

THE CHESAPEAKE CHEMIST

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THE FEBRUARY MEETING

Dr. W. A. Noyes, Jr., president of the ACS, will be our guest at the meeting on February 28, and will talk to us on the topic "Fluorescence and Photochemistry."

Dr. Noyes' career in chemistry has been distinguished. In addition to serving as president of the American Chemical Society he has been a councillor, a councillor-at-large, and a director. He is a former editor of the Chemical Bulletin, a former assistant editor of Chemical Abstracts, and was editor of Chemical Reviews until he became president of the ACS. He has published about seventy-five articles in ACS journals, and is coauthor of the ACS monograph "Photochemistry of Gases." He is professor of chemistry and director of research in chemistry at the University of Rochester, where he has been since 1938. Prior to that time he was a member of the faculties at the Universities of Chicago and California, and at Brown University. He received his A. B. from Grinnell College in 1919 and the D. Sc. degree from the University of Paris in 1920.

Dr. Noyes' service to his country has also been extensive. As a young man he served as a second lieutenant in the Signal Corps (1918-1919), and was a Lieutenant-commander USNR from 1936 to 1941. During the last war he was first section chairman and then chief of Division 10 (Absorbents and Aerosols) of the NDRC, and served on the staff of the Chief of Chemical Warfare Service. He has been active in support of UNESCO, serving first as the representative of the United States at the meeting of the Scientific Advisory Committee, and at present as adviser to the U. S. delegation at the Paris Organization Conference.

In discussing fluorescence and photochemistry, (to page 3

Section Officers

Chairman Giles B. Cooke, 502 Yarmouth Road, Baltimore 4
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THE CHESAPEAKE CHEMIST is published each month from September through May by the Maryland Section, American Chemical Society. Editor: Belle Otto, Goucher College, Baltimore 18, Maryland.

Members of the Section have received, with this issue of THE CHESAPEAKE CHEMIST, a statement for Local Section dues for 1947. Payment should be made to the Treasurer, Dr. Leatherman, at the address in the heading above. It will be helpful if each member will also indicate any changes that should be made in his mailing address.

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LICENSING, REGISTRATION, CERTIFICATION

The problem of licensing versus certification versus neither is one which has been troubling chemists for some time. The ACS has a committee which has been studying the situation, and this committee, by questionnaire, is seeking reliable information about the views of ACS members. It is important that individual members express their opinions in this poll, for the results will help determine the official action of the ACS. A representative picture must be obtained. This is a problem which, sooner or later, will confront every chemist in his own practice of his profession, and now is the time to do something about it.

The Maryland Section, at its March 1946 meeting, held open discussion on this subject, and has a special committee to watch developments. Dr. Sylvan Forman, chairman of the committee, has prepared the following summary of arguments in an effort to help those who have not yet answered the questionnaire.

Some chemists feel that licensing is necessary in order to give the chemist legal status and to protect the public from incompetents. However, legal status is necessary only in a small percent of the cases. Consultants who appear as expert witnesses before the courts and who act as referees in disputes would benefit greatly by clear-cut legal status. For others, it would be entirely unnecessary.

Protection from incompetents would be secured by certification by a body like the American Chemical Society. However, if this body refused certification, the applicant would have no legal redress and would have no way to force a reversal of this decision if his cause were just.

Some feel that licensing would raise the chemist in the public esteem. This is unlikely. No law can force respect. (to page 3

from page 2) Opponents to licensing say that the licensing boards would be political, but they need not be if proper safeguards are taken. They say that "grandfather clauses" admitting all present practicing chemists would allow incompetents to be licensed. "Grandfather clauses" are not essential to a licensing act; and if such a clause were in the act, then after fifty years the incompetents would be eliminated. Without any provision for licensing, however, they will never be eliminated.

The difficulties caused by differences in state licensing laws have been cited as objectionable. However, such differences are not crippling in the case of other professions.

Many feel that if a licensing act were passed, the decision whether or not to be licensed should be voluntary with the individual chemist. It could hardly be otherwise.

