

THE CHESAPEAKE CHEMIST

FEBRUARY 1949

VOL. 5 NO. 2

PUBLISHED BY THE
MARYLAND SECTION
AMERICAN CHEMICAL SOCIETY

THE FEBRUARY MEETING

The Maryland Section will hold its next meeting on Friday, February 25, at 8:30 P.M. on the Homewood campus. Dr. Alexander Rothen, of the Rockefeller Institute for Medical Research, will speak on "Interactions between Large Molecules".

Dr. Rothen was born in Geneva, Switzerland, and attended the University there, receiving first the degree of Chemical Engineer and then the Doctor of Science. He was an assistant in physical chemistry at the University of Geneva from 1925 to 1928, and in 1928 he joined the staff of the Rockefeller Institute for Medical Research in New York as a chemist. He is still associated with the Institute, and in addition to his recent studies there of the chemical behavior of large molecules, he has done much work in the fields of stereochemistry and optical activity, and with the ultracentrifuge.

Dr. Rothen has worked extensively with large molecules, such as enzymes, which are chemically active. He will present his remarkably simple experiments which indicate that such substances are capable of chemical interaction with other large molecules even though a space intervenes. This work introduces a new concept into biology and biological chemistry and confronts the chemist interested in large molecules with the question as to whether actual contact between reacting substances is necessary in order to secure chemical reaction. Dr. Rothen's lucid presentation of this controversial subject should be most stimulating.

The dinner preceding the meeting will be held at the Johns Hopkins Club. Reservations must be made before noon on Thursday, February 24, with Dr. A. H. Corwin, Department of Chemistry, The Johns Hopkins University, Baltimore 48 - telephone HOpkins 3300, Extension 322. The dinner is open to all members of the Section.

Section Officers

Chairman J. A. Herculson, 407 Murdock Road, Baltimore 12
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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.

A NOTE FROM THE TREASURER

The envelope which brings this issue of THE CHESAPEAKE CHEMIST also contains a receipt for those who have paid their Maryland Section dues and a reminder for those who have not. The Treasurer will be grateful if any errors are called to his attention.

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NEW BOOKS AT PRATT

The staff of the Enoch Pratt Free Library is most cooperative in providing THE CHESAPEAKE CHEMIST with lists of books added to the science shelves of the Library. Your editor is frequently faced by the embarrassment of riches in this respect. The list of interesting titles not yet printed in these pages is long -- too long to print -- and choice is difficult. The following is only a sampling from a page or two of interesting titles, and the Editor can only urge that you go to the Library and look for the others yourself.

Bergmann -- Isomerism and Isomerization of Organic Compounds (1948)
 Egloff and Hulla -- Alkylation of Alkanes, Vol. I (1948)
 Flagg -- Organic Reagents Used in Gravimetric and Volumetric Analysis (1948)
 Kermack and Eggleton -- The Stuff We're Made Of, 2nd ed. (1948)
 McIlroy -- The Chemistry of the Polysaccharides (1948)
 Northrop and others -- Crystalline Enzymes, 2nd ed. (1948)
 Rosenfeld -- Nuclear Forces (1948)
 Schmidt -- Principles of High-polymer Theory and Practice (1948)
 Steiner -- Introduction to Chemical Thermodynamics, 2nd ed. (1948)
 ---- The Use of Isotopes in Biology and Medicine. University of Wisconsin Press (1948)
 Western Reserve University -- Chemical Architecture (Frontiers in Chemistry, Vol. V) (1948)

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Dr. Arnold Gesell, of The Clinic of Child Development of The School of Medicine, Yale University, will speak at the meeting of The Society of the Sigma Xi at 8:30 P.M. on Monday, February 28, in Room 1, Remsen Hall. Dr. Gesell's subject will be "Human Infancy and the Ontogenesis of Behavior". Visitors are welcome.

from page 4) The Blood Clot Clinic for a small hospital research staff. The dried residue remaining after extraction is dry-ground and screened to 60 mesh. In the dry form this will keep for several years in proper storage in darkness and in vacuo. For use, a 5% oxalated physiological saline extract is made. This extract, stable for only a week, is the thromboplastic reagent used in the routine tests.

