

From the Institute of Technology, University of Minnesota

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Ettore Infante

IT's new dean returns to college setting

By Pamela LaVigne

After spending four of the last five years at the National Science Foundation, Ettore Infante is glad to be back home in a university.

The 45-year-old former head of NSF's division of mathematical sciences started his duties as IT's new dean July 16, succeeding acting dean V. Rama Murthy and former dean Roger Staehle, who resigned in May 1983.

"I consider myself a member of the faculty first and foremost," Infante stressed in an interview in mid-June. "I think a good dean is a servant of the faculty, certainly not a master....It's the faculty that does things, of course. That's why the faculty is so important. Being a professor is the key thing."

Infante's administrative experience began when he directed a research group of some 15 faculty and 20 students while at Brown University. More "techniques and ideas" about administration developed while he was dealing with a research community of about 4,000 people at NSF. The dean's role is to be the "conscience" of the faculty, bringing before them problems and possibilities, "in a certain sense almost forcing the faculty to think about them," Infante said.

A dean is the one "who listens, points out opportunities...and the person who is going to go out with a tin cup and try to gather resources."

In this last sense, he said, the dean's job of finding resources will be most like the NSF job. It will be different from it, though, in the much broader spectrum of disciplines to be overseen here, in the method of distributing funds—not by peer review here—and in the time frame. "In Washington, the longest horizon one has is four years....In the University we always have a very, very long horizon."

Another of the dean's duties is making sure IT's internal and external constituents are aware of each other and bringing them together when such connections are desirable, Infante said.



Photos by Kevin Gutknecht

Ettore "Jim" Infante

"The task of the dean, I think, is very much to be an information broker, a builder of channels of communication, and a creator of opportunities."

Many of these opportunities occur in collaboration between IT and high-technology industries. The relationship has

advantages for both, Infante believes, even though—perhaps precisely because—the two are essentially very different from each other.

"Our product—people and ideas—cannot be sold and marketed. Theirs can be. They depend on us because we're the ones who produce the students who go to work for them. And we are the ones who make it our business to work and rework ideas at the very basic research level from which their products are based.

"I think that our relationship with industry, not only high technology but industry as a whole, has to be one that is simultaneously intimate and at the same time highly respectful of the fact that we are in different businesses mutually beneficial to the other. One of the worst mistakes we can make is for each of us to confuse which business we are in."

His own academic interests and the organization of IT itself make a good match, Infante believes. "All through my career as a professor I have always found that really interesting things were consistently occurring at the interfaces between pure science and engineering. And here is an organization where both science and engineering are under the same roof."

An only child, Infante was born in the northern Italian city of Modena (birthplace also of Luciano Pavarotti), al-

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Science and Technology Day scheduled for Nov. 9

Mark Friday, Nov. 9, on your calendar for 1984's Science and Technology Day. The theme for this year's event, the major fund-raising activity of the IT Alumni Society, is Minnesota Technology: An Outlook for the Future.

Richard Caldecott, Consultant to the President on Technology Transfer and former dean of the College of Biological Sciences, will deliver a keynote address on University-industry relations to open the afternoon talks. Tim Flynn of Peat, Marwick, Mitchell & Co. and Kathleen McLaughlin of Minnesota Project Innovation will make a joint presentation on the importance of innovation and entrepreneurship. Mike O'Donnell, chairman of the Medical Tech Task Force, also will speak in the afternoon. NSF Director Erich Bloch is the speaker for the evening banquet.

Afternoon events will take place on campus; the banquet will take place at the Radisson South Hotel in Bloomington, Minn. Further details will be announced in a late-September mailing from ITAS.



Infante "at home" with Lind Hall in the background.

Photo by Kevin Gutknecht

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though he was raised in nearby Bologna. When he was about 10 years old, the family moved to Caracas, Venezuela, where his father, a physician specializing in tropical diseases, took an offer to practice at a leper colony.

Infante first came to the United States, not yet 17 and by his judgment, hardly fluent in English, to enter the University of Texas at Austin. It was a professor there who, frustrated by his own inability to correctly pronounce "Ettore," substituted the name "Jim." Classmates soon took it up too, and since then Infante has used it also.

Infante started out as an engineering major, but switched to math because, as he said, "I did not think I understood things well enough to practice engineering." He earned undergraduate degrees in both mathematics ('58 B.S.) and aeronautical engineering ('59 B.S.). Not wanting to choose between the two fields for a graduate degree, he continued at Texas because he could combine the two, earning a Ph.D. in engineering/mathematics (1962). He became a U.S. citizen in 1964.

The interplay between the two fields continued once he began teaching and publishing. After two years as an engineering assistant professor at Texas, Infante moved to Brown to pursue research in applied mathematics. A one-year postdoctoral appointment there lengthened into a 20-year commitment. He was named professor of applied mathematics in 1973. Infante was on leave from Brown to serve, originally as program director and ultimately as division director, at NSF.

Infante, divorced, has a daughter, Cecilia, 19, and a son, Michael, 15.

Cecilia will be a sophomore at the University this fall. Michael will continue to attend boarding school in Massachusetts.

Infante is quick to praise IT. "It's a great institution with great strengths." After a thoughtful pause, however, he adds, "A place can always be better.

"Those who work at universities are constantly seeking excellence," he said. "And we're not seeking excellence on a comparison basis, this is our business. Our business is scholarship, our business is to try to convey to students those things that are so important in an intellectual sense. I think there are possibilities here—in the state, in the University—that have not yet been taken advantage of."

On recruiting high-ability students, for example, Infante said, "I think we owe it to the taxpayers of the state. Frankly, 60 percent of students who get their degrees from IT remain in this area. If we attract the best, and the state keeps the best, why, what investment those taxpayers have made, right?"

"I really want to work very, very hard at tapping those resources that we're not tapping—women, minorities.

"Secondly, I really want students within this state and outside it to know what a good quality this place is." He said one of the tasks of the dean and the faculty is to make themselves available to transmit this message about IT. "I don't think that the task before us is one of being at all Fuller brush salesmen...But we have to make an effort along those lines."

Explaining that he believes students learn a tremendous amount from each

other, Infante also said he would like to see more study and common areas for IT. Infante plans to teach a freshman math class during spring quarter because he believes a dean is supposed to be there for students, too.

Although he said he wants to put "considerable emphasis" on undergraduates, Infante was quick to state that by no means is his focus limited to them. Recruitment efforts should be addressed toward attracting top-flight graduate and postdoctoral students also.

Infante plans to continue nurturing the electrical engineering and computer science departments. Given the prestige of their institutional homes and the strength of the Twin Cities electronic and computer industries, "neither of these departments is in size or in level of activity where it should be.

"For that matter, it seems that we have not yet been able to provide the service—on the graduate level, the level of continuing education, the level of interaction with the electronics industry—that it is possible to develop. For the University and the institute, these are areas of opportunity and as such we have to take advantage of them.

"Above all I believe that we have an obligation to try to provide to our students and to the state the sort of quality instruction and research that I strongly believe are in the long run—the very long run—the mental, economic, intellectual, and technological strength of the state."



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Grad job prospects up slightly

By Pamela LaVigne

Job prospects for 1984 graduates, up somewhat over last year, still lag behind the peak years of 1976-80.

"Things were definitely better this year than last, not substantially, but at least going in that direction," said Lee Ponto, IT's director of student affairs and placement.

Placement statistics are not compiled until at least 70 percent of graduates return the placement survey form, usually by August. But early returns indicate that final figures for 1984 will be up from last year's 78 percent placement total.

Student-employer contact was good this year, Ponto said: 185 companies (a 12 percent increase over last year) sent to campus 580 recruiters, who conducted roughly 6,400 student interviews.

Almost 60 percent of last year's grads took jobs in Minnesota; not surprisingly, the top five firms hiring them were Minnesota based (listed in alphabetical order): Control Data, Honeywell, IBM, Sperry-Univac, and 3M. Ponto expects similar outcomes this year.

Average monthly salaries of students hired by June ranged from highs of \$2,291 in electrical engineering and \$2,289 for chemical engineering to a low of \$1,895 for math (not all departments reported).



Photo by Teresa Fett

Afshin Amini helped IT grad Farideh Amiri avoid tassel trouble. For many of the 575 grads attending June graduation ceremonies, commencement marked the beginning of a job hunt.

"As we go to high school visitations, the number of questions oriented around career demand is astounding," Ponto said. "Parents and students are asking: 'What are the five-year prospects?'"

Answering that question is not easy.

First of all, there are cycles in demand for science and engineering graduates, as Ponto has observed in his 10 years with the placement office. The early '70s were a down period, with funding reductions for aerospace development

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Two IT students learn about job market

By Pamela LaVigne

For 1984 IT graduates Scott Dacko and Dawn Duerre, the job search has been successful: both received multiple job offers.

Scott received four offers and took the first, with PHI Technologies Inc., in Oklahoma City, a privately owned company manufacturing cassette playing and recording systems, whose sales have been growing at a rate of 40 percent a year. Scott will develop a comprehensive quality control system for the firm. Besides the company's president, Scott is the only employee with a mechanical engineering degree on the staff, which is dominated by electrical engineers and computer scientists.

Dawn, an aeronautical engineering major, has received offers to join structural design teams in the astronautics and the aircraft divisions of McDonnell Douglas in St. Louis. She had com-

pleted only three interviews when these offers were made. In early July she had not yet accepted either offer and was continuing to explore other firms.

