

## KSU Engineering Is Reaccredited By E.C.P.D.

All Kansas State University engineering curriculums have been re-accredited, according to a report made to KSU President James A. McCain by the Engineers' Council for Professional Development.

An ECPD inspection team visited the KSU College of Engineering last April to review the instructional program and inspect facilities. Formal action approving re-accreditation of all curriculums was taken recently by the ECPD Executive Committee.

McCain said the only real criticisms of the engineering program concerned facilities and, in the case of chemical engineering, these needs were termed "urgent and immediate."

Special reference was made in the report to a current mechanical engineering department experiment in laboratory teaching by "Individually Prescribed Instruction," described as extremely well organized and planned. Favorable reference also was made to the department's "involvement with industry in the senior design work."

## Ward Hall Report

The contract has been let for the addition to Ward Hall. Thanks to the generous support of the many friends of the K-State College of Engineering, we can now start building this badly needed addition to the facilities of the department of nuclear engineering.

Continued support to allow us to complete and equip it is still needed and urgently solicited. Please send your tax-deductible contribution care of Dean Ralph G. Nevins. Make your check or money order payable to the KSU Endowment Association. Designate it for Ward Hall.

## IPI Teaching Method 'the' Thing, Center Plans Workshop, Lectures

In formal and informal conversations these days, an increasing number of engineering educators are discussing a relatively new teaching method, individually prescribed instruction (IPI).

So it is not surprising that the primary emphasis of the K-State Center for Effective Teaching (CET) this year is on IPI. The center has slated a series of nine speakers this fall and spring and a two-day workshop on IPI in October for KSU engineering faculty members.

"The speakers are persons with established reputations as leaders in the development of new educational methods, philosophies and techniques," said Dr. Paul L. Miller Jr., professor and CET director.



P. L. Miller

"IPI is 'the' thing these days in teaching methodology. It is an outstanding successful method although it is certainly not the only teaching method.

"Even the most conservative faculty members who have tried it are talking about it with an almost evangelistic zeal; they're very enthusiastic about it," Miller said.

The two-day workshop, Oct. 8-9, has been scheduled for the development of faculty interests in IPI. "There will be a limited enrollment of 45 engineering faculty members for this workshop," Miller pointed out.

Workshop leader will be Dr. Edwin B. Kurtz, head of biology at Kansas State Teachers College, Emporia. He will be assisted by two KSU mechanical engineering faculty members who have used IPI methods in their classes for the past year: Dr. Clyde H. Sprague, associate professor, and Rodney T. Nash, instructor.

As far as Miller knows, there are only two other engineering centers for effective teaching in the U. S., at the University of Texas and Oklahoma State University.

The K-State CET operates on funds provided by interested alumni who make contributions through the KSU Endowment Association.

The first in the series of nine speakers this fall and spring was Dr. J. W. Moore, chairman of the department of education at Bucknell University, Lewisburg, Pa. He spoke Sept. 21 on "Experiences with Individually Prescribed Instruction."

Other speakers: Bill Coffman, Modern Office Methods, Inc., Topeka, Kan., Oct. 1, "Workshop on Use of Transparencies for Classroom Instruction"; Dr. Kurtz, Oct. 8, "You Too Can Use IPI"; Dr. David G. Danskin, professor of education and psychology associated with the K-State Center for Student Development, Dec. 10, "Engineering Students at KSU—Who Are They and What Can We Do for Them"; Dr. Augustin A. Root, professor, Center for Instructional Communications, Syracuse (N.Y.) University, Jan. 25, "Psychology of Advising and Counseling of Students"; Dr. Hans O. Mauksch, professor of sociology, School of Medicine, University of Missouri, Columbia, Feb. 11, "Social Sciences and Humanities in the Professional Curriculum"; and Dr. Lois B. Greenfield, assistant professor of engineering education, University of Wisconsin, Madison, March 12, "Evaluation of Problem Solving Behavior in Engineering Students."

