

sium hydroxide extracts removed practically all the dissolved matter as a green oil which after some time became semi-solid. This could not be crystallized and was unchanged when boiled for several hours in the presence of an alcoholic solution of 5% sulfuric acid solution.

The Chloroform Extract of the Resin weighed 13 g. Part of this extract was quite insoluble in ethyl acetate and alcohol with which it was digested. This part was crystallized twice from dilute pyridine and melted at 280–295°. This gave the usual color test for a phytosterolin. After crystallization it weighed 3 g. Altogether the phytosterolin isolated from the ether and chloroform extracts amounted to 5 g. or 0.011% of the air-dried drug.

The filtrate from the above phytosterolin was evaporated to dryness, taken up in chloroform, and then fractionally extracted with varying strengths of alkali. Nothing of a crystalline nature was obtained by this procedure.

The Ethyl Acetate Extract of the Resin was a mixture of ellagic acid and tannin-like substances. Upon distilling off a portion of the ethyl acetate about half of it separated as crude ellagic acid, which when crystallized once from alcohol yielded 13 g. of pure acid that did not melt at 350°. The mother liquor from this separation was a smear, that colored ferric chloride solution black, and precipitated a gelatin solution.

The part soluble in ethyl acetate was thoroughly examined but nothing was isolated.

The Alcoholic Extract of the Resin yielded 15 g. further of ellagic acid. The total ellagic acid separated amounts to 1.2% of the plant. Neither an acid hydrolysis or a potash fusion gave any interesting decomposition products. Neither the ethyl acetate fraction nor the alcoholic extract was glucosidic.

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NEW BOOKS.

Laboratory Manual of Inorganic Chemistry for Colleges. By LYMAN C. NEWELL, Ph.D., Professor of Chemistry, Boston University. Boston: D. C. Heath & Co. Pp. vi + 240.

Although this book is prepared primarily to be used as a laboratory guide in connection with the author's "Inorganic Chemistry for Colleges," the experiments are of such a nature and scope that it could be used advantageously with any standard text. The directions for the experiments are clear and definite, and are based on the author's long experience as a laboratory teacher. A large number of experiments of graded difficulty are given, and provision is thus made for students of widely different preparation in chemistry. The apparatus required for most of the work is simple and inexpensive. The book appears to be one that

could be used profitably in a large laboratory where students are unable to have the directions for the experiments frequently interpreted by an instructor.

JAMES F. NORRIS.

Elementary Qualitative Analysis. By BENTON DALES, Professor of Chemistry, University of Nebraska, and OSCAR LEONARD BARNEBY, Instructor of Chemistry, University of Wisconsin. Pp. 206. John Wiley and Sons, N. Y.

True to title, this book contains little theory, few novelties in methods, no rare elements or unusual compounds. That the student may learn to work understandingly, that he may see the reasons for the processes he uses and become able to devise simple methods of separation, are ends apparently held as important as analytical results.

The first half of the book aims to extend the student's knowledge of general chemistry, particularly as to those facts on which the qualitative scheme is based. The first 25 pages are devoted to the ionic theory, equilibrium, nomenclature, reactions and equations, a treatment too condensed to give true ideas of these subjects to one meeting them for the first time. Apparently no use of the ionic theory or equilibrium is subsequently made. For example, the double salt theory is used to explain the non-precipitation of such compounds as manganese and magnesium hydroxides by ammonia in the presence of ammonium chloride.

About 70 pages are occupied by statements of properties and reactions of acids and bases, which the student is expected to verify experimentally. This is excellent, perhaps too extensive for an elementary course. Here and throughout the book are many lists of well selected questions. If the student is held rigidly to this work and to the questions, he can scarcely fail to secure a large amount of knowledge of analytical methods before he reaches the formal scheme for the analysis of "unknowns." His work can hardly become mechanical thereafter. It would probably increase his interest, give point to the testing and help to fix the facts in mind, if, instead of first working through the whole 70 pages, he were permitted after testing through a group of metals to take up the separation of that group.

Another good feature is a list of reagents in which concentration is given in terms of normality and the corresponding number of grams per liter. Yet another is a chapter on short processes and deductions, based on a table of solubilities and the properties studied in the general testing. This should appeal to the student as a time-saver and also prevent mechanical habits.

W. S. HENDRIXSON.