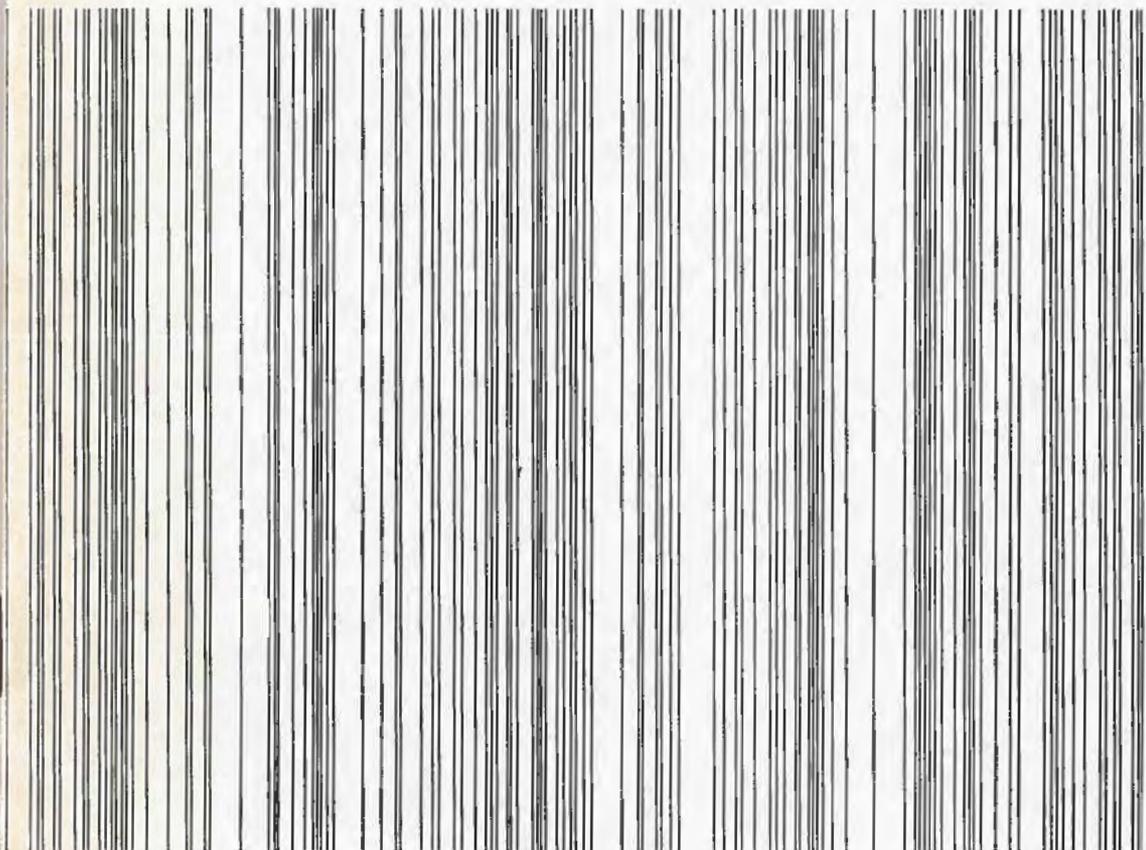

ALUMNI NEWSLETTER

SCHOOL OF CHEMICAL SCIENCES

UNIVERSITY OF ILLINOIS at Urbana-Champaign



NO. 13, WINTER 1978-79

The costs of distributing this *Alumni Newsletter* are supported by funds from the University of Illinois Alumni Association through its alumni constituents program. All graduates of the School of Chemical Sciences who are members of the Alumni Association are automatically members of our constituency. Part of their dues help support the school's alumni activities, such as the newsletter and the luncheons and social hours at national American Chemical Society meetings.

Currently, of the 7,200 living alumni of the school, only about 1,400 are members of the Alumni Association and our constituents group. We hope that some of the large remainder will join up and thereby help support the activities of the school. For further information, please write to the University of Illinois Alumni Association, 227 Illini Union, Urbana, Illinois 61801.

The State of the Union

(Comments by Professor H. S. Gutowsky, director of the School of Chemical Sciences)

In recent years the lead article in these newsletters has traditionally been devoted to a summary of a variety of items of interest that are not covered elsewhere in the newsletter. That tradition is continued in this issue. More details on the subjects can be found in the *1977-78 Annual Report* of the School of Chemical Sciences, copies of which are available on request.

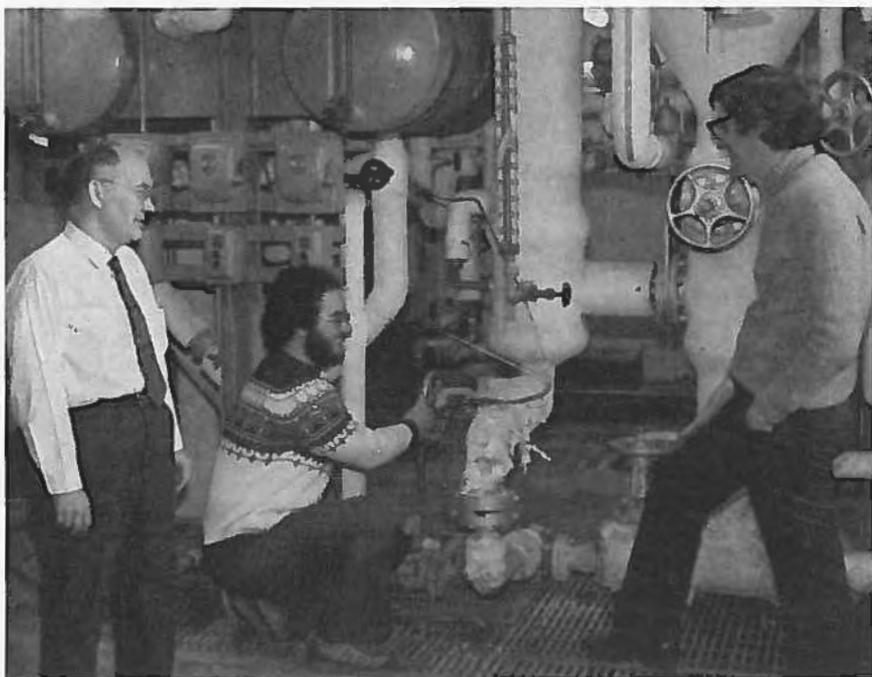
Enrollments and Student Programs

The most important change in our enrollment patterns during the past few years has been a startling increase in the number of undergraduate majors in the chemical engineering program. Although this and its implications are discussed in detail in a later article in this newsletter, a few statistics will be presented here. For the fifth year in a row, the number of undergraduate majors has increased; the total this fall of about 540 is over three times that in 1973-74. Another strong trend is the increased number of women students in the program, sixty-seven as undergraduates and four as graduate students. Also, two seniors are black. In May, 1978, we awarded our first Ph.D. degree to a woman chemical engineer.

Undergraduates in our other curricula have pretty much leveled off at 200 in biochemistry and 325 in chemistry. Thus, the total number of undergraduate majors in the school is nearing the 1,000 mark. This reflects changing career interests, because the total undergraduate enrollment of the campus has been stabilized at about 25,000 for close to a decade.

Baccalaureate degrees granted in chemical engineering are now at the 60 per year level compared to 35 several years ago and should approach 100 in another year or two. Degrees in biochemistry have leveled off at about 35, after several years of growth following the formation of that department with its own baccalaureate. In chemistry there has been a small drop over the past three years, from about 75 degrees to 65, half in the chemistry curriculum and half in the LAS major.

The new cooperative education program for undergraduates in chemistry has continued to develop. In it, students alternate course work here with field work as company employees. Ten students have participated so far, at Dow, Eastman Kodak, and Monsanto. Several other companies have expressed interest and the openings exceed the supply of students.



Prof. J. W. Westwater (on left), head of the Department of Chemical Engineering, and Professors Joseph Shaeiwitz and Richard Masel (on right) inspect equipment in the unit operations laboratory. A tripling of the undergraduate enrollment in chemical engineering has placed a very heavy load on this laboratory.

A related event is the establishment by the Eastman Kodak Company of a Kodak Scholars Program for chemistry undergraduates finishing their freshman year; it provides tuition and fees of about \$600 per year for each of the remaining three years. We nominate the students to EKCo, which makes the final selection. In starting the program with us, the company has stated they will fund at least two new scholars each year.

