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THE **NEWSLETTER** OF
THE UNIVERSITY OF WISCONSIN–MADISON

CHEMISTRY DEPARTMENT

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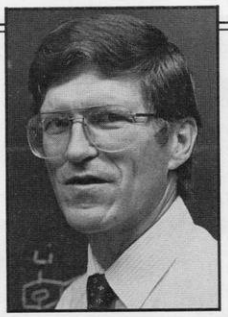
FROM THE CHAIRMAN



When I took on the Editorship of the *Badger Chemist* last year I had little idea of the magnitude of the job. I found that besides determining the content, writing some of the material, and assembling material submitted by other faculty, there is a complicated technical side to producing this publication, a set of activities in which I had no experience whatsoever. So I recruited Judy Jansen, who had assisted in the previous edition of the *Badger Chemist*, to help me out. Judy, who is journal editor at the UW Primate Center, got us through Volume 32 last year. This year Judy and I have taken another step, to the Instructional Media Development Center in the UW School of Education (diagonally across Mills and Johnson Streets) to Peter Manesis and his staff.

Pete has provided the technical expertise in production that we had lacked the previous year. In some ways that are obvious and in others not so obvious, the *Badger Chemist* has been changed. By controlling the format of BC more closely, the production process has been simplified and expedited with some savings. These savings have been put back into design and layout, although here I did impose some limitations on Pete's enthusiastic staff: *Badger Chemist* No. 33 should still look like a *Badger Chemist*.

The most notable change had been on my agenda for a year: with this issue we have included a color plate for the first time ever. We have also made substantive changes. One is the inclusion of an editorial (p. 24), which we hope will become a permanent feature in future editions. We have also included more information on recent PhD recipients, giving these new Badger Chemists additional acclaim for their work and providing an additional perspective of ongoing research in this department.

On another note: Although I am wary of making the *Badger Chemist* a fundraising instrument, we do need lots of help at this time. The escalation of costs to hire new faculty and acquire state-of-the-art equipment for our instructional program and for research is putting severe financial pressure on our department. I urge you to consider the University of Wisconsin among your charitable contributions. Especially, we would like to receive personal contributions to the *Badger Chemist* Fund. As I indicated in a letter mailed with the last BC, we are trying to build this fund to a level where its earnings can help underwrite seminars and provide fellowship support for our students. To present our needs to you, I have prepared a short document to be used in Chemistry Department fund raising. I have included this as an insert with this mailing and tried not to let fundraising intrude into the BC text. Right now, let me say only that we greatly appreciate your past donations and thank you in advance for any help you can provide.

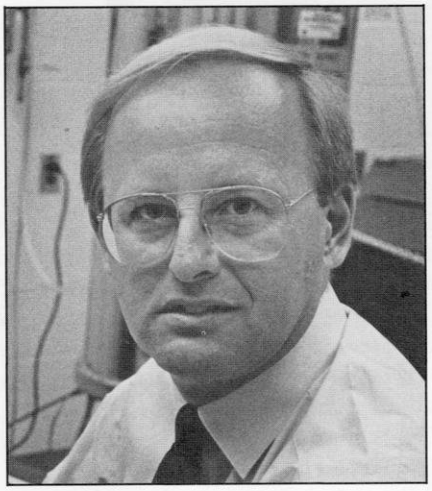
Paul Treichel

NEW FACULTY

THE MOST IMPORTANT NEWS from the UW Chemistry Department concerns faculty and staff. Over two years we have seen the addition of seven new faculty members, all but one at the assistant professor level. The department now has almost 30% of its faculty at the assistant professor level, and more than a third of its faculty are under the age of 40.

Our success in recruiting outstanding new faculty members has been just short of sensational. Last year we made offers to our top four candidates: Hazel Holden, Laura Lerner (both in Biophysical Chemistry), Bob McMahon (Organic and Materials Science), and Gil Nathanson (Chemical Physics); each chose to come to Wisconsin in preference to taking faculty positions at other major universities. The previous year, we also were successful in hiring our first choices, Sam Gellman (Organic) and Lloyd Smith (Analytical and Biotechnology) to entry level positions and Steve Burke (Organic) to a tenured position. Success in attracting new talent of this caliber has contributed to a high level of enthusiasm and excitement in the Chemistry Department.

With these new faculty additions, the research perspectives in the department have been broadened substantially. We have judged that many significant challenges in chemistry in the future will lie at the interfaces of traditional chemistry and the disciplines of biochemistry and materials science. Such research will deal broadly with difficult problems of understanding structure and function of some very complex substances. We want to be in a position to contribute to efforts addressing these new challenges in chemical research. At the same time, we are working to retain and build our strengths in traditional areas: synthesis, analysis, theory, and studies of chemical and physical properties.



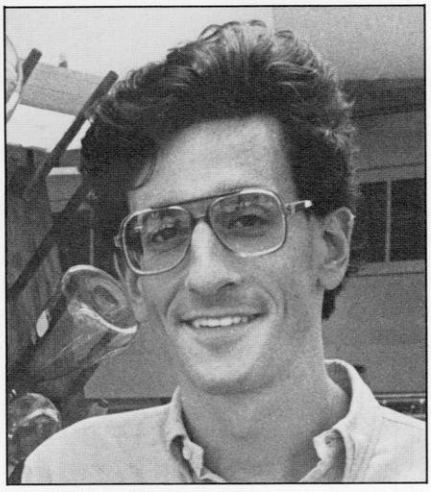
STEVEN D. BURKE

Organic Chemistry

Steve joined the faculty as Professor in Organic Chemistry. After receiving his PhD from the University of Pittsburgh in 1978, Steve spent 9 years at the University of South Carolina, rising to the rank of Professor and Carolina Research Professor. One of the inaugural recipients of the NSF Presidential Young Investigator Award ('84-89), he also was named a Research Fellow of the Alfred P. Sloan Foundation ('84-'88).

Here at Wisconsin, Steve's group of approximately 20 graduate students and postdocs are working to develop synthetic methods based on pericyclic reactions, vinylsilane-mediated cyclizations, chelation-controlled hydroformylations, and hydropyran templates. These methods are being applied to total syntheses of natural products with diverse biological properties such as antibiotic, antineoplastic, hypocholesterolemic, and antifungal activities. Novel unnatural macrocyclic ligands with ionic recognition and transport properties are being synthesized in optically pure form. Computer-assisted molecular modeling studies play a major role in the design of these substances.

Steve was born in Eau Claire, WI. He received his BS ('73) in Chemistry at UW-Eau Claire.



SAMUEL H. GELLMAN

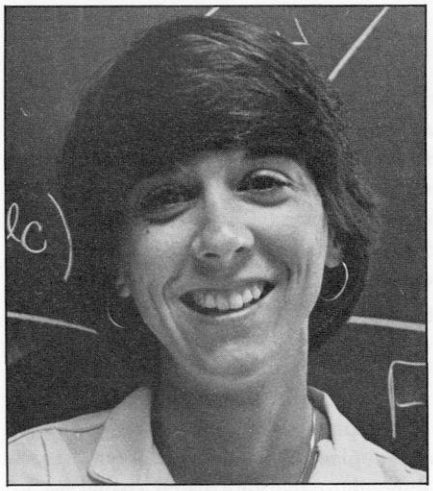
Organic Chemistry

Sam's graduate work, under Ronald Breslow at Columbia, focused on biomimetic catalysts—systems based on principles of enzymatic catalysis. As a postdoc with Peter Dervan at Cal Tech, Sam designed, synthesized, and evaluated small molecules that carry out sequence-specific hydrolysis of DNA phosphodiester linkages.

Sam is now studying the mechanistic basis of inter- and intramolecular attractive non-covalent interactions. Focusing on model systems and using relatively small molecules as tools, he intends to take advantage of the powerful synthetic and analytical methods of organic chemistry to study non-covalent association phenomena. Ultimately, he hopes to elucidate the origins of the stability, selectivity, and environmental dependence of interactions involving biopolymers.

Illustrative of Sam Gellman's ongoing research is a project on conformational amphiphiles, molecules that can undergo major structural alterations in response to changes in the surrounding medium. This project will have significant consequences in drug delivery.

Sam was born in Evanston, IL and grew up in a suburb of Philadelphia, PA. He received his AB in chemistry from Harvard in 1981.



HAZEL HOLDEN

Biophysical Chemistry

Hazel is an Assistant Professor in Biophysical Chemistry, and holds a joint appointment with the Institute for Enzyme Research. For her PhD ('82) from Washington University under the direction of Leonard Banaszak, she studied the x-ray crystallographic structure of L-3-hydroxyacyl Coenzyme A dehydrogenase, an enzyme involved in fatty acid oxidation. After her graduate studies, Hazel held a Damon Runyon-Walter Winchell postdoc at the University of Oregon with Brian Matthews. Her research there involved high resolution x-ray crystallographic analysis of the binding of transition state analogs to the bacterial endopeptidase, thermolysin. Hazel then moved to the University of Arizona as a research assistant professor, where she solved the three-dimensional structure of insecticyanin, an insect camouflage protein, to 2.6 A resolution. Other structural investigations initiated during her stay at the University of Arizona were on proteins involved in biological electron transport and lipid transport.

At Wisconsin, Hazel has initiated studies to understand—on a structural level—the mechanism and control of biological electron transfer in two protein systems, the cytochromes c_2, which contain heme prosthetic groups, and the high potential iron-sulfur proteins (HIPIP). She is also carrying out further structural work on insectocyanin and on apolipoproteins.

Hazel was born in Baltimore, MD and grew up in New Providence, NJ. She received her AB in chemistry from Duke University.

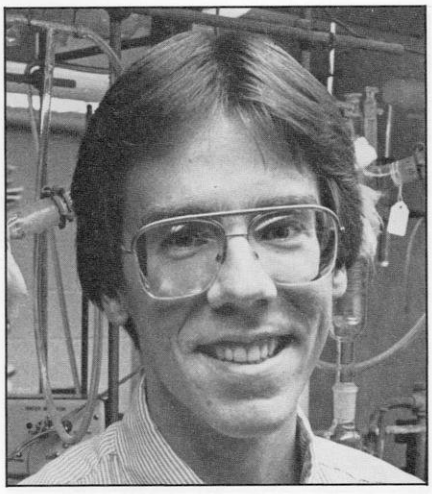
LAURA LERNER

Biophysical Chemistry

Laura has joined the faculty as Assistant Professor in Biophysical Chemistry. After earning her MS in Chemical Engineering from UW-Madison, Laura worked for Westvaco in Laurel, MD. Subsequently, she undertook graduate studies at Johns Hopkins and carried out research in Biomedical Engineering at NIH under the direction of Dennis A. Torchia, National Institute of Dental Research, receiving her PhD in 1985. This research examined the interactions of water, cations, and proteoglycans (a major component of cartilage and other connective tissues), both in solution and in intact connective tissues under compression, using nuclear magnetic resonance (NMR) to bridge the gap between the macroscopic mechanical properties of connective tissues and their molecular constituents. Laura's postgrad studies (as an Arthritis Foundation Fellow) were in the development of high-sensitivity two-dimensional NMR methods for the analysis of biomolecules in the Laboratory of Chemical Physics, NIH, under Ad Bax.

Here at Wisconsin, Laura plans to continue using high resolution NMR methods to study the relationship between subtle changes in structure and large changes in the function of biomolecules such as oligosaccharides and oligonucleotides.

Laura was born in Los Angeles and raised in Malverne, a suburb of New York City. She received her BA ('75) in chemistry from Reed College in Portland, OR.



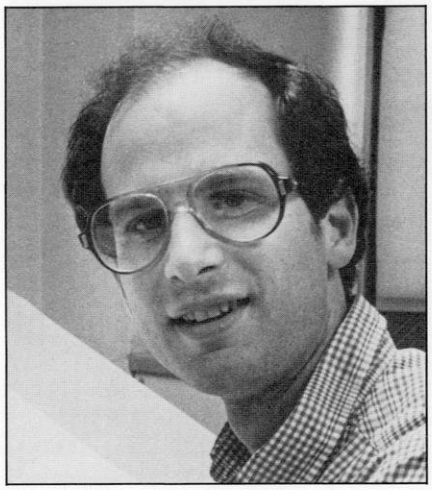
ROBERT J. McMAHON

Organic Chemistry

Bob has been named Assistant Professor in Organic Chemistry. Bob received his PhD in 1985 under Orville Chapman at UCLA, receiving the Saul Winstein Dissertation Award for his thesis work concerning the mechanisms of carbene rearrangements as studied by matrix-isolation spectroscopy. Eight research publications resulted from his thesis. During his graduate career, Bob held an NSF Graduate Fellowship, an IBM Graduate Fellowship, and was named a UCLA Distinguished Scholar. Bob recently completed postdoc studies on organometallic-reactive intermediates and excited-state electron transfer with Mark Wrighton at MIT.

Bob's research will bring physical organic insights and physical analytical methods to bear on important chemical problems. A major part of Bob's program here is the design, synthesis, and evaluation of new materials with non-linear optical properties. This is work that ultimately will have an impact in emerging high technology areas such as erasable optical information storage, optical computing, and optical communication. He is also doing research that involves the low temperature (10 K) isolation and spectroscopic characterization of reactive organic and organometallic species in inert gas matrices.

