INSTITUTE OF TECHNOLOGY
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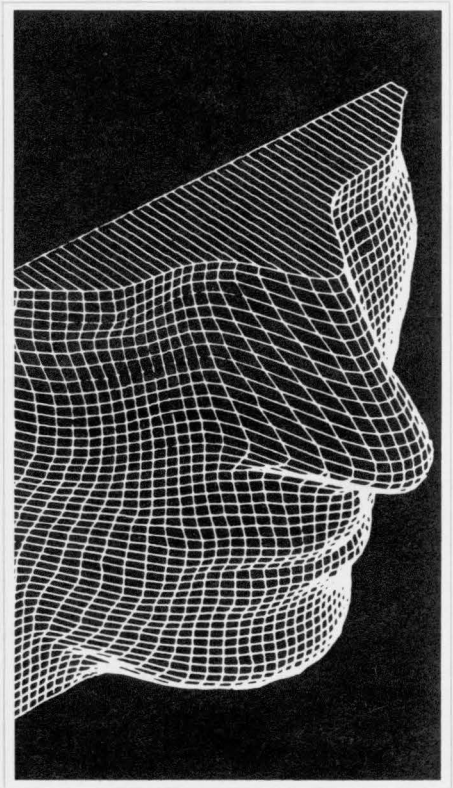

ITEMS

Volume 4
Fall 1977

Number 2

DEAN OF IT LEAVES U. OF M. ENTERS INDUSTRY IN NEW YORK

R.A. Swalin

Dean Richard A. Swalin of the Institute of Technology will be joining Eltra Corporation in New York City on November 1. He will hold the newly created position of vice president for technology.

Swalin has been dean since 1971, when he succeeded Warren Cheston in that post. He is a Minnesota native, and is a graduate of the University (B.S.-'51, Ph.D.-'54) in physical metallurgy. He joined the University staff in 1956 after two years with the General Electric Research Laboratory. At the University he has served in a number of positions including assistant and associate professor in the department of metallurgy, professor of materials science and head of the school of mineral and metallurgical engineering. He was named associate dean of the Institute of Technology in 1968, and dean in 1971.

Eltra Corporation is a diversified manufacturer of electrical, consumer and industrial goods with both domestic and international operations. The company has 77 manufacturing facilities and research and development laboratories in the United States and Europe. Swalin will have corporate responsibility for assisting the divisions of the corporation in the formulation of their technical programs, evaluating the progress of these programs and identifying policy for the technological direction of the corporation.

"The challenge offered to me by Eltra is fascinating," Swalin said, "I look forward to assisting this rapidly moving company in meeting its goals."

In a statement to IT department heads, he expressed his feelings about the move. "Naturally, I have some misgivings about leaving the University of Minnesota. I am confident that our departments have strong leadership and that IT will weather the transition period comfortably. I deeply appreciate the strong support you have provided me in the past. I shall leave with warm and cordial feelings for my colleagues in IT and for the University at large."

A committee will be named to find a successor to Swalin, according to Henry Koffler, vice president for academic affairs.

"Swalin's leaving is a serious loss for the University of Minnesota, but a significant coup for the industry that will gain the benefit of his rich talents," Koffler said.

IT Associate Dean, Walter Johnson, has been named by President Magrath to serve as Acting Dean until a replacement is found.□

Speakers Announce Sci. & Tech. Day Topics

Four speakers will develop the theme, "Materials for Today and Tomorrow," at seminars to be held in the Coffman Union Theater on Friday afternoon, Nov. 4th. The speakers, their topics and abstracts of their presentations are: C.W. Macosko, associate professor, Department of Chemical Engineering and Materials Science, **"New Processes—Polymer Reaction Molding."**

"Over 40 million pounds of polyurethane is slated to appear on Detroit's new models this year. Large body components are being reaction injection molded (RIM) from liquids, by polymerization, directly into the mold. At Minnesota, research is going on into the mixing, mold filling, curing chemistry and resultant properties produced by this new process. Because of its lower cost on large parts, RIM appears to have potential for nylon, epoxy, acrylics and other polymers to replace larger sized conventional injection moldings."