Scott and Dawn's success in the job search reflects good fortune and hard work that began long before the actual looking.

Both students deliberately became involved in extracurricular activities, not only to socialize but also to develop leadership, organizational, and communications skills—abilities that would make them appealing job candidates.

Dawn served as president of Plumb Bob, IT's honorary leadership and service group that organizes IT Week, was active in Kappa Alpha Theta sorority, and worked during summers.

Scott was president of the IT Student Board, helped write a new handbook for IT students, created and edited a biweekly student/faculty newsletter, *IT*

Connection, and worked part time during school. He also formed a new student organization, the Association for Creative Engineering, to promote invention and innovation.

Scott wanted to work in a small company because he thinks it is easier for an individual to make a difference there. So, in interviews he stressed his initiatives in activities and drew parallels between student organizations and small businesses.

Scholastics cannot be ignored, of course, though Scott and Dawn both mentioned the trade-offs they made because of their outside-the-classroom activities. "You'll notice that it doesn't have my GPA (grade point average)," Scott said about his resume. But he points out it does mention that he completed his degree in less than four years and it highlights his numerous activities and jobs.

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causing major contractors such as Boeing and McDonnell Douglas to cut way back on hiring.

Demand started to increase again about 1974, reached unprecedented

It's worked well, Ponto said. He estimated that students now spend just two hours (instead of 40 hours under the old system) signing up for interviews each quarter.

and organization of firms in these fields.

Both also registered with IT's placement office for interviews and consulted its company files for background before interviews. Scott was satisfied with his interview schedule, thanks to a friend in industrial engineering who figured out how to plot a curve that would tell them how to bid their 1,000 quarterly interview points to maximize their chances of getting the interviews they wanted. (For information on bidding, see related article.)

"As we go to high school visitations, the number of questions oriented around career demand is astounding. Parents and students are asking: 'What are the five-year prospects?' "

levels in 1977-78, and peaked in 1980, when 330 companies sent almost 1,000 personnel to conduct 8,000-9,000 interviews. Between 1976 and 1980, the placement rate was probably above 90 percent, Ponto said. "Virtually every student who graduated was guaranteed a job. We had students with 18 offers, 25-30 plant trips."

Judged by the number of recruiters cancelling their planned winter quarter visits, demand began to drop off in December 1982. Placements "reached bottom again" in summer 1983.

The supply of science and engineering graduates also cycles. Enrollment usually follows employment trends, but not always.

A third factor complicating the answer about future jobs is that there are shifts in "popularity" of different fields, Ponto said. Students choose—and change—majors, trying to guess what field will have strong job prospects.

The placement office offers students many services. Some 85 percent of undergraduates pay the \$20 fee to register with the office, and "the No. 1 thing they're seeking is campus interviews," Ponto said.

This year IT instituted a computerized bidding system (adapted from one created two years ago for the School of Management) to eliminate the long hours students were spending—sometimes sleeping overnight outside the office—to schedule interviews.

The system works like this. During the first week of each quarter, students list up to 20 companies with which they want to interview. They get 1,000 points to assign like bids to their choices. Students determine the priorities among their choices, then have to guess how many points it will take to land an interview with their top picks. A computer awards appointments to the highest bidders for each company. (The placement office posts notices of additional recruiters and of schedule vacancies as they occur, and these slots are filled on a first-come, first-served basis.)

Besides campus interview scheduling, the placement office offers workshops and seminars about various aspects of the job hunt, many conducted by Ponto and assistant placement director Kathleen Clinton.

In the placement office an entire wall of shelves carries company-furnished notebooks of background materials. On the counter are a bibliography of career information titles, sample formats for resumes and letters, and secretary Rose Garmer's candy "jar"—a large toy tractor with a feeder, the box full of peppermint rock candy.

In the hard pull of getting hired in your first professional position, sometimes the little things can help a lot.

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Dawn decided she wanted to concentrate during winter and spring quarters on organizing the Technology Fair. That decision meant taking a smaller-than-usual course load those quarters, and as a result she missed June graduation. She expects to finish in fall with a GPA that has earned her membership in several honorary societies, including Tau Beta Pi (engineering), Sigma Gamma Tau (aeronautics), Golden Key, and Mortar Board.

Their career preparation also included learning about the job market and about ways to sell themselves to employers. "I've got it down to an art and a science," Scott said.

By science, he referred to resumes, cover letters, and thank-you letters. Both consulted resume writing books and read articles in engineering publications, but they most frequently sought and followed face-to-face advice from friends. As a student member of the IT Alumni Society, Scott discussed his job search with its alumni members who, he said, "were more than willing to talk." From a friend met while organizing IT Week, Dawn learned about *Peterson's Guide to Engineering, Science, and Computer Jobs*, containing information on the products, services,

The art part of the job search really came into play during the interview, and here experience seemed to be the best teacher. "I was really rough last fall," Scott remembered with a laugh, even though by then he had already interviewed with 10 companies for an internship during his sophomore year. Dawn said her early performance in interviews was "lousy" until she received tips from a woman recruiter, who made the suggestions during her interview with Dawn.

"It (job hunting) sometimes seems a little tedious," Dawn said, but explained that she keeps at it because "I want to make sure I'm making the right decision." She's wanted to be in the space field since seventh grade and an aeronautical engineer since her junior year in high school. She'd like to be an astronaut some day. "I feel kind of excited because I'm finally going to find out if I want to spend my life working with airplanes and spacecraft."

Scott, too, used interviews as his opportunity to find out about companies. After he had bid all his interview scheduling points, he would recheck the placement office master schedule and sign up for open slots to practice interviewing and to learn more about work.

Trying to fit the job search into an already committed schedule of classes and work sometimes seemed overwhelming, Scott said. "You sort of feel incomplete in terms of future plans. Lots of people simply choose to ignore the feeling and concentrate on school-work."

And some limit themselves by their own timidity, Dawn noted. "They're content to stay where they are. I don't necessarily say that that's bad. For me, though, that's not what I want."

"Throughout the year, there's an incredible amount of uncertainty," Scott said. "For a number of my friends, there still is. They wonder, should they join the Peace Corps, or keep looking?"

IT programs encourage minorities

By Pamela LaVigne

Sara Mortenson, an American Indian and computer science junior, wasn't sure what she wanted to do after high school until she participated in an IT-sponsored program for 11th-grade minority students.

She liked the four Saturday morning classes so well she took a student job in IT that summer—a bio-engineering project on wrist and finger joint function with mechanical engineering professor Arthur Erdman.

"I didn't know anything about engineering or IT," Mortenson said. "That really opened my eyes and opened a lot of doors for me. I probably wouldn't even have considered (enrolling in) IT if I hadn't worked on these projects."

Project Technology Power, IT's Office of Minority Affairs' programs for Black, Hispanic, and American Indian students, has made a difference for Mortenson and other minority students.

Last year, 1.1 percent of IT's 1983 graduates were minority students (1984 figures will be available in December). In the 1983-84 school year these students composed 1.7 percent of IT's total undergraduate enrollment, compared to the national average of 8.2 percent. Between fall 1980 and fall 1984, the retention rate for minority students in IT was 70 percent, greater than IT's overall retention rate of 56 percent for the same period.

PTP started in 1974 to combat the problem of severe underrepresentation of minorities in technical careers, PTP director Don Birmingham said. Its goals are the recruitment, successful education, and graduation of minority students in engineering, computer science, and science programs. Its precollege programs include the following:

■ **Math Bridge.** The Math Bridge program for eighth-graders started in 1977. For the past two years the School of Management has been co-sponsoring Math Bridge with IT. The program introduces minority students to the University and encourages them to take high school chemistry, physics, and four years of math. "Even if they don't choose to go into technical college programs, these high school courses increase their options," Birmingham said.

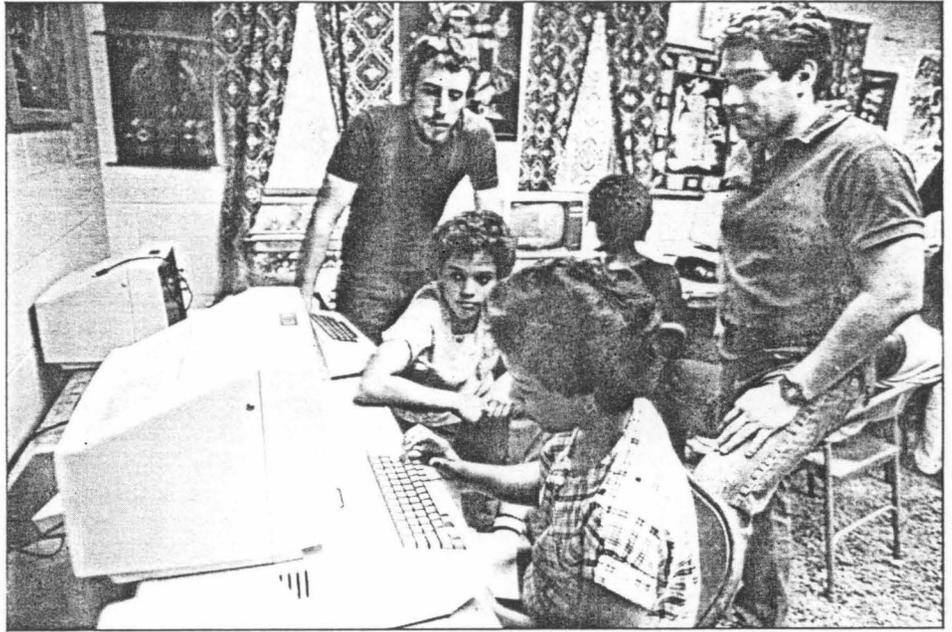


Photo by Tom Foley

Computer Camps paired minority junior high school students with IT students, who provided advice and support. This was the first summer for IT's Computer Camp, part of a series of precollege learning activities for minority students.

