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# MINNESOTA CHEMISTS NEWSLETTER

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Department of Chemistry  
University of Minnesota, Twin Cities

Summer 1989

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## Letter from the Chairman

Louis H. Pignolet

The time is rapidly approaching when my tenure as department chair will end. **Ron Gentry** will assume this position on September 16, 1989. I am looking forward to focusing my efforts back to teaching and research; however in some ways it will be a letdown to no longer be responsible for the activities of the department. I therefore leave with some mixed feelings, but I will really enjoy delving into my research full-time during my quarter leave next fall. I will miss working with the excellent administrative staff in the front office. They have made my job much easier and enabled me to focus on the major issues which faced the department. Our department is blessed with the best administrative staff in the University, and I give my sincere thanks to them all, but most importantly to **Kathy Ross, Stan Bonnema, Gladys Olson, and Grace Hokanson**. Ron Gentry will assume the chairmanship of a department which is in good shape. We are financially sound, morale is generally good, and the faculty and staff are ready to give him their full support.

Tempted to look back on the past three years and review the major accomplishments of "my" administration, I find the exercise somehow dissatisfying because the most important accomplishment has been the continuing and steady improvement of the department on all fronts and this is measured by many small but important successes. I might add that we have come out very well during a difficult and trying period for the University. There are several accomplishments which are worthy of special mention, however, and for which I feel some personal satisfaction. These include: the significant improvement of our undergraduate advising operation to become one of the best at the University; the establishment of the 3M Alumni Endowed Professorship in Chemistry, which will be used to attract an outstanding senior faculty member to the department; the construction of a new NMR laboratory facility and the purchase of two new high field NMR spectrometers including a 500 MHz instrument; the major revamping of the department's organizational structure and the establishment of a department constitution; and the hiring of an ombudsperson and women's advisor, who is charged with the task of helping to attract and retain women and minority faculty and students and generally improving the working environment for all members of the department.

Three years ago, when I assumed the chairmanship of the department, I was ill prepared to deal with the many difficult and complex issues facing the department and the University. I have grown enormously since then in my ability to deal with such issues and I have learned to face personal conflicts head on. This was not an easy learning experience, and I am indebted to several members of the faculty. **Wilmer Miller**, vice chair of the department, and members of the department's reorganization committee, **Jan Almlöf, Peggy Etter, Wayne Gladfelter, Tim Lodge and Michael Raftery**, deserve a special thanks for their support and important contributions to the department.

*(Letter to page 10)*

## Gassman Elected ACS President!

Regents' Professor **Paul G. Gassman** was chosen president-elect of the 138,000 member American Chemical Society in its election this past fall. Gassman will have, in effect, a three year term in office: one year as president-elect, one year as president, and one year as immediate past president. We interviewed Professor Gassman to find out some of his goals for his term.

"My first and major goal is to make the American Chemical Society much more proactive on behalf of chemistry," Gassman says. The Society, he continues, "needs to have an even greater impact on Congress. We need to be much more proactive in trying to influence funding in the field of chemistry. We need to be much more proactive with the public in promoting chemistry as a beneficial science. Today in the United States, chemistry is a dirty word. I think the American Chemical Society needs to spend far more effort showing the population at large that chemistry has been extremely beneficial, that they are living longer because of chemistry, and that are living better because of chemistry."

A second goal is closely tied to the first one. In order to achieve a much more proactive organization, he hopes to streamline the  
*(Gassman to page 3)*



*ACS President-elect Paul G. Gassman*

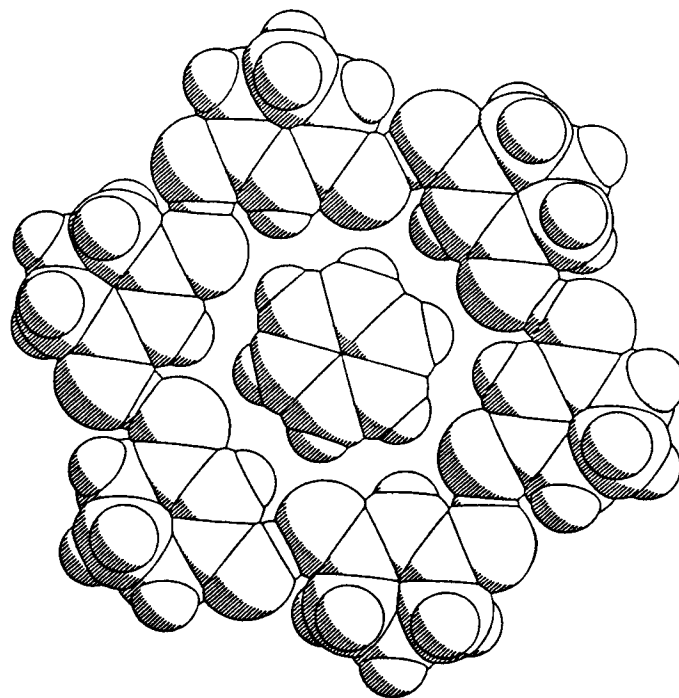
# Research Profiles

## Paul Barbara

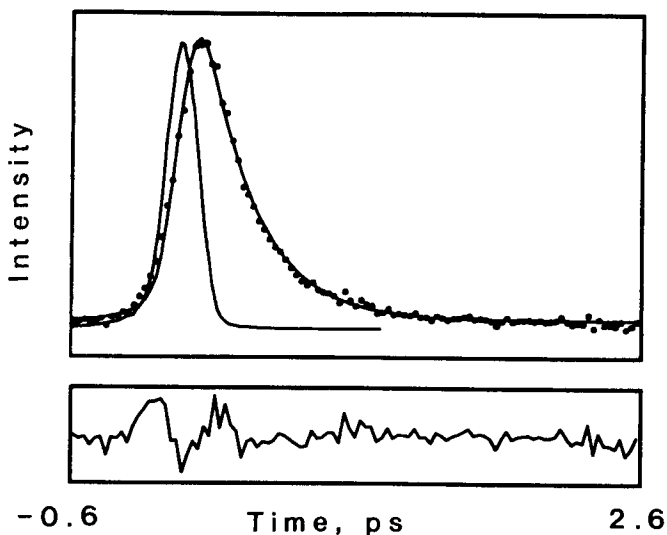
Thirty years ago it was impossible to measure the rate of a first-order process with a half reaction time less than about a minute. Faster processes were sometimes called instantaneous. Today, Professor Paul Barbara measures rates of processes with half reaction times around  $10^{-13}$  seconds. This change has had the most profound effect on the way we think about isomerism. It is currently changing our ideas about solvation and the way that solvents participate in chemical reactions.

In such research, technique is crucial. Non-equilibrium states have to be created in  $\approx 10^{-13}$  seconds and then their reaction has to be monitored on a comparable time scale. In Barbara's laboratory, a dye laser generates sufficiently short, but too weak, light pulses. These are amplified with a copper vapor laser and used to excite molecules which absorb at the frequency of the photons. The decay of excitation is monitored by fluorescence, which is up-converted by using part of the original pulse. Since the detector is sensitive only to the up-shifted frequency, it does not have to be turned on and off, and will record only for the duration of the original pulse. The time lag between excitation and recorded fluorescence is adjusted by making minor changes in the length of the light path. Light travels only  $\approx 30$  microns in  $10^{-13}$  seconds!

By studying the frequency of emission as a function of time after electron transfer, the adjustment of the solvent to the new electron distribution is monitored. As an example, in alkenylanthracenes, which are planar and show *cis-trans* isomerism at equilibrium, geometries close to perpendicular are created, and progress back to planarity is observed. Thus, our knowledge of transient phenomena is being pushed back toward the limits decreed by the uncertainty principle.



*Inclusion complex of benzene within 1,3-cyclohexanedione cyclamer (Etter, M. C.; Urbanczyk-Litkowska, Z.; Jahn, D. A.; Frye, J.S. Journal of the American Chemical Society 1986, 108, 5871.*



*Time dependence of the fluorescence intensity of ADMA, an excited state electron transfer molecule. The laser excites the sample at time = 0.0 and starts the electron transfer reaction. The fluorescence intensity is proportional to the concentration of the reactant (Barbara, P. F., unpublished results)*

## Peggy Etter

Most chemists like to think about molecules one at a time. But most chemical technology involves molecular aggregates. Professor Margaret C. (Peggy) Etter has begun to redress the balance. Her research interests are in the organic solid state. Her ultimate objective is to understand and control the way organic molecules pack together in crystals. Right now she is trying to formulate rules for the competitive formation of hydrogen bonds, because they are the most powerful orienting influence in molecular crystals. For example, she notes that the best available hydrogen-bond donor is likely to be bonded to the best available hydrogen bond acceptor in forming a crystal.

Etter is using these ideas to make crystals without a center of symmetry. Such materials are required for making non-linear optical devices, because a center of symmetry cancels out second harmonic emissions. She is also trying to use made-to-order crystals to find solid state reactions. Such reactions are inherently much more chemically and stereochemically selective than the corresponding solution reactions.

