EDITORIAL NOTES

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ACTIVITY OF WILD AMERICAN DIGITALIS.

Reprint No. 391 from the *U. S. Public Health Reports* is of particular interest at this time. Martin I. Wilbert had called attention to a neglected source for obtaining digitalis, namely, the collection of the wild-growing plant which has escaped from cultivation and become a weed in various sections of the United States, more particularly in the northwest, where it is found growing in abundance and of the pharmacopoeial variety, *Digitalis purpurea.*

The author of this report, George B. Roth,[1] technical assistant in the Division of Pharmacology of the Hygienic Laboratory, U. S. Public Health Service, in the preliminary remarks, states that in order for these plants to be of commercial importance, it is necessary that the drug come up to pharmacopoeial requirements. This question prompted the investigation of the subject.

The examination concerns the activity of four samples of wild-growing leaves which were collected in Oregon during the season of 1916 and one sample from Washington. For the purpose of comparison, examination was also made of *cultivated* digitalis leaves which were grown in Washington during the season of 1916. The report also includes a sample of the season of 1914 grown in Wisconsin and another in Ohio. Tinctures were made according to the U. S. Pharmacopoeia and their activity determined physiologically by the present U. S. P. method.

All of the Oregon digitalis was collected near Astoria. Sample 1 consisted of leaves gathered from first-year plants about six weeks after the flowering time. They were rather dark in color and the hairs practically free from soil. Sample 2 consisted of leaves from second-year or older plants, about six weeks after flowering time. These were light green in color. Sample 3 consisted of leaves from flowering plants, and Sample 4 of leaves which had partially dried on the stalk and were yellowish green in color. The largest and best leaves were from plants which grew on moist ground where the plants were shaded about half the day. Too much shade prevents the proper development of the leaves, while long exposure to the sun causes the leaves to turn yellowish.

All of the samples were air-dried immediately after the leaves were collected, except the sample which was dried on the stalk. The process of drying with these samples was as follows: The gathered leaves were spread out in thin layers on floors over which the air could circulate freely and the leaves were stirred frequently, at least every other day. About three weeks were required to dry them thoroughly.

The Washington samples were collected by Prof. A. W. Linton, of the University of Washington, College of Pharmacy. Sample 5 consisted of leaves from plants growing wild near Seattle and were collected in August, while the plants were in blossom. They were air-dried, very dry and brittle and of a yellowish tinge. Sample 6 consisted of leaves from cultivated plants of second-year growth, obtained from the drug garden of the College of Pharmacy. They were collected in November 1916, and were the second growth of leaves for the season. The Wisconsin sample, which is reported on as Sample 7, consisted of leaves from first-year, cultivated Wisconsin digitalis, and collected in 1914 before flowering. They were supplied by Prof. Edward Kremers, of the University of Wisconsin. Sample 8 consisted of leaves from first-year cultivated digitalis grown in Cincinnati, collected in November, and supplied by Prof. John Uri Lloyd.

The first two Oregon samples were assayed

[1] "The Activity of Wild American Digitalis," by George B. Roth. Reprints may be had from Superintendent of Documents, Government Printing Office, Washington, D. C., for 5 cents per copy. (Postage stamps not accepted.)

on a lot of frogs received in October. The other two and those from Washington were assayed on a lot of frogs received in November. All of the samples were assayed on *Rana pipiens*, which were all obtained from the same dealer. Neither the Wisconsin nor the Ohio digitalis was standardized except as to the lethal dose of sample tincture. The first lot of frogs standardized against ouabain showed the lethal dose of 0.00000055, and the other lot of 0.00000045. The lethal dose of standard tincture digitalis of the first two Oregon samples was 0.0066 and of the other samples 0.0054. The lethal dose of sample tincture consecutively was as follows: 0.004, 0.005, 0.004, 0.003, 0.011, 0.007, 0.003, 0.006. The corrected lethal dose of sample tincture is as follows: 0.0036, 0.0045, 0.0044, 0.0033, 0.0121, 0.0077.

From this it will be seen that all the samples of wild Oregon digitalis were stronger than pharmacopoeial sample. The author states that, while this investigation has shown that of the tinctures made from wild-growing digitalis the Oregon samples were several times stronger than that grown in Washington, it should *not* be concluded that wild Oregon digitalis is generally more active than wild Washington digitalis.

It was especially surprising to the author to find that Sample 4, which was made from leaves which had partially dried on the stalk, was the most active of the Oregon samples. These leaves were yellowish green in color and would ordinarily be regarded as leaves of poor quality. The investigation also shows that time of collection has very little to do with the activity. It is also significant that all of the samples were air-dried, notwithstanding that many authorities claim that special methods of drying are necessary to secure a good product. The author concludes that "the wild digitalis which is found in the northwestern states may be utilized as a source of supply for making the various official preparations of digitalis, and that by using ordinary methods in handling and preparing the leaves we may secure a highly active product, which compares favorably with the activity of cultivated leaves grown under more favorable conditions."

Dean Adolph Ziefle, of the School of Pharmacy, has undertaken to collect digitalis in Oregon. A circular issued to farmers and others gives the methods of collecting and drying.

GUIDE TO CHEMISTRY 40.

PLANT CHEMISTRY FOR PHARMACY STUDENTS.

