



THE

# CHESAPEAKE CHEMIST

MARYLAND SECTION  
AMERICAN CHEMICAL SOCIETY

VOL. XXIX

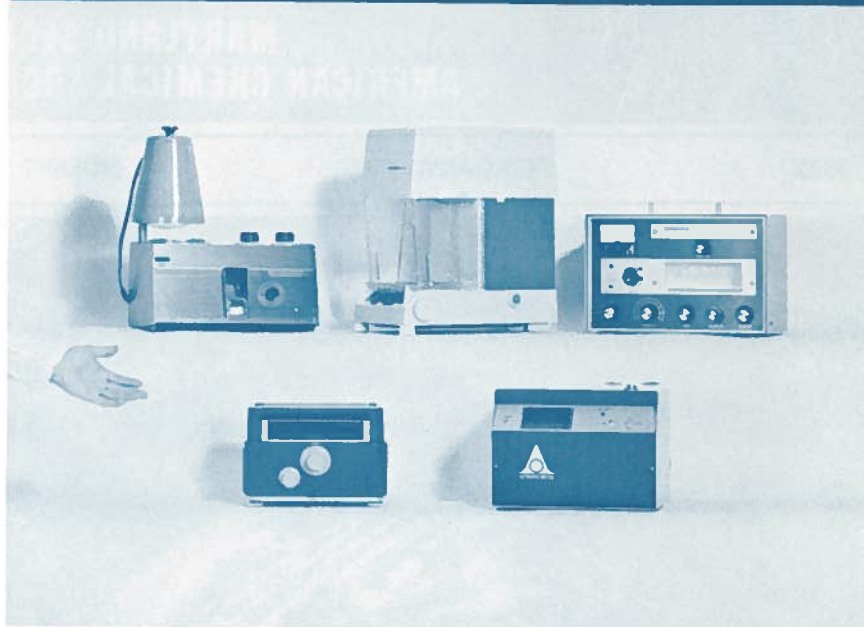
FEBRUARY, 1973

NUMBER 2



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## THE CHESAPEAKE CHEMIST

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### IN THIS ISSUE

Mailing List Up-dating....4

February Meeting.....5

Dr. T. Wilkerson and  
Précis of Talk.....6

Dr. C. Ponnampereuma and  
Précis of Talk.....6

New Members.....7

Unemployment Aids.....8

The Chesapeake Chemist is published monthly September through May by the Maryland Section of the American Chemical Society. Address editorial comments to Dr. William Galetto, McCormick and Co., 204 Wight Ave., Hunt Valley, Md. 21031. Phone 666-3155. Address advertising inquiries and copy to Mr. Kent R. Zeller, McCormick and Company, 204 Wight Ave., Hunt Valley, Md. 21031.

## International Symposium on Microchemical Techniques

"Progress and Projections for Microchemistry," will be the general theme for The International Symposium on Microchemical Techniques - 1973. The symposium will be held at The Pennsylvania State University, University Park, Pennsylvania, on 19 August to 24 August 1973 and will be conducted by The American Microchemical Society, with the sponsorship of the International Union of Pure and Applied Chemistry.

The scientific program will consist of sessions dedicated to topics of current interest, general papers, discussion groups, practical demonstrations, an equipment exhibit, and will also include a number of instructional workshop sessions. Special sessions will be included on such topics as:

Automated Elemental Analyzers -  
Ten Years Later

Computers in Elemental Analysis

Organic Elemental Analysis:  
New Methods and Equipment

Environmental Microanalysis:  
New Sensors and Techniques

Microelectrodes

Forensic Analysis:  
Narcotics and Drugs of Abuse

Organic Functional Group Analysis:  
New Directions

Electroanalytical Advances,  
including Ion Selective Elec-  
trodes

Microscale Separations:  
Advances in Techniques and  
Methods

Standards and Standardization  
for Microchemistry and Micro-  
analysis

Trace Analysis: Advances in  
Organic and Inorganic Analysis

New Techniques in Microchemistry

Persons interested in presenting a paper under any of the above topics or a paper on the general topic of microchemistry, should submit their paper to:

Mr. Howard J. Francis, Jr.  
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900 First Avenue  
King of Prussia, PA 19406

## paperwork.

A complete review and up-dating of the General Mailing List for the Chesapeake Chemist has recently been completed. If any member has detected any errors or omissions please contact Dr. Ernest Silversmith, Morgan State College, Baltimore, Md. 21212.

