



UNIVERSITY OF MINNESOTA  
TWIN CITIES

Department of Chemistry  
Kolthoff and Smith Halls  
207 Pleasant Street S.E.  
Minneapolis, Minnesota 55455

No. 9

MINNESOTA CHEMISTS NEWSLETTER

March 1980

Dear Alumni and Friends:

Each recent year has witnessed significant increases in the vigor and scientific quality of the Department of Chemistry. This trend has continued through 1979.

The plans for the renovation of Smith Laboratory are progressing quite well in spite of numerous problems associated with rapidly escalating building costs. During 1979, we completely renovated space on the fourth floor of Smith Laboratory for 18 researchers. This space will house the research operations of Professors Fristad, Gladfelter, and Livinghouse. In addition, schematics have been prepared for the renovation of the remainder of this building.

We have continued the rebuilding of the faculty through the addition of Dr. George Barany to the Biochemical Division, and Dr. Paul Barbara as an interdivisional member of both the Organic and Physical Divisions. Unfortunately, as of this time, we have not filled the position which we have opened in Analytical Chemistry.

Concerted faculty effort has continued to bring success to the updating of our instrumentation. With help from the National Science Foundation, we have secured funds for the addition of a major computer system to the Chemistry Department. In addition, the NSF has shared the cost of a 300 MHz nuclear magnetic resonance spectrometer. As a result of excellent individual and group efforts, external funding of the Chemistry Department exceeded \$3 million for the first time in 1979. Of all chemistry departments in the U.S., we ranked 11th in funding from the NSF last year.

During September, the chairmanship of the Department changed hands. As part of our plans for continuity, this has resulted in only minor changes in the mode of operation in Chemistry. As a result, we believe that our Department is continuing to improve as a source of an excellent education at the undergraduate, graduate and postdoctoral levels. We hope that our alumni and friends will "spread the word" of our progress to those who might be prospective students or postdoctorals. In recent years, we have benefited from an increase in both the quantity and quality of new graduate students. There is no doubt but that our alumni and friends have helped with this improvement. We hope that you will continue to work on our behalf.

Lastly, a new section has been added to the end of the newsletter. This is news of our alumni. The response to our recent inquiry was excellent. As a result of space limitations, only a portion of the information supplied could be incorporated.

With best wishes, we remain

Sincerely yours,

Paul G. Gassman  
(Chairman, Jan.-Sept.)

John Overend  
(Chairman, Sept.-Dec.)

PROFESSOR WAYNE GLADFELTER WINS NOBEL LAUREATE SIGNATURE AWARD  
FOR A GRADUATE STUDENT IN CHEMISTRY

Sponsored by J. T. Baker Chemical Company

"Wayne L. Gladfelter is described by his Ph.D. Adviser as the best student he has ever had. His work as a graduate student at Pennsylvania State University was extremely diligent and conscientious, traits that enabled him to complete the degree requirements for both inorganic and organic chemistry in less time than most students require to complete just one.

Gladfelter's graduate research was described as excellent and pioneering, centered on the chemistry of organometallic clusters. His work led to the development of methods for synthesis of mixed-metal clusters, including six new clusters, and to detailed NMR studies of 14 mixed-metal clusters, studies for which Gladfelter taught himself the instructional techniques. He also provided the first evidence for intrametallic rearrangement of clusters and he derived the photochemical reaction mechanism for  $\text{H}_3\text{Re}_3(\text{CO})_{12}$ .

As impressive as Gladfelter's research is his creativity and independent thinking. As a graduate student, he frequently began research areas on his own initiative, and he contributed significantly to the research projects of his adviser. His ability to generate ideas and then to go into the laboratory and perform experiments to confirm or disprove these ideas was exceptional. His mature approach to chemistry, professors who know him say, made him seem more like a faculty member than a graduate student.

Gladfelter's high quality work has already made him the recipient of several honors. These include the R. A. Baxter Award from the Colorado School of Mines, the ACS Central Pennsylvania Section Graduate Award, the Sigma Xi Research Award, and National Science Foundation postdoctoral fellowships to California Institute of Technology.

This enthusiasm for science, says one Penn State professor, combined with his penetrating insight, makes the outlook for his career in research and teaching bright indeed."\*

\*Taken from  
September 19, 1979  
Chemical and Engineering News

TEACHER OF THE YEAR

Professor Robert C. Brasted was named "Minnesota College Chemistry Teacher of the Year" by the American Chemical Society, Minnesota Section. The award was presented as part of the October 16 dinner meeting of the Section.

## FACULTY PROMOTIONS

Robert G. Bryant was promoted to full professor by action of the Board of Regents in 1979. Dr. Bryant received his Ph.D. in 1969 from Stanford University. He joined the faculty with the Department of Chemistry in the fall of 1969 as an assistant professor. Dr. Bryant's research interests are primarily concerned with the study of inorganic constituents in living systems. His major research tool is nuclear magnetic resonance relaxation studies. His laboratory currently operates with two pulsed Fourier Transform nuclear magnetic resonance spectrometers that have been assembled by him to perform a variety of experiments, including most of the multiple pulse relaxation measurements. Chemical problems under study include: the nature of water molecule dynamics at surfaces, in particular protein interfaces; the nature of intramolecular motions in protein molecules and how these may be modulated by solvent and co-solutes; the behavior of water in simple dispersions or suspensions; the interaction of the alkali metals and alkaline earth ions with enzyme cofactors and macromolecules such as DNA; the fundamental proton exchange process in water and how it is modulated by simple solutes.

W. Ronald Gentry was promoted to full professor by action of the Board of Regents in 1979. Dr. Gentry received his Ph.D. in 1967 from the University of California in Berkeley. He joined the faculty of the Department of Chemistry in the fall of 1970 as an assistant professor. His experimental projects currently underway include the study of inelastic ion-molecule collisions in a beam-collision cell apparatus, and investigation of a wide variety of ion-molecule reactions and chemical ionization reactions using a merged-beam apparatus capable of scanning the range of initial kinetic energies of collision from less than thermal energies (0.002eV) up to more than 20 eV. In addition, a new and unique pulsed molecular beam apparatus has recently been placed into operation. This apparatus is capable of quantum state-resolved measurements of collisional energy transfer between molecules. Pulsed UV and IR lasers may be used to prepare electronically or vibrationally excited molecules for collision experiments, or to study unimolecular fragmentation. The pulsed molecular beam technique was developed at the University of Minnesota, and this apparatus is the only one of its kind in existence.

## LEAVES

Professor J. Doyle Britton spent the 1979-1980 academic year on sabbatical leave doing research and studying with Professor J. B. Dunitz at the Swiss Federal Institute of Technology in Zurich, Switzerland.

Professor Wayland E. Noland spent the 1979-1980 academic year on sabbatical leave in residence at the University of Minnesota.

## NATIONAL SCIENCE FOUNDATION AWARDS MINNESOTA REGIONAL INSTRUMENTATION GRANT

The National Science Foundation has awarded a total of \$11,392,000 to eight universities in seven states for the establishment of regional instrumentation facilities.

Awards were made to Arizona State University in Tempe, the California Institute of Technology in Pasadena, the University of California in Berkeley, the University of Illinois in Urbana, the Massachusetts Institute of Technology in Cambridge, Montana State University in Bozeman, the University of Minnesota in Minneapolis and Yale University in New Haven, Connecticut.

The grants are designed to improve the quality and scope of research conducted in the United States by making sophisticated instruments broadly available and by taking advantage of the economies that result from sharing such instruments.

The University of Minnesota will establish an Upper Midwest facility for surface analysis with a \$1,408,024 grant. Scientists in the fields of chemistry, metallurgy, surface physics, and chemical and materials engineering will be prime users of the facility.

Co-principal investigators on this grant are Professors R. M. Hexter, Department of Chemistry and L. D. Schmidt, Department of Chemical Engineering and Materials Science.

## HOME SECRETARY OF THE NATIONAL ACADEMY OF SCIENCES

Bryce Crawford, professor of chemistry at the University of Minnesota, has been elected to a four-year term as home secretary of the National Academy of Sciences.

Crawford's election was announced at the February 25 meeting of the Council of the Academy. He succeeds David R. Goddard, emeritus provost and emeritus professor of biology at the University of Pennsylvania, whose term expired June 30, 1979.

The National Academy of Sciences is an organization of distinguished scientists and engineers concerned with the furtherance of science and its use for human welfare. Although the Academy is not a government agency, it is called upon by its Congressional Charter of 1863 to serve as an official adviser to the Federal Government in matters of importance to science and technology.

## FACULTY ADDITIONS

George Barany will be joining us in the Fall of 1980 as an assistant professor. Dr. Barany received his Ph.D. in 1977 from The Rockefeller University. He will join our Biochemical group. His research interests are in peptide synthesis, particularly the solid-phase method; protecting groups for organic functionalities, with an emphasis on the concept of 'orthogonality'; chemistry of thiols and disulfide bonds; rational design of protein analogues with altered specificities; and problems of biological interest from a chemical angle.

Paul F. Barbara will be joining the staff as an assistant professor in the Fall of 1980. He received his Bachelors degree from Hofstra University in 1974 and his Ph.D. in 1978 from Brown University. Dr. Barbara will join both the Organic and Physical groups. His research interests include the design and construction of computerized instrumentation; chemically induced dynamic nuclear polarization (CIDNP); free radical reaction in solution; NMR - practice and quantum mechanical theory; peroxide chemistry; "flash photolysis-NMR"; and picosecond and nanosecond optical spectroscopy.

## DEATHS

As a result of our alumni survey, we have learned of the following deaths.

Arnold Osterberg

William Nebergall

Reynold Fuson

Edward Truesdale

C. Louis Meyette

The Department of Chemistry was also notified of the deaths of former faculty members Stuart Tobias and Robert Livingston.