B.G. Koepke, research scientist, Honeywell, Inc., Materials Science Center and adjunct professor, U. of Minn., **"Ceramics—A Necessary Component of Future Technology."**

"Improved primary and secondary processing of ceramics has resulted in increased production of these materials in both single crystal and fully dense polycrystalline forms. As a re-

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Everett Dale, President, I.T. Alumni Association

A MESSAGE FROM THE IT ALUMNI SOCIETY PRESIDENT

Everett Dale

After a very restful vacation in Norway, Sweden and Denmark, I noted that a stack of technology-related articles were on my desk waiting to be read. One, in particular, from a recent edition of Industry Week really caught my attention. It was titled "Goodbye Technology—Farewell Future." As alumni of IT, it carried a message for all of us as we pursue our science and technology-related endeavors. In part, here's what it said:

"High aspirations and great achievements—the U.S. represents the best man can make of himself. His know-how created the material wealth and extended the freedoms upon which our society is based.

Because know-how (or technology) is so much a part of the system, we take it for granted. Technology has been used to solve problems as long as man has been man; we expect it will continue. Hopes for a better tomorrow are based on the assumption that man will go on extending his knowledge and putting it to work.

But the pace of technological innovation in the U.S. is slowing. Leaders in science and industry are concerned that we are putting less effort into innovation and deriving fewer returns. They are even more concerned that a reversal of the trend won't be easy.

When we restrict the pace of technological innovation, we're playing dangerous games. When we allow apathy or antitechnology feelings to become a new morality, we not only condemn the past, we condemn ourselves to a lustreless future.

Technology and freedom cannot be separated. They die together in a climate of neutrality or negativism.

Until we understand what technology really is and how it relates to a free society, the pace of progress will grow slower and slower. The odds will grow slimmer for turning aspirations into achievements. Man will be no better, no freer. One need only take a momentary look backward to see that.

FIRE AND FREEDOM. Somehow, ages ago, man learned to control fire. With it he triumphed over darkness, cold, and a precariously limited diet. He freed himself to wander and, later, to settle in communities.

Fire symbolizes both man's process of learning enough about his world to make it more of a home and the freedom to make more of himself.

From the beginning, freedom and technology have progressed hand in hand. Technology, using the powers of nature to serve his own ends, freed man to do things better, faster, and easier. More importantly, it freed him to do more things, including things which his ancestors neither needed nor longed to do.

Technology has given man freedom which he has used to open still more doors to knowledge.

The U.S. represents man's leading edge of both freedom and technological innovation. We may not always have made the best use of either, but this nation's potential for great good is indisputable.

As man observed nature through the centuries, capitalized on accidental discoveries, and did some deliberate probing of his own, he seemed to become a conqueror of nature rather than part of it.

At first, technological innovation was more accidental than deliberate; and later, deliberate but not always understood. For thousands of years, technological innovations had come slowly through inspiration, luck, or trial and error. Then came science, the disciplined study of truths that rule our physical world, which in recent decades has served more and more as the platform for new technology.

But technology is not merely the application of science. In fact, it has often preceded science. 'The introduction of the wheel and the lever owed nothing to theoretical physics; the bow and arrow were invented without any knowledge of ballistics,' says H.P. Rickman in his book "Living with Technology."

Even when technology is the application of a scientific principle, it's likely to be a highly creative step.

Man now sees innovation more as a process than a simple act. It includes the many steps from idea through design, market analysis, production, marketing, and delivery of a product or service."

Your Alumni Society Board continues to promulgate significant technology-related seminars and programs for alumni and the industrial community. Our annual "Science and Technology Day" on November 4, 1977 at the University and the Radisson South-Minneapolis, should be an enriching experience for all who can attend. I hope you are one of them. □

ITEMS

ITems is a quarterly publication of the Institute of Technology at the University of Minnesota, with special support from the I.T. Alumni Association. Material from this publication may be reproduced without cost, but credit to ITems will be appreciated. Requests to be placed on the mailing list or other inquiries may be directed to Clarence A. Berg, at the above address. Phone (612) 373-4838.

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Assistant Dean, Industry and Professional Relations .. *Arnold A. Cohen*
Assistant Dean, Student Affairs ..... *Paul A. Cartwright*
Director, Continuing Education in Engineering and Science ... *M. E. Nicholson*
Assistant to the Dean and Director of Special Programs ..... *Clarence A. Berg*
I. T. Alumni President ..... *Everett Dale*
Editor ..... *Lew Reeve*
Associate Editor ..... *Lisa A. Quiery*

TWO IT FACULTY TO RECEIVE AWARDS

Two faculty members from the Department of Chemical Engineering and Materials Science have been informed that they will be the recipients of awards to be granted in early November.