## Europe

The Philadelphia Section of the American Chemical Society is sponsoring another Charter Flight to Europe in 1973. Members of the Maryland Section are eligible to participate.

The B.O.A.C. flight will depart from Philadelphia May 17, 1973, first stop at London and then go on to Zurich. The return flight from Zurich will be on June 10, 1973. An optional 24-day land tour will be offered.

For further information contact Mrs. Shirley Golden, ACS, 215 South 35th Street, 105 Edgar Fahs Smith Chemistry Lab., Philadelphia, Penna. 19104, phone 215-382-1589.

## FEBRUARY MEETING



DR. THOMAS WILKERSON

### DATE:

WEDNESDAY, FEBRUARY 21, 1973

### PLACE:

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

### SPEAKERS AND TOPICS:

5:30 P.M. Dr. Thomas Wilkerson, U. of M., College Park. "Composition of Interplanetary Plasmas."

8:30 P.M. Dr. Cyril Ponnampereuma, U. of M., College Park. "The Chemical Origin of Life."

FEBRUARY, 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. C PONNAMPERUMA

## DR. THOMAS WILKERSON

T. D. Wilkerson was born in Detroit, Michigan on February 18, 1932. He attended the University of Michigan at Ann Arbor, and received his B.S. (Math honors) in 1953, his M.S. in 1954 and his Ph.D. in Physics in 1962. His graduate research on Astrophysical spectroscopy using the shock tube was directed by Dr. O. Laporte.

Dr. Wilkerson began his work on mass and energy analysis of plasmas while at Princeton's Plasma Physics Laboratory (1960-1961). Since 1961, Dr. Wilkerson has been associated with the University of Maryland's Institute for Fluid Dynamics and Applied Mathematics, serving as Acting Director, 1968-1969. He has held the position of Professor since 1968. He is presently continuing research on astrophysical abundances via shock tube spectroscopy and analysis of plasmas in space. This latter effort is a joint project with K. W. Ogilvie at the Goddard Space Flight Center.

Dr. Wilkerson is a consultant for Versar, Inc. on laser-enhanced electrical breakdown of gases and optical diagnostics of plasmas in the infrared. He is also presently participating in a joint project with the Stanford Research Institute and the Argonne National Laboratory to investigate the use of laser sounding of the atmosphere for gas analysis via high resolution optical spectroscopy.

### COMPOSITION OF INTERPLANETARY PLASMAS

Mass spectroscopy of plasmas in space is discussed. The principal ion-electron plasmas are the "solar wind," a continual high-velocity outward flux from the sun, and the near-planetary plasmas whose compositions reflect to some extent the makeup of each planetary atmosphere. Instruments for mass-analyzing the plasma ions take account of a wide range of ion energies, and often employ detectors which are sensitive to a single ion. Such measurements have required the parallel development of reliable scientific satellites and complex,

compact instrument packages which adapt laboratory practice to the constraints of space flight. Several satellite measurements have been made of helium and hydrogen in the solar wind, showing that  $(\text{He})/(\text{H})$  is of order 0.04 on the average, and has transients of order 0.25 behind interplanetary shock waves generated by violent events on the sun. Attention is increasingly directed towards heavier elements (carbon, oxygen, etc.) which are 3-4 orders of magnitude less abundant than hydrogen, and occur mainly as partially-ionized atoms. Mass-energy spectroscopy of interplanetary plasmas is a method of analyzing previously inaccessible solar system material, and affords valuable comparisons with optical spectroscopy of the sun and planetary atmospheres, nuclear abundances from cosmic rays, and the analysis of meteorites and lunar rocks.

## DR. CYRIL PONNAMPERUMA

Cyril Ponnampereuma is a native of Ceylon. He came to the United States in 1959, and in 1967 became a naturalized U.S. citizen.