Math teachers and counselors in 14 Twin Cities junior high schools (most are inner city schools, although some private and suburban schools also now send students) identify interested students with math ability to participate in the program.

Junior and senior high math instructors, University faculty, and currently enrolled IT minority students jointly decide the curriculum. Activities for this year's 170 participants featured problem-solving and study skills exercises, a computer graphics project, and a physics lab.

As in all of PTP's programs, strong support characterizes Math Bridge. Participants are picked up by bus in their neighborhoods. They receive awards, which this year included calculators for those with perfect attendance records, and back packs for outstanding performance.

Many of the minority students currently enrolled in IT work in the Math Bridge program. "We have the role-model interaction built into the program," Birmingham said. "Parents' involvement is crucial too, so we ask that they attend the final session, when they receive information on the University and technical careers."

■ **Computer Camp.** During summer 1984, IT and the School of Management also collaborated in launching Computer Camp for ninth-graders. During two, one-week camps, 66 students learned how to operate an Apple IIe computer and worked with four software programs.

■ **Proposed Precollege Programs.** Plans for extensively revising the 10th- and 11th-grade programs have been proposed. Birmingham and Russell

Hobbie, IT associate dean, are now seeking funding for them.

Students in the proposed 10th-grade program will train intensively in preparation for the PSAT college entrance exam they will take in the fall. Students also will tour IT departments and local businesses. The proposed \$40,000 program includes an unusual item: paying the participants a stipend, based on the hourly minimum wage. Students in the proposed 11th-grade program will begin by taking a diagnostic math test. Those scoring at or above the 11th-grade level will take five to six weeks of intensive physics; students not scoring at their grade level will work to improve their math skills. Both groups will take chemistry classes. "We are attempting to reinforce and strengthen their skills in areas that will help them to be competitive in their chosen careers," Birmingham said.

Recruitment is the objective during students' senior year, and all minority prospective students receive much individual attention. "The reason I stayed hooked was that they stayed in contact with me," said Michael C. Johnson, who attended the first Math Bridge program and now is an electrical engineering major in IT.

■ **College Program.** PTP provides numerous support services for past program participants and other minority students once they are enrolled at the University: tutoring, scholarships, academic advising, support groups, part-time and summer internships. During college, Johnson interned three times with Honeywell, a firm he first visited as a participant in PTP's earlier precol-

Coffee, doughnuts, and fun:

Magazine opens learning doors for staff

By Darlene Gorrill

Technolog student workers realized the fall 1983 issue was in trouble—machines had broken down and a story the editors needed wasn't completed. If that wasn't enough, it was almost time to send the IT students' magazine to the printer, and there wasn't any cover.

But a last-minute design by production editor Kay Kirscht solved the cover dilemma; editors found another story to replace the incompleting one; and machines or no machines the issue hit the stands. Proving once again that chaos sometimes produces the best results, the issue, which examined alternative energy forms, won four awards, including best single issue, at the Engineering College Magazine Associated Convention in spring 1984. All total, *Technolog* received 11 awards in 13 categories.

For the students who work on *Technolog*, last-minute deadlines and problems, as well as coffee and doughnuts for late-night production sessions, are common.

"I remember staying up late at night with Jim Lundy (co-author of the award-winning story on Minnesota's peat policy) and getting really silly at three in the morning....I can't believe we did that," said Mary Wilkosz, last year's assistant editor and recent IT graduate in geology. "It's a lot of fun."

According to new *Technolog* editor and mechanical engineering senior David Herridge, the magazine exists "to inform IT students on developments in technology and on events around IT."

But the magazine also has a broader charge—to involve IT students and provide them a forum in which to write, Herridge said.

The opportunity to write is what drew Herridge and last year's editor Alan Hauser to the *Technolog* office in Room 2 of mechanical engineering. "I think you have to realize the importance of communications skills in engineering and practice those skills while in school," said Herridge.

"I think it helps open up the University," Hauser said, giving students access to decision makers and allowing them to gather information about issues. One of Hauser's favorite experiences was a discussion with Graduate School dean Robert Holt for an editorial about increases in graduate tuition. Wilkosz interviewed Gov. Rudy Perpich for the peat story.

Technolog's core staff of editor, assistant editor, production editor, and photo editor decide issue content. The IT Board of Publications, consisting of a faculty advisor (John N. Clausen) and students elected to oversee the hiring of the editor and business manager and to guide content and business decisions, also provides direction for the editorial staff. Issues are published six times an academic year.

Most of *Technolog's* writers are freelancers, who may write for one or two issues. Free-lance opportunities are announced around campus each year. Although some years it's hard to get student writers, in 1983-84 "we have had a really good response," Hauser said.

Editors often set a theme for an issue, such as the recent examinations of energy and pollution. *Technolog* has produced a story outlining the historical development of the Institute of Technology and regularly features a column about jobs, campus recruiting, and placement.

Technolog also contains TechnoFlog, a humorous feature column, Technotrivia, and Ad Astra (book reviews).

"We try not to respond to other articles, but we try to get a mix that is unique to the University of Minnesota and to IT specifically," said Wilkosz.

As an example of an unique approach, Hauser points to *Technolog's* survey of IT faculty on the question of nuclear power. The faculty survey was followed by a student survey on the same topic.

Technolog hasn't always tackled tough stories. Earlier, the magazine devoted more space to humor and fun stories. "The last couple of years, it switched to a more serious publication," Hauser said. The magazine's tone often reflects who heads it and what emphasis students on campus seem to set, he said.

Issue size is determined by the amount of advertising sold. National ads are supplied by an advertising firm; staff sell local ads. Next year, Herridge said he wants to hire an advertising coordinator to increase the number of ads.

Herridge also would like to see more IT students write for *Technolog*. Said Wilkosz: "It's a great way to experience a lot of things. You can get involved in everything. There is a lot of personal satisfaction in that. You get to work with a really neat group of people."

Alumni may purchase a subscription for \$10 by writing to *Technolog*, Room 2, Mechanical Engineering Building, 111 Church St. SE, Minneapolis, MN 55455.

Minnesota Geological Survey analyzes rocks

By Harvey Meyer

Ever wonder about that chunk of grayish-brown rock you stumbled upon some years ago and kept for who-knows-what reason? Ever wonder if that golden streak across the rock's midsection makes it valuable?

Wonder no more. University of Minnesota geologists will examine any rock or mineral found in Minnesota for free.

The Minnesota Geological Survey will do a preliminary examination of any sample submitted. If a specimen is judged to have scientific or economic interest, further testing, including chemical analysis, will be done. If the specimen is selected for more testing, findings of those tests will be sent to you. You'll also be told the value and significance of your specimen.

Specimens will be analyzed if they're from a location, rock type, or formation where there may be mineral deposits, if they show signs of mineralization, such as being stained or decomposed, or if they're of possible scientific value.

The best samples come from outcroppings or near outcroppings. Samples are less valuable if they're from streams and lakes or glacial drift deposits.

"There has been a considerable amount of interest in this program," said G.B. Morey, associate director and chief geologist with the Minnesota Geological Survey, which began offering its services in early May. "There are a lot of people who have had a curiosity about what they've been seeing. Before they never had an opportunity to ask if what they found was different or why it was different. This will provide them that opportunity."

Samples must contain several ounces of material, preferably about half a pound. The location of your find should be described as accurately as possible. Submittal forms for rock and mineral samples can be obtained by writing Minnesota Public Geologic Sample Program, Minnesota Geological Survey, 2642 University Ave., St. Paul, MN 55114, or call 612/373-3372.

We Hear From You

Contributions to the Institute of Technology don't always cost money

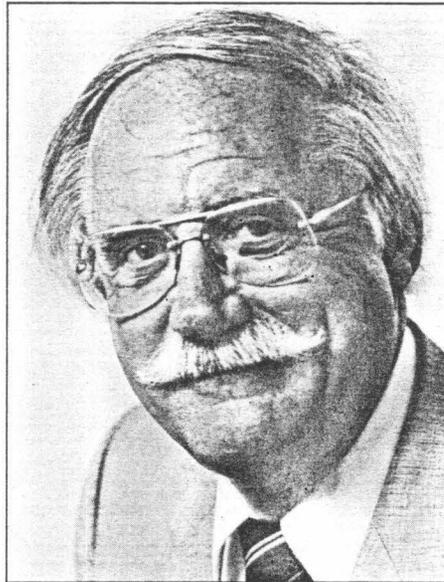
Herbert Johnson is chairman of Data-Myte Corp. in Minneapolis and is chairman of the Minnesota High Technology Council. As an invited guest columnist, Johnson has chosen to address his comments to current students and alumni.

