

THE NUCLEUS

October 1987

Of the Northeastern Section of the American Chemical Society

Vol. LXVI, No. 1

Monthly Meeting:

*Professional Relations
and Presentation of
1987 Henry A. Hill Award*

National Chemistry Day

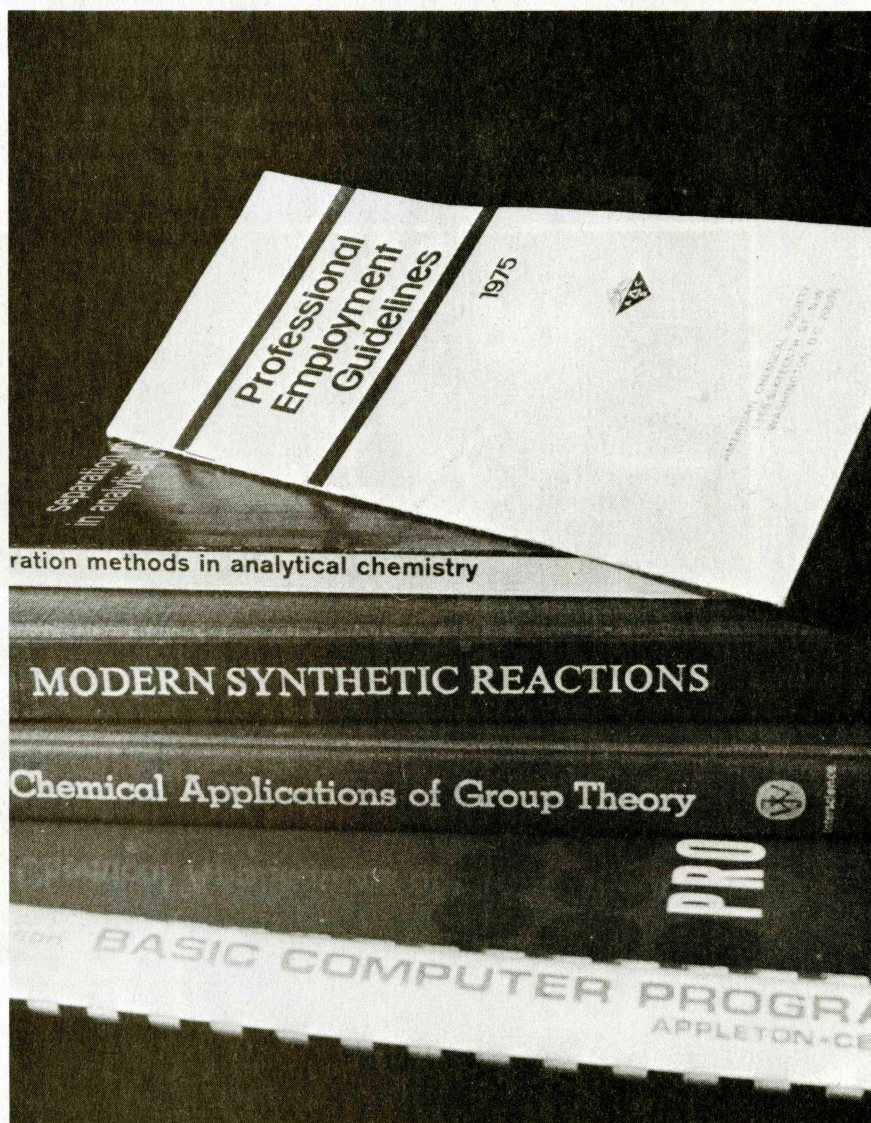
Schedule of Activities

Antarctic Ozone Hole

*Report on Esselen
Award Meeting*

Exponential Solutions

Mystery Solved



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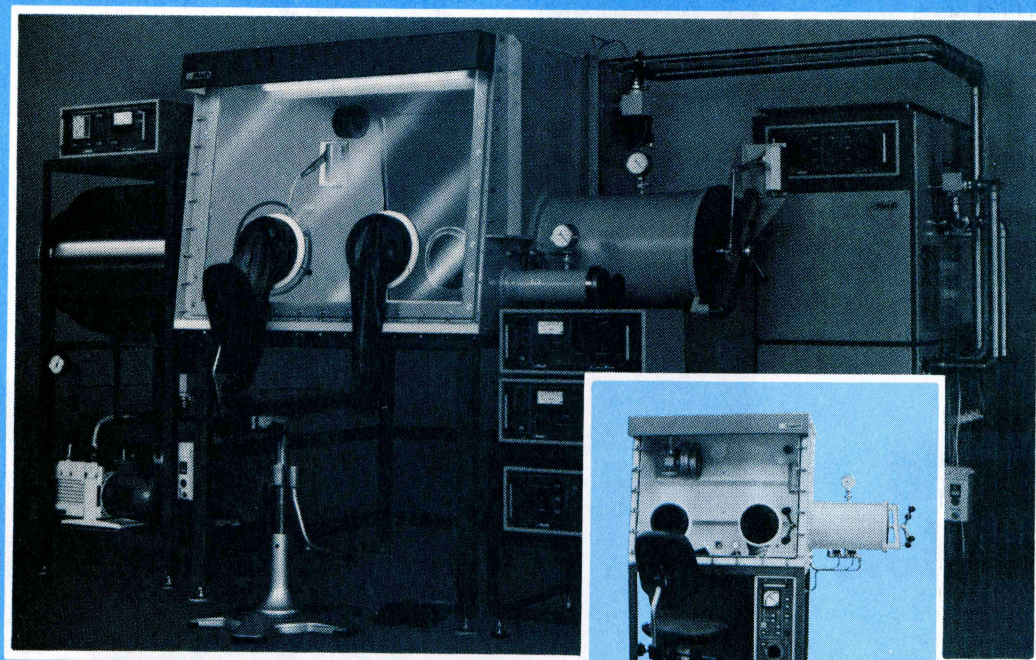
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Contents

