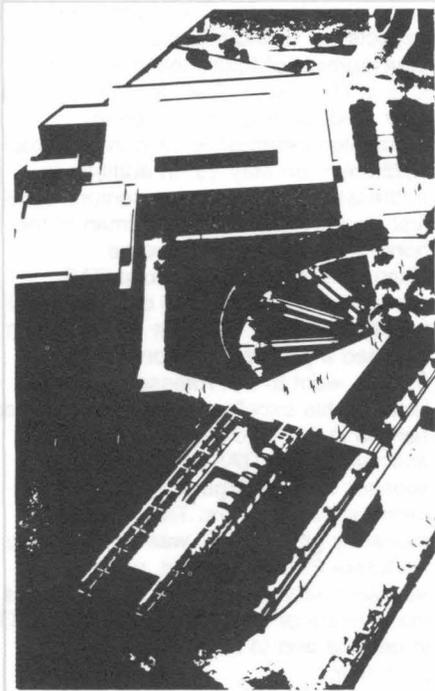


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Volume 5 Number 4  
December 1979

## Aeronautical Engineering celebrates 50th

J. Leonard Frame, president of FluiDyne Company, headed a committee of distinguished alumni who organized a three-day series of events commemorating the 50th Anniversary of the Department of Aeronautical Engineering and honoring its founder, John D. Akerman. Alumni from all over the United States returned to the campus to attend special activities that began on Friday, October 26, with the Science & Technology Day seminars and Institute of Technology Alumni Society's evening banquet.

On Saturday, October 27, an all-day anniversary program included addresses by Dr. Howard W. Barlow on "Early Days of the Aeronautical Engineering Department," by Dr. Patarasp Sethna, Aeronautical Engineering & Mechanics chairman, on the "Present and Future of the Department," and special remarks by Institute of Technology Dean Dr. Roger W. Staehle. Film clips of the history of flight were shown and a tour of the department and special nostalgia displays was also held.

The dedication of the John D. Akerman Memorial highlighted morning activities. The influence of Akerman, a founder and original head of the Aerospace Engineering & Mechanics department, has extended beyond his own achievements in the aviation industry and, in many important ways, benefited the department's nearly 2,000 graduates. The first tailless aircraft, an Akerman development considered an integral step in the evolution of today's delta-winged aircraft, now hangs in the Smithsonian Institution. Akerman also pioneered high altitude pressurized flying suits and established the University's Rosemount Research Center, site of post WWII governmental and industrial research.

The memorial fund established in his honor will be used to enhance the standards and principals he brought to Minnesota's Aeronautical Engineering curriculum through the John D. Akerman Adjunct Professor of Design position and by providing the software and technical hardware for computer-aided design through the John D. Akerman Aerospace Design Center.

In his remarks, Dr. Sethna emphasized the importance of the Akerman Memorial Fund in making the design segment of aero's educational program as strong as possible. The top-

level design engineers from industry who will come to the campus because of this fund will not only enhance the design program, but also "stimulate a strong interaction between industry and our faculty in other areas including research," he said.

Sethna cited the excellence of his department's undergraduate program, ranked in the Gourman Report—the only report that ranks such undergraduate programs—as 4th among the 59 degree programs offered in the U.S. "The faculty is also known for its excellence in teaching," he said. He noted, too, that the department's graduates hold important positions of influence around the country and are in great demand in aerospace as well as other industries.

"Our educational philosophy is to emphasize the fundamentals," Dr. Sethna said. "The average engineer becomes influential in his field in ten or more years after graduation. With the rapid change in aerospace technology the only thing we can be sure of is that the fundamental concepts will be the same in that length of time."

Sethna also pointed to the excellence of the graduate program and its reputation in studies of fluid mechanics, solid mechanics, and dynamical systems, and for the application of these studies to some professional areas of aerospace engineering. The graduate program is rated among the top ten in the Gill Report and has contributed significantly to the influences Minnesota has had in the field of aerospace engineering over the years.

In conclusion, Sethna discussed three applied areas that he felt would add greater strengths to the department: "One is the area of composites," he said. "With the growing energy crisis composites are bound to play a larger and larger role in vehicle design and, in particular, aerospace vehicles. We would like to enlarge our activity into the area of acoustics, applied acoustics, to improve our sound environment and ... include the study of aerodynamic noise from jet engines. We would also like to enlarge our activity in the area of controls. Control theory is a fundamental discipline and its growing role in the aerospace industry hardly needs emphasizing ..."

