

THE
TarHelium



A Publication of the North Carolina Section of the American Chemical Society

Vol 19 No 3

Jan-Feb 1988

**THE ERUPTION OF MOUNT ST. HELENS
CHEMISTRY & ATMOSPHERIC IMPLICATIONS**

Professor William H. Zoller
University of Washington

Wednesday, February 15, 1989
Duke University
Durham, North Carolina

Social Hour

5:30 p.m.

Dinner

6:30 p.m.

Faculty Commons Rooms A and B*
Second Floor, Union Building
West Campus

Lecture

7:30 p.m.

Room 103, P.M. Gross Chemical Laboratory *

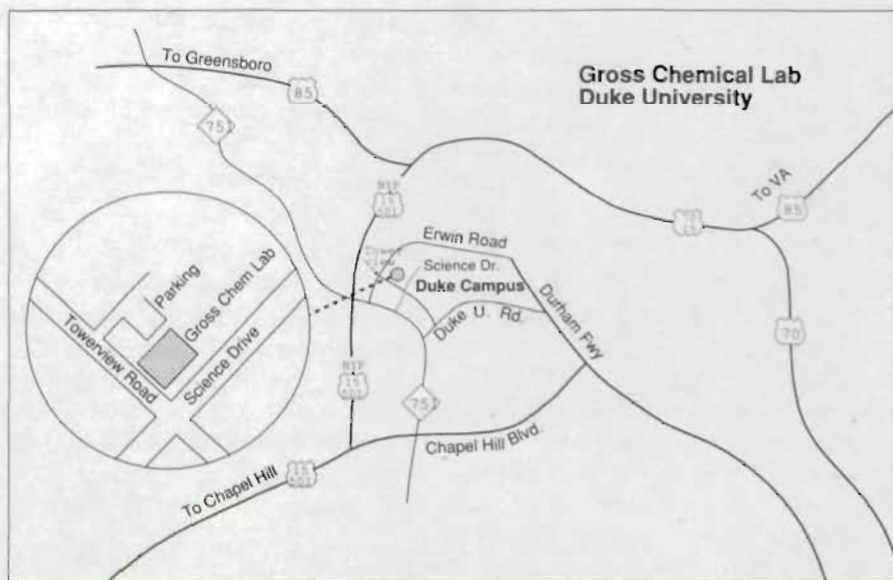
** See map, you may park in any open parking place*

The dinner cost is \$10.00 for members and guests and \$5.00 for students. Please make reservations for dinner by telephoning one of the following people by 5:00 p.m. Friday, February 10; in Chapel Hill, Debbie Edwards, 962-2172; in Durham, Carolyn Bean, 684-2414; in Raleigh, Joyce Dunn, 737-2545; in Fayetteville, Sandra Smith, 486-1000.

THE ERUPTION OF MT. ST. HELENS CHEMISTRY & ATMOSPHERIC IMPLICATIONS

During the May 1980 eruption of Mt. St. Helens volcano in Washington State, vast quantities of ash and debris were released into the atmosphere and fallout of ash occurred throughout a large area. The explosion also caused tremendous destruction in the blast area, blowing down everything to the northeast of the crater. Samples of the plume from the main eruption were collected using filter equipment onboard a NASA U-2 aircraft in the stratosphere. The fumaroles and deposits near and inside the crater were sampled six weeks after the primary eruption for comparison with the ejected material. Additional samples were collected during expeditions to the volcano in September 1980, August of 1981 and May of 1982. All of the samples were analyzed by non-destructive neutron activation techniques for nearly 40 trace elements. The results indicate that there was considerable chemical fractionation in both the ash that fell on the ground and that suspended in the air. More of the volatile elements such as S, Cl, As, Se, Sb, Au and Cd were in the plume rather than in the ash that fell to the ground. In addition, the hot vents show relatively high enrichments of volatile elements. It is hypothesized that the halogens (Cl, F) react with minerals in the magma to form volatile halide compounds which are then released to the atmosphere. For example, during quiescent periods in 1980, the volcano was releasing up to 800 kg of As and 100 kg of Se to the atmosphere.

The talk will focus on a slide show of the mountain and the surrounding area visited during the four expeditions, as well as a description of the problems encountered in the work.



