

FEBRUARY 1986

the nucleus



VOL. LXV, No. 5

OF THE NORTHEASTERN SECTION OF THE AMERICAN CHEMICAL SOCIETY



FEBRUARY MEETING

ANGELO A. LAMOLA

*Bilirubin: Photochemistry, Photophysics,
Photobiology, Photomedicine*

Thursday, February 13, 1986
at Harvard University (see page 4)

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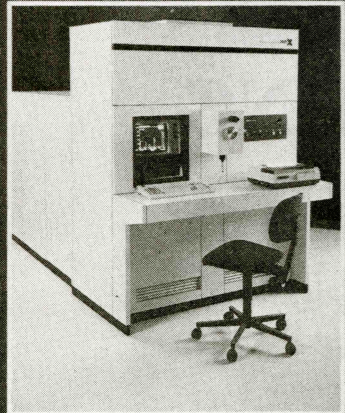
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the nucleus

Dedicated to the Memory of James Flack Norris

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1985 REPORT OF THE BOARD OF PUBLICATIONS, NESACS

The 1985 members of the Board of Publications were Arno Heyn, John Neumeyer, and Don Rickter (Chairman). They met six times during the year (in Jan., Feb., March, Sept., Oct., and Dec.) Written reports from all but the last meeting were shared with the Board of Directors. Adrienne Dey, Editor of The Nucleus, and Bill Adams, Business Manager, met regularly with the Board of Publications; Dick Handrick, Editor of the 1985 Section Directory, and Zvi Szafran, Contributing Editor to The Nucleus, attended some of the meetings. Crist Filer, 1984 Chairman, attended the January meeting. That meeting was at Northeastern University; all others were in Needham.

This year was the first in which the Editor and the Business Manager had contracts and were paid. Both contracts are on a calendar year basis, expiring on 31 December 1985. The Editor received an honorarium of \$500 per quarter and put out eight issues of The Nucleus. The Business Manager received 25% of the advertising revenue.

A resplendent blue directory was printed, thanks to Dick Handrick. Bill Adams obtained advertising for the directory.

The Board of Publications is grateful for the dedication and hard work by a small number of talented people. More participation by other members of the section would lighten their loads and improve the variety of stories published. There is a need for more advertising. Suggestions are welcome.

We have ongoing concerns. The printer was not always reliable in meeting the schedules — and telling us of change. Most members suffer from the vicissitudes of third class mail delivery — by the U.S. Postal Service (and by some employers).

Dr. Adrienne Dey is continuing as Editor of The Nucleus. She has been a professional performer in the position since October 1979. Dr. William Adams will continue as both the Business Manager and the Advertising Manager. Both people put in uncounted hours of frustrating labor and deserve the thanks of our members.

I appreciate the opportunity to have served with all of the people named above, during the past three years — and I wish John and Arno the best for the coming year.

Donald O. Rickter, Chairman

**James Flack Norris
Award of the Northeastern
Section ACS for
Excellence in Teaching**

Nominations are being received for the 1986 James Flack Norris Award for Outstanding Achievement in the Teaching of Chemistry. The annual award, consisting of an appropriate scroll and an honorarium, is presented by the Northeastern Section of the American Chemical Society. Nominees must have served with distinction as teachers of chemistry in a university, college or secondary school.

Nominating materials should include a curriculum vitae and a listing of honors, awards and publications, especially those germane to the Norris Award, a nominating letter, and as many seconding letters as are necessary to convey the depth and breadth of the nominee's qualifications for the Norris award. These letters should outline in narrative form the reasons why the candidate is deserving of the Norris Award and might include comments on the impact of the nominee's teaching at the high school or college level, the influence of the nominee's textbooks, articles, or activities on chemical education at the national or international level, and the success of the nominee in inspiring students to spend their professional lives in chemistry.

