

APR 22 1993'



PUGET SOUND CHEMIST

BULLETIN OF THE PUGET SOUND SECTION OF THE AMERICAN CHEMICAL SOCIETY

Volume 54, Number 2



April 1993



VWR Scientific

A VWR COMPANY

*Your complete source for
all your chromatography needs.*

VWR Scientific
P.O. Box 3551
Seattle, WA 98124
(206) 575-1500
1-800-333-6336

KONTES

Chromatography
Columns

EM[®]
EM SCIENCE

Chromatography
Sorbents / Solvents

On the cover: Dr. George M. Bodner, Department of Chemistry, Purdue University, will be the featured speaker at the April 1993 meeting of the Puget Sound Section of the American Chemical Society (see related articles in this issue).

APRIL MEETING

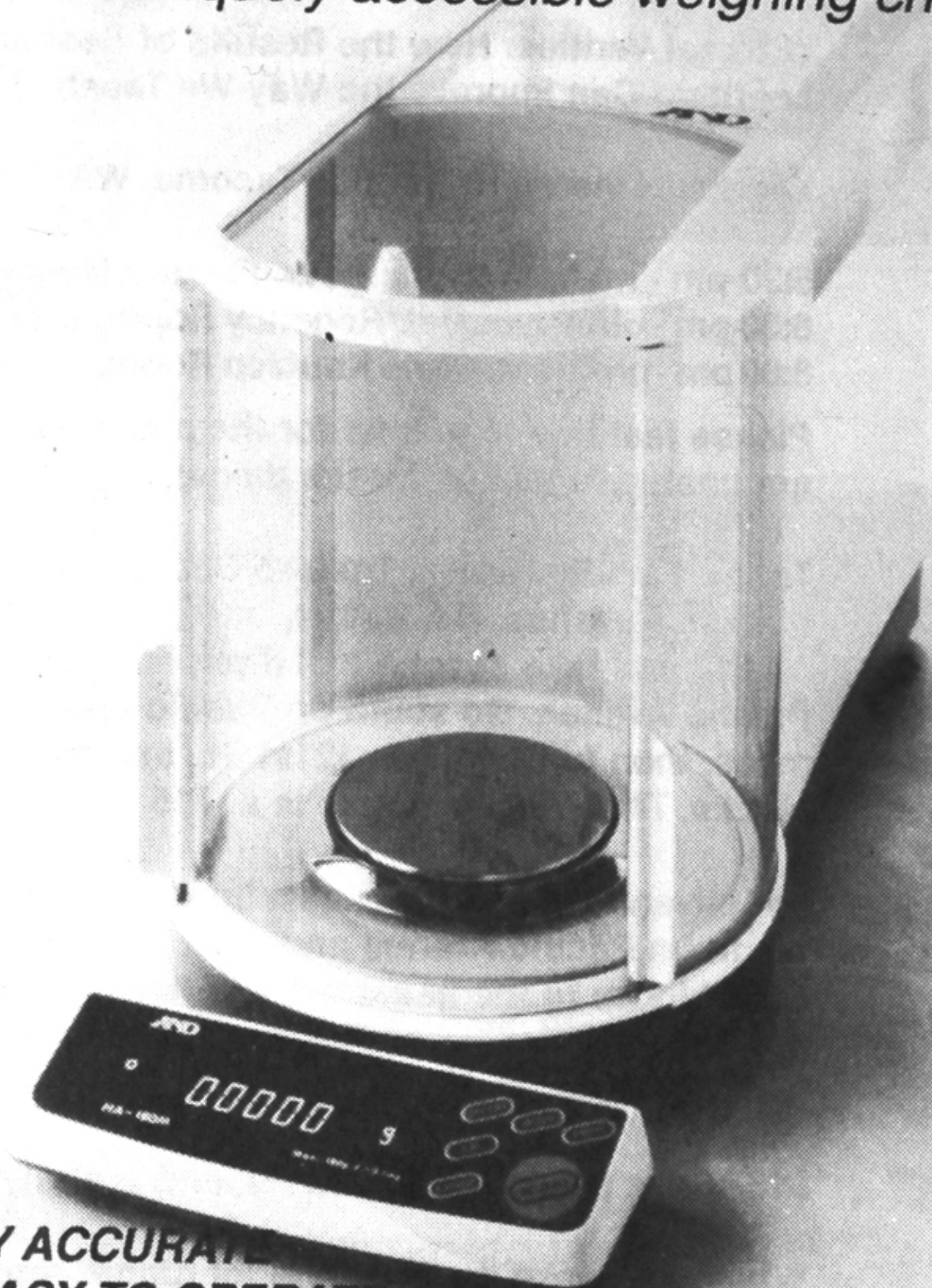
- DATE:** Monday, April 26, 1993
- FEATURED SPEAKER:** Dr. George M. Bodner
Department of Chemistry
Purdue University
West Lafayette, IN 47907
- PROGRAM:** "Eternal Verities: How the Results of Research in Learning Can Improve the Way We Teach
- LOCATION:** Pacific Lutheran University, Tacoma, WA
- SCHEDULE:** 5:30 pm - no-host social hour, Faculty House
6:30 pm - dinner, buffet, Regency Room, University Center
8:00 pm - program, Chris Knutzen Room, University Center
Please feel free to join us for the program, even if you are unable to join us for the dinner.
- DIRECTIONS:** To the Faculty House: Take I-5 Southbound Exit 127 marked Puyallup, Mt. Rainier and Highway 512. Go east on 512 and take second exit (Parkland/Mt. Rainier) to Pacific Avenue. Go south on Pacific approximately 1.5 miles, then turn right on 121st St., and go west 2.5 blocks. The Faculty House is at 715 - 121st St.