There has been little or no systematic change in graduate admissions, enrollments, and degrees granted. However, the competition for good graduate students is high in all areas. Because of this we have made surveys of students offered admission in chemistry who have decided to go elsewhere. In over half the responses, our geographical location was listed as a major factor in the decision to decline. To overcome this image, our stipends have to be visibly higher than those of our competitors and we have to work harder at pointing out our advantages to prospective students. As far as the students that come here are concerned, our strengths appear to be the general departmental reputation, the facilities available, the nature of the research going on, and the impression created during visits by prospective students.

Fellowship and traineeship support of graduate students has continued its ten-year decline, due largely to cutbacks in or elimination of federal programs. Of our 440 students in 1977-78, only 104 held such appointments compared with 197/420 in 1967-68. Some of the decrease in federal support has been offset by using industrial grants in chemical engineering and chemistry for fellowships. Fortunately, industrial support has remained strong, though not keeping up with inflation.

An important reason for recent improvements in industrial support is the job market. Our placement office found the recruiting activities of companies in 1977-78 to be the most active of the last four. Several companies made new grants of funds to us or renewed old ones while expressing interest in insuring that our best students would be encouraged to consider employment with them. In general, students were able to schedule appointments with most companies in which they were interested. It is clearly more of a seller's labor market. Although we had about the same number of students (at all levels) seeking jobs this year as last, there were more jobs and recruiters available; the average number of interviews per employer per day dropped from 9.5 to 8.4.

The increase in placement activity gave our new placement director a good initiation into the activities of the position. Our former director, Georgean Arsons, left the community in May, 1978 to move to North Carolina. Her successor is Rebecca Simon who formerly served as assistant director of the LAS general curriculum advising office on campus. Alumni will be happy to know that the placement services formerly available to our alumni will continue to be available under the new director.

Instructional Program

Course enrollments took a jump upwards in 1977-78 by 8 percent to an all-time high after being relatively stable for the three preceding years. Much of the increase is caused by chemical engineering students, and the rest by shifts in undergraduate enrollments to other branches of engineering and to agriculture, from the humanities and social sciences.

There were no major curricular revisions in the school during the year, but a number of course changes and other minor matters occurred. For example, the electron microscopy courses, Chem 423, 429, and 493, offered by and crosslisted with Department of Biology courses have been dropped as chemistry courses, but will continue to be offered by the Department of Biology in revised form. The courses have been of little interest to our students for a decade or more.

A special offering of Chem 199 (undergrad special topics) was given last spring by Dr. Lee Melhado on writing and chemical literature, for about twenty students. The course is of special interest as a possible pilot version of a permanent course. The College of Liberal Arts and Sciences has asked all departments to consider developing and requiring such courses to improve the writing skills of undergraduates. (Funds for the initial offering came from LAS.)

Chem 100, our "remedial" course for entering students, with weak or non-existent high school preparation in chemistry, has incorporated extensive use of PLATO materials developed over the past three years, largely by Ruth Chabay with the guidance of Stan Smith. The course uses PLATO lessons as homework, and PLATO administers the weekly quizzes. The students like PLATO; they find learning on PLATO a positive experience. They seem to like having quizzes on PLATO as they can be taken whenever the student is ready (and a proctor is available to put them into the quiz). The TAs like PLATO because there is much less time spent grading homework, and quiz time is not subtracted from discussion time.

More than 75 percent of our chemistry Ph.D. graduates end up taking positions in industry. Professor Peter Beak has been instrumental in developing a series of courses which present the fundamentals of industrial and polymer chemistry to them. This has previously taken the form of a special topics course with lectures by professors from our department and elsewhere as well as visiting lecturers from industry. The form was changed somewhat in the 1978 fall semester when a seven-weeks graduate course in polymer chemistry was organized by Dr. John Pochan of the Xerox Company.

Administrative Matters

Continuing increases in undergraduate enrollments without corresponding increases in resources remain our worst administrative problem. The instructional load in 1977-78 was up by 8 percent over 1976-77 yet the state budget didn't even keep up with inflation, much less provide for the increased enrollments. Another increase of nearly 5 percent occurred last fall, stretching to the breaking point our capacity to accommodate more students. About 300 students were turned away this spring from beginning chemistry courses, an action that drew the attention of several articles and an editorial in the *Daily Illini*. The number turned away would have been closer to 800 if the campus hadn't provided some last minute "bail-out" funds. At least we're beginning to draw attention to our problems!

Fortunately, outside support has continued to increase a bit more than inflation, which has helped offset some of the problems produced by decreased state support. Also, our request to the National Science Foundation for a new central computer for the school was honored with an award last spring. A Digital Equipment Corporation VAX-11 system is presently being installed to replace our outmoded IBM 1800.

The Department of Chemistry underwent a self-evaluation in 1977-78 sponsored and analyzed by the campus Council on Program Evaluation (COPE). The self-evaluation report and questionnaires have been completed and turned in to COPE. However, COPE's review of the material is still in progress. They have indicated that they plan to complete their review by early 1979, at which time their synopsis will be made available to us. I anticipate passing on the highlights to you next year.

In conjunction with the review of the quality of our programs, we had occasion to review past newsletters to total up the major awards and other

recognition received by our staff and alumni over the last few years. The results are staggering. Since 1973, members of the school's faculty have received about seventy awards on the regional, national, or international scene. During the same period, alumni accounted for at least sixty-eight such awards.

In addition to our own review of the quality of our programs, there are surveys made from time to time by groups on the national scene. The results of one of these was just announced in the *Chronical of Higher Education*. In this survey 4,000 academics were asked to name the five departments in their disciplines that they considered as having the most distinguished faculties. Eleven fields of study on the Urbana-Champaign campus were ranked in the top five by 10 percent or more of the respondents. One of these was the Department of Chemistry which was ranked in the top five by 18 percent of the respondents. Only six other chemistry departments in the country received a higher percentage response.

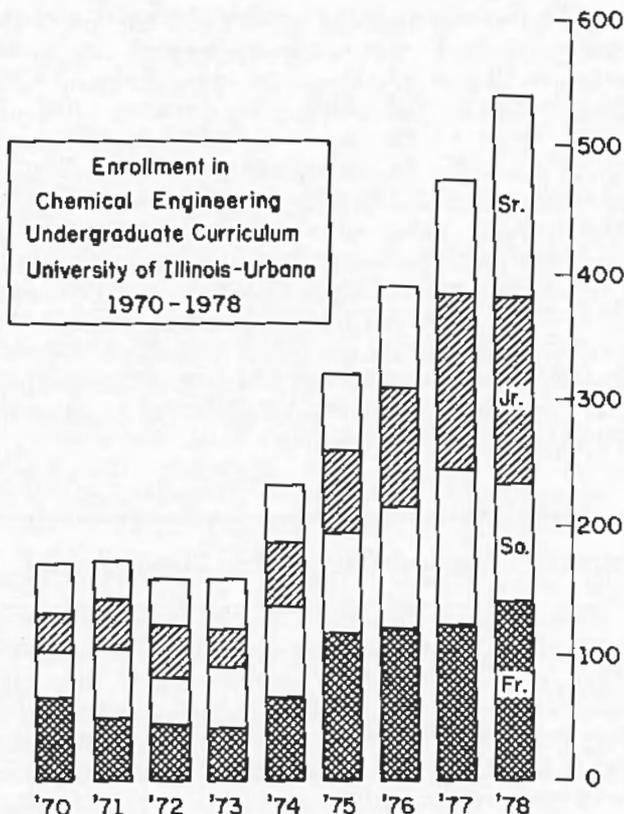
The Explosion in Chemical Engineering Enrollments

No one predicted the sudden popularity of chemical engineering which began in 1973. That was the year of the OPEC oil embargo. It coincided with ever more stringent pollution regulations throughout all industry by the Environmental Protection Agency. These two factors created a sudden, massive imbalance in the supply and demand situation for chemical engineers.

The chart on page 8 shows that the production of B.S. chemical engineers at the University of Illinois was fairly level up to 1973. The undergraduate enrollment was 159 in 1973. It doubled to 322 by 1975. It tripled to 475 by 1977. It was 540 by the fall semester of 1978. A similar though smaller change has occurred across the country for which the undergraduate enrollments have doubled. Over 7,500 freshmen are now enrolled in chemical engineering in the United States. All four undergraduate classes presently total 30,800. The unprecedented magnitude of these numbers comes into perspective when one realizes that the total membership of the American Institute of Chemical Engineers is only 40,011.

