

# THE NUCLEUS

May 1994

Of the Northeastern Section of the American Chemical Society

Vol. LXXII, No. 9



## Candidates' Statements

*Election of 1995 Candidates*

## Monthly Meeting

*Education Night; J. Bell on  
"Relating What You've Learned"*

## ACS Council Meeting

*Reports of the ACS Meeting at San Diego;  
your Councilors' activities*

## Environmental Column

*Gordon Gribble on natural organohalogens*

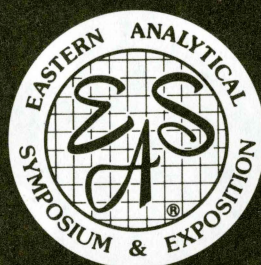
Garden State Convention & Exhibit Center

33rd Annual Eastern Analytical Symposium  
Somerset, New Jersey - November 13 - 18, 1994

DREAMING OF  
SUMMER?  
OR  
LOOKING  
FORWARD  
TO EAS?



**DON'T FORGET:  
MAKE PLANS TO ATTEND EAS!**



**Technical Papers  
EAS Short Courses  
EAS Workshops  
Employment Bureau  
Exposition**

While you are enjoying summer, the 70-plus volunteers of EAS are once again working to prepare the best Symposium ever! We hope that you will return with us to the Garden State Convention & Exhibit Center and the Radisson Somerset Hotel as we grow beyond the 1993 tally of 240 Exhibit booths, over 4400 conferees, and 440 technical papers.

Our next flyer will reach those on our mailing list in July. There you will find 65 Technical Sessions, 22 EAS Short Courses, 35 EAS Exhibitor Workshops, Housing information, a Registration form, a listing of Exhibitors, and much more.

What - you aren't already on our mailing list? You say that you simply can't wait to find out more? Don't despair, more information is available now! Just contact:

The EAS HOTLINE at (302) 738-6218,  
or the EAS FAXLINE at (302) 738-5275.

**EAS IS SIMPLY THE BEST!**

Are you interested in being an Exhibitor at EAS? There are still a few booths available, but the time to act is now! Don't wait until it is too late! Simply contact: Bob Baudoux at (412) 372-8965 or by FAX at (412) 372-6748.

The Northeastern Section of the American Chemical Society, Inc.

Office: Marilou Cashman, 23 Cottage St., Natick, MA 01760. 1-800-872-2054 (Voice or FAX) or (508) 653-6329. Any Section business may be conducted via the business office above. Washington, D.C. ACS Hotline: 1-800-227-5558

**Officers 1994**

**Chairman**  
James A. Kaufman  
Science Division, Curry College  
Milton, MA 02186  
237-1335 FAX 617-239-1457

**Chairman-Elect**  
Valerie R. Wilcox  
9 Edgewater Pk.  
Auburndale, MA 02166  
(508) 537-9529 (day) FAX 508-537-3220

**Immed. Past Chairman**  
Dorothy J. Phillips  
Waters Division of Millipore Corp.  
34 Maple St., Milford, MA 01757  
508-478-2000 ext. 2860 FAX 508-473-5514

**Secretary**  
Michael J. Hearn  
Chemistry Dept., Wellesley College  
Wellesley, MA 02181, 283-3127

**Treasurer**  
James Piper  
Simmons College, 300 The Fenway  
Boston, MA 02115, 617-521-2730

**Auditor**  
Anthony L. Rosner

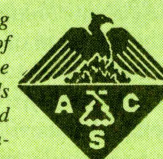
**Trustees**  
G. Richard Handrick Adrienne S. Dey  
Charles E. Kolb

<b>Councilors</b>	<b>Alternate Councilors</b>
<i>Term expires 1/1/95</i>	<i>Term expires 1/1/95</i>
Catherine E. Costello	Geoffrey Davies
Esther A.H. Hopkins	Norman W. Rice
Patricia L. Samuel	Donald O. Rickter
Valerie A. Wilcox	Alfred Viola

<i>Term expires 1/1/96</i>	<i>Term expires 1/1/96</i>
Mary T. Burgess	E. Joseph Billo
Thomas R. Gilbert	Wallace J. Gleekman
Truman S. Light	Margaret V. Merritt
Katie A. Stygall	Frank S. Wagner

<i>Term expires 1/1/97</i>	<i>Term expires 1/1/97</i>
Michaeline F. Chen	Arno H.A. Heyn
Doris I. Lewis	Morton Z. Hoffman
John L. Neumeyer	Joseph D. Smith

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

<b>ACS Council Meeting</b> _____	<b>4</b>
<i>Report on the Spring Council Meeting in San Diego; Councilors' activities</i>	
<b>Monthly Meeting: Education Night</b> _____	<b>5</b>
<i>Teacher and student awards; Jerry Bell speaks on "Relating What You've Learned"</i>	
<b>NERM 24</b> _____	<b>6</b>
<i>A special invitation to undergraduates for NERM-24</i>	
<b>Board of Directors</b> _____	<b>6</b>
<i>Condensed minutes of the February 10 meeting</i>	
<b>NESACS Election of 1995 Candidates</b> _____	<b>7</b>
<b>Environmental Column</b> _____	<b>15</b>
<i>Gordon Gribble on the natural occurrence of organohalogen compounds</i>	
<b>Historical Notes</b> _____	<b>17</b>
<i>More obituaries of recently deceased members</i>	

**Cover:** Dr. Jerry Bell demonstrating on the occasion of receiving our James Flack Norris Teaching Award in November 1992. Photo by A. Finland

**Deadlines:** Summer issue: June 10, 1994

**Important Notice:** All communication about the summer issue must be directed to the Associate Editor, Myron Simon, 20 Somerset Rd., West Newton, MA 02165; Tel.: (617) 332-5273. Material sent mistakenly to Arno Heyn cannot be forwarded during his absence (May 16-June 27).



## THE NUCLEUS

Dedicated to the Memory of James Flack Norris  
Published monthly from September 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.

<b>Editor:</b>	Arno Heyn, 21 Alexander Rd., Newton, MA 02161, Tel: 969-5712, FAX: 527-2032
<b>Associate Editor:</b>	Myron S. Simon, 20 Somerset Rd., W. Newton, MA 02165, Tel: 332-5273
<b>Board of Publications:</b>	Michael E. Strem (Chair), Joseph A. Lima
<b>Business Manager:</b>	Karen Piper, 19 Mill Rd., Harvard, MA 01451, Tel: (508) 456-8622
<b>Advertising Manager:</b>	Vincent J. Gale, P.O. Box 1150, Marshfield, MA 02050, Tel: (617) 837-0424
<b>Contributing Editors:</b>	Edward Atkinson, History of Chemistry, Book Reviews; Maryann Solstad, Health; Chris Arumainayagam, Calendar.
<b>Proofreaders:</b>	Ernest I. Becker, Donald Rickter, M.S. Simon

Copyright 1994, Northeastern Section of the American Chemical Society, Inc.

# ACS Council Meeting

San Diego, CA, March 16, 1994

Only few items were up for Council action: Renaming of a Local Section, the Southeastern Texas Section to Greater Houston Section (approved) and of Chemical Marketing and Economics Division to the Division of Business Development and Management (referred back to the committee); approval of dues for 1995 (no change requested, see below) and approval of the revision of the ACS Academic Professional Guidelines. The Chemist's Code of Conduct to replace The Chemist's Creed was presented for information. It was announced that the Multiple Termination Survey was being eliminated. Employers as well as terminees have been reluctant to support this survey, rendering the results of little value.

The most interesting items in the meeting were contained in the reports of the several bodies and committees: Budget and Finance reported that in 1983 the ACS closed its books at \$5.8x10<sup>6</sup> ahead of the budgeted amount. In view of this good news, B&F made the unprecedented recommendation of not increasing the dues according to the "dues escalator" formula, which would have raised dues by \$3 to \$99 for 1995. On a voice vote, there was overwhelming approval.

The Chairman of the Board, Paul Walter, reported that the Dialog suit had been settled by mutual agreement of the two parties, but one of the conditions of the settlement imposed a veil of secrecy on the terms.

Those of you who drop in occasionally at the home office of the ACS at 1155 Sixteenth St., NW in Washington will find that offices are being moved for about a year to temporary locations, while 1155 is being renovated from top to bottom.

Meeting attendance as of Tuesday night was 11,677 (meetings only) and a

total of 13,833 (meetings, exposition, incl. exhibitors). The Committee on Meetings and Elections asked for approval to move the Spring Meeting in 1998 from St. Louis to Dallas because of the impending demolition of a major hotel in St. Louis which reduces the number of available rooms below that required for accommodating meeting attendees.

Journal prices for 1995 increased an average of 5.4% for member subscriptions, 11% for non-member subscriptions. Part of the increase is due to a greater frequency of publication of one or two journals and a greater number of total pages. The Society Committee on Publications also announced that by the end of this year all graphic material in ACS journals will be scanned for computer retrieval.

On Dec. 31, 1993 there was a total of 149,261 members. The number of new members for 1993 was about double that for previous years!

The Council at its spring meeting selects the two candidates from a list of four for President-Elect. The members elect the President-Elect in the October mail-ballot election from the two candidates (plus any petition candidates). After the four nominees, Allan J. Bard, Ronald C. Breslow, Daryle H. Busch and Herbert D. Kaesz had addressed the Council, Bard and Breslow were selected as candidates for the fall election.

