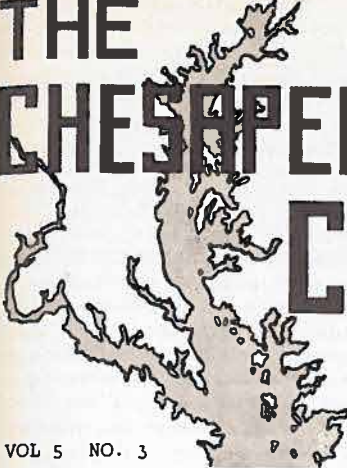


# THE CHESAPEAKE CHEMIST



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## THE MARCH MEETING

The meeting on March 25 will be devoted to an inspection tour of the new Hopkins chemistry laboratories. During the war years, most of the laboratories were devoted to war research. With the closing of intensive government research they have been generally reconstructed. Since many members of the Section are not acquainted with the activities which are going on in close proximity to their meeting place, it was thought appropriate that the members should be invited to Remsen Hall to see the laboratories.

The meeting will be preceded by the usual dinner, open to all members of the Section and their guests. It will be held at the Hopkins Club at 6:30, and those planning to attend should make reservations before noon on Thursday, March 24, with Dr. Corwin, Department of Chemistry, The Johns Hopkins University, Baltimore 18--telephone HOPkins 3300, Ext. 322. For the meeting, the Section will assemble as usual in Room 401, Remsen Hall, at 8:30. There, members of the University staff will discuss some of the distinctive features of the laboratories, and after the discussion small groups will be formed for the conducted tours.

The Department of Chemistry at The Johns Hopkins University was opened in 1876. From then until 1901 its work was guided by Professor Ira Remsen, who created here a center for research and instruction in chemistry with an international reputation. In 1901 Professor Remsen was called to the Presidency of the University and his place as Chairman of the Department was taken by Professor Harmon N. Morse, who had also come to Hopkins in 1876. Professor Morse continued as departmental chairman until 1916, when he was succeeded by Professor J. C. W. Frazer, who will be remembered by many of the present members of the Maryland Section as one who was vitally interested in the affairs of the Section. During Dr. Frazer's chairmanship, Remsen Hall was built and a start made in constructing the facilities to be seen on the tour.

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Since the next meeting of the Section will be devoted to an inspection of the Hopkins laboratories, this issue would normally contain a feature article about them. But one page is no more adequate than one paragraph for summary of the achievements of 70 years, so at the risk of monotony this whole issue is devoted to a necessarily brief account of the men and the research that have combined to contribute so much to the fame of the University.

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from page 1) The March Meeting

In 1936 Professor Frazer was succeeded as Chairman by Professor D. H. Andrews. Under Dr. Andrews the Department planned and constructed many of the special research installations that will be seen during the tour. It was also during his administration that the full impact of the war made drastic changes imperative in order to accommodate the laboratories of research and instruction to the necessities of war research.

In 1944, the Department adopted an administrative system based on a rotating chairmanship. The first incumbent under this scheme was Professor A. H. Corwin. In his administration, planning for post-war reconstruction of the laboratories was undertaken and the program of rebuilding was initiated. In 1947 Professor R. D. Fowler became chairman. The work of reconstruction has been carried nearly to completion under Dr. Fowler. In all of this work of planning and reconstruction, a large share of the credit lies with Dr. W. B. Burford, III, who has been in charge of the Building Committee, and with other faculty members who have collaborated on the details of construction of individual laboratories.

During the tour of the Hopkins laboratories, points of special interest will be the laboratories for instruction in quantitative analysis; those in organic chemistry, featuring a novel system for the removal of fumes; and those in physical chemistry, featuring new devices for securing maximum flexibility in laboratory assignments. Of the research laboratories, the low temperature laboratory, the laboratory for nuclear studies with its "atom smashing" electrostatic generator, the laboratory for X-ray crystal structure studies, and the various research laboratories of organic and physical chemistry will be shown. Many new devices for performing varied chemical manipulations will be on display. These will include special microchemical equipment and apparatus for reductions at controlled potentials.

from page 4) Research in the Department of Chemistry at Hopkins utilized his broad knowledge of organic materials to develop new agents for chemical warfare. One of his more spectacular discoveries was the suitability of using chloroacetophenone as a tear gas. Dr. Reid is also well known for the development of a wide variety of organic chemicals for special applications and for his studies on the relationship between chemical structure and physical and other properties of materials.

