



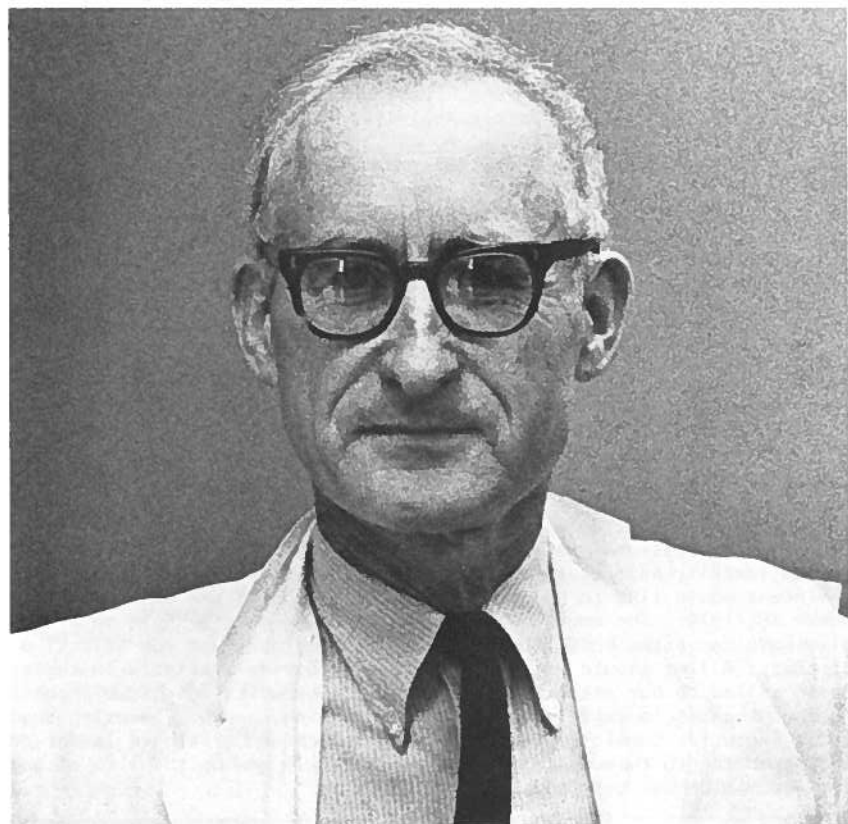
THE **CHESAPEAKE
CHEMIST**

MARYLAND SECTION
AMERICAN CHEMICAL SOCIETY

VOL. XXXV

DECEMBER, 1979

NUMBER 9



THE MARYLAND CHEMIST OF THE YEAR

The Executive Committee of the Maryland Section, American Chemical Society, was called to order by the Chairman-elect, Melvin Miller, at 7:40 pm on Wednesday, September 26, 1979, at the Knott Science Center, Notre Dame College, Baltimore. The following members were present: R. L. Caret, Merle Eiss, Frances Hummel, Don Jones, Harold Klapper, Carl Minnier, Elwin Penske, Ray Petersen, David Roswell, Charles Rowell, Ernest Silversmith, Linda Sweeting and Sister Mary Vincent. The minutes of the meeting of May 2, 1979 were read and approved.

The acting Treasurer, Elwin Penske, has audited the books and found them in order, as corrected. He would like to have either an outside auditor or two members of the Section check his work. The balance on hand, excluding funds of the *Chesapeake Chemist* account, was \$11,270.17 on August 31, 1979. A complete financial report was presented, from January 1 to August 31, 1979.

Reports of the Standing Committees were as follows:

Program Committee Dr. Miller announced that the meeting at the Science Center was successful; expenses were \$380: \$200 for the speaker's travel and \$180 for the room.

Speakers have now been obtained for the March and April meetings. March will consist of the College Student Award Night, at Towson State University. Dr. John Pavlik of Fisher Scientific will speak on Art, Science and Alchemy; Dr. John Ecklund, of the Smithsonian Institution, will be the second speaker. The April meeting will be held at the McCormick Research Laboratory; Dr. Gary Rechnitz of the University of Delaware will speak on Bio-selective Membrane Electrodes; Dr. Joseph Jordan, Penn. State University, will speak on Thermometric Titration and Enthalpometric Analysis.