## LANDO SUMMER FELLOWSHIPS

The Lando (the late Maximillian N. Lando was a University of Minnesota chemistry graduate, B.S. 1902, who left a large endowment to the University) Summer Research Fellowship Program sponsored by the Department of Chemistry, was conducted again this summer. The program was for outstanding undergraduate students who have completed three years of undergraduate study in chemistry or related fields. Students were selected from a national competition. Twelve students were selected from 78 applications and participated in advanced research projects under faculty supervision in the Department of Chemistry. The twelve students who participated in the summer of 1979 were:

| <u>NAME</u>       | <u>SCHOOL</u>  | <u>ADVISOR</u> |
|-------------------|--|----------------|
| Jesse Buck        | Humboldt State University<br>Arcata, California                | Gentry         |
| Albert Casalnuovo | University of Santa Clara<br>Santa Clara, California           | Pignolet       |
| Bernadette Chan   | Barnard College of Columbia<br>New York, New York              | Bryant         |
| Patricia Charlier | Drake University<br>Des Moines, Iowa                           | Dixon          |
| Frederick Grant   | St. Lawrence University<br>Canton, New York                    | Leete          |
| Roger Grev        | University of Minnesota<br>Morris, Minnesota                   | Truhlar        |
| Alan Magnuson     | St. Olaf College<br>Northfield, Minnesota                      | Truhlar        |
| Nancy Schultz     | University of Wisconsin<br>River Falls, Wisconsin              | Farneth        |
| Robert Stevens    | University of Wisconsin<br>Madison, Wisconsin                  | Ellis          |
| Kent Stewart      | Pennsylvania State University<br>University Park, Pennsylvania | Gassman        |
| Gregg Wells       | Northwestern University<br>Evanston, Illinois                  | Mann           |
| Scott Wood        | Hamilton College<br>Clinton, New York                          | Wertz          |

NATIONAL SCIENCE FOUNDATION - UNDERGRADUATE RESEARCH PROGRAM

The Department was awarded \$19,480 to conduct a summer research program for undergraduates. The program was directed and organized by Professor John E. Ellis. The eleven participants who were at Minnesota for ten weeks were:

| <u>NAME</u>        | <u>SCHOOL</u>                                     | <u>ADVISOR</u> |
|--------------------|---|----------------|
| Mary Andrews       | University of Minnesota<br>Minneapolis, Minnesota | Siegel         |
| Eric Borreson      | University of Wisconsin<br>La Crosse, Wisconsin   | Gentry         |
| Peter Dickson      | University of Minnesota<br>Duluth, Minnesota      | W. Miller      |
| Dianne Eberlein    | University of Minnesota<br>Minneapolis, Minnesota | Siegel         |
| Sally Feulner      | University of Northern Iowa<br>Cedar Falls, Iowa  | Gassman        |
| Richard Glick      | Macalester College<br>St. Paul, Minnesota         | Pignolet       |
| Judson Heitner     | Gustavus Adolphus<br>St. Peter, Minnesota         | Reynolds       |
| Alan Magnuson      | St. Olaf College<br>Northfield, Minnesota         | Truhlar        |
| Kathy Mittelstaedt | University of Minnesota<br>Minneapolis, Minnesota | Borch          |
| Lynne Taus         | University of Minnesota<br>Minneapolis, Minnesota | Noland         |
| Gregg Zank         | University of Wisconsin<br>Superior, Wisconsin    | Ellis          |

## POSTDOCTORAL ASSOCIATES

In the following table are listed the persons who held postdoctoral appointments in the Department during 1979.

| <u>NAME</u>        | <u>INSTITUTION</u>          | <u>GRAD<br/>YEAR</u> | <u>COLLABORATING<br/>PROFESSOR</u> |
|--------------------|-----------------------------|----------------------|------------------------------------|
| Abbate, Sergio     | Universita di Milano        | 1974                 | Moscowitz                          |
| Battistel, Ezio    | University of Genova        | 1976                 | Lumry                              |
| Bearman, Gregory   | Brandeis University         | 1975                 | Gentry                             |
| Borah, Babul       | London University           | 1976                 | Bryant                             |
| Chantooni, Miran   | University of Minnesota     | 1961                 | Kolthoff                           |
| Cooper, Charles    | University of Missouri      | 1978                 | Gassman                            |
| Etzler, Frank      | University of Miami         | 1978                 | Lumry                              |
| Fesciyan, Sezar    | Belfer Grad Sch of Science  | 1972                 | Dahler                             |
| Garrett, Bruce     | University of CA - Berkeley | 1977                 | Truhlar                            |
| Gurira, Rogers     | Penn State Universtiy       | 1973                 | Carr                               |
| Himeno, Sadayuki   | Kyoto University            | 1977                 | Kolthoff                           |
| Huang, Harry       | Rensselaer Polytechnic      | 1977                 | Gray                               |
| Jhon, Myung        | University of Chicago       | 1974                 | Dahler                             |
| Johnston, David C. | University of Minnesota     | 1979                 | Bryant                             |
| Kerr, John         | University of Edinburgh     | 1978                 | L. Miller                          |
| Kitani, Akira      | Hiroshima University        | 1979                 | L. Miller                          |
| Knox, Donald       | Notre Dame                  | 1976                 | Lumry                              |
| Liu, Kopin         | Ohio State University       | 1977                 | Gentry                             |
| McGaw, Brian       | Leicester Polytechnic       | 1978                 | Leete                              |
| Miura, Takashi     | Tokyo Metropolitan U        | 1979                 | Gassman                            |
| Mullins, Michael   | University of Wisconsin     | 1978                 | Gassman                            |
| Murdick, Thomas    | University of North Dakota  | 1977                 | Gassman                            |
| Nichols, Henry     | University of Oklahoma      | 1977                 | Hexter                             |
| Onda, Kunizo       | University of Tokyo         | 1973                 | Truhlar                            |
| Raynolds, Peter    | Ohio State University       | 1977                 | Gassman                            |
| Saito, Katsuhiko   | Tohoku University           | 1974                 | Gassman                            |
| Schmalzl, Paul     | University of Nebraska      | 1979                 | L. Miller                          |
| Seamans, Lloyd     | University of Minnesota     | 1974                 | Moscowitz                          |
| Shirley, William   | North Carolina State U      | 1978                 | Bryant                             |
| So, Ying Hung      | Colorado State University   | 1977                 | L. Miller                          |
| Suzuki, Eiji       | Nagoya University           | 1971                 | Gassman                            |
| Turner, Eric       | U of British Columbia       | 1978                 | Dahler                             |
| Willis, John       | University of Connecticut   | 1978                 | L. Miller                          |

## PLACEMENT OF POSTDOCTORAL STUDENTS IN 1979

| <u>NAME</u>                | <u>POSITION TAKEN</u>                   |
|----------------------------|---|
| Bearman, Gregory (Gentry)  | Jet Propulsion Lab - Stanford           |
| Garrett, Bruce (Truhlar)   | Battelle Columbus Laboratory            |
| Kerr, John (L. Miller)     | Postdoc - University of Southampton     |
| Knox, Donald (Lumry)       | Asst Prof - U of Port Harcourt, Nigeria |
| McGaw, Brian (Leete)       | Returned to England                     |
| Onda, Kunizo (Truhlar)     | NASA Gottard Space Flight Center        |
| Raynolds, Peter (Gassman)  | Tennessee Eastman Kodak Company         |
| Seamans, Lloyd (Moscowitz) | Found other employment                  |

## GRANTS

Grants to faculty members during calendar year 1979 from sources outside the University totaled \$2,984,782 and were received by the following professors:

| <u>NAME</u>     | <u>PROJECT TITLE</u>  | <u>GRANTING INSTITUTION</u> | <u>AMOUNT</u> |
|-----------------|---|-----------------------------|---------------|
| Borch, Richard  | Reduction of Toxicity in Cancer Chemotherapy                  | USPHS                       | \$43,887      |
|                 | Platelet Aggregation Inhibition by Altered Synthesis          | American Heart Assoc.       | 20,394        |
| Bryant, Robert  | Alkaline Earth Ion Nuclear Magnetic Resonance                 | USPHS                       | 40,522        |
|                 | Solvent and Small Solutes in Tissues and Proteins             | USPHS                       | 68,682        |
|                 | Cross Polarization NMR of Rare Spins in Protein Systems       | USPHS                       | 33,240        |
| Carr, Peter     | New Developments in Thermochemical Analysis                   | NSF                         | 17,500        |
|                 | Novel LC Multielement Methods of Occupational Health          | NIOSH                       | 77,614        |
|                 | Fundamental Studies in Affinity Chromatography                | NIGMS                       | 39,483        |
| Crawford, Bryce | Vibrational Intensities and Band Shapes in Liquids            | NSF                         | 55,100        |
| Dahler, John    | Kinetic Theory of Polyatomic (and Chemically Reactive) Fluids | NSF                         | 46,700        |
|                 | Theory of High Energy Ion-Atom and Atom-Atom Collisions       | NSF                         | 41,074        |
|                 | Theory of the Liquid-Vapor Interface                          | ACS/PRF                     | 15,000        |
| Dixon, David    | Dynamics of Chemical Reactions                                | NSF                         | 50,000        |

|                   |   |               |          |
|-------------------|---|---------------|----------|
| Ellis, John       | The Synthesis and Chemistry of Organo-metallic Anions   | NSF           | \$50,047 |
| Gassman, Paul     | A Stereospecific Functionalization of Aromatic Amines   | NIGMS         | 40,654   |
|                   | The Chemistry of Bent Bonds   | NSF           | 69,897   |
| Gentry, W. Ronald | Reactions of Ions with Atomic and Molecular Free Radicals   | DOE/EY        | 45,000   |
|                   | Quantum Dynamics of Molecular Interactions  | NSF           | 89,500   |
|                   | Chemical Dynamics of Bimolecular Reactive Collisions  | NSF           | 48,000   |
| Gladfelter, Wayne | Migration Reactions Involving Nitrosyls Synthesis and Characterization of Azaformyl and Hydridonitryl Complexes | Research Corp | 12,000   |
|                   | Nitrosyl Carbonyl Clusters  | ACS/PRF       | 10,000   |
| Gray, Gary        | Antitumor Active Components of BCG Cell Walls   | PHS/NCI       | 79,178   |
| Hexter, Robert    | Surface Chemistry Studies Using Fluorescence Probes   | Navy          | 43,000   |
|                   | Metal Surface Corrosion Studies Using Rama and SIMS Probes  | Army/DAAG     | 50,000   |
|                   | Regional Instrumentation Facility for Surface Analysis  | NSF           | 832,323  |
| Hoye, Thomas      | Synthesis of Anti-neoplastic Chemotherapeutic Agents  | USPHS         | 54,530   |
| Kolthoff, I. M.   | Use of Macrocyclic Compounds in Chemical Analysis and Polymerization  | ACS/PRF       | 14,000   |

