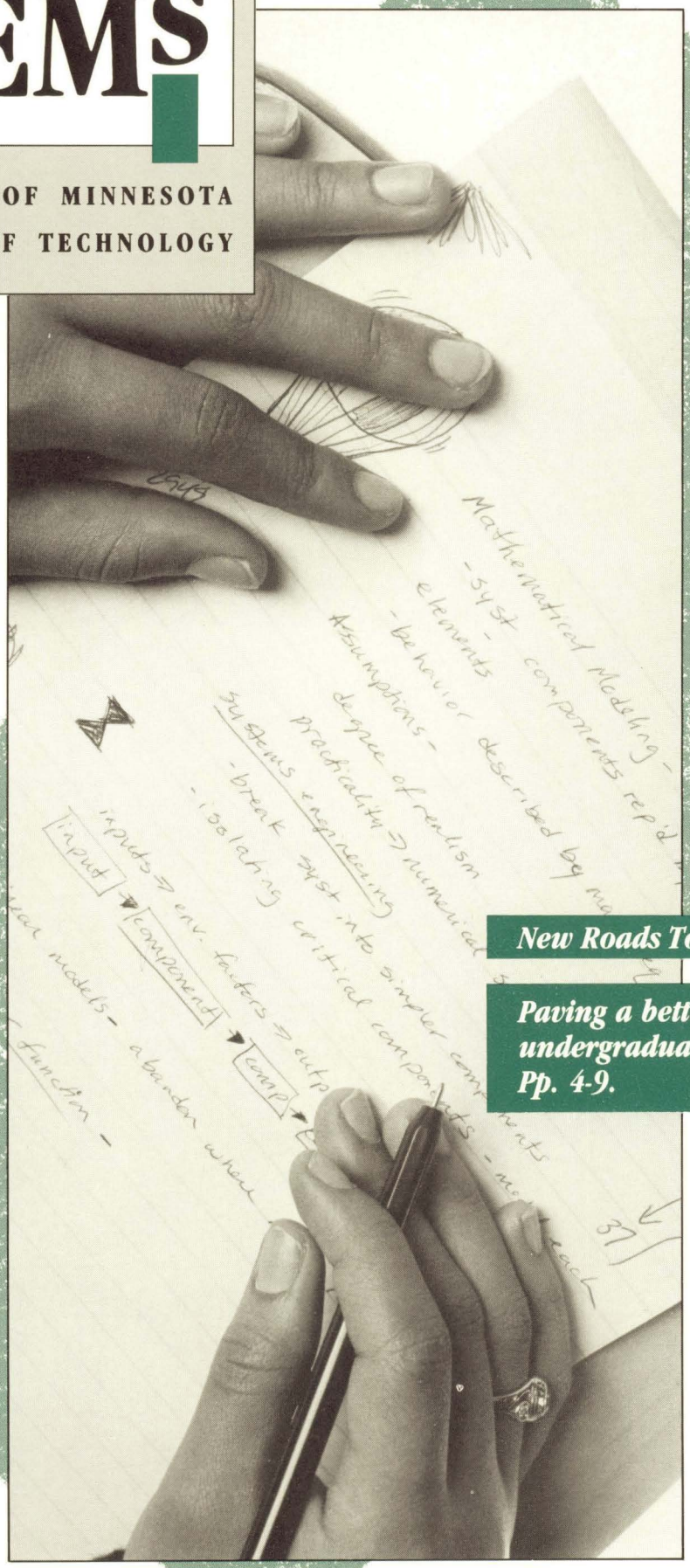
Winter 1988

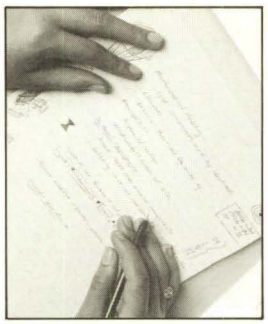
ITEMS

UNIVERSITY OF MINNESOTA
INSTITUTE OF TECHNOLOGY



New Roads To Excellence

Paving a better way for undergraduate education in IT.
Pp. 4-9.



4

Features

Departments

ITEMS

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Institute of Technology

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Ettore F. Infante ..... Dean
Gordon S. Beavers ..... Associate Dean
Russell K. Hobbie ..... Associate Dean
Clarence A. Berg ..... Associate to the Dean
Peter Zetterberg ..... Associate to the Dean
Robert V. Hanle ..... Associate to the Dean and Director of External Relations
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Items is published three times a year to inform Institute of Technology alumni and friends about news, interesting alumni and faculty, and relevant issues. Letters to the editor, requests to receive *Items,* and notices of address changes should be sent to the Director of Development, Institute of Technology, 107 Walter Library, 117 Pleasant St. S.E., University of Minnesota, Minneapolis, MN 55455. *Items* welcomes letters and ideas from all readers.

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NEWS

Smith Hall renovation completed

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

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

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

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

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

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

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

By Miriam Feldman

First Kaufmanis lecture held

George D. "Pinky" Nelson, astronaut and astronomer, delivered the first Karlis Kaufmanis Lecture in November. Nelson flew on NASA space shuttle missions in April 1984 and January 1986. Currently a mission specialist on the crew of the space shuttle Discovery, he will fly his next mission in June. Contributions from friends and former students of Kaufmanis, astronomy professor emeritus, support the lecture series. 3M's Space Research and Applications Laboratory provided additional support for the lecture. I

Endowment announced at S & T Day

Highlights of November's Science and Technology Day included the passing of the presidential gavel from John Kugler (Chemical 1959) to Kris Black, the words of keynote speaker John Rollwagen, and the announcement of a $100,000 endowment.

Black, whose three degrees from the University include a Ph.D. in materials science in 1981, became the first woman president of the Institute of Technology Alumni Society (ITAS). She announced a recently established $100,000 IT Alumni Society Scholarship Endowment Fund, which would finance scholarships for undergraduate students. The estate of Mary G. Childs provides the endowment money. Black encouraged alumni to help make this fund grow.

Rollwagen, CEO of Cray Research Inc., focused on the Science and Technology Day theme of creativity in technology. "Creativity doesn't come ordinarily from committees. It happens when unrelated patterns come together in a single mind," he said.

More than 70 companies and departments sponsored tables at this year's event, held at International Market Square in Minneapolis. Science and Technology Day is ITAS' main fund-raising event. I

IT Partners honored

A November dinner recognized the contributions of IT Partners Program members. Partners support IT activities through gifts that provide scholarships to undergraduates, assist in research efforts, and help keep and attract top-notch faculty.

Those honored included: **George Gibson** (presentation of the George and Orpha Gibson Chair in Hydrogeology); **Doris O'Connor** (presentation of the Shell Distinguished Chair in Chemical Engineering); **Barbara and Richard Nelson** (Trustees Plaque); **William I. Fine** (Builders for the Future Plaque); **Joseph C. Anderlik, Otto G. Bonestroo, Steven L. Crouch, Corinne M. Brasted, LeRoy M. Fingerson, Alan S. Rosenauer, Richard J. Hanschen, and Oscar A. Schott** (Presidents Club Plaques); **Willis K. Drake, Arlene R. Bennett, L.E. Scriven, Richard Y. Kain, Mr. & Mrs. Alfred L. Paquette, Henry Frisch, Benjamin Liu, and Patarasp Sethna** (Partners Plaques). I

Notes

Two-time Nobel Prize winner John Bardeen delivered the sixth annual Abigail and John Van Vleck Lecture in October. ■ The McDonnell Douglas Foundation contributed $23,000 to IT in October. The gift is designated for the aerospace engineering, electrical engineering, and mechanical engineering departments. ■ The recently formed Institute for Theoretical Physics hosted a three-day superconductivity workshop in October. Held in Monticello, Minn., the workshop attracted several well-known superconductivity researchers, including Nobel Prize laureate and Van Vleck lecturer John Bardeen. Physics professor Woods Halley organized the informal conference. ■ Gregory Lawrence, professor of civil engineering at the University of British Columbia, Vancouver, received the Lorenz G. Straub Award in October. The award, named for the founder of the St. Anthony Falls Hydraulic Laboratory (SAFHL), is given annually for the best hydraulic engineering thesis. ■ The job title of development director Robert V. Hanle has been changed to reflect expanded activities. He is now associate to the dean and director of external relations. I

Shimizu Corp. donates professorship

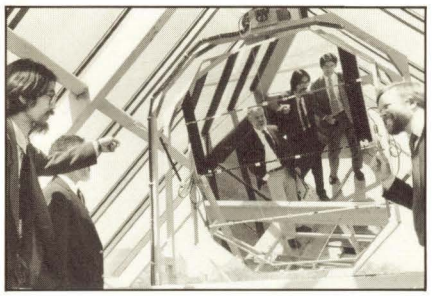
International homer hanky fans: (seated) Yorihiko Ohsaki (from left to right) Toshiaki Fujimori, Junichi Yagi, and Mrs. Ohsaki.