Professor and Associate Department Head, L.E. Scriven, will be presented the William H. Walker Award, for contributions to chemical engineering literature, at an awards luncheon Tuesday, Nov. 15, as part of a four-day national meeting of the American Institute of Chemical Engineers (AICE), in New York City.

Dr. Scriven received the Colburn Award for excellence in publications as a young member of the AICE, in 1960.

Associate Professor C.W. Macosko will receive recognition as "The Outstanding Young Chemical Engineer," from the local chapter of the AICE on the evening of Thursday, Nov. 10, at a dinner to be held at L'Hotel Sofitel in Bloomington. □

IT DEANS' REPORT

As promised in the Summer, 1977 issue of ITEMS, we are providing all alumni and friends of the University with a briefing here, from the presentations made by the Dean and his staff, to the IT Board in July.

From Dean Richard Swalin

- Mechanical Engineering's Dick Jordan has retired; Dick Goldstein is the new department head.
- External review policy to insure high quality programs continues with usually one department reviewed each year; most recent was Physics.
- Research budget for IT is up from 9 to 11%.
- Chemistry department is rebuilding under the direction of Paul Gassman; several new young faculty have been acquired.
- University had to reduce 147 positions from the faculty due to legislative directives, however further discussions have led to a reallocation of 38 positions.
- Profile of IT: 4,000 undergrads; 1,000 grad students. We "service" many students from other colleges. We were 9th in the U.S. last year in engineering graduates. There are 375 faculty, 180 teaching assistants with 17 buildings occupying 40% of the campus.

From Dean Walter Johnson

- Program to encourage women to enroll in IT: 133 in 1971, 348 in 1975-76 and 434 in 1976-77 (260 are in Engineering with the rest in Sciences and Architecture).
- Minority enrollment and retention program: 40-45 in IT (30 in Engineering).
- "Project Technology Power" helps minorities prepare for careers in Engineering.
- Corporate Associate Program—Fellowship program for entering graduate students allows us to compete with the best schools across the country.

From Asst. Dean Paul Cartwright

- Guidance and Retention Program going into 10th year—contacts with high schools (we visit over 100 each year). We are on a first name basis with counselors all over the state.
- Also maintain contact with Junior Colleges (over half of IT seniors did not start here).
- Retention part deals with 17 undergrad seniors—topflight students as tutors in the Halls. Some are resident basis, some transient.
- Commuter tutor program places tutors in appropriate locations in some of the high schools.
- 15 years ago, 50% of freshman class was flunking out, now only 10%.
- Our median percentile rank for entering freshman is above 90%.
- Merit Program is growing. Freshman Intern Program has 300 applicants—we can only fund 6 (about $1,000 support for each in tuition and books). They, in return, work in a department on research or undergrad laboratory. (We support one with our contribution from the IT Alumni Society).

From Asst. Dean Arnold Cohen

- IT Advisory Council (ITAC) has some excellent programs underway. The Council is presently developing an aggressive program in support of IT in the next legislative session.
- As Executive Secretary ITAC, further announcements and developments will be reported in ITEMS.

From Director Morrie Nicholson

- Continuing interest in credit courses.
- Increased interest in auditing courses.
- Increasing emphasis on career planning and professional development.
- High interest in management programs.
- Increasing availability of good videotape programs for tutored video instruction.
- UNITE system functioning well.
- Continuing Education in Engineering and Science reports will be presented in ITEMS.

Following the presentations in 107 Lind Hall, discussions continued over a Faculty-Board luncheon in Coffman Memorial Union. □

IT STUDENT COUNT CONTINUES TO RISE

Assistant Dean of Student Affairs for IT, Paul Cartwright, estimates that final IT enrollment figures for fall quarter 1977 will approach 4,400 students. This is an increase of about 200 students over last year's fall quarter enrollment and is a continuation of the steadily increasing IT enrollment.

The following is a listing of fall quarter enrollments for the last several years.

1976	4,204	1972	3,567
1975	4,086	1971	3,961
1974	3,981	1970	4,131
1973	3,674		

Again, as last year, the fall enrollment will be the largest achieved in over 25 years.

Amundson Resigns After 40+ Years at U.

N.R. Amundson

Regent's Professor N.R. Amundson's resignation, accepted by the Board of Regents at its October meeting, marks the departure from the University of one of the leading international authorities on the behavior and control of chemical reactors and on the mathematical analysis of a broad range of chemical engineering problems.