A native Midwesterner, Bob was born and raised in a small town in northern Illinois. He received his BS in Chemistry (magna cum laude) from the University of Illinois at Urbana-Champaign.

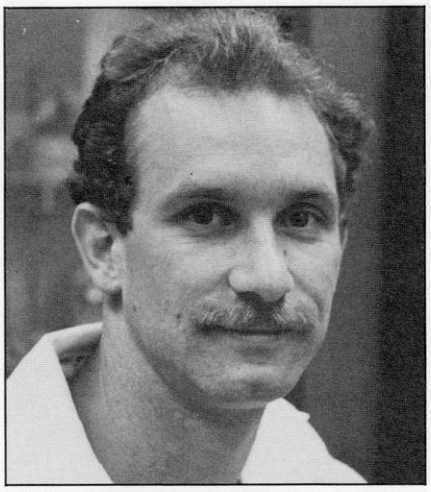


GILBERT M. NATHANSON

Physical Chemistry

Gil has joined the faculty as Assistant Professor in Physical Chemistry. Gil grew up in Massachusetts and New Jersey, and was an undergraduate at Yale. He did graduate work at Harvard (PhD '85), investigating the orientational dynamics of energized molecules. Measurements of the fluorescence polarization from such polyatomic molecules showed that their motion becomes chaotic at high energies, scrambling their orientation through the strong coupling of rotational and vibrational motions. Gil moved from Cambridge to Berkeley in 1985, where he worked in Yuan Lee's research group as a Miller Fellow. His studies shifted from isolated molecules to photo-dissociation and crossed molecular beam reactions of alkyl radicals and haloalkanes.

At Wisconsin, Gil and his students will carry out molecular beam studies of the gas-liquid interface. Exploiting techniques developed for gas-gas and gas-solid surface scattering, they will measure the roughness and elasticity of the surfaces of low vapor pressure liquids ranging from glycerol to sulfuric acid and mercury. They will seek to determine molecular motion in surface molecules of the liquid, and focus on the mechanisms for reactions of gaseous molecules with the molecules on the liquid surface. It is anticipated that these studies will establish new models for solute-solvent interactions in solutions. Ultimately, these studies will help unravel the microscopic mechanisms of corrosion and catalysis at the surfaces of liquid metals.



LLOYD M. SMITH

Analytical Chemistry

Lloyd joined the faculty as Assistant Professor in Analytical Chemistry. He grew up and went to college (AB '76) in Berkeley, and received his PhD in 1981 from Stanford under the direction of Harden McConnell. In his doctoral work, he built a laser-based fluorescence photobleaching apparatus and applied it to the study of the lateral and rotational dynamics of biological membranes. He then spent several years in the Division of Biology at Cal-Tech, first as a postdoc and later as a Senior Research Fellow. During this period, he developed the first automated DNA sequencer. This instrument, employing fluorescent tags covalently attached to DNA molecules and detected with laser-based excitation, has been commercialized and is now the basis of a multi million-dollar industry. This automatic sequencing technology plays a key role in the current international effort to sequence the three billion bases of DNA encoded in the human genome. Lloyd was named one of the 100 top innovators in the U.S. in 1985 by *Science Digest.*

Here at Madison, Lloyd is continuing his development of new analytical techniques in molecular and cellular biology. He is pursuing the further development of automated sequencing technology, in order to make this method into an effective tool for very large-scale sequencing efforts. He is also developing novel ultra-sensitive fluorescence detection methods and applying them to the development of genetic diagnosis and fingerprinting techniques.

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At the time this is being written, the Chemistry Department has 42 faculty members. This is a little higher than our 15-year average (38). This number includes Phil Certain, the current Associate Vice Chancellor for Academic Affairs on campus here, and Bassam Shakhashiri, who has been on leave for 4.5 years. Between the current year and next we anticipate four additional retirements. So we can hardly be complacent. Both near-term and long-range plans are continously evolving to respond to the anticipated changes.

The age profile in our department, which mirrors the profile of most all academic departments in institutions of higher learning, makes it clear that we will continue to add new faculty on a regular basis over the next decade. What we are doing now, and will do in the next few years, will have a profound effect on this department for decades. We are positioning our department to respond to future directions in chemistry.

Finding and attracting outstanding faculty will be a bigger and bigger problem in the future. Declining numbers of students entering the sciences (see Bassam Shakhashiri's editorial on page 24) is a great concern. We face the sobering fact that even if the number of students who enter the scientific disciplines markedly increases this year, the effect of this will be seen only in 10 years, this being the average time it takes for a freshman in college to complete a BS and PhD in chemistry.

With the need to add new faculty we also face needs for supporting staff. The support personnel in this department, in both academic and classified staff categories, are an important factor in making this a strong department. Many graduates of our department remember a crucial role that the machine shop, the electronics shop, the glassblowing shop, or the instrument center played to assist them in quality research.

And more than ever, we are on the lookout for outstanding students for our program, students who will do well here and be leaders in the future.

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OUR NEWEST Emeritus Professor is **Irv Shain** (retired 1987), who resigned his position as UW Chancellor and Professor of Chemistry to become Corporate Vice President and Senior Scientist at the Olin Corporation (see BC, Number 32). We are looking forward to Irv's return to Madison when he retires from Olin in a few years.

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We hoped it would never happen. **Russ Riley** decided to retire at 70 years of age, after 38 years with the university, most of them as Chemistry Machine Shop Supervisor. His shop has often been cited as the best on campus, a fact long known to faculty and several generations of students in the Chemistry Department.

We didn't believe that we could ever find an equal to Russ, but it appears that we came close. We are happy to report that **Al Behling**, Director of the Student Chemistry Shop, has assumed Russ' position. Al joined the department several years ago, transferring to chemistry from the UW Physical Plant. With luck, Al will be with us for the next 38 years.

Meanwhile, how is Russ spending his retirement? Of course, he is back in the machine shop—but only on a part-time basis. There, he lends valuable assistance to Al in this critical changeover period. Russ says he is happy to help and would just as soon continue doing so forever.

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Last spring brought the retirement of **Harland Bright,** another veteran with the department. He had been with us for 25 years, since the Electronics Shop was first established. His retirement came one year after that of **Bert Rogers,** also from the Electronics Shop.

Another staff member to retire last year was **Vince Genna**, who started out 20 years ago as an assistant to **Odell (Tally) Talliaferro** in the department's lecture demonstration facility. Like Russ Riley, Vince continues his work with us on a part-time basis.

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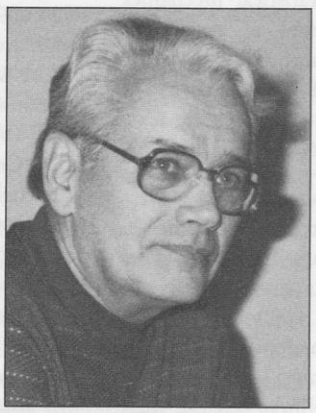
Finally, there was a departure that we sadly failed to report last year. **Bette Germann** retired in December, 1985, after 43 years as Departmental Secretary. She now keeps busy with her garden and is helping her brother, Jack, build a doll house from scratch. Bette also is very involved in church and community activities, but does find time occasionally to visit the department and lunch with her former staff co-workers.

Joyce Helt, Bette's assistant in the main office, took over for a year before moving to a position in the Dean's Office. At that time, we called on **Jan Froding**, our Payroll Manager, to take over this important job. We couldn't have picked a better person—with her experience and knowledge of the department, Jan has fit right in. We are counting on her staying for a long time.

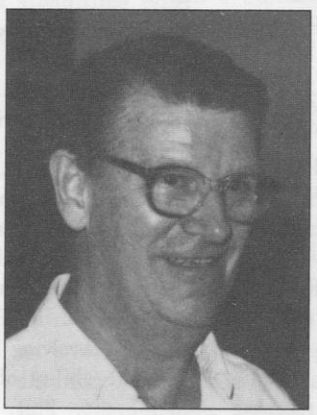
WHERE ARE THEY NOW?

WE THOUGHT that you would like to hear about the activities of our emeritus faculty. **John Ferry** (retired, 1982) continued his experimental research program up to about a year ago with postdoctoral help. He comes into the Chemistry Building almost every day and spends most of his time writing. **John Willard** (retired, 1982) comes regularly to his new office on the eighth floor. We see **Ed Larsen** (retired, 1986) frequently and **Al Wilds** (retired, 1985) and **Les Holt** (retired, 1972) occasionally. Ed has continued consulting with the fusion energy project in the College of Engineering. **Aaron Ihde** (retired, 1980) is as active as ever, working on, among other things, the departmental history. It is fortunate to have Aaron here to give the editors of the *Badger Chemist* frequent counsel. **Joe Hirshfelder** (retired, 1981) splits his time between Madison (in the warm months) and Santa Barbara (otherwise). He is still involved in research, and last April was the second Arthur William Davidson Lecturer at the University of Kansas, where he presented a talk entitled "My 55 Years of Quantum Chemistry! What Next?!"

Russ Riley



Harland Bright



Vince Genna

Bette Germann

CURRENT NEWS CHEMISTRY

DEPARTMENTAL HISTORY

Aaron Ihde's departmental history has passed review and preliminary revision. We are at the copy-edit stage and Aaron is assembling photographs from his collection. We are about to seek a publisher; our goal is a publication date in late 1989, to coordinate with the 100th anniversary of the College of Letters and Science.

An anonymous alumnus of the department donated funds to publish this book (reported in the *Badger Chemist* No. 31, 1984). That donation was placed in the *Badger Chemist* Fund, making the *Badger Chemist* a de facto sponsor.

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BOB BIRD RECEIVES MEDAL OF SCIENCE

R. Byron Bird, Vilas and John D. MacArthur Professor in Chemical Engineering here at UW-Madison, was presented the 1987 National Medal of Science by President Ronald Reagan in a ceremony at the White House. An alumnus of the Chemistry Department, Prof. Bird received his doctorate in 1950 under the direction of **Joseph Hirschfelder** (who received the medal himself in 1976). Prof. Bird was cited for his research and writings on kinetic theory, transport phenomena, the behavior of polymeric fluids, and foreign language study for engineers.

Two other scientists with UW-Madison connections were also medal of science winners. **William S. Johnson,** who taught organic chemistry in the Department from 1940 to 1960 before moving to Stanford, was cited for his outstanding achievements in organic synthesis, notably in the stereoselective total synthesis of steroids by classical and biometric pressures. **Har Gobind Khorana,** formerly a professor of biochemistry and co-director of the Institute for Enzyme Research (1960-1970) and now at MIT, received the medal for his contributions to the understanding of gene structure, membrane function, and vision. He received the Nobel Prize in Medicine in 1968.

CHEMISTRY TUTORIAL PROGRAM HONORED

Elizabeth Kean, PhD '74 (West), and **Cathy Middlecamp,** PhD '76 (West), currently directing the Chemistry Tutorial Program at the UW, and **Arthur Eggert,** PhD '70 (Blaedel), Clinical Associate Professor in the UW Medical School, received a grant of equipment from IBM under the Trochos Project to develop an intelligent computer teaching program. Cathy and Betsy also received an award from the UW's McBurney Center honoring their special contributions in accomodating and promoting awareness of special needs of handicapped persons.

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AWARDS, AWARDS, AWARDS

The 1988 Arthur C. Cope Award in organic chemistry was presented to **Charles Casey** at the annual meeting of the ACS in New Orleans. The award includes a certificate and $15,000 to be used in Prof. Casey's research.

The 1987 Bingham Medal of the Society of Rheology was awarded to **Charles Curtiss,** PhD '48 (Hirschfelder), of the Chemistry Department. His research is in the area of theoretical chemistry, particularly in statistical mechanics and molecular dynamics of small gas molecules. He is coauthor (with Prof. Hirschfelder and Prof. R. B. Byrd of Chemical Engineering) of the classic text, *Molecular Theory of Gases and Liquids.*

Sam Gellman, one of the newest members of the faculty, has been designated a Searle Scholar. This prestigious award provides significant support, over a 3-year period, for Prof. Gellman's research program involving biomolecule interactions and the ability of drugs to cross a cell membrane. Prof. Gellman is the first Searle Scholar named from UW-Madison.

Gilbert M. Nathanson was awarded a $25,000 grant by the Dreyfus Distinguished New Faculty Program, which is sponsored by the Camille and Henry Dreyfus Foundation. This grant program provides early financial support for newly appointed faculty to help set up research activities.

A 1988 Chemical Pioneer Award of the American Institute of Chemists was presented to **Robert West.** The award citation reads: "For his pioneering discovery of organosilicon species with silicon-silicon double bonds, the synthesis of organosilicon polymers used as precursors in the manufacture of silicon carbide, and the development of 'Revolutionary Chemistry,' an academic course that has been a model for chemistry courses for nonscientists."

Howard Zimmerman received the von Humboldt Foundation Senior U.S. Scientist Award for accomplishments in research and teaching. The award promotes cooperation between academic institutions in Germany and the U.S.