## COMING EVENTS

Friday, March 19, 1971

Meeting, Engineering Advisory Council

Friday-Saturday, March 19-20, 1971

47th Annual Engineers' Open House

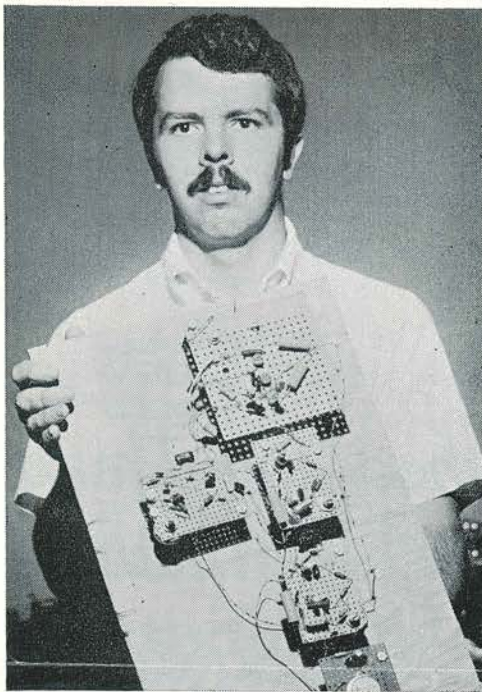
Saturday A. M., March 20, 1971

3rd Annual Engineering Alumni Symposium

Saturday P. M., March 20, 1971

Engineering Open House Awards Banquet





**DEVELOPS PROTOTYPE** — Russell C. Eberhart, a Ph.D. student in electrical engineering from Hutchinson, Kan., has developed a prototype of an all-electronic control box for a beet-hoeing machine. He used microminiature circuitry in the box which works in forward and reverse modes.

## Despite Federal Cuts, High Level of Support Maintained by College

K-State's College of Engineering, through its experiment station, received 31 grants and contracts totaling almost \$1.1 million in non-state support for research and graduate study in the 1969-1970 fiscal year.

Despite budget cuts in many federal agencies, this is the second highest year in the history of the experiment station, said Prof. Dwight A. Nesmith, director. In 1967-1968 the total reached more than \$2 million.

In numbers of grants, the 1969-1970 total was slightly more than the station's average of 29 grants a year for the past six years. Several grants and contracts received extend through 1972-1973.

This funding level assures attainment of an outside support goal, established by the College of Engineering six years ago, at an annual \$1 million rate for the next few years.

State funding of research in 1970-1971 will again be about 20 per cent of the total.

Ten grants amounting to about \$200,000 were for graduate training, while the remainder were research contracts supporting students, faculty and facilities.

Twenty agencies, foundations and corporations were represented among the sponsors. There were six grants from the Department of Defense accounting for almost \$600,000. Seven other federal agencies contributed nearly \$400,000 to the \$1.1 million total.

# Use Systems Approach to Solve Wide-Scale Design Problems

Fifteen architecture, civil engineering, and landscape architecture students and five faculty members at K-State have experimented successfully with a new venture in teaching of wide-scale design projects: the systems approach.

The K-State educators, four civil engineers and a landscape architect, led the students in a multidisciplinary effort aimed at finding solutions to some important problems facing the City of Manhattan:

—Design of an improved airport.

—Plan for a solid waste management system.

The two projects, completed during the spring semester, were an educational success. One participating professor, Dr. Bob L. Smith of civil engineering, is offering a similar course this fall.

"We're working on a problem dealing with mobile home site selection," Smith said.

The class, loosely structured with no class attendance required, was open to juniors and seniors. There were no tests except for a final report.

Nine architecture, civil engineering, and landscape architecture majors worked on the airport design. With counsel from Prof. Dennis J. Day of landscape architecture and Prof. Monroe L. Funk and Dr. Robert R. Snell of civil engineering, the students chose the airport problem because it was close at hand and information was readily available.

Smith and Dr. Larry A. Schmid of civil engineering worked closely with the five civil engineering majors and a landscape architect on the design of the waste management system.

Students in each group followed a five-step process in arriving at recommended alternative solutions:

1. Set goals and objectives.
2. Translate goals into criteria such as level of service an airport or solid waste collection system is to provide.
3. Develop alternate solutions.
4. Design a model for evaluating the possible solutions.
5. Present alternatives and recommended solution to decision-makers.

These steps are normally followed by practicing architects and engineers.

"Students seem to have learned quite a bit from working on this practical, complex airport design problem. This became more than just another academic exercise. The systems approach provides good training in learning how to make judgements and decisions," Funk said.



B. L. Smith

in the waste management project, students tried to determine the best method for disposing of trash. "It was a real life situation and problem," Smith commented.

Smith, as a visiting professor last fall, was a faculty adviser to a group of students at Dartmouth College's Thayer School of Engineering, Hanover, N. H., working to design a system to control pollution of the environment. The course offered spring semester at K-State was similar to the one at Dartmouth.

Matters like on-site storage and collection problems, transportation, and processing or disposing of trash by such methods as incineration, land-fill, and composting or recycling were among factors the Schmid-Smith group had to consider.

"As we suspected, the land-fill method was most feasible. The students studied the current operation. They also were involved in site selection, learning how such land-fill sites are selected," he said.

Several suggestions were made in the students' final report. Copies of the recommended solutions have been left with Manhattan's City Commission, city manager and city engineer.

## Waste Heat Studied For Early Spawning

Successful attempts have been made at early spawning of catfish which could materially improve the competitive position of catfish farming for the State of Kansas.

The research report was one of several prepared for the 45th annual meeting of the Kansas Committee on the Relation of Electricity to Agriculture (KCREA).

