

K-STATE ENGINEERING

impact

NEWSLETTER

COLLEGE OF ENGINEERING/KANSAS STATE UNIVERSITY

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John Dollar Appointed Assistant Engineering Dean

In the past few months, there have been appointments of a new assistant dean, assistant to the dean, and an acting head of electrical engineering in the College.

John P. Dollar, a 1956 electrical engineering graduate of KSU who served as assistant to the dean this past year, became assistant dean of the College of Engineering July 1. He succeeds Professor **Robert E. Crank** who resigned to return to his teaching duties in mechanical engineering.

As assistant dean, Dollar supervises records and coordinates student affairs activities and the general engineering program of the College. He will also continue as an instructor in K-State's new engineering technology program.

On Aug. 1, **Ray E. Hightower**, assistant professor of nuclear engineering, became the new assistant to the dean, succeeding Dollar. His duties include advising engineering students in their study programs and handling special projects for Dean **Donald E. Rathbone**. Hightower will continue to teach and conduct research half-time in nuclear engineering.

Dr. Everett E. Haft is currently serving as acting head of the department of electrical engineering. A committee headed by Dr. **Donald R. Hummels**, associate professor, is conducting a search for a new department head.

Dr. Wellington W. Koepsel, who resigned as head of electrical engineering at K-State after serving in the position for 12 years, has resumed full-time teaching and research duties in that department.

Haft was a professor of engineering mechanics at Louisiana State University before joining the K-State applied mechanics faculty in 1961. He joined the department of electrical engineering about two years ago.



NEW ENGINEERING ADMINISTRATORS AT KSU—The appointments of John P. Dollar (center) as assistant dean of engineering and Ray E. Hightower (left) as assistant to the dean of engineering were announced recently by Dr. Donald E. Rathbone, dean of engineering pictured at the right. Hightower succeeded Dollar. Both began their duties this past summer.



DURLAND HALL—The new home of Kansas State University's departments of chemical and industrial engineering. This \$2.85 million facility, named in honor of M.A. Durland who served as K-State's dean of engineering from 1949 to 1961, was dedicated in ceremonies April 9 during the 52nd annual KSU Engineering Open House.

More Interdisciplinary Flavor In Undesignated Ph. D.

Instead of a doctorate in chemical engineering or a Ph.D. in electrical engineering, K-State students will soon be working toward the undesignated Ph.D. degree in engineering.

The undesignated Ph.D. should give the students more flexibility and an opportunity for a more interdisciplinary flavor in their program," Dr. **Donald E. Rathbone**, dean of the College of Engineering at K-State, said.

"It's a broadening approach that should add to the efficiency of our faculties and facilities," Rathbone said.

The change was developed because there is a need for the student to select a program without feeling constrained by department divisions, Rathbone believes.

The new program was approved by the Board of Regents in March. "It's official now; it has taken a couple of years to get the proposal the way everyone wanted it," Rathbone said. "We are advertising nationally. Letters were sent to every (engineering) college and department in the United States and some in Canada, informing them of our program," Rathbone said.

The first degree awarded in this area "will probably be in May of 1977, but will certainly be by May of 1978," Rathbone said.

Three National Awards Presented To Professor Eugene Thorson

Eugene Thorson, professor and head of architectural engineering and construction science at K-State, has received three national achievement awards.

Thorson, who joined the faculty in 1948, has been recognized as the 16th fellow of the American Institute of Constructors (AIC). He was recognized for contributions to the Institute in the development of the American Council for Construction Education (ACCE).

The Associated Schools of Construction, a group of 42 universities with B.S. degree programs in construction science, honored Thorson last March 25 with a plaque for his creative work in the development of ACCE.

He also has been chosen the recipient of the first William Klinger Award "for excellence in teaching and/or original and productive work in construction research" in addition to service to the Institute.

Career Days for Women

The K-State student chapter for the Society of Women Engineers will conduct its third annual fall careers conference Nov. 12-13. The meeting is for women interested in exploring careers in engineering and science. Students, teachers and career counselors interested in the conference should write: Society of Women Engineers, Dean of Engineering Office, Seaton Hall, Kansas State University, Manhattan, Ks. 66506. Phone: 913 532-5590.

Good Research Year at KSU For Engineering Faculty

The KSU engineering faculty, in their determination to help solve important technical problems, keep themselves at the forefront of knowledge in their respective fields, and provide their students with the latest information available, have had another good research year.

This is the report of Dr. **Ted O. Hodges**, associate dean of the College of Engineering and director of the Engineering Experiment Station.

"They have guided approximately 250 graduate students and 75 undergraduate students in research activities. They have delivered numerous papers before nationwide audiences and have published their research findings in internationally-recognized technical journals," Hodges pointed out.