Monthly Meeting _____	5
<i>Professional Relations Program and Presentation of Eighth Henry A. Hill Award</i>	
Medicinal Chemistry Meeting _____	7
<i>Ronald G. Almquist on Orally Active Peptides</i>	
National Chemistry Day Activities _____	8
Chlorofluorocarbons and the Antarctic Ozone Hole _____	10
<i>by Patricia Cleary</i>	
Physical Effects of Exponential Solutions _____	12
<i>The Mystery is Solved</i>	
Winners of the May Education Awards _____	13
Professor Avery A. Morton—In Memoriam _____	14
<i>by Lloyd D. Taylor</i>	

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THE NUCLEUS

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Election Results

The following is the result of the balloting for the 1988 ACS officers of the Northeastern Section. There were a total of 678 ballots counted (798 last year). The * indicates the winner(s) in each category.

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*Michael E. Strem357
Martin Idelson290

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*Phyllis Brauner (3 year term) . . .452
*Arthur Obermayer (2 year term) .448
Myron Simon276

Secretary

*David Howell555

Auditor

*Arthur Reis556

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(1st 3 highest = Councilor; next 3 highest = Alternate Councilor)

*Myron Simon (Alternate)419
Arthur Reis201
*Michaeline F. Chen (Councilor) .432
*James Kaufman (Alternate)411
*John L. Neumeyer (Councilor) . .449
*Donald O. Rickter (Alternate) . . .414
*Arno Heyn (Councilor)441
William E. Adams334
Lawrence Duffy301

Nominating Committee

*Donald Smith397
*Adriene Dey462
Harry Orf96
Jeff Hoch199

Theodore Richard Williams Award Committee

David A. Evans174
Christopher Walsh206
*Norman Lichtin403
*Angelo Lamola428

Esselen Award Committee

*William Foye (4 year term)512
*Truman S. Light (4 year term) . . .515
*Myron Simon (2 year term)509
*Arthur Obermayer (2 year term) .510

Office Notes

In March, 1987, after serving the Northeastern Section with efficiency and dedication for eleven years, *Janice Fineman* retired as administrative secretary to accept a position at Brandeis University. We miss her, but wish her well in her new position. Her leaving has brought a new helper to the section. *Karen Piper* will be our new administrative secretary, and is now still trying to learn the ropes in filling Janice's shoes. The office has been moved to *19 Mill Road, Harvard, Massachusetts 01451* where any written communication should be sent. Should you prefer to reach her by telephone, the new number for those in eastern Massachusetts is 1-800-872-2054. Those calling from outside the 617 area code should use (617) 456-8227 in calling the office.

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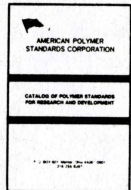
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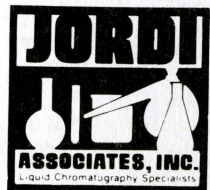
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October Meeting

The 702nd Meeting of the Northeastern Section of the American Chemical Society

Thursday, October 15, 1987

Henderson House Conference Center
of Northeastern University
99 Westcliff Road, Weston, Massachusetts

5:30 p.m. Social Hour

6:15 p.m. Dinner

7:30 p.m. Presentation of the Henry A. Hill Memorial Award for Outstanding Contributions to the Northeastern Section of the American Chemical Society:

The Henry A. Hill Awards Dr. William O. Foye
Henry A. Hill, Reminiscences Dr. Esther A.H. Hopkins
Sister Magdalen Julie Wallace Mary T. Burgess

8:00 p.m. The Chemist and the Job
What are the Responsibilities of the Chemist? What are the Responsibilities of the Employer?

Sponsored by the NESACS Committee on Professional Relations

Dr. Esther A.H. Hopkins: The A.C.S. Professional Employment Guidelines, the Rules for the Chemist, the Rules for the Employer

Dr. Erwin Klingsberg: The Plight of the Older Chemist, Taking Your Ex-Employer to Court...and Winning

Dinner Reservations must be made no later than October 9, 1987. Please call Mrs. Piper at (800) 872-2054 or (617) 456-8227. Reservations not cancelled at least 24 hours in advance must be paid. Members: \$15; Non-Members: \$18; Students and Retired Chemists: \$5.00. THE PUBLIC IS INVITED.

Directions to Henderson House

Henderson House is located in Weston, Massachusetts, just north of the Weston-Wellesley line. It is west of Route 128 and south of the Massachusetts Turnpike, between Routes 9 and 30.

Going West on Route 30. At the top of the hill, a little over a mile west of the intersection of Routes 128 and 30 and the Massachusetts Turnpike, take the hairpin left onto Oak Street. The street sign at the intersection says "Oak Street to Cliff Road." Follow the road one mile to a stop sign. Go straight through the intersection and 200 yards further on take the first right, onto

Westcliff Road. Follow Westcliff up the hill. Henderson House is on the right at the top.

Going west on Route 9. West of Route 128, immediately after Route 9 passes under Route 16, there is a GULF station on the right. Just past the GULF station, take a sharp right to Cliff Road, bearing right at the bottom of the exit ramp. Proceed about 1.2 miles and just past the Weston-Wellesley town line turn left next to the small pond onto Scotch Pine Road. Bear right on the curves and follow the signs to Henderson House which is on Westcliff Road on the left at the top of the hill. ◇

The Chemist and the Job

The professional status of the chemists in the Northeastern Section is the concern of the Committee on Professional Relations. This meeting is an attempt to bring to the membership an up-to-date report on the responsibilities of the chemist to the employer, and those of the employer to the chemist.