Councilors' Report The four Councilors, Dr. Minnier, Dr. Rowell, Dr. Roswell and Dr. Jones, will send a combined report to be published in *The Chesapeake Chemist*. The Councilors hope to present a memorandum to the Section members before the meeting in Houston, so that they may be instructed for voting on various issues. It was agreed that Councilors' telephone numbers be published in the *Chemist* in future issues, so that they may be more easily reached by the members. Dr. Roswell is now an Associate Member of the Committee on Meetings and Expositions.

Chesapeake Chemist Merle Eiss reported that the volume of advertising is low, but the new printer is charging less, so that expenses are no more than they were before.

Student Awards Sister Mary Vincent attended the Safety Meeting in Washington; there was more concern about hazardous reactions and worker safety than about pollution control. Dr. Jones remarked that the Council insists that a course be taught on Professional Safety. They will study available laboratory books, to try to identify hazardous materials, and warn students about them. Sister Mary Vincent would like to hold a Workshop on Carbon 13 NMR on Saturday, December 15, 1979. The course takes six hours, and must be held on a Saturday. We also have cassettes on Gel Permeation Chromatography and Ion Selective Electrodes. A list should be published of all courses available in the area. She also called to our attention a laboratory book which has undue emphasis on the use of benzene in experiments. Dr. Jones moved, and Dr. Sweeting seconded, that the Executive Committee support Sister Vincent in writing a letter to the author objecting to this approach, since benzene is now on the list of carcinogens. The motion was carried.

House Committee Mr. Penske announced that Mr. Nolan Phillips is the new Chairman, since he has another office. The form for dinner reservations has been
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THE CHESAPEAKE CHEMIST

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338-7417

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435-0100

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Merle Eiss Alice Zeiger
Sr. Mary Vincent

ALTERNATE COUNCILORS

Clara I. Adams Patrick Callery
William Zeiger Thomas Simmons

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MARYLAND CHEMIST OF THE YEAR AWARD

EMIL H. WHITE

The Maryland Chemist of the Year for 1979 is Professor Emil H. White of The Johns Hopkins University. Emil White was born in 1926 in Akron, Ohio, and received a B.S. degree from the University of Akron in 1947. He received an M.S. degree from Purdue University in 1948 and a Ph.D., also from Purdue, in 1950. He held post-doctoral fellowships at the University of Chicago with M. S. Kharasch and at Harvard University with R. B. Woodward.

In 1952 Dr. White joined the faculty of Yale University as an Instructor, a position which he held until 1956 when he came to Johns Hopkins as an Assistant Professor. He became an Associate Professor in 1960 and a Professor in 1964. In 1975 he became the D. Mead Johnson Professor of Chemistry. He was a Guggenheim Fellow in 1958-59 and held NIH Fellowships in 1965-66 and 1972-73.

Emil White is a leading citizen of the world of physical-organic chemistry. He has authored about 125 publications, including one book. His research has been in areas of chemiluminescence, bioluminescence, active sites of enzymes, chemically produced excited states, mechanisms of deamination reactions, and bio-organic chemistry.

CHEMICAL MAPPING OF THE ACTIVE SITES OF ENZYMES

Carbonium ions and carbenes are highly active species that can react with all of the functional groups of proteins including the most common functional group, the amide linkage. Amides are converted into imidate esters by both carbonium ions and carbenes; that is, bond formation to oxygen of the carbonyl group predominates over bond formation to the nitrogen atom. A highly active species such as a carbonium ion generated in a solution of a protein would react in essentially a random fashion with all of the functional groups of the enzyme. To localize imidate ester formation in the active site, modified substrates (active site directed reagents) are used. An even more specific substrate is one that requires enzymic activation; substrates of this type (suicide or k_{cat} substrates) are innocuous to the enzyme until bound in the active site and "primed" by the normal catalytic functioning of the enzyme.

We have applied the above principles to α -chymotrypsin using a nitrosoamide derivative of phenylalanine; this substrate generates a carbonium ion when acted on by the enzyme. Use of ^{14}C labelled substrates has shown that one equivalent of benzyl carbonium ions fully inhibits a mole of chymotrypsin; autoradiographic experiments and others have shown, however, that the benzyl groups are distributed over approximately four sites. Thus, the potential for a chemical "mapping" exists.