The report on the early spawning of catfish was made by James P. (Pat) Murphy and Prof. Ralph I. Lipper of the KSU department of agricultural engineering.

Murphy and Lipper have been investigating the use of power plant waste heat for early spawning at a generating plant in Hutchinson. Murphy explained that it normally takes three years to grow a catfish to a marketable size in Kansas.

But under a procedure devised by Murphy and Lipper, the growing time might be reduced to two years from spawning until a catfish is of marketable size. They believe that their procedure may enable Kansas to effectively compete with southern states which can produce a marketable size fish in two years. This is possible because of the warmer climates in those states.



## THEMIS Research Renewed by D.O.D., Extension Not Likely

KSU has been granted a one-year, \$252,000 extension of its large Office of Naval Research contract under the Department of Defense (DOD) THEMIS program.

The extension now insures a total funding of \$1.1 million under this contract through July, 1973. The original contract was awarded in July, 1968, to furnish \$577,000 for an interdisciplinary study in nuclear engineering and solid state physics.

"The grant has been renewable annually upon satisfactory progress. However, recent information disseminated in SCIENCE Magazine suggests that no further funds for THEMIS project renewals will be available to the DOD for the next fiscal year beginning next July 1," said Dr. Herman J. A. Donnert, K-State professor of nuclear engineering and project director.

Donnert emphasized, however, that efforts will be made to secure contract funding of this K-State research program from other sources.

The K-State faculty team headed by Donnert is considering basic phenomena relevant for the understanding of radiation-induced damage. He pointed out that significant results have been made of a "sophisticated scientific and technological nature" which elucidate the nature of solid and amorphous materials, such as plastics.

"We are learning about the detailed mechanism of radiation damage. It may enable us to make materials more resistant to damage caused by radiation. Results obtained will leave non-military use in the nuclear-power industry and the space program."

The K-Staters have also developed a radiation detector device which may be useful in the space program, nuclear and radiological medicine, and process control.

Donnert says that the detector developed by Dr. Ronald S. Lee of the physics faculty "is a very good device for soft x-rays which are not extremely penetrating. These are commonly used in diagnostic and x-ray treatment."

In process control, the device might be employed for non-destructive testing of, for example, machine gears and reactor pressure vessels. It appears to have the capability of detecting the extent of flaws in almost any type of fabricated material.

"An expert using this device can tell whether the flaw found is big enough to jeopardize the potential performance of the component or material," Donnert said.

Nuclear engineering faculty involved in the project are Dr. Richard E. Faw, professor; Dr. J. Frederick Merklin, associate professor; Dr. Walter Meyer, professor; Dr. John O. Mingle, professor; and Dr. M. John Robinson, associate professor.



**'PRIDE'**—Two retiring K-State engineering professors—D. C. Taylor (left) and O. D. Hunt—have considerable "Purple Pride" in the university's athletic program. As in past years, they are decked out in their purple blazers, caps and ties at each home football and basketball game. They retired May 31 after a combined total of 86 years of teaching.

## Hunt, Taylor Recall Tremendous Changes In Engineering Education Since 1920's

Two veteran KSU engineering professors—O. D. Hunt of electrical engineering and D. C. Taylor of applied mechanics—have retired following a combined career of 86 years of teaching.

Hunt joined the K-State faculty in 1923 after being graduated from Washington State University, Pullman. Taylor, who earned his B.S. and M.S. degrees at K-State, joined the engineering faculty in 1931 after teaching high school and coaching several sports at Newton four years.

Both men are retiring at age 70. Both have no specific plans for their retirement years. In fact each said he plans to "play it by ear."

Hunt, who spent his spare mornings this past summer painting his house, has a camping trailer. He and his wife plan to take trips with it "whenever we feel like it." "O.D." is an avid golf regular at the Manhattan Country Club and bowls at least one night a week.

Taylor, who has a contagious laugh and grin, likes his fishing, especially at Milford in recent years. He does a lot of hunting too.

Both are avid supporters of the K-State athletic program. They're especially enthusiastic about this fall's football campaign. Each is decked out in purple outfits at home games.

Hunt and Taylor naturally like to reflect back on their long engineering education careers. As might be expected, there have been many satisfactions. They have also witnessed quite a few educational changes since joining the K-State faculty.

"Seeing students graduate, going out and being successful in their work" is gratifying to Hunt.

"When I first came here, I had the electrical engineering freshman course. Then

I would have these same students again perhaps in their junior and senior years. What a change takes place in each student during that period.

"This was always pleasing to me," Hunt said.

In recent years, he taught junior and senior level courses only. He has also taught electrical engineering service courses for engineering majors from other departments.

Like Hunt, Delos Taylor has enjoyed "seeing these younger men come in here to school. It's a joy witnessing what they can do, the improvements they make.

