all of which meet the percentage requirements for active ingredient, there may still be a difference in quality and therapeutic efficacy based on physical properties of the suspended salt.

PROBLEMS IN DENTAL PHARMACY.*

BY A. O. MICKELSON.¹

To understand the pharmaceutical needs of the dental profession, not including prescription writing, necessitates a thorough understanding of modern dentistry. The dentist's medicine cabinet for daily use and the pharmaceutical preparations and chemicals used in his laboratory work should be common knowledge to the pharmacist. The dentist is constantly using acids, alkalies, oxidizing agents, reducing agents, solvents, abrasives, hæmostatics, antiseptics, germicides, anesthetics—local and general, analgesics, sedatives, hypnotics and tonics.

A closer relationship between the two professions, discussing drugs or preparations used in dentistry, is undoubtedly the most effective way to understand the pharmaceutical needs of the dentist, and thus create new possibilities for professional pharmacy. The interview with the dentist should not cover a general scope, but instead study a specific problem, study the problem with the aim of solving his problem with him. Why should the pharmacist attempt to render

* Section on Practical Pharmacy and Dispensing, A. P. H. A., Washington meeting, 1932.

¹ Dean, School of Pharmacy, North Pacific College of Oregon, Portland.

such a service to another profession? The answer is this: The pharmacist is the counselor to the allied medical professions and the more efficient and extensive this service becomes the greater will be the demand and remuneration for the pharmacist. In other words, the pharmacist must give professional service if he expects support from the correlated professions.

Quoting from the cover of the A. PH. A. JOURNAL, for February 1934, "Pharmacy Is Strengthened by That Which Makes It of Greater Service." A slogan on a publication by the Council on Dental Therapeutics, "We Serve Not for Ourselves but for Dentistry." This slogan may apply to any profession. The pharmacist is not serving the physician nor the dentist for the benefits to be derived for himself but for humanity, pharmacy and himself.

The method of individual contact, and choosing or developing a specific problem is the method I have found most helpful. The dental pharmacy problems are numerous—a new field full of possibilities. The scope of dental pharmacy is evidenced by the extensive work that is being done by the Council on Dental Therapeutics. The problem may require some coöperative research before it can be solved, but it is the solving of the technical and minute detail of a problem which give the most gratifying results. The field of dental pharmacy is most interesting and especially to the pharmacist interested in professional pharmacy.

The problems in Dental Pharmacy in this discussion have been suggested by personal contact with dentists. There is a need for a general massing fluid to be used for incorporating various types of abrasives which are used in prophylactic work. This massing fluid must possess the qualities of readily mixing with abrasives and with the desired amount of abrasive it should possess the quality of adhering sufficiently to the brush, rubber cup or whatever appliance may be used by the practitioner, as not to fly from the instrument as soon as the engine is in motion, throwing the abrasive powder on the clothing of the patient and the dentist. It should readily disintegrate in water, it should have a pleasing taste, as well as being antiseptic to prevent infection. During prophylactic treatment it is usual for the dentist to use more than one grade of abrasive. The massing fluid should serve for any abrasive desired.

The biggest problem confronting the dental profession is that of prescribing tonics which will build tooth structure in fetal life and in children, as well as tonics which will maintain tooth structure in permanent teeth. Such tonics in conjunction with food and vitamins are indeed not impossible. Considerable research work has been done by the dental profession, and favorable results have been reported in numerous cases. There is no question that the minerals such as calcium and phosphorus put up in proper combination are of extreme value to proper development of deciduous teeth and permanent teeth, as well as aiding materially in the prevention of decay of permanent teeth. It is evident that pharmacists can be most helpful in solving this problem.

There is a demand for a suitable formula, highly germicidal in action, for the sterilization of dental instruments. The sterilizing solution should be rapid in action, insuring complete sterilization in a few minutes' time without a corroding effect on the instruments. The solution should be reasonably safe to use and non-toxic to human tissue.

There are many individuals who fail to have their teeth cleaned and cared

for by the dentist at regular intervals, nor are they in the habit of using a tooth brush. Under these conditions dense calcific deposit may form around the gum margins and on the teeth. This is very difficult to remove. A solvent which will penetrate and soften such densely glazed calcific deposits would be of use to the dental profession. It must be taken into consideration that a solvent which would dissolve calcific deposits would also have a chemical action on the enamel of the teeth. However, a preparation in the hands of a skilful dentist would not come in direct contact with the enamel of the teeth.

Dry-sockets are of common occurrence in the practice of dentistry, and at times very difficult to restore as well as most painful to the patient. Help the dentist in your community solve his need for a treatment for dry-sockets.

The problems in dental pharmacy are numerous. We can only begin to realize the growing demand for dental pharmacy when we consider a national tentative curriculum in dentistry which includes subjects relating to treatment and diagnosis of abnormal conditions of the oral cavity as follows: Bacteriology, Preventive (Hygiene), Physiological Chemistry, Materia Medica, Physiology, Pharmacodynamics, General Pathology, Oral Medicine (Pulp Canal), Oral Pathology, Prevention (Nutrition), Diagnosis, Anesthesia, Oral Surgery, Oral Medicine, Principles of Medicine.

A curriculum including subjects as those mentioned gives us a picture of future dentistry. The dental profession is aware of the importance of their specialized branch of medicine in the prevention of disease and restoration of the teeth. We must contribute our part to the advancing profession if we are to maintain our recognition as professional men serving the needs of the correlated medical professions.

A STUDY OF VEHICLES FOR MEDICINES.*

BY BERNARD FANTUS, H. A. DYNIEWICZ AND J. M. DYNIEWICZ.

VIII. THE GLYCYRRHIZA VEHICLES.

That glycyrrhiza is a valuable disguising agent may be gathered merely from the extensive usage of at least some of its preparations. In Professor Gathercoal's (1) report this is given as follows:

	Usage per 10,000 Rs.
Syrup of Glycyrrhiza, N. F.	14.8
Fluidextract of Glycyrrhiza, U. S. P.	11.2
Elixir of Glycyrrhiza, U. S. P.	2.6
Fluidglycerate of Glycyrrhiza, N. F.	0.0
Aqueous Elixir of Glycyrrhiza, N. F.	0.0

The remarkable validity of this verdict of the medical profession, as expressed by the relative frequency of use of these preparations, will become clear by the perusal of this study.

* From the Laboratory of Pharmacology, University of Illinois, College of Medicine.