Then acting-dean Murthy (I get to call him Rama) invited me to write a guest article in *Items*. He said I could talk about anything I chose and that it wouldn't be edited. Now that's a hard offer to refuse. So, here I am.

A couple of issues ago you were exhorted to make financial contributions to the Institute of Technology. This is unquestionably a good idea. More money is badly needed, and your tuition payments only cover about one third of the cost of your education. Besides, there is nothing quite like that solid sense of satisfaction you get from doing something that you know is right.

I am here to persuade you to do something that will cost you next to nothing while having potentially great value to IT. Before I tell you what, I want to give you some background.

When you sit on your 1940s chairs in your overcrowded classrooms or work with obsolete equipment in your labs,



Herbert Johnson

you might think that the reason for such relative poverty is that the state can't afford to do any better. Wrong. The total IT budget of about \$24 million is less than 1 percent of our state's annual expenditures. The reason that you are overcrowded is that, until recently, the Institute of Technology was (in my opinion) a relatively transparent component of our University

system. The distributors of our state's largess were not sufficiently impressed with your plight to do much about it. Nor were they impressed with how very important engineers and scientists now are to our state's economy. You see, we have some old and very durable Minnesota myths that simply refuse to go away. The myths are that mining, logging, and agriculture are the three most important elements of our state economy. The fact is that what was once true is true no longer. Manufacturing and service industries are king, in our information age of today.

I did some research back in 1978 and was surprised to learn that Minnesota employed more people in the manufacture of scientific instruments than in the entire mining industry. When I shared that information with some decision makers, I wasn't believed. However, today, while I don't have data to back me up, I wouldn't be surprised if twice as many people are now employed in the manufacture of scientific instruments as in mining. Technology industry is the largest single employer in the manufacturing sector. Additionally, technology-trained people are a large component of our rapidly growing service industry.

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Legislature approves funding for IT buildings and remodeling

By Darlene Gorrill

Plans to remodel chemistry's Smith Hall and to construct a new home for computer science and electrical engineering received a financial boost during the Minnesota Legislature's 1984 session.

The Legislature allocated \$21 million for renovation of Smith Hall, built in 1913. For several years, University officials have requested funding for remodeling, citing obsolete, ill-equipped, and overcrowded laboratory conditions. Funding for Smith Hall was the biggest item in the University's \$74 million building request. The University received almost \$58 million in final building appropriations.

IT also received \$2.7 million to begin planning for a computer science and electrical engineering building. The University requested \$3.4 million for working drawings, based on a projected total cost of \$56 million. The legislative appropriation limits the total cost to \$40 million, but, as development of a master plan for IT facilities is completed, the University may request additional funding for the building.

Funding for working drawings helps start the improvement process slated for the computer science and electrical engineering departments. "We are on our way," said V. Rama Murthy, IT's acting dean during the legislative session.

Murthy also anticipates the need for updated equipment and improved physical space to continue. "IT badly needs it because most of the buildings are 50 years old."

Other highlights for IT in the legislative session include:

- \$1.2 million to remodel Amundson Hall, home of the top-rated chemical engineering and materials science department. The funds will be used to improve laboratory facilities.

- \$1.6 million for research costs connected with development of a super-computer institute.

- \$200,000 for operating costs connected with the Underground Space Center.

- \$75,000 for the Talented Youth Mathematics Program. Funding will be used to establish three outstate programs.

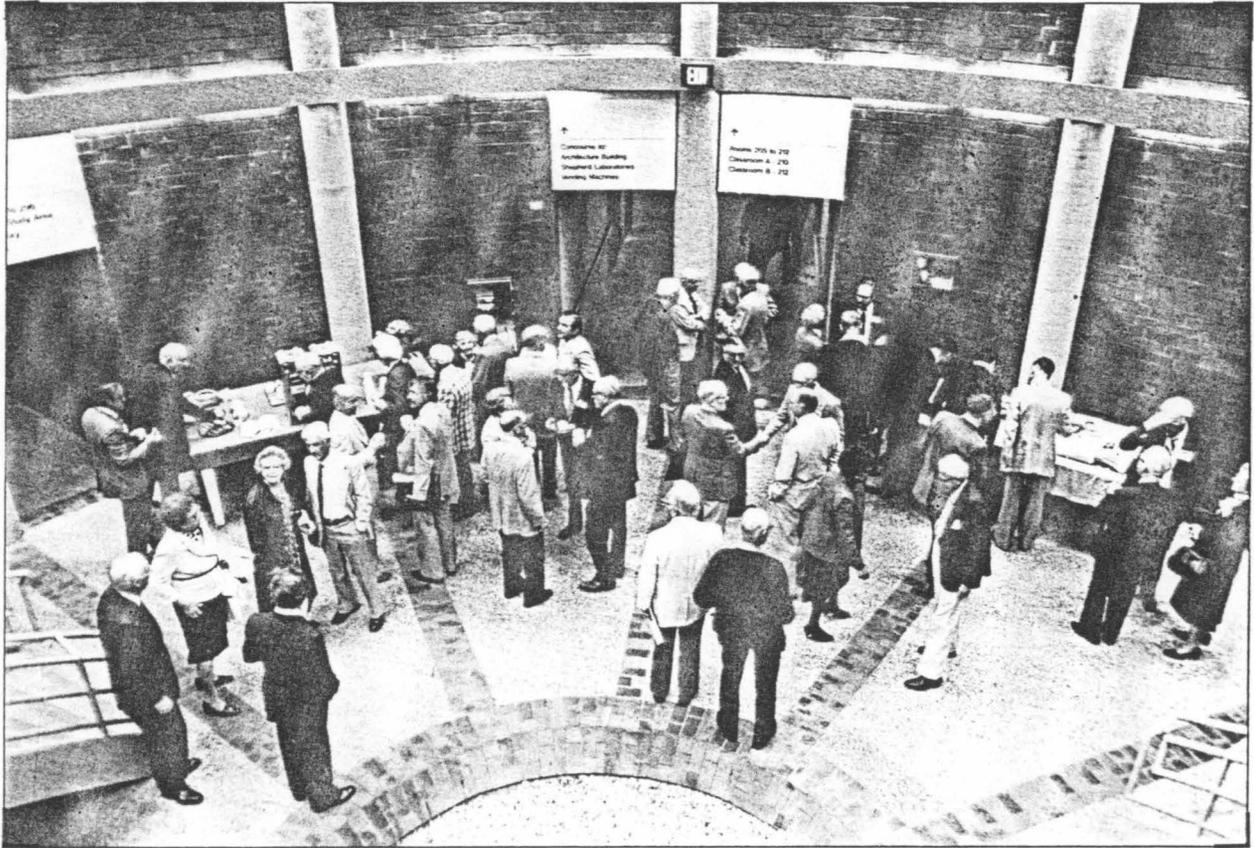
The Department of Education also approved \$165,000 for IT to provide continuing education for the state's science and math teachers.

"I think the Legislature, the state government, and the industrial community have been extraordinarily supportive," said Murthy. "I really don't think we could have made the same gains we have had if there hadn't been the convergence of support.

"It's fairly clear now that a good science and technology school is necessary to the economic health of the state."

Murthy said he believes IT will continue to emphasize already-identified initiatives in future legislative sessions. Those include alleviating the burden on faculty members by hiring more faculty, teaching assistants, and support personnel and working to increase faculty salaries.

ALUMNI REUNION



Greetings... Graduates from IT's 1934 and 1944 classes reunited May 18 at the new Civil and Mineral Engineering Building.



Sign In...

Jennings F. Johnson added his signature to the roster. The scrapbook in background is volume two ("Greetings, Alumni Record, and Appreciative Messages") of a set that alumni presented to William Appleby, former head of the School of Mines and Metallurgy, on his retirement in 1935.



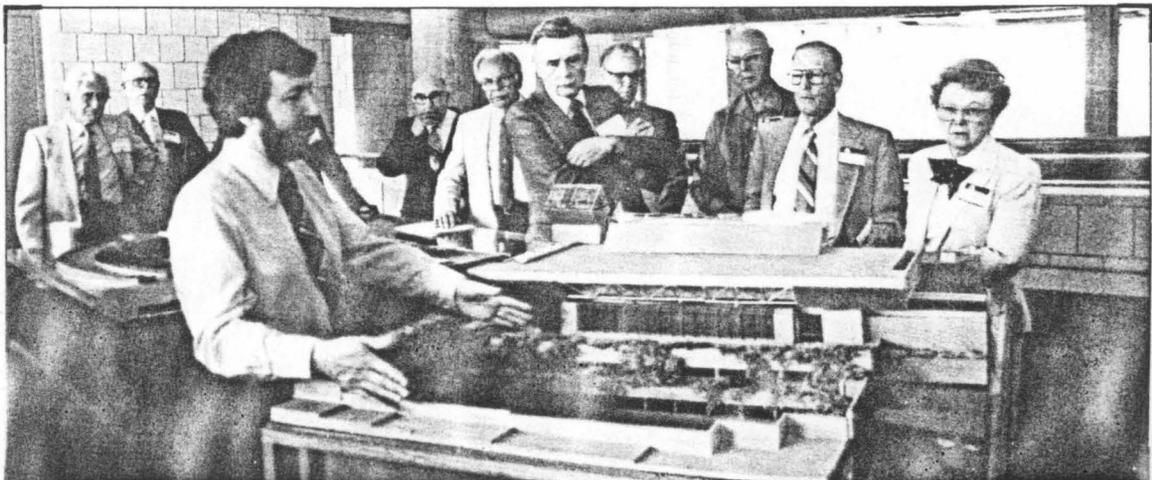
Remember... Erling Dulaken, left, and Col. Arvid Newhouse, right, caught



The Welcome... V. Rama Murthy, then-acting dean, and Jack Braun, president of IT's Alumni Society, invited alumni to enjoy their visit.