Dr. Hopkins is chairman of the ACS Council Standing Committee on Professional Relations. She has been actively involved in the revision of the Professional Employment Guidelines and will discuss the professional chemist's role, as defined by our Society.

Dr. Klingsberg has had an illustrious career as a professional chemist, responsible for important and valuable discoveries for his company. Suddenly the axe fell, and he was informed that his services were no longer required. The story of his battle to recover his position is not unique, but he is one of the few chemists who has been able to reach an accommodation in an age discrimination suit and is still able to talk about his experiences.

Dr. Henry A. Hill was a model of the professional chemist, earning the trust and admiration of co-workers, clients, colleagues. He served this Section as Chairman; he served the A.C.S. as president. His memory is honored by several awards sponsored by this Section and it is peculiarly fitting that the Henry A. Hill Memorial Award for Service to the Northeastern Section be presented at a meeting sponsored by the Committee on Professional Relations. ◇

Biographies

Dr. Esther A.H. Hopkins

Dr. Esther A.H. Hopkins is a Technology Liaison Manager at Polaroid Corporation. She received her A.B. degree in Chemistry from Boston University,

continued on page 6

BOSTON COLLEGE
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Stuart A. Rice

Frank P. Hixon

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University of Chicago & James Franck Institute

Tuesday, October 27 4:00 PM

The Structure of Liquid-Vapor Interface
of a Metal

Wednesday, October 28 8:00 PM

New Approaches in Unimolecular
Reaction Rate Theory I

Thursday, October 29 3:00 PM

New Approaches in Unimolecular
Rate Theory II

Lectures will be in Higgins Hall, Room 307,
preceded by coffee.

For more information, call 552-3605.

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Biographies

Continued from page 5.

holds M.S. degrees from Howard and Yale, and obtained her Ph.D. degree in Biophysical Chemistry from Yale.

In addition, she has studied law, taking a J.D. degree from Suffolk University and been admitted to practice before the Massachusetts Supreme Judicial Court and the Patent and Trademark Office.

She has been active in A.C.S. for many years, presently chairing the Council Committee on Professional Relations. She has been Chairman of and is presently a Councilor of this Section. ◇

Dr. Erwin Klingsberg

Dr. Erwin Klingsberg received his B.S. degree in Chemistry from the University of Pennsylvania, and his Ph.D. in Organic Chemistry from University of Rochester. He was a research chemist at the American Cyanamid Company for thirty-five years, achieving 42 patents, most of them as sole inventor. Among his inventions is the selective herbicide AVENGE® which in 1981 had worldwide sales of \$30 million.

He has authored or co-authored 44 publications, been an Associate Professor of Chemistry at City University of New York (1963-64), Coadjutant Professor at Rutgers (1969-72), Visiting Professor at Caen and Montpellier, France (1973-74) and at Tromsø, Norway (1979). Much of his published work is in the field of sulfur chemistry where he made the discovery of the 1,2-dithiolium salts and thiothiophene no-bond resonance. He has often been a plenary lecturer at international conferences, and edited the four volume "Pyridine and Its Derivatives." He is also a registered U.S. Patent Agent.

From October 1981 when he was dismissed at the age of 60 he was involved in an age discrimination suit, *Klingsberg vs. American Cyanamid*, which was only resolved with a six-figure settlement in December, 1984. His story is an intersection of professionalism and the problem of the older chemist in industry. ◇

MCG
Meeting

Medicinal Chemistry
Group Meeting

Tuesday, October 20, 1987

Boston College
Higgins Hall, Room 304
Chestnut Hill, Massachusetts

Ronald G. Almquist, Ph.D.

SRI International
Menlo Park, California

Will Speak On:

The Use of Peptide Backbone
Modification to Develop Orally Active
Peptides

4:00 p.m. Coffee and Refreshments
4:30 p.m. Seminar

For those interested in having dinner with Dr. Almquist, please make dinner reservations (by October 19, 1987) by contacting Dr. Richard Milius at (617) 437-5192. Dinner* will be at 6 p.m. at the Ming Garden Restaurant.

*Members: \$10.00
Students and Retirees: \$6.00

Abstract

The presentation will concentrate on the replacement of amide backbone linkages in biologically active peptides with ketomethylene linkages. This will include work on peptides from 3 to 10 aminoacids in length in peptide classes such as LHRH and enkephalin analogs, and renin and angiotensin-converting enzyme inhibitors. The synthetic approaches to prepare ketomethylene dipeptides and to insert them into peptide analogs will be discussed. Findings on the effect that insertion of ketomethylene linkages has on both the biological activity of a given peptide and its stability to peptidase cleavage will be presented. Finally, *in vivo* studies to determine the oral absorption, excretion and metabolic stability of some of these modified peptides will be discussed. ◇

Biography

Dr. Ronald G. Almquist received his B.S. degree in Chemistry from the University of Kansas in 1969 and his Ph.D. degree in Medicinal Chemistry from the University of Minnesota in 1973. From Minnesota, he went to SRI International as a Post Doctoral Fellow in the Pharmaceutical Chemistry Department (1973-1976). In 1976, Dr. Almquist accepted a position as a Medicinal Chemist in the Bio-Organic Chemistry Department at SRI International and is currently the Director of the Peptide Synthesis Program. Dr. Almquist's research interests and expertise include the design and synthesis of nucleotides and carbohydrates. ◇

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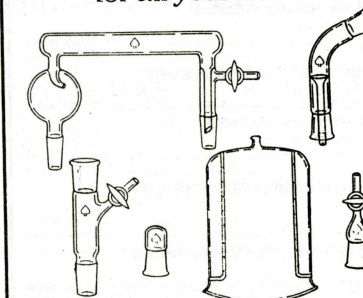
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Board of Publications meeting in February 1987: Jean Vnenchak, member; Dr. Mark Druy, circulation manager; Dr. William Adams, business and advertising manager; Dr. Arno Heyn, chairman. Photo by A.S. Dey

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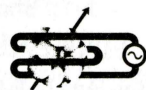
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National Chemistry Day

!!!Dates for your calendar!!!