To University Center: Follow above directions, but go south on Pacific Avenue and right on Garfield St. (west). Go 2 blocks to the campus (Park Ave.). Park in any available lot. For further help contact Sheri Tonn at (206) 535-7552.
- COST:** \$13.00 per person, includes tax and gratuity
- NOTE:** When you make reservations for dinner, you have an obligation to pay. Once the food is ordered, the section is billed even if you do not show up.
- RESERVATIONS:** All reservations must be made by NOON, Friday, April 16, 1993. For reservations, please call:
Seattle: 543-1610 Bellingham: 676-3070
Tacoma: 535-7530
- OFFER TO STUDENTS:** The section will pay half the cost of dinner for the first ten students (high school, undergraduate, or graduate) who call 543-1610.

A&D

A&D WEIGHING DIVISION

*Featuring the new **HA-M** series analytical balances with a uniquely accessible weighing chamber.*



- **HIGHLY ACCURATE**
- **EASY TO OPERATE**
- **WITH ADVANCED STABILIZATION SOFTWARE**

All-World Scientific is your Puget Sound source for the full A&D line of toploading, analytical, and moisture balances, now with a **3 year** warranty!

Call us to find out just how affordable a quality balance can be.



5515 - 186th Pl SW, Lynnwood, WA 98037
(206) 672-4228 • FAX (206) 776-1530
Toll Free 1-800-28WORLD (289-6753)

DR. GEORGE M. BODNER, SPEAKER FOR THE PUGET SOUND SECTION MEETING IN APRIL

George Bodner was born (3/8/46) and raised within a half-mile of Kodak Park in Rochester, New York. In spite of this, he entered the State University of New York at Buffalo as history/philosophy major. At SUNY he found, much to his amazement, that chemistry was fun and he changed his major (under the mistaken impression that jobs were easier to find as a chemist).

After a mediocre career as an undergraduate (B.S., 1969) he entered graduate school at Indiana University (Ph.D., 1972), undoubtedly on the basis of letters of recommendation. He apparently did well enough in graduate school as a double major in inorganic and organic chemistry to gain an appointment as a visiting professor at the University of Illinois (1972-75). His research interests at that time focused on the application of ^{13}C NMR spectroscopy to studies of the structure and bonding in organometallic complexes.

While at Illinois, he made the mistake of professing total ignorance of biochemistry to one of his colleagues in that area. After a semester of intense study to relieve this obvious deficiency, he was asked to fill an appointment as a visiting professor in biochemistry for the summer of 1974. Having survived that, he was actually invited back for the summers of 1975 and 1976.

Two things became self-evident during his tenure at Illinois. He found that teaching was fun and he realized that his research could best be described as searching for definitive answers to questions that no one ever asked. When the time came to leave Illinois, he therefore took a job as two-thirds of chemistry faculty at Stephens College — a women's college in Columbia, MO — where he lasted for two years (1975-77), teaching general, organic, inorganic and biochemistry.

In 1977, an opening in Chemical Education was advertised at Purdue University. He applied for the position and, much to their later chagrin, the faculty at that institution offered him the job. (They have compounded their error by promoting him first to associate professor and then professor of chemistry and education.) He is the author of more than 80 papers and 23 books or laboratory manuals. He has been known to claim in public that his primary interest is in epistemology. His interests also include the development of materials to assist undergraduate instruction, research on how students learn, and the history and philosophy of science.