Saturday afternoon events included a picnic lunch, Homecoming game, a social time and dinner-theater. Sunday activities were also planned.



Anthony F. Yapel, Jr., President, I.T. Alumni Society

## A Report from the IT Alumni President

Science and Technology Day, the major event sponsored by the IT Alumni Society (ITAS) during 1979, continued the success of these yearly programs. The 1979 S&T Day was really special—and for several good reasons. First of all, it was held the day before Homecoming during the Alumni Week that commemorated the 75th Anniversary of the Minnesota Alumni Association. Also, this year the IT Department of Aerospace Engineering & Mechanics is celebrating its 50th Anniversary and ITAS especially observed this milestone in its S&T Day activities.

The 1979 S&T Day program, under the able direction of ITAS executive committee member Leigh Nelson of 3M, focused on *transportation* in all its forms. Although the theme was selected over six months ago, it has, as we all know too well, become particularly significant in recent days. Gasoline shortages and "gas lines" are now familiar to most of us, while aircraft safety problems and "people mover" mass transit arguments have been extensively debated and publicized in the news media. For S&T Day, an afternoon seminar program, "Today's Technology for Tomorrow's Transportation," dealt with potential solutions to the transportation problem.

A particularly well qualified slate of speakers addressed the overall problem during the seminar. They included participants from academia, state and federal government, the auto and aircraft industries, and even a special speaker from Germany who is an expert on mass transportation systems based upon magnetic levitation. IT Professor J. Edward Anderson from the Mechanical Engineering department, our own expert on transportation problems and their solutions, moderated the program. ITAS board member Chris Christopherson of Fluidyne was in charge of seminar arrangements.

The transportation theme continued at a special banquet program which more than 900 individuals attended that same evening at the Radisson Hotel South in Bloomington, Minnesota. Featured speaker was former astronaut Donald K. (Deke) Slayton, a Minnesota Aeronautical Engineering graduate and recent recipient of a University of Minnesota Outstanding Achievement Award. Slayton is now manager for the National

Aeronautical and Space Administration's (NASA) Orbital Flight Testing.

Another highlight of the banquet program was the presentation of Outstanding Achievement Awards to three renowned IT alumni by Chief Justice of the Minnesota Supreme Court, Robert J. Sheran, who is currently serving as president of the overall Minnesota Alumni Association. Among the awardees was Dr. Richard C. Jordan, associate dean of the Institute of Technology, who is the first recipient of a PhD in mechanical engineering from the University of Minnesota. Dr. Jordan has spent more than 40 years as a University faculty member, 27 of those years as head of the Department of Mechanical Engineering to which he brought fame and a recognition of excellence. Dr. William G. Shepherd, the second awardee, received his bachelor's in electrical engineering and PhD in physics from Minnesota. After 10 years with Bell Telephone Laboratories, he returned to the University to serve as a professor of electrical engineering, associate dean of IT, head of the Department of Electrical Engineering, vice president for academic affairs, and director of the Space Science Center. Dr. Shepherd has been honored with several major distinctions, emphasizing his unique and far-ranging professional contributions. The third awardee, Eugene W. Weber, is a recognized authority on water resources planning and management. A 1930 graduate of Minnesota, he has had an illustrious career with the U.S. Army Corps of Engineers, which crystallized with his work as commissioner on the U.S. Section of the International Joint Commission of the U.S. and Canada during three presidential administrations.

A surprise award was made to Arnold Cohen, IT assistant dean of Industry & Professional Relations, for his dedicated service to the Institute of Technology and its alumni programs. Dr. Cohen received a handsome plaque and a stipend.

In addition, dean of the Institute of Technology, Dr. Roger Staehle, briefly updated those attending the banquet on his exciting plans for the years ahead in IT.

The 1979 banquet arrangements were handled by Al Holler of Twin City Testing.

ITAS has also been involved in a variety of other activities in recent months. In late May, we hosted a special Dean's Luncheon which was attended by Dean Staehle and the members of his staff. This provided ITAS board members with an opportunity to meet personally with Dean Staehle to discuss his

ambitious plans for IT and the role he expects the Institute to play in the development of future technology and jobs in Minnesota. Also, for the first time ever, ITAS participated in spring graduation ceremonies held in Northrop Auditorium on May 23. In addition to addressing the graduating seniors, ITAS first vice president and chairman of the honors committee, Dr. George Champine, presented special ITAS sponsored awards to two outstanding IT faculty members. The first award, which included a plaque and monetary gift of \$1,500, went to IT Professor Warren Loud for his excellence and distinguished service in the teaching of students. It is anticipated that ITAS will continue to sponsor the "Distinguished Teacher" award in future years. The second, a monetary gift of \$500, was presented to Professor Paul Cartwright, retiring assistant dean for student affairs, for his many years of distinguished service to IT in general and to its students in particular.