The tools for solid state chemistry are crystallography and solid state high resolution NMR spectroscopy. Crystallography shows static or average structure. NMR spectroscopy, in favorable cases, shows how the atoms are moving. This information is leavened with a good deal of intuition and imagination to produce something satisfying and useful.

*(Research to page 5)*

## ACS-SA Chapter Revived

After many years of dormancy, the Minnesota chapter of the American Chemical Society-Student Affiliate was reactivated on October 4, 1988. The department, as part of reassessing and improving its services for undergraduates, felt that there was a need to provide a forum for students in chemistry, chemical engineering and related disciplines to discuss current issues in chemistry outside the classroom. The response from students has been favorable and has resulted in the building of stronger relations between the department and the students.

The student affiliate held meetings twice a month, and had other activities between meetings. Tours were held at Valspar and the Bureau of Criminal Apprehension in their forensic laboratory. Twice a quarter, breakfast seminars with chemistry faculty were held. Some of the topics covered were job opportunities with chemistry or chemical engineering degrees and opportunities in academics. At one of these seminars, Phi Beta Kappa lecturer Dr. Carl Lineberger spoke on ethics and risk assessment in chemistry. At each of the chapter meetings, a faculty member was invited to speak on their research or on their personal background and history with the department. A variety of speakers gave presentations on careers. Kathy Clinton, from the Institute of Technology placement office, spoke on how to use the placement service. **Mike Tingerthal**, an alumnus of the chemistry department, spoke on his undergraduate career and how he got his job. Professors **Harold Swofford** and **Paul Gassman** spoke to the student affiliates about attending graduate school and the job market for chemists. A number of graduate students talked about applying to graduate schools and about their undergraduate and graduate careers. These talks have helped the students prepare for their future. A meeting was also held with the department chair, vice-chair and the director of undergraduate studies to discuss improvements in the advanced laboratory offerings. The meeting was very constructive, and there are plans to repeat this session annually to keep the lines of communication open.

Projects and social activities were another important aspect of the group's interactions. Projects included selling lab coats, and compiling a student handbook of useful information for chemistry undergraduates and a test reference file. Activities consisted of study nights, a hayride, volleyball and a day at Canterbury Downs. Two large-scale undertakings were initiated this year and will be completed next year. The first is the production of a huge periodic table for room 100 Smith, the large chemistry lecture room. The second is a laboratory safety video for use in the lower division teaching labs, which will be produced by Twin Cities Public Television provided adequate funding can be obtained. They hope to market their production nationally to colleges and high schools. The department sponsored student affiliate members **Kraig Anderson** and **Mohammad Zia-Ebrahimi** for the purpose of making poster presentations on their research at the National American Chemical Society Meeting in Dallas, Texas.

The enthusiasm of the students, along with the strong support of the Department of Chemistry, has made the American Chemical Society-Student Affiliate chapter a great success this year, and there is every indication of more benefits in the future. Congratulations to this year's advisors, Regent's Professor **Paul G. Gassman**, Professor **Steven Kass**, and Ms. **Stephanie Miller** of the chemistry advising office.

## Message from the Editors

**George Barany and Maurice Kreevoy**

We are pleased to bring you the 1989 edition of the *Minnesota Chemists Newsletter*. Our editorial team has turned over somewhat, as **Archie Wilson** decided to take "early retirement" for his blue pencil. We missed his easy humor and wealth of knowledge about the Department in this year's newsletter, anticipating by a year the more general dearth to be felt by the entire Department. Fortunately, new journalistic talent was located, and with it ideas for new feature columns (see "Research Profiles", opposite page).

You read it here first! Our last issue reported on the glorious victory of the Twins in the 1987 World Series, and ended with the thought, "If the Twins can do it, perhaps so can we!! On to the ACS presidency, ....Impossible, you say?" We are proud to include in this issue an exclusive interview with ACS President-Elect **Paul G. Gassman**, Regents' Professor in our department.

Our thanks go again to all of those who contributed their energies to this issue, and expressly to **Gladys Olson**, **Sue Page**, and **Stephanie Miller** for their efforts in culling information from numerous sources, and to **Kathy Ross** for marshaling it all into consistent form and for diligent follow through to press time.

### Administration Change

Effective in September of 1989, Lou Pignolet and Wilmer Miller will step down from the positions of chair and associate chair, respectively, and again turn their full attention to teaching and research in the Department of Chemistry. At that time W. Ronald Gentry will begin a five-year term as chair and Margaret C. (Peggy) Etter will become associate chair. As we express our gratitude to the former for their dedicated service, we send the latter our best wishes for a successful term!

(Gassman from page 1)

Society bureaucracy and reduce the number of committees. Too many of its committees, in Gassman's view, have overlapping charges, so that they spend too much time discussing their jurisdictions. "We need to get both staff and volunteer committees of the ACS working more closely for the common good," Gassman explains.

Academic chemistry departments and the Society should and will try to broaden the scope of chemistry in the coming decade, Gassman believes. We should reach out particularly toward biochemistry and materials science. Our own department, like most academic chemistry departments, should lobby Congress more actively for research funds. Gassman said, "We should make more effort to bring chemistry to non-technical students, and even high school students. A healthy and prosperous chemical industry, supported by a knowledgeable public, is the situation most likely to produce personal prosperity for chemists."

Gassman notes that the huge ACS publication operation (books and journals) and *Chemical Abstracts Services* are in good shape. New journals will be introduced as needed, and there will be more progress on electronic distribution of information.

Gassman's election and his activities in office will (and have already started to) bring a great deal of favorable attention to our department.

# Transition State

## NEW FACULTY

**Scott D. Rychnovsky** joined the Department of Chemistry faculty in Fall of 1988 as an assistant professor in the organic specialty area. He comes to Minnesota from the laboratory of Stuart L. Schreiber at Yale University, where he was a postdoctoral researcher investigating the synthesis of mycoticin. Rychnovsky received his B.S. in chemistry with highest honors from the University of California at Berkeley in 1981, and his Ph.D. from Columbia University in 1986. His graduate work was with Gilbert Stork, and his initial postdoctoral work was with David A. Evans at Harvard. Rychnovsky's honors to date include an NSF predoctoral fellowship from 1981 to 1985, the Columbia University Hammett Award in 1985, and an NIH postdoctoral fellowship from 1986 to 1987.

The research he intends to conduct at Minnesota combines synthetic chemistry with bioorganic chemistry. He plans to study olefin-directed hydrogenations, polyepoxide cyclizations, and epoxide couplings. With these techniques, he hopes to prepare mimics of natural toxins and explore their interactions with biological membranes.

## PROMOTIONS

**Margaret C. Etter**, who joined the faculty in September, 1984 as an assistant professor in the organic area, was promoted to associate professor with tenure. Her association with chemistry at Minnesota goes back further than that, as she received her Ph.D. here in 1974 with Jack Gougoutas and did postdoctoral research here in the laboratory of Robert G. Bryant. Her undergraduate degree was received from the University of Pennsylvania in 1965. Just prior to joining the faculty here, she had conducted research for seven years at 3M's central research laboratories in St. Paul. Etter's research is in the new interdisciplinary field of organic-solid state chemistry, studying new ways to grow and characterize organic crystals, developing new tools for predicting solid-state structures, and discovering new uses for organic materials, particularly those related to molecular recognition and electrooptics. (See also Research Profiles, p. 2)

**Wayne L. Gladfelter** was promoted to full professor. He joined the department as assistant professor in the inorganic specialty area in 1979, and was promoted to associate professor in 1984. Gladfelter received his B. S. from the Colorado School of Mines in 1975, his Ph.D. from the Pennsylvania State University in 1978, and was an NSF postdoctoral fellow at Cal Tech in 1978-79. Among his accolades are a Nobel Laureate Signature Award for a Graduate Student in Chemistry of the American Chemical Society, 1980, and an Alfred P. Sloan Research Fellowship, 1983-85. Gladfelter's research involves the study of reactions of organometallic compounds. Some projects are oriented towards synthesizing specific compounds, either new ones or new routes to known ones, and others are aimed at elucidating the reaction mechanisms of organometallic compounds involved in an important reaction. With this unifying theme, the specifics of individual projects cover broadly different topics: homogeneous catalysis and the synthesis of thin solid films of metals and metal nitrides.

**Timothy P. Lodge**, who joined the faculty in 1982 as assistant professor in the analytical specialty area, was promoted to associate professor with tenure. Lodge's 1975 B.A. in applied mathematics was earned at Harvard, and he received his Ph.D. in analytical chemistry from the University of Wisconsin at Madison in 1980. He was a National Research Council Postdoctoral Research Associate at the National Bureau of Standards. Lodge's research program is directed at experimental investigation of dynamics in polymer liquids, particularly translational diffusion of, and conformational rearrangements about, the center of mass.

Two general strategies are employed: measurements in dilute solution, where single chain properties are obtained by extrapolation to infinite dilution, and measurements with labeled molecules in more concentrated solutions and melts. Substantial emphasis is placed on the development and application of new instrumental approaches.