The first edition of this guide was published in 1911 and the present issue is by Nellie Wakeman and published by the University of Wisconsin. Dr. Edward Kremers states in the introduction that this pamphlet is not a text-book or laboratory manual, but merely a guide to both instructor and students.

"It is designed for the pharmacy students of the University of Wisconsin who are required to take plant chemistry as a three-credit study throughout the senior year. For a number of years, this course, together with pharmacognosy, which is given simultaneously as a two-unit hour course, has taken the place of the former course in materia medica.

"In the four-year course, pharmacognosy is preceded by vegetable histology, morphology of the flowering plants, and by general biology; plant chemistry, by pharmaceutical chemistry, inorganic and organic, and by general chemistry, inorganic preparations, organic chemistry, qualitative and quantitative analysis.

"During the first semester, experiments that do not involve a knowledge of advanced organic chemistry are selected, such as the isolation of starch, esterification of fatty and volatile oils, etc. The old-time groups of plant chemical constituents are followed: oleoresins, resins, volatile oils, etc., *i. e.*, constituents that are not chemical units but more or less natural mixtures. During the second semester definite chemical compounds are studied, such as the constituents of the volatile oils, the alkaloids, glucosides, etc."

The guide is divided into fourteen chapters, the first one on "water" and the last dealing with "proteins." The second chapter is on "enzymes" and will serve to explain the plan of presentation:

"The term enzyme is used to designate a class of complex organic substances, of unknown composition, existing in plant and animal tissues, and capable of accelerating chemical action. In the presence of enzymes, also known as unorganized ferments, chemical changes readily occur which would otherwise take place only slowly, or possibly not at all, under the same conditions of temperature, concentration, etc. As a rule the action of enzymes is checked by either increasing or lowering the temperature materially, also by the presence of certain poisons, antiseptics, or anesthetics.

"The chemical composition of enzymes is largely a matter of speculation. So far as is known, they are non-crystallizable substances, generally soluble in water, salt solutions, or glycerin. They are precipitated from their solutions by the addition of alcohol and by some neutral salts, such as ammonium sulphate. Probably an enzyme has never yet been obtained in a pure condition. Attempts at purification usually end in the diminution, or complete destruction, of the activity of the material examined."

Then follows a general classification and sub-classification, concluding with a statement relative to enzyme action. Then follow references, exercises and a series of experiments to be conducted by the student.

COMPILATION OF DIGEST OF COMMENTS ON THE U. S. P. AND N. F. CONTINUED.

The work of compiling the series of Hygienic Laboratory bulletins entitled *Digest of Comments on the Pharmacopoeia of the United States of America and on the National Formulary*, which was interrupted by the illness and death of Technical Assistant Martin I. Wilbert, has been resumed by Dr. A. G. DuMez, who was appointed to succeed the former June 1, 1917. The Digest of Comments for the calendar year ending December 31, 1915, has been completed and is ready for publication, and considerable progress has been made in the preparation of the abstracts for the 1916 bulletin.

A WAR TAX RULING.

C. E. Fletcher, Deputy Commissioner of Internal Revenue, Washington, D. C., has sent out the following ruling:

"Where goods manufactured by a person require further manufacture before being used by the consumer, *the one completing the manufacture is liable for the tax.* The same rule would apply to bulk goods that require to be bottled or otherwise prepared in order to put them into a salable condition. *Therefore the person preparing the goods in smaller packages and labeling them is the manufacturer within the meaning of the Act.*

"Where a manufacturer prepares a certain article, wrapped and labeled in a salable condition, and for the purpose of advertising will attach the name of any dealer who will handle the same, such a manufacturer is subject to the manufacturer's tax as provided in this section. *The dealer who handles the goods has no interest whatever in its manufacture and his name is simply placed upon the label for advertising purposes.*

"Where a manufacturer prepares an article according to a formula furnished by a dealer and also labels and puts the article into a salable condition, with the dealer's name stamped thereon, such a dealer will be considered the manufacturer, since he holds title to the formula by which the article is prepared."

Dr. A. Homer Smith, at a meeting of the General Medical Board of the National Council for Defense held January 13th, reported on the drug situation, detailing important data regarding chemical glassware, digitalis, alkaloids used in ophthalmic practice, novocaine, mercury, and other drugs. He pointed out the urgent need of supply and conservation, and pleaded for complete coördination of all branches of the Government on all subjects pertaining to drug and chemical need.

Dean Wilbur J. Teeters was unfortunate in having his residence destroyed by fire. Very little of the household goods escaped destruction or damage.

OBITUARY.

IN MEMORIAM.

JOSEPH PRICE REMINGTON.*

1847–1918.

WHEREAS, In the demise of Joseph Price Remington, American Pharmacy has lost its foremost figure and the Philadelphia College of Pharmacy its most distinguished son, therefore be it

Resolved, That we, the members of the Philadelphia College of Pharmacy, in special meeting assembled, express our deep sorrow at his passing and pay tribute to his work and worth.

As a pharmacist, he labored in all the branches of pharmaceutical practice—retail, wholesale and manufacturing, acquiring an unusually wide experience. He graduated from the Philadelphia College of Pharmacy

* Resolution adopted by Philadelphia College of Pharmacy.