Nominating materials should be sent before April 15, 1986, to Ms. Ethel Schultz, Associate Program Director, SEE-DTPE, National Science Foundation, 1800 G. Street, N.W., Washington, DC 20550.

ABSTRACT

Presently each year in the United States about 100,000 newborn infants are exposed to bright blue light for several days in order to reduce their burdens of unconjugated bilirubin and avoid the neurological consequences of neonatal jaundice. The molecular basis of this phototherapy is now reasonably well understood. Both configurational and structural photoisomerization of bilirubin take place yielding isomers that are excretable without conjugation. Processes involved in the pathway from the picosecond time scale to days have been elucidated. Some intriguing observations from the chemist's point of view include: an extraordinary regioselectivity for configurational photoisomerization in that only one of three possible configurational isomers is formed *in vivo*; configurational isomerization of protein bound bilirubin occurs in a few picoseconds; modest structural changes lead to a tremendous increase in the transport of the pigment through hepatocytes into the bile.

FEBRUARY MEETING

THE SIX HUNDRED AND NINETIETH
MEETING OF THE NORTHEASTERN SECTION
OF THE AMERICAN CHEMICAL SOCIETY

Thursday, February 13, 1986
at Harvard University

5:30 pm Social Hour: Faculty Club, 20 Quincy Street
6:30 pm Dinner: Faculty Club, 20 Quincy Street
8:00 pm Lecture: Science Center Lecture Hall D
1 Oxford Street

ANGELO A. LAMOLA
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**Angelo A. Lamola
Biographical Sketch**

Angelo Lamola received his Bachelor's degree from M.I.T. and his Ph.D. from California Institute of Technology working on photochemistry with George Hammond and his pioneering group in 1965. After a time at Notre Dame as Assistant Professor, he joined Bell Telephone Laboratories in 1966 in the Biophysics Department. In 1980 he was

appointed head of the Molecular Biophysics department. In 1985 he became Director of Chemical Research at the Polaroid Research Laboratories. He is also Adjunct Professor of Photobiology, College of Physicians and Surgeons, Columbia University. He is the author of many research papers and has given many invited lectures. Among his awards may be mentioned the Backeland Award of the American Chemical Society in 1977.

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PUBLIC PERCEPTION AND CHEMICAL REALITIES

Summary of the Hazardous Waste Symposium

by James A. Kaufman

The Public Affairs Committee of the Northeastern Section sponsored a Hazardous Waste Symposium at Framingham State College on Saturday, December 7th. The symposium was attended by more than seventy people representing the public and private sectors. They were treated to informative and provocative presentations and lively discussions moderated by Section Chairman Dr. Myron Simon.

Dr. Paul Weller, President of Framingham State College (himself a former chemist) welcomed the group and spoke on "The Hazards of Waste." Dr. Weller commented on the difficulty in recognizing waste and the successes we've had in the past 50 years. He pointed to the problems created by our successes, the need for better trained people and the cooperation between educational institutions and industry. He noted that "the political and interpersonal problems can be harder to solve."

Mr. Merrill S. Hohman, Director of the Waste Management Division of EPA Region I, provided an overview of the hazardous waste problem. He mentioned that this is not a new problem. For example, there were complaints about the Woburn site dating back to 1867. Today the country produces 280 million metric tons per year of hazardous waste. (It was later noted by Geraldine Cox of the Chemical Manufacturers Association, CMA, that this is 90% water.)

Mr. Hohman observed that today the problem involves more unusual organic chemicals and that new analytical techniques have made it possible to detect these substances at increasingly lower concentrations. The implementation of RCRA, the Resource Conservation and Recovery Act, has created a cradle to grave view of the hazardous waste problem. He concluded by stressing that we have the technology to solve our technical problem. The people problem is more difficult. We suffer from the "NIMBY Syndrome"—Not In My Back Yard.

