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# MINNESOTA CHEMISTS NEWSLETTER

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Department of Chemistry  
University of Minnesota, Twin Cities

Spring 1988

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## Civil Service — A Bedrock of Support

We are pleased to highlight chemistry's Civil Service staff in this newsletter. These are professionals dedicated to the advancement of the department's goals in both teaching and research. As detailed in the following paragraphs, Civil Service staff members work in several general areas: administration, secretarial, shops, instrumental services, stockroom services and in a few cases technical assistance on individual faculty research grants.\* It is, however, the interaction, cooperation and mutual support among these areas which coalesces individual efforts into a smoothly functioning operation in support of this complex department.

The administration of a large department requires the teamwork of several components. Housed in the southeast corner of the first floor of Smith Hall are the chairman, the administrators and their secretaries, the accounting personnel, and the advising staff. The chairman and his administrator, **Stan Bonnema**, and assistant administrator, **Gladys Olson**, see to the enormous task of directing all aspects of running the department and providing service to its faculty, staff, students and alumni. With receptionist **Jenny May** and chairman's secretary **Kathy Ross**, this office handles matters ranging from placement of degree recipients to issuing keys and arranging building services, to putting out this newsletter. The accounting office, headed by **Grace Hokanson**, handles the entire scope of budget reckoning for departmental business, from payroll and travel to supply and equipment orders. They keep track of dollars for research and teaching, from both state and federal sources, as well as private and industrial contributions. The advising operation, involving **Sue Page** and **Stephanie Miller**, is one of which we are particularly proud: they manage all facets of undergraduate and graduate student operations and coordinate the efforts of faculty volunteers who do the actual student advising.

The secretaries in the Chemistry Department are required to work with great diligence, efficiency and independence. Each individual secretary has her own office furnished with word processing equipment, and is responsible for helping as many as five faculty members. In addition to typing proposals, manuscripts, course materials, and correspondence, secretaries will be found arranging travel accommodations and scheduling meetings for prospective graduate students and seminar speakers visiting the department. The ambit of their other activities includes answering phones, keeping files and records, photocopying, or even delivering a proposal produced at the last moment across town to the University's Office of Research Administration.

Shops and instrumental services are an integral part of chemistry's support services and an essential magnet for attracting top quality faculty and students to conduct their research at

*(Civil Service to page 6)*

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\*The hard-working individuals in these positions generally serve their professorial supervisors for periods of one to three years and then often return to school for advanced degrees. We apologize to them that space limitations preclude further mention.

## Biological Chemistry at Minnesota — At the Cutting Edge

"To understand life"—three words that define a major purpose for theologians, philosophers, and researchers from the dawn of time to the present day. For example, the modern science of organic chemistry (the chemistry of carbon) can be traced to an 1828 experiment of Wöhler. As readers of this publication undoubtedly are aware, it had been held that "organic" materials such as urea, derived from living sources, could not be obtained by transformations of "inorganic" materials. By heating lead cyanate and ammonium hydroxide and thereby producing urea, Wöhler not only achieved the first synthesis of a natural product, but also permanently laid to rest this aforementioned "vitalism" theory.

Even as chemistry programs throughout the United States organized according to the classical subdisciplines of organic, inorganic, physical and analytical chemistry, the biological arena proved to be a fertile source of inspiration. In this regard, the early history of chemistry at Minnesota includes the examples of **Lee Smith** proving the structure of vitamin E, and **I.M. Kolthoff** measuring redox properties of glutathione. A 1935 Minnesota chemistry Ph.D., **Melvin Calvin**, went on to elucidate the pathways of carbon dioxide fixation during photosynthesis, work which was honored with the 1961 Nobel Prize. However, it was not until 1971 that a forward-looking interdisciplinary group of faculty joined here to formally establish a program designed to meet the needs of students who were primarily interested in chemistry but desired further training and experience in the application of chemical methods to the understanding of biologically important problems. This biological program has evolved to interface substantially with all four of the classical subdisciplines, as well as with other graduate programs at the University. We believe that the program at Minnesota, although since imitated at a select few other institutions, is unique in the country with respect to the breadth of its graduate course offerings and the research training it provides.

There follows a brief synopsis of the research activities of each of the current "core" biological faculty who have laboratories on the Minneapolis campus and are most involved in the specialty area teaching.

**George Barany**, a member of the faculty since 1980, has worked out a number of new mild methods of peptide synthesis, including protecting groups and anchoring strategies for the solid-phase method invented by his mentor R.B. Merrifield. An entertaining sideline to the main research area has involved his synthesis of the active ingredient of garlic, namely allyl methyl trisulfide, a compound that has now been proven to have "chemopreventive" properties against certain cancers.

**Gary Gray** came to Minnesota in 1972 and launched a program to study the chemical mechanisms by which the body recognizes

*(Biological Chemistry to page 11)*

# Letter from the Chairman

Louis H. Pignolet

The most significant event for the department in 1987 was the completion of the renovation of Smith Hall. This 22 million dollar project, which took about three years, has given us a truly first rate facility for teaching and research. The entire building is air conditioned and this will make those hot and humid summer days more enjoyable. For those of you who have spent "hot times" in Smith Hall, this is a notable improvement. The labs in the renovated building are state-of-the-art and its occupants are quite pleased. The sophisticated air handling system is now being fine-tuned and we expect the building to be fully operational in 1988. I would like to personally thank several of our staff for their extraordinary efforts in seeing that this project progressed smoothly. Department Administrator **Stan Bonnema** and Professors **Doyle Britton** and **Stuart Fenton** gave unselfishly of their time and the department is forever in their debt. I am told that this project went very smoothly and nearly on time and within the budget due primarily to the efforts of these individuals and **Ray Drake**, the University's construction manager.

I would like to invite our alumni and friends to visit the department and see the results of the renovation. I would be glad to take you on a tour of Smith Hall. Please let me know a few days in advance of your visit so I can arrange some time to show you around.

The Chemistry Advising office has been a special highlight for the department in 1987. **Sue Page** and **Stephanie Miller** have organized this office into an efficient operation which provides timely advice and guidance to undergraduate and graduate chemistry students. In my opinion this is the best advising operation in the University. Our students get a personal treatment which is rare in a large University. **Stephanie Miller**, working under the supervision of our Director of Undergraduate Studies, Professor **Doyle Britton**, has established an efficient and responsive communication system with all of our undergraduate chemistry majors. Her efforts have been especially fruitful in helping our majors make contact with companies interested in

employing chemists. She also coordinates and participates in the advising which is primarily done by a small group of faculty members. Today, the undergraduate chemistry major gets special treatment by this office and knows that the department is interested in providing an excellent education with personal and active career advising. **Sue Page**, working under the supervision of our Director of Graduate Studies, Professor **Don Truhlar**, has also organized an efficient and effective graduate student recruiting and advising operation. During the past two years we have experienced a near record number of entering graduate students, averaging about 55 per year. Although much of the success of this recruiting can be attributed to the high quality of research by our faculty, the graduate advising operation should receive significant credit for efficiently managing the mechanics of admissions as well as the publicity about our program.

We of course are also very thankful to our alumni and friends who help spread the word about the high quality of chemistry at Minnesota. We hope you will continue this endeavor, as the department depends upon you for its success. Please let us know if we can provide you with additional information about our graduate or undergraduate programs. We are also very open to suggestions from you about how we can do a better job in publicizing chemistry at Minnesota. If you know of potential undergraduate or graduate students who are interested in chemistry, possibly at Minnesota, please let me know and I would be glad to give them special attention in providing information about careers in chemistry.

Finally, I would like to close by mentioning a personal goal for 1988. During this past year, the department has been considering ways to increase the number of women and minority faculty, students, and staff. I would like to see the department become a leader in this area. I am pleased to announce that the faculty has just approved the establishment of an Equal Opportunity Committee, as well as the new position of Ombudsman and Women's Adviser. The function of these new offices will be to provide information and support for women and minority members of the department and to serve as a resource in attracting outstanding people to Minnesota. I am looking forward to 1988 as a year in which we will make good progress toward this goal.



*Sue Page (1984) and Stephanie Miller (1986) confer about student records*

# T W I N S     W I N

By now, the whole world knows of the epoch-making events of October, 1987. No, we're not referring to the stock market crash, but to something far more memorable: the astounding ascent of the Minnesota Twins from the depths of baseball obscurity to the pinnacle of the World Championship. If any readers of this newsletter are unfamiliar with these events, detailed accounts are to be found in the voluminous literature of the national pastime. Here, we are concerned only with the great event as viewed by your department.

In this department, as elsewhere in Minnesota, pennant fever came slowly. Although the Twins were rarely out of first place after the All-Star break, few could conceive of the idea that they might actually qualify for post-season play. When play-off and World Series tickets went on sale in early September, the small number of orders received could easily be filled, and numerous tickets remained for over-the-counter sale.

When the Twins maintained and extended their lead in the final weeks, however, pennant fever struck suddenly and furiously. The Twins, previously the subject only of derisive jokes, were now the main topic of conversation. The division title was greeted with jubilation, in the department as in all Minnesota. Those of us who had extra tickets to dispose of were admired and esteemed as never before (or since!). With eager anticipation, the department awaited the start of play-off action.