Shimizu Corp., one of Japan's largest construction companies, has established a $250,000 endowed professorship in civil and mineral engineering.

The first such professorship initiated at the University by a foreign corporation, the Shimizu professorship will explore new technological innovations in the design and construction of underground facilities. Shimizu's commitment will be matched by the Permanent University Fund.

Academic affairs vice president Roger W. Benjamin has appointed a search committee to fill the position. In November, Benjamin formally presented a Minnesota chair to Yorihiko Ohsaki, executive vice president of Shimizu.

For the first 10 years of the program, professorship holders will direct a research program in an area determined by the civil and mineral engineering department and Shimizu. The research will relate to underground space use and underground construction. After 10 years, the professorship will broaden to include any aspects of geotechnical engineering or underground construction.



Shimizu Corp. officials and dean Ettore F. Infante look into the mirrors behind CME's new heliostat.

Photos by Mary Perkins

It's all done with mirrors

Earlier this year, Shimizu donated and installed a new heliostat in the Civil and Mineral Engineering Building. A heliostat tracks the sun and uses one or more mirrors to reflect a concentrated, fixed beam of sunlight. In the Civil and Mineral Engineering Building, it delivers sunlight 110 feet underground to the Underground Space Center.

The heliostat installed by Shimizu replaced two originally installed in the building in 1983. Mechanical and control problems had necessitated constant adjustments to the old heliostats, says Ray Sterling, director of the Underground Space Center. One of the old heliostats used two mirrors; the other used three. Light loss and scattering at each mirror, combined with adjustment and sun-tracking problems, made the system inefficient.

Shimizu's heliostat uses one very large mirror, resulting in less light loss and scattering. The system works on a simple principle, using two pairs of photoelectric sensors mounted on a bar. The sensors are in balance when the heliostat points directly at the sun.

The system works well, Sterling says. Shimizu's heliostat and its installation are worth about $40,000 to $50,000. I

By Nancy Schwalenstocker

The Pursuit of Life, Liberty, Happiness (And A Degree)

IT strives to create more opportunities for undergraduates

By Chuck Benda

New Roads To Excellence

John Clausen began teaching mechanical engineering in 1946. During his early years in IT, Clausen's teaching experiences alerted him to problems confronting students. They had difficulty with lower-division courses. They complained about poor teachers and inability to get help from professors and teaching assistants. They worried about declaring a major when they entered IT, without much information about the major or their career prospects.

"These were really good students," Clausen says. "So many were dropping out or transferring. I saw a great unrest and unhappiness."

Clausen and others in IT became increasingly concerned about the flood of criticisms from students. In the early 60s, the college examined retention rates among IT students. A study completed in 1963 revealed some alarming statistics. By the end of fall quarter, almost half of all entering freshmen had either dropped out or couldn't maintain the 2.0 (C) grade average needed to enter upper-division courses. By the end of the first year, the percentage rose to 60 percent and after two years, 63 percent.

In the mid-60s, a task force recommended improving the quality of instruction, providing more tutoring and advising assistance to undergraduates, and allowing students to enroll without declaring a major. IT began developing new programs and policies to help undergraduates.

The results: Where IT once lost more than 60 percent of its entering freshmen after two years, it now loses only about 10 percent. Since the pivotal task force report, IT has been discovering or creating more opportunities for undergraduates. Students are, if not loving it, at least liking it more than ever before, and finding a more conducive environment to getting a good education.

Tutoring and Advising Tools for Survival

Because of his concern for the students—and because he had been one of the squeakiest wheels in voicing those concerns—in 1968 Clausen joined the dean's administrative staff as director of lower-division programs. Following the task force recommendations, Clausen set up both tutoring and advising programs with funds contributed by local companies. He hired a handful of graduate student teaching assistants and set them up in an unused classroom for a few hours a day.

As more funds became available, Clausen began hiring seniors and, eventually, juniors to tutor freshmen and sophomores. "The undergraduates do a super job," he says. The demand for tutors reinforces that assertion. From a few hours a week, the tutoring program has grown almost exponentially to more than 7,000 tutoring hours a year. Tutors are available 10 hours a day in Lind Hall, from one and a half to three hours a day at other locations on campus, and, for two nights a week, at six Twin Cities high schools.

According to Clausen, the rigorous demands of course work make tutors a necessity for many students, even though they have been excellent students in high school. Professors often can't afford to spend a lot of time working problems during lectures, and as a result, he says, even very good students need help working problems from time to time.

Photo by Tim Rummelhoff

Dawn Tilbury

Freshman Linda Weavers, a member of the National Honor Society, maintained a 3.9 grade point average in high school. Nevertheless, her freshman classes keep her running to the tutors at least twice a week.

"The course work is much more accelerated than it was in high school," Weavers says. "Without the tutoring program, my grades would be at least a full letter grade lower. The problems we have to work can be very difficult, and sometimes the professors and teaching assistants are unclear."

In addition to direct help, the tutoring program provides indirect benefits to IT students. Through regular reports from tutors, Clausen keeps close tabs on the kinds of problems students face. If he hears a number of complaints about a particular professor, he informs that professor. He also lets departments know about the kinds of recurring problems students report in

specific courses. This feedback gives individual faculty members and departments an opportunity to address student concerns and improve teaching techniques.

The tutoring program has grown more sophisticated over the years. Tutors undergo training to enhance their communication and teaching skills. The program provides extensive, detailed quiz reviews for courses that students typically find difficult. One physics professor has videotaped step-by-step solutions to the sample problems students must work.

Growth in the advising program, which helps students prepare for work in their major, has kept pace with the tutoring program. In the first year, only about a dozen students registered as unclassified, or without a major. Now there are more than 800. In the beginning, professors from various departments kept office hours in Lind Hall for advising students in career choices and class scheduling. Clausen expanded the advising program to include volunteer upper-division undergraduates—peer advisers—who help students with scheduling concerns and answer questions.

"I really enjoy working as a peer adviser. I can tell someone, 'Don't take these two classes in the same quarter—they'll kill you.'"

Dawn Tilbury,
tutor

"I really enjoy working as a peer adviser," says Dawn Tilbury, a senior electrical engineering student. "I can tell someone, 'Don't take these two classes in the same quarter—they'll kill you.' And if I don't have the answers, I can usually direct them to someone who does." Tilbury, who also worked as a tutor, thinks IT provides "everything a student needs to get an excellent education."

Tilbury and many other students also benefit from the advantages of working as a tutor. Assisting others helps them review the material, and, according to Clausen, many companies are eager to hire students who have worked as tutors and advisers.

Clausen is continuing to seek additional funding from industry and other private sources to meet demand for services. During the busiest hours, some students wait in line for tutoring and sometimes cannot get in during the time they have available. Although money is not the only answer, Clausen feels strongly that students should have ready access to the help they need.

"My whole objective and philosophy over here is to really treat students as people; to really make IT a place where they love to learn," Clausen says. "We have to respect the fact that they have bus schedules to keep, car pools to catch, jobs to go to.

"Sure, we're hired to do research—but we have to hold up the other end of the stick. We have to be teachers and role models. And improve undergraduate education."

Project Technology Power Formula for Success

Some of the most impressive improvements in undergraduate education at IT have taken place through Project Technology Power (PTP).

IT's minority affairs office, PTP developed programs to assist the underrepresented minorities—black, hispanic, and American Indian students. In 1980, enrollment from these three minority groups comprised about 1 percent of total IT enrollment—well below the national average of 8.5 percent.

"We've increased enrollment by 53 percent since then," says Don Birmingham, director of PTP. "And we've more than quintupled the number of graduates. Our retention rate is approximately 10 percent higher than the overall IT retention rate."

For Annette Alexander, a senior electrical engineering student from North Minneapolis, PTP provided a way to avoid the "large and impersonal University.