"His leaving is a grievous loss to his colleagues, the Department of Chemical Engineering and Materials Science and the University of Minnesota," Dr. Rutherford Aris, present head of the department, said in commenting upon the career of the man who served as its head from 1949 to 1974, directing it to a position of acknowledged primacy among its peers.

A native of St. Paul and a graduate of the University of Minnesota (bachelor's in chemical engineering and doctoral in mathematics), his career, until this time, has been spent entirely at the University, apart from two years at Esso's Baton Rouge refinery and a period of postdoctoral study at Brown University.

He has been the recipient of most of the awards offered by the American Institute of Chemical Engineers, thereby acknowledging his stature in the profession. In 1969 he was elected to the National Academy of Engineering and within the University, he was honored by one of the early Regent's Professorships during the 1967-68 academic year.

Amundson has accepted a professorship of chemical engineering at the University of Houston. □

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

SEMINARS TO EVALUATE IMPLICATIONS OF NEW TECH.

Thursday, Nov. 3 and Thursday, Nov. 17 mark the final two evenings of the seminar series on Technological Developments, sponsored by the Minnesota Alumni Association and the IT Department of Continuing Education. The evenings include dinner at the Minnesota Alumni Club, followed by discussions with distinguished University professors on some of the technological developments of current interest.

The November 3 seminar will be conducted by Dr. Raymond H. Warner, professor of electrical engineering, on the topic of "What the Microelectronic Revolution Means to Minnesota and You—Do you want a computer in your home?"

"Energy Conservation and Underground Space—Must we consider living underground?" will be the subject at the November 17 seminar, led by Dr. Thomas P. Bligh, assistant professor of mechanical engineering.

The series was inaugurated by Dr. Richard J. Goldstein, professor and new head of the mechanical engineering department, who spoke on "Residential Energy."

Each of the remaining evening seminars will be conducted from 6:00-9:30 p.m. at the Minnesota Alumni Club, 50th Floor, IDS Center, Downtown Minneapolis. The fee including dinner and the lecture, is $12.00 per session.

Please mail your reservation today as enrollment is limited. Make checks payable to Minnesota Alumni and mail to: Alumni Center, 2610 University Ave., St. Paul, MN 55114. For further information, call 373-2466. □

IBM STILL LEADS UNITE REGISTRATION

Registration figures compiled for UNITE students for Fall '77, show 230 students enrolled for 874 credit hours, a slight increase from Fall '76 figures of 226 enrolled for a total of 859 credits.

When students signed up for audits are included in the tally, the Fall '77 totals climb to 252 students registered for 950 credit hours.

IBM's Rochester installations have

Continued on page 6

Coming Continuing Education Programs . . .

For additional information on any of these events contact Tom Richards, program director, Dept. of Conferences, Nolte Center for Continuing Education and Extension, 315 Pillsbury Drive S.E., Minneapolis, MN 55455 or call 373-3157.

POLLUTION DETECTION
Thunderbird Motel
October 27-29
Fee: $395 ($355.50 each for groups of three or more from the same firm)

Basic considerations in environmental monitoring, administering monitoring objectives, technical factors in monitoring, how to do a monitoring survey, how to calculate monitoring costs, and the maintenance of necessary records.

ENGINEERING MANAGEMENT
Spring Hill Conference Center
Wayzata, Minnesota
November 8-10
Fee: $395 per person

For the manager who directs the work of engineers or other professional personnel. The seminar will assist the manager in establishing engineering department objectives, responsibilities, and action plans which will enable the participant to evaluate the effectiveness of his performance and his subordinates' performances. Emphasis will be placed upon understanding the management by objectives philosophy and applying this approach to achieve results in an engineering department. The management functions of planning, executing, reviewing, motivation, and developing professional personnel will be included. Participants should be employed as middle or lower level engineering managers with at least one year of supervisory experience. Enrollment limited to 20.

QUALITY CONTROL
Thunderbird Motel
November 16-18
Fee: $395 ($355.50 each for groups of three or more from the same firm)

Information to quality control supervisors and managers, regardless of their company's size, on the following topics: How to enhance quality at an acceptable cost, How to get better quality while testing fewer products, and How to reduce employee error.

10TH ANNUAL
WATER RESOURCES SEMINAR
Registry Hotel
November 21-22
Fee: $55 per person (approximately)

Classification of public waters, Corps of engineers permitting program (section 404), EPA industry standards for NPDES, Industrial problems with permitting programs, Extremes in Minnesota's water supply, Bridge waterway analysis lake restoration, and Using marshlands for treating stormwater.

