

THE NUCLEUS

November 1988

Of the Northeastern Section of the American Chemical Society

Vol. LXVII, No. 2

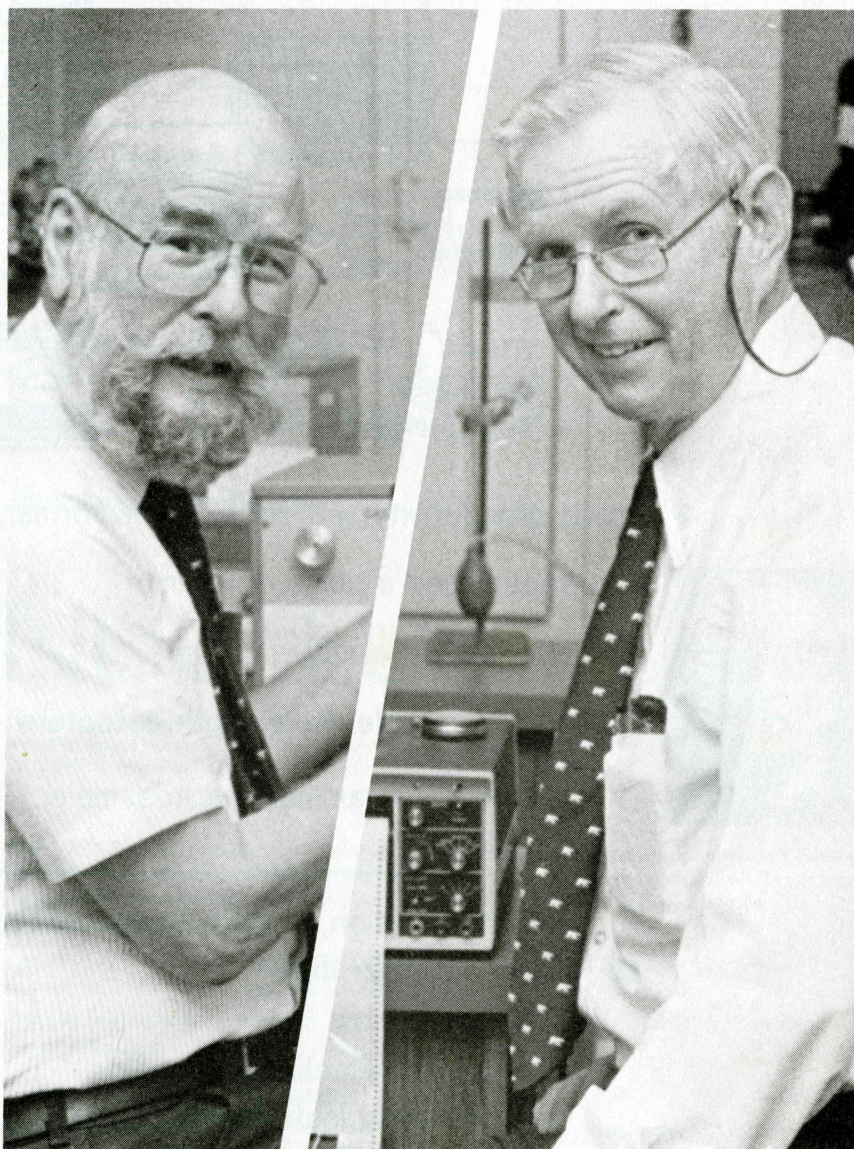
Monthly Meeting:

Presentation of the James Flack Norris Award in Teaching

Historical Notes

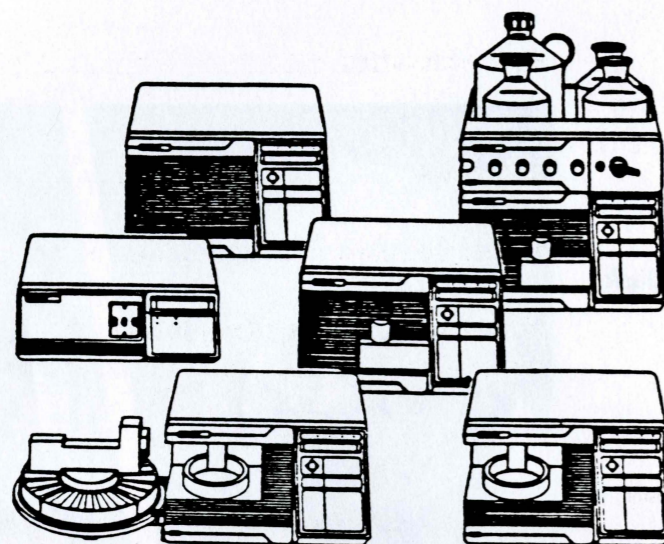
ACS News

School Outreach in N.H.





A new definition of Quality
99% Guaranteed Uptime *



- Boost productivity with superior performance and uptime
- Add capabilities a piece at a time
- Isocratic or Quaternary pumps
- Variable or Multiple wavelength detectors
- 21 or 119 vial programmable autosampler

For more information, call an Analytical Sales Representative
at Tel. #(508) 682-1500

or write to:
Hewlett-Packard Company
Analytical Instruments
1775 Minuteman Road
Andover, MA 01810

* 99% Guaranteed uptime service during coverage hours of 8:00 AM - 5:00 PM,
Monday through Friday. See HP Exhibit 04H for detailed specifications.

The Northeastern Section of The American Chemical Society Inc.

Office: Karen Piper, 19 Mill Road,
Harvard, MA 01451, in 617 area
1-800-872-2054; (617) 456-8227
Any ACS Business may always be conducted
via the business office above.

Officers 1988

Chairman
Thomas R. Gilbert
Chemistry Dept., Northeastern University
Boston, MA 02115, 437-4505

Immed. Past Chairman
Lloyd D. Taylor
Polaroid Corporation, Cambridge, MA 02139
577-3160

Chairman-Elect
Michael E. Strem
Strem Chemicals, Inc.
P.O. Box 108, Newburyport, MA 01950
508-462-3191

Secretary
David M. Howell
Chemistry Dept., Northeastern University
Boston, MA 02115, 437-3952

Treasurer
James Piper
Simmons College, 300 The Fenway, Boston,
MA 02115, 738-2181

Auditor
Arthur H. Reis
Dean of Faculty Office, Brandeis University
Waltham, MA 02254, 647-2826

Trustees
Phyllis Brauner
Janet Perkins
Arthur S. Obermayer

Councilors

Term expires 1/1/89
Esther A.H. Hopkins
Truman S. Light
Maryann Solstad
Alfred Viola

Term expires 1/1/90
Phyllis Brauner
Mary T. Burgess
Adrienne Dey
Wallace Gleekman

Term expires 1/1/91
Michaeline F. Chen
Arno H.A. Heyn
John Neumeyer

Alternate Councilors

Term expires 1/1/89
Catherine E. Costello
Patricia L. Samuel
Lloyd D. Taylor
Valerie A. Wilcox

Term expires 1/1/90
E. Joseph Billo
Esther B. Garber
Thomas R. Gilbert
Robert D. Stollow

Term expires 1/1/91
James A. Kaufman
Donald O. Rickter
Myron Simon

All Chairmen of standing
Committees, the editor of
THE NUCLEUS, and the
Trustees of Section Funds
are members of the Board
of Directors. Any Councilor
of the American Chemical Society residing
within the section area is an ex officio member
of the Board of Directors.