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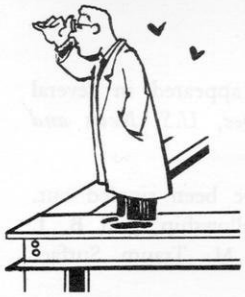
BELLE CROWE FELLOWSHIP AWARDED

Belle Crowe died in 1925 and left $1000 to the University, with the provision that earnings be reinvested until the principal sum reached $20,000. When that occurred, the earnings from the Belle Crowe Fund were to be used for a fellowship in Inorganic Chemistry. The fund has reached $20,000 and in the summer of 1987, **Richard C. Crane,** a student in Professor Treichel's research group, was appointed the first Belle Crowe Fellow. With future earnings, we expect to appoint a Belle Crowe Fellowship recipient each summer.

Over 60 years have passed and we don't know who Belle Crowe was or what connection she had with this department. Can any of our readers fill in some of the history?



FACILITIES

The newer portion of the Chemistry Building (the Matthews section) passed its 20th anniversary last year, while the Daniels section is about 30 years old. We are quite crowded and there is a need to upgrade space.

Building Addition Plans

The Department advanced a small step toward a building addition and remodeling when Chancellor Shalala included planning funds for the 1989-90 biennium. We still have major hurdles to surpass; notably, we have to persuade the University to rank this item high enough to be funded in a future biennium.

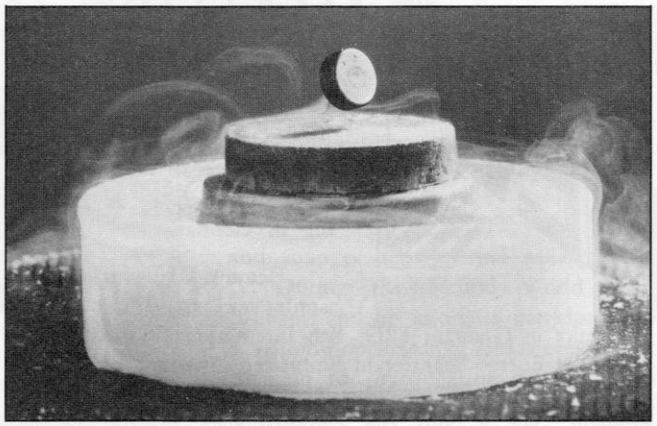
Plans for this project were developed in 1980 with leadership of Dan Cornwell, head of the Building Committee. The plan involves extending the current building west along Johnson Street to Charter Street, providing much-needed space for the Institute for Chemical Education, classrooms, and research labs, and office space. It will also include space for the Chemistry Tutorial Program, currently located in an old house on the corner of Charter and Johnson, which will have to be demolished. Remodeling of existing labs is planned to bring them up to modern standards. In particular, the need for hood and instrument space is critical at this time.

Undergraduate Lab Modernization

An important success story concerns the Undergraduate Laboratory Modernization Program. In the early 1980s, the Wisconsin Legislature recognized that instructional laboratories and equipment were becoming out-of-date and voted to provide major funding to modernize undergraduate laboratories over the following 10 year period. Chemistry has been a beneficiary of this program, receiving over $700,000 for the Analytical, Organic, and General Chemistry Labs in the first two biennia. Funds for the analytical labs were used to purchase major equipment; the organic lab was funded to set up micro-scale laboratory procedures and in addition there was the purchase of several instruments. Our General Chemistry funding is being used to develop a computer-assisted instructional laboratory. We hope to get funds to upgrade the Physical Chemistry in the next biennium; if so, we will have seen the infusion of about a million dollars into our instructional program over the 1980s.

Equipment

The most important changes, in addition to lab modernization mentioned above, involve the acquisition of several laser systems and a new FT infrared spectrometer with a combination of DOE, NSF, Graduate School, and Departmental funding. But watch for this subject next year in BC. We have funding now in place for two high-field NMR spectrometers, and we hope to develop funding for state-of-the-art ESR and mass spectrometer equipment and for a super computer over the next year.



DEPARTMENT BESTSELLER HIGHLIGHTS MAGNET

Developments in the area of superconductivity have interested scientists for some time, and this subject has fascinated the general public as well in recent years.

Professor **Art Ellis** and his student **G. H. Dieckmann,** in collaboration with the Department's Lecture Demonstrator **Fred Juergens** and Institute for Chemical Education (ICE) member **R. I. Perkins,** published a paper, "Levitating a Magnet Using Superconducting Material," in the *Journal of Chemical Education* 64: 851 (1987). In this paper, they described a demonstration of the Meisner effect and provided the picture (shown on this page) of a small magnet suspended over a wafer of superconducting material cooled at −196 °C. They also offered to make available through ICE, at cost for material and postage ($25), a kit containing materials for the demonstration of this effect (requiring only liquid nitrogen as a coolant).

The response to this offer was overwhelming. ICE has received more than 4000 requests so far. Although orders are still coming in, ICE decided to discontinue the offer after November 1, 1988, since the Institute is not set up to run a business. Fortunately, several equipment supply companies have entered the market with kits at competitive prices.

Professor Ellis and other Institute personnel have given numerous lectures (with demonstrations) around the country on this topic. Currently, they have another paper in press describing a double levitation demonstration, in which a superconducting pellet is suspended above a ring of magnets that in turn is suspended above another pellet of the superconductor.

A major research effort in the area of superconductivity is underway in the College of Engineering, under the direction of Professor David Larbalestier. Professor Ellis and Professor John Wright in Chemistry, and about a half dozen other faculty in several other departments, are currently contributing to this project on a regular basis.

ABOUT OUR FACULTY

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Charles Casey received the Alumni Merit Award from St. Louis University. He was on leave during Fall 1988, traveling in Germany and Japan.

Fleming Crim attended the Conference of Intramolecular Dynamics in Grainau, FRG; Xth International Conference on Molecular Energy Transfer in Emmetten, Switzerland; and the Faraday Symposium on Vibrational Spectroscopy in Reading, England. He is also the chairman-elect of the Physical Chemistry Division of ACS.

Art Ellis developed the levitation kit for the Institute of Chemical Education (see feature article and photo elsewhere in this issue). He was also selected Colgate University's McGregory Lecturer and is chairing an ACS Task Force to evaluate the journal, *Langmuir.*

John D. Ferry delivered invited lectures at the University of Connecticut, the Uniroyal-Goodrich Tire Company, and the International Fibrinogen Workshop in Milwaukee.

Donald Gaines gave the session lecture at the VIth International Meeting on Boron Chemistry at Bechyne, Czechoslovakia, in June 1987. He also participated in a NATO-sponsored cooperative Research Project at Strathclyde University, Glasgow, Scotland, with John Morris, and in the First Boron USA Workshop, held in Dallas in April 1988.

Laura Lerner was an invited speaker at the Third Chemical Congress of North America, National ACS Meeting, in Toronto. Her talk, "Two-dimensional NMR Methods Applied to Carbohydrates," was part of a Symposium on Recent Developments in the NMR Spectroscopy of Carbohydrates.

S. F. Nelsen was awarded Alexander von Humboldt-Stiftung and visited Germany for 2 months in 1988-89. He also received a NATO travel grant to collaborate with Hermann Moeckel at the Hahn-Meitner Institute in Berlin.

Tom Record was selected for NIH BBCA Study Section (1988-92), and named to the Editorial Board of JBC, Biopolymers. Tom presented invited papers or lectures at the International Biophysics Congress (IX) in Jerusalem, Israel, August 1987; Symposium on Unusual DNA Structures at Birmingham, AL; at Argonne National Labs in Argonne, IL; and at Vanderbilt University in Nashville, TN.

Ned Sibert gave talks at the University of Colorado at Boulder and at Argonne National Labs. He also attended the Midwest Theoretical Chemistry Conference, the Telluride Workshop on Molecular Dynamics, and a Gordon Conference on Atomic and Molecular Interactions.

Lloyd Smith has given invited lectures on aspects of automated DNA sequence analysis at various workshops and international symposia, traveling to Santa Fe, NM; Rome, Italy; Okayama and Tokyo, Japan; Stanford, CA; and Singapore. His name and photograph appeared in several publications, including *Newsweek, Science, U.S. News and World Report,* and the *Capital Times.*

Two of **James Tobin's** students have been singled out. **J. D. Hansen** won the L&S Dean's Fellowship, and **B. J. Knapp** was a competitor for the M. M. Traum Surface Science Student Award.

Worth Vaughan was a contributor to a project at Argonne National Laboratory (Chemical Technology Division) dealing with microwave-assisted treatment of hazardous wastes.

Ed Vedejs has started a 4-year stint on the NIH Medicinal Chemistry Study Section. He spent May 1988 in Bologna, Italy, as visiting professor. Ed is happy to report that he has completed several projects of long standing: he has accomplished the total synthesis of methynolide and zygosporin E and resolved the problem of the Wittig reaction mechanism.

Robert West was in Japan during April and May 1988 as Japan Society for Promotion of Science Visiting Professor. During this time, he visited 20 different universities, research institutes, and company laboratories, lecturing on polysilane polymers, silicon-silicon double bonds, and cyclopolysilanes. "Polysilastyrene," the polysilane polymer discovered by Bob and Larry David (PhD '81), is being commercialized in Japan and used as a precurser to high-strength silicon carbide. In March 1988, Bob visited Israel and lectured on organosilicon chemistry at several universities there. He also presented numerous lectures on this topic in the U.S., usually piloting himself in a single-engine Cessna airplane.

John Wright gave invited talks in Tskuba and at the Rike Institute, Japan; Beijing, China; and Kanpur, India. He also trekked in the Annapurna Mountain ranges of the Himalayas in Nepal.

Howard Zimmerman was invited to organize and give a session at the IUPAC Symposium on photochemistry in Bologna, Italy, in the summer of 1988. The topic was "Interaction between Experiment and Theory in Organic Photochemistry." He was also Plenary Lecturer at the First InterAmerican Photochemistry Society Meeting in Clearwater, FL in December 1987.

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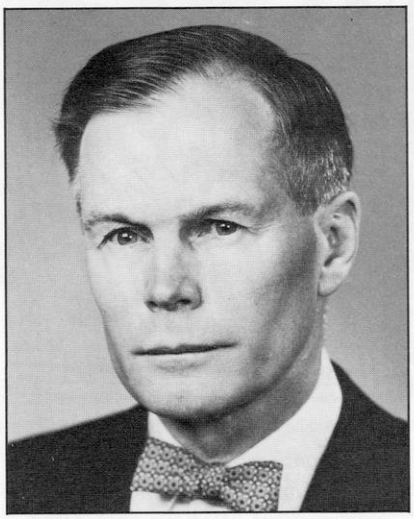
LARRY DAHL ELECTED TO N.A.S.

The Department was pleased to learn last spring that Professor **Larry Dahl** had been elected to the National Academy of Sciences. Election to the National Academy is one of the highest honors accorded to scientists in this country. Emeritus Professors Joseph Hirschfelder and John Ferry are also members. Department faculty met in the departmental lounge for coffee and cake to celebrate the occasion.

This is a well-deserved honor. Professor Dahl is well known for his pioneering work in synthesis and structural characterization of metal cluster compounds.

JOHN WARREN WILLIAMS

1898 1988



JOHN WARREN WILLIAMS, Emeritus Professor of Chemistry, died in Madison March 5, 1988, at the age of 90.

He was born at Woburn, MA, February 10, 1898, and attended Trinity College, Hartford, CT. After brief service in the U.S. Navy, he received a BS in chemical engineering from Worcester Polytechnic Institute in 1921. He came to the UW for graduate study in chemistry and remained here throughout his career, receiving his MS in 1922 and PhD in 1925; he was appointed Instructor in Chemistry the same year. He was Professor of Chemistry from 1938 until his retirement in 1968.

Williams' research began in classical physical chemistry with a long series of investigations on the dielectric properties of liquids and solutions. The applicability of such studies to probing the size of large molecules and colloidal particles led to an expanded research program on colloid chemistry and, later, the physical chemistry of proteins.

THE EVOLUTION OF WILLIAMS' WORK was strongly influenced by his association with two eminent European scientists. The first was Peter J.W. Debye, with whom he spent part of a National Research Council Fellowship at Leipzig (1927-28). Many of Williams' papers on dielectric properties were written in German and published in Germany. The second was The Svedberg, in whose laboratory at Uppsala he held an International Education Board Fellowship (1934-35).

During Williams' graduate student days (in 1923), Svedberg had been a Visiting Professor of Chemistry at Wisconsin and had conceived the idea of a powerful centrifuge that could effect sedimentation of large molecules. After returning to Sweden, Svedberg perfected this elaborate machine, and his first results with it revolutionized protein chemistry. For several years, there was no such instrument at any university in the U.S.

The Rockefeller Foundation decided to finance the installation of an ultracentrifuge at an American university and chose Williams' laboratory for its location. After that (1937), his research was centered around this equipment. His work went far beyond determining molecular sizes; he and his associates applied the instrument to solving a variety of problems in protein chemistry and immunology, overcoming handicaps in the theory of sedimentation that had previously prevented obtaining reliable results on large flexible molecules. These investigations continued until several years after his formal retirement. Many publications from Williams' laboratory do not carry his name—testimony of his generosity to his pupils and younger departmental colleagues.