The Tour... Heads turned upward as Raymond Sterling, Underground Space Center director, showed alums one way sunlight enters the below-ground building.



The Building... Sterling ended the tour by explaining the building's model. Alumni also toured departments and enjoyed social activities.

Environmental topics researched

By Pamela LaVigne

Five faculty members from the Department of Civil and Mineral Engineering compose the environmental engineering group, whose research emphasizes water and wastewater treatment, water quality engineering, and environmental/water chemistry. "Our strengths are our chemistry background and our engineering background, the blend of the two," group member Michael Semmens said.

Faculty members and their current research interests are highlighted below and demonstrate the breadth of activities under way.

Patrick Brezonik (professor; Ph.D., water chemistry, University of Wisconsin-Madison, 1968). This summer Brezonik begins a whole-lake acidification experiment in Little Rock Lake, near Rhinelander, Wis.

This regional collaborative project, funded by the Environmental Protection Agency, is the first of its kind in the United States. Preliminary data will be gathered this summer from 10 lake sites set off by "limnocorrals"—sheet plastic cylinders 14 feet in diameter that hang from a ring floating on the water's surface to a weighted ring on the lake bottom. Different amounts of sulfuric acid will be added to each corral, then researchers will follow the lake's response to the lower pH by monitoring water chemistry, phytoplankton, fish, and microorganisms in the water and lake sediment.

Next summer a large-scale experiment is planned; a plastic curtain will be installed to separate completely the lake's two natural basins, and the acid will be added to one side only. Brezonik's research group is responsible for analyzing and modeling all chemical effects of the acidification experiment, including effects on heavy metal transport through the food chain and the extent to which natural biogeochemical processes in the lake neutralize the added acidity. Data derived from the experiment will reveal at what acid levels detrimental effects occur, information that will guide EPA policy decisions.

Steve Chiesa (assistant professor; Ph.D., civil engineering-environmental, University of Notre Dame, 1982). For the past few years, Chiesa has worked with staff at the Pigs Eye waste treatment plant in St. Paul to make the necessary changes to meet new Minnesota Pollution Control Agency standards. The standards call for reduced levels of ammonium in the plant's effluent entering the Mississippi River during 1985.

The plant, largest in the metropolitan area, uses microbial cultures to transform or metabolize various impurities in the wastewater. Factors such as temperature, precipitation, and run-off alter the percentage of ammonium in the water and affect the growth rate of cultures necessary to handle the problem. Chiesa has been working with the full-scale system to achieve proper growth conditions: when to begin adding extra oxygen, how much to add, how long to maintain the enriched "diet." Accuracy in responding to the chemical dynamics of this complex system directly affects the costs of wastewater treatment and the water quality of the Mississippi.

Steve Eisenreich (professor; Ph.D., water chemistry, University of Wisconsin-Madison, 1975). Eisenreich's research interests center around air quality and its effects on water: contaminant transfer through the atmosphere, and the cycling of toxic trace metals and trace organics in aquatics. In 1977, he was the first to demonstrate the effects of acid rain in Minnesota.

A recent example of how what's in the air affects what's in the water occurred when Eisenreich and his research group noted increased levels of DDT in peat core samples. This finding—unexpected since DDT use has been banned in the United States since 1972—could be explained, Eisenreich said, by theorizing that airborne DDT, traveling along the prevailing weather paths from Mexico (where DDT is still allowed), is the source of continuing additions of this pollutant to the water.

The biogeochemistry of ombrotrophic wetlands—peat bogs deriving all their growth material from the atmosphere—is one of Eisenreich's current research activities. He is participating in a five-year project, funded by the National Science Foundation, in which researchers around the world are studying peat—how it grows, responds to drainage, and recovers—en route to developing better use of this potential energy resource. Eisenreich is conducting part of the project's North American transect and also studying a specific bog in Minnesota's Iron Range.

Eisenreich also is involved in the field study of aquifer thermal energy storage being conducted on the St. Paul campus. Estimates project that heating costs could be substantially reduced if heat from the sun could be stored in aquifers, such as sandstone, far underground.

Walter Maier (professor; Ph.D., environmental engineering, Cornell University, 1966). Biodegradation of organic pollutants is Maier's research area.

Like Chiesa, Maier works with microorganisms, but Maier's cultures are engineered to thrive on synthetically produced chemicals, such as herbicides and pesticides. They are engineered in two ways.

Some microorganisms are able to adapt to what Maier calls environmental stresses by modifying their enzyme activities. Changes in enzyme activities protect microorganisms from toxic effects of shock loadings, such as occur during oil or chemical spills, and facilitate their survival under starvation conditions. Low-concentration dispersion of pollutants in the environment is an example of a starvation condition. By altering the organism's environment in a lab, acclimated cultures can be developed. Transferring them to a polluted site is one way to speed up decomposition of pollutants.

Plasmid exchange is another mechanism of adaptation. Plasmids are free-floating genetic material within cells that, because they are not bound to the cell's nucleus, can move from one cell to another. This method of building a better adapted microorganism requires that a variety of bacteria be present. Maier's research is important for improving performance of wastewater treatment facilities and mitigating groundwater contamination.

Michael Semmens (associate professor; Ph.D., environmental engineering, University College, London, 1973). Semmens' research specializes in removing contaminants from water via chemical and physical processes such as filtration, adsorption, ion exchange, and coagulation. He's worked on removing ammonium from wastewater in connection with intensive aquaculture of catfish, a successful pilot project in collaboration with the University's fisheries department. In the area of solids removal, Semmens is working now to minimize the energy requirements needed for filtration by using a specially fabricated floating filter media, which was developed to make use of a by-product of a 3M manufacturing process. If the efficiency of the process and lower energy costs can be demonstrated, the process has the potential for displacing existing technology, he said.

Semmens also is seeking funding for research studies on the first large-scale implementation of a removal and recycling method for heavy metals produced during manufacturing processes. For this project he is collaborating with the Metropolitan Recovery Corp., which represents many Twin Cities firms producing such wastes.

Milestones

Gordon Beavers, IT's associate dean, and **Daniel D. Joseph**, aerospace engineering professor, received a grant from the Army Research Office to study the mechanics of viscoelastic liquids. □

Aerospace engineering professor **C.C. Hsiao** received renewal of NASA funding to study craze micromechanics in viscoelastic aerospace materials. □

Aerospace engineering professor **Robert Plunkett** received a renewal grant from the Office of Naval Research to study structural inelasticity. ■

Agricultural engineering professor **R. Vance Morey** received funds from the Irrigators Association of Minnesota to research experimental systems for field cooling of fresh produce. ■

Ralph Rapson, professor and head of the School of Architecture and Landscape Architecture, was honored at a retirement reception in June. Rapson will remain as head until January 1985. ■

Henry S. White will join the chemical engineering and materials science faculty as an assistant professor. His research interests include polymer-modified electrodes, electrochemistry at microelectrodes, and electrochemical integrated circuits. ■

Chemistry professor **W. Ronald Gentry** travelled spring quarter to Cambridge, England, Paris, and Bordeaux, France, to lecture and consult. This summer he lectured at various Japanese institutions. □

During March chemistry professor **Maurice Kreevoy** visited Europe to conduct research and lecture. □

Marian Stankovich, assistant professor of chemistry, presented a paper at the Eighth International Symposium on Flavins and Flavoproteins. □

Chemistry professor **Donald G. Truhlar** traveled to Okazaki, Japan, to attend and present an invited lecture at the 18th Okazaki Conference. ■

Geology professor **Subir K. Banerjee** was elected president of the American Geophysical Union's geomagnetism and paleomagnetism section. He also received a citation as best reviewer from the journal *Geophysical Research Letters*. ■

James Serrin, Regents' Professor of Mathematics, was elected a fellow of the American Academy of Arts and Sciences. ■

Joseph Shapiro, professor and associate director of the Limnological Research Center, was elected a fellow of the American Association for the Advancement of Science. ■

Ernst R.G. Eckert, Regents' Professor Emeritus of Mechanical Engineering, gave the Hawkins Memorial Lecture in Heat Transfer at Purdue University. He also was a distinguished lecturer at Michigan State University. □

Mechanical engineering professor and department head **Richard J. Goldstein** was elected vice president of the American Society of Mechanical Engineers. □

Thomas H. Kuehn, associate professor of mechanical engineering, was named Young Mechanical Engineer of the Year by the Minnesota Federation of Engineering Societies. □

Virgil Marple has been promoted to mechanical engineering professor, and **Max Donath**, to associate professor. □

Mechanical engineering professor **Richard Springer** retired in June after 43 years on the faculty. ■

E. Dan Dahlberg, assistant professor of physics and astronomy, was named an associate professor for summer 1984 at the National Center for Scientific Research (C.N.R.S.) in Grenoble, France. □

The Minnesota Area Association of Physics Teachers has established the Bruce G. Eaton Award for the best paper on laboratory or demonstration apparatus, to honor senior scientist **Bruce G. Eaton** of the physics department. □