His early education was in Ceylon and India where he received a baccalaureate in Philosophy. He then proceeded to London where he obtained a B.Sc. (Honors) degree in Chemistry at Birkbeck College, University of London, in 1959. During this time, he had the privilege of being associated with Professor J.D. Bernal, a pioneer in the field of the origin of life. After his undergraduate work at the University of London, Ponnampereuma joined the Univ. of California, Berkeley, for a Ph.D. in Chemistry under the direction of Professor Melvin Calvin.

In 1962 he was awarded a National Academy of Sciences Resident Associateship, to work with NASA, at the Ames Research Center. At the end of the first year as an associate, he was appointed to the permanent staff of NASA's Exobiology Division and became Chief of the Chemical Evolution Branch. The primary goal of his laboratory was the study of the origin of life. When the Apollo program was established, he was selected a principal investigator for organic analysis.

During his stay with NASA he was associated with many universities in the U.S. and abroad. He was on the visiting faculty of Stanford Univ., the Univ. of Nijmegen in the Netherlands, and the Sorbonne. The Indian Atomic Energy Commission appointed him a distinguished visiting professor in 1967. In 1970 he was invited by the U.S.S.R. Academy of Sciences to visit the Soviet Union as a guest lecturer.

He is currently Director of the UNESCO program for the Development of Basic Research in Ceylon, Associate Editor of Space Life Sciences, and U.S. Editor of the Journal of Molecular Evolution.

In September, 1971, he joined the University of Maryland as Professor of Chemistry and Director of the Laboratory of Chemical Evolution. He teaches a graduate course on Chemical Evolution and an undergraduate course entitled the Chemistry of Life.

The author of over one hundred and fifty papers related to chemical evolution and the origin of life, he has edited a number of books related to the subject and is the author of "The Origins of Life".

He is a member of the American Chemical Society, a Fellow of the Chemical Society, London, and a Fellow of the Royal Institute of Chemistry, London.

### THE CHEMICAL ORIGIN OF LIFE

The hypothesis of chemical evolution postulates that life is a result of a long evolutionary process in the universe. The theory of spontaneous generation is now presented in a scientific and rational manner, on the basis of astronomical and biochemical considerations. Experiments have been designed to simulate primordial conditions on this earth. The action of various forms of energy on the primitive atmosphere of the earth has given rise to the very molecules necessary for life.

Lunar samples and meteorites have provided us with some information on organic processes during the early history of the solar system. The identification of amino acids in the Murchison meteorite has provided strong evidence for chemical evolution

beyond the earth. The recent discovery of a vast array of organic compounds in the interstellar medium has dramatically highlighted the cosmic nature of primordial organic chemistry.

### COPY DEADLINE

Copy for the *Chesapeake Chemist* should be forwarded to the Editor not later than the fifth of the month preceding publication.

## 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.

Joseph Eugene Ahnell  
Baltimore, Maryland  
Dr. Alf L. Andreassen  
Columbia, Maryland  
Dr. John Paul Anhalt  
Baltimore, Maryland  
Dr. R. N. Bonnett  
Baltimore, Maryland  
Mr. Peter M. Dzadzic  
Baltimore, Maryland  
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Columbia, Maryland  
Dr. Henry E. Montgomery, Jr.  
Bainbridge, Maryland  
Dr. Sylvan H. Newburger  
Baltimore, Maryland  
W. C. Niernan  
Annapolis, Maryland  
Mr. Asokkumar Pal  
Belcamp, Maryland  
Mr. William Warren Reichert  
Catonsville, Maryland  
Dr. Bruce S. Schoenberg  
Baltimore, Maryland  
Dr. Walter M. Shackelford  
Edgewood, Maryland  
Cpt. Richard M. Spann  
Edgewood Arsenal, Maryland

## AIDS FOR THE UNEMPLOYED

The Maryland Section is attempting to assist its members who are newly unemployed. Such an occurrence is usually swift, painful and confusing. As in medical emergencies, first-aid treatment can be extremely useful. The ideas outlined below can aid the chemist in directing his efforts immediately in securing a new position. They are by no means complete.