During the Second World War, Williams and his associates participated in a nationwide research and development program for fractionating human blood plasma into different components to be used to treat military casualties. The ultracentrifuge was essential for working out the separation methods. This project, with headquarters at the Harvard Medical School, grew until enormous volumes of Red Cross plasma were processed at seven different pharmaceutical companies. Williams' laboratory provided improved procedures for separation of antibody-containing gamma globulin.

Professor Williams taught undergraduate physical chemistry courses throughout his career, and was coauthor of a widely used laboratory text (*Experimental Physical Chemistry,* by F. Daniels, J. H. Mathews, and J. W. Williams, first edition 1929). His graduate courses covered colloid chemistry and physical chemistry of proteins. He was a thought-provoking teacher whose students always remembered his personal interest in their progress. He wrote illuminating and critical reviews on colloid, polymer, and biological chemistry. He continued writing long after retirement; his last publication was a biography of Debye, and he was working on a biography of Svedberg. He had a remarkably keen sense for detecting intellectual promise in students and beginning investigators, and was instrumental in bringing graduate students to Madison who later became leaders in science with prominent academic and industrial positions.

His honors included honorary D.Sc. from Worcester Polytechnic Institute, 1973; membership in the National Academy of Sciences, 1952; ACS Kendall Award in Colloid Chemistry, 1955; Nobel Guest Professorship, University of Uppsala, 1968; and Guggenheim Fellowship, 1956-57. He served as Chairman of both the ACS Division of Physical Chemistry and the ACS Division of Colloid Chemistry.

JACK WILLIAMS enjoyed his many international associations. Among his fifty postdoctoral collaborators were visitors from 15 different countries. He traveled widely and was one of the first American scientists to visit the Soviet Union, in the early thirties. His favorite destination away from Madison, however, was his summer home at Jacksonport in Door County. In later years, he often spent several winter weeks at Cal-Tech.

His wife, the former Lois M. Andrews, whom he married in 1925, died in 1980. He is survived by his daughter, Mrs. Janet Coussens, three grandsons, two great-grandsons, and a sister.

Along with gifts came many letters with information and notes of encouragement. We have abstracted many of your letters to provide some of the news items listed in* This 'n That. *Keep sending us news; we will use it for the next edition,* Badger Chemist *No. 34.

Rolly Ahrens, PhD '59 (Willard), transferred to the DuPont plant at Kingston, NC where he is investigating fiber surfaces. He is chairman of the Committee on Testing for all of the company's textile fiber facilities.

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Ryoichi Akaba, PD '79-81 (Nelson), sent news from Gunma, Japan, where he is associate professor of chemistry. He is currently "studying electron transfer reactions of organic compounds photochemically and electrochemically." **Steve Nelsen** and Badger Chemist **Edward Clennan**, PhD '77, from the University of Wyoming, were recent visitors. He also reported meeting with **Allen C. Sarapu**, PhD '72 (Fenske), who is Director of Control of Research Laboratories of Upjohn Pharmaceuticals Limited.

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Robert A. Alberty, PhD '47, wrote from Cambridge, MA, that he is still teaching thermo, doing research, and revising his physical chemistry text (the last edition of which is being translated into Japanese). In his spare time, he serves as Secretary of the Physical Chemistry Division of IUPAC.

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Donald P. Ames, BS '44, PhD '49, has been General Manager of McDonnell Douglas Research Laboratories in St. Louis since 1971, and is the only Distinguished Fellow in the organization. He oversees the work of 62 PhD scientists and engineers who publish some 75 papers annually in aeronautical, material, chemical, physical, artificial intelligence, metallurgical, and other engineering disciplines.

James J. Becker, BS '71, is currently working for American Greetings Corp. in the Plastics R&D Engineering Department.

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Richard B. Bernstein, a member of the faculty here from 1963 to 1973 and now professor of chemistry at UCLA, received the Irving Langmuir Award in Chemical Physics. The award recognizes Dick's numerous contributions in the field of chemical dynamics.

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Silas Blackstock, PhD '85 (Nelson), finished his postdoc with Berson at Yale and has started as assistant professor at Vanderbilt University.

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Toby F. Block, PhD '76 (Fenske), reminds us that the Biennial Conference on Chemical Education will be held in Atlanta in 1990.

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William Braunlin, PhD '82 (Record), is assistant professor with the Department of Chemistry at Brooklyn Polytechnic University, NY.

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Trudy Bryson, BS '68, sent news from Allentown, NJ. She runs her own business importing textiles from Europe for television, theater, and film industries.

Richard Bunce, PhD '81 (Zimmerman), has been promoted to the position of Associate Professor at Oklahoma State University.

• • •

Edward E. Burgoyne, PhD '49 (Adkins), wrote from Tempe, AZ, that after teaching for 32 years at Arizona State University, he is enjoying his retirement: doing a little church work, traveling some, and keeping track of 16 grandchildren.

W. F. Cartwright, PhD '68 (Muxfeldt), wrote from Roswell, GA, that he is a senior research scientist at Kimberly-Clark Corporation.

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John E. Castle, PhD '44 (Adkins), is Adjunct Professor at the College of Marine Studies, University of Delaware.

• • •

Sang Up Choi, PD '57-'59 (Willard), retired from his position as Professor of Chemistry at Sogang University in Seoul in February 1988. Since leaving Madison, he has served with the Korean Atomic Energy Commission, been vice president of Sogang University, and been a member of the Korean legislature.

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Roger M. Christenson, BS '41, PhD '44 (Schuette), retired as Director of Research for PPG Industries Coatings and Resin Division in 1985 and has taken up residence in Gainesville, FL.

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David M. Coleman, PhD '76 (Walters), associate professor in the Department of Chemistry at Wayne State University, related a sad tale of having to share a lone copy of the BC with other Madison PhD alums in his department: **James H. Rigby**, PhD '78 (Trost), **Ronald R. Schroeder**, PhD '67 (Shain), and **Calvin Stevens**, PhD '47 (McElvain).

(Editor's note: this problem has been remedied.)

Kenneth E. Collins, PhD '62 (Willard), reported that **Bassam Shakhashiri** was a great hit at the IXth Conference on Chemical Education held in Sao Paulo. Collins is still with the Chemistry Institute of the State University in Campinas, Brazil.

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Joyce Corey, PhD '64 (West), and **Eugene Corey**, PhD '64 (Dahl), were two of the three organizers of the VII International Symposium on Organosilicon Chemistry held in St. Louis in June 1987. More than 450 chemists (including many Badger Chemists) from 20 countries participated. The Coreys are also co-editors of the symposium volume, *Silicon Chemistry*, published by Ellis Horwood.

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Mike Curry, PhD '48 (McElvain), with the Association of Consulting Chemists & Chemical Engineers, Inc., is part-time technical director of the Plastics Institute. As such, he is strongly involved in funding graduate work in plastics and plastics recycling.

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Walter K. Dean, PhD '72 (Treichel), who is at Lawrence Institute of Technology, Southfield, MI, enjoys teaching "more than ever."

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Pieter DeHaseth, PhD '77 (Record), is associate professor with the Department of Biochemistry at Case-Western University, Cleveland, OH.

• • •

R. C. Doban, PhD '62 (Wilds), is Senior Vice President, Science and Technology, for the technical affairs of Owens-Corning Fiberglas, Toledo, OH. Specifically, he looks after R&D, engineering and medical, safety, and environmental affairs at the corporate level. In addition, he serves on the Building Research Board of the National Academy of Science, Board of Directors of Sherwin-Williams Corp., as chairman of Ohio Diagnostics Corp. (a small clinical lab and medical testing firm), and as trustee for St. Vincent Medical Center and PBS of Northwest Ohio.

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June S. Ewing, BS '59, in Beltsville, MD, suggested a special reunion for all Badger Chemists. *(Editors note: see the standing invitation, opposite, to attend future 'Snoutouts.')*

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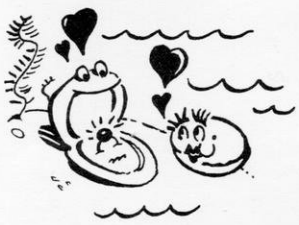
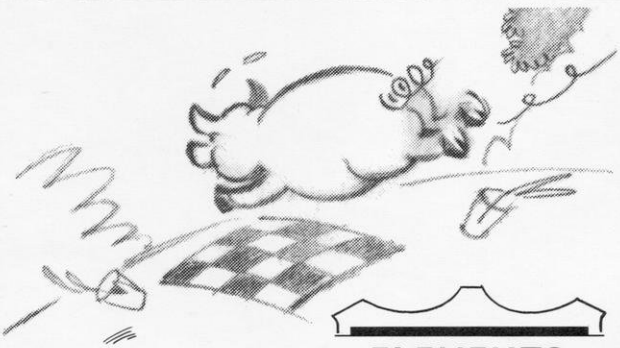
Bob Feinstein, BS '37, MS '40, PhD '40, retired from Argonne National Lab at the end of 1979. He has been having fun writing light verse—some 200 poems are now in print, and he has published a slender volume of humorous verse, *Oysters in Love*.





Snoutout '88

Perfect weather was enjoyed for our 4th Annual Snoutout, held Sept. 12 at Westmorland Park. 400 happy snouters ate, drank, and relaxed the day away, and for the second year, Dr. Vedejs' group won the Bacon Ball Volleyball tournament. Prizes and awards highlighted the day's events.

ELEMENTS

Potato Salad	100 lbs.
Pasta Salad	100 lbs.
Beans	120 lbs.
Pork	210 lbs.
Beef	220 lbs.
Chicken	160 lbs.
Soft drinks	38 cases
Beer	4 half barrels
Cookies	90 dozen
Raw carrots	40 lbs.

Snoutout Invitation

The Department of Chemistry
and the
Snoutological Society
are pleased to invite
Badger Chemists
(alumni and friends
of the department)
to the
Sixth Annual Snoutout
Saturday, September 9, 1989
1:30 pm
Westmorland Park, Madison

For further information, contact Jean Moder, Secretary, Snoutological Society, Department of Chemistry, University of Wisconsin, Madison, WI 53706 (608) 262-1482

Guy Rosenthal, a lecturer in the Department, teaching Chemistry 108.

THE OVERVIEW

Politics and weather dominated the news in Wisconsin during 1988.

After 31 years in the Senate, 73-year-old William Proxmire announced that he would not seek another term. A wild scramble ensued; political novice Herbert Kohl, former owner of Kohl's Food Stores and current owner of the Milwaukee Bucks, locked up the Democratic nomination in the primary election, and State Senate Minority Leader Susan Engleleiter won the Republican nomination. A campaign marked by the negative advertising characteristic of many campaigns in 1988 ended with Kohl's victory. Kohl personally financed his campaign, spending $6.1 million of his own money. In another less than uplifting race, Democrat Robert Kastenmeier was reelected to his 16th term in the House of Representatives from the 2nd Congressional District (which includes Madison).

The summer of 1988 was the hottest on record in southern Wisconsin, with the temperature rising above 100 degrees on 6 days and above 90 degrees on 36 days. The Madison area was subjected to a record 40 straight days without rain, from May 13 to June 21. Total precipitation between April and July, normally 13.85 inches, amounted to only 8.07 inches. More than $1.3 billion worth of the state's hay and corn crop withered in the summer sun. But, the drought inspired Appleton's Roy Griesbach. He was named World Champion Liar for this joke: "The weather was so dry this past summer that the only water you could buy was dehydrated in 16-ounce packages."

Despite the impact of the drought, the state's economy flourished throughout 1988. Construction of new homes was up 40%. The state's civilian work force exceeded 2.6 million, and unemployment dropped to 4% (compared with 5.4% for the nation), the lowest in 15 years. Wisconsin exports were up 28%, reflecting a surge in the manufacturing sector wherein employment reached 560,000—the highest total in a decade.

A major item in the news was the closing of the Chrysler plant in Kenosha in December 1988. Chrysler Corporation will move production of its K-car line to Mexico, thus putting some 5500 people out of work in Wisconsin. At Briggs & Stratton in Milwaukee, 200 jobs were eliminated when that company moved one of its production lines to Mexico.

Wisconsin's newly approved lottery began in September, and its first $1 million winner was announced in November. Total lottery receipts topped $113 million by year's end, with retailers collecting $5.7 million of that amount in commissions.

Governor Tommy Thompson has vowed to focus state energy on biotechnology. His Council on Biotechnology recommended spending $1.26 million in state money and obtaining up to $11 million in private, federal, and local monies to establish a biotechnology development program. The governor believes that development has been held back by the failure of the UW System and the state's business community to draw on each other, a situation that he now sees as improving.

Two of the more controversial and far-reaching issues before the legislature are property tax reform and changes in the Wisconsin Retirement System. Property tax relief would be provided by broadening the state sales tax and raising corporate income tax; the proposed changes in the state's pension plan, which covers 67,000 retired workers and 194,00 still at work, would allow retirement at age 55 and would boost pension levels across the board. Business lobbyists are expected to attempt to block both proposals.

Overall, Madison has enjoyed a pretty even year. The seasonally adjusted unemployment rate is down to 2.8%. The Farmer's Market continues to draw thousands to the capitol square each summer Saturday morning. The Concerts on the Square, each Wednesday night for six weeks in the summer, have increased awareness of the downtown and of the Madison Chamber Orchestra conducted by David Crosby. Part of the relocated south Beltline has opened, relieving traffic congestion in that corridor. The lakes, if not cleaner, are not getting any dirtier, thanks to the efforts of a newly formed Dane County commission monitoring the lakes and seeking ways to cut pollution.

