

THE NUCLEUS

February 1990

Of the Northeastern Section of the American Chemical Society

Vol. LXVIII, No. 5

Monthly Meeting

*G.P. Beardsley speaks on
Anti-Cancer Drugs*

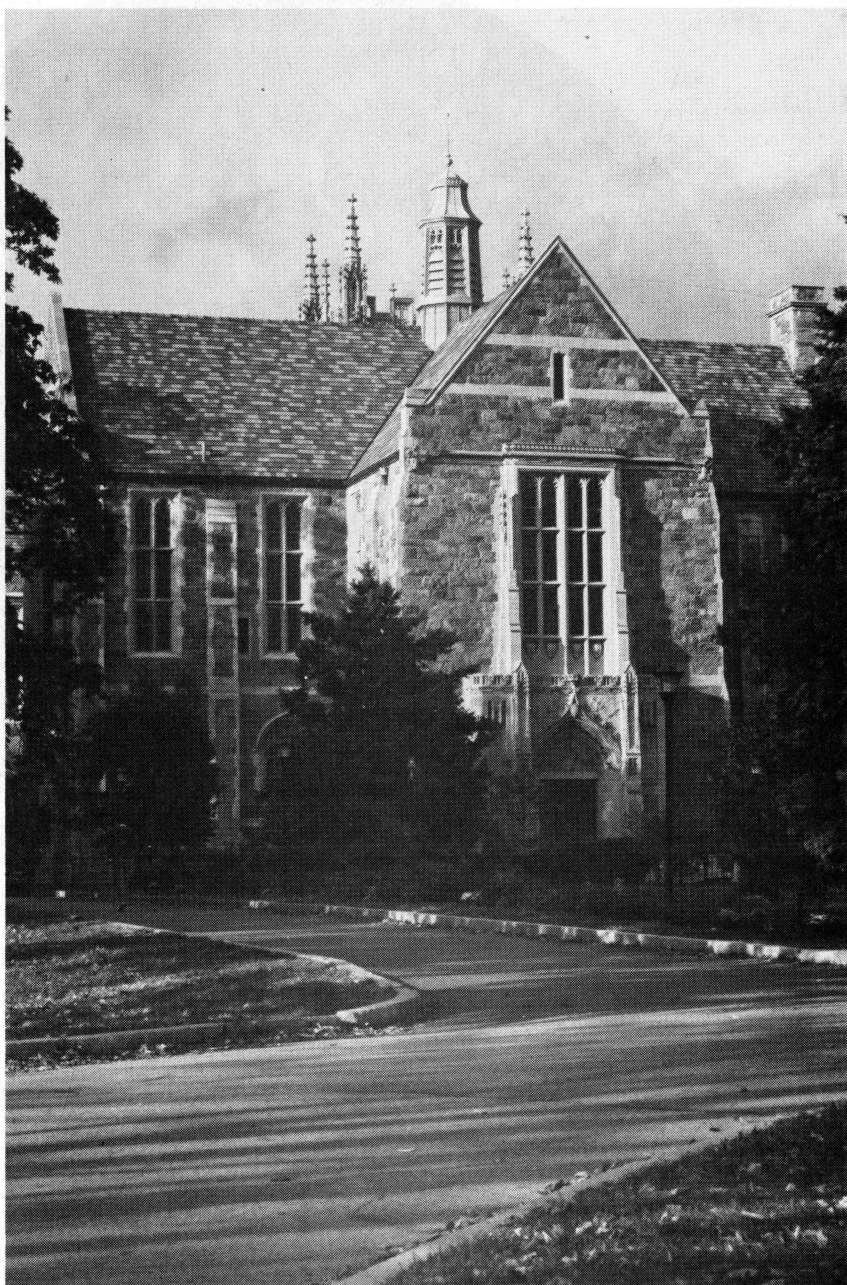
B.C. Chemistry Department

A brief historical review

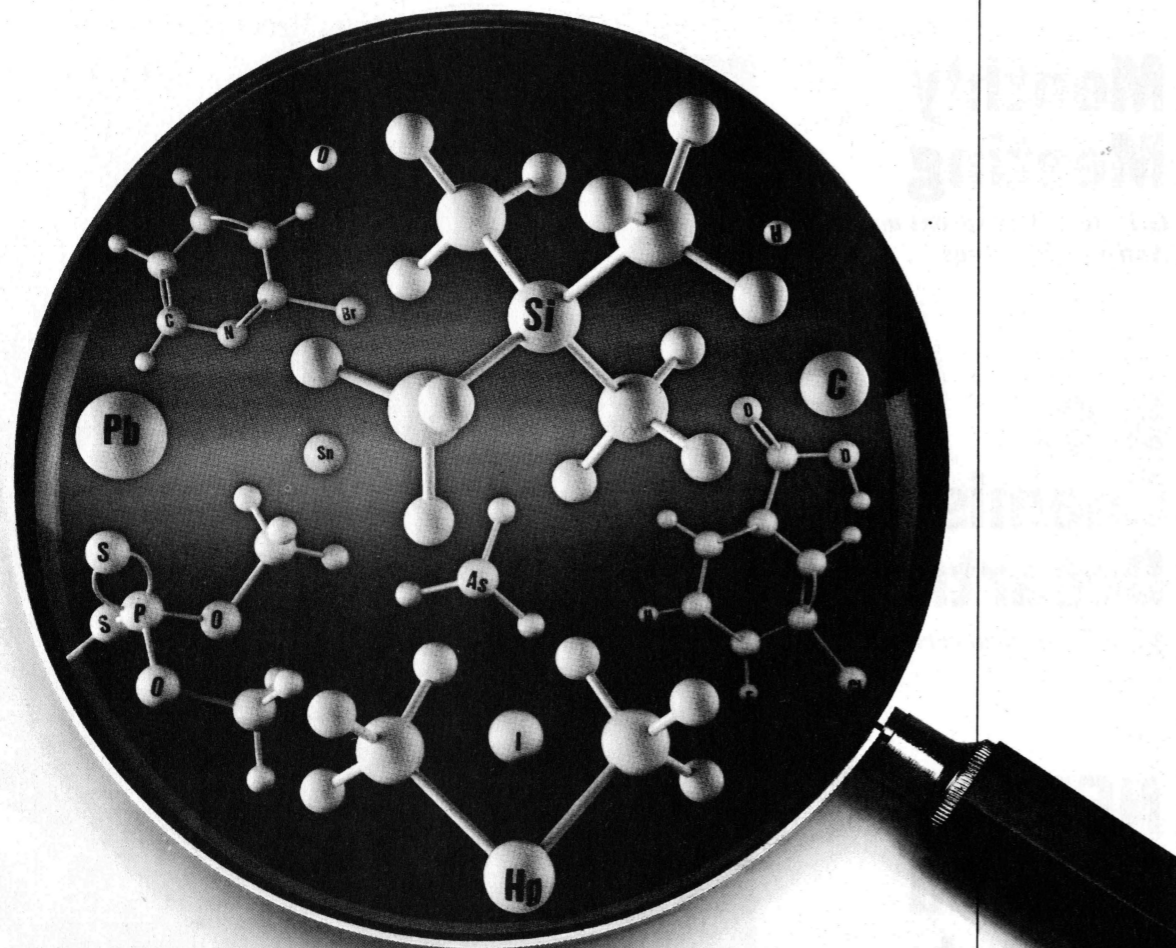
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Cover: The Bapst Library on the Boston College Chestnut Hill Campus
(Photography by Boston College, Office of Communications)

Deadlines: April issue: February 15; May issue: March 20.

THE NUCLEUS

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



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

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The Chemistry Department, Boston College

by Robert F. O'Malley

Boston College was founded in 1863 and was located in Boston on James Street. Chemistry was included in the curriculum for the first time in 1876; it was taught by a physician, Dr. William A. Dunn. Fifty years after its founding the college moved to its present location in Chestnut Hill. Chemistry was located in the basement of the only building (now Gasson Hall). In 1918 Father Michael J. Ahearn, S.J. became head of the Chemistry Department and the first degrees in chemistry were awarded in 1919. Father Ahearn was well known to members of the Northeastern Section and was Chairman of the Section at one time. Harold H. Fagan was a member of the class of 1919 and was the first to be awarded a masters degree, in 1921. He became a member of the faculty and taught analytical chemistry for more than forty years.

In 1924 a building devoted to the sciences was built and adequate facilities for chemistry were then available. Although chemistry courses had been offered for several years, a chemistry major with a program leading to the degree of Bachelor of Science in Chemistry was not introduced until 1925. Prior to that time students were prepared for careers in medicine and dentistry.

In 1928 Dr. David C. O'Donnell, who had received a Ph.D. in organic chemistry at Ohio State University joined the faculty. "Doc O'Donnell", as he was affectionately known, initiated a sound research program at the M.S. level and proved to be a truly outstanding teacher and revered faculty member. He retired in 1966 and many physicians and dentists in addition to the many successful chemists were among his former students. In 1938, Father Albert F. McGuinn, S.J. was assigned to BC as Department Chairman after receiving a doctorate in Biochemistry at Fordham University. Father McGuinn strengthened the