**JOINT NC SECTION & EASTERN NC
SECTION MEETING**

Dr. Foil A. Miller
University of Pittsburgh

Great Mistakes in Science

Monday, March 13, 1989
Burroughs Wellcome Company Auditorium
3030 Cornwallis Road
Research Triangle Park

Social Hour
6:00 p.m.

Dinner
7:00 p.m.

Lecture
8:00 p.m.

The dinner cost is \$14 for members and \$7 for students. Please make reservations for dinner by telephoning one of the following people by 5:00 p.m. in Chapel Hill, Debbie Edwards, 962-2172; in Durham, Carolyn Bean, 684-2414; in Raleigh, Joyce Dunn, 737-2545; in Fayetteville, Sandra Smith, 486-1000.

Abstract
Great Mistakes in Science

During the development of science, there have been occasional spectacular errors - cases in which considerable numbers of people worked on a subject which later turned out to be incorrect, or at least unrewarding. Some examples from the following list will be described: N-Rays, Mitogenetic Rays, Allison's Magneto-optic Effect, Infrared Theory of Odor, Super-Dry Liquids, Polywater.

Several currently-active subjects which are potential candidates for future Great Mistakes will also be mentioned.

FOIL A. MILLER

Dr. Foil A. Miller is University Professor of Chemistry Emeritus, and Director of the Spectroscopy Laboratory Emeritus, at the University of Pittsburgh. He was raised in Wisconsin, did his undergraduate work at Hamline University in St. Paul, and earned his Ph.D. at Johns Hopkins University. The next six years were spent in research and teaching at the Universities of Minnesota and Illinois. He went to Pittsburgh in 1948 to join the staff of Mellon Institute as head of its Spectroscopy Division, and in 1967 he moved to the University of Pittsburgh. He retired in 1981, but is still actively writing and lecturing.

His research, which has been primarily in infrared and Raman spectroscopy, has been described in about 100 publications. He has been an editor of *Spectrochimica Acta*, and Secretary of the IUPAC Commission on Molecular Structure and Spectroscopy. In 1957, he held a Guggenheim Fellowship for study in Zurich. He was Visiting Professor in Japan in 1977 and in Brazil in 1980. Since 1950, he has helped present the annual summer courses on infrared spectroscopy that are now given at Bowdoin College. He received the 1964 Pittsburgh Spectroscopy Award, the 1965 Pittsburgh Award of the American Chemical Society, and the 1973 Hasler Award of the Society for Applied Spectroscopy. He has served the Pittsburgh Section of the ACS in many capacities, including chairman, councilor, and director.

Among his hobbies are travel, photography, hiking, birding and collecting stamps dealing with science.

NC Section of American Chemical Society Announces 1988 Election Results

Chair-Elect	Donald Preiss
Treasurer	Joan Bursey
Councilor	Halbert Carmichael
Alternate Councilor	Suzanne Purrington

A big thanks goes to the members of the Nominating Committee (Drs. Bigham, Hanck and Palmer) and its chair, Dr. J. Myers for their work in preparing for and tabulating the election.

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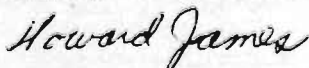
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Southeast Regional Manager
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PETER A. KOLLMAN
Professor of Chemistry
& Pharmaceutical Chemistry
University of San Francisco

Application of Molecular Modeling Methods to Macromolecules

February 13, 1989

Reception
3:30 p.m.

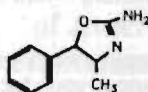
Lecture
4:00 p.m.

Bear Hall, Room 111
UNC School of Pharmacy
Chapel Hill, N. C.

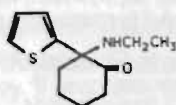
Molecular Modeling Series sponsored by:
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UNC Program in Molecular Biology and Biotechnology

DRUG QUIZ

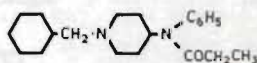
Which of these is a Scheduled drug?