The K-State associate dean noted that state appropriations account for only 30 per cent of the engineering research budget. The other 70 per cent is obtained through grants and contracts by the faculty from federal and state agencies and from industrial concerns. "Generally, these grants and contracts are obtained through nationwide competition with other engineering faculty," he explained.

"We are extremely pleased that the competence of our faculty is such that we can compete very well on the national scene since this is one of the key indicators of the quality of our College," he said.

New grants and contracts include:

— **Charles K. Spillman**, agricultural engineering, "Solar Energy for Supplemental Heating of Ventilation Air for Swine Building," U.S. Energy Research and Development Agency.

— **James K. Koelliker**, agricultural engineering, and **Jerome J. Zovne**, civil engineering, "Application of Continuous Watershed Modeling to Feedlot Runoff Management and Control," Environmental Protection Agency.

— **L.T. Fan**, chemical engineering, "Analysis and Synthesis of Solids Mixing and Demixing Systems," National Science Foundation.

— **Larry E. Erickson**, and **Fan**, chemical engineering, "Mass Transfer Mixing and Growth in Tower Fermentors with Motionless Mixers," NSF.

— **Walter P. Walawender**, chemical engineering, "Modeling of Blood Flow in Arterioles," Kansas Heart Association.

— **B.G. Kyle**, chemical engineering, "Sorption and Desorption of Fumigants on Wheat," NSF.

— **Eugene R. Russell**, civil engineering, "Investigation and Development of a Statewide Traffic Assignment Model for Kansas," State of Kansas.

— **Thomas W. Lester**, nuclear engineering, "Kinetics of Pulverized Coal Combustion," Northern Natural Gas.

— **Donald H. Lenhart**, and **Donald R. Hummels**, electrical engineering, "The Design of an Inexpensive Rain Gauge with Both Amount and Rate Capabilities," Office of Water Resources Technology.

— **Nasir Ahmed**, electrical engineering, "Investigation of Image Enhancement and Classification Techniques," NASA, and "Adaptive Transform Processing of Multispectrum Data," NASA.

(Continued on page 3)



Responding to a request by a Winfield, Kan., company, Dr. Fred Rohles of the Institute for Environmental Research and Dr. Bill Zuti (right) have recently completed a study of ice chest safety that could help diminish the number of deaths resulting from suffocation of small children.



Three Kansas City area high school graduates—(from left) Harold Carter, Bert Grigsby and Carla Cohee—took part in a July 19-August 13 summer tutoring institute for minority students intending to enroll this fall in engineering at KSU. Dr. Herbert D. Ball (right) and Duane Walker, instructor in electrical engineering, taught the 13 participating students during the institute funded with a \$14,000 grant from the Westinghouse Foundation. Remedial work in algebra, trigonometry, chemistry and physics was provided.

Potpourri:

Enrollment Increases 8%

Donald E. Rathbone, Dean

With registration for the Fall just about completed, we are anticipating 1600 undergraduates and over 200 graduate students in the College for 1976-77. This represents an 8% increase in our undergraduates and a leveling of our graduate enrollment. We are also anticipating an increase in the percentage of female and minority students in the College.

The engineering technology (ET) program which was initiated two years ago now has 150 students, and its enrollment curve has a very large, positive first derivative. ET will also get new quarters; the engineering shops building is being remodeled into an office complex for them. We expect the facility to be very functional and very nice.

One of our major concerns for the coming year will be our role in extension activities in the state. We presently are not funded directly for any extension work, even though we maintain a modest program in this area. Dr. **Bill Honstead** is the Director of the College's Kansas Industrial Extension Service, as we call it. This is presently a half-time position. The College of Engineering would like to be of service to the people of the State of Kansas when appropriate. The question is, "What kind of an extension program should we provide, keeping in mind that we do not want to be competitive with the engineering consulting firms in the state?" I would appreciate hearing your thoughts on the matter.

One extension area where we most certainly will be involved is in the field of energy. The Energy Research and Development Agency (ERDA) apparently will be charged by Congress to establish energy extension centers in each state in the country. The College has been most active in research in the areas of future energy sources and energy conservation, and has an excellent base for such an activity. Also, it appears that we would be able to coordinate the energy extension activity with our agricultural cooperative extension service and thus implement a very efficient and geographically inclusive plan for the state. Representative **Martha Keys** visited the College in late June to discuss the proposed legislation in Congress concerning the Energy Extension Centers and was very confident that such a bill will be passed in early Fall.