Department at both the BS and MS levels. He was active in the Northeastern Section and in the ACS at the national level. He was on the Committee on Chemical Education and served as its chairman. Under his guidance the Department received the approval of the ACS Committee on Professional Training.

After World War II hundreds of veterans came to the College to major in chemistry, which led to the hiring of new faculty and adding to the laboratory facilities. Two men who were to have a profound effect on the future of the Department joined the faculty: Professors Andre J. deBethune, a physical chemist, who retired last year, and Joseph Bornstein, an organic chemist, who is still on the faculty. Research at the M.S. level was strengthened by their efforts and financial support from government and industrial sources was available for the first time.

In 1958 a scientist, Father Michael P. Walsh, S.J. became president of BC with the vision of building a national university. A Ph.D. program in chemistry was initiated in 1959. The first Ph.D. degrees were awarded in 1964.

The growth of the Department to its present position is due to the efforts of many faculty members. In 1965 Father Donald I. McLean, S.J. and Dr. Irving J. Russell joined the faculty; they oversaw the complete remodeling of Devlin Hall for the Chemistry and Geology-Geophysics departments in 1968, following the construction of a new building (Higgins Hall) for the Biology and Physics departments. Father McLean was a physical chemist with a degree from Catholic University and research experience at Goettingen. He established a laboratory and obtained substantial funding for the investigation of gas phase reactions. Work in this field continues now under the direction of Professors Paul Davidovits and David McFadden. Father McLean left BC in 1972 for administra-

continued on page 6

February Meeting

The 722nd Meeting of the Northeastern Section of the American Chemical Society

Thursday, February 8, 1990
Simmons College, 300 The Fenway, Boston, MA
All activities will take place in the Main College Building.