Whatever your views on this subject, be sure to answer the questionnaire. Read up on the subject if you are not sufficiently informed on the various aspects. Make this poll as representative as possible.

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from page 1) Dr. Noyes will remind us that a study of fluorescence frequently furnishes much information concerning the mechanisms of photochemical reactions. When the absorbing gas is monatomic, the theory of the process is relatively simple, and the fluorescence quenching may be made to indicate directly the loss of energy through collision. For diatomic molecules, energy may be lost in steps, and the fluorescence spectrum may differ appreciably from the absorption spectrum and afford much information on the way the energy is distributed between molecules during collision. For polyatomic molecules the knowledge of energy levels is often unsatisfactory, and in this case the energy may be dissipated within the molecule as well as upon collision with other molecules. The data available indicate the types of molecules which may have long-lived activated states and those which may be expected to react in certain ways photochemically. Dr. Noyes will deal with various aspects of these problems.

A dinner in honor of Dr. Noyes will precede the meeting. This is an opportunity for members to meet Dr. Noyes and their fellow chemists. Those wishing to attend should notify Mr. John Herculson, 407 Murdock Road, Baltimore 12, Evergreen 896, preferably by Saturday, February 22.

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The long awaited Hancock report, with its appraisal of the American Chemical Society, appeared in the "News Edition" of February 17. It deserves the thoughtful attention of every member of the profession.

Maryland Section, American Chemical Society
Report of the Treasurer
December 1, 1945 to January 1, 1947

Cash on hand, December 1, 1945	\$	316.62	
United States Government Bonds		700.00	
Receipts:			
Apportionment of ACS funds	\$	758.75	
Commissions for new members		123.25	
Local Section dues		245.00	
Interest on bonds		17.50	
Miscellaneous receipts			
Adjustment for Remsen dinner expenses		74.50	
Adjustment for error in Dec. 1, 1945 balance		4.20	
		<u>1,223.20</u>	
			<u>1,223.20</u>
			\$ 2,239.82
Expenditures:			
Speakers' expenses (travel, hotel, meals, etc.)	\$	456.97	
Printing (meeting notices, including "The Chesapeake Chemist")		533.80	
Postage, telephone, stationery, etc.		168.64	
Secretarial and janitor services		76.50	
Refreshments (after meetings)		53.30	
Miscellaneous (photographs, refunds on dues, affiliation fee for Engineers' Club, etc.)		68.57	
Bank service charges		6.75	
		<u>1,364.53</u>	
			<u>1,364.53</u>
Balance on hand, January 1, 1947 (cash and bonds)	\$	875.29	

Respectfully submitted,
Channing W. Wilson, Treasurer

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Recent additions to the books of the Industry and Science Department, Enoch Pratt Free Library, include:
Altieri -- Gas Analysis and Testing of Gaseous Materials (1945)
A.S.T.M. Methods of Chemical Analysis of Metals (1946)
Briggs -- Metallurgy of Steel Castings (1946)
Burton and Kohl -- Electron Microscope (1946)
Feigl -- Qualitative Analysis by Spot Test (1946)
German Plastics Practice (1946)
Greene -- Where to Find Information on the German Chemical Industry...bibliography (1946)
Hawkins -- Scientific, Medical, and Technical Books Published in the United States, 1930-1944 (1946)
Kingzett -- Chemical Encyclopedia, 7th ed. (1946)
Kraemer -- Scientific Progress in the Field of Rubber and Synthetic Elastomers. Advances in Colloid Science, v. 2 (1946)
Marchionna -- Butalastic Polymers; Their Preparation and Applications (1946)

WARTIME CHEMISTRY IN THE CHESAPEAKE AREA

VII GENERAL REFRACTORIES COMPANY
(Courtesy of Louis Trostel, Manager)

The local plant of the General Refractories Company, located in the Brooklyn industrial area, is one of twenty-two manufacturing units of this organization. It is devoted solely to the production of basic refractories. Its finished products are used throughout the United States and in many foreign countries where extremely high metal melting and refining temperatures are employed. Basic open hearth steel furnaces and copper furnaces consume most of the basic refractories, though the high temperature zone of rotary kilns for manufacturing Portland cement and the heat regenerative systems of large modern glass melting tanks are also constructed of basic refractories.