As many of you know, ITAS's only money raising project each year is our Science and Technology Day banquet. Thanks to last year's record-breaking S&T Day "patron table" participation by the business community, we were able to

**Editor's Note: IItems has recently changed editors and will shortly undergo a change in format. Though this issue has been delayed by these changes, we will soon be back on schedule.**

## ITEMS

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**DONALD K. SLAYTON**, manager for Orbital Flight Test for the National Aeronautics and Space Administration (NASA) in Houston, Texas, is more widely known as a member of the three-man crew of the Apollo-Soyuz Space Mission that saw NASA and Soviet space vehicles meeting in space and docking to take part in 44 hours of joint activities before returning to Earth. During the mission, Slayton served as Apollo docking module pilot and logged slightly more than nine days away from Earth prior to splash-down in the Pacific near Hawaii.

For this achievement and other distinguished accomplishments, he was awarded the University of Minnesota's Outstanding Achievement Award in 1977.

After serving in Okinawa at the end of WWII, Slayton returned to the United States and subsequently left the Air Force to enter the University of Minnesota in 1946. He received his bachelor of science degree in aeronautical engineering in 1949 and worked for Boeing Aircraft until his recall to active duty in 1959.

After being named a Mercury astronaut that same year, Slayton was scheduled to pilot the Mercury-Atlas 7 mission but was replaced because of a heart condition discovered in August 1959. Slayton, was, however, restored to full flight status in time to make space history as a member of the Apollo-Soyuz Test Project.

not only present the awards just mentioned, but also two \$1,000 Merit Scholarships to incoming freshman students, one each to a top male and a top female student. This year's awardees are David Hanson from Mounds View Senior High School and Michelle Hajicek of South High School in Minneapolis. ITAS congratulates both of these young people for their outstanding academic accomplishments and wishes them well during their first year in IT.

As part of ITAS's continuing effort to provide career advisory opportunities for IT students, a series of programs was held on campus during Engineering Week, April 30 to May 3. Specific career areas were dealt with in considerable depth by a number of industrial engineers and scientists from several Twin Cities high technology firms. These volunteers discussed career opportunities in their speciality fields with the students. The scientific disciplines covered included physics and math, computer science, mechanical engineering, civil engineering, electrical engineering, chemical engineering, industrial engineering, and chemistry. The popular sessions were attended by more than 150 students. Because of the obvious interest, ITAS intends to continue this career advisory service during the coming academic year.

Finally, I would like to request your continued corporate and individual support of ITAS and Science & Technology Day, as well as for the continuance of such programs as our distinguished teacher honors. ITAS's ability to sponsor awards and programs and to provide financial support to outstanding faculty and students is totally dependent upon your generosity. We have a most enthusiastic, imaginative, and dedicated group of directors on the ITAS board. Thanks to you, we were able to continue all of our past activities and were also able to start several new programs during 1979. We intend to expand our activities in 1980.

With this writing, I am completing my term as president of the Institute of Technology Alumni Society. I'd like to extend my special thanks to all members of the ITAS board of directors and to the overall Minnesota Alumni Association staff for making this time an interesting, exciting, and pleasant year for me. Special thanks to Dean Staehle and his staff and to the many ITEMS readers who provided such solid support for ITAS projects during the past year. I sincerely appreciate everyone's efforts.

The new officers for 1980 include president, Dr. George Champine of Univac; first vice president, Leigh E. Nelson of 3M; second vice president, Russell Heinselman of Univac; secretary-treasurer, John E. Meyer of Meyer Borgman & Johnson, Inc.; and past president, Anthony F. Yapel, Jr. of 3M. Among the new board members are Dr. Gregg A. Vandesteege of 3M, Donald M. Sudor of IBM, Jack Braun of Braun Engineering Testing, Inc., Dr. Roland Weber of Physical Electronics Industries, Inc., and student representative Jose Lopez.

## S&T Day Seminars join today's experts with the future

The 1979 Science & Technology Day seminars, highlighting "Today's Technology for Tomorrow's Transportation," were co-sponsored this year by the University of Minnesota Institute of Technology Alumni Society (ITAS) and by the Fiftieth Anniversary committee of the Aerospace and Mechanics Department.