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

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

8:00 p.m. *Deazatetrahydrofolates: New Anti-Cancer Drugs From Structural Design to Clinical Trial* — G. Peter Beardsley, Yale University

Refreshments will be served after the program.

Dinner reservations must be made no later than February 5, 1990. Please call Mrs. Piper at (800) 872-2054 or (508) 456-8227. The price of reservations not cancelled at least 24 hours in advance must be paid. Members, \$20; Non-members, \$22; Students and Retired Chemists: \$5.00. THE PUBLIC IS INVITED.

The meeting on March 8, 1990 will be the T.W. Richards Medal Award Meeting to be held at Harvard University. Awardee: Prof. Rudolph A. Marcus

G. Peter Beardsley

Dr. Beardsley is an Associate of Pharmacology in the Graduate School of Arts and Sciences and Associate Professor of Pediatrics in the School of Medicine at Yale University. He is also Chief of the section of Pediatric Hematology and Oncology at the Yale School of Medicine and Director of the Pediatric Oncology Program at the Yale Comprehensive Cancer Center.

His chemical education was acquired at M.I.T., S.B.-1967, and Princeton University, Ph.D.-1971. He received an M.D. from Duke University in 1974 and held post-doctoral appointments at Yale, 1974-1976, and Harvard Medical School, 1976-79. He served as

Instructor in pediatrics (1979-81) and Assistant Professor of Pediatrics (1981-85) at Harvard before joining Yale in 1985.

His research interests include the design, synthesis and testing of anti-neoplastic drugs, study of the functional consequence of structural lesions in DNA, and the mechanism of action of DNA polymerase.

He has authored over 50 journal articles and book chapters published in the synthetic chemistry, biochemistry, and medical literature and holds several patents for therapeutic chemicals. He joined the ACS in 1967. ◇

Deazatetrahydrofolates

New Anti-Cancer Drugs

The successful conception, design, synthesis and testing of new anticancer drugs is an extremely complex process requiring innovative fundamental chemistry, biochemical insight, medical judgement, legal sophistication, extreme persistence and lots of luck. This talk will present an overview of the development of a new class of chemotherapeutic agents from conception to clinical trial.

Deaza analogs of tetrahydrofolic acid are a new class of folate antimetabolites whose mechanism of action is fundamentally different from that of classical antifolates such as methotrexate. These compounds are highly potent anti-tumor agents in vivo, and are now undergoing clinical trials. Their rational structural design, mechanism of action, and features of their biochemical and cellular pharmacology will be discussed. ◇



Dr. G. Peter Beardsley with oncology patient (photo by courtesy of Yale Univ. School of Medicine)

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B.C. Chemistry Department

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tive positions at other Jesuit Universities. Col. Irving Russell, with a doctorate from the University of Chicago, had retired from the United States Air Force, where he directed a laboratory devoted to atmospheric surveillance of fallout from nuclear testing and accidents. He continued research in this area at BC. He became Chairman of the Department in 1966 and served in that capacity for six years. During that period additions to the faculty were made that led to vast improvement in its research capabilities and established the Department that exists today.

Professor Jeong-long Lin had been the Chairman during the most recent advances in the Department. Despite the many demands of the chairmanship, Professor Lin was able to continue his outstanding research in solutions of electrolytes and was an inspiration for his colleagues. During his tenure biochemistry was installed as one of the principal areas of research and teaching. He also led the attempt to have a new chemistry building erected. With the support of the president, Father J. Donald Monan S.J., and the administration it is now under construction and will be completed in the spring of 1991. He died in a tragic accident in the summer of 1989 — a severe blow to the Department.

Additions to the basic instruments, especially in NMR, mass spectroscopy and x-ray spectroscopy within the Department have also been made in recent years.

In September of this year the establishment of the Thomas A. Vanderslice Chair of Organic Chemistry was announced. Dr. Vanderslice, the former president of Apollo Computer Company, is an alumnus of the Department, class of 1953. Professor T. Ross Kelly is the first occupant of the Chair.

Professor David McFadden is the present chairman of the Department of seventeen faculty members.

Many faculty members who have contributed to the growth of the Department in the past have not been

mentioned and a history of the Department would be quite incomplete without mentioning the contributions to superb teaching by Professors George Vogel and O. Francis Bennett. The testimony of their former students is evidence of their unique contributions.

A history of the Department to be written in the future will pay tribute to the newer members who are contributing so much at this time, such as Professors James Anderson, E. Joseph Billo, Michael J. Clarke, Evan Kantrowitz, Larry Kool, Larry McLaughlin, Udayan Mohanty, Yu Kang Pan, Mary Roberts, Dennis J. Sardella, and Martha Teeter.

Little has been said of the former students of the Department. Needless to say, there have been many of them and we are proud of their accomplishments. Dr. Lloyd Taylor of the Polaroid Corporation and Past Chairman of the Northeastern Section is a member of the class of 1954. Professor Peter Dervan of California Institute of Technology, who will be the 1990 University Lecturer in March, is a member of the class of 1967.

Over the years, several members of the faculty have been active in the Northeastern Section. Professor E. Joseph Billo is the Chairman this year and Professor Robert F. O'Malley was a past Chairman.