Amid the joy, however, there was a feeling of apprehension and foreboding, as we thought of Minnesota's many near misses of the past: the Vikings' four Super Bowl defeats; the failed presidential candidacies of Stassen, McCarthy, Humphrey and Mondale; the North Stars' ignominious loss in the Stanley Cup final; etc. This feeling was particularly poignant in your department, which had furnished the losing candidate in three recent elections for the ACS presidency. Could the Twins do it (especially on the road)? Impossible! A determination to ward off bitter disappointment was met by keeping expectations low.

As the Twins pressed their dome field advantage and progressed from triumph to triumph (about the three games in St. Louis, the less said the better), the department was caught up in the general excitement. During day games, normal activity was slowed as ears were glued to radios, and seminar audiences (and speakers) squirmed nervously awaiting the release which would bring access to current scores. In the labs, the familiar cry of "Eureka!" was replaced by shouts of "Kirrrrbeeee!", "Bruno!" and "G-Man!" At home, those with young children found that babies loved their homer hankies.

The final victory was occasion for celebration and renewed hope. If the Twins can do it, perhaps so can we!! On to the ACS presidency, the Nobel Prize, the No. 1 ranking among chemistry departments. Impossible, you say? Exactly the word applied to the prospect of a Twins World Championship!

The accompanying pages show many of our staff in action at the work place. Listed parenthetically in the captions are the years they joined the department. Do you recognize anyone?

## Message from the Editors

George Barany and Archie Wilson

With this issue, our report on biological chemistry completes a five-year cycle of highlighting the specialty areas in the Department of Chemistry. We also salute the always hardworking and sometimes underappreciated folks of the Civil Service. Once more, we pass along word from you, the alumni, and bring you up-to-date on the accomplishments of the faculty and students now in the department. Lastly, you will note that the promise of past issues regarding Smith Hall renovation has finally been fulfilled. We ran out of new things to say, so we have reprinted, with permission, an article by **Miriam Feldman**.

It is a pleasure to thank **Stan Bonnema, Grace Hokanson, Tim Lodge, Alden Mead, Wayland Noland, and Gladys Olson**, for their various contributions to this edition. Our particular gratitude is extended to photographer **Mary Perkins**, who brought out the best in our staff. Finally, the job of the editors becomes easier and easier, given the as always magnificent efforts of **Kathy Ross**.

We apologize for the rather late date at which this appears. 1987 was an unusual year, as shown in the "Twins Win" article. Many exciting things have already happened in 1988, but those are deliberately saved for next year's issue. Please write to us so that we may include your special news.



*Grace Hokanson (1972) at her desk in accounting*

# Transition State

## NEW FACULTY

**Michael A. Raftery** joined the faculty in February 1987 as professor. He comes to Minnesota from the California Institute of Technology. Raftery received his B.Sc. in 1956 and his Sc.D. in biochemistry in 1960, both from the National University of Ireland. Before joining Cal Tech in 1964, Dr. Raftery was in the Hormone Research Laboratory and the Department of Biochemistry at the University of California at Berkeley. Professor Raftery has been a Joseph P. Kennedy, Jr. Foundation Fellow, and an Alfred P. Sloan Fellow. In 1970, he received a National Institutes of Health Career Award and in 1984 he received the Jacob K. Javits Neuroscience Investigator Award. Dr. Raftery has been a distinguished lecturer at the University of Notre Dame and at Simon Fraser University.

Professor Raftery's research deals with the elucidation of molecular structures and biochemical mechanisms underlying key processes in nerve and brain action. It asks how electrical signals travel along nerves and how these electrical signals are transformed into chemical signals that are communicated to other cells.

## PROMOTIONS

**Essie Kariv-Miller**, who joined the department in September 1981 as an associate professor with tenure, was promoted to full professor. Professor Kariv-Miller received her Ph.D. in 1967 at the Weizmann Institute of Science in Rehovot, Israel. Before coming to Minnesota, she was at Tel-Aviv University as a senior lecturer. She also held a postdoctoral fellowship at the Weizmann Institute in 1967 and received the Bat Sheva de Rothschild Award in 1970. Dr. Kariv-Miller's research objectives are to understand and develop the synthetic and mechanistic aspects of organic electrochemical reactions.

**Marian T. Stankovich** joined the faculty in January 1981 as an assistant professor and was promoted to associate professor with tenure. Prior to joining the department, she spent three years as assistant professor at the University of Massachusetts, at Amherst. Stankovich obtained her B.A. in Chemistry at the University of St. Thomas, Houston, Texas, and her Ph.D. in analytical chemistry in 1975 with Professor Allen J. Bard at the University of Texas at Austin. She spent two years as a postdoctoral scholar in the Biochemistry Department at the University of Michigan at Ann Arbor. Professor Stankovich's research interests are in the area of electron transfer mechanisms for enzymes which catalyze redox reactions.

**Lawrence Que, Jr.**, who joined the department as an associate professor in 1983, was promoted to full professor. Professor Que received his B.S. in chemistry (*magna cum laude*) in April 1969, from Ateneo de Manila University in Quezon City, Philippines. In 1973, Que received his Ph.D. in organic chemistry from this department under the guidance of Professor Lou Pignolet. He then occupied postdoctoral positions at MIT with Professor Richard Holm, and at the Minnesota Gray Freshwater Biological Institute with Professor Eckard Münck. In 1977 he joined the faculty of Cornell University, Ithaca, New York, as an assistant professor. His awards include an Alfred P. Sloan Research Fellowship, 1982-1984, and an NIH Research Career Development Award, 1982-1987. Professor Que's research is primarily concerned with metallo-protein structure and function and the synthesis of model complexes that serve as structural analogues as well as functional mimics. Areas of current interest are studies of oxygen activation in non-heme iron systems and metal-oxo-clusters in proteins.



Professor **Michael A. Raftery** (second from right) with his research group (from left, Marilyn Meinke, Seng Ong, Brian Carlson, Stacey Jones, Mike Humble, Rachel Slade, Sue-Jan Tine, Mark Arriola, and Larry Waddel)

## RETIREMENT

**Professor Stuart Fenton** retired officially on May 31, 1986, but stayed on to see the Smith Hall renovation project to completion. Fenton joined the department as an assistant professor in 1951 after completing his Ph.D. under the direction of Professor A. C. Cope at the Massachusetts Institute of Technology. He was promoted to associate professor in 1957 and to professor in 1960, serving as chairman from that time to 1967. His elevation in rank to that of professor emeritus allows us the opportunity to remark on his distinguished career as a committed and innovative educator. He made important contributions to undergraduate education in the arena of experiment design, which were recognized by the George Taylor/IT Alumni Society Award for teaching in 1981. His service on building committees for the construction of Kolthoff Hall as well as for the revamping of Smith Hall constitutes incalculable benefits to our faculty, staff and graduate student populations. We are the beneficiaries, too, of his expertise in the areas of laboratory safety and hazardous waste handling.

Professor Fenton will now have more time to dedicate to his wide variety of non-scientific interests: skiing, fishing and camping, bridge, photography, and music. We wish Stu and Eleanor the best as they continue to pursue their many activities.

## DEATH

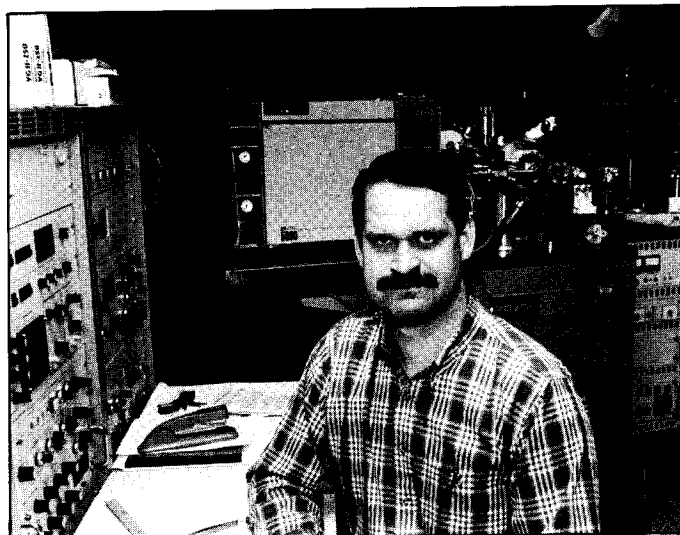
**Charlotte H. Overend**, wife of the late Professor John Overend, passed away October 10, 1987, after a brief struggle with cancer. Char had a long association with the University and had many friends here in Chemistry, as well as throughout the University community.