The morning session focused on management issues. The first speaker was Michael Strem, President of Strem Chemicals, Inc. of Newburyport, MA. Dr. Strem discussed the plight of the small businessman trying to deal with difficult disposal procedures, increasing disposal and insurance costs, liability issues, and recordkeeping. He emphasized the need for methods other than direct regulation and for better information transfer.

Joan B. Berkowitz is a vice president with Arthur D. Little in Cambridge. She described the problem as being 30% technical, 30% legal, and 40% political. It is complicated and serious and we don't need emotionalism. She suggested that "hazardous waste clean-up is a preoccupation of the affluent." And, "the \$2 billion may not be justified by the risk."

Allen McKim, President of Clean Harbors, Inc. from Braintree commented on the public's not wanting to hear about handling wastes properly. He feels we badly need a rotary kiln incinerator in our region to process our hazardous wastes.

Merrill Hohman of EPA was the luncheon speaker. Better Living produces chemical wastes. Unfortunately, "Today the public says a chemical is guilty until proven innocent." "Traffic and our homes pose greater risks than hazardous wastes." "There is no immediate risk to public health in New England."

The afternoon session was devoted to siting and people problems. The first speaker was Geraldine Cox of CMA. Dr. Cox is vice president and Technical director. She feels the problems are still the same today as they were 20 years ago. Part of the problem is that the public deals with feeling, emotions, and perceptions. She described the problem in terms of Maslow's Hierarchy of Needs.

"People will ignore the risks of what they want to do and invoke the risk for what they don't want to do." We need to stop talking about ppm and ppb. "People only hear the million or billion." Put in all the zeros.

The importance of perception was highlighted by an example of a study which solicited opinion on relative hazard from a group of experts and a group from the League of Women Voters. The group from the league ranked nuclear as number 1 and x-rays as number 22. The experts ranked nuclear as number 23 and x-rays as number 7.

The community needs to perceive the benefits of siting. What can we learn from the lessons of siting prisons? Unfortunately, the media sells on bad news and this makes finding solutions more difficult.

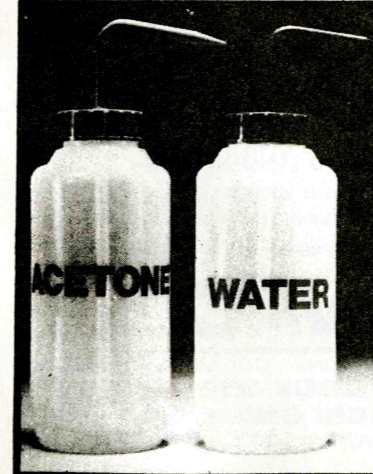
William White, General Manager of General Chemical Corp. in Framingham described the operation of a solvent recycling facility. He commented on some of the problems they had encountered in seeking a new site. An invitation was extended to all interested to tour their facilities. Call Mr. White if you are interested.

Wallace E. Stickney is Assistant for Environmental Policy in the Office of the Governor in the State of New Hampshire. More recently he has been appointed commissioner of transportation. He presented his nine laws of hazardous waste management. He cautioned on being aware of the ubiquitous alternative. It will rise up and bite you in the ankle. Remember, "One man's need is another man's poison."

The symposium's final speaker was State Representative David Magnani. He spoke on the problem of perception. He had the audience try to look at the issues from a perspective other than their own. It became obvious how difficult this is to do. "The problem will not be solved unless we walk in each others' moccasins." "Solutions must be in everyone's interests." Rep. Magnani's experience in dealing with hazardous waste issues in his own district has underscored the need for all parties to come together and to speak with each other in private. "We must

continued on p. 6

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learn to deal with complexity because the problem is complex."

Dr. James A. Kaufman, Chairman of the Northeastern Section Safety Committee provided a brief summary of the symposium. Dr. Kaufman asked the audience and speakers for examples of documented cases of harm to the public from hazardous wastes. Dr. Cox of CMA cited a study conducted by 15 medical centers which identified one incident which affected five people.