How can we measure the changes over the years? The number of students is largely a reflection of economics and demographics. A better measure is the number of publications, research funding and the number of post-doctoral fellows in the department.

In the past, a few papers, a few thousand dollars of research funding and a post-doctoral fellow were sufficient to provide satisfaction.

In contrast, during the past year more than 60 research papers originated in the department, over two million dollars in research funds were received and fifteen post-doctoral fellows were in residence.

With a new chemistry building to be completed in the spring of 1991, a good faculty, much research in progress and a dedicated student body we look into the future with confidence. ◇

The Commonwealth of Massachusetts

In the year One Thousand Nine Hundred and Eighty-Nine

RESOLUTIONS COMMENDING THE NORTHEASTERN SECTION OF THE AMERICAN CHEMICAL SOCIETY

WHEREAS the American Chemical Society is the world's largest scientific organization and the premier chemical society in the country. Its international membership includes some Hundred and thirty-seven thousand professional chemists, chemical engineers and scientists in allied fields; AND

WHEREAS, the Northeastern Section of the American Chemical Society includes all members who reside in eastern Massachusetts or in New Hampshire, the Section was chartered in 1898 and incorporated in 1926. It currently enrolls some four thousand and five-hundred members; AND

WHEREAS, the principal activities are monthly scientific meetings, numerous award programs, publication of the *NUCLEUS* and programs in such areas as education, safety, professional and public relations. With the exception of a paid part-time secretary, all activities are carried out on a volunteer basis; AND

WHEREAS numerous activities are in support of young people in secondary school and college whose career goals in science meet with disparagement in the public eye and who need to be encouraged to ensure the national welfare of the future; AND

WHEREAS, each high school in the Section is encouraged to participate in the annual Ashdown High School Examination Contest and to seek for its students the opportunity to qualify for the International Chemistry Olympiad held this year in Halle, East Germany; AND

WHEREAS, other awards are given for college and secondary school teaching and for scientific work which has contributed to the public well-being; AND

WHEREAS, The Northeastern Section of the American Chemical Society provides a resource of expertise to government in such areas as the environment, natural resources, agricul-

ture, energy, education, health and recently participated in the workshops on SARA TITLE III, a Symposium on Chemical Hazards in the Home co-sponsored with the Massachusetts Department of Environmental Management, and a round-table discussion of Solid Waste Disposal at Faneuil Hall; THEREFORE BE IT RESOLVED that the Massachusetts House of Representatives extends its congratulations to the Northeastern Section of the American Chemical Society with its best wishes for contin-

ued success in all future endeavors; AND BE IT FURTHER

RESOLVED, that a copy of these Resolutions be forwarded by the Clerk of the House of Representatives to the Northeastern Section of the American Chemical Society.

HOUSE OF REPRESENTATIVES, ADOPTED, NOVEMBER 30, 1989.

(signed) George Keverian, *Speaker of the House*; Robert E. MacQueen, *Clerk of the House* ◇

State honors NESACS

At a ceremony on December 5, 1989 in the State House, Speaker George Keverian presented the above Resolution of the Massachusetts House of Representatives to Chairman Michael E. Strem. The resolution honors the Northeastern Section for its activities in the public interest.

Also present were Past-Chairman Thomas R. Gilbert, Trustee Phyllis A. Brauner, Katie Stygall and Valerie A. Wilcox. All of them are members of the Board of Directors of the Northeastern

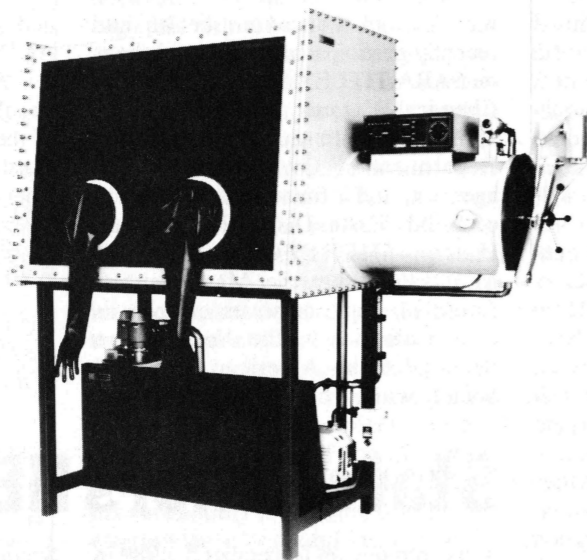
Section. The text of the resolution is shown on the left.

It will be recalled that the Northeastern Section held a reception for members of the State legislature and their aides on November 1, 1989 in the State House. Although the press of legislative business made it impossible for House Speaker Keverian to attend, he was represented by his aide, Maureen Casey. An account and pictures of that event were in the January *NUCLEUS*. ◇



Chairman Michael E. Strem receives the Resolution of the House of Representatives from Speaker George Keverian. Left to right: Phyllis A. Brauner, Valerie A. Wilcox, Katie Stygall, Speaker George Keverian, Thomas R. Gilbert, Chairman Michael E. Strem (photo by Mark E. Kasianowicz, Legislative Service Bureau)