The issue of a downtown convention center has yet to be resolved. Lack of parking downtown continues to be a problem, both for employers and retailers.

Low unemployment notwithstanding, several local companies suffered setbacks in 1988. Nicolet Instrument Corporation reported large financial losses. New management, corporate restructuring, and other modifications should provide new stability. Agrigenetics closed its doors, putting some 50 PhDs out of work. This biotechnology firm was taking too long to develop a marketable product. Verex Inc., a mortgage insurance company, laid off 80 people.

Madison's neighboring communities have been growing. Sun Prairie, Waunakee, Middleton, and Verona all have business and industrial parks, complete with tax incremental financing. The Dodgeville-based Lands' End Direct Merchants have proposed expanding part of their operation to Cross Plains. Experts predict that this business expansion will mean rapid residential expansion in DeForest, Mt. Horeb, Deerfield, Cross Plains, Sauk-Prairie, Columbus, Poynette, and other communities.

The notorious Halloween Bash on State Street is no more. The Wisconsin Student Association (WSA), the previous sponsor of the event, decided instead to host an alcohol-free extravaganza at the Field House for UW students only. To prevent an unauthorized Halloween party from erupting on State Street, the Madison Police Department sent notices to college campuses throughout the upper Midwest informing would-be revelers that the show would not go on.

Paul Schilling became the 10th president of the University of Wisconsin System Board of Regents, replacing Laurence Weinstein. A Milwaukee attorney, Schilling has declared that the long process of merging the state's university campuses, begun in 1971, is nearly complete.

The Board endorsed a systemwide plan to enhance campus diversity and increase opportunities for minority students, staff, and faculty. The plan, dubbed "Design for Diversity," requires the development of specific goals for each of the system's 26 campuses. Also adopted were recommendations to improve and expand the integration of the UW Extension and other UW System campus departments, colleges, and schools.

System President Kenneth Shaw will be requesting $2 billion for UW from the legislature for the 1989-91 biennium. The budget includes tuition increases and faculty pay increases that would bring faculty and staff salaries to the level of comparable universities.

Donna Shalala, formerly president of Hunter College in New York City, assumed the chancellorship of UW-Madison in January 1988. Within just weeks, Chancellor Shalala introduced the Madison Plan, an ambitious and comprehensive set of goals aimed at strengthening education for all students, with specific attention to minority recruitment and retention.

Long-time Dean of Students Paul Ginsberg retired in 1987; his position was filled by Mary Rouse. (Mary's spouse, Ken, is the Chemistry Department Librarian.) Vice Chancellor of Academic Affairs Bernard Cohen, Dean of the Graduate School Robert Bock, and Dean of the College of Letters and Science David Cronon have announced plans to retire in 1989. Searches for persons to fill these positions are currently underway. In March the Search Committees will submit a list of candidates to Chancellor Shalala, and she will then make the final choice from this list.

On a balmy Friday evening last May, Camp Randall Stadium throbbed to the beat of music by rock group Pink Floyd, while a laser light show brightened the sky. This novel use of the stadium caused concern in the surrounding residential areas. Stadium neighbors are willing, it appears, to accommodate football Saturdays and Mike Leckrone's exuberant UW Marching Band, but some want to draw the line at rock concerts.

The concert netted about $60,000 for the UW, which will go toward relieving a projected $2 million deficit in the UW athletic department. Athletic Director Ade Sponberg (who assumed the post upon the retirement of Elroy Hirsch) blames declining football attendance and construction of the $9.5 million Dave McClain Indoor Practice Facility for the overrun. State officials suggested charging students a special $20/year fee to reduce the deficit, a proposal that has met with stiff student opposition.

In the midst of financial troubles off the field and a 1-10 record on the gridiron in 1988, the athletic department celebrated 100 years of Badger football on October 1.

The UW is finally getting its own golf course. The championship 18-hole course, designed by the firm of Robert Trent Jones II, is being laid out on land owned by the UW-Foundation in the town of Verona and is financed by gift money. It is tentatively scheduled to open in 1990.

Standing in line to register for classes will soon cease to be a rite of passage for Madison students. The UW is in a trial period for a system involving faster, easier registration by using a touchtone telephone.

A new, two-acre horticultural garden, combining elements of a Victorian garden and the latest trends in botanical research, is being planted on the grounds surrounding the "E. B. Fred House" at the corner of Babcock and Observatory Drives. More than 450 plant varieties will be grown in the garden, which will also include a waterfall, pool, cranberry bog, fruit trees, rock gardens, a prairie garden, an herb garden, topiary, and flower garden with wildflowers and herbaceous perennials.

Gordon Foster, BS '41, PhD '44 (Daniels), retired from Shell Development on July 1. He and Lois moved to a new home overlooking the ocean in Cardiff-by-the-Sea, CA.

D. Mark Gapinski, PhD '82 (Vedejs), and **Connie J. Schlesener**, PhD '82 (Ellis), are both working at the Lilly Research Laboratories, Indianapolis, IN.

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Robert H. Gillespie, PhD '44 (Adkins), wrote a brief note from his new retirement home in Hilton Head Island, SC.

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Richard S. Givens, PhD '66 (Zimmerman), won the ninth annual T. Shutz Award for distinguished teaching at the University of Kansas. A member of the chemistry faculty there since 1967, he is also the associate director of the Center for Bioanalytical Research, one of the Centers of Excellence mandated by the Kansas legislature.

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Jeffrey M. Gold, BS '78, sent an update on his career. He left Xerox in 1985 to join the University of Rochester Chemistry Department as Coordinator of Undergraduate Laboratories and Stockroom Manager, and was promoted to Department Administrator in 1987. In January 1988, he returned to Duke University (his PhD alma mater), where he is currently Assistant Chairman of the Chemistry Department.

Carl Haeppner, BS '45, wrote from his hometown of Plymouth, WI, where he is enjoying an active retirement coaching debate and forensics at the local high school. Previously, he taught chemistry, law, and speech at Lakeland College.

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Don Henderson, PhD '68 (Willard), has sold Orthomatrix, a venture capital company he founded to make artificial bone (hydroxyapatite), biodegradable bone plates, and composite hip implants. Currently he is president and CEO of Mind Fitness Corporation, a company that develops, manufactures, and markets brainwave feedback systems. He is also on the Scientific Advisory Panel of Norian Corporation, a medical device company.

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Thomas E. Henzler, PhD '72 (Larsen), wrote to us from Rochester, NY.

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Erwin Hiebert, PhD '54 (Chemistry/History of Science), is in Berlin working on the history of nuclear physics and chemistry with emphasis on the relationship between experiment and theory in the 1930s and 1940s.

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George Hood, BS '48, PhD '51, reports enjoying retirement from Shell, particularly since he has plenty of firewood stacked for the winter. He had numerous visits from Shell friends but regrets that grad school friends **Don Cromer**, BS '47, PhD '51 (Ihde), and **Bob Kline**, BS '47, PhD '53 (Ihde), had their last time together in 1959. George and his wife live in Sturgeon Bay, WI.

Richard Johnson, PD '78-'79 (Zimmerman), was promoted to associate professor at the University of New Hampshire.

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Rich Jordan, PD '81-'83 (Casey), has moved to the University of Iowa as associate professor. He and his wife, Karen Tracey Jordan, MS '83, have two daughters.

News Badger Chemists

BS

Abdul Razak, Normaraya
Assadi, Fariba M.

Chinnery, Daniel P.
Cox, Eric D.
Czajkowski, Jayne M.

De Goey, David A.

Ehrhardt, Mark R.
Erickson, Shawn D.
Evans, Kathleen G.

Farino, Michael J.
Fick, Brian W.
Froehlich, Paul A.

Gowin, Kenneth L.

Johnson, Christopher H.

Kim, Julie A.
Klipp, Sondra J.
Krahn, John R.
Kraus, Eric E.

Larson, Ritchie A.
Leventhal, Philip S.
Liew, Pick Chung

Madden, David J.
Moorleghen, Therese L.

Nadler, William R.

Parker, Jonathon K.
Patel, Nirav Y.
Poliak, Jeffrey R.
Poroli, Mark J.

Richter, Margaret M.
Rosen, David

Sabel, Dawn M.
Seeger, Lynda K.
Slezewski, Randall E.

Viegut, Terrance R.

Watson, Michael D.
Weller, Keith J.
Welton, Kevin B.
Werner, Kim M.

MS

Babiarz, Christopher (ediger)

Benson, Jeffrey A. (tobin)

Carter-Petillo, Mary Beth (trost)

Clendening, William D. (tobin)

Drake, William B., III (dahl)

Hacker, Beth M. (ediger)

Headley, George W. (o'leary)

Jamison, Gregory M. (west)

Perner, Richard J. (nelsen)

Ronan, Martha J. (weisshaar)

Wainschel, Larry A. (casey)

Winslow, Richard W.

Yoon, Joseph K. (schrag)

PhD

Abell, Lynn M.
(o'leary) Isotope Effects on Pyruvoyl and Pyridoxal 5'-Phosphate Dependent Histidine Decarboxylases: A Comparison of Cofactor Energetics

Anderson, Mark R.
(evans) Surface Enhanced Raman Studies of the Electroactive Forms of Substituted Pyridines

Austin, Edwin A., Jr.
(casey) The Synthesis and Reactivity of Diiron Complexes Containing Bridging Alkenylidene, Alkenyl, and Allene Ligands.

Blair, John T.
(weisshaar) Natural Bond Orbital Studies of Radicals and Radical Cations

Bolin, William N.
(whitlock) Rotational Dynamics of [8.8] Cyclophanes

Carpenter, Clint W.
(zimmerman) Investigation of the Aryl Version of the Cyclopropyl-p-Methane Rearrangement and the Development of Instrumentation for Monitoring of the Triplet Excited State

Carpenter, John E.
(weinhold) Extension of Lewis Structure Concepts to Open-Shell and Excited-State Molecular Species

Frigo, Timothy B.
(nelsen) Ring Size Effects in Sesqui-Bicyclic Hydrazines and Hydrazine Cation Radicals, and Their Electron Transfer Properties

PhD, continued

GILICINSKI, ANDREW G.
(EVANS) Environmental and Structural Factors Influencing the Kinetics of Homogeneous Electron Transfer Reactions

GREY, GOTHARD C.
(FARRAR) NMR Relaxation Theory for Coupled Spin 1 Spin 1/2 with Four Relaxation Mechanisms

GRISSOM, JANET W.
(VEDEJS) The Generation of Stabilized Azomethine Ylides from Oxazolines and Aziridines

GRON, LIZ U.
(ELLIS) Structure, Synthesis, and Photochemistry of a Novel Rhenium(I) Enolate and Photochemistry and Second Harmonic Generation in Thin Films

GSCHNEIDNER, DAVID
(REICH) Synthetic Uses of Isoselenazolin-3-ones, Selenuranes, and Selenones

GUT, SALLY A.
(TROST) An Approach to the Total Synthesis of Tetrin A

HARRIS, HOLLY ANN
(DAHL) A Synthetic and Molecular Orbital Study of Early Transition Metal Dithiolene and Tetrathiooxalate Complexes

IPPOLITI, JOSEPH THOMAS
(NELSEN) Synthesis, Characterization and Chemistry of Hexaalkylhydrazine Dications, Diamines, and Bicyclic Amines

KAMATH, AJIT P.
(ZIMMERMAN) The Photochemistry of an Arylcyclopropane; an Unusual Alkyl 1,2-Shift in a 1,3-Diradical

KHARAS, KARL C.
(DAHL) Synthesis, Spectroscopic Characterization and Solid State Properties of Large Platinum Carbonyl Clusters

KIM, HONG DOO
(YU) Transport and Electro-Optical Studies of Macromolecules in Various Media

KONINGS, MARK S.
(CASEY) Synthesis, Structure, and Bonding of Diiron mVinylcarbyne Complexes

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LEE, DONNA C.
(TROST) I. Vinylcyclopropanols as Composite Functional Groups. II. Synthetic Applications of Palladium Catalyzed Enyne and Diyne Cyclizations

LOCKER, ILENE C.
(FARRAR) Structural and Dynamic Studies of Molecules in Liquids by Nuclear Spin Relaxation

LOZANO, JUAN C.
(ELLIS) Photochemical Reactions at Interfaces and Photochemistry of Retinal with Eu(fod)3

LYONS, LESLIE J.
(EVANS/TREICHEL) Electrochemical Investigations of the Oxidative Behavior of Thiolate-Bridged Complexes of Manganese and Iron

MARKS, JOEL P.
(TAYLOR) A Characterization of a Reduced Pressure Microwave-Induced Plasma Mass Spectrometer

MERCHAK, PAUL A.
The Effect of Polymer/Solvent Interactions on the Dynamic Viscoelasticity and the Oscillatory Flow Birefringence Properties for Polyisoprene Solutions