Chemical engineers are the only engineers with an in-depth training in chemistry. The curriculum at the University of Illinois contains thirty-two hours of chemistry. This is 25 percent of the four-year course load, and many students elect to take even more. This chemical background is needed when one wants to implement any of the proposed methods for making hydrocarbon gases and liquids from coal. These gases and liquids are valuable not only as fuels but also as feed stocks for the chemical process industries.

Polluting industries wish to become nonpolluters. They are hiring chemical engineers in large numbers. One prevents pollution by separating the objec-



tionable components from discharge streams. This involves one or more separation techniques. Some branches of engineering include mechanical methods of separation, but chemical engineering includes chemical methods as well. In addition, special diffusional techniques such as distillation and extraction have always been the province of chemical engineers.

A number of actions by the Department of Chemical Engineering have made it possible for the faculty to handle the triple increase in its majors. Two new permanent faculty arrived in January 1978 as assistant professors. Joseph A. Shaeiwitz (B.S., University of Delaware; Ph.D. Carnegie-Mellon University) is active in teaching and in starting a program of research on tertiary oil recovery. Richard I. Masel (B.S., Drexel; Ph.D., University of California, Berkeley) is teaching and also beginning research on catalysis and surface phenomena.

Temporary faculty have helped greatly. Visiting Professors D. B. Scully from Wales and Philip Sunderland from England were on hand during 1977-78. William Abraham of Iowa State University is present for 1978-79. Since 1973 a series of nine temporary instructors have provided help, each

serving one or two semesters. The number of teaching assistants has been tripled, thus maintaining some reasonable amount of personal attention to the undergraduates.

A great contribution to our teaching has come from PLATO. This is the computer-aided educational method which was applied previously by Professor Stan Smith in the Department of Chemistry. It has proved to be very effective for certain chemistry courses and promises to be equally fruitful in chemical engineering. During the last several years, Professor C. A. Eckert and associates in chemical engineering have developed a complete set of PLATO lessons for stoichiometry. Last year over 200 sophomores learned stoichiometry from PLATO. The machine serves as a private consultant to each student. This method makes it possible for one professor to handle huge sections in a problem-solving course. The course in chemical engineering thermodynamics is being adapted to PLATO also. The fruitful results at Illinois will probably lead to the adoption of the PLATO system for chemical engineering instruction at other schools.

What will be the future enrollments in chemical engineering? Can industry continue to absorb the new numbers of seniors — triple those of five years ago? At present the staff and facilities in chemical engineering are clearly overloaded. The department is proceeding in a cautious manner. Permanent staff are being added slowly so as to avoid the painful kind of overshoot which occurred in aeronautical engineering a few years ago. The brakes have been applied lightly by raising the minimum grade-point average requirement. Transfer students must have at least a B average to get into the curriculum. If the record high level of enrollment persists or continues to grow, it will become necessary to add personnel and staff and construct a new wing to the building.

Organic Chemistry at Illinois

The last overview of organic chemistry at the University of Illinois to appear in this *Alumni Newsletter* was nine years ago, shortly after the old Department of Chemistry and Chemical Engineering became the new School of Chemical Sciences and the old Organic Division was merged into the new Department of Chemistry. In spite of the change in organization, however, the commitment to having a strong program in organic chemistry that carries on the traditions of Professors Adams, Fuson, and Marvel remains.

The organic faculty remains approximately the same in size as in 1970. Professor Harold Snyder retired on December 31, 1975, and a symposium by his former students was held in his honor in April of 1976. Recent additions to the staff include Professor Gary Schuster, who arrived in July, 1975, and Professor A. J. Arduengo, who joined us in September, 1977. In addition, Professor Iain Paul became a member of the organic staff in 1974. Continuing

organic staff in addition to the above are Professors Douglas Applequist, Peter Beak, Robert Coates, David Curtin, John Katzenellenbogen, Nelson Leonard, J. C. Martin, William Pirkle, Kenneth Rinehart, and Stanley Smith. Three of the staff members have other appointments as well: Leonard in biochemistry, Paul in biophysical chemistry, and Rinehart in analytical and biophysical chemistry.

The organic staff continues to take pride in its undergraduate teaching. Special note should be taken of the efforts of Professors Katzenellenbogen, Paul, and Pirkle in preparing color TV tapes for use in the biologically oriented sections of general chemistry (Chemistry 102), as well as Professor Applequist's receipt in 1976 of the school's Award for Excellence in Teaching sponsored by the Eastman Kodak and DuPont Companies. The University of Illinois has been generally recognized as being in the forefront of computer-based education with its PLATO system and the organic chemistry portion of that system is due to Professor Smith, who has programmed beginning organic and qualitative organic chemistry for PLATO use at Illinois and elsewhere. More traditional approaches to undergraduate courses are represented in the textbooks by Professors Curtin and Rinehart (Shriner, Fuson, and Curtin, *The Systematic Identification of Organic Compounds*, 6th ed.; Depuy and Rinehart, *Organic Chemistry*, 2nd ed.; Rinehart, *Oxidation and Reduction of Organic Compounds*).

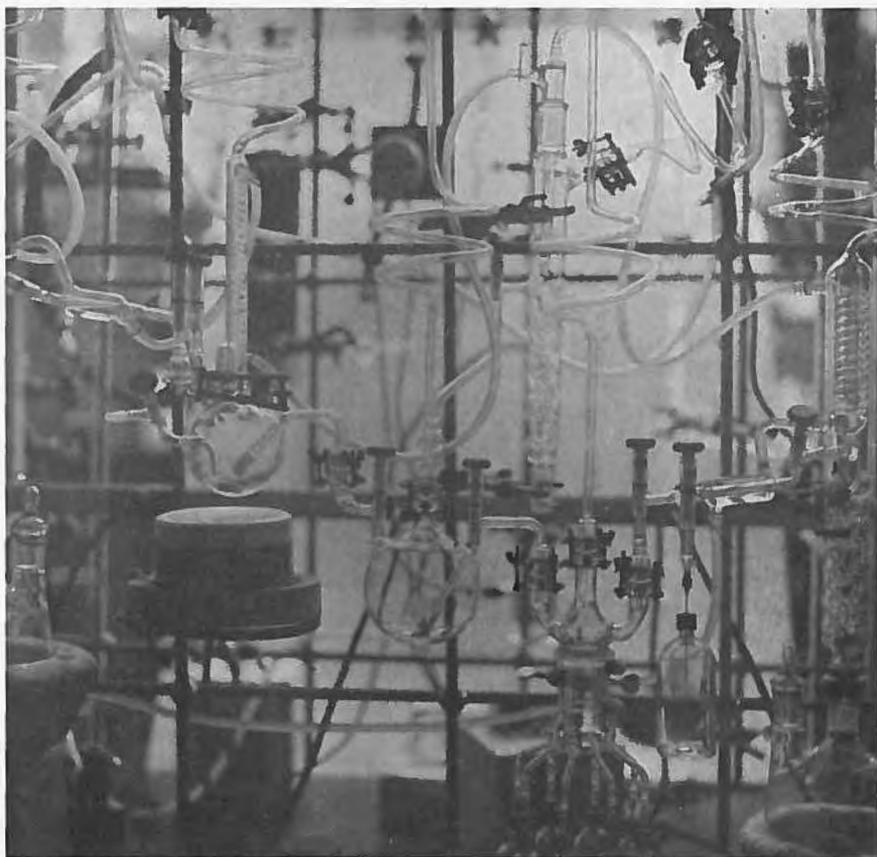
The graduate curriculum in organic chemistry has just undergone an important change, to take effect in September, 1979. In recognition of the general importance of three areas of organic chemistry — structure, physical organic, and synthesis — courses in each of these fields (Chemistry 430, 431, and 432, respectively) will be required of organic majors. In addition, organic students normally take or audit one or more organic special topics courses. In recent years these have included: terpenes, marine natural products, biosynthesis, photochemistry, molecular orbital theory, solid state chemistry, synthesis, free radicals, nucleotides, and industrial chemistry. For two of the past three years, Professor Beak has organized courses on industrial organic chemistry, enlisting the assistance of visiting industrial chemists lecturing on their specialities.

As noted in the preceding paragraph, the number of organic staff members has remained essentially constant during the past nine years. This is also true of the number of organic graduate students, who now number 115, and of organic postdoctorates, who number 21.