Individual Section Councilors were busy attending the sessions of their committees: Michaeline Chen at the new combined Committee on Economic and Professional Affairs. This new committee, as reported by Michaeline, has five focus groups: Standards and Ethics, Surveys, Professional Assistance and Career Development, Employment Services Advisory Board, Federal Policy Agenda Task Force. Catherine Costello attended the Meetings of the Committee on Constitution and Bylaws, Thomas Gilbert, as Committee Associate, was at the Committee on Meetings and Expositions. He reported that he will be visiting Philadelphia and Atlantic City with two other committee members for evaluation of their inclusion on the list

## Corporate Patrons

DuPont Merck Pharmaceutical Co.  
Duracell, Inc.  
Hoechst Celanese Corporation  
Millipore Foundation  
Polaroid Corporation, Chemical Research Division

## Corporate Sponsors

Aerodyne Research, Inc.  
AESAR/Alfa Johnson Matthey  
Arthur D. Little, Inc.  
ATI Orion Research, Inc.  
Cambridge Isotope Labs  
Consulting Resources Corporation  
Houghton Chemical Corp.  
Organix, Inc.  
Strem Chemicals, Inc.  
Van Waters & Rogers, Inc. (VW&R)  
Zymark Corporation

of approved cities for ACS meetings. He has also been appointed a Committee Associate for the Committee of Committees. Arno Heyn, this year is a "Bylaw Councilor" (because he is on an elected Council Committee, but failed to get re-elected as Councilor, since Alternate Councilors cannot serve on elected or standing committees). He attended the several meetings of the Committee on Committees as Liaison Representative, the Local Section Activities Committee meetings, and the meeting of the Committee on Environmental Improvement. Esther Hopkins attended the Council Policy Committee Meeting and a subcommittee meeting. Truman Light and his wife Arlene were busy as volunteers, managing the affairs of the Employment Clearing House. Patricia Samuel attended the Society Committee on Chemical Education and organized and chaired the Poster Session *What Makes an Effective Student Affiliate Chapter?* of the Division of Chemical Education. Similarly, Morton Z. Hoffman organized and chaired the Division of Chemical Education session on *Lecturing to Chemistry Students: The Lecturer as Performer*. Valerie Wilcox attended the meeting of the Committee on Chemical Safety. ◇

# Monthly Meeting

The 762nd Meeting of the Northeastern Section of the American Chemical Society

## Education Night

Thursday, May 12, 1994

Brandeis University, 415 South St., Waltham, MA  
Sherman Function Hall, Hassenfeld Bldg.

**5:30** Social Hour

**6:30** Dinner

**7:30** Evening Meeting, Dr. James Kaufman, presiding

**Address:** *Relating What You've Learned*  
Dr. Jerry A. Bell, American Association for the Advancement of Science

## Presentation of Awards

Avery A. Ashdown Chemistry Examination;  
Simmons College Prize  
Excellence in Teaching at the Secondary School Level  
Lyman C. Newell Grants  
Induction of New Members into Aula Laudis  
Undergraduate Research Symposium  
James Flack Norris Undergraduate Research Fellowships  
Philip L. Levins Memorial Prize

Refreshments will be served after the program.

Dinner reservations should be made no later than May 6. Please call Marilou Cashman at (800) 872-2054. Reservations not cancelled at least 24 hours in advance must be paid. Members, \$21.00; Non-members, \$23.00; Retirees, \$12.50; Students, \$8.00. THE PUBLIC IS INVITED.

Anyone who needs special services or transportation, please call Marilou Cashman a few days in advance so that suitable arrangements can be made.

**Free Parking available:** Stop at the information kiosk near the South St. entrance for parking permits and instructions.

## Election of 1995 Officers, Councilors and Committees

The ballot for voting for the 1995 candidates for the various Section positions is enclosed with this mailing. Also enclosed are the special ballot envelope and addressed return envelope. Candidates' biographies and statements are in this issue of the Nucleus beginning on page 7.

**BE SURE TO VOTE** and return your ballot by the June 1, 1994 deadline.

If you are a section member and fail to receive the election materials, please call the Section office, 1-800-872-2054.

# Abstract

## Relating What You've Learned

All the students being honored by the ACS Northeastern Section tonight have achieved significant results in their study of chemistry. Congratulations! Now they have to prepare themselves for the kinds of questions like, "You're good in chemistry, so how does...work?" You can fill in the blank to create your favorite (or most perplexing) question. To further prepare them for this sort of world, we'll discuss (and analyze demonstrations relevant to) the following questions

- What is the limewater test? How does it work?
- Toilet bowl cleaners carry warnings like, "Do not use with any other cleaners or chemicals as harmful fumes may result." What harmful fumes? How?
- What is Seltzer water?
- Chickens can't sweat. Is this important to an egg rancher?
- What are the properties of soap bubbles?
- What's the difference between a flame and an explosion? ◇

# Biography

Jerry A. Bell is Director of the Science, Mathematics, and Technology Education Programs in the Directorate for Education and Human Resources of the AAAS. Previously he was Professor of Chemistry at Simmons College, where he taught for 25 years. He has also taught for various periods at several other colleges and universities, including Harvard University and the University of Wisconsin.

He received his A.B. and Ph.D. in physical chemistry from Harvard and has done postdoctoral research as a visiting faculty fellow at Brandeis University.

His major professional interests have focused on the kinetics of free radical and photochemical reactions

continued on page 18

## NERM-24

Undergraduates invited to attend the 24th Northeast Regional ACS Meeting, Burlington, VT, June 19-22, 1994

A special program for undergraduates includes:

Undergraduate Research Poster Session Workshops:

- Mentoring undergraduate students
- Looking toward the future (career, graduate school info, ACS employment services, resume review)

Student Affiliates-Faculty Advisors Interactive Session

Mixers, lunches, excursions, socials with undergraduates of the Northeast (New England, Upstate New York)

Registration fee: \$ 20. Dormitory or local housing available at reasonable rates.

For information and housing

See C&EN for April 25 or contact

Dr. Willem R. Leenstra,

Dept. of Chemistry, U. of Vermont,

Burlington, VT 05405.

For information about the undergraduate program, contact

Dr. Morton Z. Hoffman (617/353-2494)

or

Dr. Patricia L. Samuel (617/353-2124),

Dept. of Chemistry, Boston University,

Boston, MA 02215 ◇

## 13th International Conference on Chemical Education

August 8-12, 1994

San Juan, PR

Theme: **Chemistry: The Key to the Future.** At the Inter American University of Puerto Rico in San Juan. The ACS is one of the co-sponsors of this conference which will feature 11 Plenary or Special Lectures, 28 Symposia and 19 Workshops. Lecturers come from all parts of the world, but all meetings will be conducted in English. An excellent opportunity to exchange views on chemical education with those from other countries. Pre-registration deadline: May 31. Copies of the registration and Lodging Reservation Form can be obtained from Marilou Cashman, (800) 872-2054. Contributions in the form of posters, or 2-3 minute presentations following scheduled papers are still accepted - copies of forms from Ms. Cashman. ◇

## Board of Directors

NOTE: Board meetings are held on the meeting day at 4:30 p.m. Section members are invited to attend. The May 12 meeting will be in Lariat 3, Hassenfeld Bldg. at Brandeis U.

### Condensed Minutes, Meeting of Thursday, February 10, 1994

#### Officer's Reports:

**Chairman's Report:** Dr. Kaufman indicated that the Section's Annual Report will be submitted on time. He announced the appointment of two *ad hoc* committees: a Liaison Committee to the Medicinal Chemistry Group, appointed at the request of the Group to develop closer ties with the Board; a Liaison Committee to the Corporate Affiliates to serve a similar purpose.

Dr. Kaufman asked for volunteers to fill two vacancies: Co-chair for the Safety Committee and chairmanship of the Public Service Committee.

**Treasurer's Report:** Dr. Piper presented the summary for January, which was ACCEPTED.

#### Committee Reports:

**Esselen Award Committee:** Dr. Light reported that plans for the ceremony in April at Harvard were complete.

**Hospitality:** Dr. Howell, expressing his satisfaction with the arrangement for this day's meeting at Regis College, suggested that this site should be considered for future meetings, as well. He stated that he was contacting Brandeis U. for the May 12 Education Night

**Publications:** Dr. Strem, via Dr. Billo, reported that the NUCLEUS budget was in good order. Dr. Heyn, Editor of the NUCLEUS stated that the 20 page March issue was at the printer.

**Nominations:** Dr. Phillips presented the list of nominees which is to be read at tonight's meeting and published in the March NUCLEUS. The board VOTED to accept the report.

**Program:** It was announced that the topic for the September meeting will be chemical combinatorics.

**Public Relations:** L. Charpentier indi-

cated the steps needed to develop the full potential of this committee.

**Richards Medal Award Committee:** Arrangements for the March 10 award meeting at Harvard are in place.

#### Other Committees:

**Continuing Education:** Dr. Billo stated that the ACS short course *Synthetic Organic Chemistry: Modern Methods and Strategies* (by Prof. P. Helquist of Notre Dame U.) would be offered in May.

**Education Task Force:** It was announced that Dr. Stygall-O'Sullivan is to rewrite the NSF proposal for the Task Force.

**Liaison Committee to the Medicinal Group:** Dr. Singer reported that the first meeting had been productive and that he hopes to work closely in the future with the Directors.

**Project SEED:** Application for preceptors for this summer's program are due February 15. Dr. Phillips will coordinate. A new site for Project SEED students will be in the laboratory of Dr. Mabrouk at Northeastern U.

**Summerthing:** A chairman is needed. Drs. Kolb and Brauner suggested Woods Hole as a suitable venue for this year's Summerthing.

**Old Business:** Dr. Piper presented the 1994 budget which had been distributed at the January meeting. It was VOTED to accept the budget.

**New Business:** A grant to support an ACS satellite program at the U. of Mass. Lowell has been received from Digital. Dr. Hoffman urged the board to reinstate the number of summer scholars to their 1993 level. Dr. Dey seconded the suggestion. ◇

## Exhibition

### Life and Works of Robert B. Woodward

The above Exhibition is continuing until May 7, 9 am to 5 pm in the Main Lobby of the Mallinckrodt Chemical Laboratories, Harvard University at 12 Oxford St., Cambridge, MA. The exhibition has been prepared by the Beckman Center for the History of Chemistry. If you missed it on the night of the Esselen Meeting, here is your chance to see it. ◇

## ACS Short Course

### Synthetic Organic Chemistry: Modern Methods and Strategies

A Two-Day Short Course Sponsored by the Northeastern Section, ACS, Committee on Continuing Education

National ACS is making top-rated ACS Short Courses available to local sections at tuition fees greatly reduced from the normal \$785. The NESACS Committee on Continuing Education is pleased to present this course, which has been offered successfully at each National ACS Meeting since 1981.

**Dates and Time:** Thursday, May 12, 1994, 8:30 a.m. - 5:00 p.m.  
and Friday, May 13, 1994, 8:30 a.m. - 5:00 p.m.

**Place:** Frost Lounge, Ell Building, Northeastern University, 360 Huntington Ave., Boston, MA

#### Program Agenda:

*Introduction to the strategy and planning of organic syntheses and other basic concepts such as synthetic equivalency and protecting groups.*

*Fundamentals of carbocyclic ring formation and associated principles such as stereoelectronic effects.*

*Construction of six-membered carbocyclic rings: enolate-based methods, Diels-Alder reactions, carbonation cyclizations, and others.*

*Formation of five-membered carbocyclic rings: use of dicarbonyl compounds, cycloaddition approaches, other annulative methods, and rearrangements of other ring systems.*

*Synthesis and uses of small-ring compounds: cyclopropane and cyclobutane derivatives.*

*Preparation of larger ring systems: cycloheptane derivatives, medium-ring compounds, and macrocycles.*

*Stereoselective construction of acyclic compounds: stereocontrolled alkene synthesis, sigmatropic rearrangements, and modern aldol chemistry.*

*Advanced examples of total syntheses.*

**Instructor:** Paul Helquist, Professor of Chemistry, University of Notre Dame. Prof. Helquist is one of the most highly praised instructors in the ACS continuing education program.