27TH ANNUAL
CONCRETE CONFERENCE
Holiday Inn Downtown
December 2
Fee: $33 per person (approximately)

This one-day annual conference addresses itself to a variety of concerns and techniques used by the concrete industry. Designed for engineers, architects, contractors, and other allied industry personnel, and sponsored by the American Society of Civil Engineers, the American Concrete Institute, the Concrete and Masonry Contractors Association of Minnesota, and the Minnesota Department of Transportation.

FUNDAMENTALS OF INDUSTRIAL ENGINEERING MANAGEMENT
Sheraton Ritz Hotel Downtown
December 12-14
Fee: $395 ($355.50 each for groups of three or more from the same firm)

Designed for industrial and production engineers, corporate industrial engineering staff, and operations supervisors. Some of the topics which will be covered include: How to answer the need for proper methods in operations management, How to establish time-task standards for pay rates, How to organize plant layout for maximum efficiency, How to control the quality of incoming products, ongoing processes, and the final product, and PERT (Program Evaluation and Review Technique) for scheduling and controlling of unique projects. □

FIRMS TO BE SURVEYED ON ENGINEER JOB TASKS

A survey of 30 companies in the Twin Cities area is being conducted at the present time, under the direction of Morris E. Nicholson, director, continuing education in engineering and science, to determine the kinds of responsibilities these companys' engineers are being asked to meet, and to determine the actual numbers of engineers who are employed within their profession by these firms.

This collected data will be used to determine the needs of engineers in industry, and to identify the constituencies to be interacted with in program development.

Companies that would like to participate, and have not been contacted, are asked to call 373-3132, or write to Dr. Nicholson at 11 Mines & Metallurgy Bldg., 221 Church St. S.E., Minneapolis, MN 55455.

Initial results are expected by the first of December, and copies will be available to anyone interested.

Institute of Technology Advisory Council Executive Committee members are shown at the conclusion of their first meeting. (l. to r.); Dean R.A. Swalin (see page 1), Dr. John N. Dempsey, Willis K. Drake and John A. Yngve. They will serve for the academic year, 1977-1978.

MANAGEMENT PROGRAMS FOR 'UNITE' ENGINEERS

Responding to a continuing manifestation of interest in management programs for engineers in UNITE firms, a planning meeting held Tuesday, Sept. 20, formulated plans for holding a "coherent series on project management with University and individual personnel involved in the presentation."

Seminar topics suggested by participants at the meeting include: "Introduction to engineering management with emphasis on project direction," "Project planning and organization," "Staffing, supervising and motivating," "Problem recognition and resolution," and "Project reporting."

Additional information regarding these coming programs will be available in early November, or you may request that your name be placed on the mailing list prior to that. Requests may be sent to Continuing Education in Science and Technology, 11 Mines & Metallurgy Bldg., 221 Church St. S.E., Minneapolis, MN 55455.

Advisory Council Votes New Exec. Committee

Officers of the IT Advisory Council (ITAC) for 1977-78 were elected by the Council at its June meeting. Dr. John N. Dempsey, vice president for science and technology at Bemis Company, Inc., was elected chairman. Willis K. Drake, president of Data Card Corp., was voted 1st vice chairman, and John A. Yngve, president of Nortronics, Inc., was named 2nd vice chairman. The three officers will serve as the executive committee of ITAC for 1977-78.

Six new members were welcomed to the Council at its August meeting. They are: Charles M. Denny, Jr., president, Magnetic Controls Co.; Richard F. Hammel, president, Hammel, Green and Abrahamson; Donald J. Herman, president, COMTEN, Inc.; Ansel Kleiman, president, Telex Communications, Inc.; Thomas G. Valenty, president, Onan Division of Onan Corp.; and Dr. Roland E. Weber, president, Physical Electronics Industries, Inc.

The Council was formed in 1972 to help the University's Institute of Technology maintain a strong relationship with the community it serves. Membership consists of 27 leaders in technically-oriented industry and in other important areas, who have been invited to serve by the president of the University. Members serve staggered three-year terms. The IT Alumni president is automatically a member.