As always, in a research-oriented department like ours, the problems under study by individual staff members establish its atmosphere. In general, these interests divide along physical organic and bioorganic lines, with synthesis a third major interest. Our two newest staff members, Professors Schuster and Arduengo, fall into the first group. Professor Schuster has already established an international reputation in the area of chemiluminescence, developing a formulation of the chemically initiated electron exchange luminescence (CIEEL) pathway for a variety of peroxides, including firefly and bacterial luciferins. Professor Arduengo has interests in quantum theory and its appli-

cation to novel organic structures, such as fluxional molecules and those containing hypervalent carbon. He is also one of our organic computer experts, an interest shared with, among others, Professors Smith and Curtin.

We have already noted Professor Smith's development of PLATO as a teaching tool. His other current interests include new applications of computer graphics and stopped flow spectral studies of organometallic reactions. In recent years, Professor Curtin has joined with Professor Paul in developing our understanding of organic reactions taking place in the solid state, including reactions of organic crystals with gases. Professor Paul, our resident X-ray crystallographer, also has interests in the structures of natural products, particularly those of antibiotics and ionophores. Professor Applequist maintains an interest in small-ring systems and their reactions as well as reactions of bridged bicyclic rings.



Bench set-up in organic research laboratory.

The interests of Professor Martin are centered on the chemistry and synthetic utility of organic compounds containing heteroatoms of unusual valence. Most extensively studied have been the tetravalent sulfur compounds, especially the dialkoxysulfuranes, and compounds containing hexavalent sulfur, tri- and pentavalent iodine, 4-coordinate phosphorus and 5-coordinate silicon have also been described. Professor Pirkle's principal research continues to involve stereochemistry. He has recently developed the methodology for high pressure liquid chromatographic separation of enantiomers and diastereomers and is continuing his classical studies on the selective solvation of enantiomers as a tool for assigning enantiomeric purity.

Professor Beak's interests are in the development of synthetically useful organic reactions, such as *ortho*-lithiation and use of dipole-stabilized anions, in gaining understanding of the effect of molecular environment on the structure-stability relationships of protomeric isomers, and in the reactivity of the latter systems. Professor Coates' research is mainly concerned with synthetic methodology, synthesis and biosynthesis of terpenoid natural products, and carbonium ion rearrangements of strained ring compounds. Investigations on the stereochemistry and mechanism of action of cyclase enzymes involved in the biosynthesis of polycyclic diterpenes represents a new direction for the Coates group. The application of 1'-aza-Claisen rearrangements to C-C bond formation in the synthesis of aromatic and heterocyclic compounds, among others, is under study.

Professor Leonard's interests center on bio-organic chemistry and include the synthesis of dimensional probes of enzyme binding sites for purine nucleotides and the determination of their comparative biological activities. His research group is also involved in the synthesis of fluorescent probes of nucleic acids and coenzymes and in the synthesis of photoaffinity-labeled plant hormones, specifically of cell-growth and cell-division factors. Professor Rinehart's main research interests are in structure and biosynthesis of biologically active natural products and structure-activity relationships in these compounds. Structural efforts, directed toward antibiotics, especially peptides, and toward compounds from sponges, tunicates, algae, and other marine sources, often require the development of new mass spectrometric techniques. Biosynthetic studies of antibiotics are carried out with radioactive and stable isotopes, as well as with mutant strains of microorganisms and cell-free systems. Professor Katzenellenbogen's research is in two areas — the synthesis of natural products, especially isoprenoid compounds and insect juvenile hormone, and the study of steroid binding at the uterine receptor site. The latter studies involve preparation of radioactive steroids with photoaffinity labels for marking the receptor protein.

As is apparent from the above brief descriptions of individual professors' interests, research for organic chemists at the University of Illinois is a very broad subject, impinging on disciplines well outside those of traditional organic chemistry — from computer science to marine science, from medicinal chemistry to biochemistry, microbiology, and physiology. We noted above that several staff members have joint appointments. Others have

active collaborations with scientists in other departments at Urbana or elsewhere.

In the past nine years, the facilities for research in organic chemistry have been greatly improved. The school's mass spectrometry laboratory is generally regarded as one of the best equipped in the world, with instrumentation for field desorption, high resolution, chemical ionization and gas chromatographic mass spectrometry, completely interfaced for data reduction. The molecular spectroscopy laboratory has Fourier transform nmr spectrometers for both proton (220 MHz) and carbon-13 spectra and an outstanding complement of routine nmr spectrometers and infrared and ultraviolet spectrophotometers. Three years ago, the X-ray crystallographic laboratory obtained an additional computer-controlled diffractometer and a moderate-sized computer dedicated only to crystallographic calculations. The school's computer center has recently been improved by the installation of a VAX-11 computer system, while our newest school facility is a central laser laboratory.

Both our organic staff and alumni continue to garner awards and recognitions, as noted regularly in this *Alumni Newsletter*. A noncomprehensive list for the staff would include the Medal for Creative Research in Synthetic Organic Chemistry of the Synthetic Organic Chemical Manufacturers Association (Leonard); plenary lectureships at the National Organic Symposium (Martin); and the International Union of Pure and Applied Chemistry's Natural Products Symposium (Rinehart); and numerous name university lectureships or visiting professorships (Leonard, Rinehart, Martin, Katzenellenbogen, Beak). During the past nine years five of our organic staff (Coates, Katzenellenbogen, Paul, Pirkle, Schuster) have held Alfred P. Sloan Foundation Fellowships.

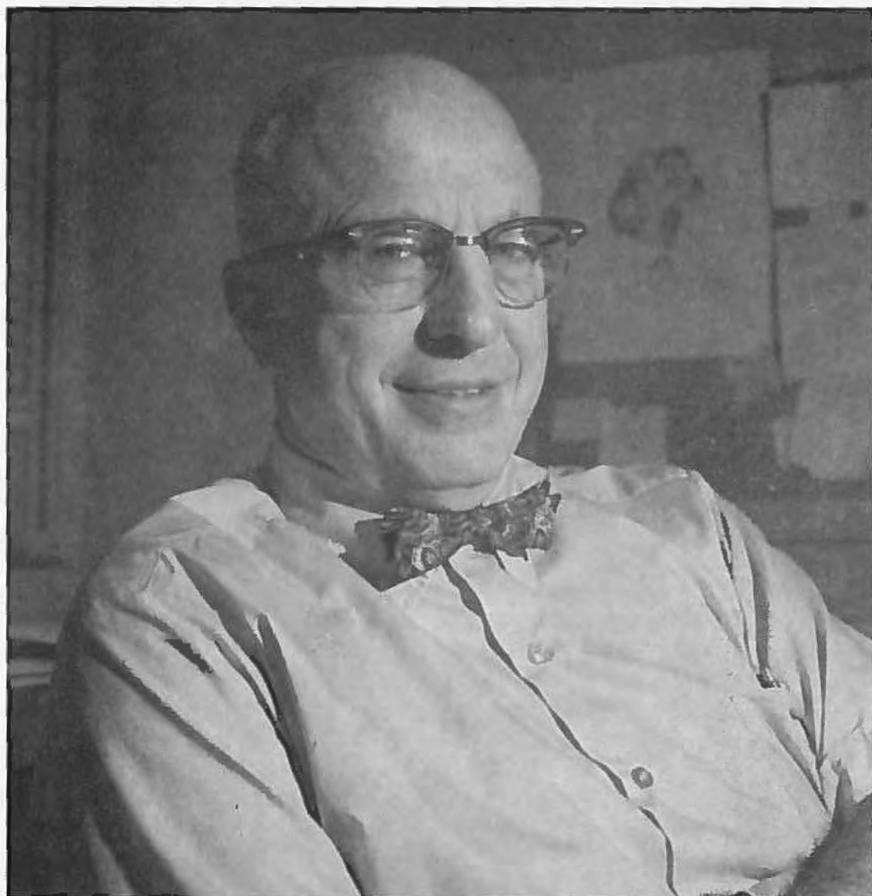
Among our Ph.D. alumni, an even more incomplete list would include the Perkin Medal of the Society of Chemical Industry (Dr. Theodore L. Cairns); the Chemical Society Medal of the Society of Chemistry and Industry (Dr. William F. Lycan); the ACS Award for Creative Work in Synthetic Organic Chemistry (Dr. Herbert O. House); the Kuebler Award of Alpha Chi Sigma (Dr. Marvel); the Award for Excellence in Teaching of the Manufacturing Chemists Association (Dr. Leallyn B. Clapp); an honorary Sc.D. from the University of Illinois (Dr. Herbert E. Carter); the Illinois Institute of Chemists Award (Dr. Roy H. Bible); the ACS St. Louis Award (Dr. A. John Speziale); and the Oklahoma Chemist Award (Dr. K. Darrell Berlin). Our alumni also continue to include a reasonable selection of new presidents (American Chemical Society, Dr. William J. Bailey; University of Arizona, Dr. John P. Schaefer; Rohm and Haas Co., Dr. Donald L. Felley).