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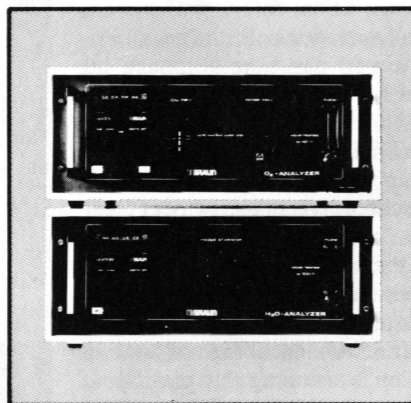
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The Professional Relations Column

By Myron S. Simon

Professionalism was the subject of an ACS conference last year sponsored by outgoing president Gordon Nelson and incoming president Clayton Callis. Aspects of this meeting were covered in a report by Robert K. Neuman, ACS Staff, which appeared in *Professional Post-Scripts*, a newsletter for "late career chemical professionals." While this newsletter is sent to ACS members over 55 some of the recommendations which were developed are of interest to professional chemists of all ages.

Four aspects of professionalism were chosen for examination:

- Career planning, including post-retirement careers.
- Employment relations including "temporary" employees, standards and ethics.
- Employment assistance, pensions, professional liability insurance.

- ACS policy making structure and general policy issues, including public awareness of chemistry.

Twelve topics were considered most pressing out of the 66 recommendations for action by ACS. To me the most important would be that ACS encourage wider compliance with the Professional Employment Guidelines (PEG), and develop guidelines for chemists working as "temps" or "part-timers." If you do not have a copy of PEG you may obtain one by calling Mrs. Piper at the Northeastern Section office. PEG summarizes the obligations of the chemist to the employer and the employer to the chemist. I reported on the availability of it and other useful publications of ACS in an earlier column (April, 1989).

Another recommendation was to provide a telephone service, a hotline, for ACS members who have urgent job-

related difficulties, including being terminated. This could give immediate aid and comfort to members in difficulty if done right. It is 800-227-5558, which can put ACS members in touch with personnel at the national office, and a competent telephone operator there can direct inquiries to staff members capable of counselling the calling chemist.

Topics more specifically related to older chemists dealt with late career options, portability of pensions, a retired chemists' committee at the national level, and surveying retired chemists for an insight into what programs and activities ACS might provide. Another idea was that ACS become a group rate provider of insurance in areas of health, homeowner, auto and financial services as well as professional liability insurance. ♦

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More on Chemistry Week

Household Hazardous Products Symposium

by Kristin Swope

Thirty people stood at a safe distance on October 28, 1989 as Springfield Fire Chief Raymond Sullivan mixed a common swimming pool chemical with a few drops of brake fluid. A minute later the mixture started to pop and crackle; suddenly it burst into flame.

The dangers of improper storage were clearly shown in this demonstration. It was part of "Hazardous Substances in the Home" symposium held at Minuteman Technical Vocational High School in Lexington. About thirty chemists, students and town officials from Massachusetts attended the all-day event. The conference covered improper use of hazardous products, threat to children's health, and problems with disposal. The Northeastern Section co-sponsored the symposium as part of National Chemistry Week together with the Massachusetts

Departments of Environmental Management and of Public Health.

"The average consumer brings over 400 toxic products into the home every year," said Dr. Alan Woolf, Director of the Massachusetts Poison Control System. He and others stated: (1) Consumers have a false sense of security (2) They feel if a product can be bought over the counter it must be safe (3) They either do not read the directions or do not follow them correctly.

It is never wise to mix household products, said Kaufman, Chairman of the Safety Committee of the Northeastern Section.

He related the story of a woman who died when she mixed bleach and Vanish to get rid of mice. What she did not know was that the mixture emits two very toxic gases, chlorine oxide

and nitrogen trichloride. Bleach and any ammonia product will react the same way.

Prevention of accidental exposure to a toxic chemical is especially important when there are young children in the house. Woolf told the story of a two year old who was discovered by his parents next to an open bottle of anti-freeze with some dribbling down his chin. They assumed he had not drunk any. He was not taken to the hospital until the next morning when his parents could not wake him. However, he survived the episode. The parents' first step should have been to call the poison center, said Woolf. Home remedies and even label directions should be checked with the center before starting any treatment. Label information is often incorrect. Always call the center first to confirm the treatment," he advised.

Children often cannot distinguish between what is food and what is not. "What is an attractively packaged product to an adult consumer is also attractive to a child," said Woolf.

Leftover hazardous household products are often disposed of improperly, said Barbara G. Kelley, Regional Director of the Massachusetts Department of Environmental Management. Many people do not stop to think when they toss batteries or cleaning products into the trash. These toxic substances seep out of the landfills and pollute the environment.

The first hazardous household waste collection day held in the nation took place eight years ago in Lexington. Now there are collection days in over 168 communities across the country, said Kelley.

Because hazardous waste collection days are held once a year, people have to save up all their hazardous household waste. Many find it easier to throw it down the sink than to save it, remarked Kelley. Permanent collection sites are being established in Sturbridge and Martha's Vineyard to address this problem.

Source reduction can avoid the problems of storage and disposal. Woolf recommended that consumers buy only what they need at the time. If they do not use it up then pass it on to someone who will. ◇

Science Teaching on the Cutting Edge

by Kristin Swope

Boston Nobel Laureate Dr. Dudley Herschbach says he is saddened by today's students' lack of interest in science. He spoke on November 4, 1989 at a science education conference at Framingham State College.