|                   |   |               |        |
|-------------------|---|---------------|--------|
| Kreevoy, Maurice  | The Chemistry of $BH_4$ and Related Reducing Agents   | Ventron Corp. | 4,861  |
|                   | The Relations Amount Rate, Structure and Solvent; Proton and Hydride Transfer   | NSF           | 38,000 |
| Leete, Edward     | Metabolism of Natural Products of Medicinal Interest  | USPHS         | 84,674 |
| Lipsky, Sanford   | The Contribution of Electronically Excited States to the Radiation Chemistry of Organic Systems                         | DOE/EY        | 78,000 |
| Lumry, Rufus      | Fluctuational Basis for the Behavior of Aqueous Solutions and Biological Systems  | NSF/PCN       | 90,000 |
| Mann, Kent        | The Photochemical Generation of Species with Multiple Open Coordination Sites   | ACS/PRF       | 10,000 |
|                   | Photochemical Generation of Species with Multiple Open Coordination Sites   | Research Corp | 12,000 |
| Miller, Larry     | Organic Plasma Chemistry  | NSF           | 37,300 |
|                   | Preparative Organic Plasma Chemistry  | NSF/DAR       | 60,002 |
|                   | Organic Electrochemistry  | NSF           | 62,588 |
|                   | Organic Electrode Surfaces  | ACS/PRF       | 15,000 |
| Miller, Wilmer    | Cholestric Biopolymer Liquid Crystals   | USPHS         | 60,309 |
| Moscowitz, Albert | Magnetic Circular Dichroism of Forbidden Transitions in Organic Molecules   | NSF           | 75,000 |
| Overend, John     | The Contributions of FF Non-bonded Interactions to Vibrational Anharmonicity in $SF_6$ , $CF_4$ , and Related Molecules | NSF           | 30,000 |

|   |  |        |         |
|---|--|--------|---------|
| Pignolet                                | Catalytic Thermal and Photochemical Decarbonylation Reactions and the Redox Photochemistry of the Metal-Sulfur Complexes | NSF    | 43,000  |
| Siegel, Brock                           | Biomimetic Organic Redox Chemistry   | USPHS  | 37,855  |
| Truhlar, Donald                         | Scattering Theory and Calculations for Chemical Reactions and Electron Impact Processes                                  | NSF    | 50,000  |
|   | Variational Transition State Theory  | DOE/DE | 30,868  |
| Departmental Equipment Grants (Gassman) | Purchase of Recording UV Visible Near IR Spectrophotometer   | NSF    | 18,000  |
|   | Purchase of Mini-computer for Large-scale Computations in Chemistry  | NSF    | 160,000 |

#### INDUSTRIAL GRANTS TO THE DEPARTMENT

The following industrial organizations have made grants to the Department for fellowships and unrestricted use. Faculty and students greatly appreciate this support, for without it many deserving and talented students would not be able to complete successfully their research programs. This industrial support totaled \$70,000.

|                                    |          |
|------------------------------------|----------|
| Minnesota Mining and Manufacturing | \$15,500 |
| DuPont                             | 27,500   |
| General Mills -Henkel-             | 3,000    |
| General Mills Foundation           | 1,000    |
| Merck & Co.                        | 1,000    |
| Celanese                           | 2,000    |
| Proctor & Gamble                   | 6,000    |
| Standard Oil of Ohio -SOHIO-       | 6,000    |
| Monsanto                           | 1,000    |
| Uniroyal                           | 3,000    |
| Union Carbide                      | 3,000    |
| Lubrizol                           | 1,000    |

UNIVERSITY SPONSORED RESEARCH GRANTS TO THE FACULTY

Graduate School Grants to faculty members during calendar year 1979 totaled \$74,900 and were distributed as follows:

| <u>NAME</u>                       | <u>PROJECT</u>   | <u>AMOUNT</u> |
|-----------------------------------|--|---------------|
| Dodson, Raymond                   | Supplies and Minor Equipment<br>in Support of Graduate Students                                | \$1,000       |
| Ellis, John                       | Hydrogenation of Carbon Mon-<br>oxide: Petroleum from Coal                                     | 3,000         |
| Farneth, William/<br>Dixon, David | Gas Phase Ion Molecules<br>Chemistry   | 3,500         |
| Fisher, Jed                       | Functional Properties of<br>Methemoglobin NADPH: Flavin<br>Reductase                           | 8,000         |
| Fisher, Jed                       | Laboratory Set-Up  | 12,000        |
| Gassman, Paul                     | Purchase of a Preparative High<br>Pressure Liquid Chromatograph                                | 8,000         |
| Gladfelter, Wayne                 | Laboratory Set-Up  | 12,500        |
| Hoye, Thomas                      | Total Synthesis of Complex<br>Natural Products   | 5,500         |
| Kreevoy, Maurice                  | Structure and Fractionation<br>Factors of Hydrogen Bonded<br>Complexes                         | 2,000         |
| Leete, Edward                     | Biosynthesis and Metabolism of<br>Natural Products   | 2,600         |
| Mann, Kent                        | A Study of Energy Conversion<br>Devices Using Photoactive Organo-<br>metallic Electrocatalysts | 6,800         |
| Miller, Larry                     | Analysis by High Performance<br>Liquid Chromatography  | 5,000         |
| Truhlar, Donald                   | Variational Transition State<br>Theory   | 5,000         |

## FACULTY ACCOMPLISHMENTS

During 1979, our faculty was extremely active. Their accomplishments have been widely recognized by invitation to provide lectures at symposia, National American Chemical Society Meetings, and numerous universities. The faculty has also distinguished itself in terms of attracting federal funding and in the area of the publication of scholarly findings. The following pages provide a sampling of some of these achievements.

### LECTURES

#### BORCH, RICHARD

|              |   |
|--------------|---|
| April 20     | "Effects of Phospholipid Alteration Upon Virus Infection in Culture", North Dakota State University, Fargo    |
| May 2        | "Effects of Phospholipid Alteration Upon Virus Infection in Culture", University of Wisconsin, Madison        |
| May 14       | "Effects of Phospholipid Alteration Upon Virus Infection in Culture", 3M Company, St. Paul                    |
| November 2   | "Viruses and Platinum: A Chemist's Approach to Two Biomedical Problems", University of Wisconsin, Eau Claire  |
| November 8-9 | "Mechanism of Action of Anti-tumor Agents", Bristol Meyers Symposium, Yale University, New Haven, Connecticut |

#### BRASTED, ROBERT

|               |  |
|---------------|--|
| February 19   | "Foreign Students Guide", International Institute of Education Annual Meeting, Washington, DC  |
| May 10        | "Foreign Students Guide", National Association of Foreign Students Adviser, Annual Meeting, Phoenix, Arizona   |
| June 5        | "Profiles in Learning", National Science Foundation Institute, South Dakota State University   |
| August 25-31  | "Profiles in Learning", Dublin meeting of the Federation of European Chemical Societies and International Chemical Education Section (IUPAC and UNESCO) Biennial Meeting |
| September 3-5 | "Sulfur Nitrogen Heterocyclic Compounds", University of Glasgow  |

Brasted, Robert

September 6 "Sulfur Nitrogen Heterocyclic Compounds", University of Edinburgh

BRYANT, ROBERT

February 26-28 "<sup>17</sup>O NMR Relaxation of Carbonic Anhydrase Solutions", Biophysical Society Meeting, Atlanta, Georgia

June 12 "Water Dynamics at the Protein Interface", Gordon Conference on Nuclear Magnetic Resonance, Wolfesboro, New Hampshire

September 9 "Water Dynamics at the Protein Interface", 1979 Annual Meeting of the American Chemical Society, Washington, DC

CARR, PETER

February 8 "Analytical Applications of Immobilized Enzymes", University of Arizona, Tucson

April 16 "Analytical Applications of Immobilized Enzymes", Abbott Laboratories, Chicago, Illinois

May 2 "Analytical Applications of Immobilized Enzymes", Department of Chemistry, University of Delaware

July 30 "Biomedical Applications", Conference on Enzyme Engineering, Henniker, New Hampshire

CRAWFORD, BRYCE

May 16 "Left and Right", Spectroscopy Society of Pittsburgh Meeting, Pittsburgh, Pennsylvania

September 19 "The Present State of Diagnostic Molecular Spectroscopy", Federation of Analytical Chemistry and Spectroscopy Societies Meeting, Philadelphia, Pennsylvania

November 7 "Relaxation in Liquids Studied from Vibrational Liquid Shapes", Polytechnic Institute of New York, Brooklyn

DAHLER, JOHN

- May 3-5 "The Coherent Scattering Law for Dilute Polymer Solutions: Continued Fraction Formalism", "Surface Tension of a Simple Fluid", "Coherence Study of Be<sup>+</sup>-Ne Collisions: Phase Jumps for Be<sup>+</sup> (25 → 2p) Excitation Amplitudes", Midwest Chemistry Conference, West Lafayette, Indiana
- June 24-30 "Interfacial Dynamics", Freudenstadt, Germany
- November 14-18 "Theory of Inelastic Atomic Collisions", Lawrence Livermore Laboratories, Livermore, California

DIXON, DAVID

- January 18 "Molecular Orbital Theory of Molecular Clusters", Drake University, Des Moines, Iowa
- May 3 "Effective Potentials for Electron-Molecule Scattering"; "The Theoretical Determination of Relative Molecular Proton Affinities"; and "Substituent Effects in Bicyclo(1.1.0)-butenes", Midwest Theoretical Chemistry Conference, Purdue University
- November 12 "Theoretical Studies of Molecular Clusters", University of Wisconsin at Milwaukee

ELLIS, JOHN

- February 26 "Highly Reduced Organometallics", University of Southern California at Los Angeles
- February 27 "Highly Reduced Organometallics", California Institute of Technology at Pasadena
- February 28 "Highly Reduced Organometallics", University of California at Los Angeles
- March 1 "Highly Reduced Organometallics", Stanford University, Stanford, California

Ellis, John

- March 2 "Highly Reduced Organometallics", University of California at Berkeley
- March 12 "Highly Reduced Organometallics", Iowa State University at Ames