Contents

Amendments to C&B	4
Monthly Meeting <i>Presentation of the 37th James Flack Norris Award to Ronald M. Pike and Dana W. Mayo</i>	5
Historical Notes <i>by E.R. Atkinson</i>	8
ACS News	10
School Outreach Program in N.H.	12
Photos from the May Awards Meeting <i>Participants in the 28th College Research Symposium</i>	13
Right-to-Know Conference	14

Cover: Ronald M. Pike (left), Dana W. Mayo (right).

December Issue Deadline: October 20, 1988

THE NUCLEUS

Dedicated to the Memory of James Flack Norris
Published monthly from October to May by the Northeastern
Section of the American Chemical Society, Inc.



THE NUCLEUS is distributed to the members of the Northeastern Section of the American Chemical Society, to the secretaries of the Local Sections, and to editors of all local publications. Forms close for advertising on the 1st of the month of the preceding issue. Text must be received by the editor six weeks before the date of issue.

Editor: Adrienne S. Dey, P.O. Box 453, Buzzards Bay, MA 02532;
Tel. 508-759-4617

Board of Publications: Harry W. Orf (Chairman), Jean Vnenchak, Catherine E. Costello

Business Manager: Russell F. McCann
10 Bassett St., Foxborough, MA 02035
Tel: 543-2155

Advertising Manager: Vincent J. Gale, 56 Bartlett Island Way, Marshfield, MA 02050;
Tel. 837-0424

Contributing Editors: Edward Atkinson, History of Chemistry, Book Reviews; Maryann Solstad, Health; Bill Adams, Cartoons; Cynthia McGowan, Calendar.

Circulation Manager: Mark A. Druy, 88 Park Ave., Apt. 202, Arlington, MA 02174.
Tel: 641-1957

Proofreaders: Arno H.A. Heyn, Donald Rickter

Copyright 1988, Northeastern Section of the American Chemical Society, Inc.

LABORATORY
EQUIPMENT
BOUGHT • SOLD • EXCHANGED

NOVEMBER HIGHLIGHT
Waters 204 HPLC System
\$4900

American Instrument Exchange, Inc.
21 Canal Street, Lawrence MA 01840
508-794-3496

PROTECT
Your Expensive Lab Work

Stock Notebooks: #B500—Fifty original and fifty
duplicates. Instructions. 1/4" Squares, Brown
Covers. 11x8 1/2
#B100P—100 Workpages. (No duplicates). Instruc-
tions. Brown waterproof covers.
#B200P—200 Workpages, 1/4" Squares on Rt. and
Left pages.
#B200PH—200 Workpages, horizontal lines only
on right and left pages.

All Books \$9.00 Each FOB Chicago
CUSTOM MADE TO ORDER LAB BOOKS
SCIENTIFIC BINDERY PRODUCTIONS
1255 South Wabash Ave.
CHICAGO, ILL. 60605
Phone: (312) 939-3449

**WOLFE
TRAVEL,
LTD.**

101 Tremont Street
Boston, MA 02108

Business, Convention, and Personal
Travel Arrangments for the ACS
since 1973.

Leonard W. Wolfe, President
482-0005

LABORATORY
SAFETY

CONSULTING SERVICES

- TRAINING
- REGULATORY COMPLIANCE
- INSPECTIONS
- PROGRAM DEVELOPMENT

James A. Kaufman
101 Oak Street
Wellesley, MA 02181
(617) 237-1335

Amendments to C & B

Notice to Members Concerning Amendments to the Constitution and Bylaws of the Northeastern Section (C & B)

by Truman S. Light
Chairman, Committee on Amendments to the Constitution and Bylaws

The following amendments to the Constitution of the Northeastern Section, ACS, were approved by the Board of Directors at the meeting of September 22, 1988. The purpose of the amendments is to give the NESACS Board of Directors more flexibility in the use of the income from the Theodore William Richards Medal Fund.

Under the provisions of Article XIX on Amendments, these amendments are published here so that they will have been received by members of the Section four weeks prior to the annual meeting (the December meeting) which precedes the annual meeting at which members will actually vote on this matter. In effect this means that the amendments will be voted on at the December 1989 meeting of the Section.

Amendments to Article XIII: deletions in [], additions underlined.

Change in title: Theodore William Richards [Medal] Fund

Sec. 2: The Northeastern Section shall maintain a trust fund called the Richards [Medal] Fund to which additions may be made by contribution, bequest, or otherwise. (Remainder is unchanged).

Sec. 3: The income only of the Richards [Medal] Fund may be expended [and only] for the cost of the medal and the expenses of the award as authorized by the Board of Directors and only for such purposes as will appropriately help to perpetuate the memory of Theodore William Richards.



"Since 1950"

MICROANALYSES

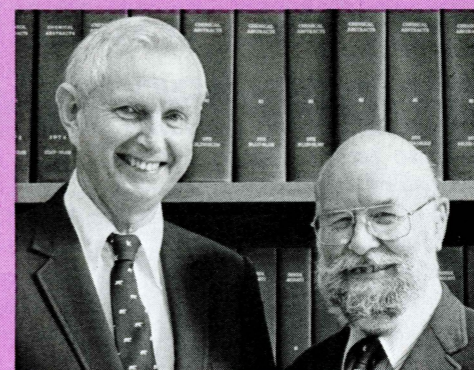
Analysis For All Elements,
Trace Analyses, ICP Scans,
TOX, Ion Chromatography,
Molecular Weights.

GALBRAITH LABORATORIES, INC.

P.O. Box 51610 — 2323 Sycamore Dr.
Knoxville, TN. 37950-1610
615/546-1335

December Meeting

*The 711th Meeting of the
Northeastern Section of the
American Chemical Society
Presentation of the 37th
James Flack Norris Award for
Outstanding Achievement in
Teaching of Chemistry to*



DANA W. MAYO, Bowdoin College and
RONALD M. PIKE, Merrimack College

Thursday, November 10, 1988

Simmons College, 300 The Fenway, Boston, Massachusetts
All activities will take place in the Main College Building

5:30 p.m. Social Hour: Special Function Room

6:30 p.m. Dinner: Fens Dining Room

8:00 p.m. Award Ceremony: Room C103

Dr. Thomas R. Gilbert, Chairman Northeastern Section, Presiding
Biography of James Flack Norris, Dr. Joseph Bornstein, Boston College
Introduction of Award Recipient, Dr. Samuel S. Butcher, Bowdoin College
Presentation of the Award, Dr. Emily P. Dudek, Chairman, Norris Award
Committee

Norris Award Address, *The Miniaturization of Organic Laboratory
Programs* Dr. Ronald M. Pike, Merrimack College and Dr. Dana W.
Mayo, Bowdoin College

Reception in honor of Dr. Mayo and Dr. Pike will follow the lecture.

Dinner reservations must be made no later than November 4, 1988. Please call Mrs. Piper at (800) 872-2054 or (617) 456-8227. Reservations not cancelled at least 24 hours in advance must be paid. Members: \$14; Non-members, \$16; Students: \$5; Retired Chemists: \$8.00. THE PUBLIC IS INVITED.

