



# THE CHESAPEAKE CHEMIST

MARYLAND SECTION  
AMERICAN CHEMICAL SOCIETY

VOL. XIX

MARCH, 1963

NUMBER 3



"SNOWFLAKES"



## EAGER

There's no delay between the time your order arrives and your Fisher Unitized Furniture is pulled from stock for immediate shipment. That's because Fisher warehouses the largest continuous inventory of lab furniture—everything you can possibly want is on hand, ready to go.

So what's your gain? Simply this: Your lab is completed on schedule. You'll not have money tied up for months in a lab you can't use because the furniture can't get there. And you order Fisher furniture on the same requisition as your new lab's instruments, appliances, glassware and reagent chemicals.

There's more to recommend Fisher furniture—like moneysaving adaptability during lab expansions; wear resistance; choice of 38 modular units. **Facts in free lab planning kit.** Call or write for it today. S-250



## FISHER SCIENTIFIC

World's Largest Manufacturer-Distributor of Laboratory Appliances & Reagent Chemicals  
**7722 Woodbury Drive, Silver Spring, Maryland**  
*For immediate service call Saratoga 7-8754 in Baltimore, Md.*



# THE CHESAPEAKE CHEMIST

VOL. XIX

MARCH, 1963

NUMBER 3

### EDITORIAL STAFF

Melvin P. Miller  
 Norbert M. Zaczek ..... Co-editors  
 Loyola College  
 Baltimore 10, Md.  
 R. J. Allgeier.....Asst. Editor  
 Fort Detrick  
 Alvin Bober.....Asst. Editor  
 U. S. Customs Lab.

### BUSINESS STAFF

John A. Kerchner.....Business Mgr.  
 Borden Chemical Co. Ink Div.  
 C. C. Legal.....Advertising Mgr.  
 W. R. Grace & Co.

### CONTRIBUTORS TO THIS ISSUE

J. J. Kaufman  
 RIAS  
 F. M. Miller  
 University of Maryland  
 Rev. W. J. Ruppenthal, S.J.  
 Loyola High School  
 W. H. Stahl  
 McCormick & Co.

### MEMBERSHIP CHAIRMAN

Joseph Cogliano  
 W. R. Grace & Co.  
 Baltimore 26, Md.

### IN THIS ISSUE

March Meeting ..... 5  
 Maryland Section Award ..... 6  
 Executive Committee Minutes ..... 7  
 Treasurer's Report ..... 8  
 April Meeting ..... 8  
 Annual Report ..... 10  
 Membership Changes ..... 13

### SECTION OFFICERS

Samuel L. Goldheim, *Chairman*  
 American Biochemical Laboratories, Inc.  
 Rolling Road and Balto. Nat'l Pike  
 Baltimore 28, Maryland  
 Arthur J. Emery, Jr., *Vice Chairman*  
 School of Medicine  
 University of Maryland  
 Baltimore 1, Maryland  
 Francis M. Miller, *Secretary*  
 School of Pharmacy  
 University of Maryland  
 Baltimore 1, Maryland  
 William H. Stahl, *Treasurer*  
 McCormick & Company  
 Baltimore 2, Maryland

### THE COVER

### "SNOWFLAKES"

Photo by CARL E. QUENSEN  
 G. W. King Printing Co.

The Chesapeake Chemist is published monthly September through May by the Maryland Section of the American Chemical Society. Address editorial comments to M. P. Miller or N. M. Zaczek, Dept. of Chemistry, Loyola College, Baltimore 10, Maryland. Address advertising inquiries and plates to C. C. Legal, W. R. Grace & Co., Washington Research Center, Clarksville, Maryland.

## MARCH MEETING

**DATE AND TIME:**

WEDNESDAY, MARCH 13, 1963  
AT 8:30 P.M.

**PLACE:**

104 Hodson Science Building, Hood  
College, Frederick, Maryland

**SPEAKER:**

DR. ROBERT C. ELDERFIELD,  
Dept. of Chemistry,  
University of Michigan, Ann Arbor

**SUBJECT:**

Recent Developments in the Chemo-  
therapy of Cancer

**DINNER:**

Drinks and dinner at 6:30 P.M. at  
the Francis Scott Key Hotel, West  
Patrick Street, Frederick, Maryland.  
Please complete the form found on  
page 7.

