



Alumni Newsletter

School of Chemical Sciences

Commemorating Roger Adams 1889-1971

In introducing him to an audience of chemists in 1946, James Conant, then president of Harvard, described Roger Adams as "undoubtedly the outstanding organic chemist in the United States at the present time, and his school, the largest and most vigorous of (its) kind in that country, is of international repute."

The widespread use of his name is a measure of his stature. It is attached to a compound he developed during WWI, called "Adamsite", and to a catalyst, a platinum oxide that is still widely used today, which is referred to as the "Adams Catalyst". The most prestigious award in organic chemistry, sponsored by *Organic Reactions, Inc.* and *Organic Syntheses, Inc.* and by the Division of Organic Chemistry of the American Chemical Society is the "Roger Adams Award". The most modern and the largest building in our chemical sciences complex is the "Roger Adams Laboratory". The "Roger Adams Fund" supports undergraduate and graduate students and rewards outstanding student research and teaching performance.

In honor of the hundredth anniversary of his birth, the School of Chemical Sciences dedicates this issue of the alumni newsletter to the memory of Roger Adams.

Roger Adams was a prodigious chemist, producing over 400 publications and serving as advisor to more than 180 doctoral students plus uncounted masters students, undergraduates and postdoctoral fellows. Throughout his life he followed the careers of his students and assisted many with personal and professional problems.

For over 30 years Rogers investigated the stereochemistry of molecules in which rotation about a single bond is restricted. Among his other work are his many contributions to natural products chemistry. His work included studies of chaulmoogra oil as an effective chemotherapeutic agent for the treatment of leprosy and the synthesis of gossypol, a yellow, toxic constituent of cottonseed. At the urging of the Narcotics Bureau, Adams undertook the identification of the physiologically active components in marijuana.

During his long career Roger Adams received virtually every major chemical honor including, for example, the Elliott Cresson Medal of the Franklin Institute (1944), the

Priestley Medal (1946), the Gold Medal of the American Institute of Chemists (1964), and the National Medal of Science (1964).

He received honorary doctors degrees from 10 universities including Harvard, his alma mater, and the University of Illinois, where he headed the Chemistry and Chemical Engineering Department from 1926-1954. Adams was President of the American Chemical Society (1935) and Chairman of the Board of Directors (1944-50). He was President of the American Association for the Advancement of Science (1950) and Chairman of the Board of Directors (1951). He was a member of the National Academy of Science and the American Philosophical Society.

During his tenure at Illinois, Adams was offered many other positions. He could have returned to Harvard as head of their chemistry department or become president of the University of Illinois. The Department of Chemistry and Chemical Engineering, as it was known in those days, was indeed fortunate that he chose instead to remain "The Chief".



The Chief



Roger Adams in 1889



East Chemistry Renamed the Roger Adams Laboratory

Lynne Parr: Intraprenneur at Dow Corning

Among the many certificates and awards of achievement that adorn her office, Lynne's favorite is a large button that says, "I'm a corrosion fighter." She is. As the program manager for protective coatings at Dow Corning Corporation, she has brought the company into the protective coatings business by developing and commercializing a new set of products called Sil-Bar™. These are silicone-based clear barrier coatings that cure at ambient temperatures and that protect ferrous and non-ferrous metallic substrates from corrosion.

One of the attractions of her current position is that she has the opportunity to be an "intraprenneur", an entrepreneur who creates "a business within a business". She oversees the labs where Sil-Bar™ is refined and put through a rigorous series of tests to determine its qualities and limitations. She "sells" the product to the company and to the customer. This involves an analysis of the external markets, to determine the potential customer base and a projection of the sales volume and profit potential to the company. For instance, she learned that whereas Sil-Bar™ is very useful to the petrochemical industry especially along the Gulf Coast in the US, in Europe the opportunities were greater in other areas such as North Sea oil production where the companies have run into serious problems with platform corrosion.

The project also brings Lynne back to her long-time interest in teaching as she "coaches" her core team, including the salesmen who will sell the product to the customers. Among the many innovative aspects of this project has been to sell the product directly to end-users, a group that have not provided a traditional market for Dow Corning.

A Rapidly Growing Company

The company produces approximately 4200 products, divided into three major categories: polycrystalline silicon used in semiconductor applications, organosilicon chemicals which are used as coupling agents to aid in bonding and reinforcing fibers, and siloxane polymers, generally known as silicones, which are useful for the production of surfactants, sealants, and adhesives, for example. Most of these are sold as intermediaries to companies that manufacture the final product that is purchased by the consumer at the retail level.

Lynne is very much at home in Dow Corning, a young company, formed in 1943 as a wholly owned subsidiary of Dow Chemical and Corning Glass to exploit the Corning silicone based technology. The company has quadrupled in size in the last ten years, growing from an investment of 375 million dollars to 1.6 billion dollars in sales



last year. Dow Corning has also become a more fluid, less hierarchical organization than many other chemical companies and one that is gradually making a transition from a technology driven to a people based company.

She Likes to Grow Products and Businesses

Working with people has been central to Lynne's professional development. She originally came to graduate school to pursue her interest in teaching and she enjoys interacting with people: her sons, her team, her customers and those to whom she reports. She has little patience with laboratory research but a passionate interest in growing products and businesses. For this reason she has become an enthusiastic proponent of "Opportunity Analysis", a method of product/market analysis that she learned while completing her MBA at Central Michigan University in 1982. She became the first official "Opportunity Analyst" within Dow Corning when the position was created. Making mistakes can also offer opportunities, according to Lynne. She spent two years in the lab working on a product that the market didn't want and she determined never to do that again.

The Rise to Management Ranks

Lynne Parr came to Dow Corning 12 years ago, directly from the U. of I. and directly into the Technical Services and Development Department, a non traditional career path for a woman. She became a group leader in select industries and five years ago was promoted to program manager, the first woman to reach

that level where "the organizational pyramid suddenly becomes very narrow." Whereas there are 6500 people in the entire company, there are only 125 at her level and above.