Abstracts

The Miniaturization of Organic Laboratory Programs

The development and introduction of the **Microscale Organic Laboratory (MOL)** has resulted in one of the most radical and rapid modifications of the initial instruction in the organic laboratory since the birth of these programs over one-hundred years ago. The joint lecture will touch on the following points: the genesis of the concept, the

effect of the approach on a number of laboratory operational parameters, the definition of scale, the influence of scale on both student and instructor, the challenge to devise experimental techniques to accommodate the scale change desired, the impact of the microscale laboratory on areas beyond
continued on page 6

Biographies

Dana W. Mayo is Professor of Chemistry at Bowdoin College. He makes his home with his wife, Jeanne d'Arc, in a salt water farm on the Maine seacoast. Following undergraduate work at the University of New Hampshire and MIT he received his Ph.D. from Indiana University (1959) where he studies with Marvin Carmack. In June of that year he joined the staff of the Spectroscopy Laboratory of MIT as postdoctoral Research Associate working in collaboration with R.C. Lord. In 1960, he received an NIH Postdoctoral Fellowship to study with G. Buchi of the Department of Chemistry at MIT. In that same year he was appointed a Fellow of the School for Advanced Study at MIT.

In 1962 he joined the faculty of Bowdoin College. He was appointed Charles Weston Pickard Professor of Chemistry in 1970 and he was Chairman of the Department during the periods 1969-1975 and 1981-1983.

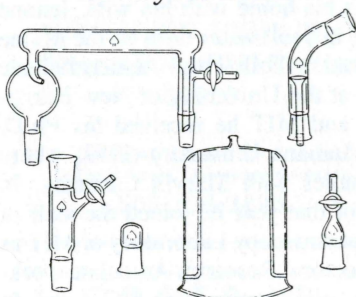
His research interests over the last decade have included the application of resolution enhancement techniques to the study of group frequencies; the automatic interpretation of molecular structure and the retrieval of infrared data; and environmental studies of oil pollution and associated marine natural products.

Ronald M. Pike is Professor of Chemistry at Merrimack College, North Andover, MA and resides with his wife, Marilyn, in Pelham, NH. He was born in Calais, ME and graduated from Cony High School in Augusta. After service in the U.S. Army during World War II, he received his undergraduate education at the University of New Hampshire (B.S. 1949) as well as the MS degree (1950). He obtained the Ph.D. at MIT (1953) under A.C. Cope.

He then joined the Union Carbide Corp. and worked in the Linde Air Products and later the Silicones Division at Tonawanda, NY. Leaving industry, he joined the Chemistry Department at Lowell Technological Institute in 1957 and in 1965 moved to

continued on page 6.

FUSED QUARTZ
for all your needs!



Custom fabrication of quartz and glass ware.
Distribution Center for quartz tubing,
rod, ground joints, plates, discs etc



G. FINKENBEINER, INC.

Call (Area Code 617) 899-3138
33 Rumford Avenue, Waltham, Mass. 02154

**CUSTOM
MANUFACTURING**
New Capacity Now Available

ChemDesign 
ChemDesign Corporation, 99 Development Rd.
Fitchburg, MA 01420, U.S.A., (508) 345-9999

Biographies

continued from page 5.

Merrimack College as Professor and chairman of the chemistry department. He has also been a Visiting Charles Weston Pickard Professor of Chemistry at Bowdoin College (1980-81, 1984).

His research interests have mainly been in the area of organofunctional silanes and related organosilicone polymers. He has over 100 scientific publications in this field, 40 of which are U.S. Patents in which he is the inventor

or co-inventor. He is co-author (with Mayo and Butcher) of a "Microscale Organic Laboratory" text.

Mayo and Pike jointly received the 1987 John A. Timm Award for their work in developing the microscale instructional program. Together with Samuel S. Butcher, Professor of Chemistry at Bowdoin College, they were co-recipients of the first Charles A. Dana Foundation Award (1986) for pioneering achievements in higher education, and the ACS Division of Chemical Health and Safety Award (1987). ◇

Abstracts

continued from page 5.

the introductory course, and the future evolution of miniaturized laboratory programs.

As expected, the move to milligram quantities of substrates has a significant impact on laboratory air quality, safety, and hazardous waste production. Less obvious during development of the program is the significant jump in the effective use of student time. This increased efficiency translates directly into expanded student exposure to experimental manipulations which in turn leads to improved student confidence in the laboratory. *The psychological impact of MOL on the attitude of the student toward the laboratory experience cannot be overemphasized.* It is now clear that MOL programs greatly help to develop a "positive" attitude which in turn builds confidence, pride and excitement in the student. The organic lab is now "fun" for both the student and the instructor.

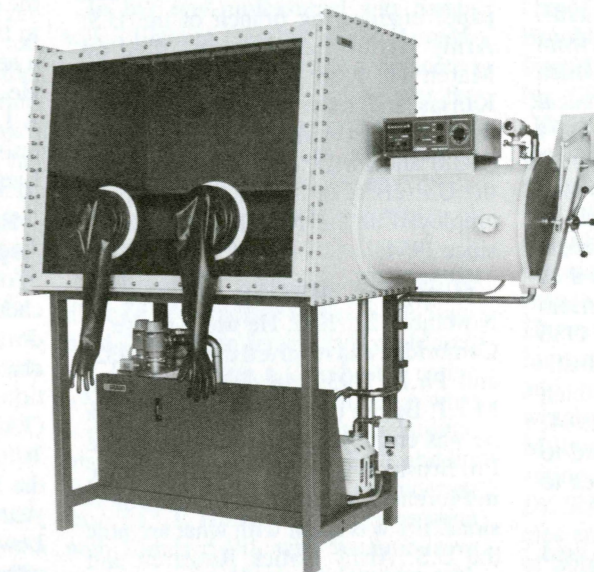
These surprising results lead to posing an obvious but previously only implicitly asked question: "at what scale is the introductory organic laboratory most effectively taught?" The experimental and psychological conditions present during the origin of these instructional laboratories in the middle nineteenth century dictated multigram reaction scales, but there would appear to be little pedagogic justification for continuing the initial laboratory experience at this level during the latter half of the twentieth century.

The effective introduction of the

MOL program to sophomores has required the development of a repertoire of techniques and equipment new to the undergraduate laboratory. In particular, working with liquid products at the milligram level historically has been no easy task even for the experienced research chemist. The extraction, and purification by chromatographic techniques such as preparative gas chromatography, followed by determination of boiling points, refractive index, IR and NMR spectra employing microliter amounts of liquids is now considered routine in the MOL program. The technique currently attracting the most attention is the bottom-driven micro-spinning band distillation columns. These systems evolved in response to the inability of classical stills to handle fractional distillation at this level. The introduction of this type of column is about to precipitate a revolution in instructional experiments centered on the separation of liquid mixtures. *As this future generation of microstills appear to possess the highest resolution of any fractionating columns ever developed,* they consequently will also rapidly find their way into the research laboratory.

The current status and future evolution of the conversion to MOL will be assessed. Finally, enough student data has been acquired to project the influence of MOL on graduate and industrial laboratories. *Interestingly, it appears that it is in these areas where the greatest impact of MOL programs will be felt as we enter the twenty-first century.* ◇

Compare our Glove Box to any other and you'll see...



There is no comparison!

Introducing the MB-150M—the latest in our line of Glove Box and Gas Purification Systems that achieve < 1 ppm H₂O and O₂.

The MB-150M retains the quality and performance features that are universally recognized by users—and, best of all, at a price that's affordable. Its cost/value basis far exceeds other systems on the market today.