One last item that I should mention. The College has been most fortunate in having one of its legislative requests given top priority by President **Duane Acker** and the Board of Regents. The request is for \$100,000 for research for new energy sources in Kansas. The areas of research which would be supported are (1) development and refinement of methods for converting agricultural waste materials and Kansas' high sulfur coal into clean gaseous and liquid fuels, (2) utilization of wind as a direct energy source for rural areas and for producing gaseous fuels such as hydrogen for mobile power units, and (3) implementation of solar energy sources for the home. While "new programs" such as this haven't had much success in being funded by the Kansas legislature, we are hopeful that this one will be.

1976 Open House Pictorial Report

The dedication of Durland Hall, presentation of Distinguished Service Awards in Engineering to two prominent K-State alumni, coronation of St. Patrick and St. Patricia plus other activities highlighted the 52nd annual KSU Engineering Open House April 9-10.

Dr. **Donald E. Rathbone**, dean of engineering at KSU, officiated at the dedication ceremonies the afternoon of April 9 which saw KSU President **Duane Acker**, President Emeritus **James A. McCain**, and Mrs. **Prudence Hutton**, Newton, Kan., chairperson for the Kansas Board of Regents all deliver remarks.

But the star of the ceremonies was none other than **M.A. (Cotton) Durland** for whom the new \$2.85 million engineering facility for chemical and industrial engineering has been named. His quips, remembrances and anecdotes delighted the throng who came from all parts of the nation for the dedication.

The **Charles H. Scholer** Materials Laboratory was dedicated the same day. The late K-State professor's widow and family came for the occasion. Prof. Scholer served as head of applied mechanics at K-State from 1919-1956. He was nationally prominent within the concrete industry, serving a year as president of the American Concrete Institute.

Ray A. Adee, Newton, Kan., a 1947 mechanical engineering graduate, and Dr. **Morton Smutz**, Gainesville, Fla., who earned chemical engineering degrees in 1940 and 1941, were presented their distinguished service awards by Dr. **John Chalmers**, KSU vice president for academic affairs. Adee is vice president of research and development for the Hesston (Kan.) Corp., and Smutz is associate dean of engineering research at the University of Florida.

John Van Wye, 16, Shawnee Mission, Kan., a senior this past year at Shawnee Mission East High School, brought his popsicle-and-glue model bridge to the "Super Bridge Contest" Saturday morning. He went home with the \$100 first prize and a slightly crumpled bridge model. His bridge, tested for strength on a testing machine, eventually cracked as did the other 43 models entered. His model could theoretically support 1,406.3 lbs.



Ray Adee, vice president of Hesston (Kan.) Manufacturing Co., and a 1947 mechanical engineering graduate, was one of two recipients of the KSU Distinguished Service Award in Engineering this past spring. Shown here with his charming wife, Adee currently serves on the Engineering Advisory Council at K-State.



M.A. (Cotton) Durland visited with **W. LeRoy Culbertson** (right), vice president of Phillips Petroleum Company, Bartlesville, Okla., prior to the dedication of Durland Hall on April 9. Dean Durland was among several prominent speakers at the ceremonies for the new \$2.85 million home of the chemical and industrial engineering departments.



Steven L. Phillips of agricultural engineering and **Tracey L. Smith** of chemical engineering reigned over the 1976 Engineering Open House. Steven was St. Patrick, and Tracey was St. Patricia, his lady. Coronation ceremonies were held as usual Friday noon on the front steps of Seaton Hall.



FIFTEEN OUTSTANDING SENIORS AT K-STATE were inducted into the Knights of St. Patrick for outstanding service to the College combined with good academic performance. Dean Donald E. Rathbone (standing right) welcomed each in the group. Seated (from left): Steve Brumbaugh, ChE; Sharon Feightner, EE; Peggy Gilliam, AgE; Luci Ronning, ME; Dodi Demuth, ME; Nancy Cooper, AgE; and Eldon Mockry, CE. Standing (from left): Gary McNaughton, EE; Wayne Harms, ChE; Danny Rogers, AgE; Chris Grier, NE; Keith Tucker, CE; Bob Williams, IE; Ron Brown, ArChE; and Ed Perry, EE.



Dr. Morton Smutz (left), associate dean of engineering at the University of Florida, Gainesville, was one of two recipients of the Distinguished Service Award in Engineering April 10 at the Open House awards banquet. Dr. **John Chalmers**, vice president for academic affairs, presented the plaque to Smutz who received two degrees in chemical engineering from KSU in 1940 and 1941.



Ron Brown (left) of Steel Ring presented the outstanding individual display plaque to student representatives from nuclear engineering.

Company Award to King Radio Corp.

Three top officers of the King Radio Corporation, Olathe, were in Manhattan Feb. 27 to receive the second annual "Company of the Year" award from the Tau Beta Pi student engineering honor society at KSU.