This topic, which holds special interest for scientists, engineers, and the public, was explored at a time when viable answers to the nation's transportation problems are being sought in the face of declining domestic petroleum reserves and increasing oil consumption.

The afternoon seminar program, held in Coffman Memorial Union Theater on the Minneapolis East Bank Campus, was moderated by Professor of Mechanical Engineering J. Edward Anderson. He is also the director of the Industrial Engineering Division in Mechanical Engineering. Remarks made by Richard P. Braun, commissioner of the Minnesota Department of Transportation, preceded six seminar presentations.

The first, delivered by Robert I. Maxwell, transportation group manager for the U.S. Office of Technology Assessment, addressed "The Effect of Energy Supply on Automotive Technology." He discussed possible courses of technological development in the automotive transportation system directed toward relieving energy constraints.

Charles A. Amann, head of the



Engine Research Laboratory at the General Motors Research Laboratories, spoke on "The Automobile Faces the Future." Amann, recognizing the attention being given to fuel economy for passenger cars, cited the challenges that the dominant spark-ignition reciprocating engine is receiving from a variety of alternative power plants, many of which promise operation on a broader range of fuels.

"The Future of Computerized Traffic Control" was explored by Associate Professor Kenneth G. Courage of the University of Florida's Department of Civil Engineering. He discussed the impact the computer has had on traffic control technology and the problems that remain to be solved.

Of particular interest was the presentation on high-speed, inter-city magnetic levitated transportation by developer Helmut Schulz of the Ministry of Research and Technology, Federal Republic of Germany. Similar to a monorail in function and appearance, the system will travel at speeds up to 400 km/hr and is designed to fill the service gap between conventional trains and airplanes. It is expected to be in use commercially in Central Europe by the year 2000. At the end of the regular seminar program Schulz showed a special color movie that emphasized the excitement behind the development of the system.

The Boeing Company's John M. Swihart, vice president for Domestic and Canadian Sales, discussed "Technology for Future Commercial Air Transportation." Swihart talked about the variety of market, environmental, energy, legal, financial, and technological influences playing on the future of commercial air transportation, then elaborated the modified and new transport systems under consideration because of technological impacts.

Moderator Anderson concluded the formal program with a presentation on "Institutional Problems in the Development of Transit Innovations," discussing the need to develop institutional and governmental structures that appropriately recognize and implement the innovative transit systems needed in the public sector.

### **Gladfelter wins first national ACS Signature Award**

Assistant Professor of Chemistry Wayne Gladfelter, who joined the University Department of Chemistry's faculty this fall, is the recipient of the American Chemical Society's (ACS) Nobel Laureate Signature Award for outstanding performance as a graduate student in chemistry. The first of these national awards to be given, this honor

will hereafter be presented each year to the top graduating PhD in chemistry in the United States.

According to the September 10 *Chemical & Engineering News*, "As impressive as Gladfelter's research is his creativity and independent thinking. As a graduate student, he frequently began research areas on his own initiative, and he contributed significantly to the research projects of his adviser. His ability to generate ideas and then go into the laboratory and perform experiments to confirm or disprove these ideas was exceptional ..."



### **IT car scores in national competition**

A modified Plymouth Volare with a hydraulic system that stores enough energy to propel the car for short distances with the engine completely shut off won top honors in its class in national competition last August. Modifications in the car were made by more than 100 University of Minnesota students.

Using a Volare donated by the Chrysler Corporation, the students combined a small gasoline engine with an energy-storing hydraulic system, which allows the engine to shut off when enough energy is stored for sustained travel. Energy given off by braking is also stored, supplying enough energy for the car to accelerate after coming to a complete stop.

The car won the hybrid division in the Energy Efficient Vehicle Competition, part of the Student Competition of Relevant Engineering (SCORE) held at the General Motors proving ground in Pontiac, Michigan. Thirty-three cars were entered. Arthur G. Erdman, associate professor of mechanical engineering, faculty advisor for the project, said that his students demonstrated a very feasible concept and that all the credit for the success of this project goes to them.

Before the competition, simulated runs gave the car an EPA estimate of 22 to 35 mpg for city driving. During the SCORE's EPA cycle tests—even though several systems on the car malfunctioned and an extra 1,000 pounds was added to the original 4,500 pound bulk of the Volare—the IT car was rated at 19 mpg. Erdman and his students feel they can up the car's mileage to 36 mpg during their fall quarter efforts.