### Psychological Effects:

Few chemists can survive being fired without some manner of depression, sense of inadequacy, failure, worthlessness, inferiority or hopelessness. This will probably happen to YOU. Continue with your job hunting in spite of it. DO NOT let it interfere.

### Contacts:

Register with Employment Clearing House. This will probably not lead to job offers but it will get you a complete set of extremely useful employment aid material. This is an excellent start.

Spread the word to your friends, former employers, co-workers, college placement offices, etc., that you are looking for another job. No one can help you unless you unless you make known your position. Personal contacts can be of tremendous benefit.

Investigate Bay-Vest, a voluntary self-help organization to help unemployed technical people in the Baltimore area. Call 383-5531 or 383-5494 for additional information. (Details in December 1972 Chesapeake Chemist.)

Check eligibility for TMRP (Technological Mobilization Re-employment Program). This can provide unemployment search grants, relocation grants or training or re-training programs. Contact local employment service for details.

### Money:

Unemployment insurance \$76/week for 26 weeks with possible extension of 13 weeks. See Local State Employment Division.

Food stamps available through local Department of Social Services. See county branch.

Read carefully Chapter 1 of ACS booklet "Job Hunting, The Seven Steps to Success" on how to handle your finances.

### Physical Effort:

You now have a new job -- to sell yourself and obtain a new position. As in any new program, you must learn to do a literature search, product analysis, market study, and sales promotion, but this time the item is you. It is probably the hardest work you will ever do. Do not be tempted to do all those odd jobs around the house, or take that long vacation you have always wanted.

## F R E E

GET YOUR POSTERS !

The Maryland ACS is attempting to update its mailing list for the Monthly Meeting Posters. If you are part of a group of chemists (ACS members or non-members) who would like to receive (or continue to receive) monthly meeting notices for posting on bulletin boards, please call and give us the proper mailing information. We feel that there are many non-attendees who would enjoy our meetings, but your assistance is needed in helping us to reach them. Please call Dr. David Roswell or Dr. Melvin Miller, Loyola College, phone 323-1010.

## SAFETY

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"Safety is common sense," claims the recently-revised Fisher Manual for Laboratory Safety, a well-known and respected safety manual which is a good beginning for any lab safety program.

The fact-filled manual which has been published for decades offers sound advice concerning: Accident Prevention in the Laboratory, Laboratory First Aid, Fires and Fire Fighting, plus an expanded section detailing Safety Equipment Available to Laboratories (Prevention and Control Equipment, Equipment for Use in Stor-

age and Handling, and Personal Protective Equipment). In addition, there is a fine section, References for Laboratory Safety, which conveniently lists many books and articles offering additional information on lab safety.

Copies are available free of charge to those who make requests on professional or institutional letterhead.

Write to: Fisher Scientific Co.  
711 Forbes Avenue  
Pittsburgh, PA 15219

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.

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The Polymer Division of the ACS is planning a round trip charter flight by Pan American World Airways on the following dates:

EASTBOUND, AUG. 24, 1973  
NEW YORK JFK TO LONDON

WESTBOUND, SEPT. 16, 1973  
PARIS TO NEW YORK (with a brief pick-up stop in Glasgow)

The flights are timed to coincide with the following meetings:

- 1) Sept. 2-8, 1973  
IUPAC Chemical Congress  
Hamburg, Germany
- 2) Sept. 10-14, 1973  
IUPAC Macromolecular Symposium  
Aberdeen, Scotland

Any regular or affiliate member of the Polymer Division of the ACS may participate in this flight as well as spouse, children and parents living at the same address. A total round trip cost of \$188.00 (which includes prepaid departure taxes totaling \$4.80) or less is anticipated. As in past years all funds not committed to the actual cost of the flight will be refunded to the participants.