**SOCIAL HOUR:**

There will be a social hour after the  
meeting.

**PARKING:**

Persons attending the dinner will  
find street parking or a metered  
parking lot within one block of the  
hotel. The Francis Scott Key Hotel  
is on West Patrick Street in the center  
of the town. Persons traveling  
from Baltimore on U. S. 40 should  
leave the highway at Exit 1 which  
leads directly on to East Patrick St.  
Persons traveling from Baltimore  
and going directly to the meeting at  
Hood College should leave the high-  
way at Exit 7 and follow signs  
directing them to Hood College.

Since the observation of Gilman and  
Phillips that nitrogen mustard is capable  
of arresting the growth of certain animal  
tumors somewhat over two thousand  
substances carrying so-called alkylating  
functions (bischlorodiethylamino, meth-  
anesulfonyl and epoxy) have been  
synthesized as candidates for control of  
neoplastic diseases. Some of these have  
met with limited success against tumors

*(Continued on page 9)*



Dr. Robert C. Elderfield

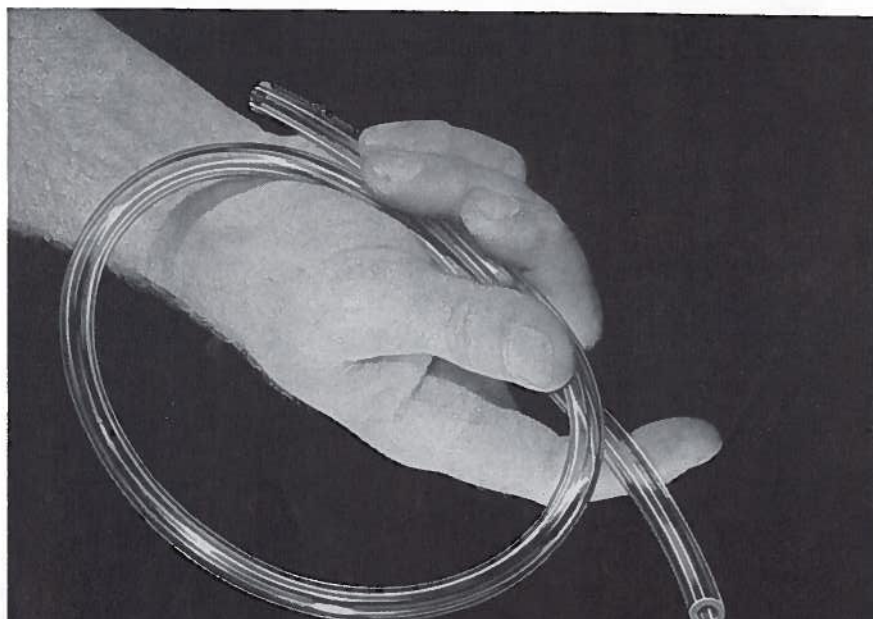
Robert C. Elderfield was born in  
Niagara Falls, New York in 1904. He  
received the A.B. degree from Williams  
College in 1926, the Ph.D. from M.I.T.  
in 1930 and an Honorary D.Sc. degree  
from Williams College in 1952.

Dr. Elderfield has a vast background  
of academic and industrial teaching and  
research experience. Among the aca-  
demic institutions with which he has been  
affiliated are Colby College, Columbia  
University, the Rockefeller Institute and  
the University of Michigan. He has been  
Professor of Chemistry at the University  
of Michigan since 1952.

Other capacities in which Dr. Elder-  
field has served include those of Visiting  
Lecturer at the University of Buffalo,  
Lecturer at the Robert A. Welch Founda-  
tion, Consultant to Eli Lilly & Company,  
Scientific consultant to the Sloan-Ketter-  
ing Institute for Cancer Research, con-  
sultant to Esso Research & Engineering  
Company, and consultant to the Tropical  
Disease Section of NIH.