One of her contributions has been to pave the way for other women in middle level management, where they have done extremely well. She counsels young people of both sexes not to be self limiting and to grasp the opportunities that come their way. Combining family and career should pose no insuperable obstacle. One young woman who is presently a manager at Dow Corning, took a six month maternity leave to have her fourth child. On her return she received a warm welcome and a promotion and a year later no one remembers that she was away for a half year.

The Balance of Home and Work

On Lynne's desk is a photo of her two boys, and pinned to the wall is a picture of horses. Between them, they describe her life which is a seamless web of home, work, sons, cottage on the lake, housekeeper and horses, held together by the Franklin Day Planner in her briefcase. In her listing of daily activities, you are likely to find "buy 50 bales of hay" sandwiched between an inspection of experiments in the laboratory and a meeting with customer service representatives. There are meetings of her son's team where she is advisor to the "Battle of the Books" group and in the evening she may take home a prospective salesman to interview over a picnic supper with the boys. The needed information will be obtained but in a relaxed setting since her boys, Chris (13) and Jeff (11) are friendly,

bright, and articulate, and will quickly take the starch out of any meeting.

She finds that both home and office require similar skills, the ability to manage, to delegate responsibility, to coach others to bring out their best, and to develop the self confidence to make the most of whatever opportunities are available. When an opportunity came along to buy a cottage on a lake, Lynne did not hesitate, nor did she hesitate when she found an irresistible fifth horse. She has just bought another parcel of 14 acres adjoining her current six and she plans to design and build a new house with state-of-the-art solar technology by next summer.

The balance and interweaving of home and work are the core of her life. In contrast to many of her colleagues, she takes every one of her 22 vacation days. They enable her to enjoy many four day weekends with the boys during the summer but she equally appreciates the occasional free weekend when the boys visit their father. On a recent trip to Europe to explore markets for Sil-Bar™ she brought along her mother and they both enjoyed many visits in the interstices of her meetings.

The U. of I. Was a Great Learning Experience

Lynne credits a great deal of her success to her experience at the U. of I., which she attended as a graduate student from 1972-1977. She received her B.S. degree in chemistry from Western Washington University, where she did undergraduate research with a former student of Professor Bailar's, who persuaded her to go to the U. of I. for graduate studies. She came, fully expecting to obtain a Ph.D. to pursue a teaching career, but left voluntarily without a thesis because she learned that a Ph.D. would disqualify her for the type of work she wanted to do. However, because of her thorough training in chemical research, she can hold her own in a technical discussion, which has been extremely helpful when the time comes to "sell" her scientific ideas to technical colleagues.

"The smartest thing I did was to take three MBA classes during my last year at Illinois," she said. "It was like getting a personality transplant. This was the real world where I wanted to be." She dropped the thesis project, which would have landed her in a laboratory and moved towards the skills she needed to deal with people and products. One of her very positive recollections was the videotapes she made with Professor Gil Haight which related to her original goal of teaching and taught her to relax in front of a videocamera.



While at the U. of I. she also honed her entrepreneurial skills. She started a grooming business, a "clip joint" for dogs, with five full time employees. In addition, she was married and had her oldest son while still a full time graduate student. All this plus the "cume exams" developed her stamina. She learned to get along on four hours of sleep and can spend long stretches of time with no additional rest.

A Full Life and a Limitless Future

Her life has always been full but she likes action and finds that she can handle the challenge. One of her toughest assignments was a three month, packed, middle level management seminar she attended at Harvard in 1987. She hesitated to leave the children for that length of time and held a discussion with them when the opportunity was offered. Her son Chris said, "Does that mean you are going to be president?" They encouraged her to go, flew out to visit her, attended class and "had a ball".

Lynne describes her life as having balance and fun, in addition to work and stress. For the present she is very satisfied with her position at Dow Corning and the opportunities it presents. Since she is a global manager, she travels all over the world, to Australia, Japan, Taiwan, Europe, and South America to develop and commercialize her product lines.

She takes pride in the phenomenal growth of her company and has made repeated trips back to the U. of I. to persuade some of our best graduates to join Dow Corning. Today

she has less time for direct contact but she takes a lively interest in all that is happening at the U. of I.

As for the future, Lynne says, "So long as I can make a significant contribution to Dow Corning, I am happy to be here. The company offers enough challenge and growth opportunity. I can call the vice president and he will listen to my ideas. I don't have to establish my credibility any more and this is very important." She has plenty of other opportunities but, for the present, she isn't considering any seriously. In the future, who knows? For a person who has come so far in only 12 years, there is no limit to what the future may hold.

Roundup of 1988/89



Good News from Springfield

It happened in the last hours of the legislative session but the main thing is that it happened. The legislature passed, and the governor signed, a package of tax increases that amount to about \$1 billion in new revenues. About half of that will go to education at all levels. The School of Chemical Sciences anticipates not only reasonable salary increases, which were long overdue, but also help with the recurring operating budget and money towards a new building.

The building program is part of the Governor's Science and Technology package which was announced by the Lt. Governor in a ceremony at the U. of I. The package is a broad initiative to support science and technology capital projects around the state in public and private institutions. For the School of Chemical Sciences the package means a new building of about 60,000 square feet, which is essential. Anyone who has ventured into Noyes Lab and seen the crowded and antiquated conditions can attest to the pressing need for more and better space.

By next year, we hope to be able to report greater detail about the proposed new building. The current proposal is to build two nearly adjacent buildings, one for life sciences and one for chemical sciences, to be joined by a bridge above California Street at the fifth floor level.

Since space problems are too pressing to wait for the construction of a new building, the school has received some space in Davenport Hall, directly south of Chem Annex, which is being remodeled and will be occupied by the chemical engineering department. A



Chemistry and biochemistry student award winners (from left) Jane Chen, Scott Brun, Milan Mrksich, Sofie Salama, Lawrence Jennings and Dave Collins.

major remodeling job begun last year for Professor John Shapley's laboratory in Noyes Lab has been completed, and the front hall of Noyes Lab has undergone a transformation. The good features, such as the original oaken doors, and ceilings, have been retained and the unsightly features such as the chipped and pitted walls and untidy bulletin boards have been eliminated.



