Carter; corresponding secretary, three years, Dr. D. Bryson Delavan; treasurer, three years. The president is elected for a two-year term; Dr. George David Stewart continues to hold this office.

AT the annual meeting of the Institute of Chemical Engineers, held in Washington on December 5, 6 and 7, the following officers were elected: Dr. Charles L. Reese, chemical director of the du Pont Company, president, to succeed Dr. Henry Howard, who had completed his second term. H. K. Moore, of the Brown Co., Berlin, N. H., automatically became first vice-president and Dr. H. S. Miner, of the Welsbach Co., became second vice-president. The office of third vice-president is filled by election and Professor A. H. White, of the University of Michigan, was chosen for this office. Other officers were elected as follows: J. C. Olsen, *secretary*; F. W. Frerichs, *treasurer*; David Wesson, *auditor*; W. L. Badger, F. A. Lidbury and A. E. Marshall, *directors*.

OFFICERS of the Optical Society of America for 1924–1925 have been elected as follows: *President,* Herbert E. Ives, New York; *Vice-President,* W. E. Forsythe, Nela Research Laboratories, Cleveland; *Secretary,* Irwin G. Priest, Bureau of Standards, Washington; *Treasurer,* Adolph Lomb, Bausch and Lomb Optical Company, Rochester; *Members of the Executive Council, Ex officio,* the above officers and the past president, Leonard T. Troland, Harvard University, the editor-in-chief of the journal, Paul D. Foote, Bureau of Standards, the assistant editor-in-chief and business manager of the journal, F. K. Richtmyer, Cornell University; *Elected,* K. T. Compton, Princeton University; Carl W. Keuffel, Keuffel and Esser; P. G. Nutting, Schenectady, and F. E. Wright, Carnegie Geophysical Laboratory.

ROBERT AMORY, president of the National Association of Cotton Manufacturers and Mr. H. C. Meserve, secretary of that organization, recently delivered lectures at Princeton University on the cotton industry and its development. The lectures were delivered under the Cyrus Fogg Brackett Lectureship in applied engineering technology. Among the lecturers of the past two years in this foundation are Samuel Insull, of Chicago; John A. Britton, of San Francisco; J. W. Lieb, of New York; Ralph Modjeski, of Philadelphia, and William S. Lee, of Charlotte, N. C.

AT a meeting of the New York Section of the Illuminating Engineering Society, on December 13, Mr. Lawrence A. Hawkins, engineer of the Research Laboratory of General Electric Company, presented a paper entitled "The light of knowledge and the knowledge of light."

PROFESSOR GEORGE GRANT MACCURDY, of Yale University, was the speaker at the meeting of the Galton Society, held on December 5 at the American Museum of Natural History, New York, his subject being "Nature as reflected in Paleolithic Art."

DR. I. NEWTON KUGELMASS, of Yale Medical School, addressed the Bio Club of the College of the City of New York on November 8 on "The Relations of Colloid Chemistry to Medicine." On December 20, Dr. L. I. Dublin, statistician of the Metropolitan Life Insurance Company, will address the club on the problem of "Longevity."

THE Pasteur Lecture was delivered by Dr. Otto Folin, of Harvard University Medical School, Boston, on November 23, before the Institute of Medicine of Chicago. His subject was "What we have learned about uric acid."

PROFESSOR FRANCIS E. LLOYD, of McGill University, lectured on the subject "Fluorescence in plants" before the Royal Canadian Institute, on December 1. He will deliver a lecture on the same subject at the University of Kentucky, Louisville, Ky., on January 3 next.

DR. JOHN MAXSON STILLMAN, emeritus professor of chemistry at Stanford University, died on December 13, aged seventy-one years.

UNIVERSITY AND EDUCATIONAL NOTES

MRS. MARY COUTS BURNETT has conveyed to the Texas Christian University of Fort Worth, Texas, an estate valued at $4,000,000 and $150,000 in cash. Under the terms of the deed of trust three fourths of the annual income goes to Mrs. Burnett during her lifetime.

THE Education Research Committee of the Commonwealth Fund has made to the University of Chicago an appropriation of $14,000 to enable Director Charles Hubbard Judd, of the School of Education, and Associate Professor Guy T. Buswell, to make a study of methods of teaching arithmetic, similar to studies which recently have been made in reference to reading.

DR. JAMES M. SHERMAN, bacteriologist in the Research Laboratories of the Dairy Division, U. S. Department of Agriculture, has been appointed head of the Department of Dairy Industry at Cornell University.