Professor Elderfield has also served on  
the Subcommittee on malaria of the Na-

*(Continued on page 9)*



**TYGON  
TUBING**

Glass clear for solution visibility, softly flexible  
for easy use, Tygon Tubing is made in 66 sizes.  
Conveniently packaged with every foot branded  
for your protection.

● At your Laboratory Supply House

**U. S. STONWARE**  
AKRON 9, OHIO

150F

# Maryland Section Award - 1963

This award has been instituted to recognize and honor meritorious achievement in chemistry of a high caliber by a member of the Maryland Section. The achievement may be in any of the fields of chemistry in which members of the American Chemical Society are engaged. The award consists of a suitably inscribed scroll or plaque, and presentation will be made at one of the regular meetings of the Maryland Section.

- Conditions:** a) The nominee must be a member of the American Chemical Society and a member of the Maryland Section.
- b) A previous recipient of the award is not eligible for renomination.
- Note that the requirement that the nominee's achievement be accomplished within the last five years has been eliminated.

Mail this nomination ballot to reach:

Rev. William J. Ruppenthal, S.J.  
 Loyola High School  
 Towson 4, Maryland

1962 Recipient: Dr. E. Emmet Reid, Professor of Chemistry (Emeritus), Johns Hopkins University.

.....

I nominate: (Name) .....

(Title) .....

(Address) .....

(State below, in 25 words or less, the meritorious achievement of the nominee.)

.....

.....

.....

.....

.....

My Name .....

Title .....

Address .....

Supplementary information may be enclosed with this form.

## EXECUTIVE COMMITTEE MINUTES

The executive committee of the Maryland Section met on Wednesday, January 23, 1963, at 8:00 p.m. in Bennett Hall with the following members present: Goldheim, Stahl, Felton, Braude, Cogliana, Kramer, Mrs. Kaufman, Fr. Ruppenthal, M. P. Miller, Zaczek, Burgison, Glocker, Hoshall, Kokes, Parr and F. M. Miller.

The minutes of the meetings of October 1 and November 14 were approved as read.

The secretary reported that the mail vote on the by-laws revision was 22 to 3 for approval. Following a brief discussion regarding their publication, Braude moved, Felton seconded and the motion was approved to print the new by-laws in the Chesapeake Chemist with a reprinting for administrative use.

Chairman Goldheim reported a request that the Section participate in National Engineering Week activities. The motion of Fr. Ruppenthal, seconded by Felton, not to participate in these activities was passed.

The request for continued participation in the activities of the Committee on Guidance for Maryland (E. C. P. D.) by Channing Wilson was approved on the motion of Felton, seconded by Burgison.

A discussion followed regarding assistance by the Section of the Maryland Academy of Sciences. It was pointed out by Hoshall that for the present the Academy is not in a position to utilize such assistance.

Chairman Goldheim reported that the Section will have two 50-year members in 1963. The informal decision was made to present the certificates of fifty-year membership to Drs. William Mansfield Clark and R. L. Sebastian at the April meeting at Goucher College.

The treasurer reported that the Section had a cash balance as of January 1, 1963, of \$4950 in both checking and savings accounts. The appended budget for the calendar year 1963 was approved.

The annual report of the Publications  
(Continued on page 12)

..... Cut out and mail today .....

American Chemical Society  
**MARYLAND SECTION**  
**DINNER RESERVATION CARD**  
 MEETING AT HOOD COLLEGE  
 MARCH 13, 1963

DINNER AT THE FRANCIS SCOTT KEY HOTEL

COCKTAILS 6:30 P.M.      DINNER 7:00 P.M.      ADDRESS 8:30 P.M.

I expect to attend the dinner at the Francis Scott Key Hotel.

Name: .....

Address: .....

Phone: .....

Number of persons in my party: .....

Check enclosed for total @ \$3.25 (drinks extra): .....

Make check payable to Maryland Section, ACS.