As noted above, organic chemistry at Illinois allows a high degree of diversity and our organic alumni have won prizes over a broad spectrum including the Bailey Award of the American Oil Chemists Society (Dr. Carter); the ACS Award in Inorganic Chemistry (Dr. James P. Collman); the ACS Award in Polymer Chemistry (Dr. Bailey); the ACS Award for Outstanding Contributions to Agricultural and Food Research (Dr. Albert P.

Elder); and the International Award in Plastics Science and Engineering of the Society of Plastics Engineers (Dr. Alan S. Hay).

Our happy conclusion is that organic chemistry at the University of Illinois is an active, exciting area of research and teaching.

Michelson-Morley Award to Professor Drickamer



H. G. Drickamer

Dr. Harry G. Drickamer, professor of chemical engineering and physical chemistry, has received the 1978 Michelson-Morley Award of Case Western Reserve University. The award is presented in recognition of outstanding

achievement by a scientist or an engineer. Drickamer was cited for the development and use of very high pressure for the characterization of electronic states, for the critical testing of theory, and for effecting transitions and chemical changes. The award carries with it a prize of \$5,000. Nominations for this award are obtained from a wide-ranging pool of corporate executives and university presidents. The award was started in 1963 and since then has been presented ten times to such notables as J. H. Van Vleck, E. H. Land, J. Bardeen, C. H. Townes, and J. D. Roberts.

Awards and Honors to Other Faculty Members



G. P. Haight



E. Oldfield



H. Malmstadt

Professor Gilbert P. Haight, who is in charge of the program in general chemistry at the Urbana-Champaign campus, has been selected for the 1979 American Chemical Society Award in Chemical Education, sponsored by the Union Carbide Corporation. The award consists of a certificate and \$2,000, plus traveling expenses to the spring meeting of the society in Honolulu, where the award is to be made. Of the twenty-three times that this award has been given it has been won five times by Illinois chemists.

Professor Eric Oldfield was awarded the Meldola Medal of the Royal Institute of Chemistry in 1978 in recognition of his work on the nuclear magnetic resonance spectroscopy of biochemical systems. The award is named after a former president of the society and is awarded to recognize the most meritorious chemical work of the year by a British subject not over thirty years old.

Professor Howard Malmstadt was presented the Outstanding Analytical Chemist Award of the Pittsburgh Society of Analytical Chemists. He is the first recipient.

Sloan Fellowships for Basic Research have been awarded to four young staff members of the school. The awards are to stimulate advances in fundamental research by young faculty scientists at a stage when government sup-

port is difficult to obtain. No formal research proposal is required, and the fellows are free to shift the direction of their research at any time. The recipients are **Clifford E. Dykstra**, a theoretical chemist doing research on electronic structure, **Robert B. Gennis**, a biophysical chemist studying protein-lipid interactions, **Eric Oldfield**, a physical chemist doing research on applications of high-resolution nuclear magnetic resonance spectroscopy, and **John R. Shapley**, an inorganic chemist studying the stereochemistry of complex inorganic compounds.

Professors **I. C. Gunsalus** and **H. S. Gutowsky** have been elected to Honorary Membership in Phi Lambda Upsilon. Professor **Nelson Leonard** has been chosen for Honorary Membership in the Illinois State Academy of Science.

Awards and Honors to Alumni and Former Staff



C. G. Overberger



E. C. Horning



S. Kirschner

Dr. **Charles G. Overberger** (Ph.D., 1944) has been selected for the Charles Lathrop Parsons Award of the American Chemical Society for outstanding public service. He has been active in the International Union of Pure and Applied Chemistry. He was president of the American Chemical Society in 1967, and in that capacity, he organized the first international meeting of presidents of chemical societies. He is currently vice-president for research at the University of Michigan.

Dr. **Evan C. Horning** (Ph.D., 1940) has won the 1979 American Chemical Society Award in Chromatography. This award is sponsored by Supelco, Inc. Dr. Horning is being honored primarily for his studies in the use of chromatography in the analysis of such compounds as steroids, alkaloids, and drugs. He is director of the Institute for Lipid Research, and professor of chemistry at Baylor College of Medicine.

The **J. Heyrovsky Medal**, named in honor of the inventor of the polarograph, has been awarded to Professor **Stanley Kirschner** (Ph.D., 1954) of

Wayne State University and Professor **John C. Bailar, Jr.**, of our faculty by the Czechoslovakian Academy of Science. These medals, "for service to chemical science," were presented during the XIX International Conference on Coordination Chemistry, which met in Prague in September. Four others shared the honor — two from Russia, one from Poland, and one from Austria. Fewer than twenty such medals have been given, and none, before this, to foreigners.



J. C. Bailar, Jr.



J. H. Sinfelt



K. D. Timmerhaus

The International Prize for New Materials has been awarded by the American Physical Society to Dr. **John H. Sinfelt** (Ph.D., 1954) of the Exxon Research and Engineering Company. He was honored for his work in heterogeneous catalysis which has led to the synthesis and characterization of a new class of catalytic materials.

Klaus D. Timmerhaus (B.S., Ch.E., 1948; M.S., 1949; Ph.D., 1952) has received the 1978 Founder's Award for Professional Achievement of the American Institute of Chemical Engineers. He is a former president of that organization, and in 1968, received the Alpha Chi Sigma Award for his work in cryogenics.

Dr. **T. E. Larson** (B.S., Ch.E., 1932; Ph.D., 1937), who has recently retired as assistant chief and head of the Chemistry Section of the Illinois State Water Survey, has been elected to membership in the National Academy of Engineering. Also elected to membership in the academy was Professor **John A. Quinn** (B.S., 1954; Staff 1958-70) who is currently a professor of chemical engineering at the University of Pennsylvania.

On January 1, **Gardner Stacy** (Ph.D., 1946) became president of the American Chemical Society, **William J. Bailey** (Ph.D., 1946) became chairman of the board, and **Clayton F. Callis** (M.S., 1946; Ph.D., 1948) began his second term as a member of the board. Stacy is professor of chemistry at Washington State University, Bailey occupies a similar position at the University of Maryland, and Callis is director of technical planning and evaluation for the Monsanto Company.



T. E. Larson



D. H. Busch



G. Rechnitz

Dr. Daryle H. Busch (Ph.D., 1954) has received the 1978 Award of the Columbus Section of the American Chemical Society. The award recognizes his research in the field of macrocyclic ligands and their complexes. Busch, professor of chemistry at Ohio State University, was also honored by being chosen to give the Bailar lecture at Illinois in December, 1978.

Dr. Gary Rechnitz (Ph.D., 1961), Unidel Professor of Chemistry at the University of Delaware, has received the Van Slyke Medal, which is sponsored by the New York Metropolitan Section of the American Association for Clinical Chemistry. He was recognized for his contributions to bio-analytical chemistry, especially in connection with membrane electrode systems.

Dr. Dean F. Martin (Staff, 1959-1964), now professor of chemistry and affiliate professor of biology at the University of South Florida in Tampa, has received the F. J. Zimmerman Award in Environmental Science, sponsored by the Central Wisconsin Section of the American Chemical Society and Zimpro, Inc. The award is given in recognition and encouragement of research on the protection of the environment. Martin has published a large number of papers on the red tide and the encroachment of aquatic weeds into the lakes and streams of Florida.

The New York Section of the American Chemical Society has chosen Arthur D. F. Toy for the 1978 Award for Outstanding Service to the Section. Dr. Toy is a triple alumnus of the University (B.S., 1939; M.S., 1940; Ph.D., 1942). He is director of the Eastern Research Center of the Stauffer Chemical Company at Dobbs Ferry, New York.

An endowed chair in organic chemistry has been established at Notre Dame University honoring Dr. Ervin C. Kleiderer (B.S., 1928; M.S., 1930; Ph.D., 1933) and his wife, Dr. Margaret Pezold Kleiderer (Ph.D., 1934). Until his retirement in 1964, Ervin Kleiderer was director of research, development, and control at Eli Lilly and Co., in Indianapolis. He died in 1976, and his wife in 1977. Both of them had been active in the affairs of Notre Dame University.

