



THE

CHESAPEAKE CHEMIST

MARYLAND SECTION
AMERICAN CHEMICAL SOCIETY

VOL. XXIX

MARCH, 1973

NUMBER 3

MARCH MEETING

BIO - ORGANIC NIGHT

5:30 P.M. Dr. B. Weiss,
"Neurochemical Aspects
of Cyclic 3',5'-AMP."

8:30 P.M. Dr. R. B.,
Merrifield, "The Chemical
Synthesis of Peptides &
Proteins."



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IN THIS ISSUE

March Meeting.....5

Dr. B. Weiss and
Précis of Talk.....6

Dr. R. Merrifield and
Précis of Talk.....7

Executive Committee
Minutes.....9

New Members.....11

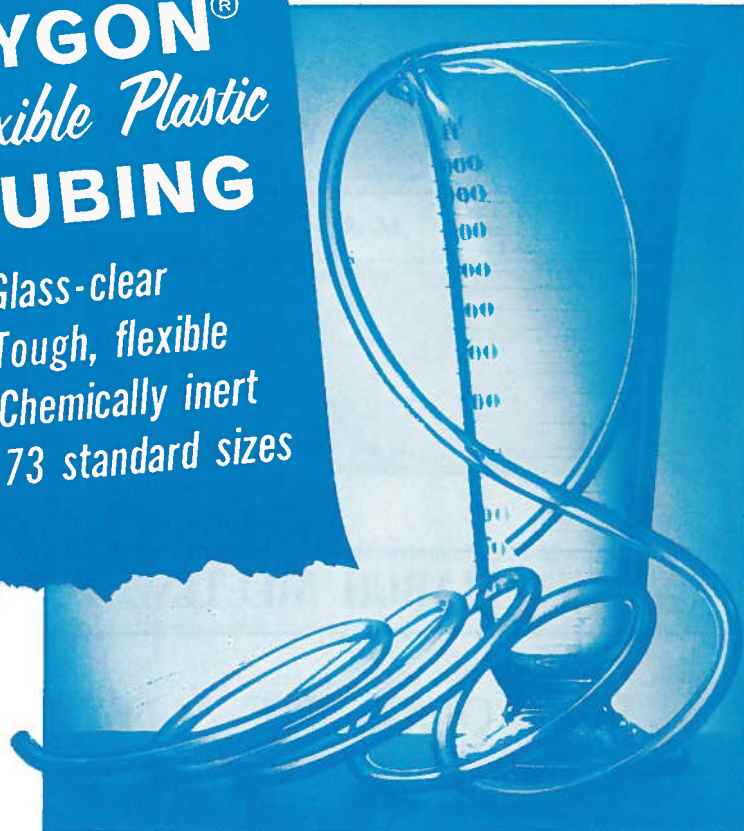
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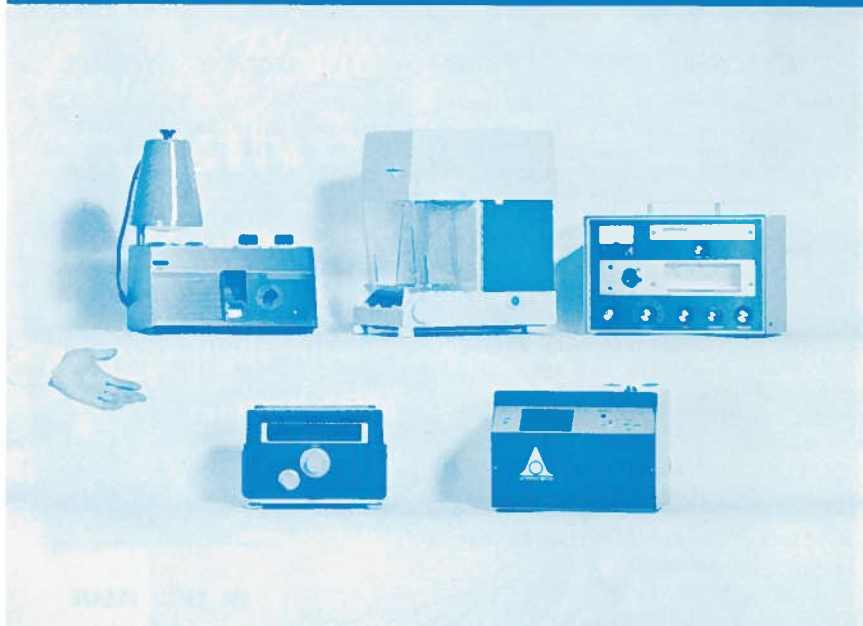
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2

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MARCH MEETING



DR. BENJAMIN WEISS

DATE:

WEDNESDAY, MARCH 21, 1973

PLACE:

Eudowood Gardens Lecture Room, Eudowood Plaza, Joppa Road near Goucher Boulevard

SPEAKERS AND TOPICS:

5:30 P.M. Dr. Benjamin Weiss, The Medical College of Penna. "Neurochemical Aspects of Cyclic 3',5'-AMP!"