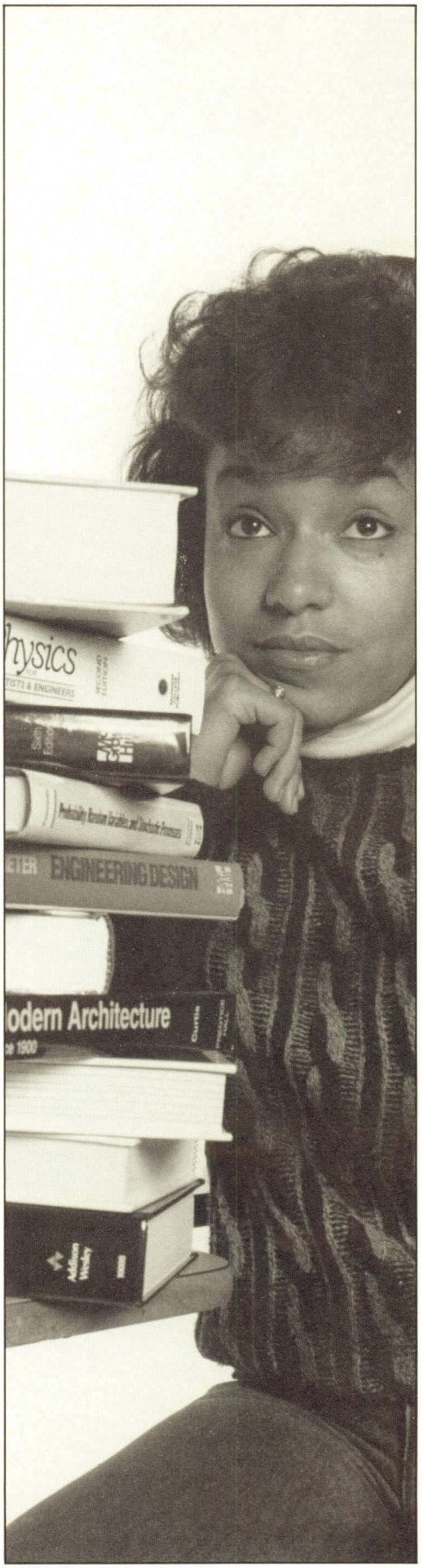
"I never felt lonely," Alexander says. "And I never had trouble meeting people and making friends." With the help of a four-year scholarship and summer internship through PTP, Alexander also has been able to make financial ends meet.

PTP offers programs both to support current students and to prepare high school students for success in college.

Three PTP pre-college programs help sharpen both student interest and math and science skills. Held on four Saturdays in the spring for 150 eighth-grade minority students in the Minneapolis and St. Paul school systems, Math Bridge program exposes students to a variety of technical careers and encourages them to take the science and math courses they need to enter IT.

Each summer, 100 post ninth-grade students attend computer camp, a hands-on computer workshop about programming, the uses of computers in schools and business, and educational applications of software.

The seven-week summer College



Preparatory Skills Program offers post 10th-grade students an opportunity to strengthen their math and verbal skills and prepares them to take the Preliminary Scholastic Aptitude Test (PSAT). Students receive a stipend of $470—approximately what they could earn working 20 hours a week—if they successfully complete the program.

All three programs have been highly successful, Birmingham says. For example, tests administered before the College Preparatory Skills Program indicate almost none of the students would have qualified for entrance to IT. After the program, 30 percent qualified. PTP plans to add a fourth program, which would emphasize a curriculum of physics, mathematics, and chemistry for post 11th-grade students.

Once these minority students enroll in IT, PTP provides tutoring and advising programs. Local industries sponsor scholarships for minority students. PTP offers practice interview sessions, industry visits, resume-writing programs, placement services, and internships. A student organization—Minorities in the Institute of Technology (MINIT)—supplies both academic and social programs.

The honors program and the rise in undergraduate research opportunities help some students increase their contact with the faculty.

Russell Hobbie,
associate dean

Tamera Irwin, a junior in electrical engineering from Minneapolis, made her first contact with IT through Math Bridge. When she arrived at IT, Irwin made full use of the tutoring services and became involved with MINIT. Currently secretary of the student-run organization, Irwin credited the workshops on study habits and other programs for helping to ease the transition to college life.

A member of the honors program and recipient of a Honeywell scholarship and internship, Irwin says IT should offer more assistance to all students.

"I've been lucky," Irwin says, "but I see others who don't have the kind of support I do. Most students don't fall short because they can't do the work. It's because they don't have the resources. The University misses out on a lot of talent because they don't provide those resources to everyone."

Honors Program Pushing to New Limits

James Rice, a junior computer science major, enrolled in IT's honors program because he wanted a challenge. At first he got a little more than he bargained for.

"I remember my first test," Rice says. "I got about a 50 percent. That was a real shock. I was used to getting 90 percent and above. They pushed us really hard, but I'm glad they did. I worked my butt off, and it helped me develop good study habits."

Rice was a member of the first group of freshmen to enter IT's new honors program, begun in 1986. "We wanted to do a better job with our best students," says David Frank, honors program director. "Some of them weren't satisfied with the education they were getting."

As he began his junior year, Rice was more than satisfied.

"I felt better prepared for upper-division courses than some of the non-honors students I've talked to. Other honors students seem to feel the same way. Our curriculum was tougher, more in depth."

Although the program is only in its third year and most departments are still struggling to put together upper-division honors courses, demand for admission is high.

"Last year we had about 250 applications out of which we selected 112," Frank says.

The structure of the honors program appeals to students looking for challenges. Faculty coordinate course work on similar topics—something that rarely happens in non-honors courses. For example, students in math and physics honors courses study vectors at the same time in both courses.

Honors classes are generally three to four times smaller than large-lecture introductory IT courses, and some courses may be team-taught by two professors. The smaller class size gives students a better chance to know their professors, Frank says. And, since they take many of their classes with the same group of students, honors students have more opportunities to get to know one another.

"It helps break down the feeling of anonymity," Frank says. It has been particularly difficult to establish an honors program in IT because of the densely packed curriculum most IT students must follow. The requirements of most programs allow little room for electives, and there is little money to pay faculty members to teach new courses. These problems have intensified as IT has begun to expand the honors program to upper-division courses, says Frank.

"We have a shock wave going through the system," he says. "People in the various departments are very busy and short on funds. Most departments are already overloaded in terms of number of students to professors. It's hard to create new courses that require more faculty per student. But the fact that they have these juniors sitting on their doorsteps is a good motivator.

"I think we've developed a sense of community in our students and a sense of excitement about learning. We've really touched that part of them."

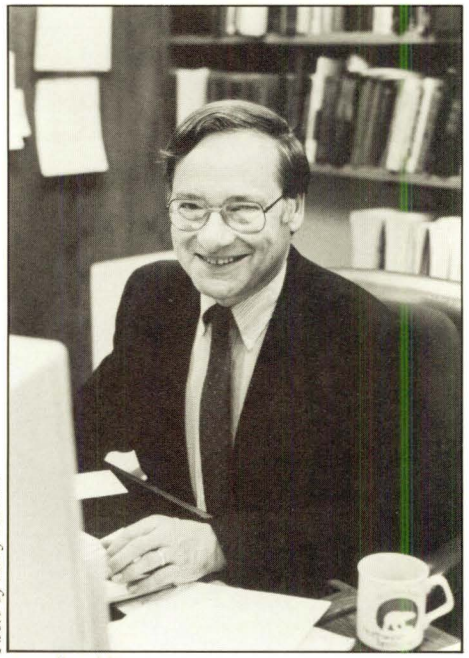


Photo by Mary Perkins

Russell Hobbie

Gifts and Scholarships Financial Assistance to Undergraduates

Private gifts and scholarships support many undergraduate education activities in IT. The tutoring and advising programs, for example, came into existence through private support. One of the most consistent donors to the tutoring and advising programs has been Edna May Taylor, wife of IT alumnus George W. Taylor. In addition to making substantial annual contributions, Mrs. Taylor made a large contribution to refurbish the Engineering Library in Lind Hall to provide a study lounge and center for tutoring and advising programs. The project will be completed in 1988.

Many other individual and corporate donors provide gifts of cash and equipment that directly benefit undergraduate education, including major gifts of equipment from IBM, Apple, Hewlett-Packard, and AT&T.

According to Robert V. Hanle, associate to the dean and director of external relations, these kinds of gifts are examples of one way private support assists undergraduate education. Hanle cited the

endowed chairs—25 to date—established to bring top-notch faculty members to IT as another. Other, smaller endowments have been set up to support scholarships. Currently about 32 endowments support scholarships. These are in addition to the grants and scholarships that support undergraduate research (see story on p. 8). Several corporations also fund scholarships for IT students that are administered independently.

"We're moving into an era in which the private/public partnership must continue to grow stronger," Hanle says. "Universities can't achieve excellence without the support of alumni, friends, and corporations. It provides the edge needed to attract and retain first-rate faculty members and students."

Enrollment & Retention The Double-Edged Sword

"We've worked hard over the past 15 to 20 years to improve retention rates at IT," says Russell Hobbie, IT associate dean. "The programs we set up have been quite successful. Now we're having an enrollment problem."

IT enrollment has increased roughly 30 percent during the past 10 years, while faculty numbers increased minimally. Last year, 5,480 undergraduates enrolled in IT. Although this year's freshman class is down about 10 percent, the number of faculty members is still inadequate to meet their needs, Hobbie says.