Refractories were an essential material in the war and their uninterrupted production in large volume was of prime importance. The production record of the local plant was an important factor in the unprecedented national production of steel, copper, and other products for military purposes. Production was speeded up by the use of a process of chemical bonding which is unique in the refractories industry and was developed somewhat previous to the war. This procedure, applicable to basic refractories, replaces the long-drawn-out firing process previously associated with the manufacture of ceramic ware.

One of the important raw materials used for basic refractories is dead-burned magnesite, a highly crystallized form of magnesium oxide. Prior to the war, part of this material was imported from Central Europe and Manchuria, and part came from the State of Washington. After the outbreak of hostilities, when the imported source was cut off, it was essential to increase our domestic supply. A large plant was built at Cape May, New Jersey, for the production of dead-burned magnesite from sea water, and is still in operation. The magnesium in sea water is precipitated as the hydroxide by the addition of slaked lime, then the precipitate is filtered, washed, and calcined for use.

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OPEN MEETINGS OF INTEREST TO MARYLAND CHEMISTS

The Maryland Association of Medical and Public Health Laboratories will meet on February 19 at the School of Hygiene, Johns Hopkins University. At 2:00 P.M. Dr. Ralph W. G. Wyckoff, Scientist Director, National Institute of Health, will discuss "The Electron Microscopy of Biological Objects."

The American College of Surgeons will hold a sectional meeting at the Lord Baltimore Hotel on March 10 and 11. Among papers of interest to chemists will be one by Dr. Charles E. Bramble, of Mercy Hospital, on "Control of Anti-Coagulants."

from page 8) The subject matter discussed follows the minimum list of topics suggested in the outline advocated by the College Entrance Board and the American Chemical Society, with supplementary topics taken up as enrichment and to allow for individual differences. It includes study of matter and energy and their relationships in chemical reactions, the electrical nature of matter, the structure of atoms and the theory of ionization and its value. The student learns to use formulas, equations and the concept of valence as tools in solving simple calculations. He becomes familiar with the laws and theories developed from experimentation. Background is provided for those students who may enter a profession in which chemistry plays a part.

This fundamental chemical knowledge is applied in studying the part played by chemical reactions in the human body and in nature. Man's dependence on natural resources is considered. The pupil learns how man, through proper application of chemical principles, develops natural resources and produces many things used industrially, medicinally and in the home. He should thus be aided in employing a critical attitude toward claims in advertisements of commercial products.

In the laboratory the students perform a minimum of thirty experiments, with supplementary experiments (some of which require the use of the chemical balance) for those students who are more adept in the subject. Each student keeps a notebook in which he records what he has done, what he has observed and what conclusions he can draw from his data. As a result of his laboratory experience, the student should develop ability to use laboratory equipment, to read and follow simple directions carefully and accurately and to record properly the results of experimental work. Finally, he should learn to reason correctly from data to conclusions.

This course in chemistry is required of all A and B course students at Poly. It is elected by about half of the graduating students in the other high schools: 64% at City, 56%, 45% and 47% respectively at Forest Park, Southern and Patterson Park. Percentages are comparable in Frederick Douglass (57%) and Paul Lawrence Dunbar (64%) High Schools. In the girls' high schools the figures run about the same: 44% for Eastern, 53% for Western. This means a total enrollment of about 2200 boys and girls, with totals for individual high schools running from about 80 (Southern) to 700 (Poly). Twenty teachers are listed as instructors in chemistry in the city high schools.

IX. MARYLAND STATE RACING COMMISSION MOBILE LABORATORY (Courtesy of Paul K. Leatherman)

With the opening of Maryland's 1946 racing season, the Maryland Racing Commission instituted a new procedure for the detection of doping of horses,—"on-the-spot" testing conducted in the newly constructed Mobile Laboratory. Three more (to page 7

from page 6) states,--New Hampshire, Massachusetts and Washington,--have since followed Maryland's example.