The Students

Compared with the national tale of woe regarding dropping enrollments and decreasing number of graduates, the U. of I. has done well. Although our numbers have dropped a bit, they appear to be fairly stable and the number of opportunities available to our graduates has increased. As of early summer, the percentages of graduate school acceptances had increased, the number of employment offers had increased and so had beginning salaries. For instance, in May 1989, 112 employment offers had been recorded for chemical engineering undergraduates, compared with 77 the prior year. Average salaries for chemistry Ph.Ds were over \$44,000 with differences depending on field of specialization.

This year's undergraduate student award winners were the following:

Alumni Awards to Carla J. Davidson, Daniel J. Kaiser, and Sameer D. Desai all in chemical engineering.

The American Chemical Society Regional Scholarship went to Kimiko Suzue in biochemistry.

The American Institute of Chemical Engineers Award went to Sameer D. Desai.

Three students received awards from the *American Institute of Chemists*: **David E. Collins** in biochemistry, **Gerhard W. Matzen** in chemical engineering, and **Jane Chen** in chemistry.

The *Chemical Institutes Council Award* went to **Daniel J. Kaiser** in chemical engineering.

The *Dow Outstanding Junior Award* went to **Anthony M. Valente** in chemical engineering.

The *Donald E. Eisele Award* went to **Scott W. Goffinet** in chemical engineering.

The *Reynold Clayton Fuson Award* went to **Scott C. Brun** in biochemistry.

The *Donald B. Keyes Award* went to **Timothy P. Holtan** in chemical engineering.

Three chemistry students received the *Marvel Research Award*: **Philip J. Hajduk**, **Milan Mrksich**, and **Ann M. Strezo**.

The *Merck Award* was received by **Peter A. Michaely** in biochemistry, **Michael E. Mayer** in chemical engineering, and **Jeffrey G. Walls** in chemistry.

The *Worth Huff Rosebush Award* was received by two chemistry students, **Sofie R. Salama** and **Milan Mrksich**.

The *Thomas O. Sidebottom/ROLM Corporation Award* was received by **Sofie R. Salama** in chemistry.

The *Arthur W. Sloan Prize* was awarded to **Dara A. Haverty** in biochemistry, **Amanda J. Watson** in chemical engineering, **Jocelyn F. Bautista** and **Krista M. Johnson** in chemistry.

The *Phi Lambda Upsilon/Arthur W. Sloan Award* went to **Victor S. Lusvardi** in chemical engineering.

The *Undergraduate Award in Analytical Chemistry* went to **Mitchell J. LaBuda**.

The *Bruno J. Wojcik Memorial Scholarship Award* went to **Kevin L. Fransen** in chemical engineering.

Portrait of an Outstanding Student

Sofie Reda Salama doesn't think of herself as outstanding despite the fact that she won seven important honors in her senior year including two overlapping national fellowships, from the



Chemical Engineering student award winners (from left) **Michael A. Mayer**, **Scott W. Goffinet**, **Kevin L. Fransen** and **Gerhard W. Matzen**.

National Science Foundation and from the *Howard Hughes Medical Institute*. She accepted the latter because she is planning to take a doctorate at the University of California in Berkeley in the department of cellular and molecular biology and the Hughes fellowship will cover all her educational expenses.

In addition, she was accepted into *Bronze Tablet* and *Phi Beta Kappa* and graduated *Summa Cum Laude* and with *Highest Distinction*. She also won the *Thomas O. Sidebottom Award* for an outstanding senior thesis in biochemistry, even though she is in the chemistry department. In nominating her for the award, her thesis advisor wrote, "Sofie Salama exhibited, as an undergraduate, the lab savvy and scientific insight of a third or fourth year graduate student. . . . (She) is the best undergraduate that I've seen."

To provide balance, Sophie has lead a full extracurricular life. She actively participated on the synchronized swimming team and worked two hours a day at the student placement office. Before she came to college she competed and won in music competitions, was accepted into all-state band, swam competitively, and served on the high school student council. She recognizes that her productivity increases when she has no time to waste and she makes sure that wasted hours have no place in her life.



Three Newcomers Joined the Faculty

In the past year we have welcomed **Andrew Gewirth** into the chemistry department. He arrived after postdoctoral work at the University of Texas, Austin, following undergraduate and graduate degrees from Princeton and Stanford Universities, respectively.

His research focuses on the relationship between electronic structure and function in inorganic materials. In one area, Gewirth utilizes the Scanning Tunneling Microscope (STM) to study electrode surfaces immersed in redox active solution in order to probe fundamental deposition and catalytic electrochemical processes. He also utilizes the STM to study transition metal complexes adsorbed onto surfaces at cryogenic temperatures in order to probe the electronic structure of these moieties and the relationship of this structure to electron transfer rates.

Finally, Gewirth studies biologically relevant inorganic systems using more traditional inorganic spectroscopies in order to probe the relationship between electronic structure and electrochemical redox potentials. He focuses especially on the active sites in molybdenum-containing enzymes and seeks to understand the nature of the active site in these proteins and its role in reactivity.

A second newcomer is Professor **Eric Jacobsen**, an organometallic chemist who came to the U. of I. chemistry department after completing his postdoctoral work at M.I.T. His undergraduate work was done at New York University and his Ph.D. at the University of California at Berkeley. His research focuses on the synthesis of organic molecules using metals as catalysts.

Because metals have special reactivity paths they expand the types of syntheses possible. For instance, one of Eric's main interests is in asymmetric synthesis. Using chiral metal complexes as catalysts makes possible the production of organic compounds that are rich in one enantiomer rather than the 50-50 mixture characteristic of laboratory synthesized compounds. Even though asymmetric synthesis can rarely provide a methodology for creating compounds that are solely one enantiomer, purification to optical purity is often relatively simple for an enriched sample. The work is of considerable interest to the pharmaceutical industry which is searching for a methodology to synthesize organic compounds that are optically pure.