"We've worked hard over the past 15 to 20 years to improve retention rates at IT. The programs we set up have been quite successful. Now we're having an enrollment problem . . . The undergraduate student/ faculty ratio is way out of whack. We've either got to have more faculty members or fewer students."

Russell Hobbie,
associate dean

If the demand for programs such as aerospace engineering, computer science, electrical engineering, and mechanical engineering continues to rise, IT may be forced to raise entrance requirements for admission to upper-division courses. Currently, juniors must have a 2.5 grade point average for admission to upper-division courses in those four fields; 2.3 for other majors. If the University does not provide additional funding to IT, those requirements may be raised to 2.8 and 2.5.

"The undergraduate student/faculty ratio is way out of whack," Hobbie says. "We've either got to have more faculty members or fewer students." The honors program and the rise in undergraduate research opportunities help some students increase their contact with the faculty, Hobbie says. He also says that the completion of the new electrical engineering/computer science building will make life easier for IT students. Ultimately, however, the course IT takes over the next several years will depend on the amount of funding available to improve the student/ faculty ratio.

Perhaps in a perfect world, there would be unlimited funds to provide more professors and smaller classes, more scholarships and more equipment, and more time for one-on-one learning. In an imperfect world, IT continues to fight to give the students the tools they need to survive; the resources to make their education what it should be. **I**

Chuck Benda, former editor of Minnesota *magazine, is a free-lance writer.*

Photo by Tom Foley

Close Encounters of the Experimental Kind

Undergraduates discover the joys of research

By Chuck Benda

New Roads To Excellence

The research laboratory has long been considered the private domain of faculty members and graduate students; the inner sanctum of academe where the mysteries of the universe are unraveled; the secret rooms where great minds do their "stuff." Certainly, it's no place for undergraduates.

But not so at IT. In recent years, the doors of IT research laboratories have been thrown open to more and more undergraduates, giving them a chance to become involved with numerous research projects. Through a number of programs offered by IT—Undergraduate Research Opportunities Program (UROP), Undergraduate Assistantship Scholars Program, and the Summer Undergraduate Research Program (SURP)—undergraduates have gained access to the inner sanctum.

"There aren't very many things a dean does that the faculty is unanimously enthusiastic about," says Russell Hobbie, IT associate dean. "The Undergraduate Research Opportunities Program is one of them." Patterned after a highly successful program at the Massachusetts Institute of Technology, each year UROP offers 30 to 50 undergraduates a chance to join in the research efforts of IT faculty members and graduate students. At the same time they may receive as much as $1,000 in financial support. Of that amount, up to $750 may be in the form of a stipend for the student's research time and up to $250 for supplies and expenses. In some cases, sponsoring professors have provided additional funds from their research grants for students to work beyond the time covered by their stipends.

Christine Gaskell, a Hopkins, Minn., sophomore majoring in chemical engineering, entered IT thinking she would simply get her bachelor's degree and get a job. Her research activities as an undergraduate have opened her eyes to a wide range of possibilities.

"It's been very exciting," Gaskell says. "I've had a chance to find out what kinds of work really interest me, and I've gotten a good taste of what research is all about."

Since fall quarter began, Gaskell has been working with a graduate student on a research project to determine if aluminum can be made without electrolysis. Using the University's solar furnace, Gaskell and her colleague are exploring the theory that aluminum can be manufactured by simply heating the bauxite from which it is made at extremely high temperatures. For a student who came to IT with a professed interest in alternative energy sources, Gaskell's UROP project is made to order.

"I became interested in alternative energy about the time my father started insulating our house to death," Gaskell says. "And I've been concerned about pollution for some time. I'd like to be able to do something about these problems.

"I'm sure all of this will pay off down the road. I'm getting lots of research experience, and I get the chance to put what I learn in class to work. I think it will help me make a better career choice."

Despite the fact that she is only a sophomore, UROP is not Gaskell's first exposure to University-level research. As a freshman, she received an Undergraduate

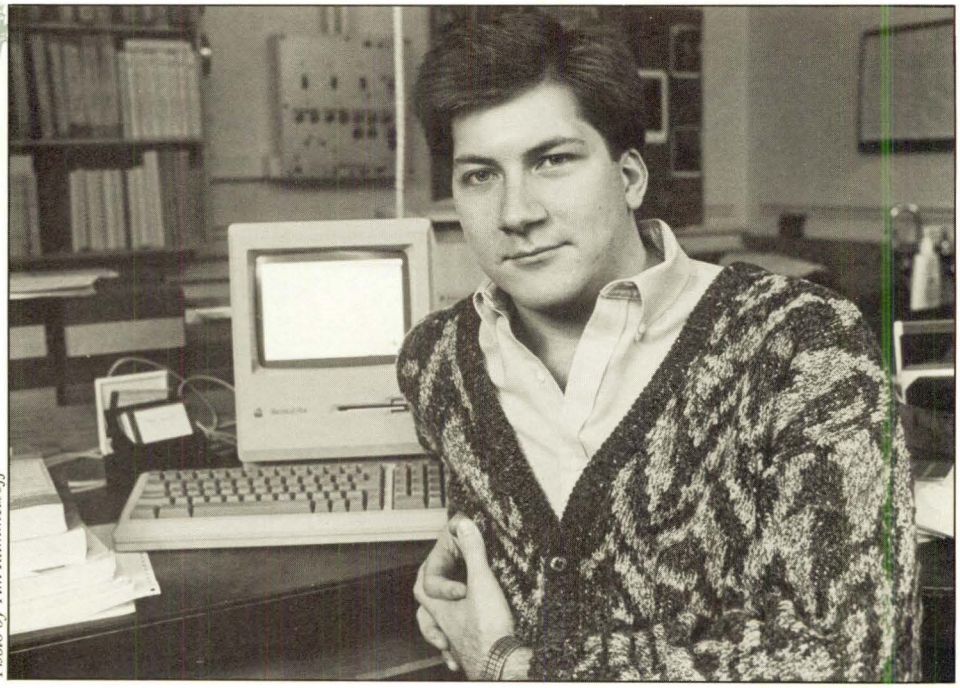


Photo by Tim Rummelhoff

Jim Amundson

Assistantship Scholars award of $1,000. Funded by industry and other groups, such as the IT Alumni Society, these scholarships are awarded to about 20 freshmen each year.

"The Undergraduate Assistantship Scholars Program has been going on for about 10 years," Hobbie says. "It's a great program. Freshmen are really excited to be able to work in a faculty member's laboratory. They don't have the skills to run a research project, but they learn a great deal."

David Sherman, an unclassified freshman who currently leans toward a major in mechanical engineering, grew up fascinated with cars and airplanes and developed an insatiable curiosity about how they worked. His assistantship has allowed him to pursue that curiosity while helping graduate students in mechanical engineering prepare the mounts for internal combustion engines. Because of his success in this program, Sherman already plans to apply for UROP next year.

Begun about 15 years ago as a National Science Foundation (NSF) program, chemical engineering's Summer Undergraduate Research Program is one of the oldest programs involving undergraduates in research projects. Even though NSF reduced the funding for SURP a few years after its initiation, the chemical engineering department had become convinced of the program's value and sought additional funding elsewhere to keep the program alive.

"We have a big university and lots of undergraduates," says H. Ted Davis, chemical engineering and materials science department head. "It's hard enough for those students to get much contact with busy professors and graduate students. SURP is very important for undergraduates. It helps them decide whether they want to go on for advanced degrees or go into industry. And it enhances the entire educational process."

With support from private industry and faculty research funds, SURP has more than doubled in size since it began. In 1987, 28 students became full-time researchers for the summer, spending 40 hours a week in the laboratory instead of taking classes or working part-time jobs. They received a stipend, completed summer research projects, and participated in research groups that included faculty members and graduate students. They presented periodic reports to student groups and faculty members and, at the end of the summer, presented a formal report before faculty members, fellow researchers, and industry sponsors.

Pam Vesely, a senior in chemical engineering, studied the biodegradation of a wood preservative called pentachlorophenol (PCP) in contaminated soil. BioTrol, the sponsoring company, wanted to explore more efficient ways of using Flavobacteria to degrade the PCP. Although Vesely's research results were inconclusive regarding optimal disposal methods, she discovered that PCP, which was previously believed to become concentrated in heavier soils, becomes most concentrated in lighter, sandier portions of the soil. This finding may lead to a publishable research paper and eventually play a role in cleaning contaminated soil.

"The summer research program has been very valuable for me," Vesely says. "In addition to the actual research experience, I've greatly enhanced my communication skills through the required reports and presentations."

Besides these formal programs, each year dozens of IT undergraduates gain research experience at IT through part-time jobs.