8:30 P.M. Dr. Robert B. Merrifield, The Rockefeller University, "The Chemical Synthesis of Peptides and Proteins!"

MARCH, 1973

COCKTAILS AND DINNER:

Eudowood Gardens Dining Room. Pay Bar (\$.50 ea.) (6:30). \$4.75 for hot buffet dinner (7:15). Students, Retired Chemists and their spouses may attend the dinner for \$3.00 each. Reservations needed. Contact Mr. Allen Bednarczyk, McCormick & Co., Inc., 204 Wight Avenue, Hunt Valley, Md. 21031, phone 667-7480, 667-7470. Non-ACS members may attend; the talks may be attended without attending dinner. Guests are welcome.

SOCIAL HOUR:

All are invited to refreshments during the Social Hour after the meeting.



DR. ROBERT B. MERRIFIELD

DR. BENJAMIN WEISS

Benjamin Weiss was born in the Bronx, New York on January 26, 1937. He received his B.Sc. degree in Pharmacy at the Philadelphia College of Pharmacy and Science in 1958 and continued his graduate work there, receiving his M.S. and Ph.D. degrees in Pharmacology in 1960 and 1963 respectively. After receiving his Master's degree, Dr. Weiss was employed as a biochemist at the Agricultural Research Service at Wyndmoor, Pennsylvania, leaving after one year to pursue his doctorate. From 1963 to 1965, Dr. Weiss was a Postdoctoral Fellow in the Laboratory of Chemical Pharmacology at the National Heart Institute in Bethesda, Maryland. He spent another year at the National Heart Institute as a Staff Fellow before leaving to spend two years as a Research Associate in the Department of Pharmacology at Columbia University's College of Physicians and Surgeons. In 1968, he joined the staff at St. Elizabeth's Hospital as a Pharmacologist in the Laboratory of Preclinical Pharmacology of the National Institute of Mental Health. In 1971, he was promoted to Chief of the Section of Neuroendocrinology in the Laboratory of Preclinical Pharmacology at the National Institute of Mental Health at St. Elizabeth's Hospital, a position he presently holds.

Dr. Weiss is a member of the American Society for Neurochemistry, the New York Academy of Sciences, the American Society for Pharmacology and Experimental Therapeutics, AAAS and the APhA Academy of Pharmaceutical Sciences.

Among Dr. Weiss' many awards and honors are listed the Rho Chi Honorary Pharmaceutical Society membership, the Rexall Award, the Borden Award, the Alpha Zeta Omega Auxiliary Award, the Joseph W. E. Harrison Award, and the Frederick William Haussman Memorial Prize. He was also the recipient of the Dobbins and the American Foundation for Pharmaceutical Education Scholarships.

NEUROCHEMICAL ASPECTS OF CYCLIC 3',5'-AMP

Cyclic 3',5'-AMP mediates the in-

tracellular actions of essentially every hormone and neurotransmitter in the animal and plant kingdoms. This nucleotide affects the activity of scores of enzymes and influences numerous and diverse biological events. In the central nervous system as well, cyclic 3',5'-AMP has been shown to have profound biochemical, electrophysiological, and behavioral effects. During the past decade, biologists of all disciplines have been trying to elucidate the means by which an organism regulates the intracellular concentrations of cyclic 3',5'-AMP. The enzyme systems that catalyze the formation (adenyl cyclase) and hydrolysis (phosphodiesterase) of cyclic 3',5'-AMP certainly play a prominent role in this regulation, and much attention has been directed to studying the effects of various hormonal and environmental stimuli on these enzyme systems.

Our own studies have shown that the activities of adenylyl cyclase and phosphodiesterase cannot only be modified acutely by a variety of chemical agents, but that these enzymes can be altered chronically by changing the hormonal or neuronal input to these tissues. These results show how an organism has several interrelated compensatory mechanisms by which it can regulate the intracellular concentrations of cyclic 3',5'-AMP.