Address reply to:

Dr. Edward J. Schantz  
 U. S. Army Biological Labs.  
 Frederick, Maryland

MARYLAND SECTION, AMERICAN CHEMICAL SOCIETY

TREASURER'S REPORT

Close of business-- December 31, 1962

<b>Income 1962</b>	
Allotment from National Society .....	\$2,530.50
Commission on new members .....	15.00
Local section dues .....	1,012.25
Publication (advertising) .....	4,224.93
Lecture Series .....	522.00
<b>TOTAL</b> .....	<b>\$8,324.68</b>
<b>Expenditures 1962</b>	
<b>Administrative:</b>	
Office supplies, mailings, etc. ....	\$ 275.92
Officer expenses .....	163.13
<b>Meetings:</b>	
Rent and janitorial service .....	26.00
Speaker expenses .....	409.69
<b>Publication:</b>	
Mailing .....	478.26
Printing .....	4,078.64
Other .....	131.25
Social activities and events .....	438.64
<b>Awards:</b>	
Remsen .....	356.50
Science Fair .....	48.45
Maryland Section Award .....	149.46
<b>Other expenses:</b>	
Affiliation fee—Engineers Club .....	32.83
<b>TOTAL</b> .....	<b>\$6,578.77</b>
<b>NET INCOME</b> .....	<b>\$1,745.91</b>
<b>Assets:</b>	
Cash on hand and in banks December 31, 1962 .....	\$4,950.01
<b>TOTAL ASSETS</b> December 31, 1962 .....	<b>\$4,950.01</b>

(Continued on page 9)

**American BioChemical Laboratory, Inc.**

Dr. S. L. Goldheim, Director

Research - Development - Analysis  
Plant Surveys - Tests - Quality Control

1113 North Rolling Road  
Baltimore 28, Md.  
RIdgeway 7-4928

**APRIL MEETING**

The April Meeting will be held on Wednesday, April 17 at Goucher College. Details of speaker, topic and exact location of the meeting will be published in the next issue of THE CHESAPEAKE CHEMIST. A tour of the new facilities at Goucher is anticipated. Keep the date open and plan to be there.

BUDGET FOR CALENDAR YEAR 1963

Funds available:

Cash on hand, January 1, 1963 .....		\$4,950.00
<b>Income expected:</b>		
Allotment from National .....	\$2,500.00	
Local Section dues .....	1,000.00	
Lecture Series .....	1,000.00	
		<b>4,500.00</b>
		<b>\$9,450.00</b>

Estimated expenses:

Meetings including Remsen and Maryland Section Award .....	\$1,500.00
Administration .....	500.00
Publicity Committee and Lecture Bureau .....	800.00
Chemical Education Committee .....	500.00
Intersociety Affairs .....	100.00
Miscellaneous .....	100.00
	<b>\$3,500.00</b>

Treasurer,

WILLIAM H. STAHL

Notes:

1. Receipts and expenses of Chesapeake Chemist not included in above.
2. Receipts and expenses for dinners prior to meetings and other self-liquidating affairs not included above.

**MARCH MEETING**

(Continued from page 5)

in man and others, despite encouraging effectiveness against animal tumors, have failed when used in man. At present there appears to be no apparent correlation between structure and effective anti-tumor action and still less correlation between behavior of these agents against animal and human tumors. Theories as to the mode of action of these substances have varied and no completely satisfactory explanation has been put forward.

Data dealing with the various hypotheses and with the results of animal versus human trials will be presented. Preliminary results of a new approach to this problem whereby the comparative action of a series of selected alkylating agents against relative simple substrates is studied will be presented. By this approach it is hoped to define more accurately than is possible by use of animals the fundamental differences in chemical behavior among the various agents and possibly to provide data which will serve to help predict the relative value of a given agent.

**DR. ELDERFIELD**

(Continued from page 5)

tional Research Council, on the Scientific Advisory Committee, with the Office of Scientific Research and Development, with the U. S. Public Health Service, and as Chairman of the Division of Chemistry and Chemical Technology of the NRC. He was awarded the Presidential Certificate of Merit in 1948.

Our speaker is a member of the following organizations: the National Academy of Sciences, AAAS, and the ACS. Since 1960 he has been on the Board of Directors of the ACS. He is a member of the Publications Committee as well as the Public, Professional and Member Relations Committee of the Board of Directors. He is Chairman of the Committee on Grants and Fellowships and the Committee on Education and Students of the Board of Directors.