## FAREWELL

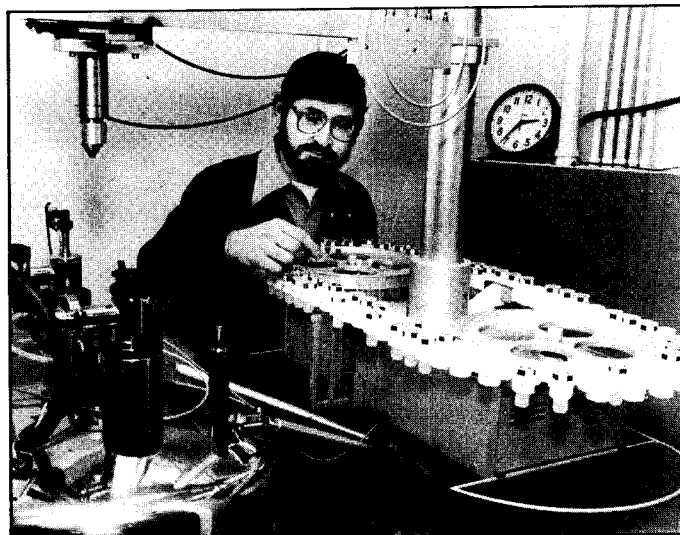
**Thomas Livinghouse**, formerly an assistant professor in the organic chemistry specialty area, departed to join the faculty of the Chemistry Department at Montana State University in Bozeman, Montana effective Fall, 1987.



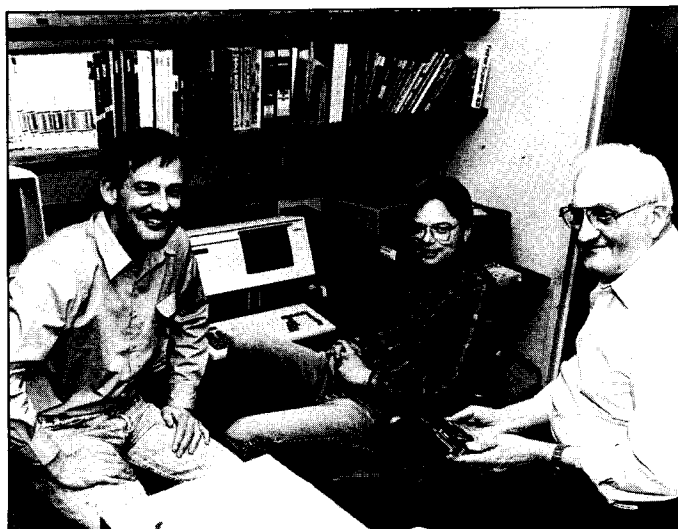
*Karen Boberg contemplates the duplication that is due today*



*Ed Larka (1982) at the consoles in the mass spec lab*



*Steve Philson (1981) loads samples in the NMR lab*



*George Potter (1977), Bruce Moe (1981), and Dale Burling (1960) at work in the electronics shop*





*Administrative office staff Jenny May (1987), Gladys Olson (1951), Stan Bonnema (1970), and Kathy Ross (1981) (clockwise from left)*

*(Civil Service from page 1)*

Minnesota. Highly sophisticated electronics (**George Potter**, manager) and machine (**Gaylord Peterson**, foreman) shops are staffed by six full-time employees who maintain, design and construct equipment for both teaching and research. Also based in the shops is **Frank Dandl**, the departmental "handyman" whose indispensable efforts are well appreciated by everyone who has needed shelves put up, cabinets built, etc., etc. **Karen Boberg** runs the duplicating services shop which serves chemistry, and consistently produces class handouts, exams, proposals and other written material, often submitted at the last moment. State-of-the-art facilities for mass spectrometry (MS) and for nuclear magnetic resonance spectroscopy (NMR) are run by **Ed Larka** and **Steve Philson**, respectively, with the help of graduate student research assistants.

Stockroom services are yet another vital part of our operation. The extremely complete research stockroom (**Dale Randall**, supervisor) gives workers the opportunity to purchase chemicals, glassware and other supplies from our convenient location. Many times, a researcher has an idea for an experiment in the morning on the way to work, and by the afternoon the result is in hand because the necessary materials were available in the stockroom. All manner of secretarial supplies are stocked as well, including the incredible variety of University business forms. When it comes to outside ordering, few can match the experience of **Mike Kurth**, and once the supplies are received, **Vic Munsch** efficiently delivers them directly to the laboratories. The teaching stockrooms (**Ted Tolaas**, **Gary Holmbo** and **Inge Heidmann**, coordinators) cooperate closely with the research stockrooms and attend to the requirements of undergraduate general, organic, physical and analytical laboratory courses. Also on the staff are **John McCarron**

and **Vern Petersen**, who set up laboratory demonstrations; Vern doubles as a photographer who, by preparing high-quality slides, has rescued many a professor rushing off to a lecture.

Among the total of 50 Civil Service staff employed in Chemistry, 6 have been in the Department for more than twenty years, and 13 more for ten to twenty years. The lengthy tenure and experience of many of our staff attests to the fact that the title "Civil Servant" is an honorable one, best stated by William Jennings Bryan, who said that "service is the measure of greatness." This also bespeaks the career commitment, challenges and rewards felt by many of our staff.

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*We are sorry that we were unable to obtain photographs of the following individuals for this issue: Justine Alexander, Kelly Beamer, Heather Bobbitt, Mary Kay Converse, Timothy Dietz, Kim Freeman, Karen Gilbert, Janelle Johnson, David Johnston, Renee Kitto, Darci Knowlton, Nancy Lenn, Cynthia Mech, Rukya Munshi, Pam Naab, Johan Nyman, and Diann Taylor (Larry Waddel appears in the Raftery group photo, p. 4)*

## Smith Hall Renovation Completed

After years of minor face-lifts and repairs, Smith Hall—home to the Department of Chemistry for nearly eight decades—finally has been overhauled to provide modern labs and a safe environment for students and faculty. The \$22 million renovation keeps Smith's vintage 1913 look on the outside, but inside it's state of the art.

The old building "was tired," says professor emeritus **Stuart Fenton**, chairman of the building committee. "The plumbing was gone, and the electric service was marginal. Everything was marginal or submarginal. We were just hanging on."

Fenton, who retired in June 1986, but stayed on to oversee completion of the renovation, calls the new building "a nice tool." Before renovating, many experiments couldn't be performed because of substandard ventilation. The electrical outlets in the labs also did not generate enough power to operate some of the department's new equipment.

All that has changed. The renovated Smith Hall has a sophisticated temperature control system that can be fine-tuned for the most sensitive experiments. It has new fume hoods for better ventilation, and for the first time, it has air conditioning and a dual-filtered air system. The environment in the labs can now be very tightly controlled, which is essential for many sensitive instruments, says **Stan Bonnema**, departmental administrator and renovation committee member.

As part of the overhaul, Smith Hall even got new windows, doors and ceilings. Nevertheless, to the observer walking along Northrop Mall, the building blends in with the others designed by Cass Gilbert in the early part of this century. "The renovation maintained the architectural integrity of the building," Bonnema says.

Planning began in 1978, and construction took three years. "This thing will have taken nine years by the time we're done," Bonnema says. It also took the effort of dozens of faculty, staff and students, who put in "hundreds of thousands of hours." While the planning took longer than anticipated, construction stayed on schedule, in large part due to the efforts of **Ray Drake**, the University's construction manager, Bonnema says. Drake oversaw every stage of the construction, including the nearly 500 modifications made along the way.

Despite the ups and downs, the project was long overdue and worth the effort. "There's no question that this will affect our ability to attract both students and faculty," says Fenton. "This is a big bit of bait. We really have something to show them."

*Ed. note:* This article, written by Miriam Feldman, first appeared in the Winter, 1988 issue of *ITEMS*, the Institute of Technology newsletter.

*Babies and infants show a style of life, and a desire and ability to learn, that in an adult we might well call genius.*

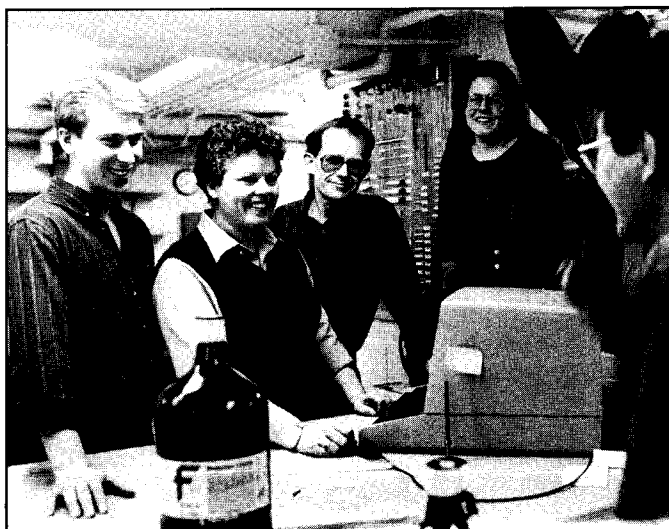
—**John Holt**



*Student secretary Lisa Peterson (1987) and general chemistry program secretary Mary Jane Lewis (1974) help some students*



*Vern Petersen (1967), Ted Tolaas (1970), Gary Holmbo (1976), and John McCarron (1957) at a stockroom window*



*Vic Munsch (1979), Dale Randall (1970), Mike Kurth (1974), and Noelle Borge (1987) help a customer in the research stockroom*

# Alumni Reports

The year 1987 brought news of our alumni from near and far. We continue to hear from people who had not previously replied to our calls for news, and we are pleased to present the following (sometimes edited) responses. In alphabetical order by last name, information presented here is name, degree, year, advisor, and current affiliation where known. If you are interested in contacting any of these people, Gladys Olson or Kathy Ross will be happy to provide phone numbers and home addresses where available.

