



THE CHESAPEAKE CHEMIST

MARYLAND SECTION
AMERICAN CHEMICAL SOCIETY

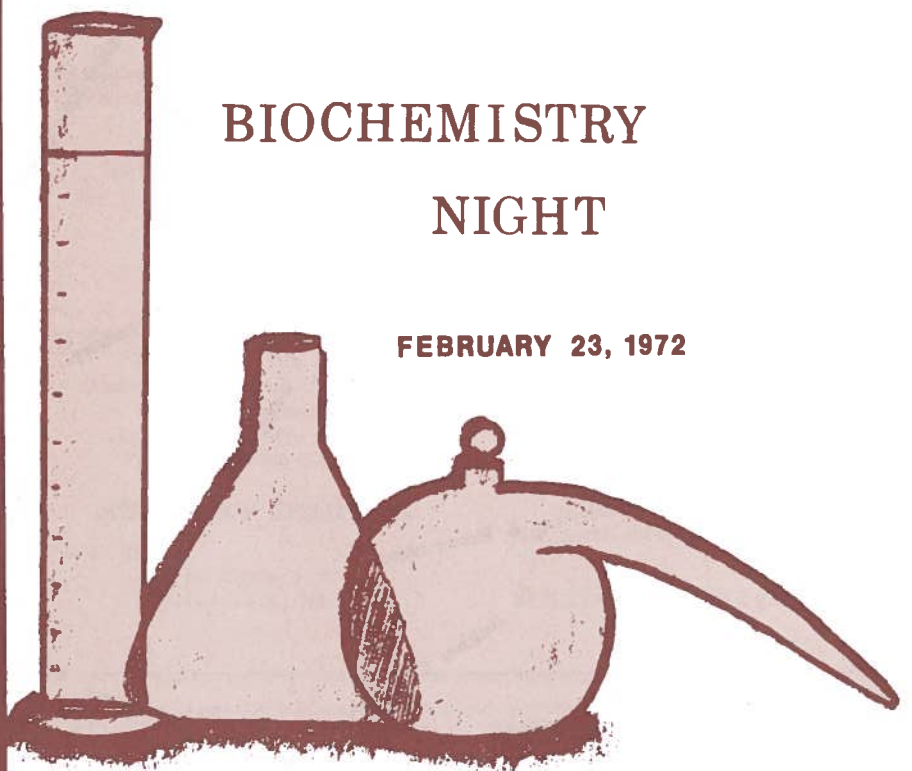
VOL. XXVIII

FEBRUARY, 1972

NUMBER 2

BIOCHEMISTRY NIGHT

FEBRUARY 23, 1972



SYMPOSIA ANNOUNCEMENT

American Chemical Society, 7th Middle Atlantic Regional Meeting, Marriott Motor Hotel, Philadelphia, Penna., February 14-17, 1972.

SYMPOSIA

The Problem of Food Supply
(Keynote Program)

A. Altschul, Georgetown University, Washington, D. C.

Speakers will include:

- S. Cantor, S. M. Cantor Associates, Ardmore, Pa.
- C. Cooney, Massachusetts Institute of Technology, Cambridge, Massachusetts
- G. Irving, Washington, D. C.
- O. Kelly, Agency for International Development, Washington, D. C.
- R. Kocher, Miles Laboratories, Elkhart, Indiana
- C. C. Price, University of Pennsylvania, Philadelphia, Penna.
- D. Rosenfield, Food and Nutrition Service, USDA, Washington, D. C.
- L. Schertz, Foreign Economic Development Service, USDA, Washington, D. C.
- S. Srinivasan, Mobil Research and Development Corp., Paulsboro, New Jersey
- S. Weissberg, League for International Food Education, Washington, D. C.
- J. A. Wolff, Eastern Marketing & Nutrition Research Division, USDA, Washington, D. C.