The story of the cracking of gasoline has many facets which connect with Hopkins. The first laboratory for research in the oil industry was founded by one of Remsen's students, Dr. W. M. Burton. This laboratory, at the Standard Oil Company of Indiana, was the pioneer in the study of cracking. Dr. Patrick at Hopkins was one of the first to show the utility of certain hydrocarbon fuels in the elimination of knocking and Dr. F. O. Rice, while at Hopkins, developed the theory of the radical chain mechanism of the cracking process in aliphatic hydrocarbons. Dr. Patrick is probably best known for his extensive studies on silica gel which have culminated in its use as a catalyst in the cracking of gasoline. At the present time he is engaged in fundamental studies on the theory and practical determination of "absolute" electrode potentials, a development which promises to have wide utility in solving problems connected with diverse chemical reactions.

"The Hopkins" was one of the pioneers in this country in the development of a laboratory for studies at temperatures approaching absolute zero. Work in this field was started here by Professor D. H. Andrews who is studying properties of substances at low temperatures and has developed a receiver for infra-red radiation utilizing superconductors,--those metals whose electrical resistance at low temperatures is too slight for measurement.

Professor R. D. Fowler has long studied the design and utilization of electrostatic generators in "atom smashing." His laboratory was one of the first in this country (1939) to confirm the discovery of nuclear fission. The large generator at Hopkins has been designed as a precision instrument to permit, among other things, study of "nuclear absorption spectra". Correlation of these absorption studies with theoretical speculations as to nuclear structure promises to be of great importance in the future development of nuclear theory.

Professor A. H. Corwin has been studying the naturally occurring pyrrole pigments and the relationship between their structures and their varied activities. Synthetic methods for the production of new materials related to chlorophyll and hemoglobin have been developed, and models to explain some of the chemical peculiarities of hemoglobin have been constructed.

Professor J. D. H. Donnay is engaged in investigations of the structures of crystals. Applications of X-rays to problems of crystal structure have given the chemist his first tool directly applicable to the correlation of chemical properties with spatial effects in molecules. X-ray studies take Remsen's "ortho effect" out of the realm of speculation into the field of measurement.

NEXT MEETING March 25 TIME 8:30 P.M.  
PLACE Room 101, Remsen Hall, Johns Hopkins, Charles & 34th Sts.  
PURPOSE Guided tours of the research and instruction laboratories  
at the Department of Chemistry, The Johns Hopkins University  
DINNER Johns Hopkins Club, Hopkins Campus, at 6:30 P.M.  
The April meeting will be held on Friday, April 29, when Dr. Jesse P. Greenstein, Chief of the Biochemistry Section, National Cancer Institute, will discuss "Enzymatic Approaches in Cancer Research".

GETTING ACQUAINTED WITH CHESAPEAKE CHEMISTRY  
XIX. RESEARCH IN THE DEPARTMENT OF CHEMISTRY,  
THE JOHNS HOPKINS UNIVERSITY

The development and encouragement of a strong research program was one of the important functions envisaged for "The Hopkins" by those who planned the University organization. The accomplishments in this direction by the Department of Chemistry in the early days of the University were outstanding and unique, and this tradition of research has been emphasized through the years. A review of some of the achievements of this department in its more than half a century of activity may well form a part of this series designed to acquaint the Maryland chemist with his professional neighbors.

The nature of the research pursued under the direction of Dr. Remsen was quite varied. His major interest, however, was in organic chemistry and many of his studies were made in the field of benzenoid derivatives. While working in Fittig's laboratory he had become interested in the so-called "ortho effect" and he published many papers detailing the differences in behavior between benzene derivatives substituted in the ortho position and those substituted meta and para. His painstaking observations and those of his students laid the foundations for much of our present knowledge of the phenomena of steric hindrance.

Professor Morse devoted the major portion of his research efforts to improving the methods of quantitative analysis. In the course of this work the copper ferrocyanide membrane for study of osmotic pressures was discovered and resulted in a notable series of papers on the use of this membrane in osmotic pressure work of highest precision. Dr. Frazer collaborated in this work and was responsible for many advances in technique.

Professor Frazer followed the Remsen tradition of having broad chemical interests. He published papers in organic, inorganic and physical chemistry and attained his greatest reputation by devising ingenious experiments to show the nature of catalytic processes. He was one of the inventors of the catalyst "Hopcalite" and because of his wide knowledge of catalysts served as special master in the litigation of the patents on the use of vanadium oxides in the manufacture of sulfuric acid.

During World War I Drs. Frazer, Patrick and Reid and their collaborators all made fundamental contributions to the efforts of the Chemical Warfare Service. Drs. Frazer and Patrick worked on problems connected with gas masks while Dr. Reid (to page 3