**Irving M. Abrams** (B.Chem. '38, and Ph.D./Biochemistry '42, K. Sollner), retired.

After leaving the U of M, I did postdoctoral work at Stanford University under Prof. J. W. McBain. From 1944 to 1947, I helped International Minerals & Chemical Company to extract glutamic acid from sugar beet waste in California. I was involved with the development of synthetic ion-exchange resins while associated with Chemical Process Company (which subsequently became Duolite International, a unit of Diamond Shamrock Corporation) from 1947 until retirement in June, 1982. I continue to work as a consultant in ion exchange.

**Mary Andrews** (B.Chem. '80), The Packer Collegiate Institute, Brooklyn, New York.

With my undergraduate degree in chemistry in hand and one year of graduate school at OSU, I was still uncertain about how I wanted to incorporate chemistry into my life. With a few years away from academia and a chance to pursue other interests, I one day found myself substitute teaching at St. Paul Academy, with much support and encouragement from the science staff there. I enrolled in the Master's program in education at the College of St. Thomas and worked as a "free lance" teaching assistant while completing my degree there. I begin my first full time teaching position in September 1987, teaching chemistry and math.

**Cyrus Bemmels** (Ph.D. '41, L. H. Reyerson), retired.

I worked for Permacel, a division of Johnson & Johnson, for 35 years, in the field of industrial pressure sensitive tapes. I hold 13 patents in this field, including strand reinforced pressure sensitive tapes.

**Tony E. Catka** (Ph.D. '78, E. Leete), E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware.

Employed at Du Pont since May 1978 as a synthetic chemist, I entered the world of regulatory life and for the past four years have worked as a registration specialist shepherding new products through the mazes of state and Federal regulations. My wife Mary and I now have five children and are expecting the sixth in September of 1987.

**Robert Cedergren** (B.Chem. '61, W. Noland), Université de Montreal, Quebec, Canada.

I am professor of biochemistry, having come to Montreal in 1967 after my Ph.D. at Cornell and postdoctorals in Toronto and at Cornell. My research interests center on the structure, function and evolution of RNA.

**Norman H. Cromwell** (Ph.D. '39, W. Lauer), University of Nebraska, Lincoln, Nebraska.

Despite my nominal retirement in 1984, I continue my work in Hamilton Hall. I was awarded an honorary doctor of science degree from the University of Nebraska in May 1987.

**Thomas W. Dakin** (B.Chem. '35), retired.

I worked at Westinghouse Electric Research Laboratory in Pittsburgh from 1941 to 1980, advancing from research fellow to group leader, section manager and department manager. My research has been primarily in dielectrics and electrical insulation. I developed the theoretical basis and practical application of chemical reaction theory to the testing and prediction of practical electrical insulation material life. This is now the basis for numerous national and international standards for accelerated life testing of materials and systems. Currently, I am writing a column regularly for an IEEE electrical insulation magazine and consulting part time.

**Stephen F. Darling** (M.S. '24, H. Hunter), retired.

Since I became a widower in 1979, I have devoted my spare time in the summers to gardening, and in the rest of year to visiting my children and grandchildren, and to trips to see my friends in Holland, Germany and Austria. I turned 86 on May 1, 1987, so I will give up gardening next year and take it easy.

**Howard L. Dinsmore** (Ph.D. '49, B. L. Crawford, Jr.), Florida Southern College, Lakeland, Florida.

I have taught at the college level since the mid-fifties, first in St. Paul and then in Florida. Probably one more year will lead to retirement.

**Leslie S. Forster** (Ph.D. '51, R. S. Livingston), University of Arizona, Tucson, Arizona.

After leaving Minnesota and a three year position at Bates College, I joined the chemistry faculty at Arizona.

**Walter J. Gensler** (Ph.D. '42, W. Lauer)

Professor Gensler died of a cerebral hemorrhage in July of 1987, after a long association with Boston University, Boston, Massachusetts.

**Suzanne Grant** (B.A. '43)

I am in the private practice of medicine in the area of general practice.

**Robert Gremban** (M.S. '84, P. G. Gassman), The Upjohn Company, Kalamazoo, Michigan.

I have been working as a synthetic organic chemist for about four years. Our excitement was the addition of Derek John to the family in May of 1987. He joins his older brother Eric (June of 1984) in making life interesting for us. I hope someone is counting, but it seems that the current generation of organic chemists are not having girls, like they used to.

**Walter Harris** (Ph.D. '44, I. M. Kolthoff), University of Alberta, Edmonton, Canada.

I have been with the chemistry department at Alberta since leaving Minnesota. From the time of normal retirement, I have been chairman of the President's Advisory Committee on Campus Reviews. We review about 15 departments per year, and we are now in the eighth year. Last year, I received an honorary doctor of science degree from the University of Waterloo.

**Ada M. Helleloid** (B.A. '75, E. Leete), Bach Christian Hospital, Hazara, Pakistan.

Immediately upon graduation, I went on to University of Minnesota Medical School, Minneapolis, graduating in 1979. I did a three year residency in family practice in Worcester, Massachusetts at the University Hospitals, living in the town of Barre and doing my health center practice there. I then returned to Minnesota and enrolled in bible college at Bemidji while awaiting my visa. I finished my coursework there and moved to Pakistan when my visa was granted in April 1983, worked part time in a clinic, and then full time in the 50-bed mission hospital in the foothills of the Himalayas. The work is rewarding and demanding. I am on furlough for one year and due to return in July 1988 for another four years.

**Allen J. Hubin** (M.S. '61, S. W. Fenton), 3M Company, St. Paul, Minnesota.

I have worked at 3M since 1961, first in polymer research, and then as information scientist/patent liaison, patent and trade mark specialist, and manager, technical education and training. Since 1980, I have been human resources manager and my current assignment includes the corporate research laboratories. I married Marilyn Hagstrom in 1978 and my primary outside interest has been in mystery and detective stories.

**Clarence W. Huffman** (Ph.D. '41, C. F. Koelsch), retired.

A fellowship at Northwestern University with Prof. Charles Hurd started my career. In 1987 I helped this renowned chemist celebrate his 90th birthday. Former Prof. Richard Arnold, Prof. Fred Bordwell and Dr. Richard Hurd attended the party, along with many others. I spent World War II as a chemical officer at Dugway Proving Ground and Edgewood Arsenal. On one of my lucky days a shell took part of one arm instead of my head. Then followed 30 years of chemical research at Merck, Monsanto and International Minerals & Chemical. This included extensive participation in litigation concerning the herbicide propanil, which I invented.

Retirement has been very pleasurable. Local senior centers have enabled me to make many new friends—especially for cards and golf. I also maintain a world-wide, part time consulting business, emphasizing pesticide processes. In 1978, I took part in an Academy of Sciences exchange program with the USSR and Yugoslavia. I spent three interesting months discussing agricultural chemicals. It's fun to travel as a VIP! (see photo at right)

My most satisfying achievements were helping to raise a chemist, a dietitian, a nurse, and a patent attorney.

**Dale W. Johnson** (Ph.D. '41, H. O. Halvorson)

For the past 25 years, along with a number of associates, I have been involved as a consultant (nationally and internationally) in the area of soybean products and production of high protein products for human foods. I currently have an appointment at the University of Minnesota, Graduate School, as an honorary fellow in the Department of Chemical Engineering. We are working on the development of a new technique to produce high protein products from soybeans and other potential protein sources.



**Dennis C. Johnson** (Ph.D. '67, S. Bruckenstein), Iowa State University, Ames, Iowa.

Fond memories of U of M: H. Swofford and H. Bent as best teachers; R. Lumry as most interesting personality; and G. Olson as the person who really is in charge of the department. Keep up the good work.

**Ralph A. Johnson** (Ph.D. '49, I.M. Kolthoff), Environmental Odor Consultants, Houston, Texas.

After teaching chemistry at the University of Illinois—Urbana, and doing research at Shell Development Company, I retired to enter consulting and pursue other interests.

**Lewis Katz** (Ph.D. '51, W. N. Lipscomb, Jr.), University of Connecticut, Storrs, Connecticut.

I am currently an associate vice president for academic affairs, but I do remain a member of the Department of Chemistry.

**Kang-Jin Kim** (Ph.D. '74, S. Lipsky), Korea University, Seoul, Korea.

**Faith (Anderson) McPeak** (B.Chem. '36), retired.

I enjoyed the day at the 1986 reunion, but wished we had more time to mingle with other institute graduates of 1936, especially St. Pat (John Hansen), whose queen I was. We did meet briefly, but no pictures—and they would have shown that we had weathered well. I also enjoyed seeing Dr. Kolthoff.