Consider a few features...

- All stainless steel construction
- DMR—digital pressure and safety control
- Copper, stainless and Swagelok® throughout
- 26 Lbs. catalyst and 20 CFM blower
- Stainless steel heat exchanger

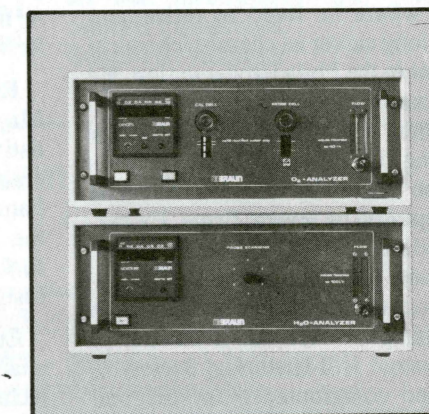
The design criteria for this system stresses modularity and expansion. Our new catalog describes the many options that can easily be added to the basic system. The MB-150M can also be expanded to a two box system.

For more detailed specifications, please write or call. Systems are available for demonstration in our lab.

INNOVATIVE... that's our first name!

**innovative
technology, inc.**

205 Willow St., South Hamilton, MA 01982 ■ Phone: (508) 468-3543 ■ Fax: (508) 468-1101



Above: Our analyzers have been specifically designed for the measurement of oxygen and moisture in inert gases. We offer both analog and digital (shown) readouts. The analyzers are supplied complete with batching pumps and are ready to run. They are easily adapted to existing systems. All analyzers include chart recorder outputs, trigger alarms, automatic range selection and Swagelok® connectors.

Historical Notes

James Donovan, 81, founder and president of Artisan Industries of Waltham, died on October 16, 1987. After receiving the S.B. degree from M.I.T. with the Class of 1928 (of which he was president) he taught chemical engineering at the Institute until 1934 when he founded Artisan. Throughout his life Donovan was very active in professional affairs. He was president of the Massachusetts Society of Chemical Engineers, a member of the Board of Registration for Professional Engineers for 20 years, and chairman of the 1986 annual meeting of the American Institute of Chemical Engineers, of which association he was a Fellow. In 1984, A.I.Ch.E. gave its Founders Award to Donovan for distinguished services to the profession.

James McArthur Harris, 86, died on October 15, 1987 at New London, N.H., where he lived in retirement after a long career as chemist/chemical engineer in the Philadelphia region. He was a native of Germantown, Pa. and lived there for most of his life. After receiving the B.S. and Ph.D. degrees from the University of Pennsylvania he was employed by several firms. He participated in the study of German industrial plants following World War II.

Throughout his life Dr. Harris was an active historian. He was a founder of the Chestnut Hill Historical Society in 1967 and contributed many original studies of the early industrial history of the region. He also served as editor of the Germantown Crier for 3 years.

Virdell E. Munsey, 88, died on March 29, 1988. He was a native of Newcastle, Maine and received the B.S. in chemical engineering at Orono in 1924. Following three years teaching in Vermont he joined the U.S. Food and Drug Administration in 1927 and served for 42 years, retiring in 1969 as chief of the agency's food additives division. While in Washington he pursued graduate work and received the M.S. in 1931 from George Washington University and the Ph.D. in 1937 from the University of Maryland.

J. Alden Murray, 84, retired (since 1970) chief of the chemical products and paper engineering branch of the U.S. Army Natick Laboratories, died on March 14, 1988. He was a native of Kansas and received the B.S. (1926) from Baker University and the M.S. (1928) and Ph.D. (1933) degrees from the University of Kansas. He had been employed at the Natick Laboratories since 1954.

George E. Murray, 77, died on November 22, 1987. He was a native of Cambridge and received the S.B. (1932) and Ph.D. (1939) in chemistry from M.I.T. Before doing his graduate work he was employed for four years by the Pro Brush division of the Vistron Corp. in Florence, Mass. Most of his professional life was spent with what are now the U.S. Army Natick Research and Development Center and the U.S. Army Materials and Mechanics Research Center in Watertown.

Richard Nelson Palmer, 82, died on May 16, 1988. He was a Pennsylvania native and graduated from the Montclair Academy in 1924 and from Williams College in 1928. After receiving the M.S. in chemical engineering at M.I.T. in 1928 he was employed at the Institute during World War II.

Edgar L. Piret, 77, former science attache and counselor for scientific and technological affairs at the American Embassy in Paris, died on September 24, 1987. He was a native of Winnipeg, Manitoba and received the B.S. in chemical engineering from the University of Minnesota in 1932. He subsequently received the doctorate in biochemistry and bacteriology from the University of Lyon, France in 1936 and the Sc.D. in chemical engineering from Minnesota in 1937.

Dr. Piret was professor of chemical engineering at Minnesota from 1943-1959 during which period he also served as a consultant to the Minnesota Mining and Manufacturing Co. for 20 years. He was the author of over 60 papers and patents, including the Scotchlite bead process for highway

signs and the K-Combat ration. In 1959 he began 16 years service with the Paris Embassy and was responsible for U.S. science relations with France, Belgium, Spain and Portugal. He served on the executive staff of the ACS from 1975 to 1978 where he organized and directed a new office of international activities. He received the Walker Award of the A.I.Ch.E. and other honors from the universities of Paris, Goteborg, and Liege.

R.M. Karapetoff Cobb, 87, died on August 3, 1987. As "Miss Cobb" or "Cobby" she had a 40-year career as a chemist with the Lowe Paper Co. and developed the "Cobb Test" for water absorption for the Technical Association of the Pulp and Paper Industry (TAPPI). She was an honor graduate of Tufts College in 1922 and then obtained the M.S. at M.I.T. in 1923. After two years in the leather industry she joined Lowe in 1926. At that time chemists were hardly known in the paper industry. She organized a technical department and developed commercially successful coatings for paper and box-board. In 1929 she became the first female member of TAPPI and by 1934 had developed the "Cobb Test" referred to above. In that same year she married Vladimir Karapetoff, Emeritus Professor of Electrical Engineering at Cornell; Prof. Karapetoff died in 1948. In recognition of her many contributions to the paper industry she was the recipient of several awards, including that of TAPPI Fellow. She retired in 1965.

A lengthy biography of Miss Cobb by R.W. Hagemeyer appeared in the October 1987 TAPPI Journal, p. 156.

John J. Sullivan, Jr., 59, owner of the New England Research and Development Co. of Holbrook, Mass., died on October 11, 1987. He was a 1949 graduate of Boston College. In 1953 he founded the former New England Industrial Chemical Corp., a specialty chemicals concern, one of whose products was Easy Off oven cleaner. He sold the manufacturing and development divisions of the company in 1967 but retained the research division, which he renamed in 1975 and which was involved in broad-scale contract R & D work at the time of his unexpected

death. Throughout his professional career Sullivan was active in affairs of the Navy Reserve, his church, and professional societies.