The imidate group is far more labile than the amide group, and at pH \sim 5 hydrolysis occurs to the corresponding amine and ester (subsequently hydrolyzed to the acid). In the context of a protein inhibited through imidate formation, each "hit" thus can lead to chain cleavage. In the mapping attempts, the peptides obtained from the hydrolysis step will be sequenced by normal peptide sequencing techniques. In view of the unique and non-repeat nature of the sequence of amino acids in chymotrypsin, the determination of three residues in a given peptide should establish not only the identity of the amino acid which had been "hit" (to form the imidate) but also its position in the overall sequence. The current status of our application of the above approach to α -chymotrypsin will be reviewed, and potential applications to other enzymes will be covered. A modification of photoaffinity labelling to utilize imidate formation will also be outlined.

DECEMBER MEETING

DATE:

Wednesday, December 12, 1979

PLACE:

Knott Science Center
The College of Notre Dame
of Maryland
North Charles Street

SPEAKER AND TOPIC:

THE MARYLAND CHEMIST
AWARD ADDRESS
8:30 pm
Dr. Emil H. White
The Johns Hopkins University
"Chemical Mapping of the
Active Sites of Enzymes"

COCKTAILS AND DINNER:

Doyle Building Dining Room
College of Notre Dame of
Maryland

Cocktails 6:30 - 7:15

Hot buffet dinner (7:15) \$8.00
per person, *except* spouse, re-
tired chemists and students may
attend the dinner for \$6.00

Reservations should be made by
sending checks to

Melvin Miller
Loyola College

or by calling

323-1010 ext 467

before December 7, 1979

It is not necessary to be a member of the American Chemical Society to attend either the dinner or the talk. You may also attend the lecture without attending the dinner.

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eliminated from *The Chesapeake Chemist* since it was not used enough to justify the expense of the four extra pages sometimes needed to print it. Future issues of *The Chesapeake Chemist* will give the address of the Program Chairman, so that checks to cover the dinner may be mailed in advance, thus alleviating the congestion at the dinners.

Congressional Science Councilors Dr. Gornick sent a report as one of the Section's Congressional Advisers; he has made contact with Barbara Mikulski.

MARM The meeting will be held in Baltimore again in 1985. More people will be available to help, since the North Jersey Section is Middle Atlantic Region.

Old Business Dr. Roswell suggested that the Baltimore Convention Center be considered for the next MARM instead of Hunt Valley.