Jim Amundson, a junior physics major, has a student job that might rival the work of many graduate students and full-time researchers. Working for professors in the physics department who conduct pure research on the structure of matter, Amundson analyzes data collected from particle collisions. Amundson gets paid roughly $6 an hour and he's gaining invaluable experience.

"I hope to stay in academia," Amundson says, "and I'm learning a great deal about how actual physics research occurs. I get to see how an idea goes through an experiment and how much differently people interpret results. I think it will play an important role in helping me get a position later on."

"It's tremendously valuable to involve students in research," Hobbie says. "It makes them excited and they feel involved. That makes them work harder and benefits their education overall.

"Undergraduates are bright and they have creative ideas. Very often, from their innocence, they will ask questions that will draw a faculty member up short and cause him or her to change directions."

And that, after all, is what research is all about. **I**

Chuck Benda, former editor of Minnesota *magazine, is a free-lance writer.*

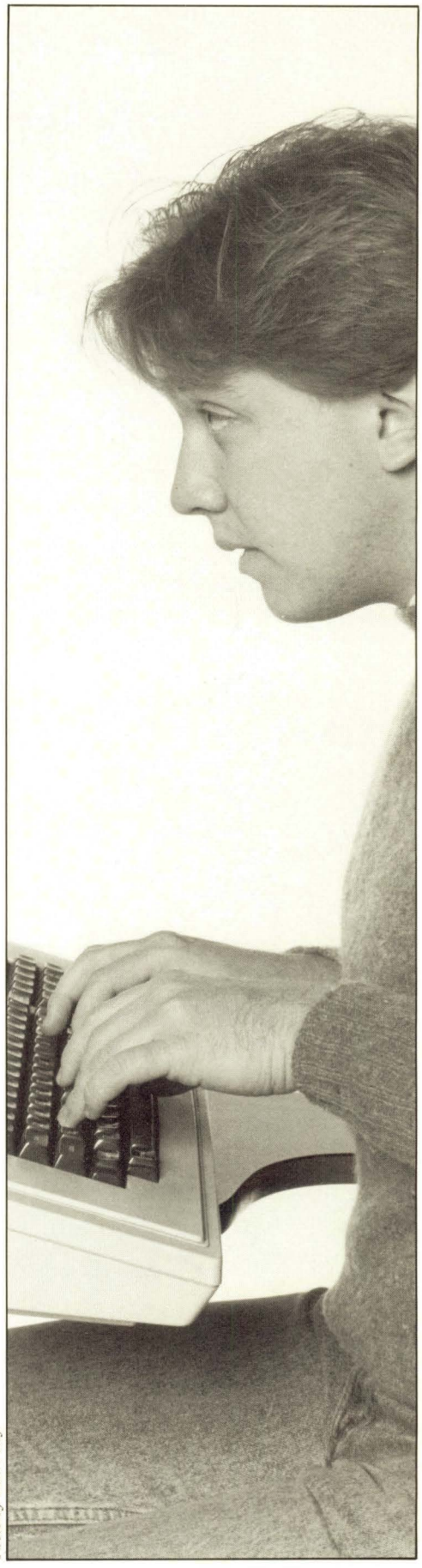


Photo by Tom Foley

Add Hard Knocks and Stir

Industry professionals share recipes for job search success with IT undergraduates

By Rabun Taylor

Al Baldwin's eyes sparkle ever so slightly before he speaks the words that no engineering student so close to graduation wants to hear.

"I've been on a lot of campuses recruiting students, and I can tell you it's getting tougher out there for graduating seniors. Frankly, there's very little to distinguish you from everyone else."

Pause for dramatic effect. A few seniors in the class are looking a little blue around the gills, but they keep writing.

"Nobody ever got hired from a resume," he continues. "A resume is a de-selection tool, and that's why it's so important. What it does is weed out the greater evils from the lesser evils. But suppose you get through the de-selection process. Then you're in the screening process, and that still isn't the real interview. The guy you're talking to weeds out another 50 percent of the applicants. If you're still around, there's a fair chance you'll be hired." (Relief in the ranks.)

"*But*—the person who's going to make the real decision is probably a complete novice at interviewing. He's not going to get a good grasp of the facts. He's relying on a series of impressions, some factual and some not. You've got to control his perceptions."

"Control . . . perceptions." The scurrying pens of 19 IT juniors and seniors record the phrase that will fast acquire new meaning for hundreds of IT graduates, most of them novices in the art of corporate courtship. The students in Baldwin's class, though, are trying to get a head start on the art of self-marketing through a new course in IT.

A professional engineer at Honeywell, Baldwin was one of seven people—several of them University alumni—who taught the course this fall. One of the first of its kind at the University, the course—"Developing Effective Job Search Skills"—helps undergraduates deal with an increasingly competitive and sophisticated professional job market.

The class evolved out of concern that students must now supplement their technical knowledge with good marketing judgment. Recruiters no longer flock indiscriminately to every campus in the nation; students, not the employers, must now take the initiative in the job search.

There are many reasons for this change. *Graduating Engineer* magazine cites "a pattern over the last five years of decreased recruiting, contraction in specific markets, and much greater savvy on the part of undergraduates in competing for existing jobs." Changing priorities, international labor competition, and a general trend toward consolidation of resources are forcing big industry to streamline its operations and concentrate on efficient production, often at the expense of research and development.

Still, the picture for new engineering graduates is far from dim. But students must now find out for themselves what's happening in engineering demographics, which is plenty. For example, their chances for immediate success with the corporate giants may be decreasing, but the opportunities at smaller businesses are burgeoning. Dun & Bradstreet estimates that over 75 percent of all new jobs in 1987 were with companies of 500 employees or less. The new coyness in big business doesn't entirely account for this figure; the fact is that small businesses in this country—including small technical businesses—are thriving.

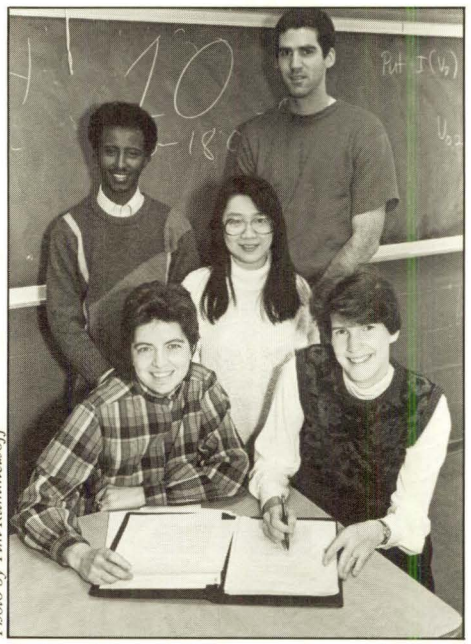


Photo by Tim Rummelhoff

Students Solomon Haile, Tuyetnga Doan, and Fred Burkley (standing from left to right) pay close attention to career information from course coordinator Kathleen Clinton and alumnus Barbara Timm-Brock (seated left to right).

An attractive characteristic of this market is that it can offer the new graduate more recognition. "In the bigger companies, if you come in with a bachelor's degree in a technical field, you start as a technician," says co-instructor Kris Black. "But in the smaller companies, you're probably going to go in as an engineer."

The course was the brainchild of Barbara Timm-Brock (Chemical 1982). What motivated her was less the national employment situation than a specific concern about Minnesota. "I'm a recruiter for Pillsbury," she says. "After I'd gone to a few other campuses, it became obvious to me that Minnesota engineering and technology graduates weren't as well equipped with interviewing and resume skills as students at the other schools."

She began lobbying for a course in job search techniques last spring, and found a

New Roads To Excellence

ready advocate in Russell Hobbie, associate dean for student affairs. They both brought the idea to dean Ettore Infante, who was delighted to have a willing volunteer organize the course. "The next thing I knew, we were in Russ Hobbie's office talking about a syllabus," she says.

Timm-Brock worked with Kathleen Clinton to develop the course. Clinton, senior student personnel worker in the IT placement office, moderates all of the classes and gives the assignments and grades. "Barbara identified some people she felt could contribute to the class and present different topics, and I came up with several people to fill in the areas where she didn't have any contacts," she says. "Between our experiences we came up with what we felt should be done."

Recruiters no longer flock indiscriminately to every campus in the nation; students, not the employers, must now take the initiative in the job search.

Kris Black was a natural choice. With three degrees from the University of Minnesota and a managerial position in an analytical lab at Unisys Corp., Black finds her teaching skills frequently in demand at the University.

"If somebody at the University asks us to talk to students or teach a class, that gives us an opportunity to give something back to the University," says Black. "We all remember what it was like to be in the situation these students are in. If they're good and capable, you're going to do everything you can to give them an opportunity, because somebody did that for *you* once. And we can feel comfortable saying to employers, 'this person had a good education.'"