"Imaginary gardens led to the discovery of the DNA code and all that comes from it," said Herschbach, a Harvard University Professor of Chemistry. "It makes me so sad that so many of the younger generation don't realize the imaginary gardens are there."

Over 110 elementary and high school teachers from eastern Massachusetts and New Hampshire attended the conference. The main topic of discussion was how to stimulate students' interest in science. There were workshops of classroom demonstrations that teachers could use to illustrate science subjects including chaos and plant growth. The conference, "Science Teaching on the Cutting Edge II" was sponsored by the Northeastern Section as part of National Chemistry Week.

Dr. Herschbach, the keynote speaker, pointed out a child's interest in science emerges at a young age when the attention is caught by an aspect of nature, awakening an interest in understanding it. He remembered his first brush with the wonders of science when he found a map of constellations in an issue of National Geographic. He used to climb a tree and attempt to identify the constellations with it. He was encouraged by a teacher who gave him a book on astronomy. A child's interest in science must be fostered and supported by teachers, Herschbach said. Similar experiences have sparked most scientists' interest.

Herschbach offered one reason for students' reluctance to go into science. "In elementary school or high school it [science] is the first thing that scares them. They are afraid they won't get the right answers. There seems to be such an emphasis on 'right answers,'" he said.

The students should learn the stories of science he said. Science is done

in fits and jerks. The scientist is always guessing and almost always guessing wrong, he observed. Wrong answers can give new perspectives on the problem. "Science encourages you to be wrong. The truth always waits patiently for you," said Herschbach.

Chemistry is an especially tough subject for students to grasp. The changes and concepts it deals with are invisible to the eye. Chemistry is like an impressionist painting, he said: "Stand too close, and all you see is dots." You need to stand at the proper distance to understand the painting.

"In an art gallery two pictures hung side by side may need to be viewed at different distances. We (teachers) take students through at high speed only a foot or two away and it is all a blur to them," he said.

Across the country, the number of people receiving advanced degrees in

science has declined dramatically in recent years. In fact, interest in science has decreased 33% over the last 20 years and interest in academic careers in science has fallen 80% according to Paul Weller, President of Framingham State College.

The finale of the conference was a demonstration designed for a middle school audience. Using a candle flame Professor Tom Greenbowe of Southeastern Massachusetts University popped three balloons filled with different gases. The one containing a mixture of hydrogen and oxygen was most impressive: it exploded into a fireball with a loud bang. Then a giant balloon was brought into the auditorium by a college girl dressed in a fireman's gear. The audience began to titter in slightly nervous anticipation — but the balloon was only filled with helium, so it popped in normal balloon fashion. ◇



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Board of Directors

Condensed Minutes, Meeting of November 9, 1989

by David M. Howell

Secretary's Report: A. Heyn corrected the October Minutes: The advertising rates for the special April NUCLEUS will be *twice* (not three times) the normal rate. The minutes of the October meeting were ACCEPTED as corrected.

Treasurer's report: Dr. Piper reported that the cash balance at present is essentially zero. A special mailing to members urging payment of Local Section dues was not cost effective. Report ACCEPTED.

Budget Committee: The 1990 committee members are M. Strem, J. Piper (chair), E.J. Billo, C. Kolb and J. Neumeyer.

Chairman's Report: Dr. Strem reported on the reception for legislators at the State House on November 1. Many Board members attended and several legislators and their aides were

there part of the time. A similar event is planned for next year. He thanked P. Brauner and K. Stygall for their help.

Nominating Committee for 1990: Esther Hopkins and David Howell were elected by the Board to serve in 1990. The other members will be Michael Strem (*ex officio*, chair), Jerry Bell and William Foye.

Board of Publications: J. Vnchak reported that the Board recommends strongly that copies of the April NUCLEUS be made available to National ACS Meeting registrants.

Constitution and Bylaws: A. Heyn reminded members that the December meeting of the Section will be the Annual Meeting and that the recent Constitution and Bylaw changed will be voted at that meeting.

Education: D. Lewis expressed

her thanks to students at the Mass. College of Pharmacy, Simmons College and Suffolk University for helping in several capacities during Chemistry Week at the Science Museum.

Speaker's Bureau: M.A. Solstad reported that there were 14 engagements of speakers through the bureau.

Program Committee: E.J. Billo announced the December program, which is to be a holiday party in conjunction with the Annual Section Meeting at Simmons. C. Kolb, the 1990 Chairman-elect presented the programs arranged so far for 1990.

Public Relations: M. Strem praised the public relations efforts for Chemistry Week.

National Meeting: E.J. Billo reported that local arrangements were on schedule. It is planned to have special articles in the NUCLEUS which is to be available to registrants. Volunteers are needed to help at the Employment Clearing House. With free registration and free lunches, this should be attractive to retired members.

continued on page 13

Board of Directors

continued from page 12

Public Service: Some of the Chemistry Week activities will continue into later November and December. The workshop at Framingham State was very successful, as was the reception at the State House. The Holiday Lecture at the Science Museum is expected to be filled. Video tapes of some of these events will be available on loan.

Old Business: Retired Chemists: E. Becker said that there are 491 retired members of the Section, which is 10% of the Section.

New Business: How to involve New Hampshire members to a greater extent? Suggestion: Set up a subsection. Beth Dustin was suggested as contact.