MERLIC, CRAIG A.
(TROST) Molbydenum Catalyzed Allylic Alkylations

MILLETTI, MARIA C.
(FENSKE) Two Aspects of the Reactivity of Cyclopentadienyl Rhenium Complexes

O'LAUGHIN, JANET T.
(O'LEARY) Reactions of Phosphoenolpyruvate Carboxylase with Bromopyruvate

PENN, STEPHEN M.
(CRIM) The Application of Low-Energy Electron-Impact Ionization to the Study of Highly Excited Molecules

PHILLIPS, NANCY H.
(REICH) Lithium-Metalloid Exchange Reactions

SAPPEY, ANDREW D.
(WEISSHAAR) Multiphoton Ionization Photoism and Photoelectron Spectroscopy of Jet-Cooled Species

SHARPE, LEE R.
(ELLIS) Photoelectrochemical Investigations of Inhomogeneous Semiconductor Electrodes

SHERIDAN, ROBERT E.
(WHITLOCK) Synthesis and Complexation Behavior of a Pyridine Bridged Naphthalenophane

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STANDARD, JEAN M.
(CERTAIN) A Quantum Mechanical Study of the Photodissociation of Carbon Monoxide Dimer Cation

TANTILLO, ANTHONY W.
(ZIMMERMAN) The Photochemistry of 1,1,5,5-Tetraaryl-3-Hydroxy-1,4- Pentadiene Derivatives

TONKYN, RUSSELL G.
(WEISSHAAR) Reactions of Gas Phase Transition Metal Ions with Small Hydrocarbons in a Fast Flow Reactor

WARNER, HUGH E.
(WOODS) The Microwave Spectroscopy of Ions and Other Transient Species in Gas Phase Discharges

WEBER, ANDREW M.
(ZIMMERMAN) The Photochemistry of 4,4-Diphenylcyclohexenones Substituted with Quenchers on a Chain

WILDE, RICHARD G.
(VEDEJS) Studies in Thioaldehyde Synthetic Methodology

WINKLER BRUCE K.
(WRIGHT) Atomic Spectroscopy by Nonlinear Four-Wave Mixing

YOKELSON, HOWARD B.
(WEST) New Unsymmetrical Disilenes, Their Rearrangement and Oxidation Chemistry

Michael Kallay, MS '72 (Record), is currently an MD in private practice in Philadelphia, PA.

• • •

Bob Keller, BS '51 (MD '58), who took his first chemistry course 40 years ago from **Prof. H. Ritter**, wrote from Sheboygan, WI, that he and his wife maintain contact with our "Great University" through UW Extension seminars and the Bascom Hill Society.

• • •

Barbara Klein, PhD '80 (Record), is with Monsanto Inc., St. Louis, MO, as Research Biochemist.

• • •

Robert Kline, BS '47, PhD '53 (Ihde), expressed appreciation for receiving BC. He is in the Department of Chemistry at Ohio University.

• • •

Gilbert H. Koch, BS '38, PhD '70 (Biochemistry), who retired from teaching at UW-Milwaukee in 1979, has just finished updating and revising the *Biochemistry Laboratory Manual*, 4th Edition. Koch sent us reminisences of his 50 years in chemistry—from industrial research (Carnation, Miller Brewing Co., etc.) to teaching—years that have been "enjoyable and rewarding."

• • •

John Kretsch, BS '73, Vice President, Ace Chemical Products, Inc., reported that with the help of **Bassam Shakhashiri's** book, he has dazzled elementary school students and local Cub Scout groups with chemical demonstrations.

—ıl|ı—

Mark Lautens, PhD '85 (Trost), is URF Assistant Professor of Chemistry at the University of Toronto. Though sorry that **Barry Trost** has left the Department, he applauded **Steve Burke's** move from South Carolina to UW-Madison.

• • •

James J. Leddy, PhD '55 (Larsen), is a senior research scientist with Dow Chemical Co. in the Central Research Inorganic Materials and Catalysis Laboratory. He leads a team of scientists in investigating the use of patented rapid

This 'n' That

(Leddy, continued) ...onidirectional compaction (ROC) technology as it applies to ceramics and ceramic-metal composites. A Dow scientist since 1956, Jim recently received the Herbert H. Dow Medal for pioneering work and "extraordinary contributions to the field of chloralkali technology."

• • •

M. B. Lele, MS '50, is another Badger Chemist who is looking forward to the publication of Aaron Ihde's *History of the Chemistry Department*. Lele is retired and lives in Bombay, India. His second son has a degree in medical surgery and is serving an internship in St. Louis.

• • •

C. Marvin Lang, MS '64, and two colleagues from the chemistry faculty at UW-Stevens Point have been on the national speaking circuit to show the public that the study of chemistry is exciting. The title of their program is "Yes, Virginia, Chemistry Can Be Fun." Marv has been a visiting Professor in the Department here during several recent summers.

• • •

Timothy Lohman, PhD '77 (Record), is associate professor at Texas A&M University, College Station, TX.

• • •

Lester Lunsted, PhD '42 (Adkins), wrote from Grosse Isle, MI.

• • •

Robert E. Lyle, PhD '49 (McElvain), is now Vice President, Chemistry and Chemical Engineering Division, Southwest Research Institute, San Antonio, TX. From him, we learned that **William B. Dickinson**, PhD '50 (McElvain), has retired from Sterling-Winthrop and is living in Menands, NY.

—ıl|ı—

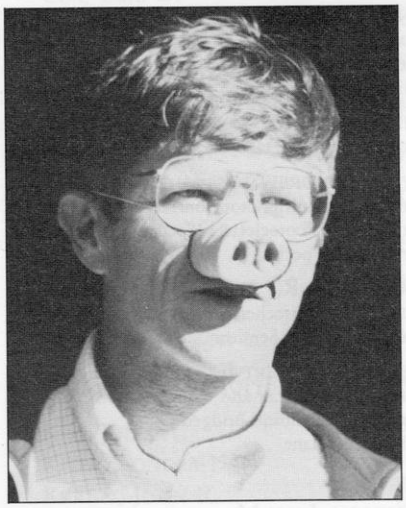
Sharlyn Mazur, PhD '84 (Record), is a postdoc with the Department of Biochemistry at Johns Hopkins University, Baltimore, MD.

• • •

E. D. McCollum, BS '21, MS '22, PhD '25 (Daniels), and his wife, Alice, are now living in a retirement hotel in St. Joseph, MI, where they have a marvelous view of Lake Michigan. At 94, McCollum is as mentally alert as ever, reported Alice, although the years have taken their toll on his sight. Before retiring, he was the head of the ink department at R. R. Donnelly in Chicago. The McCollums have two granddaughters with University of Wisconsin ties—one has just graduated and the other is a junior.

• • •

Paul McLancon, PhD '83 (Record), is a postdoctoral fellow with the Department of Biochemistry at Stanford. He is on leave from his position as assistant professor at the University of Colorado at Boulder.



Chemistry Chairman (and BC Editor) Treichel at Snoutout '88

Pamela A. Mills, MS '81, PhD '85 (Record), is a postdoc with the Department of Pharmaceutical Science at the University of California, San Francisco. She has been appointed assistant professor of the Department of Chemistry at Hunter College, NY (1989).

• • •

Michael Mossing, PhD '86 (Record), is a postdoc with the Department of Biology at MIT.

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Ikus Nozue sent an update for our address file. He is with Japan Synthetic Rubber Co., Ltd., Yokkaichi R&D Laboratory, 100 Kawajiri-Cho, Yokkaichi, Mie 510, Japan.

—ıl|ı—

Thomas A. Paral, BS '70, is currently Vice President of Engineering with Polycarbon, Inc., Valencia, CA. Previously he worked for Union Carbide Corp., Carbon Products Division, Fostoria, OH. Even though he hasn't visited Madison since he graduated, he remembers UW fondly, and "each BC makes those thoughts a little stronger."

• • •

Albert A. Pavlic, BS '38, PhD '42 (Adkins), says that the BC is "always informative and enjoyable." He is part of a large and active group of retired chemists—many of them Badgers—who meet regularly in the Delaware Section of the ACS. Otherwise, he occupies himself with retirement activities in Wilmington, DE.

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Richard Perner, MS '88, wrote to let us know that he has taken a position with Abbott Laboratories, Abbott Park, IL.

• • •

Donald J. Plazek, PhD '57 (Ferry), is on sabbatical leave from the University of Pittsburgh and the Naval Research Laboratory. He is the recipient of the Japan Society for the Promotion of Science Fellowship at Kyoto University.

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Reuben Rieke, PhD '66 (Zimmerman), has been awarded a Distinguished Professorship and Chair at the University of Nebraska. He has finished his term as department chairman.

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Jung-Hye Roe, PhD '84 (Record), is assistant professor with the Department of Microbiology at Seoul National University, Seoul, Korea.

• • •

Robert W. Rosenthal, PhD '49 (Adkins), in Hallandale, FL, continues as Adjunct in Organic Chemistry at Florida International University. He and his wife sail periodically on cruise ships as Arts and Crafts lecturers, and both sons have now relocated their optometry practices to the Hallandale area.

• • •

E. J. Schwoegler, BS '33, PhD '39 (Adkins), noted that nearly 50 years have passed since he left Wisconsin. His health is good and he remains active, " . . . with more darn projects than I can conveniently fit into a retired life."

Irving Shain, formerly professor and Chairman in the Chemistry Department and Chancellor of the UW-Madison, sent regards from his office at Olin Corporation, Stamford, CT, where he is Vice President and Chief Scientist.

• • •

Sandra L. Shaner, PhD '82 (Record), is a postdoc with the Department of Human Genetics at Yale University.

• • •

Lee Sharpe, PhD '87 (Ellis), is a postdoc at the University of Cincinnati with Heineman.

• • •

Bruce Siggins, MS '78, who holds the rank of Chief Warrant Officer in the U.S. Army, is a forensic chemist with the criminal investigation laboratory at Ft. Gillem, GA. He has been awarded the Army Commendation Medal for outstanding achievement. Bruce recalls Bassam Shakhashiri's lecture demonstrations.

• • •

Monroe A. Sprague, BS '69, is one of many alumni who appreciated the tribute to Harvey Sorum (BC 32), remembering especially Dr. Sorum's boundless patience with a "giant parade of students."

• • •

Robert W. Stack, PhD '72 (O'Leary), is currently Director of Research and professor of Chemistry at the University of Michigan-Flint. He left his old position in the Biochemistry and Molecular Biology Department at the State University of New York Health Sciences Center in Syracuse in August 1987.

• • •

Jack Steehler, PhD '85 (Wright), and **Gail Steehler**, PhD '83 (Gaines), wrote from Lynchburg, VA.

• • •

Dan Steffels, PhD '82 (Nelson), resigned his position at Alverno College in Milwaukee to do biochemical research at North Carolina State.

• • •

Harlee Strauss, PhD '79 (Record), is Senior Associate with the Gradient Corporation, Natick, MA.

• • •

Marjorie E. Svoboda, BS '43, MS '47, (PhD '75, Biochemistry, Indiana University), is one of many who wrote with remembrances of Professor McElvain. She recounted career advice given her by Professor Meloche "—to go into Food Chemistry as it was the only area for women in chemistry," and Mac said, "Oh, Marjorie, it won't make any difference. You'll meet a young man, get married and have babies so do what you want to do." As Ms. Svoboda noted, times have changed and young women no longer receive such advice. She is on faculty at the University of North Carolina in the Pediatrics Department.

Hideo Takezoe is professor in the Department of Organic and Polymeric Materials, Tokyo Institute of Technology.

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Joseph M. Timko, PD '85-'87 (Trost), who is with Upjohn in Kalamazoo, MI, boasts of an addition to the family, Phillip Michael.

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Robert H. Valentine, PhD '67 (Ferry), receives the BC in Sandy, UT. An engineer with Hercules Aerospace Division of Hercules, Inc., he is currently working on the development and processing of high temperature polymer composites.

• • •

Heather J. Vlasak, BS '70, sent encouragement from Kendall, WI, where she and her husband own and operate a successful dairy farm. Even though they left their professional jobs in 1976 to "return to the land," they keep in touch with UW events—and BC helps.

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Robert H. Wentorf, BS '48 (Chem. Eng.), PhD '52 (Hirschfelder), and his wife, Vivian, voiced their appreciation for receiving BC in Valatie, NY.

• • •

John R. Wilson, PhD '64 (Willard), is chairman of the Department of Chemistry and director of the Honors Program at Shippensburg University, Shippensburg, PA.

• • •

Charles Woodbury, PhD '75 (Record), is associate professor with the Department of Medical Chemistry at the University of Illinois-Chicago.

• • •

Gary Wulfsberg, PhD '71 (West), has been promoted to Associate Professor at Middle Tennessee State University, Murfreesboro, TN. His book, *Principles of Descriptive Inorganic Chemistry*, designed for a sophomore level inorganic chemistry course, was published in March 1987. He spent 6 months of 1988 in Germany working in the field of nuclear quadrupole resonance spectroscopy.

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Masuo Yagi, Visiting Scientist '68 (Willard), is involved in the building of a new lab for actinide elements at the Institute for Materials Research, Tohoku University, Sendai, Japan.

• • •

Harry Young, PhD '58 (Willard), took early retirement from the Staley Company in February 1987 and is now consulting full-time for the ADM Company where he is involved in plastics engineering.