C. Gardner Swain, 70, professor emeritus of chemistry at M.I.T. died on March 10, 1988. He was a native of Quincy, Mass., and a descendant of the Nantucket whaling community. After receiving the bachelor's (1940) and doctorate (1944) degrees from Harvard he worked with Linus Pauling for a year as a National Research fellow, then came to M.I.T. as an ACS fellow for work with Arthur C. Cope. During his 40 years on the Institute faculty he was the recipient of many honors including a Guggenheim fellowship (1954), the ACS Award in Petroleum Chemistry (1957) and membership in the American Academy of Arts and Sciences. At the 1986 Spring National Meeting of the ACS his 64 doctoral students and research associates honored him with a banquet and a two-day symposium on reaction mechanisms; he himself had published over 100 papers in the field. At the time of his death he was collaborating with his wife Marguerite

Stay Swain focused on demonstrating the unreliability of the widely-used computer technique known as factor analysis and developing a better method.

In his non-professional life Swain was a lifelong member of the Appalachian Mountain Club and a dedicated mountain climber. In 1961 he was the first climber of the year to reach the summit of the Matterhorn, after cutting his own steps in the ice. He also maintained a large personal collection of rare native ferns.

William J. Sweeney, 89, retired director of corporate research for Standard Oil of New Jersey, died on March 30, 1988. He was a Dorchester native who received his B.S. (1918) from what is now the University of Massachusetts, his M.S. (1922) from Penn State and his Sc.D. (1927) in petroleum engineering from M.I.T. His entire career was spent with Standard Oil, with wartime leave to work on the Manhattan Project with Teller at Princeton and Los Alamos and to serve as a consultant to the Royal Air Force.

Herman S. Schultz, 63, a principal scientist at the Waters Chromatography Division of the Millipore Corporation, died on April 27, 1988. He was a native New Yorker and received the B.S. from City College (1944), the M.S. from Brooklyn College (1949), and the Ph.D. from the Polytechnic Institute of Brooklyn (1956). After employment at the GAF Corporation in Easton, Pa. and at the Itek Corporation in Lexington he joined Waters where he developed the "Ultrastyrigel" family of poly(styrene/divinylbenzene) copolymers for use as packing material for high performance gel permeation chromatography. He was an inventor of "Nova-Pak," an inorganic polymer substrate for normal and reversed phase HPLC columns, for which invention he shared the 1983 Millipore Corporation Award for Innovation. During his professional career Dr. Schultz was the author of many articles and of over 70 patents in the areas of polymer chemistry, organic synthesis and mechanisms, and reversed osmosis membranes.

Edward R. Atkinson
Amherst, Massachusetts

Do You Have a Special Vacuum Pump Problem? Call Us For Help!

VACUUM PUMP FLUIDS

- **MV-18** — A purified hydrocarbon, non-additive fluid designed especially for use in all types of mechanical vacuum pumps.
- **MV-19** — A distilled hydrocarbon fluid developed for all types of mechanical vacuum pumps and especially direct drive pumps.
- **FOMBLIN** — Perfluorinated polyether fluid. Ideal for use in pumping corrosive and explosive gases.
- **SILICONE DIFFUSION PUMP FLUIDS** — D-7040 and D-7050 silicone fluids are recommended for use in all types of diffusion pumps for high and ultra-high vacuum applications.
- **SILICONE GREASE** — Vacuum greases for use under extreme operating conditions and also more typical conditions.

- **VACUUM TUBING** — A pure red gum rubber tubing with a cloth impression. Available in sizes from 3/16" ID to 1 5/8" ID.
- **TUBING CLAMPS** — Stainless steel tubing clamps available for all sizes of our vacuum tubing.
- **VISI TRAP™** — Vacuum foreline traps to protect your vacuum pump and reduce oil backstreaming into your vacuum chamber.
- **OFHC COPPER GASKETS** — For CONFLAT* flanges from 1.33" OD to 10" OD.
* (CONFLAT is the Trademark of VARIAN ASSOC.)
- **VACUUM PUMPS** — A COMPLETE VARIETY OF PUMPS FROM 100 TORR TO 10⁻⁴ TORR ULTIMATE VACUUM.

We maintain a variety of Re-built Pumps in stock . . . ready for immediate delivery. Call us to-day for more information:

Tel. (508) 667-2393

MV MASS-VAC INC.
11 ESQUIRE RD., P.O. BOX 359
N. BILLERICA, MASS. 01862

ACS News

Help for Oppressed Scientists

Despite the well-publicized release of a number of scientists by the Soviet Union during the past year, many are still being held in prison or exile or refused emigration by the authorities and continue to need our assistance. One of the best ways in which an individual scientist can help is to join a Small Committee on behalf of a fellow scientist or engineer being oppressed by the authorities.

Here is how the Small Committees function. Scientists and engineers in the U.S. and Canada are matched by discipline with an oppressed scientist or engineer in the Soviet Union (efforts are made to identify scientists in other countries in need of help as well). These persons comprise the Small Committee for their oppressed colleague. Their only responsibility is to correspond with their colleague periodically. Instructions are provided on how to start the correspondence; the objective is to show an interest in the scientific work of the colleague so that he or she does not feel totally isolated from the scientific community. Several scientists and engineers who have recently been allowed to emigrate from the Soviet Union have indicated that the personal interest of individuals in the outside world was important to them and to the outcome of their cases.

The activity is coordinated by Dr. Bernard Feldman, Physics Department, University of Missouri, St. Louis, MO 63121-4499, on behalf of the American Physical Society. About 20 chemists and chemical engineers in the Soviet Union have active Small Committees at present. The American Chemical Society's Committee on International Activities is cooperating with Dr. Feldman in the program. We urge you to write to Dr. Feldman indicating your willingness to join a small committee for someone in your discipline.

Subcommittee on Scientific Freedom and/or Human Rights

Dr. Zafra M. Lerman, Chair
(Columbia College)
Dr. Thomas G. Spiro
(Princeton University)
Dr. Roland F. Hirsch
(U.S. Dept. of Energy)

Patent Handbook Available

The American Chemical Society's Committee on Patents and Related Matters has recently published *What Every Chemist Should Know About Patents*, and a "Record Keeping Fact Sheet." These publications are intended for chemists in industry, academe, and business: college chemistry students, professors and teachers, researchers and research directors, and business managers.

What Every Chemist Should Know About Patents is an introduction to the essentials of patents and of patenting procedures. The handbook presents an overview of the obtainment, use and value of patents in an easily understood form. Copies are available for \$1.00 each. Requests, including prepayment and self-addressed mailing labels, should be sent to the American Chemical Society, P.O. Box 57136, West End Station, Washington, DC 20037.

The "Record Keeping Fact Sheet" is a guideline for maintaining complete and proper research records. The two-page fact sheet lists *do's* and *don'ts* of laboratory notebook record keeping for the protection of intellectual property, and is available free of charge. Send your requests along with self-addressed mailing labels to the Department of Government Relations and Science Policy, American Chemical Society, 1155 16th Street, NW, Washington, DC 20036-4849.

Policy on Outplacement Benefits

The following letter is an official ACS policy statement on federal R&D contract provisions for outplacement benefits. The letter was transmitted on April 1, 1988 to the Honorable John Glenn, Chairman of the Senate Committee on Government Affairs.

The Honorable Dennis DeConcini
Chairman
Subcommittee on Treasury, Postal
Service, and General Government
Committee on Appropriations
United States Senate
Washington, DC 20515

Dear Mr. Chairman:

In recent years, the standard employment practices of science and engineering employers have expanded to include "outplacement" services to terminated workers in addition to the older practices of advance notice and the payment of severance pay at the time of termination. For highly trained scientists and engineers who search for employment in national or global labor markets, outplacement services especially are necessary to defray the high costs of communications, advertising, interview travel and relocation inevitable in such markets.