(a) Alphamethylaminorex
STIMULANT



(b) Tiletamine
HALLUCINOGEN



(c) "Benzylfentanyl"
NARCOTIC

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**SPRING NC/ACS
MONTHLY MEETING SCHEDULE**

Feb. 15, Wednesday	see this issue
March 13, Monday	see this issue
April 15, Saturday	UNC-CH 103rd N.C. Sectional Conference (formerly called Meeting-in-Miniature)

**CANDIDATES SOLICITED FOR
NATIONAL TECHNOLOGY MEDAL**

All ACS members are invited by the Committee on Patents and Related Matters (CP&RM) to suggest possible candidates for nomination for the National Technology Medal. Recently funded by the United States Department of Commerce and established by the Stevenson-Wylder Innovation Act of 1980, the medal is awarded annually by the President. It may be awarded to individuals, groups, companies or to institutions within the United States for outstanding contributions to technology or for the promotion of the technological workforce.

Nomination documents may be obtained by contacting the staff liaison to CP&RM, Ms. Nancy Mullens (202-872-4479); they will need to be submitted to Ms. Mullens by **March 1, 1989**.

NATIONAL CHEMISTRY WEEK OCTOBER 29 - NOVEMBER 4

The American Chemical Society has declared the week of October 29 - November 4 to be National Chemistry Week (NCW). The Local Section is planning to organize events to publicize the profession during this week. Efforts will be made to reach the general public through chemistry magic shows and to reach students in schools hopefully at all levels. If you are interested in planning or participating in this event, please contact the Chairman of Local Section activities for NCW, William L. Switzer, Chemistry - 8204, North Carolina State University, Raleigh, NC 27695. Phone 737-2945 (W) or 847-7471 (H).

1989 DUES BILL

If you have not received your 1989 dues bill or have questions about your bill, please call 800-333-9511. To charge your payment by phone, call toll-free (800) 227-5558

If you have questions about your membership, please call Audra Rafter, Mgr. Office of Member Services at (202) 872-4414.

**NORTH CAROLINA SECTION
AMERICAN CHEMICAL SOCIETY**

**103RD NC SECTIONAL CONFERENCE
(formerly the Meeting-in-Miniature)**

April 15, 1989

**Venable Hall
University of North Carolina
Chapel Hill, N.C.**

**Program
8:30 - Noon**

***Lunch and Awards Presentation
Noon - Until**

*Speakers are the invited guests of the Section

DEADLINE: March 3, 1989

Mail application to: Dr. D.M. Preiss, Dept. of Materials Science and
Engineering, N.C. State University Box 7907, Raleigh, N.C. 27695-7907

APPLICATION
103RD NC SECTIONAL CONFERENCE

Saturday, April 15, 1989
Venable Hall
University of North Carolina
Chapel Hill, N.C.

Author(s) _____

Phone number of senior author _____

Position(s) _____

Presented by (Ms., Mr., Dr.) _____

Institution _____

Title of Paper _____

Session	_____ Analytical	_____ Inorganic
	_____ Biochemical	_____ Organic
	_____ Chemical Education	_____ Physical
	_____ Polymer	_____ Other

Regular session _____ *Poster Session _____ *Either Session _____

Type of projector needed if any _____

DEADLINE FOR SUBMISSION — FRIDAY MARCH 3, 1989

Mail application to: Dr. Donald M. Preiss, Dept. of Materials Science and Engineering, Box 7907, N.C. State University, Raleigh, N.C. 27615-7907

* If enough people are interested the poster session will be added.

MEETING-IN-MINIATURE RENAMED SECTIONAL CONFERENCE & NUMBERED

The last monthly meeting of the North Carolina Section in the spring each year has traditionally been one in which a large number of papers are given in parallel sessions. The number of papers approaches eighty many years, which did not seem to be on a miniature scale to the Executive Committee and so the meeting has been renamed the Sectional Conference. By examining the minutes of the Section since its first meeting in 1896, the Section Archivist decided there had been 102 prior meetings in which more than three or four papers were read and so the next such meeting, in Chapel Hill on April 15 will be styled the 103rd.

As local sections go in the ACS, the North Carolina Section is one of the very oldest, and the first in the South by a number of years. At all the early meetings, many of those in attendance read papers. This was reasonable, since it was necessary to travel by train, which changes even between Chapel Hill and Raleigh, to get to section meetings. Members often had to stay overnight in the meeting city before there would be a return train. You might as well give a paper if you were going to go to all the trouble to go to the meeting.