Professor **Frank van Swol** joined the chemical engineering faculty this year to develop computer simulations of experiments in interfacial studies. He obtained his education at the University of Amsterdam in the Netherlands and spent over three years at Oxford



before becoming interested in the wetting properties of fluids while a visiting professor at Cornell University.

Professor van Swol describes computer simulations as the "ideal experiment," one that can be completely specified and repeated indefinitely. In his particular case, he specifies the forces between each pair of atoms, the density of the atoms and the temperature of the system. He calculates the surface tension and contact angles after manipulating the input variables.

The underlying hypothesis of his experiments is that the contact angle will change as the temperature of the system changes. If the initial interfacial state is one of partial wetting, a change in the temperature will result in either complete wetting by liquid (the liquid spreads evenly over the underlying surface) or complete wetting by vapor (the liquid becomes a series of balls "lying" on the surface with zero area of contact in the most extreme case).

Interfacial studies have a wide variety of applications. For instance, both the paint manufacturer and the pesticide industry need to produce products that interact with the underlying surface at the ideal level of "wetting." The development of electronic chips depends on the proper growth of one or more metals on a substrate. These and many other applications could be speeded up if the developer could conduct his experiments by computer instead of in the laboratory. Although a supercomputer is much more expensive than simple laboratory equipment, computer simulations are exceedingly cost effective compared with lengthy, labor intensive laboratory experimentation.



... and One is Retiring

Professor **H. Edward Conrad** who has been in the U. of I. biochemistry department since 1958, is accepting emeritus status in August. He is well known for his research on the structures, metabolism and biological activities of heparan sulfate, heparin, and chondroitin sulfate. Contrary to the stereotype of the retired professor as enjoying a life of leisure, Professor Conrad is launching a second "retirement career" as director of biochemistry at Glycomed Inc., in Alameda, California, a company that develops pharmaceuticals based on complex carbohydrates. We hope that his new position will allow him enough leisure to appreciate the amenities of his California surroundings.

Private Support Makes the Difference

The difference between a good and an excellent program, such as ours, can be attributed to private support from our alumni, other individuals, and industrial sponsors. It makes an enormous difference in our ability to attract high quality faculty, students and outside speakers.

Most high quality students entering graduate schools are sophisticated and sought after. The latter is especially important because there is a shrinking pool of students available. Nationally the number of chemistry majors and graduate students is decreasing. Those that decide to enter graduate studies are serious students who investigate their options carefully before reaching a decision.

To attract these students we need not only to offer them an attractive financial package to help them "survive" five or more of their potentially most productive years, but also to reimburse them when they come to campus to interview potential research advisors. For instance, this year, about 60 chemistry students came to visit the campus and about half of this group decided to come to Illinois for their graduate studies.

One of the purposes of the annual Allerton Conference held by the biochemistry department is to bring outstanding potential graduate students to campus where they are exposed to the program offered at the U. of I. The event, which is sponsored by private funds, is organized by a committee of graduate students. Faculty and students from all of the research groups share research news and have an opportunity to become more closely acquainted on a professional and a personal level.

Start-up Support for Young Faculty

As the pool of graduate students is shrinking so is the pool of outstanding young faculty. The ones of the caliber to make them attractive to us, are a most sought-after group. When they choose to come to Illinois they do so because of the high quality of the program and the generosity of the start-up package that the department can offer, thanks to your help. The two new members of the chemistry department will serve as examples.

Andrew Gewirth in Inorganic Chemistry

The type of research carried out by Professor Gewirth is very capital intensive and he has utilized his startup funds to purchase necessary equipment. The package of about \$150,000 which came primarily from funds donated by our industrial friends, has been used to purchase a variety of equipment, including advanced electronics to interface to the scanning tunneling microscope (STM), where very high data rates necessitate special collection devices and a magnetic circular dichroism spectrometer which includes a \$50,000 optical cryomagnet.

Eric Jacobsen in Organic Chemistry

Professor Jacobsen needed an extensive startup package to set up his laboratory for using metal catalysts to create asymmetric synthesis. By drawing heavily on private funds, the department was able to offer Eric almost \$200,000 which he has used to purchase equipment to prepare and handle chemical compounds that are sensitive to air and moisture.

Without the generous startup package, the U. of I. would not have been able to attract Professor Jacobsen or given him the opportunity to set up an organometallic laboratory to train graduate students in this exciting new field of chemistry.

Awards for Teaching Excellence

One of the important uses of private support has been to recognize and support outstanding teachers. Every year the School presents awards to faculty and teaching assistants who have been rated excellent teachers. The recognition is made more memorable by an accompanying check of \$400 to each recipient from the Roger Adams Fund. This year four faculty members and nine teaching assistants received awards. One of the recipients was Professor Eric Jacobsen, described above as one of our three new faculty. (See photos on back cover for winners of 1988/89 awards.)

Support for Development of New Coursework

New courses and modifications of old ones are essential to keep our program vibrant and up to date. During the past year, Professor Chuck Eckert of Chemical Engineering has developed a new course in communication for undergraduates, stressing the interrelationship between problem solving and the communication of results. Private funds have also helped purchase equipment for new experiments to emphasize visualization and other new technologies.

These are just a sample of the types of activities and programs that would not exist without private support. Together they add up to an outstanding program. We depend on your continuing support to maintain that quality. Private support does indeed make the difference.

Help Us Maintain the Difference Be Generous with Your Gifts

The optimism generated by the prospect of financial help from the state can be sustained only with continued help from you. We depend on you to help us seed new initiatives and to bring in the high quality faculty and students who make this a top program, not only in the state but also in the nation and in the world.

Our needs list below, including established Foundation funds, does not include chemical engineering funds since that department handles its own fund raising and reporting.

Please check the appropriate box or boxes below and send a check made out to the School of Chemical Sciences. A self-addressed envelope is enclosed for your convenience. Please remember to include corporate gift matching forms where available. Matching funds can double or even triple the impact of your gift.