Recognizing that Federal research and development (R&D) contracts have a finite life span, and that occasionally members of the R&D group assembled to perform contracted services will have their employment terminated because of the early and unforeseen termination of the contract by the U.S. Government, the American Chemical Society urges Congress to specify that the inclusion of costs for the orderly relocation and reemployment of personnel terminated in such premature shutdowns be considered a normal contract cost to be borne by the Federal contracting agency.

The American Chemical Society, the world's largest scientific society comprised of over 137,000 chemists and chemical engineers, requests your committee's consideration of this issue and offers its assistance in any deliberation that may occur.

Sincerely yours,

Gordon L. Nelson
ACS President, 1988

cc: The Honorable John C. Stennis,
Chairman

Committee on Appropriations

Chem Matters Garners Honor

Chem Matters, the ACS high school students' magazine, was recently named "Best Whole Periodical" in international competition sponsored by the Society for Technical Communication (STC). More than 400 entries from STC's 37 chapters comprised *Chem Matters'* competition in this year's event.

This award rounds out a stunning year for *Chem Matters*, which was honored for excellence by both the STC and the Educational Press Association of America (EdPRESS) on the national and international level. *Chem Matters* received awards for feature writing, technical articles, and art design, in addition to honors for the publication as a whole.

Chem Matters is published quarterly (Oct., Dec., Feb., and April) by the American Chemical Society. The single subscription rate is \$5.50 per year. Orders for classroom sets (10 or more copies) are \$2.25 per subscription, a savings of more than 50% off the single

subscription price. To order, or for more information, write *Chem Matters*, American Chemical Society, 1155 Sixteenth St., N.W., Washington, D.C. 20036.

Curriculum Resource Series from ACS

The Association for Science Education has just released three more volumes of their acclaimed Science and Technology in Society (SATIS) curriculum resource series. Volumes 8, 9, and 10 provide up-to-date, exciting activities to help you introduce your students to science in the real world.

The complete SATIS series of 10 student resource units plus a teacher's guide gives you

- Lessons in 100 different science topics;
- Copyright-waived photocopy masters;
- Hundreds of student activities;
- Comprehensive index;

- Teaching techniques; and
- A list of additional activities and resources.

Among the activities suggested to involve students in each topic are simulations, data analysis, comprehension questions, discussions, and role-plays. Problem-solving and decision-making skills are stressed in all units. The index helps teachers or group leaders choose activities related to a specific subject. The teacher's guide suggests extensions of activities and additional ways to make science relevant to students.

The original seven volume set plus teacher's guide sells for \$148 in the United States and includes postage. The three new volumes sell for \$58, or you can get the complete package—all 10 volumes, plus teacher's Guide for only \$199. Postage and handling charges are added to all foreign orders.

For a complete list of topics and activities and sample pages write or call, Office of Precollege Science, American Chemical Society, 1155 Sixteenth St., N.W. Washington, D.C. 20036; (202) 872-4590.

Rent from U.S. Analytical Instruments and solve your problems.



Your equipment malfunctions. Unexpectedly.



You want to try it. Before you buy it.



The project is short-term.



You need the instrument. Now.

When you need it now but you might not need it forever, relax. And call U.S. Analytical Instruments. We have a complete inventory of new analytical instruments from the major manufacturers. So you can rent what you need right now. All instruments are available for immediate delivery. And are fully supported by the manufacturer for installation and service.

- Gas, liquid and ion chromatographs
- GC/MS systems
- IR, FTIR, UV/VIS, fluorescence and AA spectrophotometers
- Thermal analyzers
- And more

Get it short term. Long term. Or any length of time in between. Choose from a wide variety of convenient rental plans.

And here's the best part of all. When you've finished solving your problems with one of our rental instruments, you just send it back. And relax until the next time. Call today!
800-437-9701
In California, 800-824-0060

United States Analytical Instruments

US A U.S. Leasing Company
1511 Industrial Rd.
San Carlos, CA 94070
(415) 595-8200

W.R. Grace Institutes Outreach Program

by R. Rung
Introduction by M.A. Solstad

As the chairman of the speakers bureau I meet many diversely talented speakers, and get to know several of the teachers who so enthusiastically make use of the bureau. This summer I was called by Rosemarie Rung, the chemist whose suggestion launched the W.R. Grace project described here. Ms. Rung sought a group of chemists who could conduct a workshop for elementary school teachers seeking to introduce the physical sciences into the elementary grades. I put her in touch with Jerry Bell who carried the ball; they should have a great workshop this November.

The W.R. Grace Nashua program has a lot of interesting and innovative ideas that could be adopted and adapted by other chemical companies. At my request Ms. Rung was kind enough to write the following article for The Nucleus. We at The Nucleus would like to hear what your company is doing to share our field of science with the younger students. If you're not involved yet, perhaps this article will serve as inspiration.

The Hampshire Chemical operation of W.R. Grace & Co. has begun an innovative program to respond to science education needs in its community. Referred to as the "School Outreach Program", its aim is to identify areas where Grace can apply its human, technological, and financial resources to support and improve science education on the primary and second levels.

The idea sprouted from a monthly employee suggestion contest and was easily incorporated into an overall community relations drive the company was starting up. According to Jerry McCarthy, Nashua's Plant Manager, "We felt that negative public perception about us stemmed from a lack of understanding about the nature of our industry. Our Community Relations Committee was set up to organize avenues of communication and involvement with the public.

We hope that by becoming a more active and open member of the Nashua community, area residents will be more confident of our presence in Nashua."

Begun in September of 1987, the School Outreach Program has always focussed on science education. Program coordinator, Rosemarie Rung, comments: "There are so many areas in which industry can contribute to education. Instead of spreading ourselves too thin, we thought it natural for us as a chemical company to concentrate our efforts only in science." Getting the program going was not a problem according to Mrs. Rung. "Fortunately, our timing coincided with National Chemistry Day. We used that opportunity to introduce ourselves to the local school systems. Two initial projects were: sponsoring seven area chemistry teachers to attend the Framingham workshops and providing presentations/demonstrations to area high schools to commemorate National Chemistry Day." The positive response received from those two efforts encouraged Grace to continue. "We knew then that our involvement would be beneficial and welcomed by the schools, but we had to identify specific needs in order to optimize our contribution", says Mrs. Rung. "A needs questionnaire was then distributed to Nashua teachers soliticing their suggestions, comments and ideas. Feedback generally pointed to support of science education on the elementary level. Responses to the questionnaires came mostly from elementary teachers seeking speakers to come and talk on science related topics. There was also the impression that elementary teachers weren't as confident teaching science as they would like to be. Identifying these two needs paved the way for several projects to improve the situation."

Efforts that followed included: publishing a Speakers Catalog that lists Grace professionals and describes topics they present to classroom audiences;

providing tuition for an elementary teacher to attend a course on elementary level science teaching; purchasing a set of videotapes to assist in early science teaching; and providing issues of "WonderScience" to all Nashua fourth graders. "It's too early to say how much of an impact we have made in this particular area, but I think continuing our commitment can only benefit the students and teachers of Nashua."

Grace also conducts plant tours for students, provides judges for local science fairs, and assists with specific requests from teachers, such as financial support for "Odyssey of the Mind" competition. One project of special interest was helping to start up the SMART program for the Girls Club of Nashua. An acronym for "Science, Math and Relevant Technology," the program's goal is to encourage and support girls in the pursuit of technological careers.