In celebrating National Chemistry Day, November 6th, we hope to share our enthusiasm for chemistry with others and to generate an increased awareness of the important role that chemistry has to play in solving the clinical, environmental and agricultural problems that face our world today. With this in mind we offer the following programs:

Open to the General Public

Event Number 1

Saturday, October 31. Sponsored by the Center for the Health Sciences, Framingham State College, together with the Northeastern Section of American Chemical Society and Polaroid Corporation in honor of its 50th Anniversary there will be a one-day program to discuss Science Education at elementary, junior high and high school levels.

Dr. Jerry Bell, Simmons College and Director of the Institute for Chemical Education (University of Wisconsin) will give the keynote lecture in the morning. Those conducting Elementary School workshops are:

(1) Dr. Jerry Bell

(2) Ronald Perkins, Greenwich High School where in the past two years his Advanced Placement students have presented 251 demonstration science lessons in the Greenwich Elementary Schools. Mr. Perkins is Assistant Director of the Institute for Chemical Education (University of Wisconsin)

(3) Dr. Judith Fischer, member of the staff at Simmons College, Boston University and 636 Collaborator for Simmons/Jamaica Plain High School

Those conducting High School Workshops are:

(1) Computer Workshop, Dr. Robert Tinker Project Director, Technical Education Research Center, Cambridge, Massachusetts

(2) Molecular Genetics, Dr. Katherine Klinger, Manager, Genetic Disease Research, Integrated Genetics, Framingham, Massachusetts and Dr. Jeffrey Klinger, Manager for Scientific Affairs, GENE-TRAK Systems, Framingham, Massachusetts

(3) Reaction Dynamics, Dr. Dudley Herschbach, Nobel Laureate, Harvard University

For further information and registration material call the public relations office at Framingham State College 626-4512 or the Chemistry Department 626-4786.

Attendance at the Morning Program is restricted to teachers. Afternoon Events are open to the public.

At 2:00 pm Dr. Dudley Herschbach, 1986 Nobel Laureate in Chemistry will deliver the keynote lecture for the afternoon.

At 3:00 pm Dr. Bassam Shakhshiri, world renowned for his ability to entertain, will deliver a lecture/demonstration. (Remember it is Halloween!) Dr. Shakhshiri is assistant director for science and engineering education, National Science Foundation.

For further information call the above Framingham State numbers.

Event Number 2

On the eve of National Chemistry Day in Faneuil Hall, Quincy Market, Boston, a Round Table Discussion, open to the public will be sponsored by American Chemical Society and Polaroid Corporation. Time: 7:30 pm. Topic: A panel of experts will discuss *Solid Waste Management* or *Will Massachusetts Have the Next Barge Sailing the Caribbean?*

Admission is free—come and bring your friends. Decisions have to be made now—decisions based on information, correct information.

Experts will look at the kind of waste generated and who is generating what waste, the alternative methods to manage the tons of waste generated in Massachusetts (incineration, recycling, landfill, and biodegradation, for example); the economic and environmental impact on as well as convenience for the community. The forces that control the selection will also be addressed—i.e., political, press, federal and state regulations and the “not in my backyard syndrome.”

Event Number 3

On November 6th the Boston Museum of Science will be holding a one-day symposium sponsored by the Lowell Institute together with the American Chemical Society and Polaroid Corporation. The topic to be addressed is “Materials for the 21st Century.” This symposium is open to High School Teachers and selected students.

Teachers: If you have not already received information about this event, please contact the administrative secretary of American Chemical Society at 1-800-872-2054 or Valerie Wilcox at the Museum of Science 589-0343.

Event Number 4

For the college students we will be offering tours of several industrial plants. Notice of these tours will be sent to the colleges within the Northeastern Section.

Event Number 5

The Northeastern Section of the American Chemical Society and Polaroid Corporation are also co-sponsoring a Poster Competition for Junior High and High School students. These posters, which publicize the Round Table Discussion at Faneuil Hall will be on display in the hall the evening of November 5th.

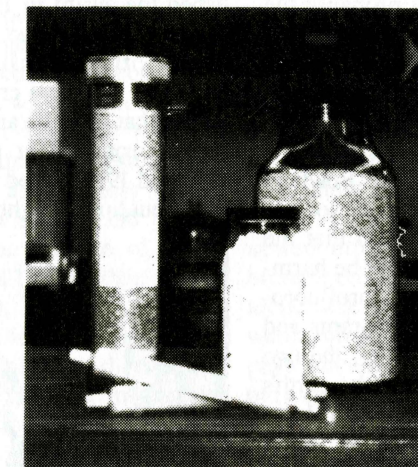
Event Number 6

And finally our first announcement of the Holiday Chemistry Lecture 1987.