- Young Faculty Support
- Student Support including Fellowships
- Teaching Expenses
- Laboratory Renovation
- Roger Adams Fund
- Carl Shipp Marvel Fund
- Nelson J. Leonard Distinguished Lectureship Fund
- John and Florence Bailar Fund
- Willis H. Flygare Memorial Fund
- Illini Chemists Fund
- General Fund
- I would like to set up a new fund, details to be discussed
- Other _____

Your Name _____

Address _____

Phone No. _____

Thank you for your gift!

Electronic Services: Extensive, Efficient, and Excellent

Need a unique piece of equipment designed for a specific research project? Do your plans call for construction of a laboratory instrument for which you have a rudimentary blueprint from a distant colleague? Is the most crucial piece of electronic equipment in your lab malfunctioning right in the middle of an important experiment? Have you forgotten to make a 35 mm. slide of your apparatus which is needed for a presentation, and your plane is leaving at crack of dawn? Do you have a lab full of expensive computer equipment that needs to be burglar proofed?

If the answer to any of the above is affirmative, Al Saldeen or Chuck Hawley of the electronic services and their staff will take care of you. Chuck is the senior research engineer in charge of design and Al Saldeen is the electronics engineer in charge of everything else. Between them they'll tackle almost anything that relates to electronics. As Al says, "Usually we win and occasionally we lose."

Electronics is one of the largest services of the School of Chemical Sciences, with 11 full time employees. One of the reasons for the extensive range of service is the trend in chemistry research which has become increasingly dependent on electronic equipment. About ten years ago, as Al recalls, less than a half a dozen faculty had computers in their labs. Today, it's considered a necessary, but not sufficient, item of equipment for virtually all faculty.

The trend to widespread use of electronic equipment, as prices have come down to a level considered reasonable by funding agencies and university budgets, has meant that the mix of functions has changed. A dozen years ago 75% of the jobs that came to the shop required design and construction; 25% were for repairs. Today, the percentages have reversed. A dozen years ago, the "answering machine" was a secretary/receptionist. Today it is a box filled with electronic equipment that has a marked tendency to malfunction. A few of the 60 answering machines owned by the School are always in the shop, waiting for the services of the repair crew.

Electronics services did not start out as the well-staffed, well-housed unit that it is today. Begun by Professor Gutowsky about 40 years ago, the service started with one person to build and maintain nuclear magnetic resonance equipment. Al Saldeen came in 1959 from channel 12, the U. of I. radio/TV station. Chuck Hawley arrived shortly thereafter and was appointed director of the service in 1976.

During the 60s, the service expanded rapidly. Their first home was a niche in the basement near the plumbing shop. From there, they moved to two rooms in the loft of Noyes



Lab. That meant that the service was located on the fifth floor when the elevator went as far as the fourth. From the fourth to the fifth floor, all equipment and supplies were hauled by human power.

Finally, they moved to their present location on the south side of the first floor of Noyes Lab. The move occurred shortly before the student demonstrations that swept the country during the Vietnam era. The staff have vivid recollections of concrete blocks flying through the windows of the shop during some of the more physical outbursts.

According to Professor Gutowsky who is still a frequent user, "The shop ranks among the biggest and the best in the country today compared to other chemical science electronics services." Very few shops create instrumentation and have the capability to design and produce customized circuit boards.

As the nature of chemical science research has changed, so have electronics services. Today, one of their high volume services is photography, which is used by virtually everyone in the school. The photographer and his assistant produce about 20,000 prints for publication and another 20,000 slides for seminars and classroom use each year, in addition to the negatives used for printing circuit boards. Recently, the shop bought a film imaging recorder so that slides can be made directly from floppies.

Another increasingly important service of the shop is to design and build digital interfaces to mini and microcomputers for a variety of functions, such as data collection and analysis, temperature level control, liquid level control or detection. For example they have built controllers for the high speed, high volume duplicating machines on the first floor of Noyes Lab.

The shop maintains the audio and TV teaching equipment for the introductory chemistry courses. They have done extensive cabling for both Noyes and Roger Adams Laboratories for the VAX computer, the CompuCorp word processing system, and the currently popular PC equipment.

Increasingly, the service is being called upon to set up security systems. The PLATO lab with its door alarm plus infrared heat detector is known colloquially as "Fort Knox." The system is so sensitive that the police are on the scene before a potential intruder can get out of the room.

In contrast to other shops, several of the staff have college degrees although most of them are chosen primarily on the basis of their experience with electronics. As Chuck says, "College degrees are largely a result of a person's aptitude. We hire their aptitude, not their degrees." The bottom line is that there is little turnover. People stay because they are proud to provide high quality, essential services for outstanding research programs.

The service is also a drawing card for recruiting new faculty who are attracted by the prospect of having specialized research equipment set up and ready to go when they enter the lab.

In recognition for his contribution to the School, Al Saldeen, the shop supervisor, was one of the first in the University to receive the Chancellor's recognition award for nonacademic staff. The electronics services have provided important support for both the teaching and research functions of the School and have freed the faculty for training students and producing fundamental science.

Rinehart Symposium



In honor of his 60th birthday and in recognition of his many contributions to natural products chemistry, the former and current students and research associates of chemistry professor K. L. Rinehart held a symposium on the *Chemistry and Biochemistry of Natural Products* at the University of Illinois on September 9. Dr. Alex Nadzan of Abbott Laboratories and Dr. Ramesh Pandey of Lyphomed Inc. organized the events.

Participants at the symposium included Professor A. Ian Scott of Texas A & M University, Professors Fred W. McLafferty and Jerrold Meinwald of Cornell University, Professor James A. McCloskey of the University of Utah, Dr. Alex Nadzan of Abbott Laboratories, Professor Koji Nakanishi of Columbia University, Professor Henry Rapoport of the University of California at Berkeley and Professors John A. Katzenellenbogen and Larry R. Faulkner of the University of Illinois.