#### Registration Fees:

ACS Members if mailed before April 25..... \$225.00; after April 25.... \$275.00

Non-ACS Members if mailed before April 25 . \$325.00; after April 25.... \$375.00

There will be a limited number of scholarships for unemployed ACS Members on a space-available basis.

Parking Fee \$3.00/day University cafeterias will be available for lunches.

For further information contact: Prof. Alfred Viola - (617) 373 2809

#### Registration form for Short Course:

##### Synthetic Organic Chemistry: Modern Methods and Strategies

Name: \_\_\_\_\_ Affiliation: \_\_\_\_\_

Mailing Address \_\_\_\_\_ Telephone: \_\_\_\_\_

Mail with remittance to :  
(Please make checks payable  
to NESACS)

Prof. Alfred Viola, Chair  
NESACS Committee on Cont. Ed.  
Department of Chemistry  
Northeastern University  
Boston, MA 02115

## Northeastern Section

### A.C.S. Election of Candidates for 1995

In the interest of providing maximum information and expression of opinions by the candidates for election in 1994, the Nominating Committee has prepared this section of the Nucleus for mailing concurrently with the ballots. All candidates were asked to submit biographical material and, with the exception of committee member nominees, position statements. Except for correcting typographic errors, and minor changes to attain uniformity in format these statements have been reproduced without change. An official ballot along with a ballot envelope and a return envelope have been provided. The election and balloting are being carried out in conformance with Article VIII of the Constitution of the Northeastern Section. The order of candidates on the ballot was determined by lot. Comments regarding the election or election process may be addressed to the Nominating Committee Chair, Dr. Dorothy J. Phillips.

**BALLOT DIRECTIONS:** Vote for the candidate(s) of your choice, insert your ballot into the ballot envelope, insert the ballot envelope into the return envelope, sign your name on the return envelope only, affix postage, and mail.

**THE BALLOT MUST BE RECEIVED BY JUNE 1, 1994**

Support  
Our Advertisers

## Chairman-Elect

### Doris I. Lewis

**Education and Experience:** B.S., Duke University, 1965; Ph.D., Tufts University, 1972. Academic appointments: Newton College of the Sacred Heart, 1970–75; Suffolk University, 1975–present; currently Professor of Chemistry. ACS member for 28 years; member AAAS, NEACT, NSTA/SCST, Sigma Xi; ACS National Science Funding Network, 1991–present. NESACS activities: Continuing Education Committee, 1979–81; Student Affiliate Coordinator, 1978–1990; National Meeting Committee, 1990; Alternate Councilor, 1991–1993, Councilor 1994.

**Statement:** The local section should be the frontline of the American Chemical Society in delivering services to members and in representing the chemical profession to the community. In public service and in providing continuing education, employment aids, and other services to support chemists and chemical educators as professionals, the Northeastern Section has an excellent record. These efforts need to be continued and expanded to meet our current needs.

More than ever, chemists need opportunities for continuing education and for employment aids on the local level. The Continuing Education Committee needs our strong support, and the activities of the Medicinal Chemistry Group serve as a model for professional programs, which could be expanded to other areas of chemistry. Both on a formal and an informal level, members of the Northeastern Section ought to be an excellent resource for one another in job-seeking, yet up to now these opportunities have not been well utilized. The Section employment clearing house, started by Ted and Arlene Light, is an excellent idea which deserves the full support of the Section if it is to be successful.

Science education at all levels can use the support of chemists, and, again, the local section is the ideal vehicle for providing help to chemistry teachers and students. The Chemical Education Committee of the Section has advanced the idea of involving college and high school students in the section as Junior Affiliates; this and other education activities should be a high priority of the Section. More high school chemistry teachers should be invited to participate in Section activities, whether or not they are currently ACS members. The excellent evening programs for the Norris award in the fall and for Education Night in May do not draw a large attendance of high school teachers; I would like to see teachers receive invitations to these events as a way of making them aware of Section activities and making them know they are welcome.



Photo: A. Fingland

Serving as Alternate Councilor and Councilor I have supported efforts to widen member participation in activities of the Board and Section, and I would continue to do so as Chairman. The open invitation to become involved in the Northeastern Section should be extended to chemists as well as chemical educators. ACS members in our area who are not Section members should be invited to join, and new members contacted to invite their participation in Section activities.

Community outreach to increase public understanding of chemistry is an important function of the ACS, and the opportunity to participate in this outreach is one of the major services the local section offers to its members. The rousing success of the Holiday Lectures, sponsored by this Section and presented at the Museum of Science, serve as a model for what can be achieved in this respect. Sponsored with Section funds, and organized by dedicated members who do everything from taking tickets from eager young scientists to mixing chemical solutions, the Holiday Lectures have not only become an institution, but have become more popular every year. On another level, the Esselen Forum in April, preceding the Gustavus John Esselen Award lecture, has expanded the impact of that award on public awareness of the benefits of chemistry. If these excellent activities and others are to continue to expand their influence, increasing numbers of chemists and chemical educators should become involved. As Chairman I would endorse the advancement of the public understanding of chemistry, not only in principle, but also in practice, and I would encourage individual members of the Northeastern Section, in large ways or small, to participate.



Photo: B.U. Photo Services

### Patricia L. Samuel

Assistant Professor, Coordinator of General Chemistry, Boston University.

**Biography:** B.S. Notre Dame College of Ohio, 1966; M.A. Boston University, 1969; Ph.D., University of Washington, 1977. Member of ACS since 1965; Committee Associate of the Society Committee on Chemical Education (1992–4); Division of Chemical Education: Program Chair, 13th Biennial Conference on Chemical Education (1994), Program Com., Personnel & Nomi-

- Spectroscopy
- Chromatography
- Thermal Analysis
- Permeation Data
- Physical Testing
- Deformation

Please send for capabilities

## PLASTICS ANALYSIS

CHEMICAL/MECHANICAL



444 W. County Rd. D  
St. Paul, MN 55112  
(612) 631-9412  
FAX (612) 631-8405

### NEW CAPABILITIES

- ASTM Injection Molding with Testing
- Dynamic Mechanical Properties

nations Com., Finance Com. (1989–90), Long-Range Planning Com.; Division of Analytical Chemistry; Division of History of Chemistry;

**Northeastern Section Service:** Councilor 1992–1994; Alternate Councilor 1987–1991; National Chemistry Day Com. 1987; Public Service Com. 1988–present, Chair 1990, 1991; Education Com. since 1993

**Statement:** As chemists in the 1990's we have the opportunity to help solve a number of challenging problems facing our profession. Among these are:

1. The public perception of our science
2. Education of the next generation of citizens and of chemists
3. Employment and professional development of chemists

Thanks to the dedicated work of many of our members, the Northeastern Section is contributing to solutions of these problems. Our outreach programs, such as National Chemistry Week and the Holiday Lectures, are expanding. The Education Task Force, the Education Committee, the Public Service Committee, and the Continuing Education Committee are among the most active in the Section. We have a dedicated group of volunteers who provide employment assistance and information to members of NESACS and to students in our area, and who lend their expertise to the National Employment Clearing House.

But we need your help to continue and to expand the good work our section is doing. The American Chemical Society is not just a club. As a professional society of chemical scientists it can be a force for positive change in our country as well as providing valuable service to its members. During the nearly thirty years I have been a member of ACS I have valued the many opportunities it provides for service to the chemical profession. I welcome the opportunity to continue to serve, and I ask you to join with me in this work.

## Trustee

### G. Richard Handrick

As a 50-year member of the ACS, almost entirely with the Northeastern Section, I have spent 25 years watching the fortunes of that Section, on and off the Board of Directors, in numerous service categories. Since 1981, I have served first as an elected Trustee then as advisor to the Trustees assigned to look after the Section's endowment funds, now valued at \$1,317,900 (1 March 1994). Election by your votes will allow me to continue to add my experience and knowledge to the task of increasing the rate of return from the investments for the benefit of the Section, while preserving the capital base and seeking ways for that base to appreciate in value.

## Treasurer

### James U. Piper

**Education:** B.S. MIT; M.S., Ph.D. Emory University.  
**Experience:** Research appointments at Yale U. 1963–6, MIT 1966–7 and 72–3, Worcester Foundation for Experimental Biology 1979–80. Teaching appointments at New Haven College 1963–6, Simmons College 1966–present.

**NESACS Activities:** Treasurer Sept. 1977–present.

**Statement:** The Treasurer chairs the Budget Committee, is responsible for all Section Funds except those of the Trust Accounts, and prepares reports for the Board of Directors, National ACS, and state and federal agencies. The Section currently operated with a budget of \$ 160,000 of which 40% comes from Trust Funds and 25% from local and national dues. About 35% of all expenditures are related to presentation of awards at all levels, from high school students to professional chemists. Administrative expenses constitute 20% of expenditures with the remaining 45% used for services to the membership, such as the NUCLEUS, monthly programs, continuing education programs and workshops, safety programs, and professional and public relations. The quality of these programs is high, and the major budgetary problems involve setting priorities among these.

## Councilors and Alternate Councilors

### Catherine E. Costello

Senior Research Scientist, Associate Director Mass Spectrometry Resource, MIT

**Education:** A.B. (1964), Chemistry, Emmanuel College; M.S. (1967), Ph.D. (1970), Organic Chemistry, Georgetown University; Postdoctoral Research, Mass Spectrometry, MIT.

**ACS/NESACS Experience:** Councilor, 1989–present; Alternate Councilor, 1986–1988; Associate, International Activities Committee, 1991–1993, subcommittees on Eastern Europe and Analytical Instrumentation; Committee on Constitution and By-laws, 1994–present; Lecture Tour Speaker, 1974–present (eleven tours and many individual talks); NE Section Nominating Committee, 1982, 1983, 1987, 1992; NE Section Publications Committee, 1987–93 (Chairman 1990, 1993)

**Statement:** I am particularly interested in applying modern chemical approaches to the solution of problems in the life sciences, in educating students and collaborators about the importance and potential for structural studies, in raising the visibility of the ACS among investigators in adjacent fields such as biotechnology and medicine, and in providing for international exchanges. I have worked both the local and national ACS levels in these areas and would continue with enthusiasm.