On October 27, George Washington University dedicated the Naeser Memorial Lecture Hall in honor of Charles R. Naeser (M.S., 1933; Ph.D.,

1935). Professor Naeser taught chemistry at George Washington for forty-one years, retiring two years ago.

Dr. **Thomas W. Mastin** (Ph.D., 1942) and Dr. **Palmer Dyal** (Ph.D., 1959) are recent recipients of honorary doctors degrees. Mastin, who is chairperson of the board and chief executive officer of the Lubrizol Corporation in Cleveland, was honored by Heidelberg College in Tiffin, Ohio, and Dyal, a NASA scientist, by his alma mater, Coe College in Cedar Rapids, Iowa.

Undergraduate Honors and Awards

Freshman Scholarships of \$500 each were awarded to ten very promising students entering the University in August 1978 and planning a professional career in chemistry. Four of them are funded from the income of the Roger Adams Fund, four by a grant from the Monsanto Company, and two by a grant from the Eastman Kodak Company. The recipients were:

Peter D. Antosh, Park Ridge (Monsanto Company)
Calvin Charles, Rockford (Eastman Kodak Company)
Sila F. Dikici, Ottawa (Roger Adams Fund)
Bernard F. Egan, Thornton (Roger Adams Fund)
William E. Finch, Rockford (Monsanto Company)
Kathleen L. Grant, Normal (Roger Adams Fund)
Donna J. Mateski, Niles (Monsanto Company)
Benjamin R. Pflederer, Morton (Monsanto Company)
Duane E. Westerberg, Park Forest (Roger Adams Fund)
Susan L. Wrightson, Milmine (Eastman Kodak Company)

Agnes Sloan Larson Awards of \$200 each were given in 1977-78 to the five sophomores in the School of Chemical Sciences who achieved the highest grade-point averages in their freshman year. These awards are made possible by a grant by Dr. Arthur W. Sloan (B.S., 1922) in honor of his sister, Mrs. Agnes Sloan Larson (B.S., 1919), who was a chemistry major and valedictorian of her class. The students who won these awards were:

Steven L. Bender, Georgetown
Joseph S. Helfand, Springfield
Wayne E. Henderson, Hinsdale
Steve J. Komie, Glenview
Wendy A. Olson, Lisle

The **Elliott Ritchie Alexander Award**, sponsored by Phi Lambda Upsilon, honorary chemical fraternity, is given to the student in biochemistry, chemistry, or chemical engineering who in the first two years at the University has attained the highest scholastic average. The award is a book of the student's choice. The student's name is also inscribed on a plaque which is displayed

in the Chemistry Library. The 1978 award went to Kenneth G. Miller of Champaign.

The **American Institute of Chemical Engineering (A.I.Ch.E.) Award**, which consists of a certificate, a two-year subscription to the *A.I.Ch.E. Journal*, and a pin, goes to the junior in chemical engineering who has attained the highest grade-point average during the first two years. The 1978 winner was Ronald R. Lagnado of Glenview.

The **Reynold Clayton Fuson Award** for 1978 went to Steven J. Catani of Brunswick, Ohio, and John C. Edwards of East Alton. This prize is given to the students who, through the first semester of the senior year, have made the most outstanding academic improvement.

The **Worth Huff Rodebush Award** is a monetary award which is given to the most able seniors who have demonstrated their intention to make a career in chemistry, biochemistry, or chemical engineering. The winners in 1978 were Joel R. Carbow of Park Forest and Thomas J. Tulig of Chicago.

The **Merck Award** consists of a copy of the *Merck Index*. Three such awards are made each year — one each to three outstanding seniors in the chemistry, chemical engineering, and biochemistry curricula. The 1978 awards went to Paul S. Hummel of Champaign, Paul A. Seitz of Libertyville, and Karl A. Seibert of Alton.

The **Phi Lambda Upsilon Cup** stands in a case in the hall of Chemistry Annex. Each year the name of the sophomore who has the highest scholastic average among the students in the curricula of biochemistry, chemistry, and chemical engineering is engraved on the cup. In 1978 five students had the same highest average: Steven L. Bender of Georgetown, Everett Farr of Waukegan, Wayne E. Henderson of Hinsdale, Susan Neder of Downers Grove, and Wendy A. Olson of Lisle.

The **Kendall Award** went to Gary A. Peltz of Chicago. This is a monetary award given each year to a student in biochemistry, chemistry, or chemical engineering who is a member of Phi Lambda Upsilon and shows the greatest promise in his or her chosen field.

The **Chemical Industries Council Scholarship** is a monetary award of \$750 given each year in statewide competition. The School of Chemical Sciences nominates junior level chemists, biochemists, and/or chemical engineers for outstanding curricular and extracurricular accomplishments and need. The 1978 winner was Randall A. DeRuiter of Frankfort.

The **Donald E. Eisele Memorial Award** (Alpha Chi Sigma) is a cash award given annually to seniors in chemical engineering for scholastic achievement and service to their profession. In 1978, the winners were Duane A. Goetsch of Frankfort and Donald A. Strohacker of Alsip.

Freshman CRC Handbook Award. A copy of the *Handbook of Chemistry and Physics* is presented each year to the outstanding student in freshman chemistry. The 1978 winner is Surandy C. Sanders of Chicago.

A new award program in 1978 was a scholarship program supported by the Eastman Kodak Company. Three-year scholarships are awarded to

sophomores on the basis of academic achievement and promise. Kodak Scholars chosen in 1978 were Joseph D. Augspurger of Chenoa, Paul W. Jahn of St. Charles, and Pauline Ting of Urbana.

School of Chemical Sciences Funds

The alumni and friends of the School of Chemical Sciences have shown their loyalty in many ways, not the least of which has been through financial contributions to various funds which support the work of the school. Of special interest are the Roger Adams Fund, the Illini Chemists Funds, the John and Florence Bailar Fund, the R. C. Fuson Fund, the W. H. Rodebush Fund, the L. F. Audrieth Fund, and the recently established Carl Shipp Marvel Fund. Alumni contributions to these funds have totalled over \$15,000 during the past year.

The purposes of these funds are many and varied, but so far they have been used primarily to support undergraduate scholarships and awards (the Adams, Fuson, Rodebush, and Audrieth funds), special lectures (the Bailar and Fuson funds), and the publication of the annual *Alumni Newsletter* (the Illini Chemists Fund). The Marvel Fund, which was established last spring through the gift of \$10,000 from the DuPont Company, will be used to support education and research in organic chemistry. To date, additional contributions from over eighty friends, former students, and colleagues of Speed Marvel have brought the fund total to over \$15,000.

We hope that our alumni and friends will continue to help us out in these activities. To aid in identifying and sending contributions, we have enclosed a form and a return envelope for your use. Checks should be made payable to the University of Illinois Foundation and sent to the School of Chemical Sciences, or to the foundation directly, if you prefer. Be sure to indicate to which fund(s) you want your gift to go.

The form also has space on it that can be used to report address changes or to provide comments on your reactions to the *Alumni Newsletter* or about your professional activities. We try to maintain an up-to-date list of company and university affiliations and we are particularly interested in learning about the current positions and employers of any graduates, postdoctorates, and former faculty who aren't on our mailing list.

Alumni at academic institutions have been especially helpful to us in our efforts to recruit top-flight graduate students and postdoctorates. We thank them warmly! Also, lists of alumni currently employed by different companies have been an impressive argument in our efforts to enlist grants from the chemical industry.

New Faculty and Staff



New staff members in the School of Chemical Sciences. Left to right, Steven Zumdahl, James Avery, Kelsey Cook, Kenneth Suslick, and Thomas Rauchfuss.

Recently, the Department of Chemistry has welcomed five new staff members — two assistant professors each in inorganic and analytical chemistry and an associate director of the general chemistry program.

Dr. **Thomas Rauchfuss** joined the staff in February 1978, after a post-doctoral stay of two years at the Australian National University in Canberra. He did his undergraduate work at the University of Puget Sound (B.S., 1971) and his graduate work at Washington State University (Ph.D., 1975). His research interests lie chiefly in the area of preparative transition metal coordination chemistry.

Dr. **Kenneth Suslick** followed undergraduate work at the California Institute of Technology (B.S., 1974) with graduate work at Stanford University (Ph.D., 1978), where his thesis work was directed by Professor James Coll-

man (Ph.D., Illinois, 1958). Dr. Suslick is working in the bioinorganic and physical inorganic areas.

