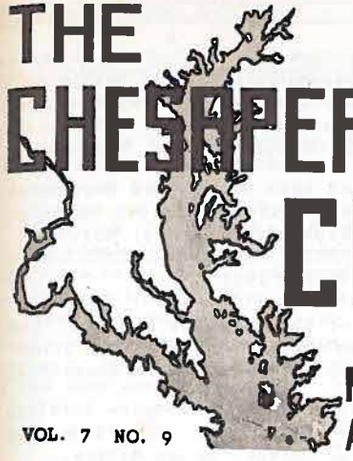
DECEMBER 1951

THE CHESAPEAKE CHEMIST



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THE DECEMBER MEETING

The Maryland Section will hold its next meeting on Friday, December 14, at 8:30 P.M. in Room 101 in Remsen Hall, Homewood. The speaker will be Dr. Britton Chance, who will discuss "The Mechanism of Enzyme Action".

Dr. Chance is a native Pennsylvanian, trained at the University of Pennsylvania (B.S. and M.S.), who in 1949 returned to his Alma Mater as Professor of Biophysics at the School of Medicine and Director of the Johnson Foundation. From Cambridge University he received two Ph.D. degrees, one in physical chemistry in 1940 and one in biology in 1942. This dual training, combined with experience during the war years at the Radiation Laboratories at M.I.T., has supplied an exceptionally good background for his work in biochemistry and biophysics. From 1946 to 1948 he was a Guggenheim Fellow, working at the Nobel Institute in Stockholm and at Molteno Institute, Cambridge, England. In 1948 he also served as Scientific Consultant to the Attache for Research, U.S. N., stationed at London. He is a member of the Committee on Blood and Blood Derivatives of the American Red Cross and National Research Council.

Dr. Chance's research has centered around enzyme kinetics, biophysics and electronic instrumentation. His investigations and those of his associates are considered among the most fundamental made in the field of enzyme chemistry in recent years. They bear upon the structure of a whole group of cellular enzymes and illuminate the mechanism of enzymatic catalysis. Their definiteness, reproducibility and quantitative character identify them as a unique advance in the general field of catalysis.

Dr. Chance's address to this Section will deal particularly with an iron-porphyrin enzyme, horse-radish peroxidase, which efficiently catalyzes the oxidation of phenols or (to page 2

Section Officers
Chairman Charles E. Brambel, Mercy Hospital, Baltimore 2
Vice-chairman Leslie Hellerman, Department of Physiological Chemistry, Johns Hopkins School of Medicine, Baltimore 5
Secretary-Treasurer H. H. Lloyd, Goucher College, Baltimore 4

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Editor: Belle Otto, Goucher College, Baltimore 4, Maryland.

MARYLAND SECTION OFFICERS FOR 1952

As a result of elections held at the November meeting, the Section will operate for the next calendar year under the direction of the following officers serving as the Executive Committee.

Chairman Leslie Hellerman Vice-chairman Winslow Hartford
Secretary H. Huntley Lloyd Treasurer Edward Metcalf
Councillors: Giles B. Cooke, Alsoph H. Corwin, Duncan MacRae, Belle Otto
Alternate Councillors: J. E. Ahlberg, C. Jelleff Carr, Sylvan Forman, Winslow H. Hartford
Elected members of the Executive Committee: Lloyd C. Felton, George P. Hager, Evans B. Reid, John L. Straughn, William H. Summerson
Past Chairmen (not otherwise listed): Donald H. Andrews, Charles E. Brambel, W. Mansfield Clark, H. A. B. Dunning, Sr., Fitzgerald Dunning, Wilton Harden, John A. Herculson, Edward S. Hopkins, John C. Krantz, Jr., S. T. Powell, E. Emmett Reid, William F. Reindollar, C. P. VanGundy, Channing W. Wilson

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enediols by hydrogen peroxide or alkyl hydrogen peroxide at turnover numbers of several thousand per second. The distinctive absorption bands of the enzyme shift when the catalytic function occurs and three intermediates in the reaction of this enzyme and hydrogen peroxide have been identified (complexes I, II and III). The enzyme is stable over wide ranges of temperature (60°) and pH (10 units), and is relatively easy to obtain in pure crystalline form. In study of this enzyme, more has been learned of peroxidase action than of any other enzyme action or of most catalytic processes in general.

Complex II has been proved to be the rate-limiting intermediate or "Michaelis compound" in peroxidase action. Recent work has centered about the role of the protein part of peroxidase in enhancing the catalytic effect of iron porphyrin and the chemical nature of the peroxidase complexes. The bonds between the protein and the two propionic acid side chains of the iron porphyrin group appear to confer upon the enzyme its remarkable property of extremely rapid combination with hydrogen peroxide and thereby to determine the enzyme specificity.