## DEATH

In May of 1988, the department was saddened by the sudden death of our friend and colleague, **Larry Conroy**. He died at 61 of coronary artery occlusion, a familial affliction. His funeral was attended by very nearly the whole faculty and included moving remarks by his former wife Nancy, his brother, and Doyle Britton.

Larry Conroy came to Minnesota in 1959 as an Assistant Professor from a similar position at Temple University, Philadelphia. His primary professional interest was in teaching the early University courses and in secondary school chemistry. He devised and taught a chemistry course for junior high school teachers, and was a resource person for a variety of high school teachers groups. His work with school chemistry teachers will be badly missed. Larry was one of the authors of a freshman chemistry manual which was originally published in 1963, and ultimately went through three editions. It was used in our own courses for over twenty years. From 1966 to 1968 Conroy functioned as director of undergraduate studies, although the title was not in use then. He also served as associate chairman of the department during the 1967-68 academic year.

Research was not usually Larry's top priority, but he always found time to pursue research interests. He came to Minnesota with an active program on the non-stoichiometric oxides of tungsten. He worked on these and related compounds for a number of years, and then developed an interest in water purity problems. The discovery of high temperature superconductivity in the last few years reignited Larry's interest in transition metal oxides and sulfides, as the superconducting materials are of just this type.

His spirit was raised and his scientific background kept up-to-date by two fruitful sabbatical leaves. The first, in 1968-69, was split between the Westphalian Wilhelm's University, Munster, West Germany, and Argonne National Labs. The second, in 1975-76, was divided between Aarhus University, in Aarhus, Denmark and University College, Cardiff, Wales, United Kingdom.

Larry Conroy was well liked throughout the department and his passing leaves many gaps in our program which will not be easy to fill. He is remembered.

## Ovations

Honors and awards provide tangible confirmation of the importance of our successes, as well as serving to stimulate further endeavors. During 1988, the following faculty and staff were recognized for their efforts.

Professor **Margaret C. Etter** was selected as an Alfred P. Sloan Research Fellow. This significant honor provides research support for a two-year period.

Professor **Paul G. Gassman** was named Regents' Professor, the highest recognition for academic merit awarded by the University of Minnesota to faculty who have uniquely contributed to the quality of the institution through especially distinguished accomplishments in teaching, scholarship and creative work. At any given time, there are only twenty Regents' Professorships spread throughout all academic disciplines at the University. Professor Gassman was also voted President-Elect of the American Chemical Society. His duties as President will commence in 1990. With 138,000 members, the ACS is the largest scientific society in the world. (See separate article in this issue.)

Professor **Robert Hexter** received a Research Opportunities Award from Research Corporation, for scientists of demonstrated productivity and creativity seeking to explore new areas of experimental research.

Professor **Steven Kass** received the American Society for Mass Spectrometry Research Award, for his work on unimolecular rearrangements of carbanions.

Professor Emeritus **I. M. Kolthoff** received an Honorary Membership in the Society for the Analytical Chemists of Pittsburgh. Presented at the Pittsburgh Conference in New Orleans on February 23, 1988, the citation was for his distinguished and continuous contributions to the field of analytical chemistry.

Professor **Doreen Leopold** was named Presidential Young Investigator. With the cooperation of the industrial sector, the National Science Foundation provides these awards of research support to the Nation's most outstanding and promising young science and engineering faculty.

Professor **Kenneth Leopold** was chosen McKnight-Landgrant Professor. This internal University of Minnesota award, for which the competition is very intense, provides research support for our most promising young faculty for the three-year period of the professorship.

In 1988, the University of Minnesota established a recognition program for civil service staff to honor their indispensable contributions to the teaching, research and service missions of the University. Administered by the individual colleges, the Institute of Technology's Civil Service Outstanding Service Award program consists of a cash award as well as a certificate of recognition. The Department of Chemistry nominated a number of its many outstanding civil servants, and we are pleased to include here the names of our five award recipients: **Grace Hokanson** (Principal Accountant), **Stephanie Miller** (Senior Student Personnel Worker), **Bruce Moe** (Electrical/Mechanical Systems Specialist), **Gladys Olson** (Associate Administrator), and **Harley Steinbrenner** (Senior Research Shop Foreman).

(Research from page 2)

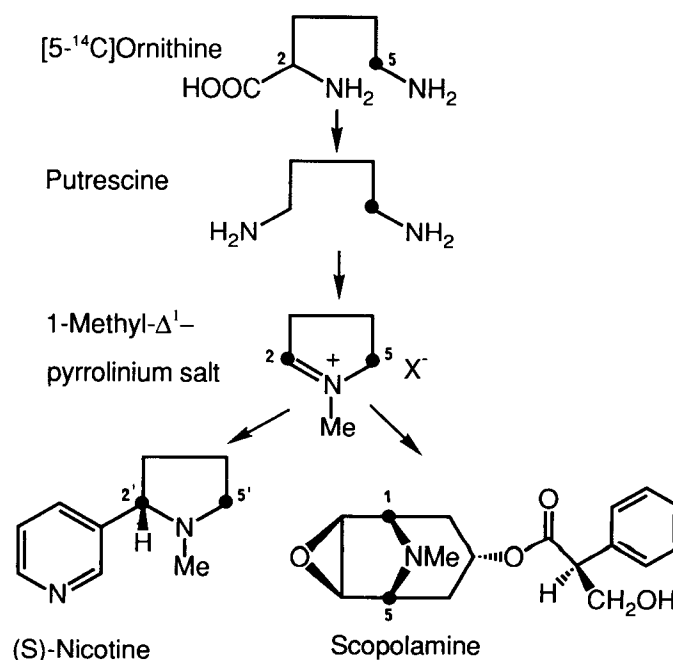
### Edward Leete

Plants make a bewildering variety of substances. One of the earliest themes of organic chemistry was the study of non-polymeric, basic, nitrogen containing materials, which came to be called alkaloids. The structures of nearly ten thousand such substances are now known, and new ones continue to be formed at an unabated rate. Professor Edward Leete traces out the paths by which the plants make these fascinating materials, speculates on why the plants make them, and tries to design laboratory syntheses which mimic the synthetic pathways in the plants.

To find out how a plant synthesizes an alkaloid, possible precursors are synthesized, with an isotopic label in some strategic position. This material is fed to the plant, or possibly to a cell culture derived from the plant, or even to a cell-free enzyme system derived from the plant. If the plant or its derivative system synthesizes the alkaloid and incorporates the isotopic label, Leete and his collaborators determine which atom of the product is labeled. By comparing the labeling of the precursor with the labeling of the product, they can see how the plant fits the precursor into the final product.

Either stable or radioactive labels can be used. For example,  $^{13}\text{C}$  is often used as a stable label, and  $^{14}\text{C}$  as a radioactive label, replacing an ordinary  $^{12}\text{C}$ . If a stable label is used, its position in the product is determined by NMR spectroscopy. If a radioactive label is used, the product must be degraded in a way that separates the carbon which may be labeled from all the other carbons of the product. The carbon of the fragment is then converted to  $\text{BaCO}_3$ , and its radioactivity determined by scintillation counting. The stable isotope technique, in which Leete was a pioneer, is less laborious and sometimes provides more information. For example, if two atoms maintain a nearest neighbor relation from precursor to final product, this can be determined. However, detection of radioactivity is much more sensitive, so the radioactive labels can be located at much lower levels of incorporation.

Nicotine, which Leete has studied for many years, cocaine, and scopolamine, are among the compounds Leete is currently studying.



*Biosynthetic formation of nicotine and scopolamine from ornithine in Duboisia species (Leete, E.; Endo, Y.; Yamasaki, Y. Phytochemistry (in press))*

# Alumni Reports

Alumni Reports has been a popular column in these newsletters, and we are gratified to hear that you enjoy these tidings from old friends as well as new. We urge those of you from whom we have not heard to let us know of your attainments, both professional and personal.

Particulars presented here are in this order: name, degree and year, advisor, and current affiliation if known. Narratives are slightly edited for consistency and space considerations. If you are interested in establishing contact with any of these people, Gladys Olson or Kathy Ross will be pleased to provide phone numbers and addresses where available.

**David Adolf** (B.Chem. '86, L. H. Pignolet), Department of Chemistry, University of Wisconsin, Madison, Wisconsin.

After I left Minnesota, I entered the doctoral program here at Wisconsin. I am currently working with Mark Ediger's group on the local dynamics of polymers. My efforts have been directed toward Brownian dynamic computer simulations. I would like to thank the department for the encompassing background they offered me as an undergraduate, and thanks also to Professors Pignolet, Mead, and Kreevoy for their advice and guidance.

**Richard S. Alberg** (B.Chem. '68, R. C. Brasted), Twin City Testing Corporation, St. Paul, Minnesota.

**Keith B. Bailey** (B.Chem. '51), retired.

I spent my working years with Honeywell, Inc., Sperry-Rand AeroSpace, and Texas Instruments. Since retiring in 1984, I've been working part-time for Nieman-Marcus and enjoying visits with our children and grandchildren.