Professor Rinehart is well known for his many contributions to the areas of structure, synthesis and biosynthesis of pharmacologically-active natural products. His more recent interests have centered on natural products derived from marine tunicates, sponges, algae, etc., especially those with antiviral, antitumor, or antimicrobial activity. The most significant is the antitumor and antiviral agent, didemnin B., which is the only marine-derived compound currently in clinical trials.

Dr. Rinehart has received widespread recognition for his numerous scientific

accomplishments. He is a Fellow of the American Association for the Advancement of Science. He has served on the editorial boards of several scientific journals and on numerous governmental advisory boards. He has held an O.B.E.C. fellowship, and Guggenheim, Fulbright, Erskine and Sloan fellowships. In 1988, he received the 25th anniversary medal from the Kitasato Institute of Tokyo for his "Research in New Bioactive Compounds" and in 1989 he was recipient of the Research Achievement Award of the American Society of Pharmacognosy.

In addition to the students, the symposium was supported by private funds of the Chemistry Department and the School of Chemical Sciences at the University of Illinois and by the following corporations: Abbott Laboratories, American Cyanamid Company, E.I. du Pont de Nemours & Company, Ethyl Corporation, International Minerals and Chemicals Corporation, Lyphomed Incorporated, Monsanto Agricultural Company, Nutrasweet Company, Pfizer Incorporated, Sterling Drug Incorporated, and the Upjohn Company.

Three Elected to National Academy of Sciences

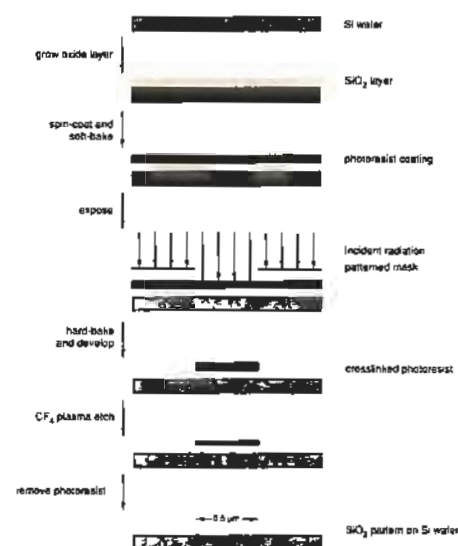
One former U. of I. faculty member and two alumni were among those elected to the National Academy in 1989.

Dr. Kensal E. Van Holde, now Distinguished Professor at Oregon State University, in Corvallis, Oregon received the honor this year. He had been a member of the faculty at the University of Illinois from 1957-1967.

Dr. William J. Lennarz, now Robert A. Welch Professor and Chairman, Department of Biochemistry and Molecular Biology at the University of Texas System Cancer Center, also was elected this year. He has been physician at the Anderson Hospital and Tumor Institute since 1983. Dr. Lennarz received his Ph.D. degree in chemistry with Professor Harold R. Snyder in 1959.

Dr. R. Byron Bird, B.S. '47 was also elected to the National Academy of Sciences this year. He is the J.D. MacArthur Distinguished Professor of Chemical Engineering at the University of Wisconsin at Madison. Professor Bird received the National Medal of Science in 1987.

Alum Designates U. of I. for Otto Haas Award



Dr. Leonard Bogan who received his Ph.D. with Professor Rauchfuss in 1986 is the 1989 Rohm and Haas awardee. The recipient is chosen by a committee of the director of research at Rohm and Haas for outstanding scientific work and may designate any institution as recipient of the \$6,000 unrestricted grant carried by the award.

The award was given to Dr. Bogan for developing NMR techniques that characterize the structure of novolak resins used in the manufacture of photoresists for integrated circuit fabrication. The techniques allow the correlation of specific structures with improved photoresist performance, leading to the manufacture of photoresists having high photospeed and contrast. These properties lend themselves to cost-effective production of IC chips with very fine (0.5 μm and smaller) features, such as will be necessary for the production of 16 Mb dynamic random access memory (DRAM) devices. The figure demonstrates the role of the photoresist in one very simple step in IC fabrication. There may be one hundred or more steps like this involved in the manufacture of a single chip.

The grant will be used to purchase instructional equipment for the undergraduate laboratories. It is fitting that the grant may train future outstanding chemists who will one day receive comparable recognition.

How "Hot" is Cold Fusion?



Professor Larry Faulkner, head of the chemistry department, was asked by the Secretary of Energy to serve on a national panel of scientists to provide an answer to this question. The Secretary asked the panel to evaluate the evidence of all relevant experiments to determine whether the potential of this line of research is sufficiently significant to warrant a realignment of national funding priorities. The cold fusion bandwagon attracted enough scientific interest that the panel divided the sites among the members and Dr. Faulkner visited the University of Utah and Stanford University. The preliminary report of the panel, published in July, found insufficient evidence of cold fusion, despite the myriad of attempts, to warrant a reorientation of funding priorities.

Professor Faulkner organized a session on cold fusion at the fall meeting of the Electrochemical Society. The panel was co-chaired by Dr. John Huizeuga, a U. of I. chemistry alumnus, who is now chairman of the chemistry department at the University of Rochester. Dr. Faulkner is currently second vice president of the society, having been elected in the spring of 1988. Following the usual progression, the recent election means that he will be president of the society in 1991-92.

Faculty Honors

Peter G. Wolynes, Professor of Chemistry and Physics, has been appointed professor in the Center for Advanced Study. This is the highest recognition offered by the University of Illinois.

Stephan G. Sligar, Professor of Biochemistry and Chemistry, has been appointed a Fulbright Fellow for 1989-1990. He will be an INSERM Professor at the Université de Paris, continuing his research on macromolecular recognition.

Gary B. Schuster, Professor of Chemistry, received a Paul J. Flory Sabbatical Award from the IBM Research Division for the spring semester, 1990. His research, which will be conducted at the Almaden Research Center in San Jose, California, will investigate ferroelectric liquid crystals as spatial light modulators or optical memory devices.