Dr. Elderfield's fields of specialization include: synthetic organic chemistry, heterocyclic compounds, chemotherapy, pharmacology, cardiac drugs and alkaloids.

## ANNUAL REPORT

The past year was generally a successful one for the Maryland Section. During the year the Section achieved "large size" status, the first Maryland Chemist Award was given, its biennial Special Lecture Series proved to be unexpectedly successful, and the financial status of the Section at year's end was almost embarrassingly healthy.

Probably the most significant organizational change was the moving of the Section's headquarters from the Engineer's Club to the School of Pharmacy of the University of Maryland. This move has made possible the elimination of an increasingly high affiliation fee with the former organization, the realization of a permanent address with which a number of officers and active members of the Section are associated, and is making possible closer supervision of the Section's files and addressograph plates.

The move from the Engineer's Club also eliminated an apparently unresolvable by-law problem. The by-laws of the Section have now been amended with the approval of the membership by mail vote to accommodate 1) the new terminology recommended by the American Chemical Society, 2) operational practices found advantageous by the Section over the years, 3) the new requirements of the Director of Internal Revenue and 4) the timing of nominations and elections of officers.

The favorable financial picture of the Section is largely the result of the increased allotment from the American Chemical Society, an unexpected surplus (rather than an expected deficit) from the operation of the Special Lecture Series, and a profitable year's operation of the Chesapeake Chemist.

An active membership committee has been in operation during the year, although the results of its efforts have not been directly realized. Welcoming letters have been written to the new

members. The new headquarters organization will make possible a reduction in the previous time lag between joining the Section and receiving the letter.

A membership drive was initiated. A list was made of the various establishments employing chemists in the Section and was narrowed down to the 21 establishments believed to be the most promising. A chemist in each was selected (preferably one with no ACS experience in order to expand the potential officer and committeeman base) to act as a local representative of the Section in all matters, but especially to ask new employees to join the American Chemical Society, to bring them to meetings and to display the posters announcing the affairs of the Section. In addition, a special mailing of application forms was made via the Chesapeake Chemist in December in order to reach many of the smaller organizations.

The Chesapeake Chemist enjoyed another year of successful operation, since May, with new, joint editorship. In addition to it as the Section's prime communication organ, attractive posters announcing the monthly meetings are sent to schools (college and secondary), libraries, research laboratories, industrial organizations and the local membership representatives.

The Section held ten successful meetings during 1962, each preceded by an informal dinner and followed by a social hour with refreshments to permit the membership to become acquainted and exchange information. Only three of the meetings were held in the regular meeting place, Bennett Hall. Two meetings included tours—of Sinai Hospital Research Center and of the RIAS laboratories. The practice of holding the meetings at various locations has proved popular and is being continued in 1963.

Plans have been made for a Joint Regional Meeting in May, 1963, with the

*(Continued on page 13)*

THE CHESAPEAKE CHEMIST

# When you need EASTMAN Organic Chemicals

*(sooner or later most chemists do)*

## you can get them quite easily

*(these distributors who serve your  
area carry large inventories of a long  
list of EASTMAN Organic Chemicals)*

### North Strong Corporation

10431 Metropolitan Avenue  
Kensington, Maryland  
949-3233

### Fisher Scientific Company

7722 Woodbury Drive  
Silver Spring, Maryland  
JU 7-7000



There are some 4,000 EASTMAN Organic Chemicals

To order them by number, you'll want our current List No. 43.  
Write to Distillation Products Industries, Rochester 3, N. Y.

**Distillation Products Industries** is a division of **Eastman Kodak Company**



**CALL**  
**MA 2-1100**

- Mallinckrodt Analytical Reagents
- Laboratory Supplies
- Scientific Instruments
- Glassware

*fast service*

**ALOE SCIENTIFIC**

Div. of the Brunswick Corp.  
12201 New Columbia Pike, Silver Spring, Md., MA 2-1100

## EXECUTIVE COMMITTEE

*(Continued from page 7)*

Board on the operation of the Chesapeake Chemist was read, reporting an operating surplus of \$387.85.