EVANS, JOHN

- January 23 "Secondary Ion Mass Spectrometry of Chemically Modified Surfaces", Institute of Technology Industry-University seminar on Surface Science, University of Minnesota
- March 6 "Electrochemical and Surface Analytical Characterization of Electrochemically Reformed Silica Surfaces", Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Cleveland, Ohio
- May 8 "Surface Analysis of Chemically Bonded Surface Layers Using Secondary Ion Mass Spectrometry and Electron Spectroscopy", 11th Central Regional Meeting of the American Chemical Society, Columbus, Ohio
- May 10 "Modification of Electrode Materials Using Plasma Chemistry", 155th Meeting of the Electrochemical Society, Boston, Massachusetts
- June 6 "Multitechnique Depth Profiling of Chemically Modified Glassy Carbon and Tin Oxide"; "Measurement of Sputter Yields of Organic Materials Using a Quartz Crystal Microbalance"; "Evaluation of the Electrocatalytic Behavior of Plasma Polymerized Polyferrocene Modified Graphite Toward the Oxidation of Ascorbic Acid", 13th Great Lakes Regional Meeting of the American Chemical Society, Rockford, Illinois
- August 31 "SIMS Depth Profiling of Thin and Ultrathin Films of Covalently Bonded Organic Overlayers, Second International Conference on Secondary Ion Mass Spectrometry, Stanford University, Palo Alto, California
- September 13 "Kinetics and Mechanism of the Reaction of Thiathrene Cation Radical with Nitrate Ion", 1979 Annual Meeting of the American Chemical Society, Washington, DC
- October 25 "Characterization of Chemically Modified Surfaces Using Secondary Ion Mass Spectrometry", Expochem -79, Houston, Texas

Evans, John

November 15 "Multi-technique Surface Analysis: Applications to Chemically Modified Surfaces", Fall Meeting Joint ACS/Analytical Topical Group/SAS, Minneapolis Section

FARNETH, WILLIAM

September 5 "Infrared Laser Initiated Reactions of Cyclopropane Derivatives", American Chemical Society National Meeting, Washington, DC

FISHER, JED

January 10 " $\beta$ -Lactamase Inhibition and Inactivation via Acyl-Enzyme Intermediates", Department of Chemistry, Brown University

January 17 " $\beta$ -Lactamase Inhibition and Inactivation via Acyl-Enzyme Intermediates", Department of Toxicology, Harvard Medical School

May 20-23 " $\beta$ -Lactamase Inhibition and Inactivation via Acyl-Enzyme Intermediates", Twentieth Annual Medicinal Chemistry Symposium, Amherst, New York

GASSMAN, PAUL

February 28 "Chemistry. Where Have We Been and Where Are We Going?", Minnesota Forum Lecture, University of Minnesota

April 10 "The Use of (2,3)-Sigmatropic Rearrangements in the Synthesis of Heterocyclic Compounds", Burroughs-Wellcome Co., Research Triangle Park, North Carolina

April 10 "Recent Findings in the Area of Alicyclic Chemistry", Burroughs-Wellcome Co., Research Triangle Park, North Carolina

April 11 "Neighboring Group Participation in Carbonium Ion Reactions", Department of Chemistry, Bucknell University, Lewisburg, Pennsylvania

April 26 "Recent Advances in the Chemistry of Highly Strained Ring Systems", Department of Chemistry, University of Wisconsin, Madison

Gassman, Paul

- May 9 "Reactions of Highly Strained Polycyclic Hydrocarbons", Research Laboratories, Eastman Kodak Company, Rochester, New York
- October 9 "Neighboring Group Participation in Carbonium Ion Reactions", T. R. Evans Research Center, Diamond Shamrock Corporation, Painesville, Ohio
- October 11 "Recent Developments in the Chemistry of Highly Strained Ring Systems", Department of Chemistry, Canisius College, Buffalo, New York
- October 30 "Recent Developments in the Chemistry of Highly Strained Ring Systems", Department of Chemistry, Rutgers University, New Brunswick, New Jersey
- November 7 "Recent Developments in the Chemistry of Highly Strained Ring Systems", Department of Chemistry, Oberlin College, Oberlin, Ohio
- November 16 "New Developments in Organic Reaction Mechanisms", Research Laboratories, Universal Oil Products, Inc., Des Plaines, Illinois
- November 19 "Factors Influencing the Stability of Carbonium Ions", Research Laboratories, The Upjohn Company, Kalamazoo, Michigan

GENTRY, W. RONALD

- April 3 "Inelastic and Reactive Scattering Experiments with Pulsed Molecular Beams", Chemistry Department, Iowa State University
- April 13 "Merged Molecular Beam Studies of Ion-Molecule Reactions", Physics Division Colloquium, Argonne National Laboratory
- April 17 "Pulsed Molecular Beam Studies of Fundamental Unimolecular and Bimolecular Processes", Chemistry Department, University of Wisconsin at Madison
- May 11 "Pulsed Molecular Beam Studies of Fundamental Unimolecular and Bimolecular Processes", Modern Optics and Spectroscopy Seminar, MIT
- October 5 "Pulsed Molecular Beam Studies of Fundamental Unimolecular and Bimolecular Processes", Chemistry Department Colloquium, University of Florida, Gainesville
- October 29 "Pulsed Molecular Beam Studies of Fundamental Unimolecular and Bimolecular Processes" Chemistry Department, University of Chicago

GRAY, GARY

- March 21 "Chemistry of Mycobacterial Cancer Immunotherapeutic Agents", Illinois Institute of Technology, Department of Chemistry
- April 1-5 "Mycolic Acids of Mycobacterium smegmatis. Characterization of Three Major Homologous Series", 63rd Annual Meeting, Federation of American Societies for Experimental Biology, Dallas, Texas
- April 25 "Chemical Agents in Cancer Immunotherapy", and "Mycolic Acids" Structure and Synthesis", Moorhead State University, Moorhead, Minnesota
- May 18 "Mycolic Acids of Mycobacterium smegmatis. Resolution of C<sub>60</sub>-C<sub>80</sub> Homologs by High Performance Liquid Chromatography", Minnesota Chromatography Forum, Spring Symposium
- June 24-29 "New Synthesis of 2-Deoxyaldoses", Gordon Research Conference, Chemistry of Carbohydrates
- October 3-5 "Mycolic Acids: New Approaches to Their Isolation, Structural Characterization and Synthesis", Fourteenth U.S.-Japan Tuberculosis Research Conference, Denver, Colorado

HEXTER, ROBERT

- January 22-24 "Raman Scattering and Surface Characterization Studies of Adsorbed Molecules on Metals", U.S.-Japan Seminar on Inelastic Light Scattering in Condensed Matter, Santa Monica, California
- February 20 "Theory of Intensity Enhancement of Raman Spectra at Metal Surfaces", University of California at Santa Barbara
- March 6 "Electrochemical and Surface Analytical Characterization of Electrochemically Reformed Silver Surfaces", Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy
- June 13 "Its Application to Biological and Physical Sciences", New York Academy of Sciences Conference on Ultrasoft X-ray Microscopy, New York City
- October 25-26 "Microscopy of Frozen Sections of Striated Muscle, Using Both White and Monochromatic Soft X-radiation", Sixth Annual Users Group Meeting, Stanford Synchrotron Radiation Laboratory, Stanford University, Palo Alto, California

HOYE, THOMAS

- March 19 "On the Total Synthesis of Aplysistatin", Carl S. Marvell Symposium on the Synthesis of Natural Products, Tucson, Arizona
- September 11 "Preparation, Stereochemistry, and Transformations of  $\beta$ -Hydroxy- $\alpha$ -phenylsulfenylesters", Washington, DC National American Chemical Society Meeting
- September 14 "Intra-molecular Cycloadditions in Organic Synthesis", Bucknell University, Lewisburg, Pennsylvania

KOLTHOFF, I. M.

- April 6 "Acid-Base Titrations and Equilibria in Nonaqueous Media", Vanderbilt University, Second Frederic LeRoy Conover Memorial Lecture

KREEVOY, MAURICE

- January 31 "Structure and Isotopic Fractionation Factors of Hydrogen Bonded Complexes", Northern Arizona University
- February 5 "Structure and Isotopic Fractionation Factors of Hydrogen Bonded Complexes", Gordon Conference
- March 1 "Mechanism of Active Anion Transport by a Liquid Membrane", Purdue-Indiana University at Fort Wayne
- March 8 "Mechanism of Active Anion Transport by a Liquid Membrane", Northwestern University, Evanston, Illinois
- June 25 "The Use of  $H^+$  to Pump an Anion Across a Supported Liquid Membrane", Conference on Reaction Rates and Mechanisms in Solution, Canterbury, England
- July 10 "The Use of  $H^+$  to Pump an Anion Across a Supported Liquid Membrane", Strathclyde University, Glasgow, England

LEETE, EDWARD

- April 6 "Use of  $^{13}C$  NMR for the Study of Alkaloid Biosynthesis", American Chemical Society, Fargo, North Dakota

Leete, Edward

- April 25-27 "Biosynthetic Studies Using  $^{13}\text{C}$  NMR", Plenary  
Lecturer at the VI International Symposium on  
Natural Products, Monterrey, Mexico
- May 11 "Biosynthetic and Biomimetic Experiments in the  
Alkaloid Field", Winona State University
- July 30 - "Biosynthetic Experiments Using Precursors  
August 3 Labeled with Contiguous  $^{13}\text{C}$  Atoms", Purdue  
University, American Society of Pharmacognosy
- September 4 "Biomimetic Synthesis of Alkaloids and Related  
Natural Products", University of Manchester,  
England
- November 19-24 "Biosynthetic Studies Using  $^{13}\text{C}$  NMR", Plenary  
Lecturer at the VIII Seminario Latinoamericano  
de Quimica on Chemistry and Biochemistry of  
Natural Products, Buenos Aires, Argentina

LUMRY, RUFUS

- January 23-24 "The Missing Dimension of Chemistry", Colloquium  
Series, University of Auburn, Alabama
- January 25-26 "Description of Hydrophobic Hydration and Some  
Implications for Biochemical Problems", University  
of Florida, Gainesville

MANN, KENT

- October 11 "The Photochemistry of Isocyanide Complexes",  
St. Olaf College, Northfield, Minnesota

MILLER, LARRY

- March 20 "Organic Electrochemistry", Pittsburgh Paint &  
Glass Company, Cleveland, Ohio
- March 31 "Polymer Coated Electrodes", American Chemical  
Society Meeting, Honolulu, Hawaii
- April 18 "Organic Electrochemistry", Department of  
Chemistry, Oberlin College, Ohio
- April 19 "Organic Electrochemistry", International  
Symposium on Physical Organic Chemistry,  
Toronto, Ontario
- May 8 "Electrocatalysis with Polymer Coated Electrodes"  
Electrochemical Society Meeting, Boston, Massachusetts