- Catalysis:
- Analytical Chemistry:
- Chemical Education:
- Chemical Technicians:
- Fluorine Chemistry:
- Chemical Documentation:
- Fiber Chemistry:
- Polymer Chemistry:
- Organic Chemistry:
- Physical Chemistry:
- Computers in Chemistry:
- Undergraduate Research:
- Chemical Marketing & Economics:
- Rubber Chemistry:
- Medicinal & Biochemistry:
- Inorganic Chemistry:



THE CHESAPEAKE CHEMIST

VOL. XXVIII

FEBRUARY, 1972

NUMBER 2

EDITORIAL STAFF

- William G. Galetto.....Editor
McCormick & Co.,
204 Wight Ave.
Hunt Valley, Md. 21031
Phone: 666-3155
- Allen Bednarczyk...Assistant Editor
McCormick & Co.
Hunt Valley, Md. 21031
- M. J. Albinak...Contributing Editor
Essex Community College
Baltimore, Md.
- David Gordon....Contributing Editor
U. S. Food and Drug Adm.
Baltimore, Md.
- E. M. Glocker....Contributing Editor
W. R. Grace and Company
Clarksville, Md.
- M. F. Switzer...Contributing Editor
The Johns Hopkins University
Baltimore, Md.

SECTION OFFICERS

- Joyce J. Kaufman.....Chairman
Chemistry Department
The Johns Hopkins University
Baltimore, Md. 21218
- Yale H. Caplan.....Chairman-elect
Medical Examiner's Office
111 Penn Street
Baltimore, Md. 21201
- Ernest F. Silversmith.....Secretary
Morgan State College
Baltimore, Md. 21212
- Leon Weber.....Treasurer
SCM Corp.
Baltimore, Md. 21226

IN THIS ISSUE

- Executive Committee
Minutes.....4
- February Meeting.....5
- W. J. Bailey and
Precis of Talk.....6
- R. Breslow and
Precis of Talk.....6
- Scholarship Winner.....7
- Morgan State College.....10
- Scholarship Program.....10

BUSINESS STAFF

- Kent R. Zeller.....Business Manager
McCormick & Co.
Industrial Flavor Division
204 Wight Avenue
Hunt Valley, Md. 21031
Phone: 301-666-7400

MEMBERSHIP CHAIRMAN

- John L. Kolbe
W. R. Grace & Co.
Clarksville, Md.

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.

EXECUTIVE COMMITTEE MINUTES

Minutes of the Executive Committee Meeting of the Maryland Section of the American Chemical Society held on November 8, 1971, at Loyola College.

The meeting was called to order by the Chairman, Richard Kokes. Present were T. Simmons, T. C. Berenthien, L. Weber, M.P. Miller, N. M. Zaczek, C. Minnier, A. Bednarczyk, J. L. Kolbe, E. J. Poziomek, G. L. Braude, T. Parr, E. Silversmith, Y. Caplan, J. Kaufman, J. Cogliano, and H. S. Aaron.

The minutes of the previous meeting were accepted as published in the September 1971 issue of The Chesapeake Chemist.

Theodor Berenthien gave a Treasurer's Report.

Dr. Minnier, Education Committee Chairman, reported that a speaker's bureau has not been established, and that there have been no requests for speakers from the section. He stated that a program of this type had been run by the Maryland Academy of Science under a NSF grant, but that it was being discontinued, because the funding had been discontinued. Dr. Kokes suggested that the Academy be contacted regarding the details of this program, and that a report be given at the next meeting.

Al Bednarczyk, Nominating Committee Chairman, announced the slate of new officers for 1972, to be published in the November 1971 issue of The Chesapeake Chemist, with the following change: for Councilors, F. Timothy Parr and Brown L. Murr; for Alternate Councilor, David H. Rosenblatt.

Dr. Kaufman announced the 1971-1972 program, as published in the September 1971 issue of The Chesapeake Chemist. For 1972-1973, we do not expect to be meeting at Eudowood Gardens. A joint meeting to be hosted by the Washington Section is scheduled for December 1972. Dr. Kaufman stated that Dr. Robert Parr, Chairman of the Remsen Award Committee, had suggested that the committee should carry over some members from year to year. The make-up of this committee was discussed. It was suggested that, in addition to the chairman, this committee should consist of

four members. At this time, two members should be appointed to one year terms, and two to two year terms. Some suggestions for possible committee members were made. Thereafter, members should be appointed to two year terms. Some suggestions for possible committee members were made.