Physics professor **Allen Goldman** presented two papers at Tel Aviv University in June. □

C.C. Huang, associate professor of physics and astronomy, was a visiting professor at the 3M Technical Research Lab and at Chalmers University of Technology in Gothenberg, Sweden. □

Joe Kapusta, assistant professor of physics and astronomy, presented two papers in June, one at the 15th Symposium on Multi-Particle Dynamics in Lund, Sweden, and one at "Quark Matter—84" in Helsinki, Finland. ■

Heinz G. Stefan, professor and associate director of the St. Anthony Falls Hydraulic Laboratory, was an invited lecturer at Ohio University in Athens, Ohio. ■

C. Edward Bowers, civil and mineral engineering professor at the St. Anthony Falls Hydraulic Laboratory, was named IT's Outstanding Teacher of the Year. ■

Raymond Sterling, associate professor of civil and mineral engineering and director of the Underground Space Center, was an invited panelist for a United Kingdom Department of the Environment seminar on using underground space for storage and disposal. ■

Leslie Fox, from the University of Minnesota Medical Foundation, is IT's new assistant director of development. ■

Awards

Robert A. Aherin, agricultural engineering safety specialist, and **Donald W. Bates**, professor and extension agricultural engineer, each received a 1984 Blue Ribbon Award for publications entered in the American Society of Agricultural Engineers' educational aids competition. □

Agricultural engineering professor **Arnold M. Flikke** received the 1984 Distinguished Service Award in the education/public service category from the National Food and Energy Council. □

Agricultural engineering professor **Curtis L. Larson** received the 1984 Hancor Soil and Water Engineering Award from the American Society of Agricultural Engineers for his contributions to the field of small watershed hydrology. ■

Rebecca Schatz, computer science graduate student, is the first University of Minnesota Luce Scholar. Through the program, promising young Americans are sent each year to the Far East for professional apprenticeships with leading Asian scholars. ■

Electrical engineering professor **Robert F. Lambert** received the Education Award of the Institute of Noise Control Engineering. Lambert has taught students about noise control and acoustical engineering for many years. □

Mark Molenaar, electrical engineering graduate student, was a member of the University of Minnesota College Bowl team that captured the national championship title in May. ■

Geology professor **Subir Banerjee** was awarded a Bush Sabbatical Supplement to research the early history of the magnetic compass. ■

Joseph Shapiro, professor and associate director of the Limnological Research Center, received a grant from the National Science Foundation for lake research. ■

Lin Fanghua, mathematics graduate student, received the Alfred P. Sloan Doctoral Dissertation Fellowship. □

AWARDS from page 11

Math professor **Carlos Kenig** received the 1984 Salem Prize for his results on potential theory and partial differential equations. The international award is given annually to recognize significant achievements by young analysts. ■

Mechanical engineering professor **Perry L. Blackshear** received the Herbert R. Lissner Award, the highest award given by the American Society of Mechanical Engineers, for outstanding contributions to biomedical engineering. □

Mechanical engineering student **Scott Dacko** received the 1984 IT Alumni/ Paul A. Cartwright Student Leadership Award. □

Mechanical engineering professor **David B. Kittelson** received the 1983 Arch T. Colwell Merit Award from the Society of Automotive Engineers for his paper, "Nonintrusive Acoustic System for the Dynamic Timing of Diesel Engines." He also received an SAE Oral Presentation Award. ■



Inventor

Robert Stuelke's Human-Powered Vehicle won first prize in the first IT Innovation Fair, sponsored by the Association for Creative Engineering. Other winners were: second place, David Zwach, Hot Spot Solar Cooker; third place, Suneel Sheikh, Swinging Lounge Chair; fourth place (four winners), E. Mitchell Danielson and Donald Deming, Red Wing Aircraft Design; Steven King, Vacuum Separator; Robert Pappas, Thermostat Controller; and Monte Ramstad, Pierced Ears Puzzle.

Corporate donations improve teaching, research

Substantial equipment grants to the electrical and mechanical engineering departments will improve teaching and research facilities.

In June, Digital Equipment Corp. donated a VAX 11/785 system, its largest and fastest computer, valued at \$503,000, to electrical engineering's newly established Magnetic Information Technology Center, located on the second floor of the Electrical Engineering Building. As part of the package, 15 terminals will be installed in the department's labs and faculty offices.

"In terms of overall contribution, the University's program in magnetic information storage and sensing technologies is the best in the nation," said John Sivertsen, associate professor of chemical engineering. He is the only faculty member outside electrical engineering who uses the computer.

For 25 years, electrical engineering had a magnetics research lab. By expanding it into a center, the department hopes to attract research partnerships with industry and eventually to bring together magnetics research now being conducted in a number of departments.

Hewlett-Packard's donations, worth about \$250,000, include their HP 90-836 desktop computer and related equipment, plus equipment to set up a digital microprocessor lab and a signal processing lab, both for undergraduate use. Acting electrical engineering head E. Bruce Lee said that, with these latest pieces, the company's gifts to the

department during the past five years total almost \$1 million.

The Productivity Center, associated with the mechanical engineering department, received \$43,500 from DI-ACRO for research on adaptive forming technology. DI-ACRO also donated a 100-metric ton advanced technology hydraulic pressbrake valued at \$50,200.

In December 1983, Onan Corporation donated an \$850 gasoline engine to mechanical engineering's basic measurements lab. Sean Smith, mechanical engineering graduate student and former Onan employee, arranged the donation with Scott Nelson of Onan, a 1973 graduate of the department.

Annual giving tops goal

Annual gifts to IT climbed over the \$200,000 mark, meeting 130 percent of IT's dollar goal for the year.

The year's goal was set at \$165,000; annual giving from July 1983 through June 1984 hit \$214,416. More donors than expected participated: 3,683 people to be exact, 127 percent of the planned donor goal.

Matching gifts were an important factor in reaching the goal—\$43,595 of the total was matching money.

Elaine Battles, IT's development director, thanks all who contributed for their part in achieving this fund-raising success.

Events & Visits

Seventeen physics teachers from throughout Minnesota attended a month-long summer workshop entitled "History and Development of Physics: The Art of Experiment." Taught by Samuel Devons, physics professor at Columbia University and director of the Barnard-Columbia History of Physics Laboratory, the workshop was designed to help improve the quality of science teaching in state high schools. It was cosponsored by the Bakken Library of Electricity in Life and the physics department and funded primarily by a Minnesota Department of Education grant. ■

IT alumni help undergrads

Two recent alumni gifts have been targeted for IT undergraduates.

The IT Alumni Society contributed \$500 to defray some of the publication costs of the student newsletter, *IT Connection*, for academic year 1984-85.

A \$5,000 grant from Mrs. George Taylor on behalf of her deceased husband, a 1934 IT graduate in mechanical engineering, kept the Undergraduate Teaching Assistant Program operating, from 10 a.m. to 2 p.m. daily, during both summer sessions. Program tutors help students with math, chemistry, physics, and related subjects.

Grad reflects on college experience

By Pamela LaVigne

When Phyllis Brown Branin entered the Institute of Technology, only two other women were in her class. The year was 1944, and the three were among the pioneer women graduates in chemical engineering.

Gender, though, wasn't as remarkable a difference as age and life experience, Branin remembers.

Almost all the men were veterans, in their mid-20s, mostly married, with families. Branin, then just graduated from West High School in Minneapolis, single, and living at home, said she felt "very young, and stupid, and naive," compared to them.

There were no role models for her choice of profession, no parent or neighbor or family friend who had been a chemical engineer. In fact, there wasn't any higher education in her background. "There wasn't even any lower education," she said.

But since grammar school, her interest and ability in mathematics and science subjects just seemed to point the way to engineering, she said. "My high school teachers sort of assumed—and made me begin to assume—that I could go to school."

Because of the cost, college meant only one place: the University of Minnesota. For a state resident, tuition then was \$96 per year, books and instruments were estimated at \$60 for the year, and lab fees were nominal—around \$5 per quarter per subject, Branin remembers.

Branin chose chemical engineering over other engineering fields because it was the one area with which she had some familiarity. "I still have a fond feeling for the kind of preparation I had," she said, recalling that she began with a better basic science foundation than most of her classmates did.

The curriculum was demanding for all chemical engineering majors. They practically lived in Smith Hall, the chemistry building. Lab assignments were very time consuming, requiring at least twice the attention of lectures.

Branin remembers a college atmosphere much different from today's. Students then rarely had cars—Branin rode the trolley to campus. Not many had part-time jobs either, although Branin was an exception to this rule, but only because her job was built in: her mother ran a rooming and boarding house at Franklin and Aldrich in Minneapolis.

(Long since sold by the family, the building still stands, refurbished in re-



Phyllis Branin

cent years to its original splendor. It serves, in the modern equivalent of its former capacity, as a bed-and-breakfast house.)

Students didn't have as many extracurricular activities competing for their time then either. "The social life was not what one ordinarily thinks of for college," Branin said. She did mention playing an occasional bridge game in the union and attending football and basketball games. "We just worked very hard...piled on the courses...There wasn't any time nor money for frills."

And in the mid '40s, there were very different attitudes toward women breaking ground in a profession whose practitioners were predominantly male. "It's hard to say how I feel about (that time)," Branin said. "But I see these young women (today) being babied and coddled into their careers...and I remember how it was when I was at that stage. I was just punching my way through on my own. I think, gee, they should be able to handle it."