**Leise Berven** (B.Chem. '84, J. E. Ellis and E. Kariv-Miller), Department of Animal Husbandry, Sydney University, Sydney, New South Wales, Australia.

I finished my M.Sc. in chemistry at the University of British Columbia in June, 1987. Since then, I have moved to Sydney, Australia, been recently married, and started work toward a Ph.D. at Sydney University. I hope to be back in Minnesota for Christmas, 1989.

**William Blackley** (Ph.D. '60, W. Lauer), 3M Company, St. Paul, Minnesota.

**Andrew Callinan** (B.Chem. '87, W. Fristad), Department of Chemistry, The Ohio State University, Columbus, Ohio.

I am currently enrolled in the Ph.D. program, working under the direction of Dr. Swenton. Our work involves new methods in electrochemistry and their application to natural product synthesis.

**An-Cheng Chang** (Ph.D. '87, L. Miller), SRI International, Menlo Park, California.

**Jane Larson Colapietro** (B.A. '57, R. Lumry), Broome Community College, Binghamton, New York.

I teach mathematics at a community college.

**Sr. Karen Conover** (M.S. '76, L. H. Pignolet), St. Paul High School, San Francisco, California.

I have been in secondary education in two Catholic high schools, one in Kansas City, Missouri, and the other in San Francisco. I have taught chemistry

during most of the past 16 years and am currently serving as the science department chairperson. I am grateful for the experience as a TA in chemistry at Minnesota. It has continually been a reference point for much of my teaching methodology, particularly with students who plan to take chemistry at the undergraduate level.

I currently work in a school which serves the new immigrants — Hispanics and Filipinos. It is important to help their self-esteem to grow, especially in the academic areas where they have found little success like science and mathematics. In this all-girls school, I am challenged to open doors for these young women to the many ways in which they can excel and be of service in our world.

**James H. Cooley** (Ph.D. '58, W. E. Noland), Department of Chemistry, University of Idaho, Moscow, Idaho.

James Cooley has been acting head of the department for two years, and has done a fine job, adding several superior young staff members during his tenure. He is looking forward to returning to research and teaching when Peter Griffiths arrives from the University of California-Riverside to head the department (reported by **Malcolm Renfrew**, Ph.D. '38, G. Glockler).

**Paul N. Craig** (Ph.D. '48, R. Arnold), retired.

My 23 years with Smith-Kline & French labs as a medicinal chemist led to 37 U.S. patents. I worked there under **Glenn Ulliyot** (B.Chem. '33); then spent seven years at the Franklin Institute in charge of biomedical information services. From 1979 to 1984, I was a special expert on toxicology information for the National Library of Medicine, and since retirement I have continued with them on a part-time basis. My special area of interest for 20 years has been quantitative structure-activity relationships (QSAR). I was the organizer and chair of the First Gordon Research Conference on QSAR in Biology in 1975. I am now writing a book for Pergamon Press on medicinal chemistry, and enjoy living on the shore of Chesapeake Bay.

**Robert Eades** (Ph.D. '83, D. Dixon), Cray Research, Inc., Chicago, Illinois.

I started a new job as a technical analyst for Cray in their Chicago office in December, 1987. I will move back to the Twin Cities in the fall of 1988 to take a position in the computational chemistry group at Cray.

**Sherif El-Basil** (Ph.D. '73, M. M. Kreevoy; note name change from Sherif E. Ibrahim), Faculty of Pharmacy, Kasr El-Aini, Cairo, Egypt.

After obtaining my Ph.D., I spent one year with C. D. Ritchie at Buffalo, and then travelled back to Egypt in 1974. Since then I have published nearly 100 papers in chemistry and have been promoted to professor. Last year I took my family — my wife Naglaa, boy Islam and girl Wesam — to Athens, Georgia, where I was a visiting professor in the Chemistry Department at the University of Georgia. We spent a year there, where my son attended school and was very happy with the American system of education. One thing we observed is that Georgia is much warmer than Minnesota, but the latter is much prettier!

**Emil Fattu** (B.Chem '38), retired.

I retired in September, 1981, after more than 43 years with the Bunker Hill Company in various capacities — analytical chemist, research engineer, environmental engineer, and metallurgist. I married in 1943 and have five children, A through E — twins Arlene and Barbara, Charles, Dale and Emil, Jr.

**John E. Franz** (Ph.D. '55, S. W. Fenton), Monsanto Agricultural Company, Springfield, Illinois.

John E. Franz was recently awarded the 12th annual Carothers Award by the Delaware section of the American Chemical Society. He holds over 840 U.S. and foreign patents for his work in several fields of chemistry and has received numerous scientific and professional awards. He is best known for his discovery of the herbicidal properties of glyphosate, the active ingredient in Roundup (condensed from the Wilmington, Delaware News Journal, March 16, 1989).

**Charles Freidline** (Ph.D. '63, S. R. Tobias), Division of Science, Union College, Lincoln, Nebraska.

I am currently professor of chemistry (since 1983), and do research. For the past eight years I have done inspections of laboratories for the Environmental Protection Agency.

**Keith Gerritz** (B.A. '59), Wilmington College, Wilmington, Delaware.

Our son Sam participated in the Undergraduate Summer Research Program described in the Spring, 1988 *Minnesota Chemists Newsletter*, almost 30 years after his father was a chemistry student in the same building. I remember the teaching excellence of Dr. Paul O'Connor. Sam had not known of his father's undergraduate major in chemistry until after he had chosen to major in chemistry at the College of Wooster in Ohio.

**Ralph Golike** (Ph.D. '55, B. L. Crawford, Jr.), retired from E. I. du Pont de Nemours & Company, Inc.

**William S. Gunther** (B.Chem. '87), U.S. Navy Technical Intelligence, Chesapeake Beach, Maryland.

I am a materials analyst chemist for the Navy.

**Fred Gustafson** (B.Chem. '71), 3M Company, St. Paul, Minnesota.

I joined the Peace Corps in 1971 and served as an analytical chemist in a government laboratory in Casablanca, Morocco, helping to enforce the food and industrial product laws of the country by performing chemical analyses. In 1973 I started graduate school in analytical chemistry at the University of Wisconsin at Madison and received my Ph.D. in 1978. My first job at 3M was in the corporate research analytical chromatography laboratory. In 1985 I joined the commercial office supply division to work on product testing, quality, and problem solving.

**Lyle Hall** (Postdoctoral with J. Overend and J. Wertz '61-64), Department of Chemistry, University of Wisconsin, River Falls, Wisconsin.

I was on a Fulbright Lectureship at the University of Costa Rica from August of 1987 to July of 1988. I was teaching the use of computer spreadsheets in handling data collected in physical chemistry laboratories. I was also trying to promote the development of the chemical industry in Costa Rica. I had quite a bit of contact with **Sherman Thomas** (Ph.D. '69, W. Reynolds).

**Jules V. Hallum** (B.Chem. '48, R. Dodson), Department of Microbiology and Immunology, Oregon Health Sciences University, Portland, Oregon.

I am retiring this year as department chairman, a position I have held for 16 years. I intend to stay active in research at least for a while, carrying out studies on the pathogenesis of AIDS.

I spent two periods at Minnesota, first for my bachelor's degree and then returning to hold the Du Pont Instructorship for a year after obtaining my Ph.D. with Stan Wawzonek at Iowa. During that time it was my privilege to study with Fred Koelsch on the mechanism of chirochromicity in spiropyrans. From there I went to Indiana, then to Mellon Institute in Pittsburgh and to industry, following which I became a virologist at Pitt, then at Tulane and finally, I settled down in Portland.

**Howard E. Holmquist** (Ph.D. '51, W. E. Parham), retired from E. I. du Pont de Nemours & Company, Inc.

**William Horwitz** (Ph.D. '47, B. L. Crawford, Jr.), Food and Drug Administration, Washington, DC.

I am still active and currently serving as the scientific advisor to the director of the Center for Food Safety and Applied Nutrition of the FDA. I started working for the FDA in Minneapolis, soon after obtaining my M.S. under George Glockler. Bryce Crawford inherited me (or vice versa) and I continued working on my thesis and for the FDA all during the war. I reconstructed the Raman apparatus—a single exposure required 12 to 24 hours!

I subsequently became an analytical food chemist and for the past decade have been studying the reliability of analytical measurements. I have lectured on this subject from Australia to Hungary. I served for almost 30 years as the director of the Association of Official Analytical Chemists. I have been a member of the International Union for Pure and Applied Chemistry (IUPAC) Commission on Analytical Nomenclature, trying to tidy up the nomenclature of sampling in analytical chemistry and developing guidelines for interlaboratory studies of analytical methods. My travel schedule this year took me to Reno, Edmonton, and Palm Beach, London, Cork, and Budapest.