### Reen D. Gibb

**Education:** Tufts University B.S.; Worcester Polytechnic Institute M.S. in Natural Science. Continued to take courses at U. Mass. Amherst, MIT and Boston University to keep up with current trends in chemistry and biochemistry.

**Professional Experience:** Currently teaching chemistry at Brookline High School together with biological science at Pierce School (1979–present). Took a one-year-leave of absence to work with an environmental consulting company.

**ACS Activities:** I have been a member of ACS since 1988 when I received a Regional ACS Chemistry Teaching Award. I have been an Affiliate of the Northeastern Section since the early eighties when I served on the Hospitality Committee for several years.

**ACS Statement:** I would like to help the ACS in supporting chemical education at the secondary level. I would like to pro-

mote more interaction between high school chemistry teachers and local University faculty as well as the local chemical industry. I have done some of this on an individual basis and hope to get involved at the national level by participating in committees and task forces involved at revitalizing the teaching of chemistry to high school students.

### James A. Golen

**Education:** B.Sc. Southeastern Massachusetts University 1965, Ph.D. University of Massachusetts Amherst 1970. Post-doctoral experience at University of Georgia 1970-71, University of Toronto 1971-73, Drexel University 1973-76, Visiting Instructor at Southeastern Massachusetts University (UMASS Dartmouth) 1976-80, Assistant Professor 1980-86, Associate Professor 1986 to present. Sabbatical/leaves at UMASS Amherst, University of Hawaii, and Brown University.

**Interests:** Physical Inorganic Chemistry with emphasis on structure elucidation, crystallography, and science education.

**Organizations:** American Chemical Society (Inorganic and Chemical Education), International Union Pure and Applied Chemistry, Sigma Xi, American Association for Advancement of Science, New England Association of Chemistry Teachers, National Science Teachers Association.

**Service:** Northeastern Section of ACS Public Service Committee 1991-3, NESACS Elementary Education Task Force 1991 to present.

**Statement:** If elected to post of councilor, I will try to accomplish the assigned duties of councilor and I will also try to increase the section's support of science education.

### Arno H.A. Heyn

**Education, Employment:** B.S., Ph.D. (1944), U. of Michigan, Analyt. chemistry. Professor of Chemistry Emeritus Boston University.

**Service in ACS:** Member since 1940. Served on many committees of the Northeastern Section. Chairman, 1969. Councilor 1967-1993. Alt. Councilor 1994-. ACS Committee on Committees 1992-1994 (as bylaw councilor 1994). Council Policy Committee 1986-1991 (vice-chairman 1987-8). Service on Council Committees: Bylaws 1980-85 (Chairman 1983-5), Membership Affairs 1968-72, 1974-79 (Secretary 1970-72, 1973-79).

**Northeastern Section:** currently on the Committee on Constitution and Bylaws, Awards Committee, Editor of the NUCLEUS (7/1989 -)

**Statement:** Only full councilors can serve on committees of the council. I wish to be able to apply the experience gained from long service as a councilor and member of several committees to the benefit of the Society, the Northeastern Section and its members. I wish to help increase the flow of information in both directions between the ACS and its members, here the members of the Northeastern Section. Serving on Committees of the Council gives me the knowledge, and being editor of the NUCLEUS, gives me the means of communication. If elected councilor I will be able to influence programs in the ACS by serving on committees which deal with members' concerns. Among the challenges facing the ACS, and science, in general, are:

- Improving the public image of chemistry
- Improving the professional standing of chemists

- Stabilizing the job security of chemists by publicizing information about the economic outlook of the field so that the supply of chemists more nearly equals demand
- Keeping officers, staff and administration of the ACS in touch with its members' concerns

I have regularly attended national ACS meetings and hope to continue to represent you as a councilor.

### Esther A.H. Hopkins

Deputy General Counsel, Office of the General Counsel, Department of Environmental Protection, Commonwealth of Massachusetts, Boston, MA

**Education:** A.B. Chemistry, Boston University; M.S., Physical Organic chemistry, Howard University, Washington, D.C.; M.S. Biophysical chemistry, Yale University; ; Ph.D. Biophysical chemistry, Yale University; J.D. Suffolk University, Boston. Admitted to practice before the Supreme Judicial Court, Massachusetts and The Patent and Trademark Office, U.S. Department of Commerce.

**Experience:** Currently Chief Fiscal and Administrative Counsel at the Department of Environmental Protection, Boston. Between 1967 and 1988 Scientist, Patent Attorney and Manager at Polaroid Corporation. Between 1949 and 1961 Research Associate at American Cyanamid Corporation and the New England Institute for Medical Research, and Instructor in Chemistry at Virginia State College.

**Service in ACS Offices:** *Northeastern Section:* Councilor 1971-1994; Alternate Councilor 1970-71; Chairman, 1983; Chairman-Elect and Program chairman 1982; Public Service Committee 1987-1990, 1992-1993; Awards Committee chairman, 1986; Long Range Planning Committee 1984-86; Committee on Amendments to the Constitution and Bylaws, Chairman 1976, 1993-4.

**Service in ACS National Offices:** Committee on Nominations and Elections 1991-93; Committee on Professional Relations 1985-89, Chairman 1987-89, Consultant, 1990; Committee on Membership Affairs, Committee Associate, 1984, Council Policy Committee (Voting) 1983, (Nonvoting), 1987-89; PROPPACC 1987-1989; Committee on Committees, 1976-83, Secretary 1981-82; Committee on Constitution and Bylaws, 1973-76; Women Chemists Committee 1972-77, Secretary 1973; Canvassing Committee, Garvan Medal, 1972-77; Task Force on Compensation for Employed Inventors; Chair, Task Force on Federal Conflict of Interest Regulations.

**Member ACS Divisions:** Chemistry and the Law; Professional Relations.

**Statement:** The length of my tenure on the Council representing the Northeastern Section has been such that I have had the opportunity to be a vocal participant in the decisions not only in the entire Council but also those made by the committees, the caucuses and the task forces of the Council. I've furthered concerns about the Science itself, about the people who practice it, about the young people entering it, about the companies that supply so many of the jobs chemists hold, and about the public perception of these items. I have recently been elected by the Councilors to the Council Policy Committee, the executive Committee of the Council, where I will have the additional chance to speak for AND act for these concerns. I ask that you vote for me to continue as one of your councilors.

### Cynthia B. McGowan

Department of Chemistry, Merrimack College, N. Andover, MA 01845

**Education:** Ph.D., Brandeis University; ; BA, Russell Sage College

**Employment:** Scientist, Polaroid Corporation 1980-84; Assistant Professor of Chemistry, Wellesley College, 1984-1993; Associate Professor of Chemistry, Merrimack College, 1993-present

**ACS Activities:** Chairman, NESACS James Flack Norris Summer Research Scholarships Committee 1990-1992; Chairman, NESACS Education Committee 1990-1992; Member, NESACS Educational Task Force 1990-present; Member, NESACS James Flack Norris Award Committee 1993-1996; Editor, Nucleus Calendar, 1987-1990

**Statement:** If elected councilor for the Northeastern Section of the American Chemical Society, I will actively participate in national forums to voice our section's issues and concerns. Communication between the local levels and the national level must be firmly established so that all members of our section are aware of Society policy as well as opportunities available to all the membership.

I am particularly interested in enhancing the quality of science education in the northeast region. We need more undergraduate research opportunities for all students including minorities and women, and increased public awareness of chemistry related topics.

I would appreciate your support and the opportunity to serve as your councilor.

### Janet S. Perkins

As a 50-year member (1994), I have long been active in the ACS both locally and nationally. I have served as Chair of the Section (1975), of the Program and Nominating Committees, as Trustee (6-9 years) of section funds as Secretary pro temp, and Editor of the revised Directory when it was converted to the computer programs since used for its layout and special features. In addition, I initiated Summerthing and helped with the former "ACS Night at the Pops". Nationally I have been a Councilor for the Section for nearly two decades, served on a number of national committees, most recently the Professional Relations Committee.

I have just retired from the Army Research Laboratory/Water-town Site, so have more leisure to serve as your Councilor, where I have always given careful consideration to the needs of our Section, our Society, and our Profession.

### Dorothy J. Phillips

Waters Chromatography Chemistry Division, Milford, MA

**Education:** B.A. Chemistry, Vanderbilt University; Ph.D. Biochemistry, University of Cincinnati

**Experience:** 1984-present, involved in the development of new chromatographic packing materials at Waters; 1974-84, fermentation and animal nutrition research at Dow Chemical Company, Midland, MI

**Recent Honors:** 1993 University of Cincinnati Distinguished Alumnae; 1991 member of Citizen Ambassadors Program's

Industrial Biochemical Delegation to the People's Republic of China

**Organizations:** American Chemical Society, National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE), Sigma Xi, American Association for the Advancement of Science and Alpha Kappa Alpha Sorority, Inc.

**American Chemical Society, Activities in Northeastern Section:** Chairman-Elect, 1992; Chairman, 1993; Chairman of Project SEED Committee, 1992-1994; Chairman of Nominating Committee, 1994. The Project SEED program has been revitalized in the Northeastern Section with the help of NOBCChE and the Millipore Foundation.

**Statement:** The position as Chairman of the Northeastern Section enabled me to realize that the American Chemical Society has a governing body that is the heart of its ability to serve us, the scientist. I would like to become more involved in the governing body to make sure that the policies of the organization meet the needs of all scientists. A major thrust of the Society is to increase the diversity of the pool of scientists; I feel that I can help them achieve that goal as we move to the next century. I am also concerned that the local voice is heard on the national level. Therefore, I consider a key role of the Councilor to be communication. I want to work with the other Councilors in the Section to ensure that our large membership (approximately 5000) is well represented. In addition, I want to ensure that the membership is aware of activities at the national level.

### Norman W. Rice

**Education:** B.S. University of Connecticut, Storrs (1974); Ph.D. University of Massachusetts, Amherst (1981)

**Experience:** American Hoechst (1974-1975); General Foods (1981-1984), Morton Thiokol/Johnson Matthey (1984-1992); Oryza Laboratories (1992-present)

**ACS Activities:** ACS member since 1974. Member of the Northeastern Section since 1981. Currently an Alternate Councilor

**Statement:** I would like to continue to serve the Northeastern Section as a Councilor or Alternate Councilor. As a Councilor I will support what I feel are the best interests of the chemistry community in the Northeastern Section. Improving the general public's understanding of chemistry and chemical issues continues to be an area of primary concern to me, and I strongly support the local volunteer efforts which work toward accomplishing that goal.