The problem, noted Kaufman, "is that the public perceives the hazardous waste to pose a much greater risk than it actually does. The public hysteria interferes with solutions which are already available."

An alternative approach is to focus on our educational system. "Let's bring a better understanding of health and safety issues into the elementary and secondary curricula." Children can learn that life is filled with hazards, how to identify them, and how to protect themselves.



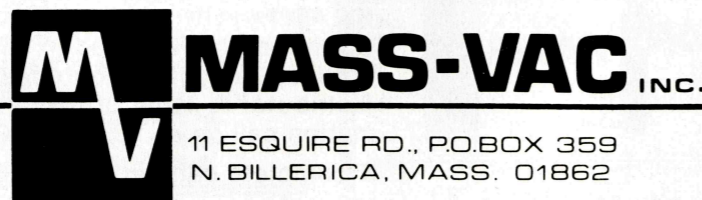
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BOARD OF DIRECTOR'S MEETING

Northeastern Section, ACS
December 5, 1985

The December 5, 1985 meeting of the board of Directors of the Northeastern Section of the ACS was called to order at 4:30 pm in the Cabot Room, Mallinckrodt Building, Harvard University. The following members of the Board were present: E.J. Billo, Phyllis Brauner, Bette Bridges, Michaeline Chen, Donald Ciappenelli, Lawrence Duffy, Crist Filer, Esther Garber, Wallace Gleekman, G. Richard Handrick, Arno Heyn, Esther Hopkins, David Howell, James Kaufman, Truman Light, Janet Perkins, James Piper, Arthur Reis, Donald Rickter, Myron Simon, Lloyd Taylor and Sr. Magdalen Julie Wallace. Chairman M. Simon was presiding.

Trustees—R. Handrick commented that the funds being provided for the Esselen Award will cover the monies necessary for presenting the Award for the next ten years, if all that is done is the distribution of the body of the fund each year. With reinvestment of the income, the amount given should last for twenty years.

The market value of the Funds held in trust has increased 11%. The Trustees suggested that monies were available for increased use of the Henry Hill Fund for the Hill Awards.

R. Handrick proposed that the High School Teacher Award be paid out of the Permanent Trust Fund, as this fund has not been used recently nearly as much as the others. (\$2000 each year will be distributed) It was suggested, and the Long Range Planning Committee concurred, that they meet again shortly to prepare options to present to the Board. Brief mention was made of the status of the Richards Medal Fund, since the Richards' Medal award will be made in 1986.

Awards—T. Light suggested that the Board again vote to award the Richards Medalist a cash award. D. Ciappenelli will look into this and into whether the Richards Medal Committee is prepared to make the Richards Medal presentation in February 1986.

The first date of the G. Esselen Award presentation will be in April, 1987, as mentioned in the correction to the November minutes. Suggested By-law changes which will enable the Northeastern Section to make the award will be presented by T. Light in February. The two sections needed will (a) make the financial arrangements and (b) establish the ground rules for making the award.

Treasurer—The income last month consisted mostly of Norris Funds which were transferred from the Trustees' accounts to pay the expenses of the Norris Award made in November. The Treasurer asked that Account #24 be increased by \$1000 to \$7500 to cover the overrun in costs of the Directory. The Board so voted.

Total Income increased to \$77,417. Total Expenses to \$86,305. These were voted by the Board. There is presently zero funds in the Operating Account. The Treasurer reported that the Section would have to conform to a more rigid budget next year.

Board of Publications—The Board met for their last session on November 26, 1985. D. Rickter mentioned that his three year term ends on December 31, 1985 and that a new member would have to be nominated by the Chair for 1986. The Board of Publications reaffirmed their confidence in the present Editor of the NUCLEUS and the Business Manager for the NUCLEUS and the Directory. A change in printers may be in order to give the Section better service.