FINIS

IN MEMORIAM

David R. Allan, BS '70, died on August 1, 1987.

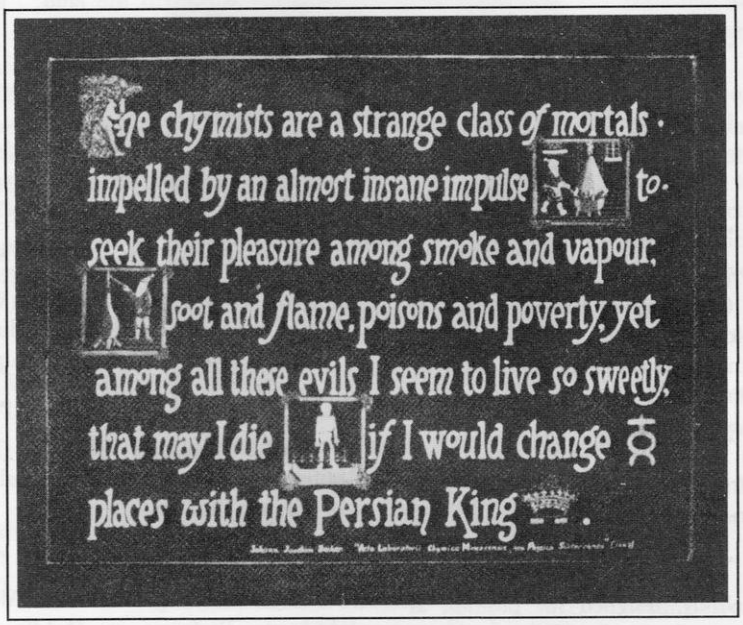
Thomas J. Anderson, PhD '70 (Blaedel), died December 24, 1984.

Horace K. Burr, BA '35, MS '37, PhD '41 (Williams), died October 23, 1983.

Warren F. Busse, MS '24, PhD '26 (Daniels), died in October in Wilmington, DE. After 14 years with B. F. Goodrich Company, he spent five years with General Aniline, three years with the Institute of Textile Technology in Charlottesville, VA, and 12 years at DuPont, where he retired in 1962. His fields of interest were the physics and physical chemistry of rubber and textiles.

As the *Badger Chemist* was going to press, we learned of the death of **Eugene Corey,** PhD '63 (Dahl). Gene was currently Professor at the University of Missouri, St. Louis.

Milford A. Cowley, PhD '33 (Schuette), died in August, 1986 at age 81. He entered the UW as a senior in 1929 after 3 years at Eau Claire Teachers College, and took three degrees at Wisconsin, all of them for studies on carbohydrates in Professor Schuette's laboratory. He joined the Science-Math faculty at La Crosse Teachers College in 1933, where he remained until his retirement in 1974, 2 years after the institution became UW-La Crosse. He was named chairman of the chemistry department there in 1939, and of the Math-Physical Division in 1945. Cowley Hall at UW-LaCrosse was named in his honor.



THE CREED OF A CHEMIST

Howard I. Cramer, MS '28, PhD '29 (Adkins), died in Philadelphia last October. He did research on rubber accelerators for Goodyear for several years, served on the faculty at the University of Akron where he had charge of the course in rubber chemistry ('33-'41), was director of development at Sharpless Chemicals ('41-'59), and became vice-president of the Pennsalt International Corp. in 1959 where he was involved in market development, process acquisition, and licensing.

Inez W. Dadswell, BS '23, MS '27, died on July 19, 1984. This information was relayed by her son, Gordon Dadswell, from Warrogul, Victoria, Australia.

Ernest W. Greene, PhD '32 (Williams), died in 1980.

Takero Higuchi, PhD '43 (Willard), PD '43-44 (Daniels), died March 24, 1987, at Lawrence, KS. Born in Los Altos, CA in 1918, he took a BS at Berkeley in 1939. After completing his work at Wisconsin, he spent 4 years in Akron with the Synthetic Rubber Program before returning to the UW-Madison Pharmacy School in 1947. There he pioneered in the application of physical chemistry to the design, delivery, and analysis of drugs. In 1967, he accepted the appointment as Regents Distinguished Professor of Chemistry and Pharmacy and chairman of the Department of Pharmaceutical Chemistry at the University of Kansas. He also held a position in later years with the Hine Laboratories in California and was involved with industrial hygiene and toxicology. He received many honors for his contributions to pharmaceutical chemistry, including awards, lectureships, and honorary degrees.

Carl H. Hoffman, PhD '49, died suddenly on September 4, 1987. After completing his degree at Wisconsin, he joined the Merck Research Laboratories in Rahway, N.J., where he had worked during the war years, and remained there

until his retirement in July 1987. During his long career with the company, he made important contributions to many programs. Two contributions were the discovery of mevalonic acid in 1956, which placed the "isoprene rule" of terpene and steroid biosynthesis on a solid experimental basis, and, in 1980, the isolation of a substance that is highly effective in preventing the formation of mevalonic acid and thereby inhibits cholesterol biosynthesis. This substance has become Merck's new cholesterol-lowering drug, Mevacor.

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Gilbert E. Hoffman, PhD '27 (Kemmerer), died December 1, 1987.

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Ray C. Houtz, PhD '32 (Adkins), died February 11, 1988, in Port Charlotte, FL, at the age of 81. After earning his PhD, he went to work as a research chemist in DuPont's textile fibers department, becoming research supervisor in 1944 and research manager from 1947 to 1954. His group originated Orlon, Dacron, and Teflon fibers and Lycra (elastic) during this period. In 1954, he joined the Toni Company (Gillette) as director of basic research. He left in 1964 to teach. He was professor of chemistry at Winona State University, 1964-73, visiting scholar at Northwestern University, 1963-65, and visiting professor, University of Florida, 1971. He was a member of the American Chemical Society, American Institute of Chemists, Wisconsin Alumni Association, Alpha Chi Sigma, Phi Lamba Upsilon, and Sigma Xi.

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Hugh McKinney Huburt, PhD '42 (Hirschfelder), died at Wilmette, IL in March 1987. After completing a BA at Carroll College in 1938, he became a TA at Wisconsin where he studied theoretical chemistry. He was an NRC fellow at Princeton, then held several industrial and academic positions. In 1963, he joined the chemical engineering faculty at Northwestern, becoming chairman of the department a year later.

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Robert L. Kelso, BS '39, MS '41, died June 12, 1987. He was a plastics chemist and laboratory supervisor for Rohm and Haas Co., Bristol, PA, for 36 years.

Roy F. Korfhage, PhD '27 (Schuette), died in 1985.

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Robert A. Lalk, BS '41, died September 30, 1981. He had worked for Dow Chemical Co. for 40 years in Technical Service and Development. One of his better known developments was exterior Latex paint, and he was known in the industry as "Mr. Paint."

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Gerrit Levey, PhD '49 (Willard), died in Berea, KY on November 3, 1987 at the age of 63. He joined the Berea College faculty immediately after leaving Wisconsin, and was Chairman of the Chemistry Department from 1958 until his death. Under his chairmanship, the department received national rankings among liberal arts colleges. He was a recipient of the Seabury Award for excellence in teaching. During summer vacations and sabbatical leaves he did research at the University of Leeds in England, the Argonne National Laboratory, the Notre Dame Radiation Laboratory, MIT, Brown University, and the University of Wisconsin.

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We have learned that **Mrs. Samuel A. McCornock,** BS '32, is deceased.

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Frederick C. Oppen, BS '32, PhD '36, died in Sturgeon Bay in May 1987. While in graduate school he served as a TA in Professor Schuette's food chemistry lab. Much of his career was spent in Wausau and Neenah in the paper industry. He retired in 1976 to Sturgeon Bay.

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Ev Pryde, PhD '49 (McElvain), died after a long illness (reported by Michael Curry).

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Roland A. Ragatz, PhD '31 (Ch. Eng.), died in June '87. He was a longtime member of the Chemical Engineering faculty after completing his studies with the late Otto Kowalke of that department.

Ernest R. Schierz, BS '16, MS '17, PhD '22 (Kahlenberg), died July 23, 1987, in Rapid City, SD. He was professor of chemistry at the University of Wyoming from 1922 until his retirement in 1961. He was a member of the American Chemical Society, American Association of University Professors, National Retired Teachers Association, Alpha Chi Sigma, Sigma Xi, and Phi Kappa Phi.

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Henry J. Schneider, PhD '51 (Adkins), died on December 19, 1985. He had recently retired as Director of Research for Industrial Chemicals, Rohm and Haas Company.

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Bryce E. Tate, MS '44, PhD '50 (McElvain), died January 27, 1988. He was a research fellow at Harvard from 1953 to 1955, then joined Pfizer, Inc. He became group supervisor in 1961, manager of chemical products research in 1968, and assistant director of Industrial Specialty Chemicals Department in 1977, the position from which he retired in 1986.

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Jim Venerable, PhD '49, died suddenly while canoeing on the Delaware River (reported by Michael Curry).

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Arnold C. Wahl, UW Assistant Professor, 1965-66, died on July 19, 1984.

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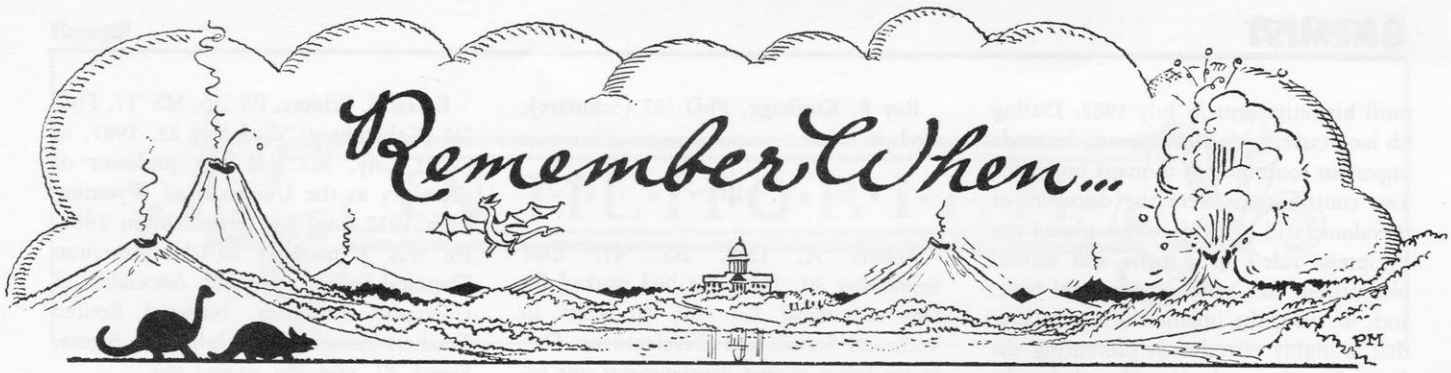
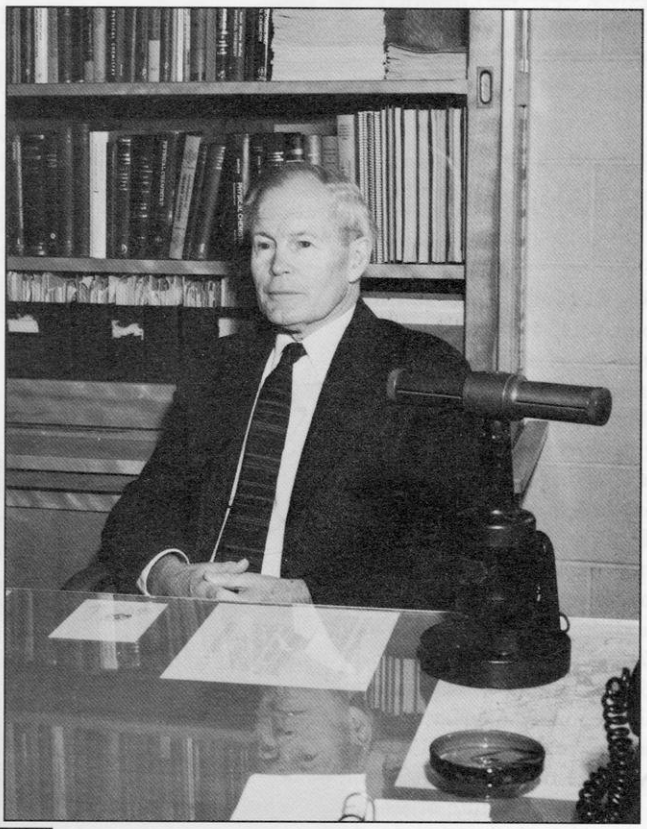
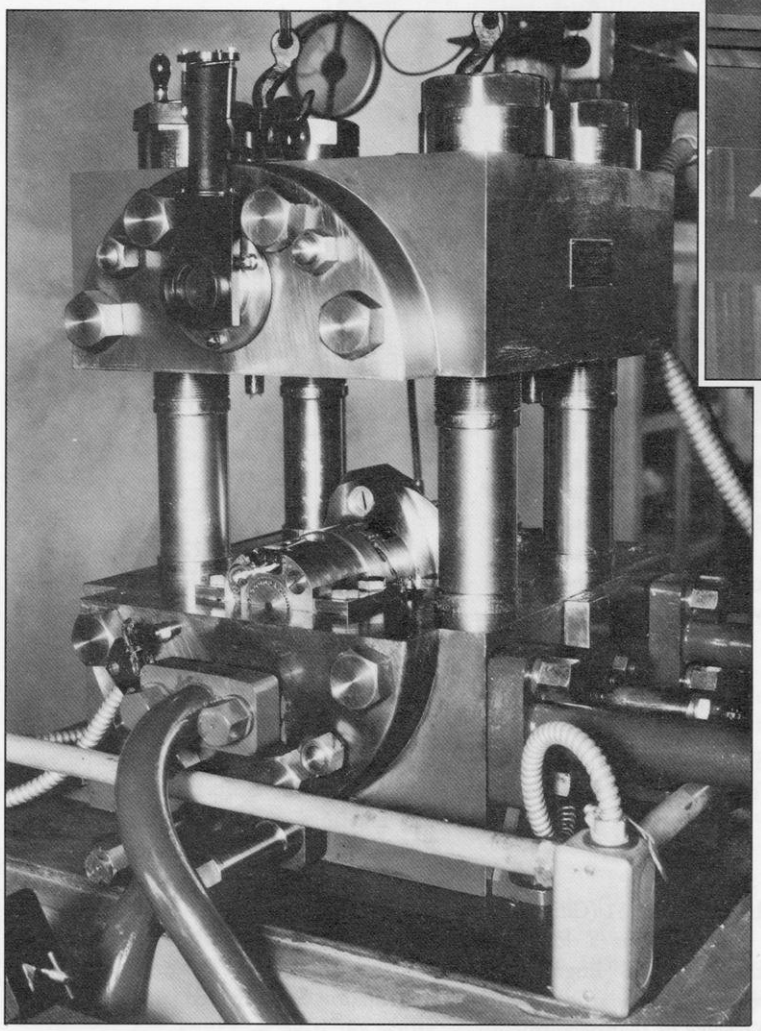
Jack Williams, MS '22, PhD '25; and a faculty member from 1925 to 1968, was a courteous gentleman and scholar. He was friendly not only to his own students but to others outside his research group and always ready to discuss their work and offer advice and philosophical perspective, even in his last years. He disliked bureaucracy, but in the deliberations of committee meetings he could often cut the Gordian knot by a penerating remark phrased in a humorous metaphor. His friends will remember him for his deep concern for their welfare and that of his Department and the University. Further information is provided in the feature article on page 9.