The mobile unit, 8' by 20' in dimensions, painted in the traditional Maryland colors of orange and black, is unique in being the first unit ever used for this purpose. It is a complete laboratory in itself, containing all the necessary equipment to perform biological and chemical tests. Such features as steam baths, hot plates, hoods, exhaust fans and electric refrigeration are all contained in the unit. Water, drainage and 220-volt, 60-cycle current are available at each track, so that by three connections the unit is made ready for operation.

Samples received at the laboratory consist of saliva and urine, taken at random at the end of the race from horses which may have finished in any position from first to last. The samples are first subjected to a biological screening test, using mice as indicators. This test requires only a few minutes. If a sample is positive, lengthier chemical tests are then made to determine the drug.

The laboratory operates at the four major (one mile) and five minor (half and three-quarter mile) tracks throughout the racing season. In the months when the tracks are not operating, the laboratory staff investigates problems related to the testing program.

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MARYLAND SECTION NEWS

The following chemists have recently joined the Maryland Section. We welcome them to our group and to participation in local chemical projects.

Theodore Berlin
John J. Brown
Jack H. Hovick
Harold S. King
Herman F. Kraybill

Doris A. Lyman
Joseph E. Plumstead
J. K. Rummel
John L. Traina

The speaker at the Section meeting on March 28 will be Dr. Robert C. Hockett, Director of the Sugar Research Foundation, who will speak on "Sugar as an Industrial Chemical."

Section Chairman Giles B. Cooke has appointed Dr. C. Jelleff Carr to chairmanship of a Speakers Bureau Committee. Dr. Carr will be assisted by Dr. George Hager. Both are associated with the University of Maryland in Baltimore. The Committee has just begun its work, and announcement of plans will be made soon. Dr. Cooke has announced that chairmen of other active committees will continue in office, namely, Dr. Winslow Hartford for Publicity, Dr. Sanford Jenkins for Membership, Dr. Sylvan Forman for the Committee on Professional Status, and Dr. A. H. Corwin for the Remsen Committee.



Dr. Noyes

NEXT MEETING 8:30 P. M., Friday, February 28
PLACE Room 101, Remsen Hall, Johns Hopkins
Charles & 34th Streets
SPEAKER Dr. W. A. Noyes, Jr., President of ACS
SUBJECT Fluorescence and Photochemistry
The meeting is open to anyone who may be inter-
ested in attending.
Save Friday, March 28, to hear Dr. Hockett.

GETTING ACQUAINTED WITH CHESAPEAKE CHEMISTRY

VIII. CHEMISTRY IN THE BALTIMORE HIGH SCHOOLS
(Courtesy of Edwin L. Frederick)

(Editor's note: Future chemists usually have their first formal contact with the subject matter of chemistry in the High Schools. The quality of instruction and the content of the course at that level are important factors in attracting able students into further study in this field. Professional chemists have a responsibility in keeping themselves informed about the adequacy of high school instruction. To further this end, THE CHESAPEAKE CHEMIST, with the cooperation of the Department of Education of Baltimore, presents the following article.)

The course in Chemistry given in the Baltimore high schools runs five periods (of forty-five minutes each) per week for one single year. Three of these periods are devoted to demonstrations, explanations and discussions in the classroom, while two periods are spent in the laboratory, where the students perform experiments correlated with the classroom work.

The purposes of the course may be grouped roughly into those designed to further the student's general education, and those designed to increase his subject matter knowledge. In general, the course is planned to help the pupils realize how scientific discoveries have affected society and how the needs of society have stimulated scientific research. It should train them in scientific thinking, and develop appreciation of the scientific method and its superiorities as a method of inquiry. The pupils should understand and be familiar with the scientific aspects of their environment and of the commodities which they use in their daily lives. It is hoped that they will be encouraged to read intelligently newspaper and magazine articles and to listen with understanding to radio presentations on commercial adaptations of chemical principles and discoveries, and that they will be stimulated to apply scientific methods to their consumer problems. All of these aims contribute finally to the general purposes of education,—the development of well-informed, intelligent citizens,—by helping in the formation of desirable attitudes, habits, appreciations and ideals. (to page 6