This year Polaroid Corporation joins the American Chemical Society in co-sponsoring this popular event. It will be held at the Museum of Science on Monday, December 28. An afternoon lecture and an evening lecture will be delivered by Bassam Shakhshiri. Dr. Alyea has been invited to give a few “reminiscences.” It is not clear at this time whether he can make it. ◇

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CFCs and the Antarctic Ozone Hole

by Patricia Cleary

F. Sherwood Rowland is probably the only radiochemist whose presentation includes slides of Right Guard and Arrid. Then again, deodorants, albeit indirectly, have played a larger role in his career than in most chemists'.

It's been 13 years since Rowland and his then-postdoctoral associate Mario Molina first suggested that the quest for good hygiene might be harming the environment. The chlorofluorocarbons that propelled deodorants and other aerosols into fine mists, the two contended, were destroying the earth's ozone layer, leaving us vulnerable to harmful ultraviolet radiation.

Using their technical expertise, the chemist and the chemical engineer proved their theory. They discovered CFCs could indeed migrate to the stratosphere where UV light split them into chlorine atoms and fluorocarbon radicals. There, the chlorine atoms were capable of catalyzing the decomposition of ozone into oxygen.

Based on Rowland and Molina's findings, the US government banned the use of CFCs in spray cans in 1977. For their contribution to making our environment a safer place, Rowland and Molina were recently chosen as the recipients of the first annual Esselen Award for Chemistry in the Public Interest.

The goal of the award, named for the late "gentleman chemist" Gustavus John Esselen, is to "perpetuate Dr. Esselen's belief that chemistry is an honorable profession that contributes to the public good." Active in the American Chemical Society and in the Northeastern Section, Esselen served as Section chairman in 1922 and 1923. (Only two others have succeeded themselves as chairman.)

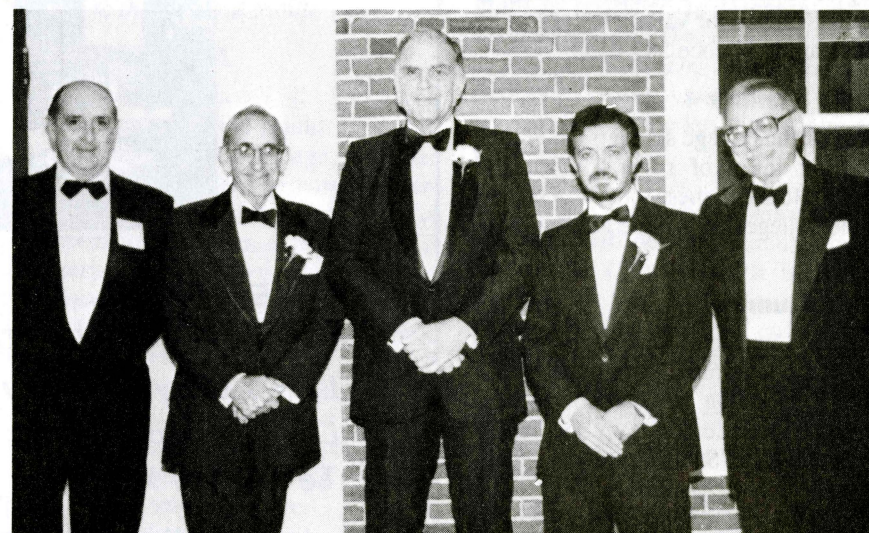
During a ceremony at Harvard in April, Rowland and Molina received bronze medals bearing a likeness of Es-

selen and a \$5,000 check that they will share. The Northeastern Section established the award in 1985 with a major gift from the Esselen family.

Another family, that of Dr. Rowland, deserves credit too. "The interests that my wife and children had in the environment at the beginning of 1970 and 1971 caused me to start thinking about how I might do work that was

Most of us assumed that switching to non-aerosol and hydrocarbon-propelled deodorants, hair sprays, and cleaners had solved the problem. And then in 1986 . . . ozone made headlines again. This time the hoopla was centered on the Antarctic.

Molina, now a senior research scientist at the Jet Propulsion Laboratory at Caltech, examined three of the



L.D. Taylor, 1987 Chairman of the Northeastern Section; G.J. Esselen III; F.S. Rowland; M.J. Molina; M.S. Simon, Chairman of the Esselen Award Committee.

related—how I might use radiochemistry in such investigations," he said.

The opportunity presented itself at a meeting in Fort Lauderdale in 1972. Listening to a presentation by British researcher James Lovelock, Rowland, the Aldrich professor of chemistry at the University of California, Irvine, learned about CFCs in the atmosphere for the first time.

Lovelock's work centered on using atmospheric fluorocarbons as meteorological tracers. Expanding on Lovelock's work, Rowland started looking into what was happening to the CFCs we were so casually spraying everywhere.

The result: ozone became a buzzword of sorts. Many consumer products appeared bearing new labels. "Environmentally Safe" and "Environmental Formula." But after the media blitz of the late 70s faded, we rarely heard it.

theories that have been proffered to explain why almost half of the Antarctic ozone layer virtually disappears for about a month every spring.

Two of the hypotheses suggest that the phenomenon is a natural occurrence. The third, backed by Rowland and Molina, puts the blame on man-made chemicals. They believe chlorine is once again an integral part of the problem.

The first theory states that the hole is caused by a dynamic shift among the layers that make up the upper atmosphere. Ozone-poor air from the mesosphere and troposphere move upward to replace ozone-rich air in the stratosphere. Molina rejected this theory explaining that measurements of the composition of the air in the ozone hole do not correlate with the composition of air from these two lower layers.

The second explanation involves

the formation of nitrogen oxide through a series of events involving the solar cycle. The NO₂ then concentrates over the poles disturbing the ozone balance. But Molina says that the NO₂ levels have been found to be very low in the region, thereby ruling out the solar cycle explanation.