DR. IRWIN ROMAN, of Northwestern University, has been appointed associate professor of mathematics at Vanderbilt University.

PROFESSOR J. C. MANRY has returned to Ewing Christian College, Allahabad, India, after completing his work for the doctor's degree in psychology at the University of Iowa. Dr. Herbert G. Kribs, late of

the department of zoology of the University of Pennsylvania, has joined the same institution as professor of zoology. Walter D. Kline, Ph.D. (Yale, '23) becomes professor of chemistry.

PROFESSOR E. STRÖMGREN, of the University of Copenhagen, has been called to a professorship of theoretical astronomy at the University of Berlin.

DR. G. HERGOLTZ, of the University of Leipzig, has been called to a professorship of mathematics at the University of Munich.

DISCUSSION AND CORRESPONDENCE

HAEMATOXYLIN

HAEMATOXYLIN is a natural dye found in logwood, and requires only to be extracted with ether and water and then crystallized. There are, of course, details of manufacture requiring attention but the method is simple and there is no difficulty in obtaining a pure product. In view of this fact it is surprising that there should have been so much trouble in getting from American sources a haematoxylin comparable with the one commonly in use at the time the foreign supply was cut off by the war. The miserable black logwood extracts that were then sold as haematoxylin were an abomination to microscopists. Failing to secure any decent material on the market, I undertook to make haematoxylin from the logwood chips and found no difficulty in doing so. Later, there appeared for sale by a number of dealers a product called "white crystals" and this has proved to be generally satisfactory. It now appears that the source of practically all this supply is the firm of McAndrews & Forbes Company, of Camden, N. J. A description of the method employed by them for the preparation of haematoxylin from logwood extract appeared in the *Journal of Industrial and Engineering Chemistry* of February, 1920.

Complaints having come to the Committee on the Standardization of Biological Stains that solutions of the white crystals did not keep well, the chairman, Dr. Conn, asked me to investigate the matter. Accordingly, with the help of Dr. Carothers, I undertook a study of a series of products which had been submitted for trial. Later I got directly in touch with the manufacturers and from them received samples of the material at different stages of manufacture and under different treatment.

As a result of all this it was learned that the "white crystals" produced to meet the demand for something different from the black crystals (?) previously on the market, owe their absence of color to the use of sulphur dioxide. In some way this agent renders the haematoxylin less stable and solutions made up with heat become very dark and stain a rusty brown without selectivity. Apparently also it is responsible for the poor keeping quality of solutions. The manufacturers, upon learning these facts, discontinued the use of sulphur and now market their product as crystals of a light brown color, similar to those of the imported substance. It is now possible, therefore, to secure in this country an entirely satisfactory haematoxylin, which can be used for the finest cytological work by the iron-haematoxylin method. This has been compared with recently imported haematoxylin and found in every way as satisfactory.

In the investigation of the various haematoxylins submitted a number of facts appeared which are of value in cytological technique. It was found, for example, that the color of a given sample might be entirely satisfactory and yet its selectivity be almost entirely lacking. Again one sample might produce a hard, sharp, vigorous coloration while another was weak and indefinite. Of course, it is possible to modify, or even reverse, the staining reaction, as I have previously announced, by incomplete removal of Flemming's fluid, but in the present series of experiments this factor did not enter.

Just what is the cause of these variations in staining reaction is not clear, but having noted certain peculiarities in the operation of the cruder samples and having observed the somewhat turbid character of their solutions, I added a small quantity of lead acetate to them. The result was to greatly improve the vigor and selectivity of the stain. I am inclined, therefore, to recommend the following procedure in cases where satisfactory results are not obtained by the iron-haematoxylin method: To 100 cc of one half per cent. haematoxylin add about three drops of a saturated solution of lead acetate and shake. The solution will become very dark but upon standing for a number of hours a fine black precipitate will form. When this is filtered out a bright clear liquid will remain. This should then give a satisfactory stain.

A good object upon which to try out the stain is a root tip section. Here it is desirable to have the chromatin stain a good vigorous black and yet without such density as to obscure the finer internal structure of prophase and telophase stages. The nucleolus at the same time should stain like the chromatin and should not, on the one hand bleach out entirely or on the other remain a dense black. All outlines should be clear and sharp in the nuclear structures without gradation into the ground substance. The cytoplasm should be light gray in color and clear and transparent. These are conditions which manifest themselves in Podophyllum root tips after fixation in Flemming's strong fluid.

C. E. MCCLUNG

UNIVERSITY OF PENNSYLVANIA