Felton reported on the progress to date in plans for the Joint Regional Meeting at College Park in May. Goldheim listed the remaining programs for the academic year. It was decided to investigate the purchase of a slide projector for use at meetings.

Burgison reported on the great success of the Special Lecture Series, and was congratulated by the executive committee for his excellent organization of a fine series. The question of lower fees for future series was discussed with no action being taken.

Cogliano reported that the membership drive has not produced a significant increase in new application, but that it is hoped that having membership representatives in various organizations will yet have a positive effect in both new member applications and more persons willing to participate actively in the Section's work.

Fr. Ruppenthal reported on the problems of obtaining nominations for awards, both national and local, and for national office. In a discussion of the Maryland Section Award, the question of the five-year limit on significant research was raised. The motion of Braude to remove the above limit was seconded and passed.

Mrs. Kaufman suggested possible approaches to be taken by the Hospitality Committee in welcoming new members at meetings.

Kokes, in mentioning preliminary plans for the Chemical Education Committee, suggested inviting a high school student and high school chemistry teacher to each dinner before the monthly meetings.

Miller and Zaczek mentioned the need of the Chesapeake Chemist for new items, and the necessity of having to find them in the daily papers.

*(Continued on page 14)*

## ANNUAL REPORT

*(Continued from page 10)*

Washington and Virginia Blue Ridge Sections at College Park, Maryland.

A highly successful Special Lecture Series covering "Recent Advances in Analytical Techniques" is being offered during the months of November, January and February.

Registration for the series was far greater than expected, forcing, for one evening, a frantic search for an available larger auditorium. Of the approximately 300 registrations to date, there are 135 students, Armed Forces Personnel and high school teachers (free, entire series), 83 ACS members, including 48 Government employees, some from Washington, whose fees are paid by the Government (\$15.00, entire series), a few non-members (\$20.00, entire series) and about 50 individual lecture registrations (\$3.00).

The annual Remsen Memorial Award was given in June to Dr. George Porter. The first Maryland Chemist Award was made in October to Dr. E. Emmet Reid, the lecture of the evening being given by one of Dr. Reid's students, Dr. Beverly Tucker.

The Section has continued its affiliation and support of the Committee on Guidance for Maryland of the Engineers Council for Professional Development. A new venture this year in the area of student aid was the financing of a student affiliate trip to Washington for a regional conference during the National ACS Meeting in April. Future support of student affiliate groups is planned, including the supplying of bus transportation for student groups from Baltimore to the Joint Regional Meetings at College Park in May.

The high level of effective activity of the Chemical Education Committee has been maintained through the agencies of the Chemistry Resource Committee, the Science Teachers Seminar and the Baltimore City-County Science Seminar Program. The Maryland Section Chemistry Awards have been continued at the Baltimore Science Fair, which is now enlarged to cover a number of sur-

rounding counties. The project of this year's overall winner was in the area of chemistry, and the recipient was the same future chemist who won last year's chemistry prize.

For 1963, it is hoped that efforts in the membership and hospitality areas, the consolidation of the organization in the new headquarters, and the improvement of attendance at regular meetings can be extended with good results.

The prime new effort of the Section in the new year, however, will be plans for the observation of the 50th anniversary of the Section in 1964, including, under a newly appointed Section Historian, the preparation of a history of 50 years of chemistry in Maryland.

F. M. Miller,  
Secretary

## MEMBERSHIP CHANGES

### New Members

- Beech, John A., 1205 St. Paul St., Baltimore 2, Md.  
Morgan, Ann M., Dept. of Pharmacology, Univ. of Md., Baltimore 1, Md.  
Treffner, Walter S., P. O. Box 1673, Baltimore 3, Md.