Along with the regular testing program, Dr. Brambel, who is Assistant Director of the Clinical Laboratory, is conducting research on blood clotting components in plasma. This is primarily a biochemical problem. In perhaps oversimplified terms, the blood clotting process may be indicated in two successive steps:

- (1) prothrombin \longrightarrow thrombin (the enzyme)
 (2) thrombin + fibrinogen \longrightarrow fibrin (the clot)

Forward action in the first step is controlled by the presence of a number of activators (which include thromboplastin, AC globulin, calcium ions and other unknown components) and inhibitors. The ratio activators/inhibitors determines the amount of thrombin formed in the conversion in the blood. The action of the dicoumarol is an inhibiting one, preventing conversion of prothrombin which is normally always present. The mechanism of the dicoumarization apparently lies in a shift in the activator/inhibitor ratio, either because it is an inhibitor itself or because it "knocks out" an activator. Dr. Brambel and his assistant are trying to isolate these activator components from fractions of blood plasma. The laboratory is equipped with a lyophilizer to freeze-dry the plasma at -70° C., and with dialyzing apparatus, a refrigerated centrifuge and a quartz spectrophotometer for further preparative and testing operations.

Another phase of the research program involves a clinical study of vitamin P and its derivatives in relation to capillary bleeding. This is related to the dicoumarization study since capillary bleeding is one of the effects produced by overdosage with dicoumarol. So far encouraging clinical results have been obtained, but much remains to be done.

The staff of the Clinic includes a number of technicians and nurses under direction of Dr. Brambel. The research is carried on by Dr. Brambel and his assistant, Mrs. Bradford. Dr. Brambel himself is a Baltimorean who did both his undergraduate and graduate work at The Johns Hopkins University, receiving his degree in biology under Dr. Cowles. Following his graduation he was an Emerson Fellow in Pharmacology at the University of Maryland. He is now Assistant Director of the Clinical Laboratory at Mercy Hospital. He is an active member of the Maryland Section, and a member of the Executive Committee. Dr. Brambel is also chairman of the Subcommittee of the American Heart Association on the Investigation of Anticoagulants in Coronary Vascular Diseases, and a member of the Josiah Macy, Jr. Foundation Conference on Blood Clotting and Allied Problems.



Dr. Rothen

NEXT MEETING February 25 TIME 8:30 P.M.
PLACE Room 401, Remsen Hall, Johns Hopkins
Charles & 34th Streets
SPEAKER Dr. Alexander Rothen
SUBJECT Interactions between Large Molecules
DINNER 6:30, The Johns Hopkins Club
Charles & 34th Streets

The meeting is open to any who are interested.
SAVE Friday, March 25, for a laboratory inspection trip.

GETTING ACQUAINTED WITH CHESAPEAKE CHEMISTRY
XVIII. THE BLOOD CLOT CLINIC AT MERCY HOSPITAL
(Courtesy of Charles E. Brambel)

One of the places in Baltimore where chemistry and the public come into contact is at the Blood Clot Clinic at Mercy Hospital. Those who read the account of the program (the only one of its kind) in the Baltimore "Sunday Sun" last summer (July 4, 1948) were intrigued by the story, but found it lacking in chemical information. In that respect "The Chesapeake Chemist" should do better.

The Blood Clot Clinic is part of the Clinical Laboratory at the Hospital, and has been open since 1943. Here tests are made to determine the prothrombin level or clotting power of the blood of patients in danger of clot formation in the blood stream. An average of about 70 house patients per day is tested in the prophylactic program directed to the prevention of intravascular clotting in post-operative and post-partem cases. An equal number of out-patients is tested each day in the therapeutic program, and the dosage of dicoumarol for the ensuing week is prescribed for victims of phlebitis and coronary thrombosis. The dicoumarol is administered by mouth and reduces the clotting tendency of the blood, becoming effective about 48 hours after the initial dosage. The standard test employed is the one developed by Quick, whereby thromboplastin and calcium chloride solution are added to the oxalated plasma, and the clotting time is noted.

Behind this simple test, of course, stands a great deal of preparative work and much research. At Mercy Hospital one of the major chores on the preparative side is the preparation of the thromboplastic extract. This is done at the laboratory, not only because the cost is greatly reduced thereby, but also because the reproducibility of the product is assured. To provide the clinic with a two week's supply (50 grams) of the thromboplastic reagent, from 50 to 60 rabbit brains must be processed in an operation conducted on a pilot plant scale. The brains are macerated and extracted with acetone, which is then removed by filtration and by evaporation in a vacuum desiccator. Since about 30 liters of acetone are used in each extraction, it is apparent that solvent recovery alone is a problem of no small proportions (to page 3