"There's only a few that don't make it," Taylor noted.

He has had a number of outstanding students in his career. William Wheellock, formerly of Pleasanton, who came to K-State in the mid-1930's, is one who stands out in Taylor's memory. Wheellock was an outstanding miler and two-miler for KSU who majored in mechanical engineering.

Wheellock, now head engineer with a gypsum company in Wisconsin, came to K-State at Taylor's invitation.

"I gave him a job for board and room at our home to get him started. After his freshman year, he was given a job in the athletic department," Taylor recalls.

Both Hunt and Taylor concur that there has been a big shift in the emphasis in engineering education. They feel there has been less emphasis on laboratory work and practical engineering with more attention now being given to theoretical approaches.



# News-worthy Notes

Dr. M. John Robinson, associate professor of nuclear engineering, has accepted a position as an adviser to the Brazilian government in Sao Paulo. He is serving as an International Atomic Energy Agency technical assistance expert at the Institute of Atomic Energy, Sao Paulo. Robinson will return to KSU next August.

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Dr. James A. McCain, K-State's president, paid tribute to the achievements of student engineering groups in his decade report of the 1960's released just recently.

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Dr. Fredric C. Appl, professor of mechanical engineering, has been granted a two-year renewal of a research contract with Christensen Diamond Products, Salt Lake City. He is studying the cutting action and wear on diamond cutting tools used on non-metallic materials.

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Two K-State nuclear engineers—Dr. Curtis G. Chezem, professor and department head, and Dr. Walter C. Meyer, professor—participated in the Aug. 17-21 faculty-student conference at Argonne National Laboratories on "Safeguards: Key to Non-Proliferation of Nuclear Weapons."

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The second annual conference on fundamentals of statistical quality assurance was hosted by KSU Aug. 3-6 at the University Ramada Inn. There were 30 participants from industry in Kansas and other surrounding states, said Dr. Stephan A. Konz, professor of industrial engineering, who was in charge.

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Richard D. Scherer, president of the Kansas Engineering Society, and Prof. W. C. Kitchen of Hutchinson Junior College are the newest members of the College of Engineering Advisory Council. Scherer is facilities manager at Boeing, Wichita. Kitchen is chairman of the physical science and mathematics department at Hutchinson.

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An honorable mention award for technical writing from the American Society of Agricultural Engineers has been given to Dr. Stanley J. Clark, K-State associate professor. He was the senior author of a paper, "Model Studies of Single, Dual, Tandem Wheels" published in the "TRANSACTIONS of the ASAE in 1969."

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A K-State assistant professor of nuclear engineering, Dr. J. Kenneth Shultis, has been awarded a new, \$14,500 contract by the National Science Foundation to develop a method for solving multi-group transport theory problems.

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KSU's student chapter of the American Society of Civil Engineers has been awarded its 12th consecutive certificate of commendation by the national society. The award for excellence in conduct of chapter affairs in 1969 was one of 28 made this past year by ASCE.

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Dr. Emerson L. Besch and Dr. John E. Kipp of the K-State Institute for Environmental Research have been named to the instruments and measurements technical committee of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

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Dr. L. T. Fan and Dr. Larry E. Erickson of chemical engineering, and Dr. C. L. Hwang of industrial engineering, are using a systems approach in a study for the National Aeronautics and Space Administration. They are combining their efforts to help make the cabin of a space vehicle more comfortable, liveable and safe for astronauts.

## IEEE Nuclear Group To Present Awards To Prigel, Lindsay

Two juniors in nuclear engineering at Kansas State have received the student scholar award of the nuclear science group of the Institute of Electrical and Electronics Engineers.

The award to Donald W. Prigel and W. Michael Lindsay was based on an investigation they conducted into the transient effects of nuclear radiation of transistor devices.

Prigel and Lindsay carried out the study using the TRIGA Mark II Nuclear Reactor of K-State's department of nuclear engineering. In addition to a cash award for the achievement, they will be honored November 4 at a nuclear science symposium in New York City.

Operated in the pulse mode, the reactor power surges to approximately 250 million watts in about 15 one-thousandths of a second with the release of a correspondingly large burst of radiation. The transient effects of the radiation on electronic components was the subject of the investigation by Prigel and Lindsay.

They carried out the study under the guidance of Dr. N. Dean Eckhoff, Dr. Ali F. El-Saiedi and Richard M. Rubin of K-State's nuclear engineering faculty.

## City's Golden Age Clubbers Help Establish Comfort Zone

Members of Manhattan's Golden Age Club have participated in the first of 15 tests conducted at KSU to help bioenvironmental engineering researchers establish the human comfort zone.

The Golden Agers, five men and five women with an average age of 76, took part in the study at the K-State Institute for Environmental Research (IER) sponsored by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE).

Participants wore special clothing. The test room was maintained at moderate temperatures.

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