**Robert N. Hudberg** (B.A., '49), retired.

I retired after 35 years with Dow Chemical as quality assurance manager for organic chemicals production.

**Charles T. Hughes** (M.S. '68, W. Parham), E. I. du Pont de Nemours & Company, Inc., Wilmington, Delaware.

I am currently sales development manager/bioprocessing products for Du Pont's biotechnology systems division.

**Carl G. Krespan** (Ph.D. '52, C. F. Koelsch), E. I. du Pont de Nemours & Company, Inc., Wilmington, Delaware.

Carl Krespan received the 1987 American Chemical Society's Fluorine Division Award for creative work in fluorine chemistry. He has carried out research in organofluorine chemistry since joining Du Pont's central research and development department in 1952. He is the sole inventor on 47 patents, and co-inventor on 17 others. He has been a loyal member of the ACS Fluorine Division for many years, serving as chairman of the division, co-chairman of the First Winter Fluorine Conference, ses-

sion chairman, and member of the executive committee (condensed from the news magazine of PCR, Inc., Gainesville, Florida).

**Lester Krogh** (Ph.D. '52, C. E. Koelsch), 3M Company, St. Paul, Minnesota.

Lester Krogh was elected into the National Academy of Engineering during 1988.

**Emmett Moore** (Ph.D. '56, W. N. Lipscomb), Pacific Northwest Laboratory, Richland, Washington.

I was elected a fellow of the American Association for the Advancement of Science.

**Clarence L. Moyle** (Ph.D., '35, L. I. Smith), retired.

Clarence L. Moyle died on May 21, 1988 (reported by his wife).

**Craig B. Murchison** (Ph.D. '70, J. Overend), Dow Chemical Company, Midland, Michigan.

I received the 1988 Giuseppe Parravano Memorial Award for Excellence in Catalysis Research and Development from the Michigan Catalysis Society. I was cited for outstanding leadership in the development of new catalytic technology for the conversion of coal derived synthesis gas to high yields of low molecular weight paraffins, olefins and alcohols.

**Laurence A. Nafie** (B.Chem. '67, A. Moscovitz), Department of Chemistry, Syracuse University, Syracuse, New York.

I am presently Professor and chairman of the department, working in the area of vibrational optical activity.

**George Nilles** (B.Chem. '64, E. Leete).

I seem to be stuck in a Belousov-Zhabotinsky reaction. For a quarter century I've oscillated between Minnesota and Michigan. I am presently in East Lansing, hoping to finesse funding from our "Gramm-Rudman" government.

**Adekunde A. Ogundipe** (B.Chem. '81, J. F. Evans), Vegetable Oils Ltd., Ikeja, Lagos State, Nigeria.

After graduation, I first worked with Askar Paints, Ibadan, for one year of compulsory national service. I was involved in quality control and development of paints and related products. On completion of that service, I joined my present employer, and am presently involved in the processing of oil seeds into vegetable oil and cake.

**Richard A. Olson** (B.A. '76, J. E. Ellis), The Emory Clinic, Atlanta, Georgia.

I attended Duke University medical school, and since 1981 I have lived in Atlanta, Georgia, serving a residency in surgery. Currently I am involved with kidney and liver transplantation surgery at Emory University. My wife Terri is a native of Atlanta, and we anticipate beginning our family this year. I would like to express my congratulations for ensuring a course of excellence in Chemistry at Minnesota. I have very fond memories of the time I spent while an undergraduate in Minneapolis.

**Patrick Oriel** (B.Chem. '59), Department of Microbiology and Public Health, Michigan State University, East Lansing, Michigan.

I obtained my Ph.D. with J.A. Schellman in 1964 and did postdoctoral research at Harvard Medical School. I joined Dow Chemical Company in 1965 and stayed until 1982, at which time I joined Michigan State.

**Paul Overbeck** (B.A. '77, S.W. Fenton), Culligan International Co., Northbrook, Illinois.

I married Marita Heath (B.S., Chemical Engineering '76). I am currently director for commercial-industrial sales. I have been involved in industrial water purification system design and sales since graduation. I have provided systems for electronics, pharmaceutical, medical, manufacturing, military, and laboratory markets, utilizing reverse osmosis, ultrafiltration, deionization and filtration technologies. My sales include the largest reverse osmosis seawater desalting system in the world (Republic of Malta), providing in excess of 10 million gallons of potable water per day from seawater. We lived in Paris while working on an international assignment. We have two sons, Paul, Jr. and Kevin, ages 6 and 4. I would like to express my best wishes and thanks to Harold Witcoff.

**Richard Roach** (B.Chem. '71), Southwestern Medical Clinic, Barrien Center, Michigan.

I was quality control supervisor for R. J. Reynolds's Chun King division in 1971, then attended medical school at Minnesota from 1972 to 1976. I am now director for the drug rehabilitation program at SWMC, where I have worked since 1979. I have served two short-term mission trips in church hospitals in Madagascar (where I saw lemurs in the wild) and Rwanda, Central Africa.

**Richard M. Scribner** (Ph.D. '55, L. I. Smith), retired from E. I. du Pont de Nemours & Company, Inc.

**Jean'ne Shreeve** (M.S. '56, E. B. Sandell), Department of Chemistry, University of Idaho, Moscow, Idaho.

Jean'ne Shreeve has moved up to associate vice president for research and dean of graduate studies (reported by **Malcolm Renfrew**, Ph.D. '38, G. Glockler).

**Jorma Jules Sjoblom** (Ph.D. '55, R. S. Livingston), University of Baltimore Library, Baltimore, Maryland.

I have been at the Baltimore Library for 14 years. I was glad to see news of Steven F. Darling, as I was with him in the chemistry department at Lawrence College from 1946 to 1955.

**Paul Sollman** (Ph.D. '51, R. Dodson), retired.

**Catherine Crane Stone** (B.Chem. '62, W. E. Noiland), Kodak, Rochester, New York.

**Roger W. Strassburg** (Ph.D. '50, W. E. Parham), Department of Chemistry, University of Akron, Ohio.

Since I last wrote, I have completed a chapter on "Acrylic-Based Elastomers" for the reference work *Handbook of Elastomers*, published by Marcel Dekker. In August, the University appointed me visiting professor and director of freshman chemistry—a general upgrading of that program is underway.

**Marlys Rieke Sutton** (B.A. '35), retired.

I was chosen Blount County (Alabama) Citizen of the Year, 1987, for my volunteer work in many categories, and received a nice engraved silver tray. I was chairman of the publication committee of the Blount County Historical Society for the *Heritage of Blount County*, 410 pages, hard back.

# Outstanding Achievement Awards

The Outstanding Achievement Award is conferred upon graduates or former students of the University of Minnesota who have attained unusual distinction in their chosen fields, professions, or public service. Over the many years of this program since 1949, chemistry alums have been repeatedly singled out for this honor, and we feel this is a particularly fitting way of expressing our pride in the accomplishments of our students. Suggestions for submissions are initiated by those most familiar with the honorees, and voted upon by the department faculty. Nominations are then made by the departments to the all-University honors committee, and if approved at that level, are forwarded to the Board of Regents' for final decision. No disclosure is made to the nominee while his or her name is under consideration.

**Dr. Ruth Annette Reck** (Ph.D. 1964, S. Prager; see photo back page) received an Outstanding Achievement Award at the Science and Technology Day Banquet on October 4, 1988. Dr. Reck has been with General Motors since 1965, where she has risen from Associate Senior Research Physicist to her current position as Assistant Manager of Paint Technologies, which places her in charge of research planning in the coatings technology area for some twenty-three departments. Her own research is in the area of modeling atmospheric phenomena with the aid of large computers, focusing on problems of environmental impact. The award citation reads: "distinguished graduate of the University of Minnesota; pioneering developer of computer models of atmospheric phenomena, particularly the effects of pollutants on world climate; leading environmental scientist, whose scholarly contributions and communication through the public media have raised awareness of our influence on the earth's atmosphere."

In the recent past, four other chemistry graduates have also been so honored. We are pleased to reiterate here their names and award citations.

**Dr. John E. Franz** (Ph.D. '55, S. W. Fenton) received his award in June of 1988. The citation: "distinguished graduate of the University of Minnesota; distinguished Fellow of the Monsanto Company; creative and energetic researcher, whose inventions and discoveries have won him hundreds of patents and worldwide respect; award-winning scientist in the field of synthetic organic chemistry, whose work with glyphosate has set new standards for effectiveness and safety in chemical herbicide research and development."

**Dr. Johannes F. Coetzee** (Ph.D. '56, I. M. Kolthoff), who received his award in October of 1985, was cited as: "distinguished graduate of the University of Minnesota; Professor, Department of Chemistry, University of Pittsburgh, who maintains a first-rate research program; widely respected scientist, known for his contributions to understanding nonaqueous solvents, electrochemistry and ion-selective electrodes; pioneer in the field of solution chemistry, whose work will continue to have an impact on the understanding of nonaqueous solvents; highly regarded scholar, invited to lecture at international conferences."