Later, the North Carolina Academy of Science was formed, and for many years, our ACS Section met jointly with the NCAS at its Spring Meeting. Since the Section's boundaries covered the entire state at first, it was always possible to hold a joint meeting with the Academy. Later, as other sections were split off from the North Carolina Section, the Academy's Spring Meeting was frequently held outside the boundaries of the North Carolina Section--Wilmington, Asheville, Charlotte or Greensboro, for example. The Section then held its multipaper meeting by itself, and since there would be fewer in attendance (just chemists, no other scientists) it was named the Meeting-in-Miniature.

The minutes (kept in the State Archives in Raleigh) show that some years, there was only one meeting of this kind, and in a few years there is no record of any multipaper meeting at all. There are a few ambiguities also...before Charlotte set up a separate section, chemists there asked to have a multipaper meeting of their own, but the North Carolina Section held its regular multipaper meeting in another city. Was that Charlotte meeting countable ????? The archivist decided it was.

Why "Sectional Conference"? The Executive Committee wanted a name that parallels "regional" and "national". We decided not to use the name "meeting" because it would not distinguish the April extravaganza from our usual guest speaker meeting.

So, our first numbered Sectional Conference this spring will be our 103rd.

**Winners of 1st Annual Marcus E. Hobbs
Service Awards Announced at the December NC/ACS
Distinguished Speaker Series**

**Marcus E. Hobbs
Maurice M. Bursey
Monica Nees
William F. Little
Robert G. Ghirardelli**

THE CENTENNIAL SCHOLARSHIP AWARD

The North Carolina Section of the ACS announces its CENTENNIAL SCHOLARSHIP AWARDS for 1989. Up to three awards of \$600 each will be made; normally, two will be awarded to graduate students from doctorate-granting institutions and one to a student from an institution offering the master's degree or significant opportunities in research to undergraduate students. These awards will recognize achievement and potential in chemistry research and should be used to help the student further that potential.

Award criteria include research accomplishments, excellence of academic record, and quality of the application.

Eligibility requirements are enrollment at a college or university within the NC section territory and research in a department of chemistry, biochemistry, or chemical engineering or in a related department carrying out research under the direction of an ACS member.

Applications must include full name, address, and daytime telephone number; must be typed and submitted in triplicate; and must include the following information:

- a summary, up to 1000 words, written by the *applicant*, describing research accomplishments or progress,
- a letter of recommendation from the student's research director,
- a copy of the appropriate transcript(s) (graduate and/or undergraduate), and
- a description of how the award would be used.

The awardee is required to consult with his or her research advisor about how to use the award. Examples of appropriate uses include travel to a national ACS meeting, tuition for an ACS short course, purchase of technical books, or support of research. The award must not be used to support research already funded by other sources.

The deadline for submitting applications is **March 20, 1989**. Submit applications to: Centennial Scholarship Award Committee: Dr. Robert G. Ghirardelli (Chairman) Army Research Office P.O. Box 12211 Research Triangle Park, NC 27709

Award recipients will be announced at the Section's 103rd Conference on April 15, 1989.

CHEMICAL SOCIETY PROGRAM

Jerrold Meinwald
Cornell University

Introductory Remarks

4:15 p.m.

Powell Lecture

4:30 p.m.

Social Hour

5:30 p.m.

Dinner *

7:00 p.m.

Virginia Section of ACS

8:30 p.m.

Lecture

*Organic Pollutants in the Chesapeake Bay
Analysis & Distribution*

Dr. Robert J. Hugget

Virginia Institute of Marine Science

W. ALLAN POWELL

CHEMISTRY LECTURESHIP

February 24, 1989

4:00 PM

Gottwald Science Auditorium

University of Richmond

* Call (804) 289-8242 by noon Wednesday, February 22, to make dinner reservations.

Abstract

A Chemist's View of Chemical Warfare, Courtship, & Mate Selection Among Insects

Insects are often defended by a wide variety of organic chemical weapons, some of which they synthesize, and some of which they acquire from their food. Many insects also utilize organic chemicals (pheromones) for intraspecific communication. In the cases of some lepidoptera and beetles, we have been able to establish an unanticipated relationship between the compounds used as "aphrodisiac" pheromones. These studies suggest a possible pathway for the evolution of a chemical signalling system.