"Developing Effective Job Search Skills" presents a variety of strategies and approaches to self-marketing. "Sometimes the different instructors won't agree on something," says Clinton. "I think it's good that students get exposed to that, because that's the way it is in the job market."

Every week for nine weeks, a different instructor discusses a relevant topic in detail: determining goals, role playing, resume writing, interviewing, employers' attitudes. The instructors emphasize the psychological tools of the job-hunting trade, whether it be making a good impression, assessing an interviewer's probable expectations and prejudices, or trimming the fat off a resume.

About every other week, students must submit a completed assignment. Some of the assignments involve self-assessment, others require research into likely fields of employment. Every student must write a resume and cover letter. In the seventh session, the students are given a mock screening and an informal interview, where they are encouraged to try what they've learned in a one-on-one situation. "If you're right for the position, your best option is to make the employer want to see what you're like in person," says Black. "You want them to think there's something different, something catchy, about this person."

"This class should be given every quarter," says Solomon Haile, a junior in mechanical engineering. "I don't have words to explain how important this class is for students before they graduate. I was thinking it was best to approach the interviewer and talk before the interview, but they're saying don't show up before you're called—I didn't know that. And my resume was a disaster. I thought I had a good resume, but compared to the samples they gave us . . . ! I'm glad they saved me from that.

"I'd like to take the class again next quarter. I'm sure I would learn a lot of new things from day to day. After all, we're students—we want to know more about the real world."

If evaluations by students and instructors are positive, Clinton hopes to make the course a permanent biannual offering, with continued teaching support from alumni. "Our hope is that this will be a course we regularly offer to juniors, so that when they become seniors and the recruitment process begins, they'll already have this background," she says. **I**

Rabun Taylor is an editor in University Relations.

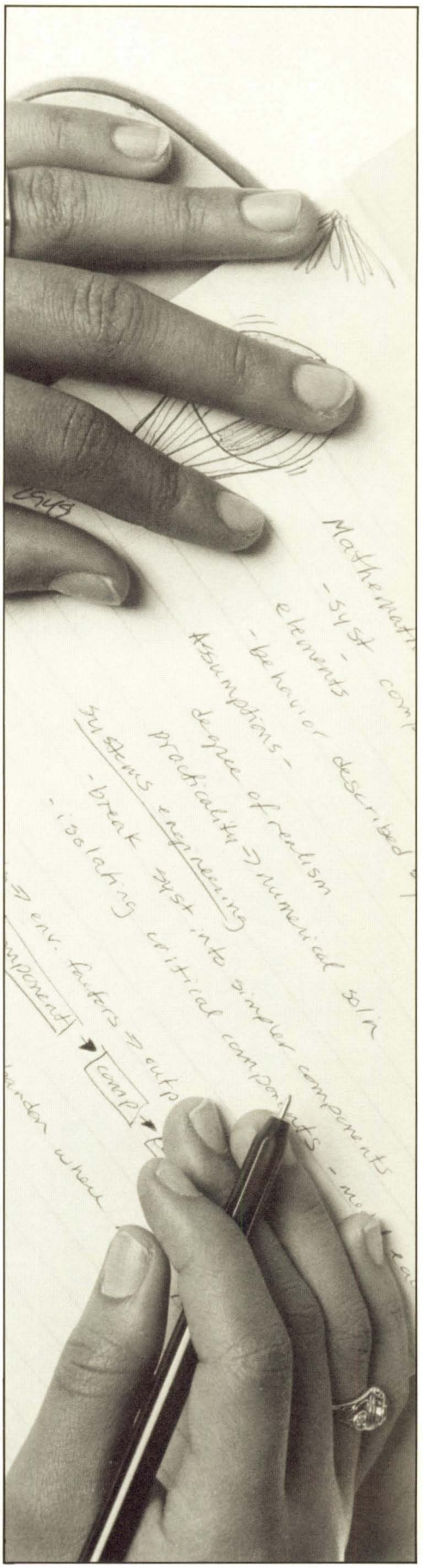


Photo by Tom Foley

FACULTY

Keith Olive
PYI winner considers universal matters

Physicist Keith Olive has a simple goal: a better understanding of the history of the universe and the nature of forces acting on the world around us. Achieving it won't be simple, but a boost from his 1987 Presidential Young Investigator (PYI) Award will help.

The National Science Foundation awards the five-year, $25,000-per-year PYIs to promising young scientists as an incentive for them to stay in academia. NSF also matches up to $37,500 per year raised by a winner's department from other sources, bringing the maximum total award to $100,000 per year. The physics department has brought Olive's total to $100,000 per year. He'll use the funds to help support his research, students, visiting speakers, visiting scientists, and postdoctoral fellows.

He has his work cut out for him. Olive's investigations of the nature of matter and the Big Bang put him on the cutting edge of theoretical physics. He is especially interested in the role of "dark matter" in the universe. Some scientists have postulated that much matter is invisible, or "dark," and might contribute enough gravity to cause the universe to collapse eventually. Some of that matter may be composed of subatomic particles called neutrinos and photinos.

"For example, some models of particle physics predict neutrino masses," Olive explains. "If the mass is large enough, it predicts a collapsing universe."

Photinos are predicted by "supersymmetry" theories, Olive says. If photinos exist, they may have a mass a few times bigger than a proton and would easily pass through matter, as neutrinos do. Thus they would be very hard to detect and difficult to manufacture. Physicists must produce a particle in an accelerator to confirm its existence in nature.

"If they do exist and make up dark matter, maybe we don't have to make them," Olive suggests. "Maybe we can use the ones all around us. We could use the sun. In the sun, if they reached a high enough concentration they would annihilate each other, producing neutrinos with about 1,000 times the energy of the ordinary neutrino from the sun." If detected, such high-energy neutrinos would help verify the existence of dark matter.

Another tantalizing problem is the search for grand unified theories to explain the common features of the four fundamental forces of nature—strong forces holding atomic nuclei together, weak forces that tend to rip them apart, electromagnetic force, and gravity. Olive studies the interplay between cosmology, which treats the origin of the universe, and particle physics.

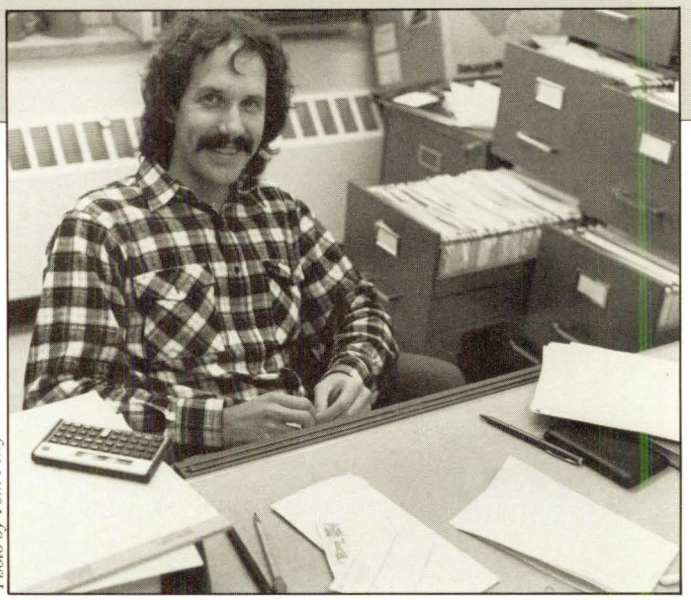


Photo by Tom Foley

Keith Olive

"I use particle physics to understand what went on when the universe was three minutes old and earlier," he says. "Based on what we know we can extrapolate back to 10^{-43} second by particle physics. That's the time at which gravity breaks away from the other three forces.

"I would like to understand gravity as well as we do the other forces. Gravity is different—there's no quantum theory of gravity. I don't know if there will be a quantum theory of gravity by itself or only in the context of unification. There may be a gravity particle called a graviton, but no one knows a complete description of how it works."

In thinking about how to unify the four forces, Olive works with superstring theories, which consider subatomic particles to be different excitations of one string, he says. He tries to extrapolate superstring theory down to energies that can be studied in particle accelerators, then placing that knowledge in a cosmological context.

A Chicago native, Olive began his career by earning a bachelor's degree in math and master's and Ph.D. degrees in physics at the University of Chicago. He came to the University in 1985 and remains enthusiastic about the solid state of physics here, especially the new Institute for Theoretical Physics.

"I hope part of the role of the institute is to keep this kind of work going," he says. I

By Deane Morrison

Aerospace Engineering and Mechanics

Professor *Philip Hodge* received a medal from the American Society of Mechanical Engineers (ASME) honoring his more than 35 years of work in engineering. During its annual meeting in December, ASME also made professor *Robert Plunkett* an honorary member for his substantial contributions to mechanical engineering.