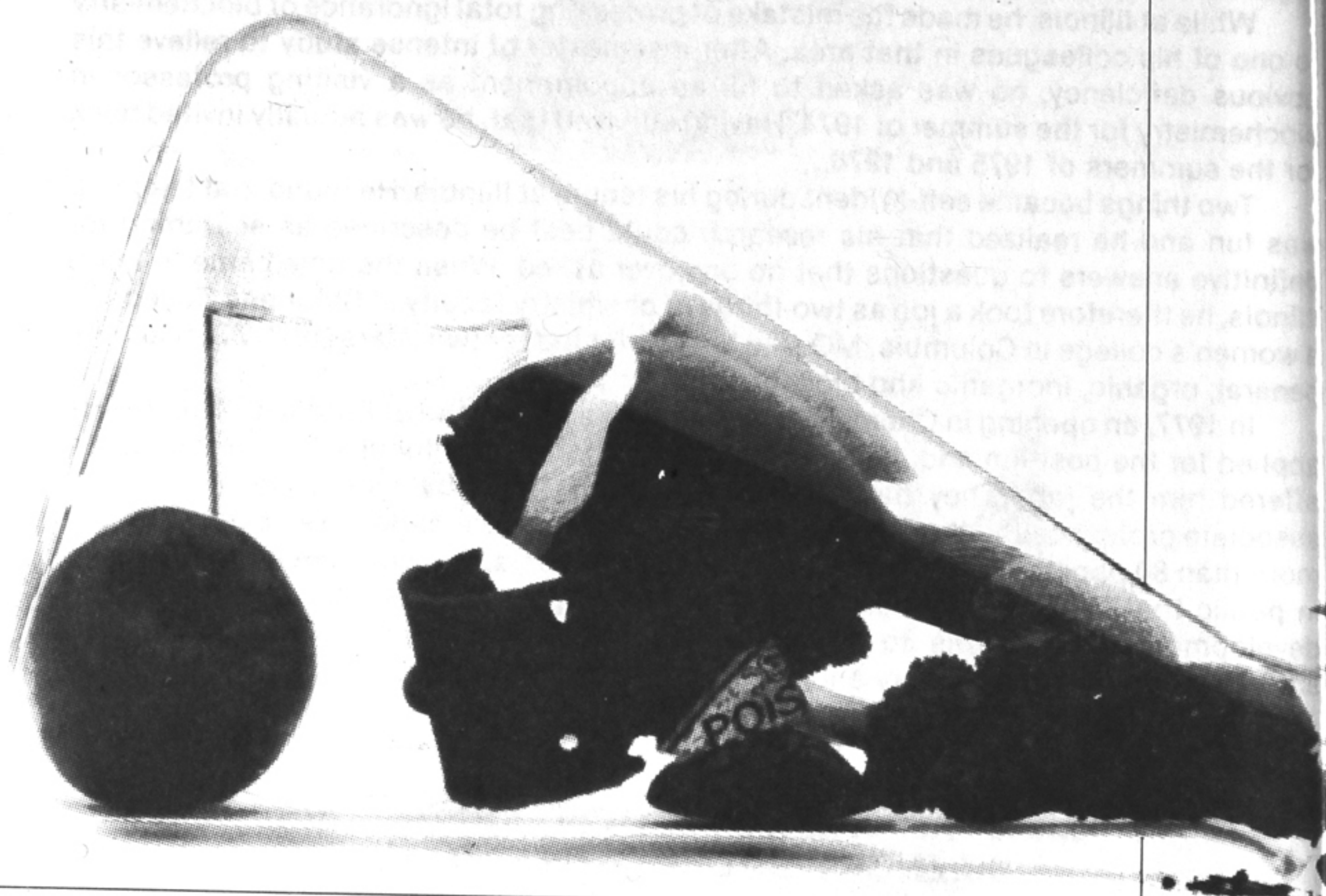
AMERICAN CHEMICAL SOCIETY SPONSORS SCIENCE FEATURE IN USA TODAY

The American Chemical Society announces its sponsorship of "Explorations: Fun Activities for All Ages," a colorful half-page of activities and information appearing in *USA TODAY*, to motivate adults and children to get involved with hands-on science. This feature, appearing biweekly on Tuesdays, adjacent to the Life section's regular science news, premiered March 9, 1993.

A future "Explorations" feature will announce details of a program offering grants of up to \$1,000 to community groups, schools and institutions in support of hands-on, nonformal science activities for adults and children. ACS expects to award at least \$50,000 in Community Science Grants this year. The grant competition and the application process will be publicized in the *USA TODAY* feature.

Each edition will include one of the "kitchen science" experiments from *WonderScience*, the hands-on science activity magazine ACS publishes for children and adults. The experiments are designed for children to be performed with adult supervision. "Early exposure to hands-on science," says Sylvia Ware, Director of the ACS Education Division, "stimulates a child's curiosity about the natural world. This curiosity and wonder form the foundation of scientific thinking." In addition, the newspaper is providing an 800 number for information requests and to help consumers order educational materials.

How to break through the productivity bottleneck.



It's simple: Wherever you see a bottleneck in your environmental laboratory, look to HP for the solution.

Sample preparation? We'll cut your time from days to minutes. Report generation? Powerful, automated HP data handling solutions meet your data quality objectives—and your deadlines—while your people focus on other tasks. Informa-

tion flow? Industry-standard HP networking helps different vendors' instruments and systems work together smoothly.

Every product in our broad offering—from sample preparation through analysis and reporting—is designed for high throughput. While top-rated HP quality, service and support all help lower your cost of ownership—and make

possible our 99-percent uptime guarantee.*

Call **1 800 556-1234, Ext. 10232**, for our informative brochure. In California, call **1 800 441-2345, Ext. 10232**.