Round trip reservations are made by mailing \$100 deposits per seat. All checks should be made payable to ACS Polymer 1973 Charter. For further information contact:

DR. CHARLES A. GARBER  
STRUCTURE PROBE, INC.  
P. O. BOX 342  
WEST CHESTER, PA 19380

All reservations are cancellable at any time with almost total refund. As in the past, children pay full fares since they occupy seats. However, infants may go free of charge in a bassinet supplied by the airline.

**ACS SHORT COURSES**

**Feb. 16-17. Intermediate Chromatographic Systems: Maintenance and Troubleshooting;** John Q. Walker, Minor T. Jackson, and M. P. T. Bradley. N.Y.C. area.

**Feb. 23-24. Electroorganic Synthesis;** Dr. Norman L. Weinberg. Philadelphia, Pa.

**At the 1973 Pittsburgh Conference  
March 3-4. Modern Liquid Chromatography;** Dr. Lloyd R. Snyder and Dr. J. J. Kirkland. Cleveland, Ohio.

**March 19-23. Gas Chromatography, Theory and Practice (A One-Week Laboratory Course);** Dr. H. M. McNair and Dr. J. M. Miller. VPI, Blacksburg, Va.

**March 30-31. Business Aspects of Chemistry;** Dr. Aimison Jonnard. Newton, Mass.

**At the Dallas Spring National Meeting  
April 7-8. Explosion Problems in the Chemical Industry (Only session in 1973);** Dr. Robert W. Van Dolah and Dr. David S. Burgess. Dallas, Tex.

*To register or obtain complete information on the courses, convenient lodging, and student discounts, write to Department of Educational Activities, American Chemical Society, 1155 16th St., N.W., Washington, D.C. 20036. During the two-week period prior to a course, registration should be made by telephone: area code 202, 872-4508.*

**MARCH MEETING**

**BIO-ORGANIC NIGHT**

**MARCH 21, 1973**

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."

THE CHESAPEAKE CHEMIST



Dr. Charles H. Townes (left center), university professor at the University of California in Berkeley, receives the Remsen Award of the Maryland Section of the ACS from Dr. Joyce J. Kaufman, The Johns Hopkins University, Chairman of the Section. Professor Townes was honored for "his contributions to the knowledge of the molecular components of interstellar space." Dr. Harry Woolf (left), Provost of The Johns Hopkins University, represented the University and Dr. David Lide (right), National Bureau of Standards, introduced Professor Townes.

-----Tear-Out Dinner Reservation Form-----

There is enclosed \$.....(\$4.75 per person)\* for dinner reservations at Eudowood Caterers, Eudowood Plaza, for the following persons.

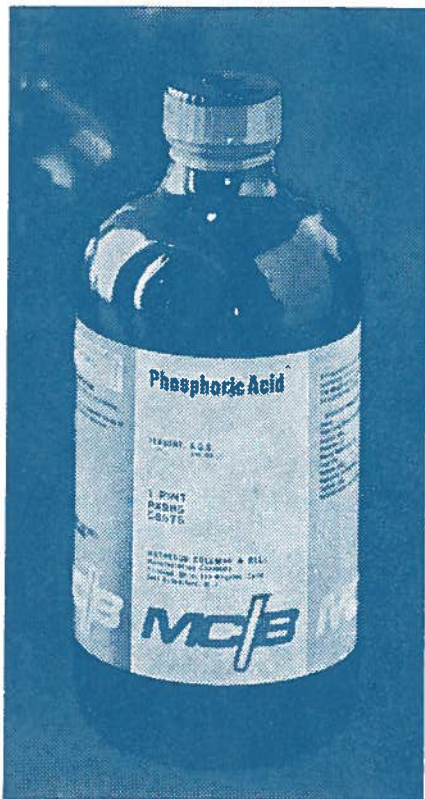
| <u>Name</u> | (Please print or typewrite) | <u>Affiliation</u> |
|-------------|-----------------------------|--------------------|
| _____       | _____                       | _____              |
| _____       | _____                       | _____              |

\*Please make checks payable to Maryland Section, ACS and mail together with reservation form to Mr. Allen Bednarczyk, McCormick & Co., Inc., 204 Wight Ave., Hunt Valley, Md. 21031 or phone 667-7480, 667-7470.

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