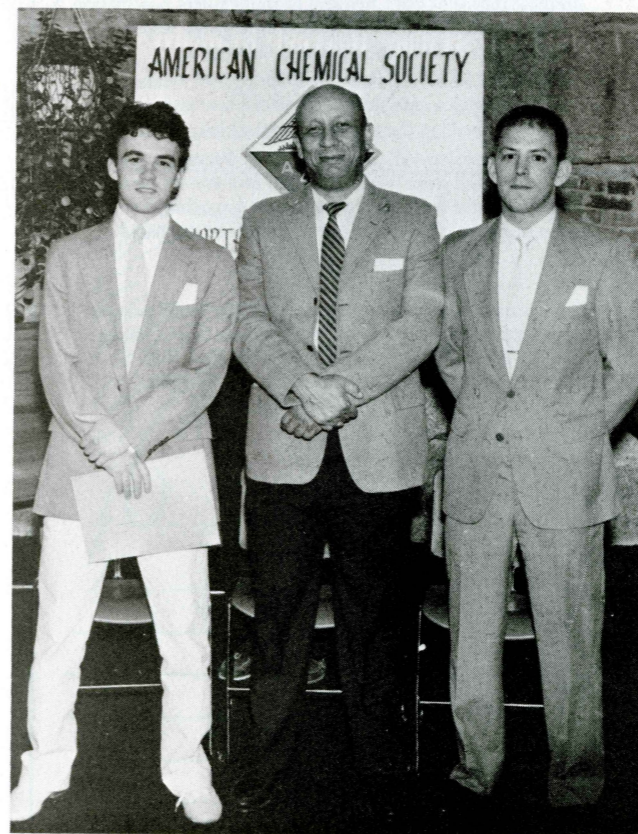
Grace is counting on continuing its success into the second year of the School Outreach Program. "We are planning to sponsor a teacher workshop on elementary science teaching, continuing "WonderScience" subscriptions, and sending teachers to the Northeast Regional National Science Teachers Association Conference", says Mrs. Rung. "We also hope to network with other companies who want to involve themselves in this type of endeavor", she adds. "The most important element to starting and maintaining a school outreach program, says Mrs. Rung, is a strong management commitment." "It's vital to allow staff time to speak to classes, conduct plant tours, and judge science fairs. Financial support is also important, but the human element is more crucial for success to both the school and the company", says Mrs. Rung.

The 28th College Research Symposium

More photos from the May awards meeting



From Brandeis University: (left to right, standing) Leon Bablonzian, Billy Kerr (representing Prof. Rosenblum), Craig Parish; (left to right, sitting) Marietta Calisto, Prof. Emily Dudek, Robin Bersch.



From U. Mass.-Boston: James Dowling, Prof. Jean-Pierre Anselme, Michael Stranberg.



From Wellesley College: (standing) Prof. Michael Hearn, Prof. Jean Stanley; (sitting) Susan Iakin, Susan Hallenbede, Rathyany Sak Bun.

A "SARA" TITLE III SYMPOSIUM

Hazardous Substances in Your Community Emergency Planning and Community Right to Know

A one-day symposium on the new SARA Title III regulations on emergency planning and community right-to-know will be held:

SATURDAY, DECEMBER 3, 1988
FRAMINGHAM STATE COLLEGE - THE FORUM

PROGRAM

<p>8:30 Registration and Coffee. (A Chemical Manufacturer's Association video film about SARA will be shown in the auditorium during this time.)</p> <p>9:00 Dr. James Kaufman, Professor of Chemistry, Curry College, and Chairman of both the local and national ACS Health and Safety Committees, acting as moderator, will open the program. Among the topics he will address in his opening remarks will be Academic compliance.</p> <p>9:20 Susan M. Cooke, lawyer with Goodwin, Proctor and Hoar, will give an overview of the legislation governing compliance to Title III.</p> <p>10:00 Ralph Ayers, Right to Know Coordinator for the city of Newburyport, will discuss what the coordinator needs to know and do in this capacity.</p> <p>10:40 Break</p>	<p>10:55 Stephen Black, Chief, Wellesley Fire Department, and Chairman of the Hazardous Waste Committee of the Massachusetts Fire Chief's Association, will discuss community preparedness.</p> <p>11:35 Dr. Michael Delaney, Cambridge Analytical Laboratories, will address the role of the chemist in SARA compliance.</p> <p>12:15 Lunch</p> <p>1:30 Terry Nelson, Monsanto Chemical Company, Orchard Creek Plant, Springfield, Massachusetts. Dr. Nelson is a representative of the Chemical Manufacturers Association, Washington, DC. He will discuss emergency response in Massachusetts from the industrial viewpoint.</p> <p>2:10 Raymond Sullivan, Fire Chief, Springfield, Massachusetts, will give a case study of how the law and compliance "worked" in the recent Springfield fire.</p> <p>2:50 Panel Discussion - all participants will discuss the impact of SARA and close with a question and answer period. A representative from state government has asked that someone from the office of Civil Defense sit on the panel.</p>
---	---

Cost to attend the Symposium is \$20.00 for lunch and symposium, \$8.00 for the symposium only. To register please return the form below to: Northeastern Section ACS, 19 Mill Road, Harvard, MA 01451. For further information call Mrs. Karen Piper at (800) 872-2054 or (508) 456-8227.

Directions to Framingham State College: Follow Rte 9 east or west toward Framingham Center. Watch for Framingham State College signs to exit from Rte 9. Follow signs to State St. Follow State St. up the hill where directions to the Symposium will be posted.