Walter May, Professor of Chemical Engineering, received the 1989 Award in Chemical Engineering Practice from the AIChE. This award, sponsored by Bechtel National, Inc., recognizes his outstanding accomplishment as a chemical engineer in the industrial practice of the profession.

Andrew Gellman, Professor of Chemistry, and **Mary Schuler**, Professor of Plant Biology and Biochemistry, were appointed Beckman Fellows at the Center for Advanced Study.

Alumni News

In Memoriam

Professor **John K. Stille**, Colorado State University Distinguished Professor of Chemistry and University of Illinois alumnus, died in the United Airlines 232 plane crash on July 20, 1989.

Before coming to Colorado State, he had taught at the University of Iowa for 20 years. Dr. Stille received his Ph.D. at the U. of I. with Professor C.S. Marvel in 1957, following undergraduate and M.S. degrees at the University of Arizona in 1952 and 1953, respectively, and two years' service in the navy.

Professor Stille had been Professor of Chemistry at Colorado State University since 1977 and was named Distinguished Professor in 1986, one of only seven faculty members receiving the University's most prestigious award.

Dr. Stille ranked among the world's foremost synthetic polymer chemists. He was a pioneer in the creation of high performance, temperature-stable polymers with a wide range of applications from industrial to aeronautical.

He was a frequent advisor to NASA, served as lecturer and visiting professor at a number of universities and provided consulting services to chemical and other industrial companies. During his career he had directed 73 doctoral students and 74 postdoctoral research associates.

Among his many honors, in addition to the Distinguished Professorship, he received the 1982 ACS Award in Polymer Chemistry and the 1988 ACS Colorado Section Award.

Dr. David H. Chadwick, Ph.D. '46 (Chemistry with Fuson) died on April 23, 1989. He retired in 1983 as director of research for the Mobay Corporation. Prior to taking an appointment at the Mobay Corporation in 1959, he had worked for the Monsanto Chemical Company.

Word has reached us that Dr. **Premo Chiotti**, B.S. '38 passed away in January, 1989.

Edward Walter Comings, B.S. '30 (Chemical Engineering) died on May 29, 1989. He was dean of the College of Engineering at the University of Delaware from 1959-1973. After his retirement he became professor of chemical engineering from 1974-1978 at the College of Petroleum and Minerals in Dhahran, Saudi Arabia. Professor Comings had also served as head of the School of Chemical and Metallurgical Engineering at Purdue University for 8 years and he was professor of chemical engineering at the University of Illinois from 1936-1951.

Charles Cooper, B.S. '35 died on January 26, 1989. He had been with the DuPont Company for 39 years, retiring in 1980.

We have received word that Dr. **G. R. Gillespie**, Ph.D. '53 (Chemistry with Johnstone) passed away February 19, 1989.

Mark A. Koval, B.S. '82 (Chemical Engineering) died on October 11, 1988.

We have received notice that Mrs. **Eleanor L. Mattson**, M.S. '50 has passed away.

David L. McKinley, Ph.D. '52 (Chemistry with Johnstone) died October 21, 1988. Until his retirement in 1985, he was associate director of research for the research and development division of the Union Carbide Corporation in South Charleston, WV.

Word has reached us that **Luman Ney**, M.S. '40 has passed away.

Laurence L. Quill, Ph.D. '28 (Chemistry with Hopkins) died on February 13, 1989. He had retired in 1966 as director of the institute of water research at Michigan State University. From 1945-1961 he was head of the chemistry department at MSU. He is credited with having guided the chemistry department from the level of a small agricultural college to the status of a major graduate research university.

William H. Rieger, Ph.D. '41 (Chemistry with Marvel) died on March 15, 1989. He retired in 1980 as director of research for Reilly Industries.

Oren Francis Williams, Ph.D. '51 (Chemistry with Bailar) died on April 15, 1989. He retired in 1986 as director of the chemistry division program of the National Science Foundation.

News of the Classes

'20s

Richard T. Urben, B.S. '29 retired in 1970 as general manager of the coatings and resins plant of P.P.G. Industries, located in Delaware, Ohio. Each winter he plays golf with **Bill Lycan**, Ph.D. '29, his former lab instructor in Chem 38 (organic analysis).

'30s

Leonore Hollander, Ph.D. '32 (Chemistry with Rose) returned to the US after having spent WWII in Germany, raising a young family. From 1950-1962 she worked in hospital biochemistry in Bethlehem, PA and in 1956 started a community mental health agency. Since then, she has been involved in a number of social welfare projects benefiting Africans and Native Americans.

'40s

Nancy Armstrong Aldrich, M.S. '49, received an M.S.S. degree from the Bryn Mawr

Graduate School of Social Work and Social Research in 1986 and graduated from therapist training at the New York Society for Bioenergetic Analysis in 1988. She is currently a licensed clinical social worker at the Tressler Center in Wilmington, DE.

Paul H. Aldrich, Ph.D. '49 (Chemistry with Marvel) retired as senior research chemist with Hercules, Inc. in 1982. He has since established a personal service corporation for small business personal computer consultation and tax accounting.

Fulmer Shealy, Ph.D. '49 (Chemistry with Fuson) was the first recipient of the Scientific Engineering Excellence Award of the Southern Research Institute in Birmingham, AL. Dr. Shealy is head of the medicinal chemistry division of the institute. He is credited with one prescription anticancer drug, one anti-cancer drug that has shown effectiveness in clinical tests, and another that will soon begin clinical trials in Europe.

'50s

John E. Franz, B.S. '51 is the 1989 Carothers Award Lecturer at Monsanto Chemical Company. Dr. Franz has been Distinguished Fellow at Monsanto since 1980.

John T. Henry, B.S. '56 (Chemical Engineering) has retired from the Shell Oil Company after 32 years of service. He is now pursuing a second career in music.

Adelbert T. (Del) Tweedie, Ph.D. '56 (Chemistry with Marvel) retired as chief scientist at General Electric Valley Forge Space Center after 30 years in the space business.