**Duane Napp** (Ph.D. '67, S. Bruckenstein), Digital Equipment Corporation, Westford, Massachusetts.

Upon leaving the University in 1968, I joined IBM and spent 19 years in the development of materials and processes for electronic packaging technologies. On July 1, 1987, I accepted early retirement from IBM and embarked on a new career as Group PWB Engineering Manager with Digital.

**Gary V. Olhoft** (B.Chem. '66, R. C. Brasted), Union Carbide Corporation, Cary, North Carolina.

I have been with the same company since graduation, first for 12 years in research and development at South Charleston, West Virginia, then for seven years in Chicago. Since late 1985, I have been in Raleigh, North Carolina as National Technical Services Manager for UCAR Emulsion Systems. My career has been almost entirely involved with technical service with some development, rather than with research. I have found this to be a very enjoyable application of technical training and skills, providing travel as well as interaction with sales, customers, manufacturing, and research.

**Edwin F. Orlemann** (Ph.D. '41, I. M. Kolthoff)

Professor Orlemann died suddenly in July 1985 at the age of 70, after serving on the faculty of the chemistry college at University of California at Berkeley since 1945. (Reported by his widow, Olga C. Orlemann.)

**Constantine S. Papageorgiou** (B.Chem. '85, W. L. Reynolds), University of California, Santa Barbara, California.

I completed an M.A. in chemistry here in the spring of 1987, and I am currently enrolled in the Ph.D. program, working under the direction of H. W. Offen. Our work involves photochemical and photophysical processes under high pressure.

**Robert G. Parr** (Ph.D. '47, B.L. Crawford, Jr.), University of North Carolina, Chapel Hill, North Carolina.

Minnesota was well represented at a symposium in my honor held at Chapel Hill in March of 1987. Rudolph Pariser was one of the plenary lecturers and Bryce Crawford was the after-dinner speaker. Ruth Crawford also joined the party. Contrary to what this might imply, I am not retiring.

**Sheri L. Haines Peterson** (M.S. '83, R. G. Bryant), Twin City Testing Corporation, St. Paul, Minnesota.

I am presently the water quality section supervisor in the inorganic chemistry department. Dur-

ing 1986-87, I was Xi chapter president of Sigma Delta Epsilon graduate women in science (Minnesota chapter) and a member of the Minnesota Chromatography Forum newsletter committee. I also received an Outstanding Young Woman of America Award for 1985-86.

**Thomas H. Plaisance** (B.Chem. '63), Desoto, Inc. Des Plaines, Illinois.

**Vaughan M. Pultz** (Ph.D. '83, A. Moscowitz), Northeast Missouri State University, Kirksville, Missouri.

This is my first year at NMSU. I am very busy. I strongly feel that this is a good time to be joining the chemistry faculty. The department is growing in numbers and equipment. We are well-supported financially. This year four of us joined as chemists, two as biologists, and one physicist was added. Next year we hope to add one chemist and 2 or 3 biologists. If anyone has any questions, please feel free to contact me.

**Carl Reller** (B.Chem. '71, E. J. Meehan), Alaska Department of Environmental Conservation, Juneau, Alaska.

Two years of immunological cancer research at the University of Minnesota Heart Hospital led to two years of teaching in the Peace Corps, in Tonga, South Pacific. This was followed by a year at Chapel Hill, North Carolina, studying chemical oceanography, five years teaching chemistry at Sheldon College in Sitka, Alaska, two years consulting for salmon hatcheries, two years as an organic environmental chemist, then three in hazardous waste for the state (superfund and siting). In January, I will quit work and embark on a world cruise aboard a 38-foot sailboat which I constructed on an island in Sitka—a ten-year project. I hope to work in New Guinea.

**Linda Rochford** (B.Chem. '78, S. W. Fenton), College of Business Administration, Department of Marketing, San Diego State University, San Diego, California.

**Gary S. Rodman** (Ph.D. '87, K. R. Mann), University of Texas-Austin, Texas.

I am doing post-doctoral work with Prof. A. J. Bard.

**C. S. Rondvestedt** (B.Chem. '43), Du Pont, retired.

I retired in April, 1985, after 25 years with Du Pont. Prior to my employment with that company, I received my Ph.D. at Northwestern in 1947, held a Guggenheim Fellowship at the University of Munich, Germany, and taught organic chemistry at the University of Michigan for nine years. I married Estelle Sloman in September 1944. She completed her M.S. degree in 1945 with R.T. Arnold, and has been a mother and homemaker since 1947. My current interests are travel, playing chamber music (cello) and taxation study.

**John G. Schaffhausen** (Ph.D. '77, P. G. Gassman), Amoco Petroleum Additives, Naperville, Illinois.

I took a one-year postdoctoral position with Ed Vedejs at the University of Wisconsin following my degree. Since then, I've pushed forward the frontiers of science at Amoco. I hold six patents in the lube oil additives area.



*Alumnus Clarence W. Huffman (third from left) was photographed on his speaking tour in the USSR*

*(Alumni Reports to page 10)*

**James Schlichting** (B.Chem. '75), IBM Corporation, Rochester, Minnesota.

At work I am involved in technology development for CMOS semiconductor processing—ion implantation, metal interconnects, and insulating layers. Prior to this I have been in a magnetic coatings formulation group for the magnetic recording section.

Mary and I have three children. Mary is Program Administrator for Dodge, Filmore and Olmsted County Court Services and is finishing up her M.S. in community counseling. This year I finally bought an IBM pc.

**Steve Silesky** (B.Chem. '64, P. R. O'Connor), La Seine, San Francisco, California.

**Mark Steine** (B.Chem. '81, C. A. Mead and G. Barany), American National Can, Minneapolis, Minnesota.

I started as a chemist with ANC upon graduation and was promoted to development chemist after one year. For the past four years, I have been working as Quality Assurance Supervisor. Presently, I am pursuing an MBA at the College of St. Thomas.

**Todd A. Swanson** (Ph.D. '86, T. R. Hoye), ECO-CHEM Research, Chaska, Minnesota.

After a one-year postdoctoral with Professor P.G. Gassman, I am now the senior organic chemist for a small biotechnology firm.

**Roy W. Tess** (Ph.D. '44, L. I. Smith)

After 35 years with Shell in California, the Netherlands, New York and Texas, I retired in 1979 with the title of consultant, the highest technical level in Shell. I was active in many organizations, including serving as Chairman, ACS Division of Organic Coatings and Plastics Chemistry, President of the Paint Research Institute, and President of the Association of Industrial Scientists. I am now a part-time consultant and technical writer in Fallbrook, California. "Applied Polymer Science, Second Edition," by Tess and Poehlein, organizers and editors, was published by the ACS in 1985 and is now in its second printing. I am still active in ACS as a member of the Executive Committee of the Division of Polymeric Materials: Science and Engineering.

**Karen M. Torvi** (B.A. '85, W. Fristad), Kohl & Madden Printing Ink Corporation, Minneapolis, Minnesota.

After three years at 3M, I have chosen an industry related to my work there, going from graphic arts to printing ink. I am always amazed at how much chemistry there is. I am in the color matching lab, still in quality control. Ink is truly everywhere!

**Clinton Van't Land** (B.Chem. '86, E. Leete), Ohio State University, Columbus, Ohio.

I spent the 1986-87 school year at Ohio State University, joining Prof. Heinz Floss in the study of natural products antibiotics. I plan to finish my Ph.D. research at the University of Washington starting in the fall of 1987, due to the recent transfer of Prof. Floss to that university. I want to express a deep appreciation to the U of M and especially Prof. Leete for his education in natural products chemistry.

**Stephen M. Willging** (Ph.D. '83, P. G. Gassman), H. B. Fuller Company, Vadnais Heights, Minnesota.

In 1987, I accepted a senior chemist position.



*Secretary Mary Sende (1967) looks at the Stainless Steel Beaker with graduate students Chad Kolaskie, Stan Rak, and Joe Schroeder*



*Harley Steinbrenner (1979), Frank Dandl (1976), Kurt Albeck (1984), and Gaylord "Pete" Peterson (1970) in the machine shop*



*Lynda Woitas (1979), Aster Habte (1986), Inge Heidmann (1969) and Russ Booth (1986) in the general chemistry stockroom*

# Ovations

We are proud of the accomplishments of the following faculty and staff who received honors and awards in 1987:

Professor **Peter Carr** received the Merit Award of the Chicago Chromatography Discussion Group in May of 1987. Professor Carr is also the Chairman-Elect of the Chromatography Subdivision of the Analytical Division of the American Chemical Society, and has been named to the Editorial Board of the *Microchemical Journal*.

Professors **John Dahler** and **Ron Gentry** were elected Fellows of the American Physical Society.

Professor **Paul Gassman** received a 1988 Fulbright-Hays grant from the Council for International Exchange of Scholars. Professor Gassman also received the University of Minnesota George Taylor/IT Alumni Society Award in the area of Service.

Professor **Essie Kariv-Miller** collected several accolades during 1987. She received an International Exchange Scholar Fellowship from the National Academy of Sciences, a Career Advancement Award from the National Science Foundation, a Fulbright Fellowship for 1987-88, and a Bush Sabbatical Program Award for 1987-88. Professor Kariv-Miller was also elected Secretary-Treasurer for the organic division of the Electrochemical Society, and she received a special two-year extension for creativity on her current NSF grant.