## N. R. Amundson cited for service in renaming of East Bank building

The Chemical Engineering building in the East Bank IT complex has a new name. It recently became Amundson Hall in recognition of the contributions Neal R. Amundson has made to the Department of Chemical Engineering & Materials Science and to the chemical engineering profession. A plaque affixed to the wall of the building's main corridor commemorates the May action of the University's Board of Regents in honoring Amundson's distinguished service.

A Regents' Professor of Chemical Engineering, Amundson earned three degrees from Minnesota: a bachelor's in 1937, a master's of chemical engineering in 1941, and a doctorate in mathematics in 1945. From the time he received his doctorate until he joined the faculty of the University of Houston in 1977, Amundson was continuously associated with the University of Minnesota, excepting for two years spent at Brown University on a post doctoral program.

Twenty-five of Amundson's Minnesota years were as head of Chemical

Engineering & Materials Science which gained international recognition as an outstanding research center and for the quality of its graduates during his tenure.

Participants in the name-changing ceremony included University Regent Neil Sherburne, University President C. Peter Magrath, and Regents' Professor Rutherford Aris. The afternoon program concluded with a presentation by Arvind Varma of Notre Dame University, entitled "On Editing the Chief." Varma reflected on his experiences as editor of a two-volume set of Amundson's selected papers that will be published in 1979 as "The Mathematical Understanding of Chemical Engineering Systems—Selected Papers of N. R. Amundson," in two volumes of 400 pages each.

During an evening dinner, Dr. and Mrs. Amundson were presented with a print commissioned from Gene Larkin, a Twin Cities artist and their long-time friend. The print enhanced Amundson's avocation, the raising of orchids, in its background.



N. R. Amundson

## Remedial enrollments create math crisis at University

Many students are coming to the University of Minnesota with less than the minimum education in mathematics necessary to get them through college.

As a result, there has been an "enormous" increase in the number of University students trying to enroll in remedial math courses, according to Willard Miller, head of the School of Mathematics.

"Last quarter, we taught close to 7,500 students in math," Miller said. "About a third of those students were enrolled in remedial math." Remedial math, in this case, is defined as math that is offered in high school, such as algebra, plane and analytic geometry, and trigonometry.

"Many students are arriving at the University with the mistaken impression that they can get along with only elementary school mathematics," Miller said.

The problem is partly a result of the fact that courses of study traditionally requiring little or no math are now beefing up their math requirements. Many departments in the Colleges of Agriculture, Biological Sciences, Liberal Arts, Home Economics, Business, and Education and in the health sciences require more math now than they did in the past, Miller said.

"This increase in math requirements is due primarily to a greatly increased need for mathematics training in a society based on high technology," he noted.

Miller feels the answer is more math preparation at the high school level. "Lack of sufficient high school math is impeding the progress of these students toward degrees, and severely draining the resources of the School of Mathematics."

He pointed out that students who take math in high school benefit in other ways. More individual attention can be given in high school classes, and

instruction moves at a more leisurely pace. "Math that may take a year in high school might be covered in one quarter at the University," he said.

Remedial math as taught at the University is mostly concerned with rapid development of computational skills, which, according to Miller, makes the classes dull for the students.

Using college level instructors to teach high school mathematics to large numbers of students is a poor use of the math department's talents, he added.

Miller is currently trying to communicate with high school teachers, counselors, and students about the need for more math instruction in the high school curriculum, and is organizing a math advisory council, made up of representatives from local industry and math-related institutions, to push for greater public awareness of the growing need for mathematics education. — Mark Canney, University Science Writer



Morris E. Nicholson, Director, Continuing Education in Engineering and Science

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February 1
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This 28th annual conference will feature the Second Annual Kersten Lecture on the "Stability of Slopes" by national expert G. A. Leonards of Purdue University.

geotechnical engineers from the U.S. and Canada, additional topics will include "Expansive Soils and Over-Consolidated Clays," by R. M. Hardy of Edmonton, Alberta; "Professional Liability for Geotechnical Engineers," by Design Professionals of San Francisco; "The Evaluation and Measurement of the Density of Cohesionless Soils Using the SPT," by Wesley G. Holtz of Wheat Ridge, Colorado; and "Dewatering Techniques for Construction and Dewatering Practices," by Patrick Powers of Moretrench Corporation, Osseo, Minnesota.

Preliminary Announcement & Call for Papers ...

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