Miller, Larry

- August 9 "Organic Electrochemistry", International Symposium on Physical Organic Chemistry,
- August 17 "Organic Reactions at Electrodes and Organic Electrodes", Monsanto Co., St. Louis, Missouri
- August 26 - September 26 "Rf Reactions of Aromatic Compounds", International Symposium on Plasma Chemistry, Weizmann Institute of Science, Rehovot, Israel
- December 4 "Organic Electrochemistry", North Dakota State University, Fargo

MILLER, WILMER

- March 27 "Anisotropic Phase Stability and Structure in Rodlike Polypeptides", American Chemical Society Meeting, Honolulu, Hawaii
- June 12 "Polymer Liquid Crystals", 53rd Colloid and Surface Science Symposium, Rolla, Missouri
- July 4 "Relationship Between Phase Behavior and Interfacial Tension in a Water-Hydrocarbon-Sulfonate Surfactant System", Gordon Conference on Chemistry at Interfaces, Meriden, New Hampshire
- September 10 "Conformation of Polymers Adsorbed at a Solid-Liquid Interface by ESR Spectroscopy", Symposium on Characterization of Macromolecules by ESR and NMR
- December 14 "Adhesion of Vinyl Polymers to Oxide Surfaces", McDonnell-Douglas Corporation, St. Louis, Missouri

MOSCOWITZ, ALBERT

- June 11-15 "Theory of Vibrational Circular Dichroism I. Techniques for the Calculation of Rotational Strengths of Vibrational Transitions"; "Theory of Vibrational Circular Dichroism II. Application to Simple Chiral Molecules"; "Vibrational Circular Dichroism in the CH Stretching Region of Simple Sugars"; "Vibrational Magnetic Circular Dichroism: Some Theoretical Consideration", 33rd Annual Symposium on Molecular Spectroscopy, The Ohio State University.

OVEREND, JOHN

- June 11-15 "Theory of Vibrational Circular Dichroism I. Techniques for the Calculation of Rotational Strengths of Vibrational Transitions", 33rd Annual Symposium on Molecular Spectroscopy, The Ohio State University.
- November 1-4 "IRRAS Spectra of Adsorbates on Polycrystalline Pt", University of Florida, Gainesville.
- November 15 "The Structure of  $UF_5$ ", University of North Dakota, Grand Forks.

PIGNOLET, LOUIS

- May 3 "Catalytic and Photochemical Decarbonylation of Aldehydes and Ketones", Case Western Reserve University
- May 4 "Recent Progress in Metal Sulfur Chemistry" Firestone Tire and Rubber Co., Akron, Ohio
- June 4-6 "Photochemical and Electrochemical Properties of Some Carbonyl-Dithiocarbamate Complexes of Ru"; "Catalytic Decarbonylation Reactions Using Rh(I) Complexes", Great Lakes Regional ACS Meeting, Rockford, Illinois.
- August 6-10 "Decarbonylation Reactions of Aldehydes and Acid Chlorides Using Diphosphine Complexes of Rh(I)", Gordon Research Conference on Inorganic Chemistry, New Hampton, New Hampshire.

PRAGER, STEPHEN

- June 10 "Stat. Mech. of Interfaces Between Microemulsions" 53rd Congress on Colloids & Interfacial Science, University of Missouri, Rolla.
- August 19 "Formation of Porous Structures in Diffusion - Controlled Precipitation of Polymers", Gordon Conference on Coatings and Films, Andover, New Hampshire.
- August 26 "Voronoi Models of Microemulsions", Gordon Conference on Fluids in Permeable Media, Plymouth, New Hampshire.

REYNOLDS, WARREN

June 4-6

"Intermediates in Assisted Substitution Reactions of  $\text{Co}(\text{NH}_3)_5\text{X}^{(3-n)+}$  Complexes" Great Lakes Regional Meeting, Rockford, Illinois.

September 5

"Intermediates in Assisted Aquation Reaction of  $\text{Co}(\text{NH}_3)_5\text{X}^{(3-n)+}$  Complexes", National American Chemical Society Meeting, Washington, DC.

SWOFFORD, HAROLD

January 11

"Working Full-time and Going to Graduate School in Chemistry", Pillsbury Central Research, Minneapolis, Minnesota.

February 28

"Employment vs. A Graduate Education", Minnesota Institute of Chemists, St. Paul, Minnesota.

TRUHLAR, DONALD

January 31

"Reactive and Nonreactive Collisions of Atoms and Hydrogen Molecules", 1979 Annual Meeting of the American Physical Society, New York

February 4

"A Generalized Transition State Theory for Kinetic Isotope Effects", Gordon Conference on the Chemistry and Physics of Isotopes, Santa Barbara, California

March 11

"Recent Advances in Electron-Molecule Scattering Theory" Sanibel International Symposium on Atomic, Molecular and Solid-State Theory, Collision Phenomena, Quantum Statistics and Computational Methods, held at Palm Coast, Florida

May 4

"Effective Potentials for Electron-Molecule Scattering", 12th Midwest Theoretical Chemistry Conference, West Lafayette, Indiana

May 5

"Generalized Transition State Theory", 12th Midwest Theoretical Chemistry Conference, West Lafayette, Indiana

May 23

"Electron-Molecule Scattering: 10-100 eV", Nuclear Physics Seminar, Minneapolis, Minnesota

August 22

"Variational Transition State Theory", Argonne National Laboratory, Argonne, Illinois

WERTZ, JOHN

- February 21 "Electronic Properties of Oxides", Argonne National Laboratory, Solid State Science Division, Argonne, Illinois
- July 31 "Hole Centers in the Alkaline Earth Oxides", Rocky Mountain Conference, Denver, Colorado

WILSON, ARCHIE

- June 3 "Good Students or Bad Items: The Use of Pretests for Screening Examinations", Great Lakes Regional Meeting of the American Chemical Society, Rockford, Illinois

FACULTY PUBLICATIONS

- "A New Method for the HPLC Analysis of Platinum(II) in Urine", R. F. Borch, J. H. Markovitz and M. E. Pleasants, Anal. Lett. 12, 917 (1979).
- "Amelioration of Platinum Nephrotoxicity via Diethyl Dithiocarbamate Rescue in a Rat Model", R. F. Borch and M. E. Pleasants Proceed. Nat. Acad. Sci. 76, 6611 (1979).
- "Science Education as an Instrument for Peace", R. C. Brasted, Proceedings ICUS 1979, 1947.
- "Impact -- Herman Mark", R. C. Brasted, J. Chem. Ed. 56, 83 (1979).
- "Place of the Teacher", R. C. Brasted, J. Chem. Ed. 56 137 (1979).
- "Anorganische und Allgemeine Chemie" (second edition), R. C. Brasted and E. Fluck, Meyer Quelle Press, Heidelberg.
- "<sup>14</sup>N NMR Relaxation in Monovalent Ions in Aqueous Metal Ion Solutions", T. Raj and R. G. Bryant, J. Mag. Reson. 34, 537 (1979).
- "The Insignificance of Second Coordination Sphere Interactions in Cobalt-59 Relaxation: A More Precise Assessment", K. Rose and R. G. Bryant, J. Mag. Reson. 35, 223 (1979).
- "Cobalt-59 and Nitrogen-14 Nuclear Magnetic Resonance Relaxation in Hexanitrocobalt(III) Ion", K. D. Rose and R. G. Bryant, Inorg. Chem. 18, 2130 (1979).

"Nuclear Magnetic Resonance Study of Water Absorbed on Cellulose", E. Hsi, J. Vogt and R. G. Bryant, J. Colloid Interface Sci. 70, 338 (1979).

"High Sensitivity Continuous Flow Thermochemical Analyzer", R. S. Schifreen, C. S. Miller and P. W. Carr, Anal. Chem. 51, 278 (1979).

"Investigation of the Kinetics of Hydrolysis of Triglycerides by Lipase from *candida cylindracea*", R. S. Schifreen and P. W. Carr, Anal. Lett. 12(B1), 47 (1979).

"Applications of Differential Scanning Calorimetry to Enzyme Kinetics", L. F. Whiting and P. W. Carr, Thermochim. Acta 33, 7 (1979).

"A Realistic Simplex Approach to the Optimization of Gradient Elution HPLC", M. W. Watson and P. W. Carr, Anal. Chem. 51, 1835 (1979).

"Infrared Intensities of Allene and Allene-d<sub>4</sub>", M. J. Youngquist, B. Crawford, Jr., and J. Overend, J. Phys. Chem. 83, 2638 (1979).

"Characterization of Aquatic Organics", L. E. Conroy, M. H. Maier and C. Macko, AIChE Symposium Ser. 75, 162 (1979).

"Multicomponent UV Spectral Analysis of Aquatic Organics", L. E. Conroy and W. J. Maier, in "1978 Proceedings of the International Congress on Analytical Techniques in Environmental Chemistry", J. Albaiges, editor (Barcelona, Spain, 1979).

"Conformations and Electronic Structure of Oxidized and Reduced Isoalloxazine", D. A. Dixon, D. Lindner, B. Branchard and W. N. Lipscomb, Biochemistry 18, 5770 (1979).

"Classical Theories of Direct-Mode Chemical Reactions: Angular Distributions, Energy Utilization and Disposal, and Accuracy of Classical Mechanics", D. G. Truhlar and D. A. Dixon, Chapter 18 in "Atom-Molecule Collision Theory: A Guide for the Experimentalist", R. B. Bernstein, editor (Plenum Press, New York, 1979) p. 595.

"Polarization Potentials for Electron Scattering", D. G. Truhlar, D. A. Dixon, R. A. Eades, R. F. Van-Catledge and K. Onda, in "Electron-Molecule and Photon-Molecule Collisions", V. McKoy, T. N. Rescigno and B. I. Schneider, editors (Plenum Press, New York, 1979), p. 151.

"Ab initio SCF Polarizabilities and Electron-Molecule Adiabatic Polarization Potentials. I. H<sub>2</sub>", D. G. Truhlar, D. A. Dixon and R. A. Eades, J. Phys. B, 12, 1913 (1979).