More recently it has become apparent that these enzymes are considerably more complex than originally thought. For example, it is now recognized that the adenylyl cyclase system is made up of at least two subunits, one catalytic and one regulatory, and that there may be different regulatory subunits for each hormonal activator. Similarly, it was shown that there are multiple molecular forms of cyclic nucleotide phosphodiesterase. These enzymes have different kinetic properties, different substrate specificities and respond differently to various activators and inhibitors of phosphodiesterase. Despite the fact that there are many different phosphodiesterases, each type of cell apparently has a distinct pattern of phosphodiesterase. This observation is of particular interest to the therapist for, if one can develop com-

pounds which will selectively inhibit each form of phosphodiesterase, one may be able to selectively alter the concentration of cyclic 3',5'-AMP in discrete types of cells and thereby affect the function of that cell specifically.

DR. ROBERT B. MERRIFIELD

Robert Bruce Merrifield was born in Fort Worth, Texas on July 15, 1921. He received his B.A. in Chemistry from the University of California at Los Angeles in 1943 and his Ph.D. in Biochemistry from U.C.L.A. in 1949 under Professor M. S. Dunn. He is also the recipient of honorary D.Sc. degrees from the University of Colorado (1969), Yale University (1971), Newark College of Engineering (1972) and the Medical College of Ohio (1972). He also holds an honorary Ph.D. degree from Uppsala University (1970).

After receiving his Ph.D., Dr. Merrifield accepted an Assistant's position at the Rockefeller Institute, being promoted to Laboratory Associate in 1953. In 1957, Dr. Merrifield was made an Assistant Professor at the Rockefeller Institute and later was promoted to Associate Professor. In 1966, he was appointed full Professor at the Rockefeller University.

Dr. Merrifield is a member of Sigma Xi, Phi Lambda Upsilon, Alpha Chi Sigma, the American Chemical Society, the American Society of Biological Chemists, the American Institute of Chemists and the National Academy of Sciences.

Among his awards and honors are listed the Lasker Award for Basic Medical Research (1969), the Gardner Award (1970), the Intra-Science Award (1970), and the American Chemical Society's Award for Creative Work in Synthetic Organic Chemistry (1972). He was also the Nobel Guest Professor at Uppsala, Sweden in 1968.

Dr. Merrifield is an Associate Editor of The International Journal of Peptide and Protein Research and a member of the Editorial Board of Analytical Biochemistry.

THE CHEMICAL SYNTHESIS OF PEPTIDES AND PROTEINS

The techniques of peptide chemistry have evolved to the point where

the synthesis of proteins is now feasible and both classical and solid phase approaches have been applied to the problem. The general method of solid phase peptide synthesis will be reviewed and several variations of the technique discussed, together with some of the current problems and developments. Several examples in which synthesis has been useful in answering important chemical and biological questions related to peptides and proteins will be described.

Total syntheses of ribonuclease A, ribonuclease T1, staphylococcal nuclease, trypsin inhibitor, lysozyme, acyl carrier protein and several other small proteins have been undertaken in several laboratories and will serve to illustrate the potentials and limitations of this approach. The synthesis of analogs of the N-terminal and C-terminal regions of RNase A and the recombination of these peptides with inactive protein components of the enzyme has given important information about the role of individual amino acid residues in binding substrate and in determining the activity, conformation and stability of the molecule.

The depsipeptide, valinomycin, and many synthetic analogs have led to a better understanding of its conformation and its role in binding and transporting potassium ions in lipid membranes. A cyclic dodecapeptide was designed and synthesized which also had the ability to bind alkali ions and carry them into hydrophobic media.

ORGANIC MICROANALYSES

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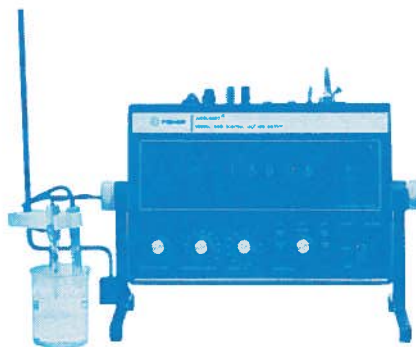
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EXECUTIVE COMMITTEE MINUTES

Minutes of the Executive Committee Meeting of the Maryland Section of the American Chemical Society held on February 6, 1973, at Loyola College

The meeting was called to order at 8:15 by the Chairman, Yale Caplan. Present were: George M. Steinberg, Melvin P. Miller, Edward J. Poziomek, Ronald J. Kassel, Robert Ellin, John L. Kolbe, Thomas C. Simmons, George L. Braude, Joseph Cogliano, Joyce J. Kaufman, David F. Roswell, Yale H. Caplan, Kent R. Zeller, William G. Galetto, Robert Schneider, A. Allen Bednarczyk, Fred Gornick, Leon Weber, and Ernest F. Silversmith.