"Many experiments remain to be carried out," Molina concluded. "What is clear, though, is that this is yet another indication that . . . ozone can indeed be perturbed by the activities of man."

But if chlorofluorocarbons are to blame for the Antarctic hole, where are they coming from? The switch to non-aerosols was a step in the right direction, but it was a far cry from solving the problem, according to Rowland. Solving it involves a global effort, and he said the world has been slow to acknowledge the damage and take action. As of May, only five countries: the US, Canada, Sweden, Norway, and Denmark had imposed any regulations restricting the use of chlorofluorocarbons.

While the 1977 ban on their use as

propellants alleviated the largest source of CFCs in the US, it did not banish them entirely. Chlorofluorocarbons continue to be used in refrigeration and in making polyurethane foam products. In many countries they're still being used as aerosol propellants.

In their original paper, Rowland and Molina estimated that fluorocarbon 11, one of the most widely used, could remain in the environment for 40 to 80 years. Similarly, they suggested that fluorocarbon 12, also widely used, could last between 80 and 150 years. "We now know the lifetime of 11 is around 75 years and 12 more than a century," said Rowland.

"If you have molecules that have lifetimes of 75 to 100 years, that means they are going to survive in the atmosphere for periods of time much longer than the lifetimes of anyone who's in this room," Rowland told the audience of about 170. "So, whatever we do to the atmosphere is something that will last for all of the 21st century."

He went on to outline the dangers

of ozone depletion. They include:

- An increase in the incidence of skin cancer as more UV rays reach earth.
- Adverse effects on other animals and plants as UV exposure increases.
- Temperature changes of as much as 20°C at altitudes of 2500 miles.

Rowland said a 95 percent phaseout of fluorocarbons 11, 12, and 113 has been under consideration in the US for several years. He's hopeful that the renewed attention to the atmosphere brought on by the discovery of the Antarctic hole will result in movement toward a phaseout. Last spring the European Economic Community agreed to put a cap on CFC production and to discuss a 20 percent phaseout.

The Esselen award is not the first time Rowland and Molina have been honored for their work. In 1983, they shared the Tyler Prize in Ecology and Energy. In addition, they have received numerous other awards. ◇

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Patricia Cleary is a student in the Program for Reporting on Science and Medicine, College of Communications, Boston University.

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1987 Holiday Lecture

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The Northeastern Section ACS was indeed very grateful for the help in launching what we hope will be a series of annual holiday lectures.

Exponential Solutions

Conclusion

by Erwin Heintz, Strasbourg, Alsace
translation by Arno Heyn

In the last two issues we presented the summary/translation of the article. Now follows the sequel: One year later, in 1942, *Die Naturwissenschaften*, 30, 642 (C.A., 38, 3537⁴) there appeared an article by E. Heintz entitled: Observations on a previous paper: "The physical effects of progressively diluted substances" [C.A.'s translation of the German title]. To quote Chemical Abstracts:

"New measurements did not confirm the previous results regarding the infrared absorption and the elec. cond. of highly dild. solns. obtained by successive dilns. The absorption of NaNO_2 , $\text{Cu}(\text{NO}_3)_2$ and K_2CO_3 were measured repeatedly and exceptional care was taken in the prepn. of the mica vessel. In all probability, in the previous expts. the solns. under investigation evapd. from heating by the source of light, and the mica plates were slightly distorted. The effects of these phenomena were previously underestimated, and the assumed accuracy was too great. It is concluded that no special physical action should be assigned to progressively highly dild. substances."

So sorry, you homeopathic chemists out there!

But how could a serious journal even accept such obvious scientific balderdash? Remember, in 1941-42 there was a war on. France was occupied, the Elsass, with Strasbourg as its capital, was claimed as long-lost German land. No doubt, at the university, where now German became the language of instruction, long-standing professors were replaced by German academics which were in short supply, so that people of very questionable academic credentials, but undoubted loyalty to

continued on page 13

Winners of the 29th Annual Avery A. Ashdown High School Chemistry Examination Contest

STUDENT	SCHOOL	TEACHER
Simmons Prize <i>John Golden</i>	Belmont Hill School	Richardson
Second Prize <i>Albert Chen</i>	Brookline High School	Gibb
Third Prize <i>Isabel Taube</i>	Winsor School	Gepner
Fourth Prize (tie) <i>Michael McCandless</i> <i>Patrick Shaughnessy</i>	Winchester High School B.C. High School	William Marks L. O'Toole
Honorable Mention - First Year		
STUDENT	SCHOOL	TEACHER
William Mark	Lexington High School	Masselam
Jason David	Lexington High School	Masselam
William Ashmanskas	Lexington High School	Masselam
Andrew Ross	Cambridge Rindge & Latin	Levenstein
Karl Happe	Cambridge Pilot	McGillicuddy
Noam Berstein	Newton South High School	Leary
Honorable Mention - Second Year		
STUDENT	SCHOOL	TEACHER
Alejandro Manevich	Newton North High School	Wells
Jay Steinman	Brookline High School	Gibb
David Max	Brookline High School	Gibb
Thomas Cavanaugh	B.C. High School	L. O'Toole
David Ng	Brookline High School	Gibb

Contributors to the Ashdown Chemistry Examination Contest

The Boston Museum of Science, Boston, Massachusetts
Simmons College, Boston, Massachusetts
Raffi and Swanson, Inc., Wilmington, Massachusetts
Fisher Scientific, Pittsburgh, Pennsylvania
Dow Chemical U.S.A., Wayland, Massachusetts
The Kendall Company, Lexington, Massachusetts
The Foxboro Company, Foxboro, Massachusetts
Hutson Howell, Bedford, Massachusetts

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Brookline High School
Dr. James E. Johnson
Falmouth High School

Aula Laudis Society

Mrs. Reen Gibb
Brookline High School
Mrs. Laura Wick Hallowell
Wellesley High School
Mr. George Martins
Newton North High School
Mrs. Ethel Schultz
Marblehead High School

Phillip L. Levins Memorial Prize for Graduate Study

Yvette Dick
Tufts University

Solutions

continued from page 12

the National Socialist Party filled the chairs in the universities in occupied lands. With a Fuehrer who was given to occult beliefs and mysticism, and a system which discouraged the questioning of authority, is it little wonder that charlatans could get the ear of the public, even the scientific public?