Chemical Education Committee—B. Bridges (Chair, High School) announced that the High School Committee was presently working on the Ashdown Exam. It is contemplated that the exam will be April 12, 1986. Our winners will be guaranteed a chance in the Olympiad through the procedure of our giving the national committee the number of places to reserve for our winners.

The previous winners of the exam will be allowed to take the exam again solely to secure qualification for the Olympiad. It is anticipated that the winners and their teachers will be honored at the Northeastern Section meeting, May 6, 1986. B. Bridges announced that the annual fund drive for financial support for the Ashdown Contest has begun. Contributions will be welcomed from both individuals and companies. Simmons College is expected to again sponsor the top winner of the Contest.

J. Billo announced the Undergraduate Research Symposium will be held on Saturday, April 2, 1986. The location is to be decided. The \$1000 scholarship being made available to an undergraduate within ACS Region I was mentioned again. The names of nominees are due in January. A 3.5 minimum grade is necessary. It is proposed that each college or university provide one nominee.

Hospitality—M. Chen queried the board about continuing the post-talk refreshments at the Section meetings. After some discussion it was decided to continue doing so.

Safety—J. Kaufman announced that the January session of the Safety Clinic is filled. There are presently openings for the April session which will be April 24-26.

Public Relations—C. Filer reported that the Committee needed information on the details of the Esselen Award as soon as is practical for establishing the relationships needed to effectively publicize the award.

Continuing Education—The Symposium will be held at Framingham State College on Saturday, December 7. P. Brauner mentioned that seventy people had signed up for the luncheon. Publicity is being obtained in the Boston Globe and in the Middlesex News. B. Duston asked if the Section would like another Continuing Education presentation in April or so.

Summer Scholars—J. Billo reiterated his request for more money to fund these.

New Business—R. Kramer has asked us if we would like to sponsor a group at the Boston Pops again. We will have to decide soon to secure a date we would like.

J. Harris from A.D. Little has submitted the proposal for the Northeastern Section to consider administering and presenting the Philip L. Levins Award. It is presently administered by the Trustees of the Fund who would like to be relieved of this burden.

The following considerations were brought forth in the discussion which followed: (1) What are the legal restrictions on the distribution and awarding of the funds? (2) Can the award be made open to all graduate students? (3) What conditions would the Northeastern Section like to impose if we were to give the award?

J. Kaufman MOVED "The Board of Directors of the Northeastern Section, ACS, looks with favor on an agreement to assume responsibility for the Levins Award providing the Award can be made open to any students in the Northeastern Section. The motion was PASSED.

A. Heyn asked that the Chair for next year announce the committee assignments as soon as possible. D. Howell commented that the elected Secretary is required to send a listing of Committee assignments to the National records office as soon as it is possible.

L. Taylor reported on the IUPAC meeting to be held at BU in 1987. This is a business meeting, so total attendance will be small. J. Piper will be acting as Treasurer for the meeting.

The meeting was adjourned at 6:10 pm.

Respectfully submitted,
David M. Howell, Secretary

NOTE: On December 12, 1985, the April 1985 Board of Directors meeting was reconvened for the purpose of electing two members of the Board to the 1986 Nominating Committee. Arno Heyn and Esther Hopkins were elected to the Nominating Committee. The meeting was adjourned.

CALENDAR

TUESDAY, FEBRUARY 4

Dr. Arthur Pardee (Harvard Medical School, Dana Farber Cancer Institute)
Title to be announced
Tufts University School of Medicine
Patten A at 4:00 P.M.
Refreshments at 3:30 P.M.
Call 956-6884 for more information

Professor John Larson (Lehigh University)
"Macromolecular Structure of Coal"
Tufts University
Pearson Hall, Room 104 at 4:30 P.M.
Refreshments at 4:00 P.M.
Call 381-3441 for more information

WEDNESDAY, FEBRUARY 5

Professor Dietmar Seyferth (MIT)
"Direct Nucleophilic Acylation Using Acyl Lithium and Cuprate Reagents"
University of Connecticut
CEW, Room 100 at 4:00 P.M.
Refreshments at 3:30 P.M., Room 131
Call (203) 486-3214/2012 for more information