DEADLINE: NOVEMBER 19, 1988

Name: _____ Tel: _____

Home Address: _____ Tel: _____

Work address: _____ Tel: _____

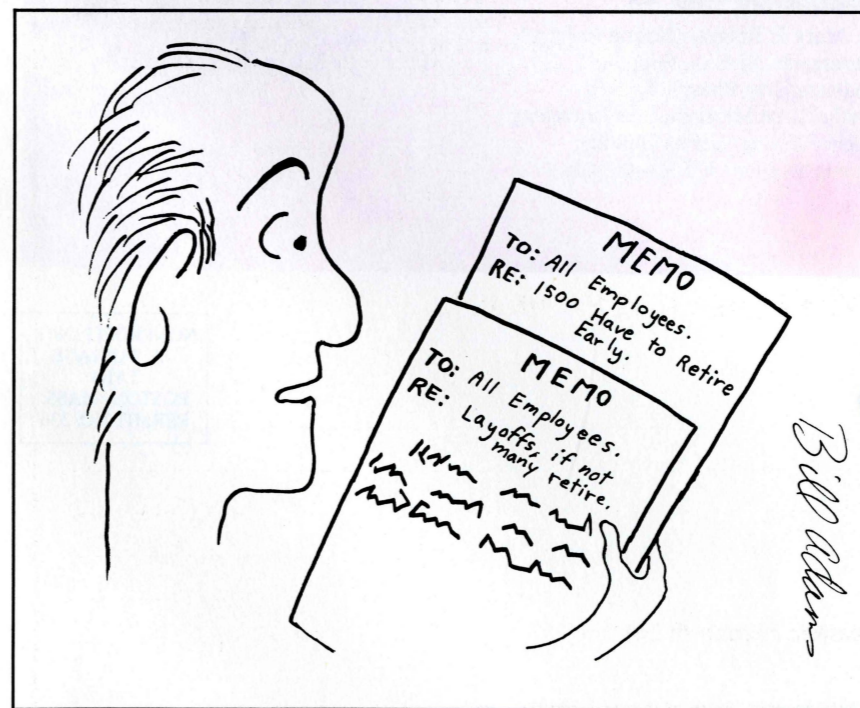
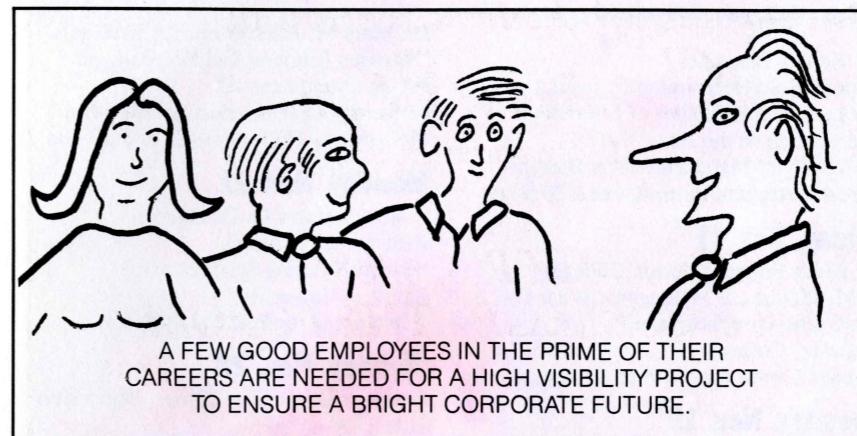
Number of registrations at \$20.00 _____

Number of registrations at \$8.00 _____

Total enclosed (payable to Northeastern Section ACS) \$ _____

The Employment Scene

Cartoons by Bill Adams



ACS Congressional Fellowship

Available Fall 1989

The Fellowship places an ACS member in a staff position in Congress to

- Gain firsthand knowledge of the operations of the legislative branch of the federal government.
- Make scientific and technical expertise available to the government, and
- Forge links between the scientific and government communities.

Applications Due December 1, 1988

For more information contact:
Meredith Bears, Department of Government Relations and Science Policy, American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036, (202) 872-4467

FREE Polymer Standards Catalog

AMERICAN POLYMER STANDARDS CORPORATION
P. O. Box 901, Mentor, Ohio 44061-0901
216-255-8397

POLYMER PROBLEMS? WE OFFER:

- Complete Polymer Deformation
- Good vs. Bad Comparison
- DSC, TGA, IR, UV-Vis
- GPC/SEC Molecular Weights and MWD
- Additive Package Analysis

26 Pearl Street
Bellingham, MA 02019

JORDI ASSOCIATES, INC.
Liquid Chromatography Specialists

(617) 966-1301

Calendar

Wednesday, Nov. 2

Dr. John K. Snyder
(University of Massachusetts)
"Isolation and Structure Determination
of Bioactive Natural Products"
Southeastern Massachusetts University
Science & Engineering Building
(Group II) room 305 at 4:00 p.m.

Dr. Alexander Tzagoloff
(Columbia University)
"Nuclear Genes Affecting the Expression
of Cytochrome b in Yeast"
Tufts University
Sackler Building, DuBlois A auditorium
at 4:00 p.m.

Thursday, Nov. 3

Professor Karl Kadish
(University of Houston)
"Chemistry and Electrochemistry
of Metalloporphyrins"
Boston College
Gasson Hall room 305 at 4:00 p.m.

Dr. Lily Y. Young (New York University)
"Anaerobic Diversity and Biodegradation"
University of Massachusetts at Boston
McCormack Hall room 423 at 3:30 p.m.

Professor Charles Stirling
(University of North Wales)
Title TBA
Brandeis University
Gerstenzang room 122 at 4:00 p.m.

Monday Nov. 7

Professor Richard Cohen (MIT)
"Sudden Death: Failure of an Oscillator"
Brandeis University
Gerstenzang room 122 at 4:00 p.m.

Tuesday, Nov. 8

Dr. Leon Rosenberg (Yale University)
"Sequential Action of Two Mitochondrial
Matrix Proteases"
Tufts University
Sackler Building, DuBlois A auditorium
at 4:00 p.m.

Thursday, Nov. 10

Professor Paul Davidovits
(Boston College)
"Interactions of Gas Molecules with
Water Surfaces"
Boston College
Gasson Hall room 305 at 4:00 p.m.

Dr. Ken O. Buesseler
(Woods Hole Oceanographic Institution)
"Oceanographic Studies of Chernobyl
Radiotracers in the Black Sea"
University of Massachusetts at Boston
McCormack Hall room 423 at 3:30 p.m.

Friday, Nov. 11

Dr. Mary Roberts (Boston College)
"NMR Studies of Methogens: What Use
is a Cyclic Pyrophosphate?"
Wellesley College
Science Center room 278 at 12:30 p.m.

Tuesday, Nov. 15

Professor Edward Eyring
(University of Utah)
"Laser Photothermal Spectroscopic Rate
Measurements in Liquids"
Tufts University
Pearson Memorial Laboratory room 104
at 4:30 p.m.

Dr. Bernard Trumpower
(Dartmouth Medical School)
"Genetic Controls of Mitochondrial
Development and Function"
Tufts University
Sackler Building, DuBlois A auditorium
at 4:00 p.m.

Wednesday, Nov. 16

Dr. Mary F. Roberts (Boston College)
"Detergents, SLUVs, Flippases:
Understanding Phospholipases"
Southeastern Massachusetts University
Science & Engineering Building
(Group II) room 305 at 4:00 p.m.

Thursday, Nov. 17

Professor Jeff Skolnick
"Computer Simulation of Globular
Protein Folding"
Boston College
Gasson Hall room 305 at 4:00 p.m.

Dr. Mary M. Allen (Wellesley College)
"Nitrogen Limitation in Non-nitrogen
Fixing Cyanobacteria"
University of Massachusetts at Boston
McCormack Hall room 423 at 3:30 p.m.

Monday, Nov. 21

Professor Harry G. Drickamer
(University of Illinois)
"Pressure Tuning Spectroscopy"
Brandeis University
Gerstenzang room 122 at 4:00 p.m.

Monday, Nov. 28

Professor David Cane (Brown University)
Title TBA
Brandeis University
Gerstenzang room 122 at 4:00 p.m.

Tuesday, Nov. 29

Professor M. David Curtis
(University of Michigan)
"New Metallacycles and Coupling
Reactions of Alkynes on Early Transition
Metals"
Tufts University
Pearson Memorial Laboratory room 104
at 4:30 p.m.

Notices for the NUCLEUS Calendar
should be sent to:
Cynthia B. McGowan
Dept. of Chemistry, Wellesley College
Wellesley, MA 02181
Phone: (617) 253-0320 ext 3112

THE NUCLEUS

Northeastern Section of the American Chemical Society
19 Mill Road
Harvard, MA 01451

NONPROFIT ORG.
U.S. POSTAGE
PAID
BOSTON, MASS.
PERMIT NO. 336

0136765J 10/88 ZA 109 1
ESTHER BEATRICE GARBER
45 BRINGTON RD
BROOKLINE MA 02146