### Donald O. Rickter

**Education:** University of California, Davis, AB and MS; Michigan State University, Ph.D.

**Experience:** Two years as U.S. Navy Hospital Corpsman; 3 years H.S. and college teaching; Polaroid Research (Scientist since 1964; Information Scientist since 1978)

**ACS Activities:** Member since 1973; Congressional Science Counselor (8th District, Mass.) 1974-1992; Liaison between Polaroid and the Northeastern Section since 1974; Program Committee 1981; Board of Publications 1983-85, Chair 1985; Alternate Councilor 1985-1994; Polaroid Exhibit at Mass. State House, June 1992

**Statement:** This section is large and unusually rich in talented chemists of many kinds. My specialty is the management of chemical information, using STN/CAS and many other resources. These are powerful tools for enhancing our work—in research, teaching, marketing, or whatever. All of us need to use our opportunities to interact as active members, volunteers in our communities, and as professional chemists. We can solve many problems as we take part and share our abilities. The public has some negative attitudes toward chemistry that will not go away if we are silent, neglecting our responsibility to inform people. Industrial chemists, especially, have a need to do public relations about the impacts of science and technology on the lives of our fellow citizens.

### Patricia L. Samuel

See above: Chairman-Elect candidate statement

### Irwin A. Taub

**Date and Place of Birth:** 18 July 1934, Brooklyn, NY

**Education:** Queens College of the City of New York, Flushing, NY, B.S., Chemistry (1955); University of Minnesota, Minneapolis, MN, Ph.D., Inorganic and Physical Chemistry (1961)

**Job Progression:** Resident Research Associate, Argonne National Laboratory, 1961–1963; Research Fellow, Mellon Institute of Science, Carnegie Mellon University, 1963–1969; Research Chemist, GS-14, Chief, Isotope Branch, Radiation Sources Group, Food Laboratory, U.S. Army Natick Laboratories, 1969–1974; Research Chemist, GS-14, Head Radiation Sources Group, Radiation Preservation of Food Division, Food Engineering Laboratory, U.S. Army Natick Research and Development Command, 1974–1980; Food Technologist, GS-14, Chief Plant Products Group, Food Technology Division, Food Engineering Laboratory, U.S. Army Natick Research, Development, and Engineering Center, 1980–1983; Food Technologist, GM-14/15, Chief, Technology Acquisition and Development Branch, Food Technology Division, Food Engineering Directorate, U.S. Army Natick Research, Development, and Engineering Center, 1983–1988; Food Technologist, GM-15, Chief, Technology Acquisition Division, Food Engineering Directorate, U.S. Army Natick Research, Development, and Engineering Center, 1988–1991; Senior Research Scientist, ST-16, Food Engineering Directorate, U.S. Army Natick Research, Development, and Engineering Center, 1991–present

**Statement:** I look upon this position as an opportunity to help chemists, locally and nationally, and to promote chemistry in the schools and among the general population. Accordingly, I have set three goals for myself. First, to try to involve chemists in this area who are not as active in the Section as they might be. The second is to expand activities already underway to interest elementary and high school students in chemistry, in all its aspects, as a career. The last goal is to try to show others in a non-academic way how chemistry pervades their everyday activities and how it can be understood by reference to these activities.

### Alfred Viola

**Education:** BA, 1949, MA 1950, Johns Hopkins; Ph.D., 1955, University of Maryland

**Professional Experience:** Boston University, Research Associate, 1955–57; Northeastern University, 1957–present, Professor 1968–present. Visiting Professor: University of Munich, Germany, 1977; Monash University, Australia, 1984; Wellesley College, 1982

**Northeastern Section:** Alternate Councilor, 1963–65, 1965–68; Norris Award Committee, 1979–82 (Chairman 1981), 1982–86 (Chairman 1985); Councilor 1986–88; Continuing Education Committee, Chairman, 1989–present; Alternate Councilor, 1990–91, 1992–1994

**Statement:** In my view the problems facing the chemical profession and its practitioners are now more numerous and more profound than at any previous time in the history of the science, but so also are the opportunities for Chemistry to contribute to the health and welfare of society as a whole. There is a great need to educate the public as to the truths and misconceptions that surround the world of Chemistry, and thereby address the rampant scientific illiteracy within the public which now hinders scientific progress in this nation.

As Chair of the Continuing Education Committee of the Northeastern Section, I feel strongly that it is imperative for the Society to provide continuing education opportunities to enable its members to stay abreast of the ever evolving advances and changes in the world of Chemistry, as well as to help meet the Society's obligations to help re-tool those of its members who find themselves unemployed due to current job market changes. I hope we can continue to bring A.C.S. short courses to this Section under a greatly reduced fee structure.

I would welcome the opportunity to continue to represent these views within the Section, locally, and within the Council on a National level.

### Valerie R. Wilcox

**Education:** MA, Chemistry, Wellesley College; BA, Mathematics, College of New Rochelle

**Position:** Executive Director, The National Plastics Center and Museum, Leominster, MA

**Formerly;** Assistant Director, Laboratory Safety Workshop, Curry College, Education Associate, Museum of Science, Boston, MA

I am now in the third year of my first term as a full Councilor from the Northeastern Section, having served three terms as alternate Councilor. As an affiliate of the Committee on Chemical Safety, subcommittee on household chemicals, I feel that my work has only begun. As your Chair-elect of the Northeastern Section, I would welcome the opportunity to continue not only this work, but, calling upon my experiences as your National Chemistry Week coordinator for three years, my work in public education as well.

## Nominating Committee

### James N. LePage

Withdrawn

### Joseph A. Lima

Vice President, Houghton Chemical Corporation. ACS member since joining as a Student Affiliate. A member of the Division of Chemical Marketing and Economics and our NESACS Board of Publications. Education includes a B.S. in Chemistry from UMass and an MBA from Babson College.

### Debra J. Saez

No statement received

### J. Donald Smith

Professor and Chairperson, Department of Chemistry, University of Massachusetts Dartmouth.

**Education:** B.A. 1965, Columbia University; Ph.D. 1969, University of Chicago; Post-doctoral Fellow 1970–1974, Albert Einstein College of Medicine.

**Professional Experience:** Research Scientist, New York State Department of Mental Hygiene, 1974–1975; Miami University, Assistant Professor of Chemistry, 1975–1982; University of Massachusetts Dartmouth, Assistant (1982–1984), Associate (1984–1989), Professor (1989–) and Chairperson (1990–) of Chemistry

**Professional Memberships:** American Chemical Society, American Society for Biochemistry and Molecular Biology, AAAS, New York Academy of Sciences, American Society for Microbiology, New England Association of Chemistry Teachers

**Professional Service:** Member, Advisory Panel for the Cellular Biochemistry Program, NSF (1989–1992); Member, Educational Affairs Committee, ASBMB (1987–present)

**Service to NESACS:** Nominating Committee (1985 and 1988); Alternate Section Councilor (1994–1997)

## James Flack Norris Award Committee

### Charles L. Braun

Professor of Chemistry, Dartmouth College

**Education:** B.S. in Chemistry, South Dakota School of Mines and Technology (1959); Ph.D. in Physical Chemistry, University of Minnesota (1963)

**Awards:** Distinguished Teaching Award, Dartmouth College, 1987; Catalyst Award, Chemical Manufacturer's Association, 1991; New Hampshire Teacher of the Year (CASE), 1992

**Teaching Interests:** General Chemistry, Physical Chemistry, Non-majors Chemistry, Environmental Chemistry

**Research Interests:** Electronically excited states of organic molecules, photoionization, geminate charge pairs in photoconductivity and radiation chemistry, dipole moments of excited states

### Saul G. Cohen

No statement received

### Dudley R. Herschbach

Frank B. Baird Professor of Science, Harvard University  
Dudley Herschbach was born in San Jose, California (1932) and received his B.S. degree in Mathematics (1954) and M.S. in Chemistry (1955) at Stanford University, followed by an A.M. degree in Physics (1956) and Ph.D. in Chemical Physics (1958) at Harvard. After a term as Junior Fellow in the Society of Fellows at Harvard (1957–1959), he was a member of the Chemistry Faculty at the University of California, Berkeley (1959–1963), before returning to Harvard as Professor of Chemistry (1963), where he is now Baird Professor of Science (since 1976). He has served as Chairman of the Chemical Physics program (1964–1977) and the Chemistry Department (1977–1980), as a member of the Faculty Council (1980–1983), and Co-Master with his wife Georgene of Currier House (1981–1986). His teaching includes graduate courses in quantum mechanics, chemical kinetics, molecular spectroscopy, and collision theory, as well as undergraduate courses in physical chemistry and general chemistry for freshmen, his most challenging assignment.

He is a Fellow of the American Academy of Arts and Sciences, the National Academy of Arts and Sciences, the American Philosophical Society, and the Royal Chemical Society of Great Britain. His awards include the Pure Chemistry Prize of the American Chemical Society (1965), the Linus Pauling Medal (1978), the Michael Polanyi Medal (1981), the Irving Langmuir Prize of the American Physical Society (1983), the Nobel Prize in Chemistry (1986), jointly with Yuan T. Lee and John C. Polanyi, the National Medal of Science (1991), and the Jaroslav Heyrovsky Medal (1992).

Professor Herschbach has published over 300 research papers. His current research is devoted to molecular beam studies of reaction stereodynamics, intermolecular forces in liquids and dimensional scaling approach to electronic structure.

### Robert S. Umans

**Education:** A.B., Columbia University, 1962; M.S., Yale University, 1963; Ph.D., Yale 1966; NIH Postdoctoral Fellow, Johns Hopkins University, 1966–1968; Postdoctoral Fellow, University of Paris, 1968–1969.

**Professional Positions:** Boston University, Assistant Professor of Chemistry, 1969–1975; Boston College, Assistant Professor of Chemistry, 1976–1977; Wellesley College, Assistant Professor of Chemistry, 1977–1979; Harvard School of Public Health, Research Fellow and Research Associate, 1980–1986; Wellesley College, Assistant Professor of Chemistry, 1986–1990; University of New Hampshire, Faculty in Residence in Biochemistry, 1991–1993; Boston College, Adjunct Associate Professor of Chemistry and Assistant Director of Undergraduate Laboratories, Boston College, 1993–present.