In addition to the officers and the six new members, the current Council membership is: Dr. Robert M. Adams, vice president, research and development, 3M Company; Dr. Donald E. Anderson, director, Central Solar Energy Research Institute, Inc.; Dr. Van W. Bearinger, former vice president, science and engineering, Honeywell, Inc.; Frank A. Donaldson, chairman of the board, Donaldson Company, Inc.; J. Leonard Frame, president, FluiDyne Engineering Corp.; John T. Hanley, president, Fowler, Hanley Inc.; Dr. J. William Haun, vice president, engineering policy, General Mills, Inc.; James R. Heltzer, government affairs coordinator, Dayton Hudson Corp.; Richard E. Horner, president, E. F. Johnson Company; Herbert C. Johnson, president, Electro/General Corp.; and Frederick W. Lang, president, Analysts International Corp.

Other Council members are: John P. Millhone, director, Minnesota Energy Agency; Willard L. Moline, senior vice president, Rosemount, Inc.; John K. Moorhead, president, Moorhead Machinery and Boiler Co.; Frank C.

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EXEC COMMITTEE—*from page 5*

Mullaney, chairman, Cray Research, Inc.; James G. Peterson, president, James G. Peterson Associates; Harry C. Smuda, director, Roseville Development Center, Sperry Univac; Richard J. Vasatka, executive vice president, Setter, Leach & Lindstrom; Robert E. Wesslund, vice president, Control Data Corp.; and Everett Dale, president, IT Alumni Society.

Executive secretary of the Council is Dr. Arnold A. Cohen, assistant dean for industry and professional relations.

IBM—*from page 4*

again led the 12 participating organizations with 112 students registered for a total of 417 credit hours. This quarter also marks the first students from the Mayo Clinic in Rochester being enrolled for courses totalling 17 credit hours. Four from Mayo are listed as IT students and one is a graduate student.

Honeywell has 34 students registered at a total of 11 credits, and two 3M Company locations have enrolled 19 students who will receive 77 credits upon completion of their work. Five 3M Company enrollees are listed as graduate students and 14 from Honeywell also have graduate standing.

UNIVAC, another long-time participant in UNITE, has a total enrollment from two locations, of 45 students who will receive 181 credits. Twenty-three of their enrollees have achieved graduate student status. □

IT Advisory Council Activates Program on Capital Requests

The IT Advisory Council launched its 1977-78 season with a well-attended, working session in Morrill Hall on August 31. Their aim was to learn about the process by which the University brings its capital (building) requests before the legislature, and about this year's plan in particular. This information is important to the Council for building its support plan. Guest speaker and discussion leader was Dr. Stan Kegler, University vice president for institutional planning and relations.

Since 1975, the legislature has been meeting every year. The University's operations budget is now taken up in the first half (odd year) of the biennium and the capital request in the second half (even year). By statutory requirement, the University's capital request is presented at the same time as the operations budget request, in advance of the legislative session. In the 1977-78 biennium, the legislature will be considering the University's capital request during the 1978 session. The capital request, formally submitted one year ago, has now been reexamined by the University administration and revised for submission as an amended request.

The revised request—In the last several biennia, the University's requests for new construction have been categorized under three headings: planning, working drawings, and construction. This year there will be an entirely new approach to preliminary planning, particularly for the east bank campus. Funding is being requested (Item A-1) to study alternative uses of space, resulting in recommendations for the best use of each existing building studied, and for programs of renovation, plus (if necessary) new construction to accommodate particular programs.

IT items which have been moved into Item A-1 for such planning are the Electrical Engineering building and the 3rd floor addition to Architecture, both previously requested as working drawings items.

The item requesting planning funds for the Civil and Mineral Engineering building is not included in A-1, but has been singled out for acceleration. Quoting President Magrath's memo to the Regents, "I am recommending moving one building from the preliminary planning stage to working drawings because of the urgency of the state and national problems which are addressed by the faculties in this area. New facilities for Civil and Mineral Engineering (B-1) are needed to house this faculty in modern research and teaching quarters, as they address a variety of physical environment problems. The use of underground structures for the conservation of energy has been a well-publicized activity of this unit, but it also works on a number of other major environmental concerns."

The Smith Hall (Chemistry) remodeling request continues to approximately unchanged priority. A small amount for continuing the rehabilitation of this building has been appropriated in each biennium. Larger increments are needed however, to upgrade marginal space to usable standards.

Supporting role of professional groups—Supporting professional groups such as ITAC can be extremely helpful in a number of ways: testimony at committee hearings, contacts with individual legislators and staff, both personal and through letters, and in preparation of informational handouts.

In committee hearings, it is up to the University people to testify on specific request items and their features. Dr. Kegler indicated the University would welcome help in getting across the relationship between research and the economy of the state. It is in this area that ITAC can be of great assistance.