J. Piper inquired whether the Section mailing list might be made available to IBM for a fee. Safeguards are to be taken so that addresses are only used for the particular mailing. It was VOTED to permit this use with the safeguards indicated. ◇

Last Chance to Volunteer

for Spring 1990 National ACS Meeting

The 199th National ACS meeting will be held in Boston on April 22-27, 1990. The Northeastern Section will be the host section for the meeting and is responsible for the operation of the Hospitality Center, running the General Interest Program, and arranging for Student Personnel and volunteer workers. To volunteer, or for further information, contact the chairperson of the appropriate subcommittee listed below, or contact General Chairperson Joe Billo, Boston College, (617) 552-3619 or Section secretary Karen Piper.

HOSPITALITY CENTER: Volunteers are needed to provide information on points of interest, transportation, restaurants, etc. Volunteers are also needed to guide groups on walking tours or via public transportation. The center will be open from about 9:00 am to 5:00 pm (exact times will be decided later). Contact Mary Burgess, Army Materials Lab, (617) 923-5562.

GENERAL INTEREST PROGRAM. A tour program has been arranged. Plant tours, (to Repligen, Polaroid, Natick Labs, Mass. Bay Brewery) require one or more ACS members to shepherd the group to and from buses, etc. Contact Myron Simon, (617) 332-5273.

STUDENT PERSONNEL. College and university students are needed to assist at registration, with audiovisual services, or at the employment clearing house. Duties include acting as messengers, setting up projection equipment, copying, or distributing programs. Students will be paid and will also receive free admission to the meeting. Contact Carolyn Spodick, Simmons College, (617) 738-2181.

PUBLIC RELATIONS. To assist with local publicity for the national meeting, contact Michaeline Chen, Army Materials Lab, (617) 923-5042. ◇

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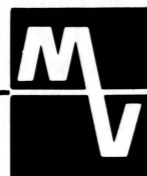
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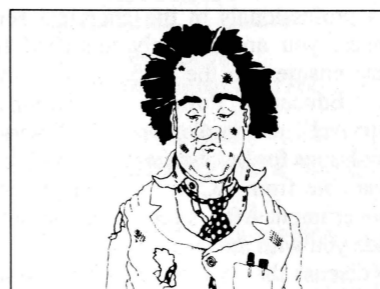
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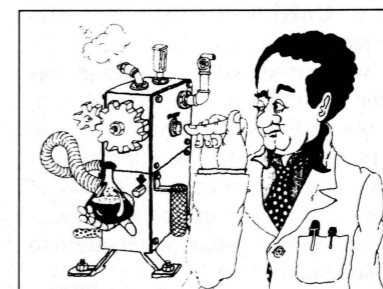
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Bloodhounds 1990 Norris Award and Writers

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So, if you think we mean YOU, let your conscience get the better of you and contact the section office or Myke Simon, Associate Editor, 20 Somerset Rd., West Newton, MA 02165, Tel. 332-5273. ◇

Nominations

Nominations are being received for the 1990 James Flack Norris Award for Outstanding Achievement in the Teaching of Chemistry. The Norris Award is presented annually by the Northeastern Section, and consists of a certificate and an honorarium. Nominees must have served with special distinction as teachers of chemistry at any level: secondary school; college level or graduate school as attested by broad evidence of their students' subsequent careers in chemistry and/or other evidence of wide-ranging effect on the teaching of chemistry.

Nominating material must be limited to 30 pages and focus specifically on the nominee's contributions to and effectiveness in teaching chemistry. This should include a thorough curriculum vitae with listings of honors, awards and such publications as relate to education. There must be a nominat-

ing letter and as many seconding letters as are necessary to convey the nominee's qualifications for the award. These are to outline, in narrative form, the nominee's qualification for this award for outstanding achievement in teaching chemistry. These letters will show the impact of the nominee's teaching in inspiring students to spend their professional life in chemistry, with broad student testimonial. They will also attest to the influence of other activities in chemical education such as textbooks, articles or other activities at national level. Materials should be of standard 8 1/2 x 11 size for binding but should not include reprints or books.

Nominating materials should be sent before April 15 to Prof. Mary Jane Schultz, Department of Chemistry, Tufts University, Medford, MA 02155. ◇

ACS Notes

ACS Issues "White Paper" on Science Education

The crisis affecting science education in the United States is well-documented, and defining the problems without offering solutions has become a popular pastime. In "Education Policies for National Survival," the ACS is taking a different approach by making specific recommendations to improve the quality of science education at all levels — from kindergarten to continuing education.

The "white paper," which was developed by the Society Committee on Education and introduced at a recent Congressional briefing, addresses such areas as teacher education and assessment, curriculum, faculty supply and development, underrepresented populations, and research support. Recommendations are grouped according to educational system levels: prehigh school (K-8); secondary schools (9-12); two-year colleges; four-year colleges, universities, and graduate education; and continuing education.

The "White Paper" And You

As professionals in the chemical sciences, you are uniquely qualified to help ensure that the recommendations in "Education Policies for National Survival" are implemented. "Emerging Issues for Involvement," a brochure available from ACS's State and Local Government Affairs program, can provide you with the information you need to discuss the "white paper's" recommendations with your state and federal legislators and your state department of education.