### Transferred in

- Crispell, John P., U. S. Army CBR Agency, Army Chemical Center, Md.  
Doepker, Richard D., Churchville Road, Churchville, Md.  
Hoffman, Raymond A., 1211 Lemekiln Road, Baltimore 4, Md.  
Krenzer, John, Box 748, Edgewood, Md.  
McLaren, George W., Jr., 803 W. Joppa Road, Baltimore 4, Md.  
Reporter, Minocher C., Carnegie Inst., 115 W. University Pkwy., Baltimore 10, Md.  
Skrabek, Emanuel A., 4811 Clayburn Ave., Baltimore 6, Md.  
Trahe, Robert M., Box 378, S.O.F.-U.S.A.O.S., Aberdeen Proving Ground, Md.  
Trostel, Louis J., 4302 Miami Place, Baltimore 7, Md.

*(Continued on page 14)*

## WANTED - DONATIONS OF BACK ISSUES OF SCIENTIFIC JOURNALS

The Centre for Quantum Chemistry of the Sorbonne University, Paris, France (where I spent the past 7 months as a visiting staff member) has a serious problem. The Centre has just moved from the area of the Sorbonne and the Sorbonne Libraries on the Left Bank to a larger laboratory on the Right Bank at the extreme other end of the city of Paris. The Centre is now faced with having to re-establish for itself a complete library at its new location. The Centre is in need of donations of back issues of scientific journals for this library. The interests of the Centre are wide and cover chemistry, physics, biochemistry, theoretical biology and cancer problems. Among the journals which would be most welcome are:

Journal of the American Chemical Society  
 Journal of Physical Chemistry  
 Journal of Physical Chemistry  
 Chemical Reviews  
 Journal of Chemical Physics  
 Physical Review  
 Reviews of Modern Physics  
 Journal of the Chemical Society (London)  
 Quarterly Reviews  
 Proceedings of the Physical Society (London)  
 Journal of Theoretical Biology  
 ETC. ETC. ETC. ETC. ETC. ETC.  
 (and of course) Chemical Abstracts

If you have any journals (even just a few issues) which you no longer need and which you would like to contribute to the Centre, please contact me

Dr. Joyce J. Kaufman  
 Research Institute for Advanced Study  
 7212 Bellona Avenue  
 Baltimore 12, Maryland  
 Telephone: 435-1100 Day  
 532-0267 Evenings

and I shall take care of all the arrangements for sending the journals to the Centre.

Thank you,  
 (Dr.) Joyce J. Kaufman

### EXECUTIVE COMMITTEE

(Continued from page 13)

Hoshall and Goldheim reported on preliminary plans for observation of a history of the Section since its chartering.

The meeting adjourned at 10:45 p.m.

Respectfully submitted,  
 F. M. Miller,  
 Secretary

### MEMBERSHIP CHANGES

(Continued on page 12)

Tucker, Lamonte A., U.S.A. Chem. Res. Dev. Lab., Edgewood Arsenal, Md.  
 Venkatarama, Rao S. V., Dept. of Chem., Johns Hopkins Univ., Baltimore 18, Md.  
 Wheeler, Vaughn V., 1711-D Aberdeen Road, Baltimore 34, Md.  
 Young, Luther O., 5701 Lawyers Hill Road, Baltimore 27, Md.



Actual laboratory application showing Sargent Constant Rate Burette with Magnetic Stirrer, pH RECORDING ADAPTER, and Model SR Recorder.

## For Recording pH SARGENT pH RECORDING ADAPTER OFFERS

- **HIGH SENSITIVITY**  
1 millivolt per pH unit
- **EXCELLENT STABILITY**  
Drift less than 0.01 pH/hour
- **FLEXIBILITY**  
Output adjustable to give full scale recorder deflection for 1 to 14 pH
- **LOW COST**

Extreme resistance in electrode or solution is completely compatible with Sargent or other high quality potentiometric recorders through this new instrument, which transmits potential without distortion but converts impedance to lower values. An electrometer circuit—stable, linear and of high resistance—provides smooth, non-interrupted conversion with output at maximum sensitivity approximately 1 millivolt per pH unit. Adjustable sensitivity and variable displacement give flexibility in setting pH range of the recorder. Accommodates standard commercial glass and reference electrodes.

For pH titration, the Sargent Constant Rate Burettes, which may be synchronously driven from Sargent Recorders, are useful adjuncts.  
 S-72172 pH ADAPTER-Sargent Recorder. Without electrodes..... \$170.00

Designed and Manufactured by E. H. Sargent & Co.