"Ab initio SCF Polarizabilities and Electron-Molecule Adiabatic Polarization Potentials. II. Li<sub>2</sub>", D. A. Dixon, R. A. Eades and D. G. Truhlar, J. Phys. B, 12 2741 (1979).

"Ab initio SCF Polarizabilities and Electron-Molecule Adiabatic Polarization Potentials. III.  $N_2$ ", R. A. Eades, D. G. Truhlar and D. A. Dixon, Phys. Rev. A, 20, 867 (1979).

"The Effect of Alkyl Substitution on the Ease of Oxidation of Bicyclo[1.1.0]butanes. Experimental Verification of PRDDO Calculations for the Nature of the HOMO of Bicyclo[1.1.0]butane", P. G. Gassman, M. J. Mullins, S. Richtsmeier and D. A. Dixon, J. Amer. Chem. Soc. 101, 5793 (1979).

"The Geometry and Inversion Barrier of the Sulphonium Ion  $SH_3^+$ . Dependence on Basis Set", D. A. Dixon and D. S. Marynick, J. Chem. Phys. 71, 2860 (1979).

"The Proton Affinities of Ethylideneimine and Vinylamine", M. R. Ellenberger, R. A. Eades, M. W. Thomsen, W. E. Farneth and D. A. Dixon, J. Amer. Chem. Soc. 101, 7151 (1979).

"Effective Potential Approach to Electron-Molecule Scattering Theory", D. G. Truhlar, K. Onda, R. A. Eades and D. A. Dixon, Int. J. Quantum Chem. Symp. 13, 601 (1979).

"Covalent Attachment of Electroactive Amines to Pyrolic Graphite Using a Cyanuric Chloride Linkage", M. Dautartas, J. F. Evans and T. Luwana, Anal. Chem. 51, 104 (1979).

"Introduction of Functional Groups onto Carbon Electrodes via Treatment with Radio Frequency Plasmas", J. F. Evans and T. Kuwana, Anal. Chem. 51, 358 (1979).

"On the Application of Open Circuit Relaxation Spectroelectrochemistry to the Diagnosis and Evaluation of Succeeding Second Order Chemical Reactions", J. F. Evans and H. N. Blount, J. Electroanal. Chem. 102, 289 (1979).

"Reactions of Cation Radicals of EE Systems. VIII. Effects of Initial Cation Radical Concentration on the Rate Determining Step in the Half-Regeneration Mechanism", J. F. Evans and H. N. Blount, J. Phys. Chem. 83, 1970 (1979).

"Reactions of Cation Radicals of EE Systems. IX. Kinetics and Mechanism of the Reaction of Thianthrene Cation Radical with Nitrate Ion", J. E. Penberton, G. L. McIntire, H. N. Blount, J. Phys. Chem. 83, 2696 (1979).

"SIMS Depth Profiling of Thin and Ultrathin Films of Covalently Bonded Organic Overlayers", J. F. Evans, M. R. Ross and D. M. Ullevig, in "Secondary Ion Mass Spectrometry", A. Benninghoven, C. A. Evans, Jr., R. A. Powell, R. Shimizu and H. A. Storms, editors (Springer-Verlag, Berlin, 1979).

"Reactions of Vinylcyclopropane Induced by Multiphoton Adsorption of Infrared Radiation", W. E. Farneth, M. W. Thomsen and M. A. Berg, J. Amer. Chem. Soc. 101, 6468 (1979).

"Reactions of 1-Chloro-2-alkylcyclohexenes with Organolithium Reagents", P. G. Gassman, J. J. Valcho and G. S. Proehl, J. Amer. Chem. Soc. 101, 231 (1979).

"Air Oxidation of Oxindoles to Isatins", P. G. Gassman and K. M. Halweg, J. Org. Chem. 44, 628 (1979).

"The Electrochemical Oxidation of Strained Hydrocarbons", P. G. Gassman and R. Yamaguchi, J. Amer. Chem. Soc. 101, 1308 (1979).

"Methyl Substituent Probe of the Transition State for Thermal Decarbonylation of *endo*-Tricyclo[3.2.1.0<sup>2,4</sup>]octan-8-one" M. A. Battiste, D. D. McRitchie, P. G. Gassman, W. F. Reus, III, J. N. Chasman and J. Haywood-Farmer, Tetrahedron Lett., 2097 (1979).

"Evidence for the Formation of a Symmetrical Ion During Neighboring Group Participation by the Cyclopropyl Moiety. Solvolysis of Methylated Derivatives of Tricyclo[3.2.1.0<sup>2,4</sup>]octan-8-ol", P. G. Gassman, J. N. Chasman, W. F. Reus, III, M. A. Mattiste and J. Haywood-Farmer, J. Org. Chem. 44, 2814 (1979).

"The Synthesis and Structure of 10,11-Bistrifluoromethyl-*i,o*-bicyclo[7.2.2]trideca-10,12-diene. A Highly Strained Inside-Outside Bicycloalkane Derivative", P. G. Gassman, S. R. Korn, T. F. Bailey, T. H. Johnson, J. Finer and J. Clardy, Tetrahedron Lett., 3401 (1979).

"1,3-Di(methylthio)-2,2,4,4-tetramethylbicyclo[1.1.0]butane", P. G. Gassman and M. J. Mullins, Tetrahedron Lett., 4457 (1979).

"Classical and Semiclassical Methods for Calculations of Vibrational Energy Transfer", W. R. Gentry, Chapter 12 in "Atom-Molecule Collision Theory: A Guide for the Experimentalist", R. B. Bernstein, editor (Plenum Press, New York, 1979).

"Progress in the Application of Molecular Beam Techniques to Ion-Molecule Reactions", W. R. Gentry, Chapter 15 in "Gas Phase Ion Chemistry", Volume 12, M. R. Bowers, editor (Academic Press, New York, 1979).

"Pulsed Molecular Beam Study of Ethylene Dimer Photodissociation with a CO<sub>2</sub> Laser", M. A. Hoffbauer, W. R. Gentry and C. F. Giese, in "Laser Induced Processes in Molecules", Springer-Verlag Series in Chemical Physics, Volume 6, K. Kompa and S. D. Smith, editors (Springer-Verlag, Berlin, Heidelberg, New York, 1979).

"Molecular Beam Studies of Ion-Molecule Reactions", W. R. Gentry in "Kinetics of Ion Molecular Reactions", P. Ausloos, editor (Plenum Press, New York, 1979).

"A Merged Molecular Beam Study of the Endothermic Associative Ionization Reaction N(<sup>2</sup>D) + O(<sup>3</sup>P) → NO<sup>+</sup> + e", G. Ringer and W. R. Gentry, J. Chem. Phys. 71, 1902 (1979).

"Energy Dependence of the Differential Cross Sections for Simple Models of Ion-Induced Dipole Capture Collisions", G. H. Bearman and W. R. Gentry, J. Chem. Phys. 71, 1128 (1979).

"1,2,4-Triazolo- and 1,2,5-Triazino[4,3-d][1,4]benzodiazepinone Ring Systems: Synthesis and Barrier to Ring Inversion", P. C. Wade, B. R. Vogt, B. Toeplitz, M. S. Puar and J. Z. Gougoutas, J. Org. Chem 44, 88 (1979).

"The Crystal Structure of endo, endo 2,4,-bix(Methoxycarbonyl)-1,3-Diphenylbicyclo[1.1.0]butane", J. Z. Gougoutas, Cryst. Struc. Comm. 8, 135 (1979).

"The Crystal Structure of endo, exo 2,4-bis(Methoxycarbonyl)-1,3-Diphenylbicyclo[1.1.0]butane", J. Z. Gougoutas, Cryst. Struc. Comm 8, 131 (1979).

"The Structure of Ionomycin - A Novel Diacidic Polyether Antibiotic Having High Affinity for Calcium Ions", B. K. Toeplitz, A. I. Cohen, P. T. Funke, W. L. Parker and J. Z. Gougoutas, J. Amer. Chem. Soc. 101, 3344 (1979).

"The Crystal Structure and Solid State Behavior of a Diazonium Iodide: 3-Carboxy-2-Naphthalenediazonium Iodide, Hydrate", J. Z. Gougoutas, J. Amer. Chem. Soc. 101, 5672 (1979).

"Orientation of the Sulfoxide Bond as a Stereochemical Probe. Synthesis of <sup>1</sup>H and <sup>13</sup>C NMR of Substituted Thiopyrano[4,3-c]pyrazoles", M. S. Puar, G. C. Rovnyak, A. I. Cohen, B. Toeplitz and J. Z. Gougoutas, J. Org. Chem. 44, 2513 (1979).

"Acetylated Methylmannose Polysaccharide of Streptomyces griseus. Locations of the Acetyl Groups", B. E. Kari and G. R. Gray, J. Biol. Chem. 254, 3354 (1979).

"The Major Mycolic Acids of Mycobacterium smegmatis. Characterization of Their Homologous Series", M. Y. H. Wong, P. A. Steck and G. R. Gray, J. Biol. Chem., 254, 5734 (1979).

"Structures of the Homologous Series of Monoalkene Mycolic Acids from Mycobacterium smegmatis", M. Y. H. Wong and G. R. Gray, J. Biol. Chem. 254, 5741 (1979).

"Structural and Immunochemical Characterization of the Acidic Arabinomannan of Mycobacterium smegmatis", P. L. Weber and G. R. Gray, Carbohydr. Res. 74, 259 (1979).

"N-Acetyl-D-Glucosamine Binding Lectins. A Model System for the Study of Binding Specificity", B. M. Cederberg and G. R. Gray, Anal. Biochem. 99, 221 (1979).

"Intralesional Immunotherapy of Malignant Melanoma with Mycobacterium smegmatis Cell Wall Skeleton Combined with Trehalose Dimycolate (P3)", G. J. Vosika, J. Schmidtke, A. Goldman, E. Ribí, R. Parker and G. R. Gray, Cancer 44, 495 (1979).

"Phase I-II Study of Intralesional Immunotherapy with Oil Attached Mycobacterium smegmatis Cell Wall Skeleton and Trehalose Dimycolate", G. J. Vosika, J. Schmidtke, A. Goldman, R. Parker, E. Ribí and G. R. Gray, Cancer Immunol. Immunother. 6, 135 (1979).

"Metal Surface Raman Spectroscopy: Theory", R. M. Hexter and M. G. Albrecht, Spectrochim. Acta 35A, 233 (1979).