For assistance in getting involved in public affairs activities, please contact Jane Risk, ACS State and Local Government Affairs, at (202) 872-4391. Copies of the "white paper" and the "Emerging Issues" brochure are available free by calling the above number or by sending a self-addressed mailing label to State and Local Government Affairs, ACS, 1155 16th St. NW, Washington, DC 20036. ◇

Eli Lilly Travel Grants

Eli Lilly & Co. is sponsoring a program to provide funding for women chemistry students at the undergraduate, graduate, and postdoctoral levels to travel to scientific meetings and present results of their work. With these awards, Eli Lilly & Co. hopes to increase the participation of women chemists in the scientific community.

Grants cover meeting registration, travel, and accommodations and are restricted to travel in the continental United States. Only U.S. citizens and permanent residents are eligible to receive the grants. The deadline for

application is April 1, 1990 (for meetings between September 1 and December 31, 1990). The decisions will be made by the Awards Subcommittee of the ACS Women Chemists Committee, and the awardees will be notified 2 months before the meeting date. Awards will be based on scientific merit and financial need, with preference given to persons who have not previously made a presentation at a major meeting.

Contact Connie Senior for details on the application process at (508) 689-0003. ◇

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Calendar

Thursday, Feb. 1

Professor C. Braun (Dartmouth College)
"Geminate Charge Pairs in Organic Solids and Liquids"
Northeastern University
Hurtig Hall room 129 at 4:00 pm

Polymer Science/Plastic Engineering Seminar Series
Dr. C. Venkatachalam (Polygen Corp.)
Title to be Announced
University of Lowell
Olney Hall 428 at 11:30 am

Monday, Feb. 5

Professor Ernest Grunwald (Brandeis University)
"The Interior Structure of Some Ion Pairs"
Brandeis University
Gerstenzang 122 at 4:00 pm

Dr. Willem Leenstra (University of Vermont)
"Bilirubin Secondary Structure Investigated by Fluorescence Raman, ODMR and Computational Studies"
University of Lowell - Biochemistry Seminar Series
Olney Hall 428 at 3:00 pm

Wednesday, Feb. 7

Dr. John P. Dirlam (Pfizer, Inc.)
"Antibiotic Research: Chemical Studies with Indolmycin and 24-Dehydrozincophorin"
Southeastern Massachusetts University
Science & Engineering Building room 305 at 4:00 pm

Thursday, Feb. 8

Polymer Science/Plastic Engineering Seminar Series
Professor W. Rudolph Seitz (University of New Hampshire)
"Infrared to Optical Detection of Trace Explosives in Ground Water"
University of Lowell
Olney Hall 428 at 11:30 am

Monday, Feb. 12

Dr. Ian Fleming (University of Cambridge, UK)
"Stereocontrol in Organic Synthesis Using Silicon Compounds"
Brandeis University
Gerstenzang 122 at 4:00 pm

Tuesday, Feb. 13

Professor Julian Tyson (University of Massachusetts)
"Small Bore Analytical Chemistry-Flow Injection Techniques for Enhancing the Performance of Analytical Methodology"
Northeastern University
Hurtig Hall room 129 at 4:00 pm

Thursday, Feb. 15

Polymer Science/Plastic Engineering Seminar Series
Professor Donald L. Wise (Northeastern University)
"Application of Biopolymers"
University of Lowell
Olney Hall 428 at 11:30 am

Monday, Feb. 19

Professor David Smith (University of Birmingham, UK)
"Interstellar Molecules: Organic Chemistry Near 10K!"
Brandeis University
Gerstenzang 122 at 4:00 pm

Wednesday, Feb. 21

Dr. James H. Davis (Brandeis University)
"Stacked Carborane Complexes: New Polymer Precursors"
Southeastern Massachusetts University
Science & Engineering Building room 305 at 4:00 pm

Thursday, Feb. 22

Polymer Science/Plastic Engineering Seminar Series
Professor J. Koberstein (University of Connecticut)
"Interphase Partitioning in Multiconstituent Polymers"
University of Lowell
Olney Hall 428 at 11:30 am

Harvard/MIT Inorganic Seminar Series
Professor Peter Wolczanski (Cornell University)
"Formation and Reactivity of Early Transition Metal Nitrogen Bonds"
Harvard, Mallinckrodt MB-23 at 5:00 pm

Monday, Feb. 26

Professor William Gelbart (University of California at Los Angeles)
"Effects of Flow on Micellar Size and Alignment"
Brandeis University
Gerstenzang 122 at 4:00 pm

Tuesday, Feb. 27

Dr. Duncan Brown (Advanced Technology Materials, Inc.)
"The Role of the Mechanism in the Design of Organometallic Reagents for the CVD of Semiconductors"
Northeastern University
Hurtig Hall room 129 at 4:00 pm

Wednesday, Feb. 28

Dr. Edward Cain (Rochester Institute of Technology)
"Teaching Chemistry to the Physically Handicapped"
Southeastern Massachusetts University
Science & Engineering Building room 305 at 4:00 pm

Thursday, March 1

Polymer Science/Plastic Engineering Seminar Series
Professor Lowell Hall (Eastern Nazarene College)
"Chemical Graft Theory and Approaches to Structure-Property Relationship"
University of Lowell
Olney Hall 428 at 11:30 am

Notices for the Nucleus Calendar should be sent to:

Cynthia McGowan
Department of Chemistry
University of Lowell
Lowell, MA 01854
Phone: (508) 934-3828
(Note: Material should be sent so that it arrives before Jan. 25, 1990 for the March Nucleus.)

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