**Dr. George W. Parshall** (B.S. in chemistry with highest distinction, '51) received his award in October of 1985. His citation was: "distinguished graduate of the University of Minnesota; Director of Chemical Science, E. I. du Pont de Nemours and Co.; pioneering researcher, who discovered new inorganic and organometallic catalysts used for production of plastics and pharmaceuticals; innovative scientist, whose theories and work have led the way to significant discoveries by other researchers in this country; respected scholar, who has served on numerous academic review committees, editorial boards, and national advisory groups."

**Dr. Lester C. Krogh** (Ph.D. '52, C. F. Koelsch) was an award recipient in November, 1984. The citation: "distinguished graduate of the University of Minnesota; Vice President of Research and Development at 3M whose executive talents have enhanced the company's position of leadership; organic chemist who has been a research innovator in developing fluorocarbon businesses; past director and member of the Minnesota Academy of Science who gave guidance and encouragement to secondary school students; concerned citizen, active in many civic and professional organizations."



*Outstanding Achievement Award Winner  
John E. Franz*

## *(Alumni Reports from page 7)*

**Marcus W. Thomsen** (Ph.D. '82, W. E. Farneth), Chemistry Department, Franklin & Marshall College, Lancaster, Pennsylvania.

I have been an assistant professor since 1983, and was granted tenure during November of 1988. I am active in research with undergraduate chemistry majors, with support from the William and Flora Hewlett Foundation of Research Corporation and the Petroleum Research Fund of the American Chemical Society.

**Sheridan Vincent** (M.S. '74, J. Overend), Eastman Kodak Co., Rochester, New York.

I am currently a senior photographic engineer and group leader in the photofinishing division of Eastman Kodak Company. We design photographic processing solutions for color paper.

**Kathryn Pfahl Vogel** (M.S. '84, J. E. Ellis).

I took leave from Medtronic, Inc., two years ago to become full time mother to my children, Christopher and Julie Ann.

**Brandon W. Wiers** (Ph.D. '64, W. L. Reynolds), The Procter & Gamble Company, Cincinnati, Ohio.

Brandon Wiers has been associated with P & G for over 24 years, and is now a research and development section chief. He is also active in local government — he was Forest Park's mayor from 1979 to 1985, and before that was on Forest Park's council for three years and its planning commission for five. Among his top priorities in this extra-curricular activity has been arguing for township home rule (reported by T.J. Logan, Procter & Gamble, and condensed from an article appearing in the *Cincinnati Enquirer*).

**Harold E. Zaugg** (Ph.D. '41, R. T. Arnold), retired.

I went to work for Abbott Laboratories in 1941, and stayed for forty years until retirement. I worked on projects of my own choosing for about half the time, with two or three full time assistants. I also had several sabbaticals, serving on peer review committees for NIH and Walter Reed Research Institute. Since retirement I have written three articles for *Chem Matters*, the ACS publication for high school chemistry students. I am hoping that some of them will recognize the interesting and rewarding possibilities of a career in chemistry!

**Richard T. Zera** (B.A. '75, W. E. Noland), Hennepin Faculty Associates, Minneapolis, Minnesota.

# We Thank You

Support from our alumni and friends is crucial to the myriad activities in the department, as well as a meaningful gauge of your confidence in our programs. Student fellowships providing support for both graduate and undergraduate chemistry students are the top priority for these funds, and thus the impact of these contributions is quite direct. With gratitude, we acknowledge our 1988 donors.

Industrial support of education is a boon to both academia and industry. The future of chemistry in this country depends upon the strength of this partnership, for top universities provide the kind of high caliber individuals who will tomorrow lead the very companies who have invested in them today. Special projects, including matches for equipment grants, laboratory set-up funds for new faculty, and summer support of graduate students, are made possible through the generosity of our friends in industry. On behalf of the department, its faculty and staff, and the student beneficiaries, we thank the following companies and their educational foundations.

The Air Products Foundation, Amoco Chemicals Corporation, Baxter Healthcare Corporation, BP America, Council for Chemical Research, Dow Chemical Company, E. I. du Pont de Nemours & Company, H. B. Fuller Company, The Procter & Gamble Company, Rohm & Haas Company, 3M Company, and Union Carbide Corporation.

The **Kolthoff Fund** was endowed anonymously in 1976 for the purpose of establishing a prestigious lectureship series. The Kolthoff Lectureship brings an eminent scientist to campus each quarter. In addition to giving public lectures, the Kolthoff Lecturer interacts with chemistry faculty and students during a week-long residency. Donors during 1988 were: Courtland L. Agre, Roger W. Amidon, John A. Anthes, Madolyn Youse Babcock, William J. Bailey, Michael H. Baker, C. Manley Berry, James M. Bierman, Newman M. Bortnick, Gerhard M. Brauer, Edward M. Carr, Sze-Foo Chien, Grace Po-Yuen Chiu, Johannes F. Coetzee, S. F. Darling, Reuben B. Ellestad, Otto C. Elmer, Lee C. Fischer, Marvin W. Formo, Nile G. Frawley, William P. Friday, David J. W. Goon, William H. Gumprecht, Willa I. Guss, Philip B. Herman, Harvey H. Hoehn, Albert C. Holler, John W. Hull, Brian G. Julin, Paul G. Kemp, Herbert A. Laitinen, James J. Markham, John J. McBrady, Donald S. McClure, John C. McCool, I. Keith Miller, Edwin M. Nygaard, Yutaka Okinaka, Lyle G. Overholser, Rudolph Pariser, Marvin L. Peterson, Philip C. Price, William W. Prichard, Floyd L. Ramp, Thomas B. Reddy, Malcolm M. Renfrew, Robert H. Rosenwald, Paul C. Sadek, John L. Sheard, Maurice E. Stansby, Vernon A. Stenger, Glen L. Swanson, Marjorie K. and Roy W. H. Tess, and Carl D. Yaeger.

The **Chemistry Special Projects Fund** is the department's main discretionary fund, which supports student fellowships and awards as well as the bulk of the other activities mentioned in this newsletter. Benefactors were: Ann L. Abeles, C. J. Alexander, Clifford A. Anderson, Charles A. Anker, Jay S. Baldinger, Steven G. Banning, Jonathan L. Bass, Robert L. Batdorf, Nancy E. Baum, Donovan F. Beaver, Roy O. Beito, John H. Birely, Thomas D. Bouman, Bradley Bradford, Nicolas Brodoway, James L. Buechle, Albert V. Buettner, Donna J. Butterbaugh, Paul J. Cahill, Irene Gennick Cesa, Teh-Hsuan Chen, Brian H. Chollar, Clayton G. Christensen, Leonard I. Cobb, Jane L. Colapietro, Walter S. Combs, Jr., Joseph R. Conrad, Helen B. Cost, Arthur J. Coury, Ruth Crawford, James C. Darling, Darwin D. Davis, Daniel B. Dess, George F. Detrick, Charlotte R. Drenckhahn, Deann J. Drott, Kasmer E. Dykoski, David W. Edelstein, John A. Edgar, Carl A. Evans, Jr., Jurgen H. Exner, David R. Filpula, Kay L. Franzen, Mary Lou Gantzer, Norman W. Gill, Gilbert S. Gomes, Thomas G. Goplen, Norman R. Gould, Bob G. Gower, Leland S.

Grotte, Mary M. Grula, Frederick J. Gustafson, David A. Halsrud, John C. Halverson, Philip B. Hammen, Maxine B. Hancock, Joseph B. Hanson, Darrel M. Harris, Lucille L. Hay, Walden L. Heino, Henry E. Hennis, Jerry A. Herby, Charles W. Hobbs, Milton L. Hoefle, Howard E. Holmquist, Jerry D. Hoyt, Clarence W. Huffman, Henry V. Isaacson, Eugene C. Johnson, John A. Johnson, Roy A. Johnson, David C. Johnston, Kathleen Nelson Juneau, Wallace A. Kirkpatrick, James K. Knudsen, John H. Konnert, Mark J. Kurth, Gary W. Y. Kwong.