Professor **Steven Kass** was named McKnight-Land Grant Professor. Now in its second year, this University of Minnesota program is targeted for junior faculty career development. Nine professorships are granted each year, and the award consists of a research grant for each of the three years of the professorship and a sabbatical-type leave in the second or third year of incumbency. The Department of Chemistry is pleased to be "two for two" in successful nominees for this award, since Professor **Doreen Leopold** was chosen last year.

Professor **Wayland E. Noland** was elected a Fellow of the American Association for the Advancement of Science.

Postdoctoral students **Edith Parsons** and **Nancy Phillips**, working in the laboratories of Professors **Paul Gassman** and **Larry Miller**, respectively, received National Institutes of Health Postdoctoral Fellowships.

**Stephanie Miller** of our advising office won first place in the Institute of Technology Alumni Society poster competition, sponsored in connection with Science and Technology Day (an annual event in the fall quarter of each year). Stephanie's poster, "Teaching and Research in Up-to-Date Facilities" is on display in the lobby area of the newly renovated Smith Hall.

*(Biological Chemistry from page 1)*

bacterial infection and initiates the immune response. He is responsible for the structural characterization of a range of biologically important molecules, including ppGpp ("Magic Spot"), some cancer immunostimulants, and of greatest generality, a host of polysaccharides that have been sequenced by an exciting new reductive cleavage method.

**Hung-wen ("Ben") Liu** was invited to join the Department in 1984, based on discoveries made as a graduate student and postdoctoral at Columbia and M.I.T., respectively. Thus, he devised a circular dichroism method with Nakanishi to elucidate the types of sugars as well as the linkage patterns in the structures of oligosaccharides, and collaborated with Walsh to work out mechanisms of an enzyme involved in the degradation of a cyclopropane amino acid which is the precursor for ethylene biosynthesis. Once here, he started an ambitious program on the mechanisms of the entire cascade of enzymes involved in the biosynthesis of deoxy sugars.

**Larry Que** is a bio-inorganic chemist, whose 1983 association with the Department as a faculty member is predated by earlier stints as a graduate student (1969-73) with **Lou Pignolet** and postdoctoral (1975-77) with **Eckard Münck**. He has studied a series of enzymes utilizing inorganic ions and metal complexes as cofactors for catalysis or redox reactions, bringing to bear a range of sophisticated instrumental techniques including NMR, EPR, resonance Raman, EXAFS, and Mössbauer spectroscopy.

**Michael Raftery**, who came aboard just recently, has an international reputation for his pioneering work in neurobiochemistry. His contributions include the first isolation and structural characterization of key molecules in electric tissues including nerve and brain: the acetylcholine receptor and the sodium channel.

**Marian Stankovich**, an alumnus of the Bard and Massey groups, joined the faculty in 1981. She has invented a new electrochemical cell and has carried out definitive measurements on the redox potentials of a variety of biochemically significant flavoproteins. Her redox measurements are providing insights into the regulation of fatty acid oxidation, which is an important energy source for heart muscle and the kidneys.

Space limitations allow no more than mention by name of the following faculty who in the past or present have made distinguished contributions to the activities of the biological area: **Ron Barnett**, **Victor Bloomfield**, **Rick Borch**, **Bob Bryant**, **Jed Fisher**, **Rufus Lumry**, **Ed Leete**, **Wilmer Miller**, **Eckard Münck** and **Wayland Noland**.

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.

*Secretaries Carol Makkyla (1985),  
Sue Wrayge (1986), and Flurnia  
Hadley-Davis (1984)  
admire the new word processor*



*Secretaries Janet Sabol (1986), Syd Westling (1986), and  
Chris Lundby (1972) share a joke in a  
Kolthoff Hall landing*

*Secretaries Ruth Granheim (1985),  
Jennifer Burkhart (1984), and  
Joyce Garcia (1985) compare notes*



# We Thank You

As our regular readers know, this column is devoted to acknowledging our faithful contributors, without whose generosity many of the special programs and student awards about which you read in this newsletter would be impossible. The following list is limited to the calendar year 1987; more recent contributions will be acknowledged in next year's newsletter.

Each year, contributions from industry provide an invaluable source of support for such important purposes as student fellowships, laboratory set-up funds for new faculty and special projects. More and more, our society depends on the partnership of education and industry to benefit both components. On behalf of the Department of Chemistry, its faculty, staff and students, we thank our generous friends of the industrial sector:

Air Products Foundation, AMOCO Chemicals, Council for Chemical Research, Dow Chemical, E.I. du Pont de Nemours & Co., H. B. Fuller Company, General Mills, Hercules Incorporated, Procter & Gamble Company, Rohm & Haas, Shell Companies Foundation, Smith Kline Beckman, SOHIO, 3M Company, and The Upjohn Company.

The Chemistry Department also has several standing funds sustained solely by the munificence of our alumni and friends. During 1987, as part of the Minnesota Campaign, contributions from employees, both current and retired, were matched by the Permanent University Fund (PUF). *Those whose contributions were matched under this program are indicated by italics in the following paragraphs.* If you wish any further information on any of these funds, please contact Gladys Olson or Kathy Ross. We extend our gratitude to the following individuals and organizations for their unstinting support.

The **Kolthoff Fund** supports scholarships for outstanding graduate students as well as an annual series of lectureships which brings distinguished scientists to our campus for a week in residence to meet with faculty and present a series of seminars. Contributors to this fund were:

Ann L. Abeles, C. J. Alexander, Roger W. Amidon, Sanford J. Anderson, Charles A. Anker, Madolyn Youse Babcock, Keith B. Bailey, Charles E. Bartsch, Willard H. Beattie, Donovan F. Beaver, C. Manly Berry, James M. Bierman, John H. Birely, Newman M. Bortnick, David J. Bowden, Bradley R. Bradford, Gerhard M. Brauer, Nicholas Brodoway, Albert V. and Joyce E. Buettner, Donna J. Butterbaugh, Paul J. Cahill, Grace D. Chapman, Grace Po-Yuen Chiu, Brian H. Chollar, Clayton G. Christensen, Dale L. Christensen, Paul J. and Michelle Christensen, Leonard I. Cobb, Johannes F. Coetzee, Nancy F. Cole, Walter S. Combs, Jr., Martha E. and Judd S. Copeland, Helen B. Cost, Arthur J. Coury, S. F. Darling, George F. Detrick, Eugene DeWald, Bernard Dimsdale, Mark M. Doherty, Kasmer E. Dykoski, Reuben B. Ellestad, Bentley W. Elliott, Otto C. Elmer, Robert D. Fellman, Marvin W. and Florence A. Formo, James A. and Catherine M. Foster, Kay L. Franzen, Nile N. Frawley, William P. Friday.

Mary Lou Gantzer, Don D. Gilbert, Gilbert S. Gomes, Thomas G. Goplen, Robert S. Gremban, Leland S. and Donna J. Grotte, Mary M. Grula, William H. Gumprecht, Willa I. and Cyrus O. Guss, Kenneth E. Hafften, Phillip D. Hammen, Maxine B. and John E. Hancock, Michael J. Hansel, Warren Hanson, Darrell M. Harris, Charles M. Hartzel, Frederick J. Hicks, Wallace R. Hlavac, Charles W. Hobbs, Milton L. Hoefle, Harvey H. Hoehn, Albert C. Holler, Nicholas J. Horvath, Thomas J. Hudson, John W. Hull, Jr., Charles D. Johnson, Curtis E. Johnson, John A. Johnson, Roger D.

Johnson, Roy A. Johnson, Sanford D. Johnson, Susan A. Johnson, Alan R. Johnston, David C. Johnston, Walter H. Jopke, Jr., Margaret M. Jordan, Paul G. Kemp, John H. Konnert, Carl G. Krespan, Fay B. Kulenkamp-Steitz, Mark J. Kurth, Herbert A. Laitinen, Lawrence L. Landucci, James F. and Victoria Lang, Robert M. Leekley, Juei-Hua Lin, Margitta G. Lindberg, Steven E. Lindberg, Robert M. Lindquist, Harold V. Lindstrom, Frederick J. Locke, Thomas W. Lorschach, Gregory N. Maisel, Jerome Margulies, James J. Markham, Francis W. Martin, Mark W. Martinson, George Matsuyama, John J. McBrady, Donald S. McClure, John C. McCool, Richard M. McCurdy, James A. McDonell, Michael F. McGuiggan, Pat F. Mentone, Richard J. Meyer, Robert V. Meyer, Robert F. Modler, Edwin F. Morello, Craig B. Murchison, Carl D. Neuberger, John G. Newman, Edwin M. Nygard, Yutaka Okinaka, James H. Osborn, Dumas A. Otterson, Lyle G. Overholser, Janice Owens, Kenneth E. Owens.