James Winefordner, Ph.D. '58 (Chemistry with Malmstadt) was the first recipient of the ACS award in Spectrochemical Analysis and won the 1989 Applied Spectroscopy Award of the New York Section of the Society of Applied Spectroscopy. Dr. Winefordner is professor of chemistry at the University of Florida at Gainesville.

'60s

Helen Elsbernd, Ph.D. '69 (Chemistry with Haight) has been named vice president for educational affairs at Marycrest College in

Davenport, IA. Sister Elsbernd had served 13 years as academic dean at Viterbo College in La Crosse, WI.

Fred Endelman, B.S. '68 (Chemical Engineering) has been named director of corporate planning for the Vista Chemical Company in Houston TX. He has just returned from a two year assignment in Tokyo as president of Vista Chemical Far East.

Richard A. Meyer, Ph.D. '63 (Chemistry with Hummel) has been appointed program manager for nuclear theory at the US Department of Energy in the division of high energy and nuclear physics.

Joseph J. Pesek, B.S. '66 was appointed chairman of the department of chemistry at San Jose State University.

William H. Pittman, Ph.D. '60 (Chemistry with Snyder) has been placed in charge of the chemical patent program at the General Electric Research and Development Center.

Kamalesh K. Sirkar, Ph.D. '69 (Chemical Engineering with Hanratty) was appointed to the editorial board of the *Journal of Membrane Science*. He is professor of chemical engineering at Stevens Institute of Technology in Hoboken, NJ.

Roger L. Tanner, Ph.D. '69 (Chemistry with Juvet) of Brookhaven National Laboratory, has been collaborating with **Antonio Miguel**, Ph.D. '76 (Chemistry with Natusch) at the University of Sao Paulo, Brazil, in a study of the effects of ethanol fuel use on vehicular emissions and urban smog photochemistry in Brazil.

Jack Welch, Ph.D. '61 (Chemical Engineering with Westwater) has been named Honorary Chairman of National Engineers Week, 1989. Dr. Welch is chairman and CEO of the General Electric Company.

'70s

Dale Edward Fitz, Ph.D. '75 (Chemistry with Marcus) was promoted to senior research specialist and became leader of the well logging research group in the data management and interpretation division of the Exxon Production Research Co.

Lester Kaplan, B.S. '72 has been appointed vice president of research and development for Allergan, Inc., a company devoted to eye and skin care.

Mark Koznarek, B.S. '76 recently completed an MBA degree at the Wharton School of the University of Pennsylvania and is a product manager in the chemical products group of FMC Corporation.

Bruce Nattinger, M.S. '76 has joined Wilson Sporting Goods as group manager of the golf ball product development group.

'80s

William S. Burton, Ph.D. '89 (Biochemistry with Gumpert) was an AAAS Mass Media and Engineering Fellow in the summer of 1988. He worked at *The Oregonian* newspaper in Portland, Oregon.

Erick M. Carreira, B.S. '84 has won a postdoctoral research fellowship from the National Science Foundation for 1989. He received his Ph.D. from Harvard, specializing in organic synthesis. His postdoctoral research at Cal Tech under Professor Peter Dervan will involve the design of novel chemical probes of biological systems and chemotherapeutic agents.

Dennis Delfert, Ph.D. '84 (Biochemistry with Conrad) is working in cancer research and development work at Abbott Laboratories.

Kurt A. Gabbard, B.S. '85 (Chemical Engineering) was recently appointed business manager and director of rural transit for Mary Holmes College in West Point, MS. He completed an MBA degree in 1989.

Daniel A. Gulino, Ph.D. '83 (Chemical Engineering with Drickamer) has accepted a position as assistant professor of chemical engineering at Ohio University in Athens, OH.

Kevin E. Howard, Ph.D. '88 (Chemistry with Rauchfuss) has completed post-doctoral work with Professor David Payne in the Ceramics Department at the U. of I. and has been appointed senior research chemist in the advanced ceramics laboratory of central research for the Dow Chemical Company.

Samuel H. Johnson, B.S. '81 (Chemical Engineering) has been appointed product manager of the engineering polymers division for polyamide-imide and polyketone products at Amoco Performance Products.

Gary A. Kaufman, B.S. '84 (Biochemistry) graduated from medical school in 1988 and is doing a residency in internal medicine at Evanston Hospital of Northwestern University.

Phillip Kardenetz, B.S. '82 returned to graduate school for an MBA degree in 1987. For the previous five years he had worked as a development chemist in resin products for the Dow Chemical Company.

George Rotter, B.S. '85 (Chemical Engineering) has received the Dow Chemical Award for Excellence in Composites Research from the Composites Institute of the Society of the Plastics Industry, Inc. He expects to receive his Ph.D. from Case Western Reserve University next spring.

Patrick Shaklee, Ph.D. '85 (Biochemistry with Conrad) has accepted a position as assistant professor of biochemistry at the Texas College of Osteopathic Medicine.

Thomas A. (Tom) Sullivan, Ph.D. '81 (Chemistry with Beak) has accepted a position at NASA, Johnson Space Center where he will be working on lunar base logistics and chemical process development of lunar minerals to extract oxygen, metals, and other logistically strategic materials.

Eleni Vassiliadou, Ph.D. '85 (Chemical Engineering with Hanratty) has been transferred from the Shell research laboratory in Amsterdam, Holland to Shell United Kingdom, Exploration and Production, in London.

KEEP IN TOUCH

Return to: Ellen Handler, Editor
SCS Alumni Newsletter
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Your news (please include newspaper clippings, photos, extra sheets, etc.)

Teaching Awards for 1988/89



Faculty winners from left to right Professors Walter May of chemical engineering, Kathryn K. Harden of biochemistry, Eric N. Jacobsen and David M. Paisley of chemistry.

Winners among the teaching assistants in the back row (from left) Kyle Chan, Lefkopoulos Alexandros, Keith W. Woods and Dean Olson. In the front row (from right) Brandon Cruickshank, Kevin Bray, Brenda Kesler, Patrick Brennwald and Mark Von Cleve.



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