In addition, because of the war, periodicals were short on articles to be published, so that papers which normally might have ended up in the wastebasket got published.

Thus endeth the story of the molecules who weren't there. ◇

Arno Heyn

In Memoriam—Professor Avery A. Morton

by Lloyd Taylor, 1987

I am sad to report the passing this spring of Professor Avery A. Morton, past chairman of the Northeastern Section, 1949, at the age of 94. He was Emeritus Professor of Chemistry at M.I.T. He was a student of James Flack Norris and then became a full professor at M.I.T. He was the author of three books: "Laboratory Technique in Organic Chemistry," 1938; "The Chemistry of Heterocyclic Compounds," 1946; "Solid Organoalkali Metal Reagents," 1964.

He was the inventor and principal investigator of the "Alfin" catalyst, which produced one of the first stereoregular types of polymerization. This work pioneered much of what was to follow in ionic polymerization research.

I was his last graduate student and finished in the fall of 1957; Avery retired from M.I.T. a few weeks later. That was thirty years ago. I know he remained an active chemist for most of those thirty years, still collaborating with Ed Lanpher of OrgMet, former student and colleague.

In June a very inspiring memorial service was held at the Unitarian Church in Watertown. On the way home, I decided to write some personal recollections which illustrate the great persistence and insight of this wonderful teacher and researcher. Avery was always available to his students, and we used to have wonderful and sometimes

hot discussions for hours in the back of our laboratories. One thing I remember was that even after a heated discussion, he would come back and say something like, "I went a little overboard but I respect your opinion and freedom of thought is most necessary for good science, especially with a Ph.D. candidate."

As a very green grad student I can recall being very thrilled to be working with amyl sodium, "the world's strongest base." I also remember that in my classroom activities, "electron pushing" was mandatory to describe the "real world" rather than the traditional "lasso" mechanism. To write a mechanism of an amyl sodium reaction in any way other than beginning with an arrow originating from the all powerful anion would be unthinkable.

On this point I found out that Avery was having difficulties with his colleagues—and especially referees—and kept saying that the cation is very important because of its reactivity with complexing agents containing oxygen or nitrogen atoms. To emphasize this, he even referred to the world's strongest base as being electrophilic. Although cation complexing only came into vogue some ten years later, along with terms such as "naked anions" and "tight ion pairs," Avery already knew this in the early fifties, extrapolating from both metalation and polymerization experiments.

Another idea Avery was proposing and always testing was the notion that

organoalkali compounds could react as if they were free radicals. In discussions he would say, "How do you know that amyl sodium can't dissociate into amyl radical and metallic sodium?" Long after I finished, a technique was developed to follow free radical formation called CIDNP. To my surprise one of the first reactions, observed to generate free radicals, which then decayed as products were formed, was the reaction of butyl lithium with butyl chloride. The most convenient and realistic way to write this equation would actually be the way Avery used to do it with a box (lasso) combining lithium chloride. At the present time many nucleophilic reactions such as the Stevens rearrangement have been shown by CIDNP to produce radicals along the reaction path. This work now appears in modern text books such as March, "Advanced Organic Chemistry."

Professor Morton was an imaginative scientist and teacher who was always testing, regardless of how popular a proposal was. Sometimes experimental methods were available only years later. I want to say that I and my colleagues and the world are all enriched by his accomplishments and example. Scientific ideas and theories must always be put to the test, especially when "everyone knows the answer." I'm sure Professor Morton, your many students all join with me to say, *God bless you and thank you, you sure taught us a lot!* ♦

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LIQUID CHROMATOGRAPHY SPECIALISTS

Report on Council Meeting, April 8, 1987 in Denver

Voting Issues	Councilors									
	Burgess	Dey	Garber	Heyn	Hopkins	Kaufman	Solstad	Viola	Wilcox	
1. Motion to recommit amendment to Bylaw III, Sec. 3(i)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2. Amendment of Constitution on terms of Councilors	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3. (a) Motion to set dues increase at \$2	Y	Y	Y	N		Y		Y	Y	
(b) Motion to keep current dues	Y	Y	Y	N	N	Y	Y	Y	Y	
(c) Motion to increase dues by \$3*	Y	Y	Y	N	N	Y	Y	Y	Y	
4. Motion to recommit amendment on National Affiliation	Y	Y	Y	Y	Y	Y				Y

Y=yes; N=no; A=abstain

*A no vote would make the increase \$4, making the dues for 1988 \$80 not \$79.

Call for Nominations

Richards Medal

The Theodore William Richards Medal Award Committee of the Northeastern Section of the American Chemical Society invites nominations from the Section membership of candidates for the Richards Medal Award. This medal is given every other year for "conspicuous achievement in chemistry" and it will next be awarded in 1988.

Nominations should be addressed to: Professor Dietmar Seyferth, Chairman, Richards Medal Award Committee

Department of Chemistry, 4-382
Massachusetts Institute of Technology
Cambridge, MA 02139

The nomination documents should include a *brief* curriculum vitae of the person nominated and a *clear* and *concise* statement outlining the "conspicuous achievements in chemistry" on which the nomination is based. Nominations are due in the Chairman's office by December 15, 1987.