 **HEWLETT
PACKARD**

*Not available in all countries.
©1990 Hewlett Packard Company AG04009

ABSTRACT

ETERNAL VERITIES: HOW RESEARCH IN LEARNING CAN IMPROVE THE WAY WE TEACH

It is possible that the worst person to teach a physical (or organic) chemistry course is a physical (or organic) chemist. People tend to become physical (or organic) chemists because they found the subject intrinsically interesting the first time they encountered it, excelled at it in their first courses, and are now reasonably expert in the field. As a colleague once suggested, "The biggest problem with chemistry is that all of our professors are 'A' students, and so few of our students are 'A' students."

When the enormous difference between the levels of understanding of chemistry by faculty and students is coupled with the fact that few chemists have been exposed to formal preparation for teaching, it is not surprising that students — who are often not quite as enthralled with chemistry as we are — do not think highly of some of our courses.

By paying attention to a limited number of basic concepts that have come out of research in learning theory, we might be able to design courses in which students learn more, retain their knowledge longer, feel better about the course, dislike their instructors less, and, perhaps even become interested in our own first love: Chemistry.

This lecture discusses certain eternal verities — things that will be true till the end of time — about the interaction between students and teachers, followed by illustrations of how these truths apply to the teaching of chemistry.

Most of the more than 130,000 ACS members would argue that the subject of this talk isn't appropriate to their job, because they don't work in academics. They are wrong. If you replace the term "student" with the term "people," you will find that this talk is appropriate for almost any ACS member. We all teach for a living, regardless of whether we work in academics, industry, or for the government. The interaction between teachers and students discussed in this lecture is an appropriate model to help us understand relationships that we try to build with family, friends, our supervisors, and those we supervise.

HELP ACS EFFORTS TO INCREASE NIH FUNDING — JOIN THE NEW NIH NETWORK

Painfully, the prospect of obtaining research funding through NIH is expected to grow even worse than it is today. In order to address this growing crisis, the ACS has created the *National Institutes of Health Network*, which consists of ACS members concerned about NIH funding. Your participation in the Network will be instrumental if the scientific community is to remedy the problem of shrinking NIH funds. It is essential that researchers become engaged with the science policy issues affecting funding decisions made by Congress. Currently, the basic research enterprise faces heavy congressional scrutiny. Its value and benefit to society are being seriously questioned. Consequently, Congress has begun paring back support for basic research available at NIH. Congress needs to hear from the research-intensive community how it utilizes the public's money for the betterment of the nation. Network membership will facilitate your communicating this to Congress by providing you with information about your members of Congress, important congressional activities related to NIH funding, and alerts when your action is required to inform your members of Congress of the importance of health-related basic research funded by NIH. To become a member of the Network and to join the growing community supporting NIH funding is simple. Just call the ACS at (202) 452-2127 and ask for a sign-up form to be faxed or mailed to you. It's that easy!

SUPPORT GROUP FOR WOMEN IN SCIENCE

If you would like to join a small group of women to assess career directions and the family balancing act, take stock and plant new seeds for tomorrow, and explore possibilities, please call Virginia F. Stout at 206-322-8786. The group will meet seven Monday evenings, starting April 5, at a total cost of \$55.00.

When you need to hire temporary personnel for your lab, chances are you have two basic requirements.

- 1. They have to be qualified.*
- 2. They have to be available when you need them.*



Call the one company that specializes in filling both of those requirements.



LAB SUPPORT

Science Professionals On Assignment

Seattle (206) 455-5025

MORE ABOUT OUR 50 YEAR MEMBERS

Alden L. Crittendon

I lived in Kansas and Colorado before going to the University of Illinois at Urbana. I interrupted my studies to be a Navy bomb disposal officer in the Pacific during WW II, then returned to the U of I where I received my Ph.D. in 1947. I then joined the faculty of University of Washington Chemistry Department teaching general and analytical chemistry with the late Rex J. Robinson and T. G. Thompson. (For the first course I taught at UW, I was able to use some lecture notes prepared the year before by Prof. Arthur Anderson.) I taught the first course in instrumental analysis at UW and, together with Prof. Robinson, set up the first Beckman DU spectrophotometer in the state, in the late '40s. My research initially involved electroanalytical chemistry. In the early '50s, I set up the first mass spectrometer laboratory at the UW. Later, I became interested in the use of mass spectrometry for the study of organic materials in the atmosphere, with Profs. R. J. Charlson and Richard Gammon, writing extensive machine language computer programs for the operation of the mass spectrometer and data analysis at a time when the total core available to us was 8000 words! I retired from the University in 1989.

I married Eloise Snyder in 1958 and we have two children.

G. Otto Orth, Jr.

G. Otto Orth has been a chemist for more than 50 years and was active in his laboratory on Roosevelt Way for over 30 years. During his career as research chemist in wood products and adhesives he had 21 U. S. patents issued in his name in chemical and related fields and obtained many additional foreign patents as well. He was instrumental in expanding the *Puget Sound Chemist* monthly bulletin from a newsletter to its current magazine format in 1946.