Agricultural Engineering

Professor emeritus *Donald Bates* and veterinary medicine professor John Anderson won an American Society of Agricultural Engineers (ASAE) Extension Educational Aids Blue Ribbon Award for their design of a calf warming box. Professor *Forrest Bear* and an associate won an ASAE Blue Ribbon Award for their entry, "Planning, Organizing, and Teaching Agricultural Mechanics." Professor *George R. Foster* from Purdue University is the new department head. Internationally recognized for his work in soil erosion prevention, he received the Outstanding Engineer of the Year Award from the National Society of Professional Engineers in 1986.

Architecture

Visiting professor *Andrzej Piotrowski*, a practicing architect from Lublin, Poland, will teach design and graphics winter and spring quarters. Professor emeritus *Ralph Rapson* received the 1987 Topaz Medal, awarded jointly by the American Collegiate Schools of Architecture and the American Institute of Architects for outstanding long-term contributions to teaching.

Chemical Engineering and Materials Science

Klavs Jensen, associate professor, received the 1987 Allan P. Coburn Award for Excellence

in Publications from the American Institute of Chemical Engineers (AIChE). He also won the Young Chemical Engineer Award from the Twin Cities chapter of AIChE.

Chemistry

Professor *Paul Gassman* received a 1988 Fulbright-Hays grant from the Council for International Exchange of Scholars. Professor *Essie Kariv-Miller* received an Exchange Scholar Fellowship from the National Academy of Science and a Career Advancement Award from the National Science Foundation. Kariv-Miller also was awarded a Fulbright Fellowship for 1987-88.

Civil and Mineral Engineering

Professor *Cesar Farell* of the St. Anthony Falls Hydraulic Laboratory (SAFHL) is a member of a Midwestern University Consortium for International Affairs advisory committee that will help set up engineering labs for Indonesian universities. *John Gulliver*, associate professor, has been appointed technical editor for *Hydro Review*, a hydropower industry trade journal. *Karl A. Smith*, associate professor of the Mineral Resources Research Center, received the AT&T Foundation Award for outstanding engineering teaching and research. *Joseph Wetzel*, assistant director of SAFHL, attended the Memphis, Tenn., ground-breaking for a large cavitation channel that will be built using SAFHL's hydrodynamic design.

Computer Science

Maria L. Gini, assistant professor, received a $20,000 grant from the AT&T Foundation to purchase equipment that will aid development of a robot test bed for artificial intelligence and real-time programming.

Electrical Engineering

Robert J. Collins, professor and department head, received an AT&T Foundation grant of $20,000 to buy a microwave spectrum analyzer. Professor *Mostafa Kaveh* received a senior award from the Institute of Electrical and Electronics Engineers (IEEE) Acoustics, Speech, and Signal Processing Society for his paper on statistical signal processing.

History of Science and Technology

Arthur L. Norberg, associate professor and director of the Charles Babbage Institute, has been appointed to the NASA Advisory Council.

Mechanical Engineering

Professor *John N. Clausen* received the 1986-87 Zone 3 Outstanding Campus Representative Award from the American Society of Engineering Education (ASEE). *Kevin J. Dooley*, assistant professor, joined the department in September. *Richard Goldstein*, professor and department head, attended a meeting in Russia of the International Centre for Heat and Mass Transfer executive committee and presented colloquia on his research activities to the Russian Academy of Science. Professor *Ephraim M. Sparrow* received the Worcester Reed Warner Medal for an outstanding contribution to permanent engineering literature from the American Society of Mechanical Engineers (ASME) and also was named an ASME Distinguished Lecturer. *Kim Stelson*, associate professor, received the 1986-87 Dow Chemical Outstanding Young Faculty Award from the ASEE. *Kumar K. Tamma*, associate professor, and *Nicholas J. Zabaras*, assistant professor, joined the department in September.

Physics and Astronomy

Professor *Roberta Humphreys* received the Alexander von Humboldt Distinguished Senior Scientist Award for 1987-88 from the Federal Republic of Germany. As part of the award, which recognizes research and teaching accomplishments, she will spend six months at the Landessternwarte observatory in Heidelberg, West Germany. I

ALUMNI

Alumnus Erick Schonstedt
A strong attraction to magnetometers

They measure the heavens. They measure the earth. They measure beneath the sea. They delve into the past and push forward to new frontiers.

They are magnetometers—instruments that can detect and measure weak magnetic fields. These magnetic field sensors, devices of seemingly Biblical proportion, have been around for several centuries, but in 1953 Erick Schonstedt built a better one. As founder and president of Schonstedt Instrument Company, based in Reston, Va., he has been building variations on it ever since.

Schonstedt graduated from the University of Minnesota in 1941, with degrees in mechanical engineering and business administration. Because of the war, "there was such a desperate need for technical help," that Schonstedt launched his career a month before graduation. He went to work for the Naval Ordnance Laboratory, where he designed a magnetometer capable of measuring the direction and intensity of the Earth's magnetic field from an airplane. That instrument is now preserved at the Smithsonian Institution.

With the war over, Schonstedt searched for something else to do, and in 1953 founded his company. He wanted to make a better magnetometer. There were others on the market; his would preserve their best features, while eliminating their drawbacks.

Erick Schonstedt

At that time, magnetometers either consumed too much power or didn't completely erase the effect of the magnetic field just measured, creating a bad memory effect. (Think of turning off a television in a dark room, where a glow remains for some time. That's an example of a bad memory effect.)

Schonstedt's magnetometer consumed little power and eliminated the memory effect. It bears the trade name HeliFlux Magnetic Locator.

Scientists at the Naval Research Laboratory, who later became the nucleus of NASA's scientific experiment group, first used Schonstedt's magnetometer to measure how fast rockets were spinning and in what direction they were pointing.

Today, Schonstedt's instruments are aboard more than 300

***Schonstedt** to p. 14*

***Schonstedt** from p. 13*

space satellites, measuring the magnetic field outside the Earth. "They're circling the Earth. Circling the sun. Circling the moon," Schonstedt says.

His instruments also have more down-to-earth applications. Land surveyors use his magnetometers to mark the corners of properties. Geologists use them to measure how rocks are magnetized and to learn more about how the continents are drifting apart. In China, Schonstedt's instruments measure earthquake activity.

The latest application of the magnetometer is in asphalt recycling—the process of tearing up a road, crushing the asphalt, and reusing it. A milling machine cuts and crushes the asphalt, but cannot crush metal. So before the recycling begins, road crews use Schonstedt's "road runner" to detect hidden metals, such as manhole covers or old railroad tracks.

One of the more romantic applications of Schonstedt's magnetometers has occurred on expeditions to locate sunken Civil War ships with Clive Cussler, who searches for lost historical ships and has written numerous adventure stories, including *Raise the Titanic.* Schonstedt accompanied Cussler into the harbor in Charleston, S.C., where they discovered a number of war ships, including the Stonewall Jackson, a blockade runner that washed up on the Isle of Palms and sunk 15 feet in the sand.

Reflecting on more earthly matters, Schonstedt expressed concern that engineers are undervalued in our society. "Some of the brightest people go into finance and consulting," he says. "The nation's welfare depends on more of the bright students going into engineering."

When he was a student, Schonstedt couldn't decide between engineering and business, so he majored in both. "It was an excellent combination." Engineering skills "can wear out because technology advances beyond you," but you can always administer, he says. Next year, Schonstedt will celebrate his 35th year administering a company that has left its mark in the heavens, on the earth, and beneath the sea. I

By Miriam Feldman

1924

Elmer A. Jones *(School of Mines)* worked for 41 years at St. Joseph Lead Co. in Bonne Terre, Mo., 15 of them as manager of southeast Missouri mines and mills. During that time, he became the first president of the Society of Mining Engineers of the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME). In 1960, Jones received the University's Outstanding Achievement Award. His retirement in 1967 didn't slow him down; he was named chairman of the Lead Zinc Committee in Washington, D.C., and later joined the International Executive Corps., which sent him to the Philippines to advise a mining company. In 1970 the AIME awarded Jones the William Lawrence Saunders Gold Medal, recognizing distinguished achievement in mining. He now lives in Bonne Terre.

1956

Byron W. Engen *(Mechanical),* an instructor at Central Ohio Technical College, is chairman of the standards committee of the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE).

1957

Morris D. Wisti *(Mechanical)* is the executive president and chief of manufacturing at Star Machine & Tool Co., Minneapolis.

1967

Robert Tipton Brown *(Civil and Mineral, 1969 M.S.)* is vice president and chief civil engineer of Ellerbe Associates Inc. in Minneapolis.

John Sharp *(Geo Engineering)* is the C.E. Yager Professor of Geology at the University of Texas at Austin and conducts research in groundwater hydrology.