Dr. Caplan reported that the new format of The Chesapeake Chemist has reduced publishing expenses, and that we should just about break even through December 1971.

Dr. Silversmith reported that Miss Vanessa Olivis received the second Scholarship Award, and has just started the fall term. Mr. David Dixon, the first recipient, is making satisfactory progress under the program. Dr. Kokes announced that the Dunning Foundation and the Davison Division of W.R. Grace had contributed an additional \$1000 and \$200, respectively, to finance the program, hence provide that measure of financial relief to the Maryland Section. Since the Maryland Section will not be able to continue to sponsor the program for more than two scholarship awards, he suggested that we recommend to Dr. Scarlett of the Catonsville Community College that he should explore the possibility of continuing the program with the aid of government funding. Dr. Kokes recommended that the section give whatever assistance (other than financial) that it can to continue the program.

Dr. Braude gave a Councilor's Report from the September National ACS Meeting. The main topics discussed were whether the ACS should become a more professional organization, and what should be done to improve the financial situation of the society. Current policy is not to start any new program without a thorough review as to its future financial implications to the society.

Tim Parr reported on costs and facilities available at some possible future dinner meeting places for 1972-1973. The question of the for-

(Continued on Page 9)

FEBRUARY MEETING BIOCHEMISTRY NIGHT



PROF. RONALD BRESLOW

DATE:

WEDNESDAY, FEBRUARY 23, 1972

PLACE:

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

SPEAKERS AND TOPICS:

5:30 P.M.
Professor William Bailey, U. of Md., "A New Synthesis of Polypeptides and Ordered Copolyamides Thru the Acylazide Hydrobromides."

8:30 P.M.
Professor Ronald Breslow, Columbia University, "Biomimetic Chemistry."

COCKTAILS AND DINNER:

Eudowood Gardens. Price is \$5.25 per person for cocktails (6:30-7:15, unlimited quantity) and hot buffet dinner (7:15). Retired members, students and their spouses may attend the dinner for \$3.00. Reservations are necessary for the dinner, and should be made with Mr. Allen Bednarczyk, McCormick and Co., Inc., 204 Wight Avenue, Hunt Valley, Md. 21031, phone 666-3155, by Friday preceeding meeting. It is not necessary to be a member of the American Chemical Society to attend the dinner and/or the talks.

SOCIAL HOUR:

There will be a social hour after the meeting. Refreshments will be served.



PROF. WILLIAM BAILEY

WILLIAM BAILEY

William J. Bailey was born in East Grand Forks, Minnesota on August 11, 1921. He received his B.S. in Chemistry from the University of Minnesota in 1943, and his Ph.D. from the University of Illinois in 1946. The year after graduation was spent as an A.D. Little Postdoctoral Fellow at M.I.T. From there, Dr. Bailey went to Wayne State University where he held the position of Assistant Professor until 1949 when he was appointed Associate Professor. In 1951, Dr. Bailey left Wayne State to join the staff at the University of Maryland where he now holds the title of Research Professor.

In 1967, Dr. Bailey was Chairman of the Division of Polymer Chemistry of the A.C.S. and served on the Council Committee on Nominations and Elections (1969-1971). In 1968, he was appointed Chairman of the National Research Council Committee on Macromolecules, a position he presently holds. In 1960, Dr. Bailey was Chairman of the Gordon Research Conference on Organic Reactions and Processes and served on the NRC-NSF Postdoctoral Fellowship Selection Committee (1965-1968).

He presently serves on the Editorial Boards of: Macromolecular Syntheses, Journal of Organic Chemistry, Macromolecules, Journal of Polymer Science, Journal of Macromolecular Chemistry and Record of Chemical Progress.