"I'll say that emphatically and clearly. There was never any support in my school days for me as a woman in engineering. In fact, if anything, quite the opposite. I can even remember one of my professors at the U—I hate to say it, I thought he was among the better, friendlier ones that I had—but he said to me, 'Why are you beating your head against a brick wall?' That's pretty bad. That's the kind of thing I usually ran into."

Branin earned a bachelor of science degree in chemical engineering, three years after starting the program, "because that was the way it was" then.

Her first job was in a pilot plant lab at Oak Ridge National Laboratory in Tennessee, the research center where enriched uranium was first developed, then applied to an atomic pile. After 1½ years there, she moved to the state of Washington to work at another atomic energy installation. She married there and eventually moved back to the east coast when both she and her husband got jobs with RCA in Lancaster, Penn. (Branin has since divorced.)

In 1985 Branin will have been with RCA for 30 years. In that time she has been working on what she describes as a "peculiar specialization:" process engineering of color kinescopes—producing the phosphors and coating on color picture tubes.

Branin survived the crisis of being laid off after 16 years with RCA when it shut down the Lancaster plant. After a year's job search, she was invited to join the David Sarnoff Research Laboratory of RCA in Princeton, N.J. She continues to work there.

Looking back now on her career, Branin says, "One of the things I made a mistake about was feeling such a need to get out and get a job....I was perhaps foolish in not doing graduate work right away."

Though her time in IT was short, and her career took her quickly away from the state, Branin has been supporting IT for many years through annual contributions. Last year, however, she talked to the University foundation about making a more significant donation. A campus visit was arranged, including a tour of the chemical engineering facilities erected since Branin graduated and a Campus Club lunch with current chemical engineering department head H. Ted Davis.

The result was what Branin calls a "commitment" to the University, which she has named as inheritor of her estate.

"Well, after all, I've made a fairly comfortable life for myself and it wouldn't have been possible without my degree," she said. Since she has no children and no favorite charities, she said it seemed quite obvious that she would choose the University as her beneficiary.

She is now exploring with the University foundation ways to translate her decision into a current giving program. "They have some excellent plans for getting people to give," she said.

Alumni interested in discussing donations to IT should contact Elaine Battles, director of development, at 612/376-2448.

Grad Notes

'26 **Loren W. Neubauer** ('32 M.S., '48 Ph.D.), retired agricultural engineering professor from the University of California, received the 1984 Metal Building Manufacturers Association Award from the American Society of Agricultural Engineers.

'33 **Gayle B. Priester** of Baltimore, Md., retired civil engineer, has received the Distinguished 50-Year Member Award from the American Society of Heating, Refrigerating, and Air-Conditioning Engineers Inc.

'34 **Francis W. Boulger** of Columbus, Ohio, was named a Distinguished Alumnus by Ohio State University for his contributions to technical progress in metallurgy and metal processing. He is senior technical advisor for Battelle Memorial Institute Columbus Labs.

'39 **Reuben M. Olson** ('41 M.S., '64 Ph.D.) retired in June as head of the civil engineering department in Ohio University's College of Engineering and Technology.

'40 **Morris E. Fine** of Wilmette, Ill., is the Walter P. Murphy Professor of Material Science at the Technological Institute of Northwestern University.

Charles Colbert (Goldberg) of Yellow Springs, Ohio, is president of Skeletal Assessment Services Co., chief executive officer of Clinical Radiology Testing Laboratory, and associate clinical professor of radiological sciences at Wright State University School of Medicine.

'41 **William I. Weisman** of Tulsa, Okla., retired last year as president of Ozark-Mahoning. He is now vice president of business development at Chemical Marketing Services in Tulsa.

'47 **Leif W. Ericksen** of Minneapolis is chairman of the board at Ericksen Ellison and Associates, a St. Paul mechanical and electrical engineering design firm.

'48 **E.A. Baillif** of St. Joseph, Mich., has been promoted to senior vice president of research and engineering for Whirlpool Corp.

John E. Donalds of Lexington, Mass., has been named president and chief executive officer of Collaborative Research Inc., a biotechnology company. He had been with Dow Chemical Co. for 34 years.

George Ellison of Cannon Falls, Minn., has been named president of Ericksen Ellison and Associates, St. Paul.

'50 **Harold Irwin Reynolds** of Dayton, Ohio, is a member of Sigma Xi, a scientific research society.

'53 **Robert L. Thorson** of the New York firm Carson, Lundin, and Thorson, P.C., designed the health facilities building of the Methodist Church Home in Riverdale, N.Y.

'56 **Rodney M. Larson** of Ham Lake, Minn., won the 1983 Honeywell H.W. Sweatt engineering-scientist award for developing and implementing real-time signal- and image-understanding algorithms.

'58 **John E. Sandahl** of St. Paul has been named district engineer in Duluth by the Minnesota Department of Transportation.

'59 **Larry G. Larson** of Barrington, Ill., has been named president and chief executive officer of Recon/Optical. He had been vice president and general manager of the electro-optics division at Honeywell.

'63 **William F. Raleigh** of Cazenovia, N.Y., has been appointed vice president-engineering for TRL Productions of Brookpark, Ohio.

'69 **James T. Fries** of Blue Grass, Iowa, has been promoted to assistant to the vice president of manufacturing for Sears Manufacturing Co.

'70 **Charles N. Standing** of Minneapolis has been appointed director of research and development for the Betty Crocker Division of General Mills.

'71 **Robert Cordes** of San Jose, Calif., has been promoted to an associate in the firm of Ehrlich-Rominger, a high-tech computer buildings and design firm in Los Altos. He has been a consultant to the Children's Discovery Museum and the Northern California Children's Theatre Co. in San Jose.

'72 **Gary L. Gerber** of Seattle, Wash., has started Hanson Gerber, P.S., a company offering mechanical and electrical engineering services.

'74 **Harmon B. Abrahamson** of Norman, Okla., has accepted a position as assistant professor of chemistry at the University of North Dakota.

'76 **Thomas R. Swanson** of Shoreview, Minn., is office and materials control manager for 3M/staff manufacturing.

'78 **Mark S. Feder** of Santa Ynez, Calif., is senior resident engineer with Martin Marietta Corp., working on site activation for the Space Transportation System at Vandenberg Air Force Base.

'79 **Roger W. Johnson** of San Diego, Calif., finished a Ph.D. degree in mathematics at the University of California at San Diego and accepted a position as a scientist at the Naval Ocean Systems Center in San Diego.

David H. Owens of Minneapolis is a senior chemical engineer at Henkel Corp. Research and Develop-

ment Labs. He is currently in Dusseldorf, West Germany, on assignment with the Henkel Corp. there.

'81 **David Aus** of Renton, Wash., is a stress engineer with Boeing Commercial Airplane Co.

Thomas Massopust of Golden, Colo., is founder of Surface Analysis Service Laboratory, supporting the microelectronic, magnetic media, optical, and other industries.

Joseph F. Vilardo of Schenectady, N.Y., is an architect with project engineering operations at General Electric Co.

'84 **Jean Houtman** of Minneapolis was selected by a faculty/student committee to address the graduating class at IT commencement exercises in June. She has accepted a position with Procter & Gamble in Cleveland, Ohio.

Deaths

J.H. Kuhlmann, electrical engineering professor emeritus, died June 3, 1984. He taught at the University from 1920 to 1961 and was appointed professor in 1945. His specialty was electrical machine design.

Henry M. Tsuchiya, chemical engineering professor emeritus, died May 19, 1984. He taught at the University from 1956 to 1983. His specialty was biochemical engineering. The newly remodeled bioengineering laboratories in the chemical engineering department have been named the Tsuchiya Biotechnology Laboratory.

WATER from page 10

As a group, environmental engineering faculty members interact and bring their collective expertise to bear on a variety of specific projects. For example, long-term collaborative studies with the Metropolitan Waste Control Commission have involved all members to some degree, and the group has completed studies related to odor control, ammonium removal, and performance improvement at metropolitan wastewater treatment plants.

MATH from page 5

lege programs. "You can ask any IT student—the experience I'm receiving is invaluable."

For minority students to do well in college and find jobs afterwards requires commitment at many levels, Birmingham said. "The students themselves must be strongly committed and have their parents' support. Beyond this, the public and private school systems must be committed to providing each student with the best possible education, and universities and colleges, as well as industries, must be committed to providing access."

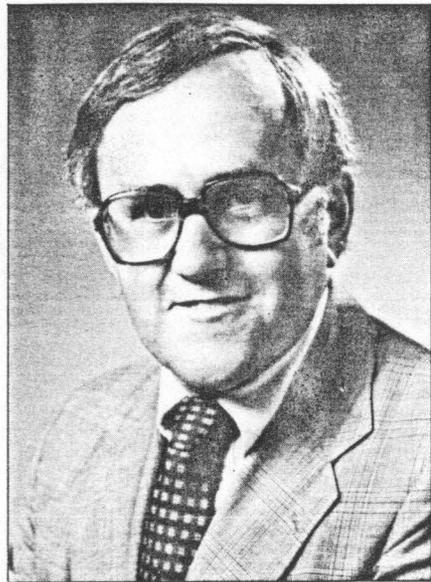
From the Alumni

Institute of Technology Alumni Society president J.S. "Jack" Braun ('56 B.C.E., '57 M.S.C.E.) is president of Braun Engineering Testing Inc., geo-technical materials and environmental consultants with offices in Minnesota, North Dakota, and Montana.