During the 1980s, Mr. Orth worked in Singapore and Malaysia on palm oil pollution, developed preservatives for fish and crab bait, created new adhesives for collators, and extraction of sugar from the Jerusalem artichoke. He was one of the ten expert witnesses in the MGM Grand Hotel fire which resulted in his investigating the combustibility of ceiling tile adhesives for three years. Following a stroke in 1987 during open heart surgery, Mr. Orth became interested in developing methods for making flour from popcorn and creating recipes for bread, candy and other products incorporating popcorn flour and he continues working on these products to this day.

Lewis S. Miller

Originally an Oregonian, he obtained a B.A. from Reed College (1939), an M.S. from Oregon State (1941) and after working for Allied Chemical & Dye, Nitrogen Division, Syracuse, NY, on war related projects, obtained a Ph.D. under Gilman at Iowa State (1950). Returning to the Northwest, he worked in research on paper polymers and resins and later became Research Director for American Marietta Adhesives Division in Seattle. When Weyerhaeuser acquired Marietta in 1963, his research work continued in areas of paper polymers, radiation cured coatings, lignin resins and various new business projects until retirement in 1981.

He also served as the section secretary in the 1950s.

Note: Have we heard from you? We know the list was longer! We would like to hear from all of you who became 50 year members of the ACS in 1993. Please submit, in your own words, a brief description of your life as a chemist.

The Millennium 2010 Chromatography Manager. It's not just a new product, it's a milestone.

The Millennium™ 2010 Chromatography Manager is the only chromatography data system that adapts to the way you do chromatography.

- Microsoft Windows™ 3.1 makes it easy to learn and easy to use.
- Unique tracking and managing of chromatographic methods and results so you can:

Develop customized reports with the Report Publisher.

Search and review specific samples based on your unique parameters (i.e., lot number, operator ID, sample name).

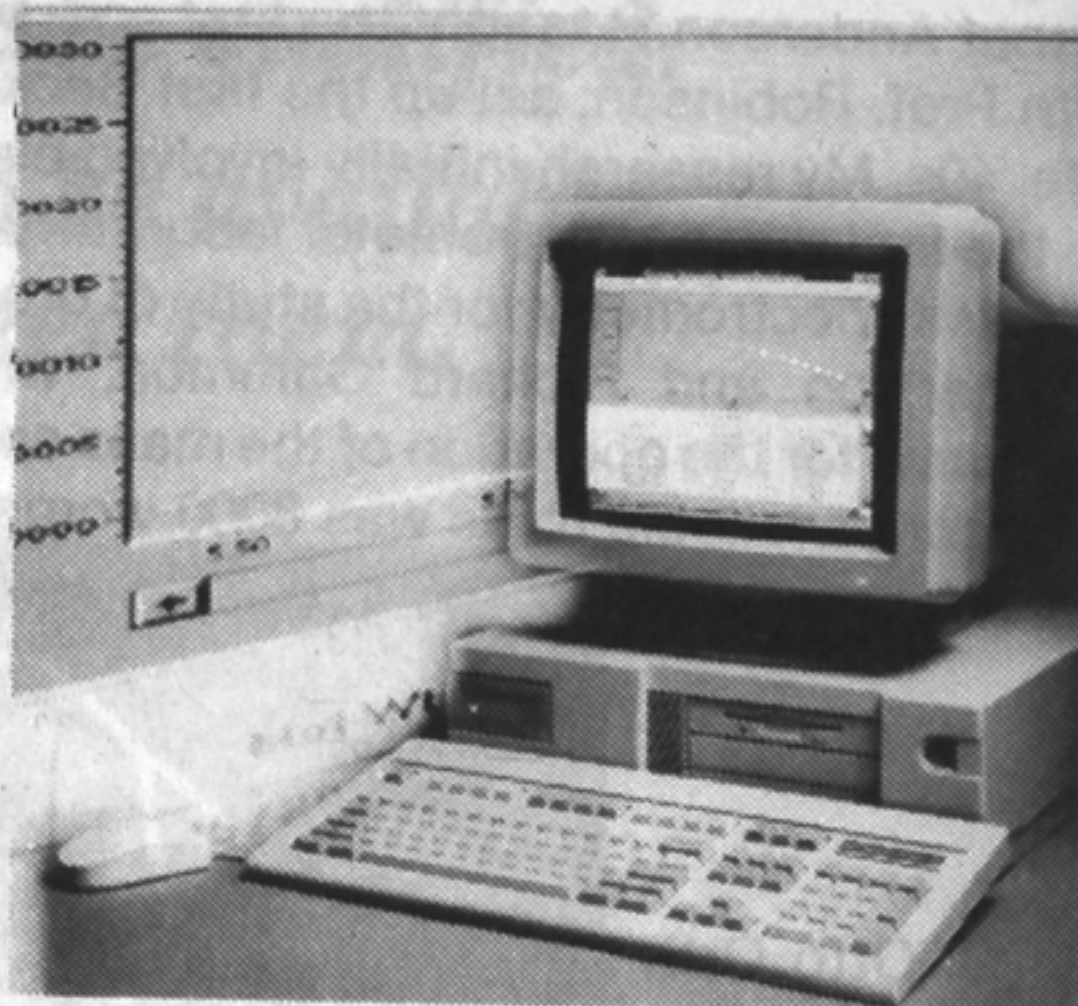
- System Suitability option that establishes and verifies operating parameters.