POWELL LECTURER

Jerrold Meinwald, Goldwin Smith Professor of Chemistry at Cornell University, received Ph.D and B.S. degrees from the University of Chicago, and an M.A. and Ph.D. from Harvard. Aside from many contributions to small ring chemistry, molecular rearrangement mechanisms, and organic photochemistry, he has been a pioneer in elucidating the chemical interactions which take place among insects and plants. In 1970-77, he served as a Research Director of the International Center of Insect Physiology and Ecology in Nairobi, Kenya.

Dr. Meinwald's honors include election to the National Academy of Sciences (1969), the American Academy of Arts and Sciences (1970), and the American Philosophical Society (1987). He has held an A.P. Sloan Foundation fellowship, two Guggenheim fellowships, and has served as a fellow of the Japan Society for the Promotion of Science and as a Fogarty Scholar-in Residence (NIH). He is currently President of the International Society of Chemical Ecology, and is the recipient of the E. Guenther Award in the Chemistry of Essential Oils (1984) and an A.C. Cope Scholar Award (1989) of the American Chemical Society.

The 1989 W. Allan Powell Lecture will be held in conjunction with the Virginia Section of the American

GRANT SOURCES AVAILABLE AT ACS

Are you looking for federal funding to explore a research idea? Do you need to know who funds research in your area of interest. The American Chemical Society (ACS) can help. The Department of Government Relations and Science Policy maintains an electronic bulletin board guide to grants and contracts in the chemical sciences and engineering, for access by ACS members.

The bulletin board is called ChemREFS, which stands for Chemical Research and Education Funding Sources. All you need to access ChemREFS is a computer, modem, and telephone--and best of all, access is free. You only pay for long distance charges you may incur.

Once online, you'll find over 250 files describing chemical research and education programs at a variety of federal agencies, each with its own directory. Among those represented are: Department of Agriculture, Environmental Protection Agency, National Institutes of Health, and National Science Foundation.

Area-specific and targeted programs, such as instrumentation funding, young investigator programs, and women and minority programs, are described in their own directories.

Two special features of ChemREFS are News and New Programs. The News category carries bi-weekly coverage of science policy issues, the federal budget, and changes in grant and contract procedures or guidelines. The New Programs area highlights the newest federal programs and selected RFP's with short submission deadlines.

All files can be downloaded to the user's system. Users can contact the ACS System Operator by electronic mail or by telephone. ACS members interested in obtaining a user manual should contact Ms. Trudy J. Rodgers, Office of Science Policy Analysis, Government Relations and Science Policy, 1155 Sixteenth Street, N.W., Washington, D.C. 20036, (202) 452-2127.

HIGH SCHOOL TEACHERS OFFERED MINIGRANTS FOR STS MATERIALS DEVELOPMENT

A new program offering high school teachers up to \$1,000 in materials development funds has just been announced by the American Chemical Society. The ACS-STS Minigrants will fund projects focusing on the relations among science, technology, and society (STS) issues.

Teachers may use the grant funds either to produce their own, original lessons and resources that might be used over two to four days, or they may design a curriculum module using existing materials to comprise a four to nine week unit. Hands-on activities and an emphasis on problem solving, decision making and critical thinking skills are particularly encouraged.

The goals of the ACS-STS Minigrants are to help students understand science in its societal context, to assist teachers in developing and implementing innovative curriculum, and to form a cadre of experienced teachers and a selection of programs to serve as models for continued evolution of science programs.

For further information contact: David Licata, Manager, Office of Precollege Science, American Chemical Society, 1155 Sixteenth St, NW, Washington, DC 20036, (202) 872-4590.

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The TarHelium is a publication of the North Carolina Section of the American Chemical Society. The views expressed herein are not necessarily those of the Section.

B. A. Whittaker, Ph.D., Editor
Jeff Wilson, Advertising Manager

Please direct all correspondence and submissions to the attention of the editor:

B. A. Whittaker, Ph.D.
3108 Anderson Drive
Raleigh, NC 27609

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Next deadline for the *TarHelium* will be March 15, 1989. Contributions should be on PC disk in WordPerfect, DW-4, RTF, DCA, Wordstar, XYWrite, Microsoft Word or ASCII format or on Macintosh disk in any format.

If you wish to change your membership status or your *TarHelium* mailing address, please submit your new address along with your old address in the form of a recent C&EN or *TarHelium* address label to:
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