Lynda L. Parella, Rudolph Pariser, Helen M. Parker, David R. Peck, James R. Persoon, Otto C. Phares, Ronald L. Plante, Joseph P. Porwoll, James H. Prestegard, Philip C. and Mary Ann J. Price, Rebecca J. Puumala, Floyd L. Ramp, Joel H. Rapaich, Alan W. Rautio, Thomas B. Reddy, Lucinda E. Reichley-Yinger, Norman C. Reynolds, Jr., G. Paul Richter, Steven C. Riemer, Frederick H. Roberts, Edgar R. Rogier, Donald N. Robinson, Thomas S. Robison, Christopher S. Roosevelt, Paul C. and Tammy P. Sadek, Gary L. Santee, Robert D. Sauerbrunn, Mark A. Schroeder, John L. Schulz, Sidney M. Schwartzfield, R. M. Scribner, Mark W. Severson, John L. Sheard, Daniel D. F. Shiao, Paul A. Sitz, William K. Skagerberg, Steven R. Skorich, Jane B. Spence, Maurice E. Stansby, Thomas G. Stavros, Peter A. Steck, Charles R. Steitz, Vernon A. Stenger, Robert E. Stevens, Gerald E. Stokker, Catherine C. Stone, Roger W. Strassburg, David P. Suby, Lynn A. Swanson, Martin J. Tenenbaum, Todd C. Thompson, Charles R. and Dianne Thueson, Gary E. and Phyllis J. Timm, Victor K. Wang, Steven R. Wann, Joseph T. Warden, Jr., John B. Welch, III, Edward O. Welke, Edward L. Wheeler, Ray E. Wheeler, Jr., Norman M. Whitton, Stephen M. Willging, Larry D. Winter, Donald P. Woodbridge, Ellen L. Wu, and Anthony F., Jr. and Agnes E. Yapel.

The **M. Cannon Sneed Fund**, used for scholarships for promising inorganic students, received donations from *Mrs. Russell J. Beers, Corinne M. Brasted, Lucille L. Hay, Janice M. and Ronald S. Ivkovich, Catherine S. Mulholland, and Royce P. and Mildred S. Murphy.*

The **Overend Memorial Fund**, honoring the memory of the late chemistry professor John Overend, received contributions from Kathleen A. Davis, Ronald O. Kagel, and Katsunosuke Machida.

The **Robert C. Brasted Memorial Fund** supports the Robert C. Brasted Undergraduate Fellowship and Teaching Apprenticeship, which is awarded annually to an outstanding chemistry junior who is interested in a teaching career. Contributors during 1987 were the American Chemical Society (ACS) (John K. Crum, Executive Director), ACS Division of Chemical Education (Mary Virginia Orna, Treasurer), ACS Minnesota Section (Jack F. McKenna, Treasurer), Karen E. Bartelt, Fred Basolo, *Mrs. Russell J. Beers, Corinne M. Brasted, Ronald W. Collins, James O. and Doris H. Corner, Bryce L., Jr. and Ruth Crawford, Glenn A. and Jane L. Crosby, Frank E. and Genevieve DiGangi, Barbara L. Edgar, Mark L. Ellenberger, Edward Eller, Inc., Kenneth Emerson, Wayne L. and Elizabeth J. Gladfelter, George E. and Ieva O. Hartwell, E. Grace and Vaughn H. Hokanson, Louis I. and Mary B. Ingram, Sally B. Jorgensen, Izaak M. Kolthoff, Mary Jane K. Lewis, Ralph H. Marking, Blaine C. McKusick, Neal Meade, John W. and Elizabeth A. Moore, Catherine S. Mulholland, Charles and Edna Naeser,*

(Thanks to page 15)

# Recent Department of Chemistry Graduates

These pages list the degrees awarded by the Department of Chemistry from January through December, 1987. Columns, left to right, are name of graduate, degree advisor, thesis title, and current place of employment.

## Ph.D. Degrees

David Charles Boyd	Mann	"Electrochemical and Spectroscopic Investigations of Unstable Transition Metal Intermediates"	Postdoctoral Fellow, Dept. of Chemistry Univ. of Minnesota, Minneapolis, MN
David Brand	Fisher	"An Investigation of the Redox Chemistry of Daunomycin and Related Aglycones"	3M Company St. Paul, MN
Steve Allen Buntin	Gentry	"Crossed Molecular Beam Studies of the Reaction $D + H_2 \rightarrow HD + H$ "	NRC Postdoctoral Fellow, National Bureau of Standards, Gaithersburg, MD
Matthew R. Callstrom	Gassman	"The Use of X-ray Photoelectron Spectroscopy (XPS) in Physical Organic Studies: Part I. The Ziegler-Natta Polymerization Reaction; Part II. Are Hypervalent Atoms Really Hypervalent?"	Assistant Professor, Dept. of Chemistry, The Ohio State Univ., Columbus, OH
An-Cheng Chang	L. Miller	"Characterization and Properties of Oligomers of 3-Methoxythiophene"	Postdoctoral Fellow, Dept. of Chemistry, Syracuse Univ., Syracuse, NY
Eric Detlefs	Swofford	"An Electrochemical and Spectrochemical Investigation of Aqueous Copper (II) - Hydrogen Peroxide Reactions"	General Electric Largo, FL
Doris Ann Eckey	Dahler	"Dynamic Correlations and Microscopic Fluid Mechanics of a Dense Fluid"	Postdoctoral Fellow, Univ. of Minnesota, Minneapolis, MN
Eric Edstrom	Livinghouse	"Carbocycle Annulations Mediated by Episulfonium and Episelenonium Ions"	Postdoctoral Fellow, Stanford Univ., Stanford, CA
Andreas B. Ernst	Fristad	"Manganese (III) Acetate Oxidations of Activated Acids"	Amoco Chemicals Co., Naperville, IL
Leonard M. Haberman	Gassman	"The Opening of Oxygenated Heterocycles with Trimethylsilyl Cyanide"	Shell Development Co., Houston, TX
Douglas Hanggi	Carr	"High-Performance Dye-Ligand Affinity Chromatography Using Immobilized Triazine Dyes"	3M Company, St. Paul, MN
Kenneth Oman Haug	Truhlar	"Topics in the Theory of Chemical Dynamics"	Postdoctoral Fellow, Univ. of California, Santa Barbara, CA
Steven E. Husebye	Gassman	"Photosensitized Additions to Substituted Bicyclo[1.1.0]butanes: A Mechanistic Investigation"	Union Carbide Corp., South Charleston, WV
Yong Tae Lee	Fisher	"Reactions of Epoxides with Reduced Flavins"	Faculty member, Dept. of Biochemistry, Yeung Nam Univ., Gyeongju, Korea
Tendai John Mahachi	Kariv-Miller	"Dimethylpyrrolidinium Mediated Electroreduction and Electroreductive Cyclization"	Unilever, Zimbabwe, Africa
Annette Mitchell	Gentry	"The Dissociation Dynamics of Various Species Using a High Resolution Time of Flight Mass Spectrometer with a Laser MPI Source"	Postdoctoral Fellow, AT&T Bell Laboratories, Murray Hill, NJ
Daniel G. Mullen	Barany	"Synthesis and Characterization of a Silicon Functionalized Handle for Use in Solid-Phase Peptide Synthesis"	Postdoctoral Fellow, The Rockefeller Univ., New York, NY
Dwight M. Peterson	Fisher	"Mitomycin C: A New Proposed Mechanism of Action"	Procter & Gamble, Ivorydale Tech Ctr. Cincinnati, OH
Gary Stuart Rodman	Mann	"Characterization, NMR and Electronic Spectral Properties of Binuclear Rhodium and Iridium Complexes Containing Hydroxypyridinate Ligands"	Postdoctoral Fellow, Dept. of Chemistry, Univ. of Texas, Austin, TX
Jon Stanley Speier	Fristad	"Synthetic and Mechanistic Investigations of Organofluorosilicates"	BASF, Wyandotte, MI
Michael Jay Tarlov	Evans	"Characterization of Polycrystalline Tin Oxide Thin Films Before and After Immersion in Aqueous Electrolyte Solutions"	National Bureau of Standards, Gaithersburg, MD
Michael Allen Van Lente	L. Miller	"Electrochemical Reductive Cleavages of Organic Compounds"	Institute of Paper Chemistry, Appleton, WI
Guang-Ming Xia	W. Noland	"In situ Vinylindole Synthesis of Carbazoles"	Visiting Assistant Professor, Dept. of Chemistry, Luther Coll., Decorah, IA
Shmuel Zalipsky	Barany	"Development of New Functionalized Polymers and Their Utilization in Peptide Chemistry"	Enzon, Inc., South Plainfield, NJ
Qin-Xin Zhou	L. Miller	"Ion Delivery from Conducting Polymer-Polypyrrole"	Postdoctoral Fellow, Rutgers Univ., New Brunswick, NJ
Janet Lynn Zuffa	Gladfelder	"Ruthenium and Osmium Isocyanato Clusters in Homogeneous Catalysis"	Amoco, Naperville, IL