Dr. Kelsey Cook is a graduate of Colorado College (B.A., 1974) and of the University of Wisconsin (Ph.D., 1978). He is doing research in the spectroscopy of surfactant systems.

Dr. James Avery is one of our own, having taken his doctor's degree at the University of Illinois this year, under the direction of Professor Howard Malmstadt. His undergraduate work was done at Michigan State University (B.S., 1972). His field of research is the development of automated instruments for chemical analysis.

Dr. Steven Zumdahl has returned to us as associate director of the general chemistry program and lecturer. He is a graduate of Wheaton College (B.S., 1964) and of the University of Illinois (Ph.D., 1968). He was a member of the faculty of the University of Colorado until 1974, when he returned here on a two-year appointment. From 1976 until 1978 he taught at Parkland College in Champaign.

New Ph.D.'s from the School of Chemical Sciences

Ph.D. Recipients in January, 1978

Baillargeon, Maurice Joseph Organic D. Y. Curtin
Eli Lilly & Co., Lafayette, Indiana
"A study of the Organic Solid State Properties of *p*-Benzoquinone Monoxime Salts"

Breese, John Allen Inorganic R. S. Drago
Procter & Gamble, Cincinnati, Ohio
"Part One: Binding and Activation of Molecular Oxygen by Cobalt Complexes and Part Two: Bimetallomers of Vanadyl, Copper and Cobalt"

Chamberlain, Craig Stanley Inorganic R. S. Drago
Central Research Labs, 3M Center, St. Paul, Minnesota
"Reactivity of Transition Metal Complexes Using Gas Liquid Chromatography"

Graves, Charles Wilbur Chemical Engineering C. A. Eckert
Phillips Petroleum Company, Bartlesville, Oklahoma
"Liquid Metals as Process Solvents: Design Techniques for Magnesium Oxide Reduction"

Hodges, Keith David Inorganic E. K. Barefield
Milliken Research Corp., Spartanburg, South Carolina

"Iron Complexes of 1,4,8,11-Tetramethyl-1,4,8,11-Tetraazacyclotetradecane and Nickel(II) Complexes of Penta- and Octamines Derived from the Fourteen Membered Macrocyclic Tetramine 1,4,8-Trimethyl-1,4,8,11-Tetraazacyclotetradecane"

Keister, Jerome Baird Inorganic J. R. Shapley
Exxon Company, Linden, New Jersey

"Reactions of the Unsaturated Cluster Dihydridodecacarbonyltriosmium with Lewis Bases and Alkenes"

Martin, Steven Jaye Analytical H. V. Malmstadt
Dow Chemical USA, Midland, Michigan

"Critical Evaluation of Some Atom Reservoirs for Atomic Fluorescence Spectroscopy"

Rubenstein, H. Mitchell Organic K. L. Rinehart
School of Pharmacy, University of Wisconsin, Madison

"Biosynthetic and Mutasynthetic Studies of Neomycin"

Toscano, William A., Jr. Biochemistry I. C. Gunsalus
Department of Pharmacology, University of Washington, Seattle, Wash.

"Purification and Properties of Electron Transfer Proteins from *Pseudomonas Aeruginosa*"

Ph.D. Recipients in May, 1978

Avery, James Paul Analytical H. V. Malmstadt
Department of Chemistry, University of Illinois, Urbana, Illinois

"Microprocessors in Analytical Chemistry: Applications to Analytical Spectrometry"

Chorn, Larry Gregg Chemical Engineering T. J. Hanratty
Research Center, Atlantic Richfield Petroleum Co., Plano, Texas

"An Experimental Study of Near-Wall Turbulence Properties in Highly Drag Reduced Pipe Flows of Pseudoplastic Polymer Solutions"

Covington, Johnny Braxton Organic Peter Beak
3M Center, St. Paul, Minnesota

"A Study of the Effect of Environment on the Position of Tautomeric Equilibria for 2-Hydroxypyridine-2-pyridone and Related Systems"

Emptage, Mark Henry Biochemistry J. M. Wood
Freshwater Biological Inst., University of Minnesota, Naverra, Minnesota

"Physical Studies of the C-Type Cytochromes from *Rhodospirillum Rubrum*"

- Gaul, John Henry, Jr. Inorganic R. S. Drago
Corporate Research, Dow Corning Corp., Midland, Michigan
"Polymer Bound Schiff Base Complexes"
- Glugla, Paul Gregory Chemical Engineering C. A. Eckert
Corporate Research & Development, General Electric Co., Schenectady, New
York
"The High Pressure Kinetics of a Halide Exchange Reaction"
- Hatzivramidis, Dimitrios T. Chemical Engineering T. J. Hanratty
Sibley School of Mech. & Aerospace Eng., Cornell Univ., Ithaca, New York
"Interpretation of the Flow in the Viscous Wall Region as a Driven Flow"
- Hoke, William Eugene Physical W. H. Flygare
Raytheon Research Division, Waltham, Massachusetts
"Transient Rotational Relaxation Studies and Fourier Transform Microwave
Spectroscopy"
- Jameson, David M. Biochemistry G. Weber
Departement de Physiologie, Humaine, Unite D'enseignement et de Recher-
che, Biomedicale, Paris, France
"Instrumental Refinements in Fluorescence Spectroscopy: Applications to
Protein Systems"
- Koszykowski, Michael Leo Chemical Physics R. A. Marcus
Sandia Laboratory, Livermore, California
"Semiclassical Studies in Molecular Dynamics"
- Krottinger, David Louis Analytical H. V. Malmstadt
Continental Oil Company, Ponca City, Okla.
"Automated Clinical/Analytical Methodologies Developed for a Stopped-
Flow Spectrophotometric System"
- Lawson, Randy Joe Inorganic J. R. Shapley
Universal Oil Products Co., Des Plaines, Illinois
"Synthesis and Stereodynamics of Rhodium and Iridium Organometallic
Complexes"
- Leung, David Wai Hung Biochemistry J. M. Clark, Jr.
Department of Biochemistry, University of British Columbia, Vancouver,
Canada
"The Translation Initiation Site of Satellite Tobacco Necrosis Virus Ribo-
nucleic Acid"

Mann, Barbara Joyce Organic D. Y. Curtin
Housewife, Ashland, Wisconsin
"Thermal Solid State RXNS of *N*-Substituted *p*-Diaminoterephthalates"

Maurizi, Michael Robert Biochemistry R. Switzer
National Heart, Lung, and Blood Institute, Bethesda, Maryland
"Immunochemical Studies of the Inactivation and Synthesis of Aspartate
Transcarbamylase in *Bacillus Subtilis*"

McCracken, Michael Scott Analytical H. V. Malmstadt
Procter & Gamble Co., Miami Valley Laboratory, Cincinnati, Ohio
"Automated Reaction-Rate Methods for the Determination of Protein Nitro-
gen and Phosphorous"

Nickel, Gary Warren Organic D. E. Applequist
E. I. duPont de Nemours, Philadelphia, Pennsylvania
"Rearrangements of Spiropentyl Cations"

Olson, Keith Lesley Analytical K. L. Rinehart, Jr.
Analytical Chemistry Dept., General Motors Technical Center, Warren,
Mich.
"Improvements in Field Desorption Mass Spectrometry"

Peyayopanakul, Wanawan Chemical Engineering J. W. Westwater
Chemical Employment, Bangkok, Thailand
"Evaluation of the Unsteady-State Quenching Method for Determining
Boiling Curves"

Reich, Marvin Fred Organic J. A. Katzenellenbogen
National Institutes of Health, Bethesda, Maryland
"A Chemical Approach to the Study of the Juvenile Hormone Carrier Pro-
tein and a Specific Carboxylesterase from the Tobacco Hornworm, *Man-
duca Sexta*"

Thomas, Richard Woodbury Organic N. J. Leonard
American Cyanamid Company, Bound Brook, New Jersey
"Synthesis and Evaluation of Fluorescent Reagents for the Study of Nucleic
Acids and Proteins"

Ph.D. Recipients in October, 1978

Allison, Bruce Donald Organic S. G. Smith
Rose Huhnan Institute of Technology, Terre Haute, Indiana
"Kinetics and Mechanism of the Reactions of Lithium Reagents with Ke-
tones and Esters"

Bieksza, David Steven Inorganic D. N. Hendrickson
Chemistry Department, SUNY, Buffalo, New York
"Magnetic Exchange in Five-Coordinate Copper(II) Systems"