Armed with Dr. Kegler's practical points on dealing with the legislature,

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DR. KENNETH REID NAMED NEW DIRECTOR OF MRRC

Dr. K. Reid

Dr. Kenneth Reid has been appointed director of the Mineral Resources Research Center and professor of mineral engineering at the U. of M. Reid comes to Minnesota from Zambia, where he headed the industry process analysis and control services department of Nchanga Consolidated Copper Mines and Roan Consolidated Mines, the two companies which do all the copper mining in Zambia.

Born in England, he received his B.Sc. in chemical engineering from the U. of Birmingham, with 1st class honors. As an undergraduate, he also received the Nash Memorial Prize and the Cadman Medal. He then studied at Cambridge U., and received his doctorate in 1960.

Following receipt of his doctorate, Reid spent two years at the U. of California-Berkeley, as a Harkness Fellow, engaged in research and advanced studies in chemical engineering topics. He then spent seven years as a senior research scientist at C.S.I.R.O. in Australia, doing research in mineral

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"TECHNOLOGICAL SHOCK" CURED BY COURSE IN INDUSTRIAL CHEMISTRY

To use the term "semi-retired" in reference to Dr. Harold Wittcoff who is working three distinct jobs, is certainly a travesty and worthy of the chemist's knowing smile and easy chuckle. Wittcoff "semi-retired" four years ago and is working as special advisor to the president for General Mills, as well as serving as an adjunct professor of chemistry for the U. of M. and an industrial chemistry teacher for instructors all over the country who are interested in incorporating industrial knowledge into their chemistry curricula.

Wittcoff spent his undergraduate years at DePauw University and moved on to Northwestern where he earned his Ph.D. in 1943. Because of the war, he abandoned his ideal of being a teacher, in favor of becoming a chemist for General Mills. From there, he worked his way up to the position of vice president of corporate research, where he remained until his "semi-retirement."

After 30 years of watching employees fresh out of college go through what he terms "technological shock," Wittcoff realized a need for educational help in an area he calls Industrial Organic Chemistry, especially when statistics showed 80% of the chemistry graduates to be working in industry. He explained, "A company may put in $60-$100,000 on a Ph.D. every year (not just in salary alone), so the sooner he can be productive, the more the company is getting for the money."

This is not to imply that the universities should teach pure technology. As Wittcoff put it, "We don't want to degenerate the chemistry departments into trade schools, we want to teach things that will give the students breadth in this area." But, he insists, "We have to distinguish between science, and technology (the ability to use that science)."

So Wittcoff researched and designed a course in Industrial Organic Chemistry, which he teaches winter and spring quarters at the University. "Industrial organic chemistry deals with an entire body of chemistry not in the textbooks," he explained.

The course, originally designed for students, is used in part for his teaching at General Mills and is the foundation for his teaching of instructors who wish to set up industrial chemistry courses of their own. The course itself is divided into three main parts, including The Chemistry of Industry, taught as a discipline; Technology, the interrelationships between chemical properties and their uses; and Industrial Environment, where he deals with topics such as communication, economics, lab organization, patent information, how to get a job, ecology and government regulations, and the capitalistic system.

He cites several reasons for the lack of industrial chemistry education programs, including the fact that there is no current textbook on the subject available in the United States, although it is being taught in many foreign countries. Wittcoff and a British cohort will solve that within a year and a half, when their book on industrial organic chemistry is completed.

It has been suggested that people in industry do the teaching, but the problem with that, Wittcoff finds, is that "Good industrial professionals are not usually willing to take off a year to teach if they are doing well in industry." And although the information for the course comes from patent literature, trade magazines and experience from just these kinds of professionals, Wittcoff explained, "These people are out to distinguish themselves in the lab, not in the classroom."

Another problem he cites is the professors themselves who "have a good 'feel' for their subject—organic chemistry," Wittcoff said. These professors have no problem keeping up with their topic, but perhaps haven't yet acquired that same kind of zest and 'feel' for industry-based chemistry.

To help solve this problem, Wittcoff teaches teachers. This summer, he conducted a week-long seminar for 15 college and university chemistry teachers who will take this information back to their classes.