Lawrence L. Landucci, James F. Lang, Richard J. Legare, Tai-Ming Liang, William A. Larson, Steven E. Lindberg, Robert M. Lindquist, Robert T. Madsen, Joel G. Malmberg, Mark W. Martinson, Albert S. Matlock, Michael F. McGuiggan, Faith C. McPeak, Dan E. and Karen S. Melchior, John G. Meyer, J. C. Mickus, Jerry K. Miller, Thomas C. Miller, Robert F. Modler, Edwin F. Morello, Wilbur N. Moulton, Joseph Nichols, Richard A. Olson, James A. O'Rourke, James H. Osborn, Dumas A. Otterson, Kenneth E. Owens, Lynda L. Parrella, David R. Peck, Dennis R. Pickering, Thomas H. Plaisance, Ronald L. Plante, Joseph P. Porwoll, Curtis H. Pratt, Robert F. Raffauf, Allyn M. Ramsden, Joel H. Rapsaich, Harris J. Ratnayake, Alvin W. Rautio, Richard L. Redington, Malcolm M. Renfrew, Patricia A. Rethwill, Steven C. Riemer, Donald L. Robinson, Thomas S. Robison, Mrs. George F. Rodgers, Edgar R. Rogier, Nancy E. Sandelin-Paisley, Gary L. Santee, Kerin Scanlon, Jacob F. Schaefer, James R. Scherer, Mark A. Schroeder, Sidney M. Schwartzfeld, Richard M. Scribner, Russell D. Schon, Mark W. Severson, Mildred E. Spector, Jane B. Spence, Thomas G. Stavros, Peter A. Steck, Mark A. Steine, Robert E. Stevens, Gerald E. Stokker, Catherine A. Stone, Roger W. Strassburg, Ann E. Sutton-Johnson, Lynn A. Swanson, Todd A. Swanson, John J. Talley, Martin J. Tenenbaum, Warren L. Thompson, Charles R. Thueson, Steven J. Tinker, James J. Wade, Victor K. Wang, Steven R. Wann, Roland D. Wardell, Joseph T. Warden, Jr., Don J. Wessel, Edward H. Wheeler, Ray E. Wheeler, Jr., Adeline J. Wilcox, David T. Wingfield, Larry D. Winter, Ellen L. Wu, Mrs. Leng J. Yin, Lucinda Reichley Yinger, Lee R. Zehner, and Ronald J. Zymunt.

Memorial Funds are a fitting remembrance of those whose contributions to science and to society deserve special recognition. These funds and their 1988 contributors were: The **John Overend Memorial Fund**, Thomas G. Goplen and Ronald O. Kagle; The **Robert C. Brasted Memorial Fund**, James O. Corner, George E. Hartwell, Judson S. Pond and Indulis R. Rutks; The **Dwight C. Legler Memorial Fund**, Mattie H. Helwig and Frederick W. Potter.

Finally, programs by companies to match the donations of their staff are becoming more and more prevalent. Matching fund policies help to ensure that industrial donations are consistent with public sentiment about the merits of charitable giving. Such programs can vary from one-to-one to three-to-one matching ratios. We are grateful to the following companies for their donor matches.

Air Products & Chemicals, Inc., Allied Corporation, Amoco Chemical Company, Ampex Corporation, AT & T Bell Laboratories, Atlantic Richfield Company, BP America, Inc., Chrysler Corporation, Colgate Palmolive Company, Corning Glass Works, Dow Chemical Company, Ecolab, General Electric Company, General Mills Company, Hercules, Inc., Hewlett-Packard Company, Honeywell, Inc., IBM, International Minerals Company, Merck Sharp & Dohme, Mobil Research & Development Corporation, Monsanto Company, NSP, Northwest Airlines, Occidental Petroleum, PQ Corporation, Pfizer, Pitman Moore, Inc., Rohm & Haas Company, Sandoz Crop Protection, Schering-Plough Corporation, Shell Development Company, Smith Kline Beckman, Tennant Company, Texaco, 3M Company, Union Camp, Upjohn Company, Virginia Chemicals, Inc., Wausau Insurance Company and Whirlpool.

## Chemistry Students Recognized

We are happy to announce the following 1988 awards, prizes, scholarships and fellowships to chemistry students, and we offer our congratulations on their accomplishments.

Undergraduate chemistry majors who received fellowships and prizes were **Tracy Thompson**—G. B. Heisig Undergraduate Research Fellowship, awarded for outstanding achievement in undergraduate research and overall scholastic excellence; **Richard Kilby** and **Brad Karon**—Lloyd W. Goerke Scholarships for outstanding academic achievement; **Debra Taylor**—Robert C. Brasted Memorial Fellowship and part time apprenticeship in the general chemistry program, awarded to an outstanding chemistry major who has indicated an interest in a teaching career; **George Griesgraber** and **Trang Vo**—M. Cannon Sneed Scholarships, awarded for demonstrated promise for future achievement; **Steven Davis**—Chemistry Alumni and Faculty Scholarship for outstanding academic achievement; **George Griesgraber**—J. Lewis Maynard Memorial Prize in Advanced Inorganic Chemistry, for outstanding scholastic achievement in that area; **Trinardi Linoto**, Walter M. Lauer Prize for an advanced undergraduate chemistry major with a distinguished academic record who has demonstrated a strong interest in organic chemistry; **Joshua Radke**, CRC Freshman Chemistry Achievement Award, sponsored by the CRC Press and given to a freshman chemistry major for outstanding achievement in freshman chemistry; **Melissa Smith**, Merck Index Award, sponsored by Merck & Co., Inc., for outstanding scholastic achievement in organic chemistry as a sophomore chemistry major; and **Patrick Johnson**, Undergraduate Award in Analytical Chemistry, sponsored by the Division of Analytical Chemistry of the American Chemical Society, given for outstanding scholastic achievement in that discipline.

Graduate student **Kirby Scott** was named 1988 Outstanding Teaching Assistant. Based on an open nomination process, this award is perhaps our best indication of peer appreciation. Nominations are solicited from faculty, staff and graduate students during the entire preceding academic year. In addition to pursuing his Master's degree under the direction of Professor Doreen Leopold, Kirby is the Department of Chemistry's hazardous waste TA, and has done a marvelous job in organizing and refining the system for collection of hazardous waste in our teaching labs.

Academic-year 1988-89 corporate fellows are **Brian Breczinski**—Air Products; **Sheila David**—Amoco; **Marlene McGivern**—Dow; **David Gorman**—Rohm & Haas; and **John Bullock**—3M. **Chris Blaine**, **Sean Casey**, **Oksoo Han**, **Charles Liberko**, and **Steven Mielke** are Departmental Fellows. First-year graduate students holding Graduate School Fellowships are **Elizabeth Craig** and **John Krahn**. Advanced graduate students with Graduate School Dissertation Fellowships are **Joe Casalnuovo**, **Thanh Truong** and **Meishan Zhao**.

*(Letter from page 1)*

I have been impressed by the strong support provided the department by our many alumni and friends. You all deserve a big thanks because your generous contributions have helped improve the department in many ways. Although the majority of the gifts go directly for student fellowship support and the Kolthoff Lectureship series, some of the unrestricted donations have been used for purposes which have special impact. For example, during the past year we have funded travel grants for two undergraduate students to attend and present talks at the national ACS meeting in Dallas, a recognition picnic for graduating seniors, a lecture series on lab safety and hazardous waste disposal, special equipment for advanced undergraduate laboratories, and an award for the top teaching assistant of the year. Your support of the department helps us to continue to improve our academic programs. I have met many of our alumni and friends during the past three years, and they generally speak very highly of the department. Many say that our academic program has prepared them extremely well for their chosen careers. Our goal has been to continuously improve our program and with your continued support and help this will indeed occur. I urge you all to communicate your feelings about our program to us so that we can learn which changes are needed.

The future of the department looks bright. The quality of our faculty and students is very high, and we have an outstanding and dedicated civil service staff. Our main challenge for the next several years will be to add top quality faculty. We anticipate that about ten faculty will be hired over the next five years, due to past and future retirements. This large number will stretch our resources, so your support will be needed more than ever. This hiring must be successful if we are to improve and move forward into the twenty-first century. Another big challenge will be to change the trend of declining interest in chemistry among our high school and pre-high school students. The department feels a responsibility in this endeavor and will begin programs aimed at these younger students. This fall, on November 4, as part of National Chemistry Week, the department will host a day long symposium and open house for the purpose of promoting and stimulating interest in chemistry to young students and the general public. If you live near the Twin Cities, please encourage young people to attend our chemistry day event. You are of course also welcome to the open house. This event will be widely advertised in the early fall. I look forward to being involved in this and similar undertakings in the future.

Finally, let me thank those alumni and friends who have personally given me encouragement and support during the past three years. It has been very much appreciated.

If you wish to make a donation to the chemistry department, please send your donation to the attention of the Chairman, Department of Chemistry, 139 Smith Hall, 207 Pleasant Street Southeast, University of Minnesota, Minneapolis, Minnesota 55455. You may also use the donor forms and envelopes provided by the University of Minnesota Foundation Office.

## Recent Department of Chemistry Graduates

Congratulations to the following degree recipients, who were awarded their degrees during the period January through December, 1988. Left to right, columns are name of graduate, degree advisor, thesis title and current place of employment.