Dr. Bailey has published over 100 papers in the fields of pyrolysis of esters, cyclic dienes, polynuclear aromatic hydrocarbons, acetylenes, phosphorous compounds and high polymers.

His work in the field of Pyrolysis of Esters led to his receiving the first Fatty Acid Producers Research Award in 1955. He has also received the Service Award of the Washington Section of the A.C.S. (1968) and in 1970-1971 was a Robert A. Welch Foundation Lecturer.

A NEW SYNTHESIS OF POLYPEPTIDES AND ORDERED COPOLYAMIDES THRU THE ACYLAZIDE HYDROBROMIDES

A new method for the synthesis of high molecular weight polypeptides has been developed from the amino acid azide hydrobromides. The slow addition of a base to a solution of the amino azide salt in a polar solvent, such as water, alcohol, or DMF, produces the polypeptide at low temperatures (0 to -20°) with little or no cyclic by-product. This method has an advantage over the Leuch or N-carboxy anhydride method in that it can be run in polar solvents with amino acids containing unprotected polar side groups. The method can also be used to produce sequential polypeptides from the azides of dipeptides or tripeptides. It also has an advantage over the active ester method in that the polymerization conditions are milder and no recombination occurs during polymerization. It can also be extended to produce regular alternating or sequential polyamides such as the alternating copolyamide of nylon-3 and nylon-6. The procedure fails in the case of the azide from p-aminobenzoic acid because the amine is not basic enough and from the azide of gamma amino butyric acid because the major product is cyclic.

RONALD BRESLOW

Dr. Ronald Breslow was born in Rahway, New Jersey, on March 14, 1931. He received his A.B. degree summa cum laude in Chemistry from Harvard University in 1952. In 1954, he received his A.M. degree in Biochemistry from Harvard and his Ph.D. in Organic Chemistry in 1956 from the same institution. After receiving his doctorate, Dr. Breslow spent a year at Cambridge University as a National Research Fellow with Sir Alexander Todd, leaving in 1956 to join the staff of Columbia University where he is now S. L. Mitchill Professor of Chemistry.

(Continued on Page 7)

PROF. RONALD BRESLOW

(Continued from Page 6)

Dr. Breslow has held a Sloan Fellowship (1961-1963), and has been elected to the National Academy of Sciences (1966), the American Academy of Arts and Science (1967), the Executive Committee of the Organic Division A.C.S. (1966), the Editorial Board of Organic Syntheses (1968), and the Board of Editors of Bioorganic Chemistry (1971). He has received the A.C.S. Award in Pure Chemistry (1966), the Fressenius Award of P.L.U. (1966), the Mark Van Doren Medal (1969) and the Baekeland Medal (1969). Dr. Breslow has delivered numerous invited and named lectures among which are included: the Gordon Conference on Hydrocarbon Chemistry (1962), A.C.S. Carbanion Symposium (1963) Plenary Lecturer, International Symposium on the Chemistry of Small Ring Compounds and Plenary Lecturer, International Symposium of the Chemistry of Nonbenzenoid Aromatic Compounds.

BIOMIMETIC CHEMISTRY

Enzymatic reactions differ from ordinary chemical reactions not only in their high velocities but in their remarkable selectivities. Although artificial enzymes do not yet rival natural enzymes in terms of speed, it is possible to mimic the positional selectivity of such enzymes as the oxidases by use of the principles involved in the enzyme-substrate complex. Orientation of reagent and substrate by a variety of forces has been studied and had led to the process called "remote oxidation" in which various positions of such molecules as steroids may be selectively functionalized. Studies with cyclodextrins have led to selective reactions for similar reasons. Functional derivatives of cyclodextrins have many of the properties of primitive enzymes, and may also be used in the mimicking of enzymatic chemistry with simple organic systems.

SCHOLARSHIP WINNER

Vanessa Olivis, a freshman in the Chemical Technology curriculum at Catonsville Community College, is the second recipient of the scholarship award presented by the Maryland Section of the American Chemical Society, according to Joseph A. Scarlett, director of career programs for the community college. The scholarship, which totals \$2,000, provides for tuition, books, transportation, meals, and incidental expenses for the two-year duration of the chemistry curriculum. Miss Olivis was selected by a special committee chaired by Dr. Ernest Silversmith of Morgan State College.