Write for Bulletin RA

**SARGENT**

E. H. SARGENT & CO., 35 STERN AVE., SPRINGFIELD, NEW JERSEY  
 Chicago 30, Illinois • Detroit 4, Michigan • Dallas 35, Texas • Birmingham 4, Alabama • Anaheim, Calif.

SARGENT SCIENTIFIC LABORATORY INSTRUMENTS • APPARATUS • SUPPLIES • CHEMICALS

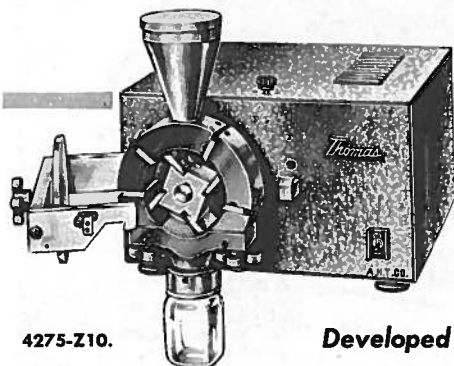


The Chesapeake Chemist  
University of Maryland  
636 W. Lombard Street  
Baltimore 1, Maryland

Nonprofit Org.  
U.S. Postage  
PAID  
Baltimore, Md.  
Permit No. 2917

*New...* Model ED-5

*Thomas-Wiley*  
**LABORATORY  
MILL**



- 5-inch chamber diameter
- 3-speed enclosed drive
- simplified sieve construction

4275-Z10.

*Developed to meet the demand for a size  
between Intermediate and Model 3*

For laboratory or semi-pilot plant milling of a large variety of materials. A modification of the original Standard Model 3 Wiley Mill developed in response to requests for a mill offering the advantages of the basic Wiley Mill shearing principle but of smaller chamber capacity, i.e., approximately half that of the Standard Model. Modifications include a simplified sieve construction and other features for safe, convenient bench operation.

Retains the shearing action of the Standard Model which minimizes changes in the sample such as temperature rise, loss of moisture, or liquefaction.

**Grinding Chamber.** Cast iron and steel, 5 inches i.d. × 2 inches deep. Four rotating knives, bolted to removable rotor, are precisely adjusted for shearing clearance with four individually adjustable knives mounted in the frame. Fan action of the blades increases throughput and quick clearing of the chamber.

**Knives.** Tool steel, hardened and tempered for toughness and retention of cutting edge. Stainless steel knives are available.

**Drive Unit.** Provides unloaded rotor speeds of approximately 500, 800 or 1200 r.p.m. Louvered steel cabinet encloses  $\frac{1}{4}$  h.p. motor, two 3-step pulleys, drive belt, rotor shaft ball bearing assembly, and storage compartment for tools and sieves. Ball bearings are permanently lubricated and sealed.

**Door.** Clamping screw seals heavy steel plate door against the face of the mill. When released, door pivots for full diameter access to the chamber. *Safety electrical interlock disconnects motor when door is open.*

**Sieves.** Curved, round hole screens of stainless steel, inexpensive and easily interchangeable.

**Receivers.** Threaded collar at lower end of chute takes a standard Mason jar. Collar is removable for attachment of a bag or smaller neck vessel for collection of sample.

4275-Z10. Laboratory Mill, Wiley Model ED-5, as described, with  $\frac{1}{2}$ , 1 and 2 mm sieves, three shim plates, three Allen keys, open-end wrench for knife adjustment, and three 1-pint Mason type jars. With 3-wire cord, 3-prong plug and adapter. Shipping weight 185 lbs. For 115 volts, 60 cycles, a.c. . . 690.00

*For detailed description of Standard, Intermediate and Micro Models  
of the Wiley Mill, see pp 346-350 of our 1961 general catalog*



**ARTHUR H. THOMAS COMPANY**

*Scientific Apparatus and Reagents*

VINE STREET AT 3RD • P. O. BOX 779 • PHILADELPHIA 6, PA., U. S. A.