The Millennium™ 2010 Chromatography Manager. So advanced, it will make history out of every other way of doing chromatography.

For more information, call Mike Leahy at 1-800-632-2708 ext: 2147

MILLIPORE

Waters Chromatography



$K = \Delta$

**For Chemical
Careers in the '90s,
The Only Constant
is Change**

Prepare for change with ACS Career Services:

- ◆ Career Consultants
- ◆ Employment Clearing Houses
- ◆ Professional Data Bank
- ◆ Resume Review
- ◆ Job-Search Workshops
- ◆ Salary Surveys
- ◆ Classified Ad Discounts

and more!

Put ACS Career Services to work for you . . . for your entire career.



ACS CAREER SERVICES

For more information call Erika at
800/227-5558 or 202/872-4432

- BECKMAN

Products for the Life Sciences

Receptor Binding
DNA Sequencing
Pharmaceutical QA/QC

Molecular Biology
Peptide Mapping
Radiochromatography

System Gold HPLC
Capillary Electrophoresis
UV/VIS Spectrophotometers
Liquid Scintillation Counters
pH Meters

Centrifugation
Robotics
Lab Information Management Systems (LIMS)
Supplies
Field Service

Beckman Instruments, Inc., Western Sales

1050 Page Mill Road, P. O. Box 10015

Palo Alto, CA 94303

1-(800) 742-2345

AMERICAN CHEMICAL SOCIETY REGIONAL MEETING, CALL FOR PAPERS

The Southwest ACS Regional Meeting will be held October 24-27, 1993, at The Hyatt Regency Hotel, Austin, TX. Persons interested in submitting papers, please contact Alan H. Cowley, Department of Chemistry and Biochemistry, The University of Texas at Austin, Austin, TX, 78712. Phone: (512) 471-7484, Fax: (512) 471-6822

NORM 93

The 48th American Chemical Society Northwest Regional Meeting will be held at University of Wyoming in Laramie, Wyoming, June 17-19, 1993. There will be a strong emphasis on environmental issues in this year's program. Program highlights include a workshop on "Regulatory Compliance: Waste Minimization," the 3rd annual symposium on "Hazardous and Mixed Wastes," and a general session on "Environmental and Atmospheric Chemistry." Tours of the University's newly constructed state-of-the-art Regulated Materials Management Center will be also offered.

Those wishing to attend NORM93 are strongly encouraged to register in advance. For further information and registration, call 1-800-448-7801.

FUTURE MEETINGS 1993

April 26
June 17-19

Dr. George M. Bodner, ACS Tour Speaker
NORM93
48th ACS Northwest Regional Meeting
Laramie, Wyoming

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 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

HUFFMAN

LABORATORIES, INC.

Quality Analytical Services Since 1936

Elemental Analysis

(C, H, O, N, S, P ■ Halogens ■ Ash ■ Metals)

TOC ■ TOX ■ BTU ■ Molecular Weights

ICP ■ Emission Spectroscopy

GC ■ IC

4630 Indiana Street • Golden, CO 80403

Phone: (303) 278-4455 • FAX: (303) 278-7012

POLYMER STANDARDS FOR GPC/SEC MOLECULAR WEIGHT ANALYSIS GPC/SEC COLUMN REPACKING

American Polymer Standards Corporation

8680 Tyler Boulevard, Mentor, OH 44060

Phone: 216-255-2211 Fax: 216-255-8397

206) 932-7698

Car: (206) 947-6593

KARDEN ASSOCIATES, INC. CONSULTANTS

Safety and Regulatory Compliance

Denis Sapiro, CSP, CHMM
Senior Consultant

3241 44th Ave. SW • Seattle, WA 98116



Christopher L. Getchell
Oceanographer / Biologist

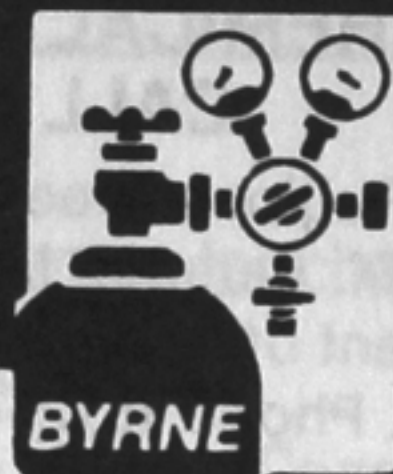
BIOASSAY TESTING SERVICES

8455 S. 19th Suite 12A

Tacoma, WA 98465

206-565-5492

*Acute and Chronic Toxicity Testing
Hazardous Waste Characterization
NPDES Permit Compliance*