A June 1971 graduate of Eastern High School, Miss Olivis is eighteen and lives with her parents, Mr. and Mrs. Jesse McCall, in Edmondson Village. A grade of 90+ in high school chemistry led her to select this field for a career and to apply for consideration for the grant. When she completes the program at the Catonsville college, she hopes to transfer to a senior college or university to continue working toward a career as a chemical oceanographer or a research chemist. In addition to pursuit of her studies, Miss Olivis enjoys bowling, reading, and art work.

The chemical technology program at Catonsville was begun several years ago with the cooperation of the local section of the American Chemical Society, Mr. Scarlett added, and at the urging of chemical industries who were suffering shortages of skilled manpower. It emphasizes laboratory techniques and experiences in quantitative and qualitative analysis and organic chemistry. Robert O. Reynard is faculty coordinator for the program, which also makes available a cooperative work-study option with local industry.

When Did YOU

Last Attend An

ACS Meeting?

CHROMATOGRAPHY COURSE

WASHINGTON CHROMATOGRAPHY DISCUSSION GROUP

THREE DAY CHROMATOGRAPHY COURSE

APRIL 6-8, 1972

THEORY AND PRACTICE OF CHROMATOGRAPHY

PRESENTED BY: The Washington Chromatography Discussion Group.

SPONSORED BY: The American University, Department of Chemistry, Massachusetts and Nebraska Avenues, N.W., Washington, D.C. 20016

PURPOSE: The course is designed to benefit those with a limited amount of experience in chromatography as well as those new to the field. Although the most recent developments will be emphasized, the course is not a research conference for experts. The material will be of interest to those working in the laboratory as well as to supervisory personnel interested in evaluating the techniques.

COURSE DESCRIPTION: Lectures and laboratory sessions will cover basic principles and practices of liquid, thin layer and gas chromatography. The presentation of physical concepts rather than mathematical derivations will be emphasized. One and one half days will be devoted to gas chromatography, one day to liquid chromatography and one half day to thin layer chromatography.

ENROLLMENT: The total number of students is limited. Applications will be accepted in the order received. Enrollment may be made by individuals or organizations. Any number of persons from a single organization may enroll as long as there are vacancies. Upon receipt of a written or telephone request, a place in the short course will be reserved for those who require time to obtain authorization. Please use the application address below:

DR. MARY H. ALDRIDGE, DEPARTMENT OF CHEMISTRY, THE AMERICAN UNIVERSITY, MASSACHUSETTS AND NEBRASKA AVENUES, N.W., WASHINGTON, D.C. 20016.

FEE: Applications for enrollment may be made for any part of the course. The fee is \$30.00 per day and includes luncheons and a "Certificate of Completion".

COPY DEADLINE

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

COVER DESIGN

BY
MRS. JANICE COOPER

DR. MAX TISHER

ACS PRESIDENT

Dr. Max Tishler, professor of chemistry at Wesleyan University, Middletown, Conn., and former senior vice president for research and development of Merck & Co., Inc., Rahway, N.J., took office January 1, 1972, as president of the 110,000-member American Chemical Society. He succeeds Nobel laureate Melvin Calvin professor of chemistry at the University of California, Berkeley.

Recipient of the Society's Priestley Medal in 1970 for "distinguished service to chemistry", Dr. Tishler retired that year from Merck, where for more than 30 years he had contributed significantly to most of the company's major scientific developments, including sulfa drugs, antibiotics, cortisone, hydrocortisone, and commercial syntheses of vitamins B₂, K₁, and pantothenic acid.

During the thirteen years he headed research at Merck, discoveries of far-reaching importance were made for the treatment of heart disease, hypertension, mental depression, rheumatoid arthritis and other inflammatory ills, and certain poultry and livestock diseases.