The electronic structure of complexes I and II has been studied by Theorell's micro magnetic susceptibility (to page 3

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apparatus. Titrations indicate that only one oxidizing equivalent remains of the two originally present in hydrogen peroxide.

Dr. Chance will present an integration of the diverse data on the chemistry of peroxidase into a unified explanation of the mechanism of its action.

Preceding the lecture, the Section will hold a dinner in honor of the speaker. Dinner will be served at 6:30 at the Johns Hopkins Club on the Homewood Campus, and is open to members of the Section and their guests. Reservations should be made by Wednesday noon, December 12, with Dr. Leslie Hellerman, Department of Physiological Chemistry, Johns Hopkins School of Medicine, Baltimore 5, phone ORleans 4700, or with the secretary, Mrs. Corliss at the same number.

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from page 4) Report of the Secretary for 1951

Duncan MacRae and Belle Otto represented the Maryland Section at both the April and September meetings of the A.C.S. Council; they were joined by Giles Cooke and Alsoph Corwin at the September meeting. Belle Otto continued to serve as secretary of the Council Standing Committee on Membership Affairs.

"The Chesapeake Chemist" has appeared regularly throughout the meeting year under the editorship of Belle Otto, and has maintained the high standards that have characterized it from its inception.

H. H. Lloyd, Secretary

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Dr. Robert Dudley Fowler, chairman of the Department of Chemistry at The Johns Hopkins University, has resigned his position there to become Associate Leader of the Division of Chemistry and Metallurgy at the Los Alamos Scientific Laboratory of the University of California. Dr. Fowler has been an active member of the Maryland Section, particularly as chairman of the Remsen Award Committee, and he will be greatly missed by Maryland chemists when he leaves Baltimore in February.

Dr. Albert L. Genter of the Maryland Section was the only Maryland chemist to exhibit his work at the Exhibition of Art Works by members of the ACS held in conjunction with the New York meeting of the Society. Dr. Genter is better known to his fellow chemists as a consultant in the field of sewage sludge dewatering and as the recipient, in 1944, of the Kenneth Allen Award of the Federal Sewage Works Association and, in 1947, of the Rudolph Hering Medal of the American Society of Civil Engineers.

Dr. Alsoph H. Corwin of The Johns Hopkins University spoke at the Symposium on Electro-organic Reactions held at the meeting of the Electrochemical Society of America in Detroit on October 10. His subject was "Selective Anodic Oxidation at Controlled Potentials".

Dr. Chance

NEXT MEETING December 14 TIME 8:30 P.M.
PLACE Room 101, Remsen Hall, Johns Hopkins
Charles & 34th Streets
SPEAKER Dr. Britton Chance
SUBJECT The Mechanism of Enzyme Action
DINNER 6:30, The Johns Hopkins Club
Charles & 34th Streets
The meeting is open to any who are interested.
The dinner is open to members and their guests.

REPORT OF THE SECRETARY FOR 1951

A net gain of 20 A.C.S. members has brought the roster to 783 (as of July 30, 1951), including three emeritus members. Regrettably, there is a considerable number of Maryland members whose A.C.S. dues for 1951 have not been paid; this keeps our official count from being well over 800. There is still doubt whether the Section will be entitled to four councillors in 1952 because of a nation-wide increase in the members per councillor factor. The Section has 21 associate members and sends "The Chesapeake Chemist" to a total of 925 persons and groups, including 39 exchanges with editors of A.C.S. Section publications.

Three special features have marked the 1951 meetings program. In May, Dean Hugh Stott Taylor (Princeton University) gave the sixth Remsen Memorial Lecture and was awarded the testimonial scroll. In September, the 75th anniversary of the founding of the A.C.S. was celebrated with an address by W. Albert Noyes, Jr. (University of Rochester) and with a series of talks given by selected speakers to several civic groups. In October, Maryland chemists were guests of the Chemical Corps, Army Chemical Center. The lecture was given by Don L. Mace (Camp Detrick). To avoid interference with these meetings, the Program Committee deferred the second session of special interest group meetings until mid-winter, 1952.

Six regular meetings were also held, with the following speakers participating: Kenneth C. Blanchard (School of Medicine, The Johns Hopkins University); N. Howell Furman (President of A.C.S.); Frank R. Mayo (General Electric Company); Joseph R. Spies (U.S. Department of Agriculture); Paul H. Emmett (Mellon Institute); and Britton Chance (University of Pennsylvania). Attendance at meetings has continued to be generally good, with an unusually large turnout to mark the 75th anniversary dinner and meeting.

The Executive Committee held two well-attended meetings in May and June, and put a great deal of time and thought into arrangements for the 75th anniversary program. A third meeting met late in November to plan for the special interest group meeting in February, 1952, and to consider other business of importance to the Section. The six standing committees and four additional special committees, which were organized at the start of the year, have greatly assisted the Executive Committee in furthering the variety of interests and obligations of the Section. (to page 3