## M.S. Degrees

Martha Crowell Gill	Carr	"High Performance Liquid Chromatography of Metal Butylnaphthylmethylthiocarbamates"	Baxter Travenol Labs, Libertyville, IL
Peter Russell Johnson	Carr	"Analysis of Serum Bile Acids with an Immobilized Enzyme Reactor by Flow Injection Analysis and Reverse Phase High Performance Liquid Chromatography"	3M Company, St. Paul, MN
Richard C. Kolanczyk	Que	"Iron(III)-Catalyzed Oxygenation of Catechols"	Veterans Hospital, Minneapolis, MN
Karen Lynn Klotz	Gray	"Structural Analysis of Sialic Acid-Containing Carbohydrates by the Reductive Cleavage Method"	Upjohn, Kalamazoo, MI
Peter Markland	Lodge	"Diffusion of Highly Branched Star Polystyrenes in Semidilute and Concentrated Ternary Solutions"	Upjohn, Kalamazoo, MI
Susan Pedigo	Bowers	"Evaluation of a PS-DVB Stationary Phase for Reversed-Phase HPLC Application"	Dept. of Biochemistry, Univ. of Iowa, Iowa City, IA
Shiyamalie Ruberu	Etter	"The Solid-State Physical and Chemical Properties of Cyclamers"	Graduate Student, Dept. of Chemistry, Univ. of Texas, Austin, TX
Sally Ann Vodoniak	Gray	"Reductive Cleavage Analysis of Polysaccharides Containing Uronic Acid Residues"	Arden Medical Systems, Inc., Roseville, MN



**Bachelor's Degrees** with a major in chemistry were granted during the calendar year 1987 to:

Steven Christopher Banning, Kathryn J. Berg, Roger F. Bernards, Andrew J. Callinan, Eugene H. Carlson, James Peter Demos Chapman, Bruce J. Denenny, Michael S. Enslin, Philip Joseph Erickson, Gail L. Frantsi, William S. Gunther, Mark B. Halvorsen, David Bruce Karnes, Gary Steven Kedziora, Darci Lyn Knowlton, Steven C. Lien, Lowell Glen Lindquist, John R. McGaa, David Daniel McSherry, Thomas S. Overstreet, Todd Joseph Pavcek, Manuel J. Rivas Olivero, Steve Sanderson, Mark Schaber, Daniel C. Snustad, Bao Tran, Van Thieu Tran, Loc Xuong Van, Peter A. Voss, Diane E. Wallner, Darcie M. Weber, Matthew Wehling, Kraig A. Wheeler, Birgit Heidrun Will, and Ronald Gene Wohlfarth

(Thanks from page 13)

National Association Foreign for Student Affairs (John F. Reichard, Executive Vice President), *Wayland E. Noland*, Paul E. R. Nordquist, *Paul R. and Patricia T. O'Connor*, Robert W. Parry, Judson S. Pond, Norman and Dora T. Rabjohn, Lucinda E. Reichley-Yinger, *Warren L. and Rose M. Reynolds*, *Indulis R. Rutks*, A. Truman Schwartz, Dwight S. and Mary Lee Springer, *Dimitri T. and Beatrice P. Tselos*, *Lynda J. Woitas*, and Wayne C. and Mary M. Wolsey.

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A special thanks is extended to the **3M Company** for its participation in the Minnesota Campaign. This special program, intended to encourage giving to education by 3M employees and board members and to enlarge the donor base among Minnesota graduates at 3M, matched on a three-for-one basis gifts and pledges meeting certain conditions set by this program. Contributions and pledges committed by March 31, 1987, from current and retired employees of 3M as well as current and former members of the 3M Board of Directors were eligible for this match. Our thanks, too, to our alumni and friends at 3M Company for their participation in this solicitation. Contributors and pledgers were Dennis C. Bartizal, Galen C. Britz, Leif Christensen, Robert D. De Master, Thomas J. Evensen, Raymond J. Farm, William B. Gleason, Lloyd W. Goerke, Peter A. Howell, Lester C. Krogh, Dennis P. Landucci, Wy-Shyong Li, Robert B. Lockwood, Donald H. Lucast, Gale W. Matson, Carol A. Moenke, Joyce B. Pallazzotto, Michael C. Pallazzotto, John W. Pearson, Julianne Heller Prager, Frederick H. Roberts, Mark A. Rustad, John P. Ryan, Terrance P. Smith, Steven J. Strauss, James R. Throckmorton, Hubert J. Tierney, Sr., Victoria K. Veach, James J. Wade, Charles D. Wright, and Anthony F. Yapel, Jr.

## Chemistry Students Recognized

The Department of Chemistry is pleased to salute the following students, who received recognition in the form of prizes, awards, scholarships or fellowships.

Undergraduate chemistry majors who received 1987 prizes and awards were **Greg Gadbois** and **George Griesgraber**—G.B. Heisig Research Fellowships for demonstration of outstanding achievement in undergraduate research and overall scholastic excellence; **Paul Maslowski** and **Nicholas Armstrong**—Lloyd W. Goerke Scholarships for outstanding academic achievement; **Crystal Hanscome**—Robert C. Brasted Memorial Fellowship and part time apprenticeship in the general chemistry program for an outstanding junior chemistry major indicating an interest in a teaching career; **Brad Karon** and **Clair Emery**—M. Cannon Sneed Scholarships for outstanding academic achievement; **Kraig Anderson**—Chemistry Alumni and Faculty Scholarship for the outstanding freshman chemistry major and the CRC Freshman Chemistry Achievement Award; **James Novack**—J. Lewis Maynard Memorial Prize in Advanced Inorganic Chemistry; **Melinda Salisbury**—Walter M. Lauer Prize in Advanced Organic Chemistry; **Mark Andres**—Merck Index Award; and **Rob Guettler**—ACS Undergraduate Award in Analytical Chemistry.

**Scott Harring** received the 1987 Outstanding Teaching Assistant Award. Scott is a graduate student in organic chemistry, and his student nominators commented on his attentive emphasis on laboratory safety. Unusual in 1987 was the special mention of **Jeffrey Bjorklund** as another outstanding teaching assistant. This award is truly an indication of peer appreciation, as it is based upon nominations received from faculty, staff and graduate student co-workers, as well as from undergraduate students.

Graduate Students **Shiyamalie Ruberu** and **Tom Panunto** received the first Linus Pauling Award for best student poster at the American Crystallographic Association Meeting held in Austin, Texas in March of 1987. Co-workers with Professor **Margaret Etter**, they took first place with their poster, "The Physical and Chemical Properties of Cyclamers."

**Paul Deck** is a National Science Foundation Fellow. Graduate students holding Graduate School Dissertation Fellowships are **Bruce Alexander**, **Bob Hammer**, and **Louise Wheeler**. **John Bullock** received the Stanwood Johnston Memorial Fellowship, which is administered through the Graduate School. **Steven Severtson** holds a Microelectronic and Information Sciences Fellowship. Academic-year corporate fellows are **Joe Casalnuovo**—Rohm & Haas; **Gunnlaug Einarsdottir**—Shell; **Kurt Hermann**—3M; **Paul Hladky**—DuPont; **Roland Schulze**—Amoco; **Thanh Truong**—Dow. Departmental Fellows are **Michael Finley**, **Alan Johnson**, and **Susan Reutzel**. Graduate Fellowships are held by **Steven Jons** and **Diana Parker**.

## Undergraduate Summer Research Programs

The Chemistry Department has a strong commitment to interest talented undergraduates from within the state and throughout the country in research at the career-choice point so as to ensure an adequate supply of high quality scientists for the future. The Lando-Sohio Fellowship Program, administered by Professors **Tim Lodge** and **John Ellis**, enjoyed another banner year in 1987. Fourteen junior chemistry majors came to the department from as far away as Pensacola, Florida for a ten-week summer term to work on a research project under the guidance of a faculty member as a part of a regular research group. In addition, there were six University of Minnesota chemistry undergraduates who participated under the same umbrella. Most of the out-of-town participants were housed in Middlebrook Hall, the University's air conditioned, high-rise dormitory on the west bank. Support for almost half of the total twenty fellowship students was made possible by a National Science Foundation Research Experiences for Undergraduates grant to the department. This grant, which was the result of a proposal designed and assembled by Professor **Wayland Noland**, will be in effect for at least two more years.

During the summer, the fellows met for a lunch seminar every Thursday, at which a graduate student described his or her research. This was very successful in exposing the fellows to the breadth of research in the department, as well as stimulating interest and developing camaraderie among fellows and graduate students alike. During the final week of the summer term, the annual Lando Fellow Symposium took place, in which each fellow gave a brief presentation on the summer's progress. As always, the symposium was well attended by students and faculty from the department, and a good time was had by all.



*Michael Jeremy Barany, whose birth April 3, 1987, was reported in our last issue, has grown up with a different view of the world. As far as he is concerned, the Twins have always been World Champions (see article, p. 3). By the way, the faculty baby boom continues, and we welcome **Julie Rebecca Hoyer** (born May 23, 1987 to Tom and Becky), **Christopher Davis Gladfelter** (born November 24, 1987 to Wayne and Betty), and **Juliet Virginia Barbara** (born February 2, 1988 to Sharon and Paul).*

*The University of Minnesota is an equal opportunity educator and employer.*

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