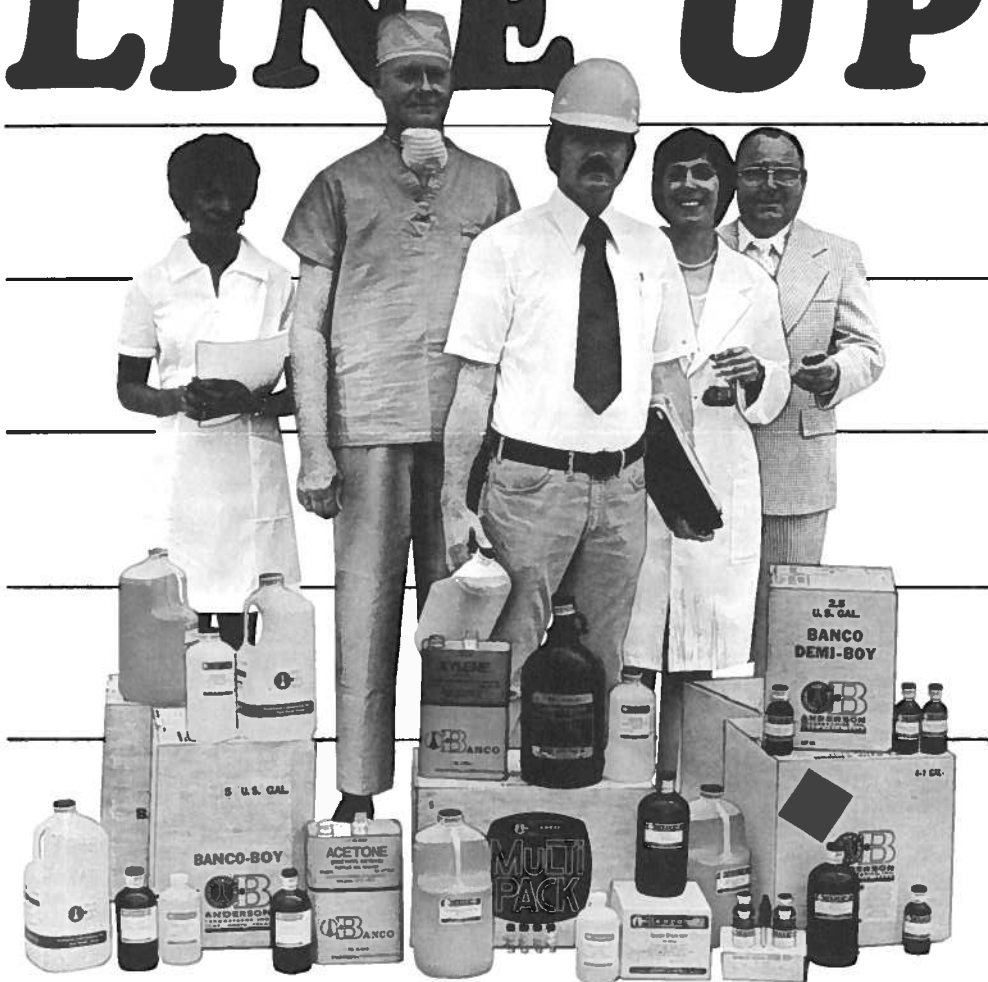
The student program was discussed briefly. There was some feeling that the teachers do not encourage attendance at the meetings, and are not really interested in the work of the Section. The only meeting which interests the high school students is the award program. More effort should be made to interest teachers.

The Naval Academy now has a Student Affiliate Chapter. The Section will present their Charter to them at a future meeting.

New Business Mr. Penske moved that two members be appointed by the Chairman to do an annual audit of the Section's books. Dr. Silversmith seconded the motion, which was carried.

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MARYLAND CHEMIST AWARD

The Maryland Chemist Award was established in 1962 to recognize and to honor, each year, a member of the Maryland Section for outstanding achievement in the field of chemistry. The achievement may be in pure or applied chemistry, chemical engineering or chemical education.

Previous recipients have been:

1962	Dr. E. Emmet Reid	1971	Dr. Giles B. Cooke
1963	Dr. W. Mansfield Clark	1972	Dr. Arnold M. Seligman
1964	Dr. Alsoph H. Corwin	1973	Dr. Lester P. Kuhn
1965	Dr. John C. Krantz, Jr.	1974	Dr. Joyce J. Kaufman
1966	Dr. Belle O. Talbot	1975	Dr. Benjamin Witten
1967	Dr. Walter S. Koski	1976	Dr. Richard L. Hall
1968	Dr. George L. Braude	1977	Dr. Henry C. Freimuth
1969	Dr. Leslie Hellerman	1978	Dr. Gunther L. Eichhorn
1970	Dr. Paul H. Emmett		

...cont. from p 5

Mr. Penske also suggested that we have an Archivist. The subject was discussed. Dr. Silversmith volunteered to store the old Treasurer's records, which now are contained in several boxes.

The meeting was adjourned at 9:00 pm.

Respectfully submitted,

Frances C. Hummel, Secretary

MARYLAND SECTION FUTURE PROGRAM

Date	Location	Speakers	Topic
January 16	Loyola College	Jon D. Franklin (Baltimore Sunpapers)	To Be Announced
February 13	College of Notre Dame	William Avery (Johns Hopkins Applied Physics Lab)	Chemical Storage of Energy
March 19	Towson State University	John Pavlik (Fisher Scientific)	Art, Science and Alchemy
		Jon B. Eklund (Smithsonian Inst.)	To Be Announced

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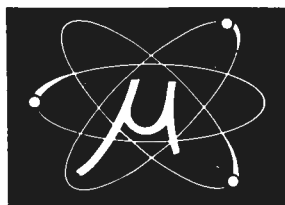
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