THURSDAY, FEBRUARY 6

Professor Stephen G. Weber (University of Pittsburgh)
"Photoelectroanalytical Chemistry—Sensitive and Selective Approaches to the Detection of Derivatives of tris(2,2'-bipyridine)ruthenium(II)"
Vernon Memorial Lecture
Northeastern University
Room 129 Hurtig Hall at 4:30 P.M.
Coffee preceding seminar
Call 437-2847 for more information

Professor Nanette Orme-Johnson (Tufts University Medical School)
Title to be announced
Wellesley College
Call 235-0320 ext 3149 for time and location

TUESDAY, FEBRUARY 11

Dr. Walter Mahler (E.I. DuPont deNemours)
"The (Perfluoroalkyl)alkanes"
Tufts University
Pearson Hall, Room 104 at 4:30 P.M.
Refreshments at 4:00 P.M.
Call 381-3441 for more information

WEDNESDAY, FEBRUARY 12

Dr. Henri Ulrich (Director, DOW Chemical USA New Haven Laboratory)
"Latent Functionality in Heterocycles: Applications in the Synthesis of Organic Materials and Polymers"
University of Connecticut
CEW, Room 100 at 4:00 P.M.
Refreshments at 3:30 P.M., Room 131
Call (203) 486-3214/2012 for more information

THURSDAY, FEBRUARY 13

Dr. Thomas Stengle (University of Massachusetts)
"NMR of Xenon: A Novel Probe of Liquids and Biological Systems"
Southeastern Massachusetts University
Room 305, Science & Engineering Building, at 11:00 A.M.
Call 999-8246 or 999-8232 for more information

TUESDAY, FEBRUARY 18

Dr. Richard Feldmann (National Institutes of Health)
Title to be announced
Tufts University School of Medicine
Patten A at 4:00 P.M.
Refreshments at 3:30 P.M.
Call 956-6884 for more information

WEDNESDAY, FEBRUARY 19

Professor Mary Jo Ondrechen (Northeastern University)
"New Theoretical Developments on Bridged Mixed Valence Dimers"
University of Connecticut
CEW, Room 100 at 4:00 P.M.
Refreshments at 3:30 P.M., Room 131
Call (203) 486-3214/2012 for more information

THURSDAY, FEBRUARY 20

Dr. George W. Parshall (Central R&D, DuPont)
Title to be announced
Harvard-MIT Inorganic Seminar
MIT

FRIDAY, FEBRUARY 21

Dr. John T. Yates, Jr. (University of Pittsburgh Surface Science Center)
"Chemical Bond Directions: Imaging Chemisorbed Species on Single Crystal Surfaces"
Wellesley College
Room 278 Science Center at 4:00 P.M.
Refreshments at 3:45 P.M.
Call 235-0320, ext 3149 for more information

TUESDAY, FEBRUARY 25

Professor Raymond Fort (University of Maine)
"Heteroadamantanes"
Northeastern University
Room 129 Hurtig Hall at 4:30 P.M.
Coffee preceding seminar
Call 437-2847 for more information

WEDNESDAY, FEBRUARY 26

Dr. Richard L. Greene (IBM)
"New Phenomena in Organic Metals: Superconductivity and Spin Density Waves"
University of Connecticut
CEW, Room 100 at 4:00 P.M.
Refreshments at 3:30 P.M., Room 131
Call (203) 486-3214/2012 for more information

THURSDAY, FEBRUARY 27

Dr. Gary Weisman (University of New Hampshire)
"Host-Guest Chemistry: Crowns, Cryptands, Spherands, Octopi, Lariets and Venus' Flytraps"
Southeastern Massachusetts University
Room 305, Science & Engineering Building, at 11:00 A.M.
Call 999-8246 or 999-8232 for more information

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