ACS member since 1969. ◇

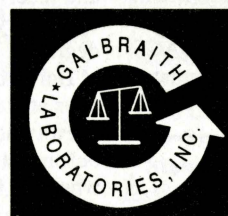
## ACS News

### 1994 Member-Get-A-Member Campaign

The annual ACS Member-Get-A-Member Campaign is underway! When you nominate a colleague or other chemistry peer for membership, ACS will send you an original Swiss Army Knife in appreciation for contributing to the Society's membership development, once the candidate for membership has been approved. In addition, ACS has doubled the commission amount that local sections receive from your recruiting efforts. Simply complete and return the Member-Get-A-Member application that you've received in late March. Be sure to sign your name on the application of your nominee and at the bottom write "Northeastern Section" in the local section/division commission claim box. Additional information is available at the ACS Department of Membership Activities, (202) 872-8737.

### Since 1950 Complete Microanalysis Services

Analysis for all elements • Trace analyses  
Environmental Analyses • GLP • GMP



- Instrumental superiority
- Technical competence
- Guaranteed turn-arounds
- Regulatory expertise
- Quality assurance
- EPA certification
- Customized reporting

Serving over 3,500 clients worldwide,  
including 60 of the largest 100 U.S. corporations

Accuracy with speed

### GALBRAITH LABORATORIES, INC.

Fax: (615) 546-7209

2323 Sycamore Drive  
Knoxville, TN 37921-1750

Tel: (615) 546-1335

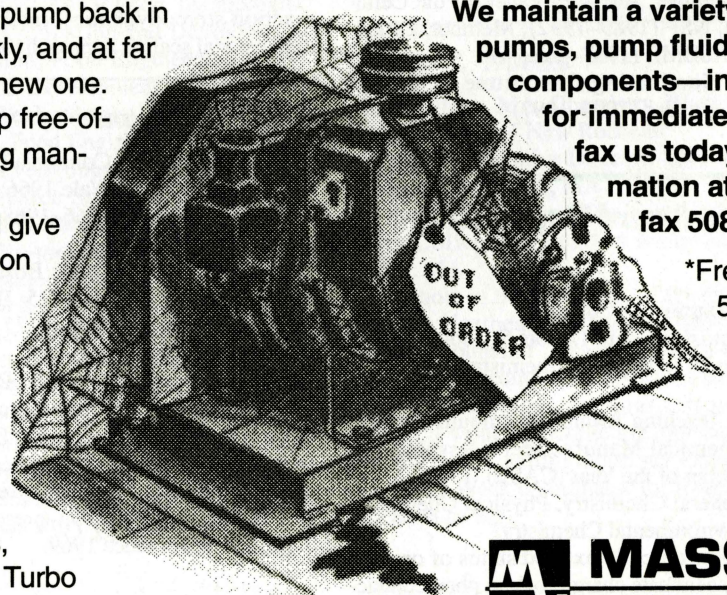
P.O. Box 51610  
Knoxville, TN 37950-1610

Call or write for our information packet.

## An Idle Pump Can Be Costly.

We can have that 'idle' pump back in working condition quickly, and at far less than the cost of a new one. We'll pick-up your pump free-of-charge\*, re-build it using manufacturer's original replacement parts, and give you a 90-day warranty on parts and labor.

We service all makes of vacuum pumps including such names as: Sargent-Welch, Precision, Cenco, Kinney, Alcatel, Stokes, Leybold-Heraeus, plus Turbo Molecular Pumps by Sargent-Welch.



We maintain a variety of rebuilt pumps, pump fluids & vacuum components—in stock—ready for immediate delivery. Call or fax us today for more information at 508-667-2393 fax 508-671-0014.

\*Free pickup within a 50 mile radius of Billerica.

**MV MASS-VAC Inc.**  
247 Rangeway Road, P.O. Box 359  
N. Billerica, MA 01862

## Environmental Column

### Natural Chlorine? You Bet!

by Gordon W. Gribble, Dartmouth College

As a result of the interest in his "Letter to the Editor"<sup>1</sup>, we have invited Dr. Gribble to contribute a column on this topic.

Given the campaign to ban summarily chlorine (and bromine) and industrial chlorination (and bromination) processes by Greenpeace, the Environmental Defense Fund, and other environmental groups — a crusade that has reached Congress — it is important to hear the other side of the chlorine story.

Every chemist knows that table salt — a natural chemical essential for the proper functioning of our nervous and muscle systems — is sodium chloride. But how many of us would be startled to know that hundreds and probably thousands of organic chlorine chemicals are produced naturally by an array of biological and chemical processes in our environment? Many of these chemicals are identical to man-made organochlorines with which we are familiar: chlorophenols, chloroalkanes, PCB's, CFC's and dioxins. But many others are entirely new molecular entities and possess extraordinary biological properties similar to those of penicillin, morphine, and the new anticancer drug taxol.

As a fundamental chemical element, chlorine is not only abundant in the earth's crust (ranking 18th in the list of elements) but is also ubiquitous in our soil, rivers, lakes, trees, plants, and, of course, oceans. Like the other common elements that are present in all living things — carbon, hydrogen, oxygen, nitrogen, sulfur, phosphorus — so, too, it would appear, is chlorine and the other halogens (bromine, iodine, and, to a lesser extent, fluorine). Although only 30 natural organochlorines had been discovered

up to 1968, this number as of March 1994 is over 1000! And more are being discovered every month. Organochlorine and organobromine compounds are produced naturally by marine creatures (sponges, corals, sea slugs, tunicates, sea fans, jelly fish) and seaweed, plants, seeds, trees, fungi, lichen, algae, bacteria, microbes, and insects. The ocean is the single greatest source of different organochlorines. Nearly 100 different organochlorine, organobromine, and organoiodine compounds are present in "limu kohu," the favorite edible seaweed of most Hawaiians. Other seaweeds produce bromoform, chloroform, carbon tetrachloride, methyl bromide, and numerous polyhalomethanes. It has been reported that ozone destruction in the lower Arctic atmosphere at the polar sunrise is linked to the bromoform that is produced in large quantities by sea ice algae. As a matter of fact, the "smell of the ocean" is probably due to these volatile organochlorines and the other organohalogens. A species of marine worm from the Gulf of Mexico secretes 20 different halogenated compounds, mainly phenols.

Extensive research has shown that these organochlorine compounds are not derived from pollutants but, rather, are biosynthesized by individual organisms for very specific purposes. They play an essential role in the survival of the organism, and its ability to synthesize these compounds has evolved over time under the stress of natural selection.

Many organochlorine compounds are used by organisms in chemical defense — as feeding deterrents, irritants, or pesticides — or to facilitate food gathering. Several studies have shown this to be true for marine creatures and seaweeds. The marine algae monoterpene telfairine, which is chemically similar to many chlorinated pesticides, is 100% lethal to mosquito larvae at 10 ppm, and a related natural chlorinated monoterpene is three times more effective than the commercial chlorinated pesticide lindane against mosquito larvae. Other organochlorines may serve as hormones. Plants such as lentil and sweet pea use

4-chloro-3-indoleacetic acid as a growth hormone, and a Chinese folk medicine plant contains five natural chlorinated iridoids. The German cockroach manufactures two chlorinated steroids as aggregation pheromones, the Lone Star tick produces 2,6-dichlorophenol as a sex pheromone, and locusts have evolved to employ chlorinated tyrosines in their proteins to strengthen the cuticle. A *penicillium* species produces 2,4-dichlorophenol, the same chemical that man uses to synthesize the herbicide, 2,4-D! Recently, an Ecuadoran frog was found to produce a chlorinated pyridine alkaloid, which has powerful analgesic activity, and which is believed to thwart predators. It is only a matter of time before natural organochlorine compounds are found in humans. Indeed, organoiodines (thyroid hormones) and one organobromine compound are well known to be present in humans.

More remarkable is that our immune system *actually uses* chlorine, bromine and iodine to halogenate and kill invading microorganisms! Thus, numerous studies have shown that cellular peroxidase enzymes in mammalian white blood cells oxidize natural blood chloride (and bromide, iodide) to active chlorine, resulting in the death of the pathogen (bacteria, yeast, fungi, and even tumor cells) by chlorination. Chlorination is apparently as natural a biological process as blood clotting or salivation.

Nature is an incredible recycling center. Insects, microorganisms, and fungi all conspire to break down dead matter to simpler chemicals for reuse. One such organism, the white-rot fungus, decomposes dead trees and other forest plant material. One of the byproducts of this natural decay process is methyl chloride (chloromethane) — the simplest organochlorine — and 5 million tons per year of this chemical are produced naturally, dwarfing the 26 thousand tons produced annually by man. It may be that this natural methyl chloride is an innate regulator of the stratospheric ozone density.

continued on page 16

## Environmental Column

continued from page 15

Another breakdown process involves the biodegradation of humic and fulvic acids into phenols and chlorophenols. Several studies have shown that this production of chlorinated phenols outweighs anthropogenic sources. The total pool of chlorinated compounds in peat bogs in Sweden is several hundred thousand tons, in areas where these chemicals can only be of natural origin. By comparison, the largest industrial emissions are from paper pulp industries and are 10,000 tons per year. Not surprisingly, organochlorine compounds in humic and fulvic acids have been found in ground water samples that date back 5200 years.

Methyl chloride and many other chloroalkanes are also produced when organic matter is burned, since organic matter contains natural chloride (up to 10,000 ppm) and this reacts to form organochlorines at high temperatures. This natural process occurs in forest fires and volcanoes. In fact, it has been estimated that the largest source of dioxins in the environment is from forest fires, of which 200,000 occur annually (most of which are caused by lightning; e.g. the Yellowstone fires in 1988). Indeed, dioxins have been identified in 100-year old preserved soil samples. Dioxins and the related chlorinated dibenzofurans also form from chlorophenols by the action of natural chloroperoxidase enzymes, and polybrominated dioxins and diphenyl ethers have been tentatively identified from a sponge.

Both Mt. St. Helens and Hawaii's Kilauea, the latter of which has been erupting continually since 1983, produce methyl chloride. The Kamchatka volcanos in Siberia and the Santiaguito volcano of Guatemala emit organohalogenes, including CFC's (Freons) in quantities well above background levels. These include tetrachloroethylene, chloroform, carbon tetrachloride, methylene chloride, and several of the CFC's (CHFC<sub>2</sub>, CFCl<sub>3</sub> (Freon 11),

CF<sub>2</sub>Cl<sub>2</sub> (Freon 12), CHF<sub>2</sub>Cl, CHFC<sub>2</sub>, and CCl<sub>2</sub>FCClF<sub>2</sub> (Freon 113), chemicals formerly thought only to result from the actions of man! From one Kamchatka volcanic vent, CF<sub>2</sub>Cl<sub>2</sub> was detected in levels of 160 ppb, which is 400 times that of the background atmosphere. Such natural chlorine and fluorine compounds are produced in the eruption zone by the combustion of organic material, such as vegetation, sediments, or fossil soils in the presence of chloride, and fluoride mineral deposits. The extent to which these natural organochlorines and CFC's contribute to the global picture vis-a-vis ozone depletion remains to be seen. A study of Mt. St. Helens ash has revealed the presence of three previously unknown isomers of pentachlorobiphenyls (PCB's).