We intend to include this feature in every issue from now on. Its complexion will no doubt evolve as we go, but the idea is fairly clear—to run pictures, reminiscences, perhaps even stories which, hopefully, have a common thread to which we can all relate. We welcome your ideas. Please write in care of the Editor, *Badger Chemist*, UW Chemistry Dept., 1101 University Ave., Madison, WI 53706.



John Williams with Svedberg's optical centrifuge.



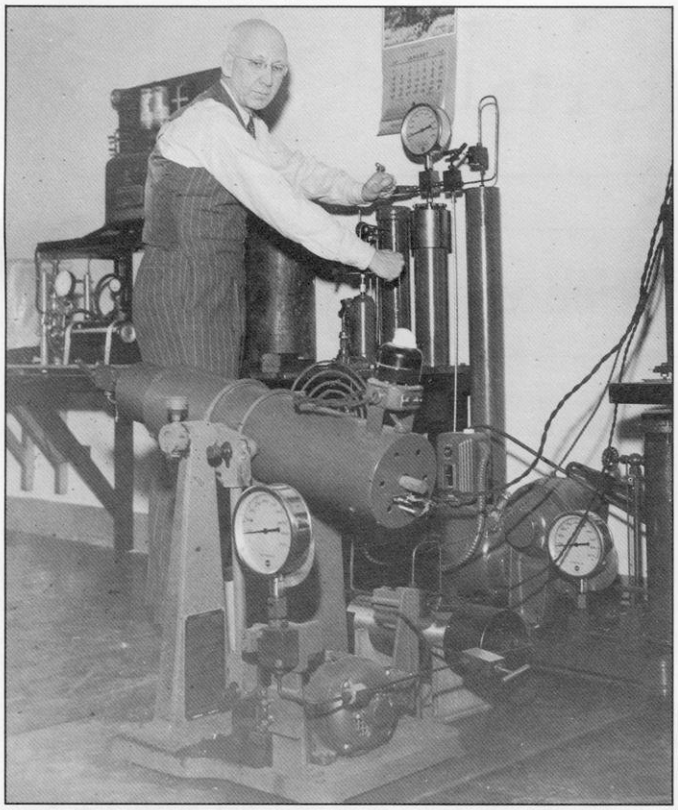
The UW Ultracentrifuge with head elevated to reveal rotor.

The First Ultracentrifuge

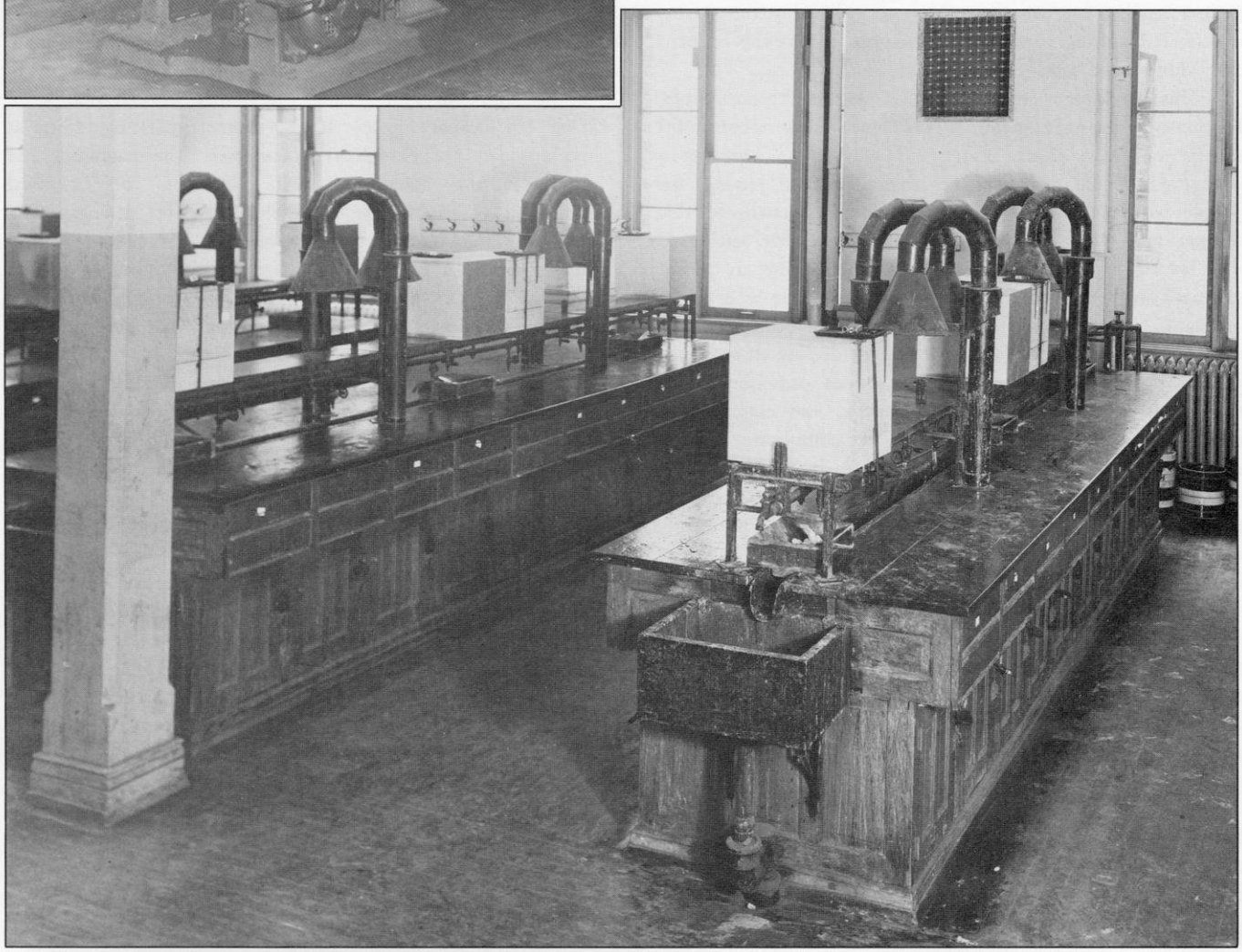
Professor The Svedberg of the University of Uppsala, Sweden, designed and with Dr J.B.Nichols, constructed this first optical centrifuge while a visiting Professor at The University of Wisconsin in 1923. It was used for the determination of particle size distributions.... in some paint pigments, carbon black suspensions and representative inorganic colloids. .....

Success with it led at once to the development of the.. high-velocity oil turbine ultracentrifuge, operating.... in a low-pressure hydrogen atmosphere at speeds up to 70,000 rpm, which Professor Svedberg built after returning to Uppsala. This impressive engineering ... achievement enabled him to obtain fundamental information.. on colloids and macromolecules, some of which have... revolutionized concepts prevailing at that time. .... for instance, some of his early results established the existence of definite molecular weights for proteins, thus to found a new subject, the Physical Chemistry of the Proteins. For this achievement he was ..... awarded the Nobel Prize in 1926.

Homer Adkins, ca. 1948



This Badger Chemist breathes the glory of Wisconsin today, a Wisconsin inspired by the vision of her Past and secure in the courageous flame of her Destiny



Freshmen Laboratory, Old Chemistry Building (about 1948) showing rabbit hutches.

Editorial

Crisis in Science

I appreciate the invitation to share with fellow Badger Chemists some of my convictions about communicating chemistry. Distinguished departments such as ours have an important mission in advancing knowledge and training graduate students. There is no debate about that mission nor about our preeminence in achieving it. Our faculty and our alumni are testimony to the standard of excellence we continue to maintain. By all measures, the Madison graduate program in chemistry is among the best in the country, indeed in the world. This is a tribute to the enlightened leadership of a great public institution, to the hospitable and supportive environment provided by the citizens of Wisconsin, and to the creativity of faculty and students who not only thrive in such a setting, but who contribute to enhancing the quality of life in Madison, throughout Wisconsin, across the country, and around the world.

This attainment carries with it several responsibilities. Foremost is the maintenance of excellence. This responsibility can be met if we clearly understand, and act on, the rapidly changing national societal forces that affect our setting, the people who are drawn—and who must be drawn—to that setting, and what eventually emanates from that setting.

The shrinking pool of students who choose to pursue graduate work at Madison and across the nation is a source of alarm. The number of 22-year-olds has been declining annually since 1981 and will continue to decline through the end of the century. This will have serious consequences on the supply of chemists, natural scientists, and engineers. If one projects through the year 2000, the cumulative shortfall in holders of Bachelor of Science degrees in natural science and engineering is estimated to be about 430,000. Similar projections based on current trends indicate a shortfall of about 4000 PhDs in those fields by the year 2004. Academic institutions and industry will soon be competing for a shrinking supply of PhDs since an estimated 40% of the current science and engineering faculty will retire in the next 10 years. By the year 2000, 85% of those who enter the work force will be women and minorities. Effective recruitment and retention strategies targeted at all segments of the population must be deployed now in order to meet the demands of the next decade.

Not only will our ability to carry out graduate research be affected, but so will the quality of our professional and personal lives. Although there are signs that we do not work sufficiently at nurturing and developing the talent of our youth, I believe strongly that we have the national capacity to deal successfully with these issues. What we must do now is develop quickly a national will to enhance the quality of science education throughout America.

For chemists, this means stepping up our efforts to communicate chemistry to nonchemists. Sharing our enthusiasm about, and commitment to, chemistry with others is a pleasant task. We should not only strive to understand the chemical world that we live in, but we should teach others about chemicals, their properties, their uses, their benefits, and their potential hazards. We should not deny others the joy and satisfaction of learning about our chemical world.

FOR BADGER CHEMISTS, this means expecting (perhaps demanding) an expansion of our efforts at the undergraduate level (the data of the ACS Committee on Professional Training on bachelor's degrees granted show that we can double or triple our annual output). It also means expanding efforts at the secondary and elementary school levels. The magnitude and scope of the activities of the Institute for Chemical Education (ICE) can serve as the basis for strengthening Madison's role in chemistry education at the precollege and college levels. A great deal has been accomplished by ICE in the past 5 years locally as well as on a regional basis and on the national scene. The ICE projects that are budgeted at more than one million dollars annually are a tribute to Madison's stature and its national influence. ICE and its centers and satellites across the country are excellent vehicles for improving the quality of chemistry education at all levels. These efforts, which are a source of pride to all of us, deserve further support.

We are very creative in solving complex scientific problems, and society is the better off for that. Should we not be creative and inventive in addressing the task of communicating chemistry to the nonchemist? We need an educated citizenry that has an understanding of the chemicals we eat, the drugs we should not use, the control of pollutants, and other complex issues. We need a scientifically literate citizenry that can distinguish between astronomy and astrology and that will not be bamboozled into making foolish decisions.

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