**BYRNE
SPECIALTY
GASES, INC.**

- Pure, Mixed & Rare Gases
- Gas Handling Equipment
- Engineered Systems
- Cryogenic Supplies
- Liquid N₂, Ar

**Express Gas &
Emergency Delivery
(206) 764-4633**

**118 South Mead Street
Seattle, WA 98108**

1 (800) 767-4601

FAX (206) 763-3753

spectron corporation

PHIL JOHNSON

SALES & SERVICE REPRESENTATIVE

We buy, rebuild and resell laboratory instrumentation

11025-118th Place N.E. • Kirkland, WA 98033 • (206) 827-9317

THE CREATION OF A NEW DIVISION OF THE AMERICAN CHEMICAL SOCIETY

Everyone who works in the chemical industry realizes the important contributions that chemical technicians make daily. In a rapidly advancing, highly technical society, there is a growing need for dedicated, conscientious technicians to contribute to the efforts of the scientific team. The demands made upon the chemical technician have evolved tremendously from lab helper to contributing member of the team. The changing role of chemical technicians is dictated by the requirements of chemical industry. With the awareness of these changes, the American Chemical Society (ACS) created the Committee on Technician Activities (CTA) in 1966, and in 1971 the National Conference of Chemical Technicians (NCCTA). Twenty years later the Society's CTA and NCCTA saw the need for the creation of a new Division within ACS for chemical technicians. This Division, referred to as the probationary Division of Chemical Technicians (TECH) was created at the Fall ACS National Meeting in 1991, and replaces the NCCTA.

There are several criteria for a probationary Division to be granted full Division status. As part of this procedure, TECH must obtain 250 Full ACS Members as Members of its Division by the end of the probationary period in August, 1994.

The key goals of TECH are to promote the formation of new Technicians Groups (TG's) throughout the country; coordinate technician symposia and workshops at every National Meeting and many Regional Meetings, and to act as a communication and information body to assist local TG's.

Because we are a new Division, we must inform ACS members and technicians who work with them of our existence, and encourage them to become ACS and TECH Division members. Please pass this information to interested individuals. Current ACS members who endorse our cause can support our efforts by becoming a TECH Division member.

Application for Membership

Please enroll me as a member of the probationary Division for 199____. I enclosed a check payable to the probationary Division of Chemical Technicians for the indicated membership category:

____ ACS member, \$3.00 ____ Not an ACS member, \$5.00 ____ Full time student, \$2.50

I would like to suggest the following symposia topic(s):

Voluntary contribution \$ _____

Name _____ ACS Member Number _____

Mailing Address _____

City _____ State _____ Zip Code _____

Please return to: Treasurer, TECH, American Chemical Society, P.O. Box 3337, Columbus, OH 43210; phone (80 872-4396.

For additional information contact Michael Cisneros, Membership Chair, Los Alamos, National Labs, TA-48, INC-12, MS J514, Los Alamos, NM 87545; (505) 667-9164.

Treasurer's Report
 PUGET SOUND SECTION
 AMERICAN CHEMICAL SOCIETY
 31-Dec-92

	1992 BUDGET	1992 Year-to-Date
INCOME		
Annual ACS Allotment	\$8,329	\$8,329.00
New Member Commissions	7	17.50
Local Section Dues	4,200	4,243.00
Publications (advertising)	5,000	4,324.88
Directory (advertising)	500	0.00
Meals (total revenue)	3,000	1,262.00
Receipts (Chem Demo Wkshop, ACS pins, etc.)	200	0.00
Interest, Dividends	1,300	1,186.43
Donations, Contributions	0	0.00
Rebate from ACS for councilor travel expenses	1,000	644.70
Other (Safety tape copies, Chem for Kids book)	0	334.30
TOTAL:	\$23,536	\$20,341.81
EXPENSES		
Administration	\$350	\$43.25
Education Committee	4,000	3397.73
(Donations: Wash College Chem Teachers Assn		929.19)
(Expanding Your Horizons		200.00)
(W Jr Sci-Hum Symp & W Sci Teachers		0.00)
(Precollege Program		
(Chem Olympiad		60.00)
(Chemistry for Kids		661.41)
(Chem Workshops for students/teachers K-12		0.00)
(Recognition awards for HS students		38.23)
(Grants to HS groups for K-9 chem demos		1,024.24)
(Matching grants to HS for publications		228.50)
(Scholarships K-12 teachers / chem classes		220.00)
(HS Chem teachers group		36.16)
Public Affairs Committee	0	0.00
Professional Relations and Status Committee	100	0.00
Public Relations Committee	0	0.00
Safety Committee	100	134.40
Local Meetings (includes speakers' expenses)	1,500	1,198.00
Pauling Medal Symposium	2,000	2,020.75
Meals (total expenses)	3,000	1,119.33
Publications (printing, mailing, etc.)	10,400	10,391.34
Directory	2,000	0.00
National Chemistry Week 1992	0	0.00
Awards Other (50yr member dinners)		40.00
Pauling Award (1990 - 1992)	1,500	1,148.00
High School Teacher Award	200	0.00
Student Affiliate Award	200	50.00
Travel Subsidies for Councilors	2,500	2,321.39
Travel Subsidy and Fee for LSO Conference	500	453.00
Other	500	0.00
TOTAL:	\$28,850	\$22,317.19
NET GAIN (LOSS)	(\$5,314)	(\$1,975.38)
ASSETS AND CAPITAL		
Washington State Employees Credit Union Checking account	\$5,850.88	
Account number 156176-0 Share account	120.11	
1 year WStECU CD No.58648 @ 4.00% due 06/26/93	2,000.00	
1 year WStECU CD No.63259 @ 4.00% due 11/19/93	7,500.00	
1 year WStECU CD No.64971 @ 5.45% due 03/19/93	7,500.00	
Pauling Award Medals 1 @ \$542	542.00	
A/V Equipment for Safety Talk (@ 60% of cost 10/90)	510.00	
BALANCE	\$24,022.99	