"Enhanced Raman Intensity of Molecular Absorbed on Metal Surfaces: Experiments and Theory", R. M. Hexter, Solid State Comm. 32, 55 (1979).

"Mercuric Acetate Oxidation of 1-Vinylcycloalkenes: Diels-Alder Reactivity of Resultant Allylic Diene Acetates", M. J. Rother and T. R. Hoyer, J. Org. Chem. 44, 458 (1979).

"Mercuric Trifluoroacetate Mediated Brominative Cyclizations of Dienes: Total Synthesis of *dl*-3 $\beta$ -Bromo-8-epicaparrapi Oxide", M. J. Kurth and T. R. Hoyer, J. Org. Chem. 44, 3461 (1979).

"Total Synthesis of *dl*-Aplysistatin", M. J. Kurth and T. R. Hoyer, J. Amer. Chem. Soc. 101, 5065 (1979).

"Resolution of Acid Strength in *tert*-Butyl Alcohol and Isopropyl Alcohol of Substituted Benzoic Acids, Phenols, and Aliphatic Carboxylic Acids", M. K. Chantooni, Jr., and I. M. Kolthoff, Anal. Chem. 51, 133 (1979).

"Voltammetric and Polarographic Catalytic Hydrogen Currents of Modified Bovine Serum Albumin", I. M. Kolthoff and S. Kihara, J. Electroanal. Chem. 96, 95 (1979).

"Acid-Base Equilibria of Hydrochloric and Hydrobromic Acids in Isopropyl and *tert*-Butyl Alcohols", I. M. Kolthoff and M. K. Chantooni, Jr., J. Phys. Chem. 83, 468 (1979).

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| DEGREE | NAME                   | DATE REC'D | THESIS TITLE   | ADVISOR   | POSITION   |
|--------|------------------------|------------|--|-----------|--|
| Ph.D.  | Apple, Fred S.         | 12/79      | Manipulation of the Fatty Acid Content of Mammalian Plasma Membranes in Culture  | Borch     | Clinical Chemistry Fellow<br>University of Utah<br>Salt Lake City, UT        |
| M.S.   | Boyd, Jean W.          | 8/79       | Exegesis of Benzyl Ether Oxidations  | L. Miller | Department of Chemistry<br>University of Southampton<br>Southampton, England |
| Ph.D.  | Chernega, John G.      | 12/79      | A Spectroscopic Investigation of Ferroelectric and Paraelectric Sodium Nitrite   | Hexter    | Research Chemist<br>3M Company<br>St. Paul, MN                               |
| Ph.D.  | Cole, Susan M.         | 6/79       | The Reductive Sulfenylation of $\alpha, \beta$ -Unsaturated Cyclic Ketones and Approaches to the Synthesis of Ellipticine                      | Gassman   | 3M Center<br>Building #235-1B<br>St. Paul, MN                                |
| M.S.   | Dittenhafer, Diane     | 12/79      | Synthesis, Characterization and Kinetics of Demetallation of $\alpha, \beta, \sigma, \delta$ -tetra( <i>p</i> -sulfohenyl) porphine idium(III) | Reynolds  | Department of Chemistry<br>University of Minnesota<br>Minneapolis, MN        |
| Ph.D.  | Doughty, Daniel        | 12/79      | Catalytic Decarbonylation Reactions Using Cationic Rhodium (I) of Chelating Diphosphine Ligands  | Pignolet  | Research Chemist<br>Scandia Laboratories<br>Livermore, CA                    |
| Ph.D.  | Gennick, Irene         | 12/79      | The Reactivity of Bicyclo[2.2.1]-hept-2-yne Precursors   | Gassman   | Postdoctoral Fellow<br>University of Wisconsin<br>Madison, WI                |
| Ph.D.  | Harvey, Nancy Mullaney | 6/79       | New Methods for Quantum Mechanical Calculations of Inelastic Atom-Molecule Collisions and Electron Scattering                                  | Truhlar   | Postdoctoral Fellow<br>Caltech<br>Pasadena, CA                               |

| DEGREE | NAME                | DATE REC'D | THESIS TITLE   | ADVISOR               | POSITION  |
|--------|---------------------|------------|--|-----------------------|---|
| Ph.D.  | Hong, Chun-I        | 12/79      | Thiophosgene at a Dienophile<br>In Organic Synthesis   | Dodson                | Tek-Hwa Rubber Co. Ltd.<br>Jenteh Sporting Goods Co., Ltd.<br>No. 340 Ton Men Road<br>Taiwan, ROC |
| Ph.D.  | Liang, Tai-Ming     | 8/79       | Molecular Spectra, Isotopic<br>Fractionation Factor and<br>Structures of Very Strong Hydro-<br>gen Bonded Homoconjugate and<br>Heteroconjugate Complexes | Kreevoy               | Senior Chemist<br>Mobay Corporation<br>Pittsburgh, PA   |
| Ph.D.  | Marcott, Curtis     | 3/79       | Vibrational Circular Dichroism<br>and the Structure of Chiral<br>Molecules   | Overend/<br>Moscowitz | Proctor & Gamble<br>Miami Valley Labs<br>Cincinnati, OH   |
| M.S.   | Rider, Jack         | 8/79       | Electrochemistry of Polybenzene<br>Iminodiacetic Acid  | Swofford              | 3M Company<br>Plating Systems<br>St. Paul, MN   |
| M.S.   | Robison, Thomas S.  | 8/79       | Studies of Compounds of the<br>Zearalenone Series  | Fenton                | Department of Plant Pathology<br>University of Minnesota<br>St. Paul, MN                          |
| Ph.D.  | Rose, Kenneth D.    | 3/79       | Applications to Nuclear Magnetic<br>Resonance Quadrupole Probes to<br>the Study of Protein Binding<br>Sites for Coal and Small<br>Molecules              | Bryant                | Exxon Research and<br>Engineering Co.<br>Linden, NJ   |
| Ph.D.  | Seif El-Nasr, Moheb | 12/79      | Studies of the Substitution<br>Reaction of the (Dimethyl<br>Sulfoxide)pentaamminecobalt(III)<br>Ion  | Reynolds              | Department of Chemistry<br>Lindenwood College<br>St. Charles, MO                                  |
| Ph.D.  | Stewart, Ray F.     | 12/79      | Synthetic Applications of Organic<br>Electrochemistry  | L. Miller             | Research Chemist<br>Raychem Corp.<br>Menlo Park, CA   |

| DEGREE | NAME                | DATE REC'D | THESIS TITLE  | ADVISOR  | POSITION  |
|--------|---------------------|------------|---|----------|---|
| Ph.D.  | Talley, John        | 12/79      | The Properties of Electron Deficient Carbonium Ions   | Gassman  | General Electric<br>Basic Research Labs<br>Schenectady, NY                            |
| Ph.D.  | Watson, Ann Frances | 6/79       | Part I: The Mitogenic Effects of Mycobacterial Cell Wall Preparations on Mouse Splenic Lymphocytes. Part II: The Effects of Certain Dibasic Drugs on the Products of Arachidonic Acid Metabolism  | Borch    | Department of Biochemistry<br>University of Minnesota<br>Minneapolis, MN              |
| Ph.D.  | Wheeler, Steven     | 12/79      | The Electrochemistry and Chemistry of Ruthenium and Osmium Dithiocarbamates   | Pignolet | Department of Chemistry<br>Wheaton College<br>Wheaton, IL                             |
| Ph.D.  | Winzenberg, Mark L. | 12/79      | Synthesis and Reactivity of Transition Metal Carbonylates:<br>Part One: The Chemistry of the Tricarbonylmethylate (-1) Anions of Cobalt, Rhodium and Iridium.<br>Part Two: Ligand Substitution Reactions of the Tetracarbonylmethylate (-1) Anions of Cobalt, Rhodium and Iridium | Ellis    | Postdoctoral Position<br>Department of Chemistry<br>Iowa State University<br>Ames, IA |
| Ph.D.  | Woo, Henry          | 3/79       | Quantitative Analysis of Sub-microgram Quantities of Some Metals by HPLC  | Borch    | School of Business<br>Administration<br>University of Chicago<br>Chicago, IL          |

## ALUMNI HAPPENINGS

We were delighted to hear from many of our alumni in response to our recent correspondence. We have attempted to include a few of the highlights of the responses. We hope to hear from many of you in the next few months in order to include an update for your friends in next year's newsletter.

### Class of 1917

Elmer A. Daniels retired in 1959 from the Morse Laboratories in Sacramento, California.

### Class of 1924

Stephen F. Darling retired as a full professor at Lawrence University in 1977. Until 1977 he was also associated with the Institute of Paper Chemistry. His grandson, who enrolled at the University of Minnesota this past fall, entered sixty one years after Dr. Darling entered in the fall of 1918.

### Class of 1927

M. Margorie Crawford retired from Vassar College in 1964 then taught for four years at Marist College. She celebrated her 80th birthday in March of 1979. In August of that year she had her first broken bone thus spending her first night in a hospital.

### Class of 1932

Grant W. Smith retired as a emeritus professor from the Pennsylvania State University in 1967.

### Class of 1933

William F. Filbert retired in 1972 after nearly 38 years of service at the Explosives Department of the DuPont Company.

Frank H. Stodola was head of the Laboratory for Microbiological Chemistry, Northern Regional Research Laboratory, from 1957 until he retired in September of 1972. He received a Distinguished Service Award from the U.S. Department of Agriculture in 1955 and also received the Pasteur Award from the Illinois Society for Microbiology in 1965.

Vernon A. Stenger retired from the Dow Chemical Company in 1973 but still maintains laboratory space there and does some research in methods for trace analysis.

#### Class of 1934

Henry M. Davis was Director of the Metallurgy and Materials Science Division, U.S. Army Research Office from 1962 - 1974. He is presently an adjunct professor of materials engineering at North Carolina State University. He received the first University Award for Excellence in Teaching in 1959 and is also an elected fellow for the American Society for Metals, 1970; and the American Ceramic Society, 1973.

#### Class of 1935

Everett J. Hoffman retired in 1977 from the U.S. Energy Research and Development Administration.

#### Class of 1936

Francis C. Lanning retired from Kansas State University in 1978. He is presently an emeritus professor of chemistry.

William D. Larson retired in 1972 from the College of St. Thomas in St. Paul.

Robert H. Rosenwald retired from Universal Oil Products as an Associate Director of Chemical Products and Research in 1974.