1971

Richard P. Rozek *(Math, M.A.)* joined National Economic Research Associates Inc. in July 1987 as a senior consultant in the antitrust and health care areas.

1975

William A. Hansen *(Chemical)* is the vice president of manufacturing for Capital City Products Co. in Columbus, Ohio. He has three children.

1976

Thomas R. Swanson *(Mechanical),* materials control manager for 3M Co., has recently spoken at several national professional organizations about automatic identification techniques.

1979

Craig Mueller *(Mechanical)* recently joined Solutions Are Everything Inc., an engineering workstation design firm, as a product designer. He previously had been a product designer and marketing engineer for Hewlett-Packard's Ft. Collins, Colo., systems division.

1980

Al Amlani *(Chemical)* is a senior process engineer at Hudson Engineering Corp. in Houston, Texas, working on design automation of offshore drilling platform topside facilities using artificial intelligence techniques with minimum process data.

1981

Brian L. Benson *(Mechanical),* a systems sales manager at Hoffman Electric Co., Roseville, Minn., is involved in the design and installation of commercial/industrial environmental control systems.

1983

William J. Drasler *(Biomedical Engineering, Ph.D.)* has been named vice president of research and development at Possis Medical Inc. in Golden Valley, Minn.

Jeffrey A. Gorski *(Geo Engineering)* has been promoted to field service manager for the Houston, Texas, offshore district of Schlumberger Offshore Services.

Bruce H. Seeds *(Architecture)* has passed the Architect Registration Examination and is now a licensed architect working for Corgan Associate Architects in Dallas, Texas.

1984

First Lt. William S. Sobaskie *(Geo Engineering),* a supply operations officer at Loring Air Force Base in Maine, has been selected to attend the Air Force Institute of Technology for a master's degree in logistics management.

1985

Daniel Steven Hiatt *(Mechanical)* was awarded his gold wings as a naval aviator in September 1987. In a ceremony at the Naval Air Station in Whiting Field, Fla., Hiatt's father, Fred, pinned his own 1965 wings on his son. Daniel Hiatt graduated with highest honors from naval aviation training and received a certificate of merit. He is assigned to Mayport Naval Air Station, Jacksonville, Fla., where he will fly the SH-60B LAMPS helicopter.

LTJG Patrick T. Keane *(Civil and Mineral)* received his wings as a naval aviator in November 1986. Deployed in Bermuda out of the Jacksonville, Fla., Naval Air Station, he is currently flying submarine patrol over the Atlantic Ocean.

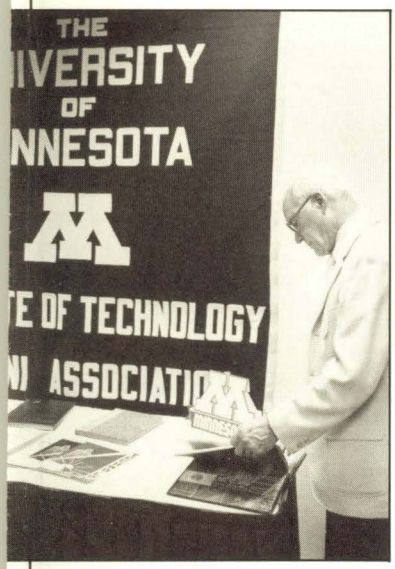
John M. Wisti *(Mechanical)* is involved in new product development and quality control at Star Machine & Tool Co., Minneapolis. I

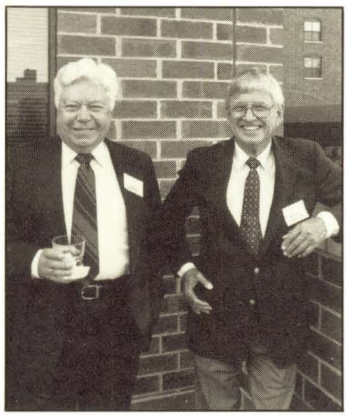
REUNIONS

Class of 1937 Celebrates 50 Years

(Top left) From left to right (seated) civil and mineral engineering grads Robert Rhode, Robert Johnson, F.W. Thorstenson, Art Banister, Delroy Peterson, (standing) Robert Ellison, Paul Thomas, John Boehlke, George Johnson, Earl Franzen, Richard Appert, Richard Soderberg, Milan Johnston, John Swenson, and Richard Leonard.

(Top right) From left to right (seated) electrical engineering grads Ken Hunter, Bill Smith, and John Mikkali, (standing) Jim Lang, Carl Henrici, Vincent Stewart.





(Left) Mechanical engineering alumnus Norm Serigstad eyes a *Gopher* yearbook at the class of 1937's 50th reunion held in June at the Radisson University Hotel.

(Middle) Architecture grads Lloyd Borget and Ralph Zander share some laughs.

(Bottom) From left to right Jill Henrici, Carl Henrici, Jim Lang, Marion Lang.

Photos by Mary Perkins

News About You

Name

Address

City, State

Graduation Year/Department

Job

Other News

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ALUMNI NEWS

Notes

The Institute of Technology class of 1938 will celebrate its 50th reunion on Oct. 6-8, 1988. Fiftieth reunion festivities will coincide with the University's *"There's Just One 'U'—A Minnesota Celebration."* Homecoming is scheduled for October 8. ■ ITAS directories were mailed in January. ITAS members who haven't received directories should write or call: IT Development Office, 107 Walter Library, 117 Pleasant St. S.E., Minneapolis, MN 55455; (612) 624-5268. ■ The Minnesota Alumni Association named the Institute of Technology Alumni Society (ITAS) the Outstanding Alumni Society of the Year (1986-87) in October. ITAS won this honor for overall programming and continued efforts toward maintaining a good relationship between IT and the community. I

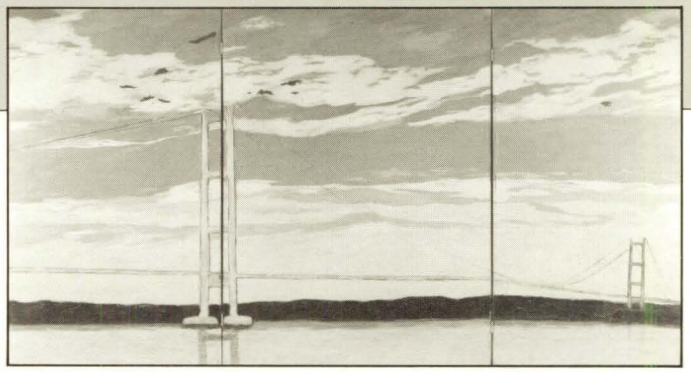
Claire and Simon Benson honored

Civil and mineral engineering faculty, staff, and friends gathered in October to honor the memory of two alumni, Claire and Simon Benson.

A painting was dedicated to commemorate the former students, who were killed in an auto accident in August 1986. Brother and sister, both had worked as civil engineers in Colorado. Simon Benson graduated with a B.S. degree in civil engineering in 1983; Claire Benson earned the same degree in 1985.

Commissioned by the Benson family, the painting hangs in the student lounge of the Civil and Mineral Engineering Building. Arleene Sweet painted the abstract scene of Humber Bridge. The world's longest span, Humber Bridge stands near Simon and Claire Benson's British hometown.

In 1986, the faculty voted to designate the CME Citation for Outstanding Undergraduate Performance as the "Simon and Claire Benson Award." The highest honor granted by department faculty to a civil and mineral engineering student, the annual award recognizes outstanding achievement in areas such as research, leadership, oral presentation, and effort or improvement. Claire Benson received the award in 1985. Simon graduated before the award was instituted. I



The painting of Humber Bridge, by Arleene Sweet, honoring the memory of Claire and Simon Benson.

DEATHS

Curtis C. Hammer *(Mechanical 1956),* co-owner of Hart-Hammer Inc. in Des Moines, Iowa. He was a member of the Iowa Engineering Society, an alumnus of the Triangle Fraternity, and secretary of the U.S. Hockey League.

Edgar Lambert Piret *(Chemical 1932 bachelor's degree; 1937 Ph.D.), 77,* professor of chemical engineering at the University from 1943 to 1959. In 1959, he was appointed science attache, then scientific counselor to the American Embassy in Paris. He was a fellow of the American Institute of Chemical Engineers, the New York Academy of Sciences, and the American Association for the Advancement of Science, and was a member of the American Chemical Society.

John C. Tenold *(School of Mines 1936),* president and owner of Spokane Steel Foundry in Spokane, Wash. He founded the company in 1952 with Ralph Baldwin and Jack Fagerstedt. He retired in 1984. Active with many community organizations, he served on the board of the National Steel Founders Society and was president of the society's western division.

Leo W. Zolldan, Jr. *(Chemistry 1939),* a scientist for the federal government in Washington, D.C., for 35 years. He retired in 1979. I

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