Boeder, Charles William Organic W. H. Pirkle
3M Center, St. Paul, Minnesota
"The Synthesis, Absolute Configuration, and Enantiomeric Purity of Chiral Allenes"

Brunk, Sheldon Dale Analytical H. V. Malmstadt
Department of Clinical Pathology, University of Oregon Health Sciences
Center, Portland, Oregon
"Enzyme Immunoassay Methodology: New Instrumental and Chemical Procedures for Serum Drug Assays"

DeFries, Timothy Hamacher Physical Jiri Jonas
Exxon Research & Engineering Company, Linden, New Jersey
"Pulsed NMR Studies of Water Under Extreme Conditions"

Deline, Vaughn Robert Analytical C. A. Evans, Jr.
Charles Evans & Associates, San Mateo, California
"Quantitative Aspects of Secondary Ion Mass Spectrometry"

Eaton, David Roth Analytical L. R. Faulkner
Monsanto Co., St. Louis, Missouri
"Analysis of Organic Thin Films"

Fan, Fu-Ren Analytical L. R. Faulkner
Department of Chemistry, University of Texas, Austin, Texas
"Rectifying Properties, Photovoltaic Effects, and Electrochemical Studies of Phthalocyanine Thin Films"

Felthouse, Timothy Roy Inorganic D. N. Hendrickson
Department of Chemistry, Texas A & M University, College Station, Texas
"Magnetic Exchange Interactions in Copper(II) Complexes Propagated by Extended Bridging Groups"

Fury, Michael Andrew Physical Jiri Jonas
IBM Components Division, East Fishkill, New York
"NMR Studies of Liquids and Disordered Solids at High Pressure"

Huss, Albin, Jr. Chemical Engineering C. A. Eckert
Mobil Research and Development Corporation, Paulsboro, New Jersey
"Studies of the Catalysis and Inhibition of the Oxidation of Aqueous Sulfur (IV) Solutions; Effects on Flue Gas Desulfurization Processes"

- Irwin, Robert Bruce Chemical Engineering C. A. Eckert
 Technical Center, Owens-Corning Fiberglass, Granville, Ohio
 "A Chemical Theory for the Thermodynamics of Highly Solvated Liquid
 Metal Mixtures"
- Korfmacher, Walter Averill Analytical D. F. S. Natusch
 Chemistry Division, NCTR, Jefferson, Arkansas
 "The Decomposition of Polycyclic Organic Matter Adsorbed on Coal Fly
 Ash"
- Lai, Shook Tsang Francis Analytical C. A. Evans, Jr.
 Department of Chemistry, University of Illinois, Urbana, Illinois
 "Electrohydrodynamic Ionization Mass Spectrometry"
- McCoy, David Daniel Chemical Engineering T. J. Hanratty
 Exxon Production Research Corporation, Buffalo Speedway, Houston, Texas
 "Droplet Mixing and Deposition in a Turbulent Flow"
- Mitchell, Dean James Chemical Engineering H. G. Drickauner
 Sandia Laboratories, Albuquerque, New Mexico
 "Photophysics of Organic Molecules at High Pressure"
- Moore,Carolynn Hinkle Chemical Education S. G. Smith
 Birmingham-Southern College, Birmingham, Alabama
 "Development and Evaluation of Techniques for Laboratory Use of Com-
 puter Aided Instruction"
- Morris, Jerry Lee, Jr. Analytical L. R. Faulkner
 Lockheed Palo Alto Research Laboratory, Palo Alto, California
 "A New Approach to the Theoretical and Experimental Treatment of Elec-
 trogenerated Chemiluminescence"
- O'Brien, Thomas Andrew Biophysical R. B. Gennis
 Department of Biochemistry, Harvard University, Cambridge, Massachusetts
 "Ligand-Binding Properties of *Escherichia coli* Pyruvate Oxidase"
- Pellin, Michael Joseph Physical K. J. Kaufmann
 Chemistry Division, Argonne National Lab, Argonne, Illinois
 "Picosecond Kinetics of Reaction Center Chlorophyll"
- Rinaldi, Peter LaCava Organic W. H. Pirkle
 Department of Chemistry, Florida State University, Tallahassee, Florida
 "Syntheses and Determinations of Absolute Configuration and Enantiomeric
 Composition of Chiral Oxaziridines and Epoxides"

- Schaefer, Helen Schwarz Physical P. E. Yankwich
Housewife, Tucson, Arizona
"Carbon-Thirteen Kinetic Isotope Effect Studies in the Oxidation of Formic
Acid/Formate Ion by Thallium(III) and Cobalt(III) Ions"
- Schiemann, Valeria Hales Physical Jiri Jonas
Engineering Research Center, Princeton, New Jersey
"Raman Studies of Relaxation Mechanisms in Dense Fluids: Hydrogen-
Bonded and Non-Interacting Systems"
- Schrock, Herbert L. Biophysical R. B. Gennis
Department of Biochemistry, Cornell University, Ithaca, New York
"Studies on the Lipid-Protein Interactions of Pyruvate Oxidase"
- Simmons, Mark James Analytical H. V. Malmstadt
Hahnemann Medical College & Hospital, Philadelphia, Pennsylvania
"Fluorescence Measurements on a Mini-disc Centrifugal Analyzer with a
Pulsed Nitrogen Laser Source"
- Simpson, Gregory D. Physical R. L. Belford
Silas Mason and Company, Amarillo, Texas
"Electron Paramagnetic Resonance Studies of Vanadium(IV) and Molyb-
denum(V) Systems. Part I: EPR Studies of Undiluted Single Crystals of
Two Vanadium(IV) Complexes. Part II: EPR Studies of Frozen Solution
of Two Molybdenum(V) Complex"
- Spillman, Harold Thomas Biochemistry L. P. Hager
Department of Microbiology, State University of New York, Stony Brook,
New York
"A Study of the Extraction and DNA Binding Properties of Simian Virus 40
Tumor Antigen"
- Stuntz, Gordon Frederick Inorganic G. D. Stucky
Exxon Research and Development, Baton Rouge, Louisiana
"Synthesis and Stereodynamics of Tetrairidiumdodecacarbonyl Derivatives"
- Tomkins, Bruce Allen Analytical D. F. S. Natusch
Oak Ridge National Laboratory, Oak Ridge, Tennessee
"The Formation and Analysis of Particulate Polycyclic Organic Matter"
- Tsotsis, Theodore Thomas Chemical Engineering R. A. Schmitz
Department of Chemical Engineering, University of Southern California,
Los Angeles, California
"Steady State and Stability Characteristics of Catalytic Arrays"

Williams, J. Fenton Biochemistry G. Weber
Perkin-Elmer Corporation, Norwalk, Connecticut
"A Study of Anisotropic Molecular Rotations by Differential Polarized Phase
Fluorometry"

Wong, Joseph Yue-oi Biochemistry R. L. Switzer
Department of Biochemistry, University of Illinois, Urbana, Illinois
"Clutamine Phosphoriboylsylpyrophosphate Amidotransferase from *Bacillus
subtilis*"

Yim, Calvin Wai-Kin Analytical L. R. Faulkner
Department of Chemical Engineering, MIT, Cambridge, Massachusetts
"Accurate Chemical Characterization by Fluorescence Spectrometry"

House, David Worth Organic W. H. Pirkle
Universal Oil Products Co., Des Plaines, Illinois
"Direct High Pressure Liquid Chromatographic Separation of Enantiomers
Using a Chiral Stationary Phase"

Elder, Robert Thomas Biochemistry O. C. Uhlenbeck
Department of Biochemistry, School of Medicine, Stanford University, Stan-
ford, California
"Organization of Transfer RNA Genes in *Drosophila*"



The first William C. Rose Lecture in biochemistry was given in Urbana on October 5, 1978 by Professor Minor J. Coon, head of the Department of Biochemistry at the University of Michigan. Dr. Coon, shown on the left above with Professor Rose, was one of Rose's students, taking his Ph.D. degree here in 1946. The lecture was entitled "Oxygen Activation in the Metabolism of Lipids, Drugs, and Carcinogens."

The William C. Rose lectureship was established and is administered by the Nutrition Foundation of New York and honors Professor Rose for his outstanding research and teaching. He is widely known for his fundamental studies of protein and amino acid metabolism. These led to his discovery of the amino acid threonine, which is indispensable in animal and human diets, and to the establishment of quantitative amino acid requirements in the diet. Professor Rose taught at the University from 1922 until his retirement in 1955. He still resides in Champaign.