On the evening of June 1, I enjoyed the privilege and pleasure of representing IT alumni at IT's commencement ceremony.

Planning began with an early May call from the student affairs office inquiring if I would bring my own cap and gown or if I wished to have one furnished by the University. Since I had not donned academic garb in the past 28 years, I gave the caller my sizes. (I remembered my mom's admonition of many years ago to check impulses to be a smart aleck, so I did not offer to bring a cap and gown from my own closet.)

The logistical and mechanical details of the commencement ceremony proved only incidental; making new and renewing old acquaintances were the real highlights.



ITAS president J.S. "Jack" Braun

After a pleasant dinner at the Campus Club, the department heads, student and faculty award winners, administrative staff, a regent, and I approached Northrop. About 18 of us had a part in the program, and we donned caps, gowns, and hoods backstage, preparing to lead some 575 degree candidates into Northrop Auditorium. The magnificent pipe organ alternated with a brass quartet. "Pomp and Circumstance" was not played, but its substitute set an equally festive, ceremonial mood.

Dinner, gowning, processional, and stage conversation produced many visits with other participants. I was reassured that our University is in good

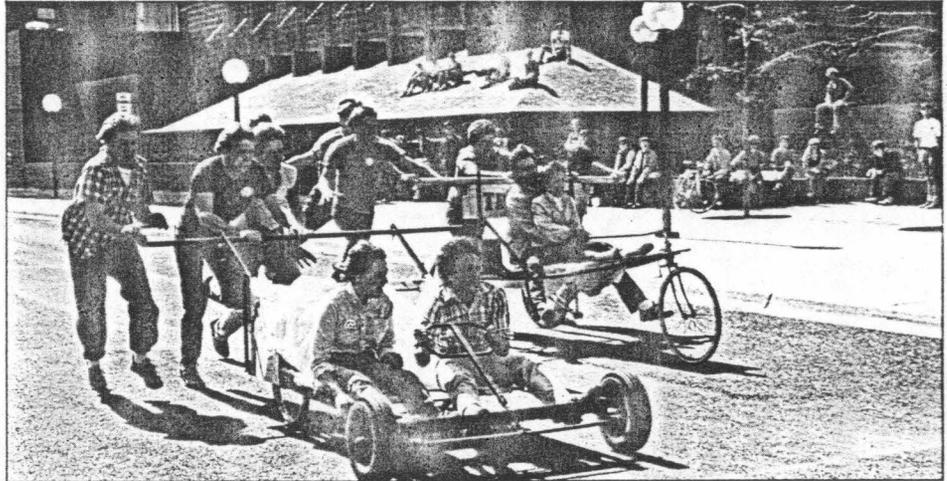


Photo by Teresa Fett

Spring fun

Many IT Week activities stressed applied fun. In this competition, IT students gained hands-on experience testing the aerodynamics and passenger-safety features of various low-tech vehicular designs and energy sources. IT's honorary society, Plumb Bob, also organized Technology Fair during the annual May event.

hands with vice president for academic affairs Kenneth Keller, IT associate dean Gordon Beavers, and Regent Willis Drake. These gentlemen, respectively, gave the commencement address, presided, and conferred the degrees.

I was downright impressed at the poise, service, and potential exuded by the first Paul A. Cartwright Student Award winner, Scott Dacko, and by Jean Houtman, who spoke on behalf of the graduating class.

The evening also afforded an excellent opportunity to meet and visit extensively with our new IT dean, Ettore Infante (see page 1). His academic and administrative achievements are impressive. From our conversations, it's obvious that he will be an outstanding leader.

In addition to presenting the Paul A. Cartwright Award to Dacko, I was honored to congratulate the new graduates

on behalf of the 3,566 members of ITAS and all previous IT graduates. Predictably, I took the opportunity to urge them to maintain contact with *their* great University through membership in ITAS. I made them aware of the many active IT alumni in all areas of the United States and encouraged them to think of ITAS as an opportunity to continue their support of IT, its student publications, scholarships, and awards that make an excellent academic institution a great university. I invite all *Items* readers to follow suit. The cost is nominal, the benefits to your University are real, and you'll enjoy participating. The membership application form conveniently furnished makes it so easy.

It was great to be back under the old mortar board. It was reassuring to see that our University is in good hands. The next time you have an opportunity to go to the campus, do it—you'll enjoy it too.

Institute of Technology Alumni Society Membership Application

Please enroll me as a member in the category I've checked below.

Name _____ Address _____

City _____ State _____ Zip _____ Phone _____

College _____ Degree/Year _____

Spouse _____ Degree/Year _____

(please include name while enrolled)

- \$22 Annual—Individual
 - \$28 Annual—Husband/Wife
 - \$300 Life—Individual
 - \$350 Life—Husband/Wife
 - Installment Life—Individual (\$100 down, 10 annual payments of \$30)
 - Installment Life—Husband/Wife (\$100 down, 10 annual payments of \$36)
 - My pledge is enclosed.
 - Please bill me.
- Discount rates are:
 \$17 Individual \$23 Husband/Wife
- (rates effective through June 30, 1985)
- MasterCard # _____
 VISA # _____
- Signature _____

Calendar

SEPTEMBER

5-14: **Equilibrium and Stability Questions in Continuum Physics and Partial Differential Equations**, opening conference of the 1984-85 program of the Institute for Mathematics and its Applications. For information, contact Susan Anderson, 373-0355.

6-7: **12th Midwest Solid State Theory Conference** at the Earle Brown Center for Continuing Education in St. Paul.

17-21: **First International Aerosol Conference**, hosted by the Particle Technology Laboratory, at the Amfac Hotel in Minneapolis. Topics include particulate contamination control in clean rooms, production of high purity silicon and other industrial fine particles by aerosol reactors, and filtration and particulate control technology. Some 300 papers will be presented in four parallel sessions over the five-day period. For information, contact Benjamin Liu, 373-3043.

OCTOBER

14-16: **1984 Annual Meeting of the North Midwest Section of the American Society for Engineering Education** at the University of Minnesota's Coffman Memorial Union. Tours of IT will be available. For registration information, contact John Vollum, 373-3157; for information on displays and exhibits, contact Peter Zetterberg, 373-3486.

22-26: **Homogenization and Effective Moduli of Materials and Media**, part of the 1984-85 program of the Institute for Mathematics and its Applications. For information, contact Susan Anderson, 373-0355.

JOHNSON from page 7

The Minnesota High Technology Council was formed just two years ago out

of the Institute of Technology Advisory Committee, which goes back to 1972. As one of our first acts we did a survey of Minnesota industry to find out what our future employment needs would be. We learned that the state wasn't educating nearly enough engineers and that technology businesses will have to import a large number of engineers now and in the next few years to meet our growth plans.

There have been some changes. In 1982, we lobbied our Governor and Legislature hard for additional monies to be spent facilitating science and engineering education. The Legislature wasn't sure but, to its credit, gave us the benefit of the doubt. It allocated \$17 million for special technology initiatives, much of which went to the Institute of Technology. In 1983, the Legislature allocated \$50 million for technology-related building rehabilitation and new building designs, of which approximately \$37 million was designated for the Institute of Technology. Also, the University was granted planning money for a \$40 million electrical engineering and computer science building, which will be voted up or down in this coming Legislature. So it's improving, but we have a long way ahead to go. And even though some legislators take tours through IT (under University sponsorship), they still don't really know what it's like to go for a degree in IT today.

There is the background. Now my pleading. The best way I know to make our legislators aware of the actual needs of IT is for you students and alumni to tell them. There are a lot of you, and you, after all, are the experts on IT. Think what an impact your letters would make in our Legislature. (Legislators have told me that 10 letters can make a difference.)

If you think of conditions that need to be improved, if you are aware of seri-

ous deficiencies in buildings, equipment, libraries, or whatever, seek out your legislators (house and senate) and tell them. By all means, say what is good, too. They will be interested. After all, you are their constituents. You can find out who your legislators are by calling 612/296-2146.

You can use one letter. Send it to your legislators in the house and senate. If your home is outstate, send it to your outstate legislators. Send a copy to me at the Minnesota High Technology Council, 4900 W. 78th St., Bloomington, MN 55435. I'll see that it's shared more broadly.

You can, of course, go further. You can meet your legislator face-to-face. That's an educational experience in itself. I suggest it's a useful one you'll almost certainly not regret. Don't worry about whether or not your legislators are on key educational committees. If they are, fine. If they're not, they'll tell their colleagues on the committees about your contact. They really will. We engineers (I'm one too: '51 B.S.M.E) tend to be a rather reticent bunch. We're usually not given to speaking out on unfamiliar ground. Here's a chance to enter the process.

Why this? Because our council is convinced for many reasons that technology is Minnesota's future. It's that or a decline in living standards here. The institute, while good, is poised to become great. We need a decade of sustained support to make that happen. That support has to come from several places, but the Legislature is key. If truly technology is it, education is the engine to drive it, and IT is a critical component of that great engine. That's the reality of the '80s and beyond. That's what our decision makers need to understand. That's why I'm asking you to spend 60 cents and a little time.



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