The minutes of the last Executive Committee Meeting and the Treasurer's Report were approved. The latter showed that the section currently has a balance of about \$6700, compared to about \$5700 a year ago.

Y. Caplan reported on some correspondence he has received recently. We are invited to submit names for Division Chairmen and other offices for the 1974 MARM to be held at Wilkes-Barre, Pa. We are also invited to submit names of members to serve on the National ACS Safety Committee. Three members of the section will receive 50-year pins at the September, 1973 meeting.

J. Kaufman stated that Dr. Saalfeld of the Washington section thinks that another joint meeting of our sections, in December, 1974, is a fine idea. The Maryland Section would act as host. M. Miller stated that Sr. Vincent of the College of Notre Dame has suggested that Notre Dame's facilities could be used for such a meeting.

M. Miller reported a current enrollment of 25 for the short course to be held at Loyola on February 17 on "Soft and Hard Acids and Bases." ACS headquarters has been most cooperative in helping set up the course.

G. Braude of the Government Advisory Committee pointed out that there is a committee, chaired by Dr. Pelzar

of the University of Maryland, that provides liaison between Maryland scientists and the government. Dr. Braude will meet with Dr. Vaneski of the Washington Section on February 8 to discuss possible joint ACS-government liaison ventures.

J. Cogliano of the Member Assistance Committee has published some "Aids for the Unemployed" in the February "Chesapeake Chemist".

G. M. Steinberg (home phone HU-6-6820, office phone, 671-3836) volunteered to provide whatever advice or help he could for unemployed chemists. If employers could inform Dr. Steinberg of openings, he could pass the information along to unemployed chemists that may contact him.

J. L. Kolbe of the Membership Committee stated that ACS (at the national level) is losing a net of 1500-2000 members per year. A person-to-person campaign to recruit new members will be initiated.

D. Roswell stated that D. Jones, the Program Chairman, is soliciting suggestions for speakers at our 1974 dinner meetings as well as possible places to hold these meetings. The Remsen Lecturer has been selected but the date is still undecided.

Y. Caplan read a letter from C. Minnier of the Public Relations Committee. Mr. Franklin of the Sunpapers is interested in writing a series of articles on research done by local chemists. Please inform Dr. Minnier at Essex Community College about possible subjects for these articles.

F. Gornick solicited opinions from members on ACS matters such as PEP, dues increases, etc., which he could carry to the Dallas ACS meeting. Members who wish to do so could write their views to Dr. Gornick at UMBC.

(continued on page 10)

The committee voted unanimously (1) against having a PEP solicitation drive in the Maryland Section and (2) for a \$500 grant to the "Chesapeake Chemist" to meet anticipated deficits through May, 1973.

Respectfully submitted,
Ernest F. Silversmith
Secretary

These minutes are uncorrected, and are published for informational purposes only pending their acceptance at the next meeting of the Executive Committee.

BE AN AUTHOR

The Baltimore Sun newspaper has expressed an interest in printing a series of articles describing research being conducted by chemists in the area. If you are involved in research which you feel would be of interest to the general public, and would like to share it, please contact Dr. Carl Minnier, Essex Community College (682-6000) for further details.

IF YOU CHANGE YOUR ADDRESS . . . Please do not notify the Editor of the *Chesapeake Chemist*, but send your new and old addresses to: The American Chemical Society, 1155 Sixteenth Street, N. W., Washington, D. C. 20036. The Maryland Section will then be notified.

**When Did YOU
Last Attend A
Local A.C.S.
Meeting?**

WELCOME...

The following people have recently joined the Maryland Section of the American Chemical Society. The Local Section welcomes each one and invites each member to attend Local Section meetings and to participate in Local Section activities.

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Laird G. L. Ward
Elkton, Maryland
Manfred Wentz
Columbia, Maryland
Dr. Walter L. Zielinski
Frederick, Maryland

MARYLAND SECTION AWARD

The Awards Committee of the Maryland Section ACS is now accepting nominations for the Maryland Chemist Award. This annual award was established in 1962 to recognize and honor 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. In making its selection, the Committee will consider nominations made in previous years as well as those received this year.

Please send your nominations together with a supporting statement to Dr. Raymond Burgison, Chairman, Awards Committee, Univ. of Maryland, School of Dentistry, Dept. of Pharmacology, Baltimore, Md. 21201.

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