### Ph.D. Degrees

Bruce Dean Alexander	Pignolet	"The Synthesis, Characterization and Reactivity of Heterobimetallic Gold Cluster Complexes of Ruthenium, Osmium, Rhodium and Iridium"	Amoco Oil Co., Naperville, Ohio
Jonathan Louis Bannitt	Hoye	"Studies Toward the Total Synthesis of the Venturicidan Aglycone"	Postdoctoral, Univ. of Geneva, Switzerland
Paul Daniel Boyle	Pignolet	"Synthesis, Characterization, and Reactivity of Phosphine Stabilized Cluster Compounds Containing Rhenium and Gold"	Universität Bern, Switzerland
Karen Donnelly	Fristad	"Manganese (III) Mediated Difunctionalizations of Alkenes"	Postdoctoral, Dept. of Chem., Florida State Univ., Tallahassee, Fla.
Kai-Ming Chi	Ellis	"Highly Reduced Group 4 Metal Carbonyl Chemistry"	Postdoctoral, Du Pont, Wilmington, Del.
Mary Jean Condoluci	Noland	"The <i>In Situ</i> Vinylindole Synthesis of Carbazoles: Use of 2-D NMR and Mass Spectrometry to Determine Regio- and Stereochemistry"	Du Pont, Wilmington, Del.
David Duncan Cox	Que	"Synthesis and Spectroscopy of a Series of [Fe(L)cat] Complexes: Functional Models of the Catechol Dioxygenases"	MBA Program, Carnegie-Mellon Univ., Pittsburgh, Penn.
Gunnlaug Einarsdottir	Stankovich	"Electron Transfer Properties of Salicylate Hydroxylase from <i>Pseudomonas cepacia</i> and Anthranilate Hydroxylase from <i>Trichosporon cutaneum</i> "	Technological Institute of Iceland
Scott Rickbeil Frerichs	Ellis	"Low Valent Mono-Cyclopentadienyl and Mono-Permethylocyclopentadienyl Group IV Carbonyl Compounds"	Du Pont, New Johnsonville, Ind.
Thomas Jozefiak	L. Miller	"Part I: The Anodic Oxidation of 1,3-Benzodithioles; Part II: The Synthesis and Properties of Polyacenequinone Ions"	General Electric, Schenectady, New York
Michael Arthur Kahlow	Barbara	"Subpicosecond Solvation Dynamics in Polar Solvents"	Asst. Prof., College of St. Catherine, St. Paul, Minn.
Sung Hoon Kim	Leete	"Studies on the Biosynthesis and Biomimetic Synthesis of Coca Alkaloids"	Postdoctoral, Dept. of Chem. Harvard Univ., Cambridge, Mass.
Phillip Bruce Lawin	Kariv-Miller	"Tetraalkylammonium-Metals Electrosynthesis, Characterization and Reactivity"	Reilly Industries, Indianapolis, Ind.
Jeffrey Alan Lee	Lodge	"Diffusion of Small Molecules in Polymer Systems Near the Glass Transition Temperature by Forced Rayleigh Scattering"	TEEPACK, Danville, Ill.
Robert H. Michelson	Leete	"Exploration into the Biosynthesis of Dioscorine"	Postdoctoral, Medical School, Univ. of Minn. Minneapolis, Minn.
Annette Mitchell	Gentry	"Time Domain Measurements of the Infrared Photodissociation Lifetimes of Weakly Bound Clusters"	Postdoctoral, Bell Labs, Murray Hill, N.J.
Russell Lawrence Morris	Lodge	"Oscillatory Electric Birefringence Properties of Polymer Solutions"	Medtronics, Inc., Fridley, Minn.
Thomas William Panunto	Etter	"Synthesis of Organic Supermolecules"	Air Products Corp., Allentown, Penn.
Jung Hag Park	Carr	"Headspace Gas Chromatographic Measurement and Applications of Limiting Activity Coefficients"	Dept. of Chem., Yeung Nam Univ., Gyongsan, Seoul, Korea
Brian Harold Peterson	Hoye	"Studies Toward the Synthesis of Homoharringtonine and Cephalotaxine"	Mobay Corp., Baytown, Tex.
Kevin Roesselet	Gladfelter	"Part I: O-Xylylene and Exo-Methylenecyclohexadienyl; Part II: Structural and Catalytic Aspects of Halo-, Nitrido-, and Imido- Complexes of the Transition Metals"	Asst. Prof., Dept. of Chem., Bates College, Lewiston, Maine
Joseph David Schroeder	Hoye	"Synthetic Studies Related to the Synthesis of Sesbanimide"	Postdoctoral, MIT, Cambridge, Mass.
David Wallace Tweeten	Lipsky	"Production and Reactivity of Primary Charged Species in the Gas and Liquid Phases"	3M Company, St. Paul, Minnesota
James Lee Wade	Carr	"The Theory of Nonlinear Chromatography and Its Application to Affinity Chromatography"	Hercules, Inc., Wilmington, Del.
Louise Marie Wheeler	Lodge	"Diffusion of Linear and Star-Branched Polystyrenes in Dilute, Semidilute and Concentrated Ternary Solutions"	Exxon, Inc., Linden, N.J.

### M.S. Degrees

Paul William Baures	Etter	"Complexation and Cocrystallization with Triphenylphosphine Oxide"	Smith-Kline & French Labs, Philadelphia, Penn.
Mark Stephen Kemper	Gray	"Synthesis and Mass Spectral Analysis of Partially Labeled Permethyated Anhydroalditols"	Upjohn Company, Kalamazoo, Mich.
Duckhee Kim	Kreevoy	"Hydride Transfer from Sodium Borohydride to NAD <sup>+</sup> Analogues"	Prin. Lab Tech., Dept. of Vet. Biol., Univ. of Minn., Minneapolis, Minn.
Kevin Wallace McKay	W. Miller	"Rodlike Polymer-Diluent Gels"	Dow Chemical Co., Baton Rouge, LA
Tina Marie Wade	Carr	"A Study of the Interactions of Small Solutes and Triazine Dyes Used in High Performance Affinity Chromatography"	Temp. Faculty, Dept. of Chem., Univ. of Minn., Minneapolis, Minn.
Frank Zu-Fan Yang	Fristad	"Application of Manganese(III) Acetate in the Synthesis of Bioactive Lignans"	

**Bachelor's Degrees** with a major in Chemistry during the calendar year 1988 were granted to:

Steven Egan Baker, Mark Edward Bringham, Hoa Thi Bui, Lane Bushman, Nathan Frederick Dalleska, Eugene Paul Danilenko, Ann Christine Carlson Dietz, Clair J. Emery, Barbara A. Faville, Todd Gac, Kimberly Grandprey, George Griesgraber, Robert David Guettler, Robin Hanschulz, Thaddeus Ilg, Patrick Jansen, Patrick Lee Johnson, Steven M. Johnson, Lawrence Arthur Jones, Lori Ann Jorgensen, Randall Lee Kallinen, Ha Lam, Paul Werner Kariniemi, Thomas Andrew Kestner, Steven James Kivi, Hong Lam, Paul Michael Leach, Lisa Loree Leither, Lee Anne Menth, Todd Lewis Mitchell, Keith Palmer, David Joseph Rys, Crystal Marie Schlosser, James L. Schmidt, Cheryl Ann Scholten, David Arthur Sommerfield, Kevin Joseph Sweeney, Tracy Rochelle Thompson, Brian Russell Thoreen, Cynthia Sue Ulik, and Kimberly Ann Vanderbeck

## HazWaste & Safety Minicourse

During spring quarter, 1988, the department offered a one-credit special topics course on hazardous waste management and laboratory safety issues. **Mary J. Condoluci** (Ph.D., 1988, W. E. Noland) conceived and organized this course to cover a variety of issues ranging from new technology to regulatory considerations to career options. Consisting of a series of talks, the course was presented as a for-credit offering as well as being individually promoted as special seminars. A cross-section of speakers from industry and academics informed an audience of undergraduate, graduate and postdoctoral students, as well as faculty and staff.

The opening session consisted of a showing of the Dr. Bruce Ames video *Carcinogens, Anticarcinogens and Risk Assessment*, with remarks from Regents' Professor **Paul G. Gassman** (U of M Department of Chemistry). The speakers were Dr. Ronald Kagel (Dow Chemical Company, Coalition for Responsible Incineration), Dr. James Johnson (retired from 3M, radioactive waste management), **David Karnes** (B.S., 1987, W.E. Noland, now with Aptus, a small Minnesota waste contractor and PCB incinerator), Dr. **Fay Thompson** (Ph.D., 1970, W. E. Noland, now with U of M Environmental Health & Safety Department, regulatory issues), Dr. James Sugg (3M Company, industrial hygienist), Dr. Ronald Unterman (General Electric Company, bacterial degradation of halogenated waste), Marty Rodgers (J. T. Baker, laboratory worker safety and regulations), Joseph R. Loer, (Metropolitan Waste Control, waste water treatment for industry), Dr. E. J. Brandt (Monsanto Company, risk assessment and regulatory compliance) and Ronald Berglund (Union Carbide Company, multimedia perspectives on environmental problems).

The course was very well received, with an average attendance of 30 to 35 people. The lectures were evaluated as timely, interesting, relevant and useful. Small, informal lunches after each seminar gave the attendees a chance to meet the speakers and ask questions. The department would very much like to repeat this offering, and is exploring the funding and staff support options to do so.



*Outstanding Achievement Award Winner Ruth A. Reck (see article, p. 8)*

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Minnesota Chemists Newsletter  
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