Esselen Award

The Gustavus John Esselen Award for Chemistry in the Public Interest was established by the Northeastern Section of the American Chemical Society in 1985. The award is a memorial to Dr. Esselen, a former outstanding member of the Section, and was made possible by a major gift from the Esselen family.

The person who nominates a candidate is requested to provide seven copies of 1) a biography of the candidate, 2) a description of the work which has been recognized within the last five years as contributing to the public good (please include pertinent technical papers and news articles), and the names of three co-sponsors. **This information should be sent to Dr. Myron S. Simon, Chairman, Esselen Award Committee, c/o Research Division, Polaroid Corporation, 730 Main Street (730M-5A), Cambridge, MA 02139, and should be postmarked no later than December 1, 1987.**

Calendar

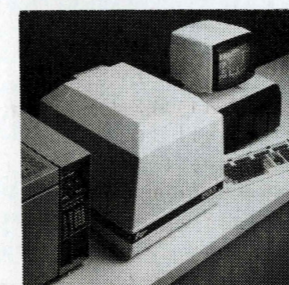
continued from page 16

Wednesday, October 28

Dr. Edith Flanigen (Linde Div., Union Carbide)
"Zeolites"
MIT Room 4-231 at 11:00 A.M.

Professor Stuart Rice (University of Chicago)
"New Approaches in Unimolecular Reaction Rate Theory"
Boston College
Higgins Room 307 at 8:00 P.M.

Notices for the NUCLEUS Calendar should be sent to:
Marilyn J. Schneider
Department of Chemistry
Wellesley College
Wellesley, MA 02181
Phone: 235-0320, ext 3031
(Note: Material should be sent so that it arrives by the first of the month *prior* to the month for which the event is scheduled.)



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Calendar

Thursday, October 1

Peter Connolly (Boston College)
"Isomerization of Macrocyclic Complexes"
Boston College
Gasson-305 at 4:00 P.M.

Friday, October 2

Dr. Donald R. Weyenberg (Dow Corning Corp.)
"Silicones—Past, Present and Future"
MIT Rom 4-231 at 11:00 A.M.

Monday, October 5

Professor Frank Hauser (SUNY Albany)
"Stereospecific Synthesis of Anthracyclines"
Brandeis University
Gerstenzang 122 at 4:00 P.M.

Tuesday, October 6

Dr. Louis D. Quin (University of Massachusetts)
"The Highly Reactive Family of Metaphosphoric Acid Derivatives: New Types and Properties"
Southeastern Massachusetts University
Science & Engineering Building Room 305 at 11:00 A.M.

Wednesday, October 7

Professor Michael J. Cima (MIT)
"Superconducting Oxide Ceramics"
MIT Room 4-231 at 11:00 A.M.

Thursday, October 8

Professor Bill Jensen
"August Horstmann and the Origins of Chemical Thermodynamics"
University of New Hampshire
Parsons Hall Room L-103 at 11:00 A.M.—12:30 P.M.

Dr. James J. Sloan (National Research Council, Canada)
Title to be announced
Boston College
Gasson-305 at 4:00 P.M.

Tuesday, October 13

Professor Irving Epstein (Brandeis University)
"Chemical Oscillations in Time and Space"
Tufts University
Pearson Hall Room 104 at 4:30 P.M.

Dr. David Saperstein (IBM)
"IR Spectroscopy of Aromatic Molecules Retained by Microporous Carbons"
University of New Hampshire
Parsons Hall Room L-103 at 11:00 A.M.—12:30 P.M.

Wednesday, October 14

Dr. Howard E. Katz (AT&T Bell Labs)
"Nonlinear Optical Materials"
MIT Room 4-231 at 11:00 A.M.

Thursday, October 15

Professor Russell Grimes (U. of Virginia)
"Polyhedral Clusters and Organic Chemistry; Bridging the Cultural Gap"
Mobay Lecture
University of New Hampshire
Parsons Hall Room L-103 at 11:00 A.M.—12:30 P.M.

Friday, October 16

Dr. Ray Baughman (Allied-Signal Corp.)
"Conducting Polymers"
MIT Room 4-231 at 11:00 A.M.

Tuesday, October 20

Dr. Alan A. Jones (Clark University)
"NMR Relaxation Studies of Polymer Dynamics"

Southeastern Massachusetts University
Science & Engineering Building Room 305 at 11:00 A.M.

Friday, October 23

Dr. Michael L. Steigerwald (AT&T Bell Labs)
"Chemical Vapor Deposition"
MIT Room 4-231 at 11:00 A.M.

Monday, October 26

Professor H.C. Brown (Purdue University)
"Asymmetric Synthesis Via Chiral Organoboranes"
Tufts University
Pearson Hall Room 104 at 4:30 P.M.

Tuesday, October 27

Dr. Jeannette Grasselli (Standard Oil)
"Problem Solving by Combined Techniques in an Industrial Laboratory"
Mobay Lecture
University of New Hampshire
Parsons Hall Room L-103 at 11:00 A.M.—12:30 P.M.

Dr. James B. Mangold (Univ. of Connecticut)
"The Chemistry of Toxicity: Enzymatically-Generated Reactive Intermediates"
Southeastern Massachusetts University
Science & Engineering Building Room 305 at 11:00 A.M.

Professor Stuart Rice (University of Chicago)
"Structure of Liquid-Vapor Interface of a Metal"
Boston College
Higgins Room 307 at 4:00 P.M.

continued on page 15

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