Credited with more than 100 patents, which include the first commercial production processes for penicillin, streptomycin, cortisone, and hydrocortisone, Dr. Tishler is the author or coauthor of more than 100 other scientific publications and of two books dealing with vitamins, sulfa drugs, and antibiotics.

A native of Boston, Dr. Tishler received the B.S. degree magna cum laude in 1928 from Tufts College and the Ph.D. in organic chemistry in 1934 from Harvard University. Before joining Merck in 1937, he was a research associate and instructor in chemistry at Harvard.

Named director of developmental research of Merck's Chemical Division

in 1944, Dr. Tishler became vice-president for scientific activities ten years later. He was made vice-president and executive director of Merck, Sharp & Dohme Research Laboratories in 1956 and president in 1957. Five years later he was elected a member of the Merck & Co. board and in 1969 he became senior vice-president, research and development. In 1970 he was appointed professor of chemistry at Wesleyan University.

EXECUTIVE COMMITTEE MINUTES

(continued from page 4)

mat for future meetings of the section was discussed. The possibility of going to a bimonthly afternoon meeting with more concentrated technical sessions or a possible training course was considered. The Chairman requested an informal show of hands to gauge the feelings of the committee on the subject. The committee was evenly divided on the suggestion of changing the present monthly format to a bimonthly or other format. They were opposed (11 to 5) to going over to an afternoon session time. They were almost unanimously opposed to any limitations under which we should give "equal time" to each branch of chemistry. The committee unanimously voted to curtail the dinner meetings in the interest of economy, in whatever manner is deemed necessary by the program chairman.

Dr. Kaufman asked for suggestions for any new standing committees. She is considering establishing a committee to provide assistance, if possible, to members who have been laid off or are seeking professional advice.

A request for our membership list by a management consulting firm was denied.

The meeting was adjourned at 10:55 P.M.

Respectfully submitted,
HERBERT S. AARON,
Secretary

MORGAN STATE COLLEGE

Clara Adams (Ph.D., University of Massachusetts Five-College Cooperative) is a distinguished member of Morgan State College's Chemistry Department. Anthony Dent, who received his Ph.D. from Johns Hopkins after a very productive graduate career with Richard Kokes, is a member of Carnegie-Mellon University's Chemistry Department. Tyson Tildon, another Hopkins Ph.D., is Head of Pediatrics Research at the University of Maryland Medical School. What do these three outstanding chemists have in common? All are graduates of Morgan State College's Department of Chemistry, and all exemplify that department's tradition of excellence. This tradition gives the department's students, alumni and staff a real sense of pride and dedication.

Another example of the department's accomplishments is the fact that its American Chemical Society Student Affiliate, the George H. Spaulding Chapter, has been selected as outstanding by the A.C.S. for three of the last four years! This remarkable feat was guided by student presidents Elmer Hayes, Joan Smith and Jimmie Daniels, and Faculty Advisors Clara Adams, John P. Brown and Horace Judson.

Much of this tradition of excellence was built under the leadership of the late Dr. George H. Spaulding, who was Department Chairman from 1945 until his untimely death in 1966. It was during Dr. Spaulding's term as chairman that the department won accreditation by the A.C.S. Also, during his term, the department occupied its present building, Calloway Hall, which it shares with the Department of Physics. The building was named after Dr. Milton Calloway, who came to Morgan in 1916 and founded the Departments of Chemistry and Biology.

Many Morgan chemistry graduates are pursuing distinguished careers in teaching, research, business, medicine, dentistry and veterinary medicine. These graduates have won numerous advanced degrees, including at least 13 M.S. degrees, 8 Ph.D.'s, 2

D.D.S.'s and 2 D.V.M.'s. At least 20 other graduates are currently pursuing advanced degrees in graduate, medical, pharmacy and business schools.