Dr. Wittcoff is now involved in a Chautauqua series of seminars for teachers which will take him to Christian Brothers U.-Memphis, Miami U. and the U. of Iowa. He will teach for two days this fall and return for two days in the spring to discuss the reactions to, and the progression of the use of his material within their individual programs. One suggestion he makes to the professors attending his seminars, is to correct and enrich their organic chemistry textbooks as far as industrial chemistry is concerned. The cost for the program is supported by the AAAS (American Association for the Advancement of Science) and in turn, the NSF (National Science Foundation). The only expense to the teachers is travel, meals and incidentals.

Wittcoff feels his cause can be furthered by either setting up specific industrial organic chemistry courses, or by enriching the existing chemistry courses.

The response to Dr. Wittcoff and his program has been very enthusiastic. "Teaching teachers can be tremendously stimulating," he said. He later admitted that his first love is teaching the students themselves. "Once you start teaching students the practical applications," he said, "It helps them learn more easily and remember for a longer period of time."

And so in his "semi-retirement" years, Dr. Harold Wittcoff has activated his long-overdue desire to teach.

CAPITAL REQUESTS—*from page 6*

the Council and its Executive Committee initiated a strategic plan. The Council will concentrate on broad issues. Legislative contacts dealing specifically with the Civil and Mineral Engineering (CME) building will continue to be the responsibility of the CME (departmental) Advisory Council, whose chairman, Richard Vasatka, also sits on ITAC.

A number of points will be stressed by ITAC on its handout material and personal contacts. Up-to-date facilities are important, whether in industry or in education and research. Council members from industry management will explain how industry uses "the University product," and how the quality of the product depends on the quality of University facilities. The educational role of research will be explained, including the basic inseparability of research and graduate-level education. University research is indeed relevant to state problems, and there are impressive examples to support this point.

Neither ITAC nor the CME Advisory Council are novices in the art of cultivating legislators and state officials. Both groups will continue to build on relationships developed in previous years.

Recognizing the need for a positive expression of support which can be communicated in contacts with legislators, ITAC adopted a resolution stating that "the Institute of Technology Advisory Council endorses and fully supports the several items in the University's capital request (1977, revised) which relate to the Institute of Technology." □

SPEAKERS—*from page 1*

sult, the enormous range of physical properties exhibited by ceramics is now available to the user. In this talk, some roles that ceramics are expected to play in a society faced with materials shortages and with challenging new materials will be discussed."

J.R. Johnson, executive scientist, director of advanced research programs laboratory, central research, The 3M Company, **"Will Materials be Serving Materialism of Survival?"**

"Is the challenge, to provide higher technology materials for an ever more materialistic society, or is it to find means to provide materials in a world facing shortages and increased costs for energy and basic resources? Some responses are examined, considering the visions of materials technologists, the record of the materials industries and forecast restraints."

The topic that J.L. McCall, manager of materials resources and process metallurgy, Battelle Institute, Columbus, Ohio, will discuss is not available at this time.

W.W. Gerberich, professor, Department of Chemical Engineering and Materials Science, **"Materials Dependability—Looking for Solutions."**

"Anyone surveying a junk yard or witnessing urban renewal can appreciate that an expanding world population should either use less or hold on to what they have for longer periods. To maintain quality of life, longevity and reliability are the keys—only achievable through structural, material and protection innovations. For example, why not use vapor phase inhibitors for corrosion protection of automobile bodies? Institute of Technology researchers are currently examining ways of extending component lifetime through improved material composition and microstructure as well as protection."

Speaker of the evening, Dr. J.J. Herbert Holloman, director of the center for policy alternatives, the Massachusetts Institute of Technology will use for his remarks, the central theme of the afternoon sessions, **"Materials for Today and Tomorrow."** His background in science, technology and education and his reputation as a speaker, offers assurance of an interesting, informative talk.

Outstanding Achievement Awards will also be presented to distinguished Institute of Technology alumni as a part of the program.

Tickets for the dinner may be obtained from the IT Alumni Association, 2610 University Ave., St. Paul, 55114. Checks made out to the association in the amount of $10 for each ticket should be mailed far enough ahead to permit them to clear the mails. Those expecting to purchase them at the door should call 373-2466 and have them reserved in advance. □

REID—*from page 6*

processing, particularly in grinding, classification, and flotation systems.

Dr. Reid, associate professor in mineral processing at McGill U. in Montreal for two years in the early 1970's, has also done consulting on an international basis on problems relating to mineral processing.

He has been an active member of the Institutions of Mining and Metallurgy in all countries in which he has worked. Reid has also had more than 20 technical papers published, one of which was used extensively in the section on comminution in the *Chemical Engineers Handbook.* □

ITEMS

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