PUGET SOUND CHEMIST



BULLETIN OF THE
PUGET SOUND SECTION
AMERICAN CHEMICAL SOCIETY

Editor

J. K. Bhat 745-9550

Business Managers

Ron Ekdahl 672-4228
Bruce Tanke

Circulation Manager

Bob Smith 296-5502

Correspondent Staff

Betty Smith 363-3626

Printing

G & H Printing
2370 Eastlake Ave. E.
Seattle, WA 98102
329-9888
FAX 324-3705

EXECUTIVE COMMITTEE PUGET SOUND SECTION

Chairperson

Clarita Bhat wk 546-4575

Chairperson-elect

Randy Eatherton 767-2809

Past Chairperson

Despina Strong 684-2322

Secretary

Diane Davis 684-2300

Treasurer

David Munch 523-3763

Councilors

William J. Wasserman (1992) 587-5438
Mark Wicholas (1993) 676-3071
Herb Bryce (1994) 587-6921

Alternate Councilors

Deborah Wiegand (1993) 641-1553
Tim Hoyt (1994) 756-3833
John Westland

Typeset by Scarlet Letters Ltd., 2366 Eastlake Ave. E., #301, Seattle, WA 98102-3366
(206) 328-4616 • FAX (206) 328-6101

Puget Sound Chemist, P.O. Box 24032, Seattle, WA 98124-0032

Published eight times during the September-June portion of the year by the Puget Sound Section of the American Chemical Society. Direct all copy to the Editor and advertising correspondence to the Business Manager. The Secretary of the Section handles other business. All copy shall be **typed** and **double-spaced**!!

Puget Sound Section, ACS Executive Committee Future Meetings in 1993

Meetings are open to all members and are held on the second Wednesday each month.

April 14 May 12

Place: Seattle University
Dinner: 5:30 PM in Cafeteria (optional)
Meeting: 6:30 PM in Room 511,
Engineering Building.

Hg - As - Se

We can speciate
the hard ones

Brooks Rand, Ltd.
phone: (206) 632-6206
fax: (206) 632-6017

Accuracy with speed

Complete Microanalysis Services

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

GALBRAITH LABORATORIES, INC.



**Since
1950**

Tel: (615) 546-1335 • Fax: (615) 546-7209

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

2323 Sycamore Drive
Knoxville, TN 37921-1750

Call or write for our information packet.

SPECIALTIES

- GPC, high temp, aqueous and all solvents
- FTIR, with Micro capabilities
- Tensile and Puncture, -40°F to 600°F
- Headspace, Pyrolysis GC
- Oxidation Studies, TGA, DSC, TMA
- USP XXII Testing EP Toxicity
- Thermoplastic and Thermoset Formulations
- Plastic Film, constructions, Ident
- Gas Permeation Rates, most gases
- Residual solvents, Monomers, qual and quant
- Outgassing, qual and quant
- Deformulations; Coating and Paints, Organics
- Aging; Thermal, Humidity, UV, Cold



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

CHEMICAL ANALYSIS • PHYSICAL TESTING

- Spectroscopy; AA, FT-IR, Micro IR
- Chromatography; LC, GPC, GC, Ion
- Thermal Analysis; DSC, TGA, DMA, TMA
- Microscopy ESD Instrumentation
- CHNOS GC/MS
- Instron, ASTM-TAPPI Instrumentation
- Environmental Instrumentation

**American Chemical Society
Puget Sound Chemist
P.O. Box 24032
Seattle, WA 98124-0032**

**Dated Meeting Notice
Please Do Not Delay**

**Non-profit Org.
U.S. POSTAGE
PAID
Seattle, Wash.
Permit No. 12966**

UNIV OF WASH LIBRARIES
SERIALS DIVISION
SEATTLE, WA 98195