A frightening footnote to "End of Antibiotics"<sup>2</sup> is the possibility that vanomycin — our last defense against hospital staph infections — could be banned by pending legislation since it contains chlorine as part of its molecular structure. If chlorine and chlorinated chemicals are banned, what will happen to vancomycin and the numerous other pharmaceuticals that contain chlorine? Of the nearly 400 new drugs approved for therapeutic use in humans since 1984, more than 60 contain chlorine. Two of the ten most prescribed pharmaceuticals, Ceclor® and Xanax® contain chlorine. What will happen to the millions of American children who develop middle ear infections and are now best treated with the chlorine-containing antibiotics Ceclor and Lorabid™ if chlorine is banned?

Numerous recently discovered organochlorine compounds — natural and synthetic — have potent antibacterial, anticancer, and other important medicinal properties. For example, the newly discovered anticancer marine sponge metabolite spongistatin contains chlorine, as does DDD ("mitotane"), a DDT derivative used to treat inoperable adrenal cancer, cis-platin, the miracle testicular cancer drug, and the anesthetic halothane. An Oregon forest moss produces the chlorine-containing ansamitocin, which has potent anticancer activity against solid

## Summer Fellows

Four undergraduates in the Northeastern Section are among the eighteen recipients of 1994 Pfizer Undergraduate Summer Fellowships in Chemistry.

The students and their faculty mentors are:

**Andrew T. Maioli**, Prof. Jean-Pierre Anselme, University of Massachusetts-Boston

**Mamta Parikh**, Prof. John K. Snyder, Boston University

**Scott E. Schaus**, Prof. James S. Panek, Boston University

**Amanda E. Sutton**, Prof. Michael A. Walters, Dartmouth College

The awards provide a stipend to the student during the summer of 1994; funds also support the expenses of the research. In the fall, the students and their advisers will be invited to the Central Research headquarters to present the results of the summer work. ◇

tumors, as does rebeccamycin, which contains two atoms of chlorine, discovered in a Panamanian soil microbe. Ambigol, a chlorinated PCB from a terrestrial blue-green alga, is active against HIV reverse transcriptase. The list is long.

We must stop pretending that chlorine does not occur naturally, and acknowledge the myriad naturally occurring organochlorine chemicals. Only then can we intelligently regulate the use of chlorine and chlorinated chemicals in our environment.

### FOOTNOTES:

<sup>1</sup> The *NUCLEUS*, 72 (6), 6 (February, 1994).

<sup>2</sup> *Newsweek*, cover story, March 28, 1994.

### GENERAL REFERENCES:

Gribble, G.W., *J. Nat. Prod.*, 1992, 55, 1353-1395.

Gribble, G.W., *Environ. Sci. and Tech.*, in press. ◇

## Historical Notes

Continuation of the brief biographies of recently deceased chemists and chemical engineers of the Northeastern Section.

**George Feick 3d**, 73, a retired chemical engineer and consultant, died on November 27, 1993. He was a native of Sandusky, Ohio and a graduate of Western Reserve Academy in Hudson, Ohio. He received the S.B. degree from M.I.T. in 1943 as a chemical engineer major. He was a member of the professional staff at Arthur D. Little, Inc. for 28 years during which he directed a variety of researches on clients' problems. In 1978 he retired and founded his own consulting firm. He served as a consultant to the Haemonetics Corporation for 10 years. He was active in church and community affairs in Needham. As George's colleague at Little I observed that he was well liked by all persons with whom he shared professional tasks.

**J. Spencer Kelley**, 65, has died after a long battle with cancer. His early education was in the public schools of Mansfield, Mass. and the Monsignor Coyle School in Taunton. He received the B.S. in chemistry from Boston College and the M.S. from the University of New Hampshire. After several years employment as a textile chemist he devoted the balance of his professional life to science teaching in secondary level schools at Taunton High School (1961-1966), Mansfield High School (1966-1987), and Coyle-Cassidy High School (1987-1991). He was a member of the New England Association of Chemistry Teachers and a founding member of the Southeastern Massachusetts Association of Science Supervisors. Throughout his career he was an enthusiastic supporter of school sports and served as athletic director, coach, curriculum coordinator and sports reporter for a local cable station.

**Richard M. Kerwin**, 71, died on May 9, 1993. He was a native of West Chester, Pa. and secured his B.S. and Ph.D. degrees from Dartmouth Col-

lege, the University of New Hampshire, and the Pennsylvania State University. During World War II he served as a U.S. Navy photographer in the Pacific and took the first photographs of the wreckage in Hiroshima. After the war he was employed by the Wyeth Laboratories in West Chester, Pa. where he developed new strains of penicillin. He became a member of the Northeastern Section when he retired to Hancock, N.H. in 1974. In retirement he taught at the Dublin School and other local schools and was active in church and community affairs.

**Chien-Pen Lo**, 79, died on October 17, 1993 after a short battle with cancer. He was a native of China and in 1935 graduated from the Tsinghua University in Beijing. After carrying out research in organic chemistry at the Academia Sinica he came to the U.S. in 1944 and obtained the Ph.D. at the University of Minnesota in 1947. He was a research chemist at the Rohn and Haas Co. in Philadelphia for 32 years during which he developed resins, polymers, and pesticides described in 28 papers and 22 patents. In retirement he came to Lincoln, Mass. and became active in the affairs of the local Council on Aging. He also exhibited photographs taken during his many travels. His children are currently members of the faculties at Harvard, the University of California Medical School, and the University of Missouri, Columbia campus.

**Domenic P. Macaione**, 56, a research chemist in the Polymer Research Branch of the U.S. Army Watertown Laboratory for over 30 years, died on October 7, 1993. A Cambridge native, he received the B.S. (1959) and M.S. (1961) degrees from Boston College. Among many areas of polymer chemistry he was best known for his expertise on flammability. His advice was sought by government agencies and industrial organizations. He organized the 39th Sagamore Army Materials Research Conference on "The Science and Technology of Fire Resistant Materials" held at Plymouth, Mass. in 1992. The conference Proceedings were published just before his death.

Joseph Bornstein and Robert E.

Singler write that Dom's colleagues remember him as a careful and talented experimentalist, always willing to share his knowledge and enthusiasm. He was particularly admired for his supervision of young student chemists who worked with him in cooperative programs with local schools. His hobby was photography, which he shared with his colleagues at Watertown, and in evening courses in the public school system of Mansfield, where he made his home.

**Edwin T. Mitchell**, 82, died on February 4, 1994. A Boston native, he received the B.S. and M.S. degrees from Boston College and the Ph.D. (1942) from Clark University. He was an instructor at Holy Cross College then became associated with the United Shoe Machinery company, retiring in 1975 as president and group manager of the Bostik Chemical Division. At his homes in Needham and Scituate he was known for his expertise in antique furniture and clockmaking and won awards in each subject. He was a member of the Northeastern Section, ACS, the American Horological Society, and other social and professional organizations.

**Maryalice C. Moore**, 75, a former chair of the chemistry department of Stonehill College, North Easton, Mass. and a former treasurer of the Northeastern Section died on September 1, 1993. She received the B.S. in chemistry from Simmons College in 1939 and the Ph.D. in organic chemistry from M.I.T. in 1942. She was employed by DuPont in Newport, Delaware for 8 years. As the wife of James F. Moore she spent the 1950-1955 years devoted exclusively to the raising of two daughters, then joined the faculty of Stonehill College where she remained until retirement to Brewster, Mass., in 1981. In addition to her activities in the Northeastern Section Maryalice was an officer of the New England Association of Chemistry Teachers, of the alumnae associations of M.I.T. and Simmons College, and of their clubs on Cape Cod.

Edward R. Atkinson  
Amherst, Massachusetts ◇

To be continued

## Biography

continued from page 5

and on science education at all levels, especially the hands-on approach to teaching. He has published new laboratory materials for courses he has taught and strongly advocates small-scale techniques in instructional chemical laboratories

He has taught and directed workshops and teacher institutes for science teachers at all levels, such as summer institutes sponsored by the Dreyfus Foundation at Princeton University, and under sponsorship of the NSF. He was the Director of the Institute for Chemical Education, located at the University of Wisconsin-Madison and elsewhere. The Institute seeks to improve chemical education at all levels from primary grades to graduate school.

He has been active in ACS activities, both in the Northeastern Section and nationally. In 1992 he received the James Flack Norris Award in Teaching from the Northeastern Section. ◇

## ACS News

### Laboratory Waste Reduction

In October 1993, the ACS Department of Government Relations and Science Policy published the second edition of a 24-page booklet: "Less is Better: Laboratory Chemical Management for Waste Reduction", prepared by the Task Force on Laboratory Waste Management. The booklet encourages buying chemicals in quantities which get used in a reasonably short time so that less needs to be discarded and processed as hazardous waste, reducing the scale of experiments or recycling, where practical, and proper tracking of chemicals on hand and to be discarded as hazardous wastes. Copies of the booklet are available from the American Chemical Society, Department of Government Relations and Science Policy, 1155 Sixteenth St., NW, Washington, DC 20036.

continued on page 20

## BUSINESS DIRECTORY

### CAREER OPPS.

#### CIL

As a result of steady growth CIL, a leading manufacturer of stable isotope labeled chemicals and biochemicals, is conducting a continuing search for skilled chemists for laboratory and non-laboratory positions at its new laboratory facility in Andover, MA.

**Ph.D./M.S. Synthetic Organic Chemists**  
Laboratory positions requiring excellent lab techniques, a broad knowledge of organic synthetic methods, strong analytical skills and a proficiency in chemical separation and identification of organic compounds.

**B.S. Chemist**  
Candidates for laboratory positions must be well motivated and eager to learn, possess excellent lab skills and a sound background in organic chemistry and analytical techniques. Non-laboratory positions are also periodically available in production control, laboratory management, technical and customer services.