At present, the department has a well-trained faculty that is dedicated to continuing this rich tradition of excellence. It includes Clara Adams (physical chemistry), John P. Brown (inorganic), L. Pearl Brown (physical-inorganic), James A. Duncan (organic; on a one-year appointment replacing Morton Huber), Horace A. Judson (organic), Bibhuti Mazumder (physical), Ernest F. Silversmith (organic), U.S. Stubbs (analytical) and Hugh G. Vance (analytical). Future plans of the department include the occupancy of a new building in a few years and the acquisition of additional modern equipment as hard-to-come-by dollars become available.

SCHOLARSHIP PROGRAM

The Scholarship Program of the Maryland Section has made it possible for two students to enroll in the Chemical Technician Program at Catonsville Community College. The scholarship funds were donated by the H.A.B. Dunning Foundation, W.R. Grace Company and the Maryland Section. The program at Catonsville is directed by Mr. Joseph Scarlett.

The two students, Miss Vanessa R. Olivis and Mr. David S. Dixon, are doing well in the program and are happy to have this opportunity. Miss Olivis, a graduate of Eastern High School, entered the program in September, 1971. She resides at 4102 Glenhunt Road. Mr. Dixon is a graduate of Dunbar High School. He entered the program in September, 1970. Both of these students had fine high school records and both are hard, dedicated workers.

Clearly, this program has succeeded in providing two very fine young people an opportunity to enrich their lives that they would not have had otherwise. If this program is to continue, additional funds from the private sector will be needed.

ACTIVATION ANALYSIS - PRINCIPLES AND APPLICATIONS

The Baltimore-Washington Section of the Society for Applied Spectroscopy in collaboration with the Maryland Section of the American Chemical Society and the Chemical Society of Washington is continuing with its Professional Development Program for Scientists in the Baltimore-Washington Area.

Our 1972 Spring Session is entitled, "ACTIVATION ANALYSIS - PRINCIPLES AND APPLICATIONS." The session will consist of five two-hour lectures on alternate Tuesdays from 7:30 to 9:30 P.M. at the W. R. Grace Research Center, Clarksville, Maryland. The starting date is March 14, 1972. Drs. Philip LaFleur and Herbert P. Yule of the National Bureau of Standards will present the lectures. The text for the course is "Guide to Activation Analysis" edited by W. S. Lyon, Jr. The course fee including text is \$25.00 for ACS and SAS members and \$35.00 for non-members.

Requests for applications and additional information should be sent to:

Maurice J. Peterson
Professional Development Program
U. S. Bureau of Mines
College Park, Maryland 20740
or call 301-864-3100 Extension 70

Registration is limited and will be closed March 10, 1972.

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.

ORGANIC MICROANALYSES GALBRAITH LABORATORIES, INC.

P. O. Box 4187
Knoxville, Tenn. 37921
(615) 546-1335
HARRY W. GALBRAITH, Ph.D.

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

There is enclosed \$.....(\$5.25 per person)* for cocktails and dinner at Eudowood Caterers, Eudowood Plaza, for the following persons.**

<u>Name</u>	<u>(Please print or Typewrite)</u>	<u>Affiliation</u>
-------------	------------------------------------	--------------------

*Please make checks payable to Maryland Section, ACS and mail together with reservation form to Mr. Allen Bednarczyk, McCormick and Co., Inc., 204 Wight Ave., Hunt Valley, Md. 21031, or phone 666-3155.

**Return by Friday preceeding next meeting.

PLEASE DO NOT DELAY — DATED NOTICE INSIDE



*There's more
to VacTorr
than the name...*

VacTorr™ **VACUUM EQUIPMENT**

VacTorr is the new name chosen to designate Precision Scientific's line of vacuum pumps and vacuum equipment.

Precision's mechanical, rotary vane vacuum pumps have an already established position in the vacuum field, being noted for their extremely quiet operation and highly efficient performance. Nine models are available, in a range from 0.8 to 53 cfm. Guaranteed to achieve ultimate vacuum of 0.1 micron of mercury, 1×10^{-4} Torr.

Now, in addition, the VacTorr line includes a pumping station, diffusion pump, gauges, traps and associated system elements, supplies and accessories.

VacTorr provides the fundamental vacuum components for any laboratory or industrial application, offering a single-source supply point for vacuum equipment.