#### Class of 1938

Malcolm M. Renfrew is an emeritus professor at the University of Idaho. He continues as safety editor of the Journal of Chemical Education.

#### Class of 1939

J. A. Anthes retired from the Dravo Corporation, Pittsburgh, Pennsylvania, in 1978 after 25 years of service.

John H. Backmann retired in June of 1977 as Department Head at the Chemistry Department, University of Akron.

Norman Cromwell was appointed Acting Director of the Eppley Institute for Cancer Research at the University of Nebraska Medical Center effective July 1, 1979.

#### Class of 1940

Richard Loeppert retired in 1979 as professor and associate head of the Department of Chemistry at North Carolina State University after 39 years.

Carl S. Miller retired from the 3M Graphic Research Division in August of 1977.

#### Class of 1941

Erhard J. Prill is presently senior group leader at the Monsanto Agricultural Products Company.

Harold E. Zaugg has been involved with Abbott Research ever since leaving school in 1941.

#### Class of 1942

Walter J. Gensler is presently acting chairman of the Department of Chemistry at Boston University.

#### Class of 1943

Walter Harris recently stepped down as chairman at the University of Alberta, Edmonton, Alberta.

Christian Kaslow retired in 1971 as an emeritus professor at Indiana University, Bloomington.

Joseph Nichols is presently president of Helitrex, Inc., a new company organized to manufacture medical and surgical products. Previously he was president and founder of Princeton Biomedix, Inc. which was acquired by Becton, Dickinson and Company in 1976.

#### Class of 1944

Max Chilcote is currently the Director of the Erie County Laboratories in Buffalo, New York. He was formerly Acting Secretary and then President of the Academy of Clinical Laboratory Physicians and Scientists.

Roy W. Tess retired from Shell after 35 years of service in 1979. He was co-organizer and co-editor of Applied Polymer Science published in 1975 by the ACS Division of Coatings and Plastics. He was chairman of this division in 1978.

#### Class of 1945

D. L. Lehmicke retired from Firestone Central Research as a Research Associate in 1978. Since then he has taken on part-time teaching in the Chemistry Department at the University of Akron.

#### Class of 1947

Gerald A. Boyack has been employed at the Upjohn Company for 26½ years in the Agriculture Division.

#### Class of 1948

Paul N. Craig is a consultant to the National Toxicology Program after almost seven years with the Franklin Institute as Director of the Toxicology Information Department.

Otto Elmer has been working since 1953 at the General Tire & Rubber Company in the Corporate Research and Development Department in Akron, Ohio.

George Matsuyama is currently a senior staff scientist at Beckman Instruments, Inc. in the scientific instruments division in Irvine, California.

Catherine Evertz Ryan has been working as a research associate for the Atmospheric Physics Department at the University of Wyoming.

#### Class of 1949

Charles R. Stephens, Jr., is currently Director of Food Chemicals Research and Development at Pfizer, Inc., in Groton, Connecticut.

#### Class of 1951

William P. Webb is a Senior Research Associate in charge of the patent liason department for all of the Chevron Research Corporation groups.

#### Class of 1952

Lester C. Krogh is in his 27th year of employment with the 3M Company, St. Paul, Minnesota. He is Chairman of the Board of the National Home Fashions League Educational Foundation. Dr. Krogh's current position is Division Vice President of the Commercial Chemicals Division, 3M.

J. M. Honig is presently Chairman of the Committee administering NSF Materials Research Laboratory at Purdue University.

John Sheard is a Research Associate with Electronic Materials Division, Photo Products, E. I. DuPont in Niagara Falls.

#### Class of 1953

J. John Brezinski has been with the Research and Development Department of the Union Carbide Corporation in South Charleston, West Virginia for 26 years.

Arthur E. DeWald is currently Vice President of Quality, Assurance and Control at Smith Kline & French Laboratories in Philadelphia, Pennsylvania.

#### Class of 1954

W. R. Workman is involved with University Relations for Central Research at the 3M Company in St. Paul. He received the Carlton Award for Outstanding Technical Contributions at 3M in 1972.

#### Class of 1955

Darwin D. Davis is employed at DuPont in Victoria, Texas. He is currently a Technical Fellow in Process Development at the Victoria Laboratory, Petrochemicals Department.

Peter A. Howell is currently a Research Specialist at the 3M Company in St. Paul, Minnesota.

#### Class of 1956

William H. Gumprecht has been at the DuPont Jackson Lab, Chambers Works, Deepwater, New Jersey since 1957 as a Senior Chemist.

Chikara Kirayama is employed at Westinghouse in Pittsburgh, Pennsylvania. He has been engaged in research and development studies and states that his latest awards are five healthy children.

Bart van't Riet was awarded the Chemical Pioneer Award from the American Institute of Chemists in 1973. He is currently employed at the Medical College of Virginia in Richmond.

#### Class of 1958

William Beattie has been with the Applied Photochemistry Division of the Los Alamos Scientific Laboratory since 1973, where he has been investigating techniques for laser isotope separation.

Charles B. Koons joined the Exxon Production Research Company in 1958 and was recently promoted to senior research associate in the Basin Exploration Division.

#### Class of 1959

Kenneth K. Andersen was on sabbatical leave at Colorado State University and returned to the University of New Hampshire in Durham in January of this year.

Earl C. Curtis is employed by Rocketdyne in Canoga Park, California and is involved in research on high energy lasers.

Melvin W. Hanna is currently a Professor of Chemistry at the University of Colorado in Boulder.

#### Class of 1959 continued

Laurence A. Knecht is a professor of chemistry at Marietta College in Marietta, Ohio, involved in the areas of analytical chemistry and general chemistry.

William C. Kuryla is employed by the Union Carbide Corporation, Chemicals and Plastics Division in South Charleston, West Virginia. He is Group Leader of both the Industrial Hygiene Skill Center and Environmental Analytical Group. He has been honored by the Kanawha Valley Section of the American Chemical Society with both their "Outstanding Service Award" and the "Award for Scientific Achievement - 1974". In December of 1974 Governor A. A. Moore, Jr. conferred on him the award "Honorary West Virginian" for his meritorious service to the State. He is very active in the Boy Scout Movement and holds several honors including both the Silver Beaver and Silver Antelope Awards.

Kenneth Kustin was chairman of the Department of Chemistry at Brandeis University in Waltham, Massachusetts from 1974 to 1977. Since then he has been "plugging away at research and teaching".

Robert W. Rinehart, Sr., tells us that Rinehart Laboratories was started in June of 1979. Their work is comprised heavily of water pollution studies and support for energy exploration projects.

Donald N. Robinson is presently a Senior Research Chemist at Pennwalt Company in Collegeville, Pennsylvania.

#### Class of 1960

David M. Golden is currently Director of the Department of Chemical Kinetics at Stanford Research Institute International. He is also a consulting professor of chemistry at Stanford University.

Carol Spencer Curtis writes that she is retired.

#### Class of 1961

Robert W. Campbell is project leader at the Chevron Research Company.

#### Class of 1962

Robert St. Louis is in his 12th year of teaching at the University of Wisconsin, Eau Claire. He is currently a full professor of chemistry.

Richard J. Sundberg is a professor of chemistry at the University of Virginia.

#### Class of 1962 continued

Ellen L. Wu is a senior research associate with Mobil Research & Development Corporation in Paulsboro, New Jersey.

#### Class of 1963

Charles L. Braun currently holds a position of professor at Dartmouth College.

Peter Delvigs is currently employed at the NASA Lewis Research Center in Cleveland. Recently he received a special achievement award and shared a \$6000 prize with another colleague for a widely used patent dealing with polyimide matrix resins for fiber-reinforced composites. He is still actively involved in sports and was recently elected to the Lake Erie Soccer League board of governors.

Kent Rush is laboratory head in the Color Instant Photography Division of Research Laboratories, Eastman Kodak Company.

#### Class of 1964

Larry A. Haas is a research chemist at the U.S. Bureau of Mines in Minneapolis.

#### Class of 1965

E. O. Schlemper is presently a professor of chemistry at the University of Missouri.

#### Class of 1966

Michael Gross is a professor of chemistry at the University of Nebraska and Director of the Midwest Center for Mass Spectrometry.

#### Class of 1967

John Baum is the Director of Chemical Development of the Zoecon Corporation in Palo Alto, California.

Thomas D. Bouman is a professor of chemistry at the Southern Illinois University at Edwardsville.

Dennis C. Johnson is a professor of chemistry at Iowa State University.

Anthony F. Yapel was appointed manager of Biokinetics Research Section in the 3M Company in 1978. He is currently serving as President of the University of Minnesota's 2100 member Institute of Technology Alumni Society.

#### Class of 1968

James F. O'Brien was recently promoted from associate to full professor at the Southwest Missouri State University.

#### Class of 1969

Daniel D. F. Shiao currently is a research associate at the Research Laboratories of Eastman Kodak Company in Rochester, New York.

#### Class of 1970

Norval C. Kneten was promoted to full professor of chemistry in 1978 at Texas Wesleyan College in Fort Worth and is also Associate Dean of Science and Humanities.

Jane Idell Wenger currently holds the position of Assistant Professor of Physiology in the Department of Physiology at the Milton S. Hershey Medical Center at the Pennsylvania State University.

#### Class of 1971

Charles Grudzinskas joined the Lederle Laboratories shortly after graduation and was recently appointed project coordinator.

#### Class of 1972

Cora Jane Boswell Levin married David P. Levin in 1974 and currently holds a position as housewife and mother of two daughters.

#### Class of 1974

Gary DeGrande is currently supervisor of Chemical Process Development at the Riker Research Laboratories of the 3M Company in St. Paul.

#### Class of 1975

Philip Hoekstra holds a position of polymer chemist at the Muckman Laboratories in Memphis, Tennessee.

D. James Schreck was promoted last August to project scientist at the Union Carbide Corporation.

#### Class of 1976

Phil Price is involved with Analytical Research and Development and supervision of the Mass Spectrometry Lab at the Technical Center of the Union Carbide Corporation, South Charleston, West Virginia.

#### Class of 1978

Ronald Zygmunt is currently employed by the Sigma Chemical Company in St. Louis, Missouri and is the supervisor of the enzymatic analysis group.

We enjoyed hearing from many of you. We hope that you will provide us with new information and updates for next year's newsletter. We are also hopeful that next year we will be able to provide information on many of our alumni that we did not hear from in 1979.