CIL offers an excellent salary, stock option and benefit package and new state of the art laboratory facilities. If you have an interest in these types of positions, please send your resume to Diane Weatherbee at:

**CIL**  
**CAMBRIDGE ISOTOPE LABORATORIES**  
20 Commerce Way, Woburn, MA 01801  
An Equal Opportunity Employer  
Non Smoking Environment

### PRODUCTS

#### LABORATORY EQUIPMENT

Bought • Sold • Exchanged

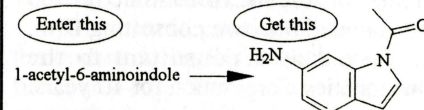
#### May Special PERISTALTIC PUMPS

Many in stock -- Variety of FLOW RATES  
Ask for our latest equipment listing

American Instrument Exchange, Inc.  
21 Canal Street, Lawrence MA 01840  
TEL: 508-794-3496 FAX: 508-794-8431

#### ChemNameStru

Innovative chemical structure drawing program.  
 NameXpert module converts IUPAC chemical names to high quality molecular structures.  
 A wide range of drawing tools  Text editing tools  
 Runs on PCs under MS Windows 3.1



Special Offer \$149  
**ChemInnovation Software** (619)566-2846  
8190E Mira Mesa Blvd., Suite 428, San Diego, CA 92126

#### PROTECT

Your Expensive Lab Work with Research and Development Record Books

**STOCK RECORD BOOKS**  
B50D — Fifty pages and fifty duplicates.  
1/4 inch sqs. on right pages.  
B100P — 100-1/4 inch sqs. on right pages.  
100-10 sqs. per inch on left pages.  
B200P — 208 1/4 inch sqs. on right and left pages.  
B200PH — 208 horizontally lined right and left pages.  
Books have instruction and TOC's. Page size is 11 x 8 1/2.  
Hard extension brown cloth covers. Pages open flat.

\$10.50 each, FOB Chicago  
**CUSTOM MADE BOOKS TO ORDER**  
**SCIENTIFIC BINDERY PRODUCTIONS**  
1255 S. Wabash Ave., Chicago, IL 60605  
Phone: 312-939-3449 Fax: 312-939-3787

Please donate  
your copies of  
the *NUCLEUS* to your  
local High School  
when you no longer  
need them.

### An exciting opportunity at THE NUCLEUS

Would you like to contact the movers and shakers and researchers of the business and academic worlds?

Our members tell us that they would like to see more articles about the happenings in these two arenas. We have a plan to make the gathering of articles from these sources fairly easy, but we need several volunteers to do the contacting.

**Might that be you ???**

Please call  
Arno Heyn  
Editor of The Nucleus

**(617) 969-5712**

## BUSINESS DIRECTORY

### SERVICES

Technology Exchange Corporation  
A Scientific Computer Applications Company  
One Main Street, Whitenville MA 01688  
Phone (508) 234-6655 FAX (508) 234-6859

#### Doing Organic Analysis?

Talk to us about *Demeter*, our Organics Data Collection Package. *Demeter* collects and validates data. It supports EPA Contract Laboratory Program Statements of Work and similar reporting formats such as SW846. Hard-copy and diskette submittables are supported.

For further information (508) 234-6655

TxC

A Scientific Computer Applications Company

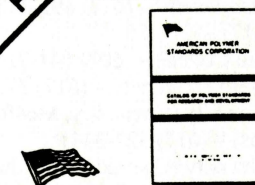
### SERVICES

#### micron inc. ANALYTICAL SERVICES

3815 LANCASTER PIKE  
WILMINGTON DE. 19805  
302-998-1184

### SERVICES

#### FREE Polymer Standards Catalog



AMERICAN POLYMER  
STANDARDS CORPORATION  
P. O. Box 901, Mentor, Ohio 44061-0901  
Phone: 216-255-2211 Fax: 216-255-8397

### CONSULTANTS

#### ELEMENTAL ANALYSIS

Your Priorities...

- 1<sup>o</sup> - Accuracy and Precision
- 2<sup>o</sup> - Turnaround (1 day for CHN, S, X)
- 3<sup>o</sup> - Value

Our Capabilities...

- Organic Elemental Analysis
- Inorganic Analysis - AA, ICP
- Chromatography - HPLC, IC, GC

Your Service Lab...

**QTI** QUANTITATIVE TECHNOLOGIES INC.

(908) 534-4445 P.O. Box 470, Rt. 22E  
Whitehouse, NJ 08888

#### RECRUITING?

The *NUCLEUS* readership is New England's best source for chemical industry personnel.

The *Nucleus* reaches more than 10,000 readers each month. These readers are in the following areas of activity:

Industry	Management & R&D	67%
Academe	Faculty & Admin	14%
Students	Grad & post-docs	10%
Consulting & Clinical Labs		5%

One company that recruited through *The Nucleus* said: We received more qualified resumes from our ad in *The Nucleus* than we did from our newspaper ad.

Call Nancy Bedell for more info:  
**(617) 837-0424**

**ORYZA** Custom  
LABORATORIES, INC. Synthesis

Lab Scale Synthesis  
of Organic and  
Organometallic Compounds

Call for a confidential quotation  
112 Parker Street  
Newburyport, MA 01950  
Tel: 508-463-8685 Fax: 508-462-3048

**SATT**  
Quality Custom Synthesis  
Organic chemicals, biochemicals

You challenge our chemists -  
We challenge any body's price

SATT Corporation  
P.O. Box 654, Woodbury, NJ 08096  
Tel: (609) 384-8822  
Fax: (609) 384-8835

#### NMR ANALYSIS

POLYMERS • ZEOLITES • CHEMICALS

• GLP/GMP COMPLIANCE •

SPECTRAL DATA SERVICES, INC.  
818 Pioneer • Champaign, IL 61820  
(217) 352-7084 • FAX (217) 352-9748

Support Our  
Advertisers

#### POLYMER PROBLEMS?

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

4 Mill Street  
Bellingham, MA  
02109

(508) 966-1301



### Index of Advertisers

Am. Instrument Exchange, Inc. . . . .	18
Am. Polymer Standard Corp. . . . .	19
Betec Laboratories . . . . .	8
Cambridge Isotope Labs. . . . .	18
ChemInnovation Software . . . . .	18
Eastern Analytical Symposium . . . . .	2
Galbraith Laboratories, Inc. . . . .	14
Jordi Associates, Inc. . . . .	19
Mass-Vac, Inc. . . . .	14
Micron Inc. . . . .	19
Oryza Laboratires, Inc . . . . .	19
Quantitative Technologies, Inc. . . . .	19
SATT Corp. . . . .	19
Scientific Bindery Productions. . . . .	18
Spectral Data Services, Inc. . . . .	19
Technology Exchange Corp. . . . .	19

# Calendar

## For additional information, call:

Boston College – (617) 552-8077  
Boston University – (617) 353-2537  
Brandeis University – (617) 736-2500  
Clark University – (508) 793-7116  
Dartmouth College – (603) 646-2501  
Harvard University – (617) 495-5333  
MIT – (617) 253-4080  
St. Anselm College – (603) 641-7148  
Northeastern University – (617) 373-2822  
Tufts University (Chemistry, Medford Campus) – (617) 627-3441  
Tufts University (Chemical Eng., Medford Campus) – (617) 627-3900  
Tufts University Health Science Campus – (617) 956-6867  
UMass Dartmouth – (508) 999-8232  
University of New Hampshire – (603) 862-1550

## May 2

Prof. Barbara Imperiali (Cal. Inst. of Technology)  
TBA  
Harvard University  
12 Oxford Street, Mb-23 at 4:15 pm

## May 4

Prof. Efthimios Kaxiras (Harvard Univ.)  
“Properties of Covalent Clusters of Carbon and Silicon”  
Harvard University  
12 Oxford Street, Mb-23 at 4:00 pm

## May 5

Dr. Seth Marder (Jet Propulsion Lab. and the Cal. Inst. of Technology)  
“An Organic Chemist’s View of Structure-property Relationships for Second and Third Order Non-linear Optical Materials”  
MIT, Room 6-120 at 5:00 pm

## May 9

Prof. Ryoji Noyori (Nagoya Univ.)  
TBA  
Harvard University  
1 Oxford Street, Sci. Ctr. D at 4:15 pm

Dr. Steve Miller (Phillips Laboratory, Hanscom AFB)  
“Techniques for Measuring the Catalytic Depletion of Stratospheric Ozone”  
UMass Lowell, North Campus,  
Olney Sci. Ctr., Room 524 at 2:30 pm

## May 12

Dr. J. Fred Banks, Jr. (Analytica of Branford)  
“Recent Advances in the Application of Electrospray Ionization in HPCE/HPLC-Mass Spectrometry of Bipolymers”  
Northeastern University  
129 Hurtig Building at 4:00 pm

## May 16

Prof. Paul Dowd (Univ. of Pittsburgh)  
“On the Mechanism of Action of Vitamin K”  
Harvard University  
12 Oxford Street, Mb-23 at 4:15 pm

## May 23

Prof. Fred Wudl (Univ. of California, Santa Barbara)  
“Recent Advances in the Chemistry of Buckminsterfullerene C<sub>60</sub>”  
Harvard University  
12 Oxford Street, Mb-23 at 4:15 pm

## May 26

Prof. P. Davidovitz (Boston College)  
“How do Gas Molecules Enter Liquids and What do They do There?”  
Northeastern University  
Rm. 129/130 Hurtig Hall at 4:00 pm

## June 2

Dr. Chris Walsh (Harvard Medical School)  
“Biological Catalysis and Enzymatic Reaction Mechanisms”  
Northeastern University  
Rm. 129 Hurtig Building at 4:00 pm

## June 7

Dr. T.L. Rose (EIC Laboratories, Inc.)  
“Conducting Organic Polymers for Optical Applications from the Visible to the Microwave”  
Northeastern University  
Rm. 129 Hurtig Building at 4:00 pm

## Notices for the Nucleus Calendar should be sent to:

Chris Arumainayagam  
Dept. of Chemistry  
Wellesley College  
Wellesley, MA 02181  
Tel: (617) 283-3326  
Fax: (617) 283-3642  
e-mail: CARUMAINAYAG@LUCY.WELLESLEY.EDU ◇

## ACS News

*continued from page 18*

### *Increased Emphasis on Minorities*

To further strengthen efforts for minorities in chemistry, a Blue Ribbon Panel has been established, chaired by the Executive Director, to advise the Society on its efforts to improve access to chemistry for minorities.

The recently established Joint Board-Council Committee on Minority Affairs is chaired by Prof. Carlos Guiterrez (Cal. State U., Los Angeles).

Dr. Crum, the Executive Director, also chairs an internal Coordinating Committee for implementing recommendations by the above two bodies. ◇

# THE NUCLEUS

19 Mill Road  
Harvard, MA 01451

NONPROFIT ORG.  
U.S. POSTAGE PAID  
NORTHEASTERN  
SECTION  
AMERICAN CHEMICAL  
SOCIETY