Edward J. (Ed) King Jr., a 1943 electrical engineering graduate who is president of the company, accepted the award on behalf of the Olathe electronics firm at a banquet from **Phil Harden**, president of the honorary.

According to **Jeff Bone**, chairman of the Tau Beta Pi awards committee, King Radio was honored for its interest in education in general and in the K-State engineering program in particular.

"The purpose of the visitation and the award is to establish better relationships between the University and industry, and to give the students an insight into business and industry," he said.

Two other King Radio officers joined Mr. King at the evening banquet and in visiting with, and lecturing to, K-State business, engineering, and science classes during the day: **C.J. (Jack) Weltsch**, vice president of business, a 1951 business administration graduate of KSU; and **Richard G. (Dick) Johnson**, director of personnel.

King, who received the K-State Distinguished Service Award in Engineering in 1967, is a past president of the KSU Endowment Association. **Dr. Duane Acker**, president, and other top K-State administrators attended the banquet honoring King Radio Corporation.



A large welcoming banner was displayed in the main lobby of Seaton Hall welcoming the King Radio officers for the day. Dean Donald Rathbone posed with the three King Radio representatives—(from left), Ed King, Jack Weltsch and Dick Johnson—along with Phil Harden and Jeff Bone of Tau Beta Pi at K-State.



Those participating in the King Radio Day were (standing from left) Tom Hopkins, EE; John Garner, EE; Phil Harden, AgE; Kala Marietta, EE; and Mike Chatham, IE. Seated (from left): Jeff Bone, ChE; Dr. Donald E. Rathbone, dean; Ed King, president of King Radio; Dick Johnson of King; and Jack Weltsch, King.



Jack Weltsch (right), vice president of business at King Radio, received a wall plaque noting his participation in "Company of the Year" activities from Mike Chatham of Tau Beta Pi. Ed King and Dick Johnson also received attractive plaques. Weltsch is a 1951 business administration graduate of K-State. Gary McNaughton, at the podium, was president of Tau Beta Pi at KSU this past year.



Ed King, founder and president of King Radio, told students and faculty attending the banquet in his company's honor that his corporation began in a farm house with a bathtub for storage and it grew into a corporation with \$48 million in annual sales. The company was created out of King's disappointment in aviation's radio equipment.



Ed King (center), a 1943 electrical engineering graduate and president of King Radio Corp., Olathe, Kan., received the Tau Beta Pi "Company of the Year" award for 1975-76 on behalf of his company. Kala Marietta (second from right) made the presentation at a banquet in honor of King Radio. Others (from left) congratulating Mr. King were Phil Harden, president of Tau Beta Pi; Dr. Duane Acker, KSU president; and Dr. Donald E. Rathbone, dean of engineering.

Four Engineering Students Win Paper Recognitions

K-State engineering students did well this past spring in technical paper competitions sponsored by four professional societies.

Wayne J. Mikols, Hinsdale, Ill., graduate student in nuclear engineering, won top honors for an oral paper presentation at the 1976 Midwest Student Conference of the American Nuclear Society at the University of Wisconsin, Madison.

Mikols' paper on computational methods won a certificate and \$30. The paper represented six months of work on his master's thesis.

Eldon F. Mockry, Manhattan, Kan., a May graduate in civil engineering, had the top paper at the Mid-Continent Conference of Student Chapters of the American Society of Civil Engineers March 26 at the University of Missouri, Columbia.

His "Highway Perspective Plot System" paper was his senior honors research program project. It earned him \$30 in cash and \$70 in design manuals covering many areas of design.

An incoming junior in industrial engineering, **James Holub**, Marion, Kan., won a \$50 prize from the Kansas City section of the Society of Manufacturing Engineers for his technical presentation in April on "An Evaluation of Three Screwdriver Handles." He found that the most comfortable handles gave the most torque.

A graduate of Langford (Kan.) High School, **Dennis K. Matteson**, a junior this fall in K-State's mechanical engineering curriculum, was awarded fifth prize for an oral presentation he gave at the 1976 meeting of the American Society of Mechanical Engineers held recently at the University of Missouri, Columbia.

Natarajan Studies TV Systems

Research by a graduate student in electrical engineering may boost an effort which could result in futuristic television systems that are more compact, reliable, and economical than those in use today.

T. Raj Natarajan, nearing completion of his Ph.D. in electrical engineering at K-State, is studying TV picture coding using digital techniques for his dissertation. His picture processing research activity uses digital TV communications rather than the analog transmission process commonly used in the television sets in most American homes.

Bioengineering Internships Continued

Following a successful first year of operation, Memorial Hospital of Manhattan and the College of Engineering have agreed to continue their bioengineering internship program for the coming year.

The program, thought to be a first in this region, will now continue through August, 1977. Funding of the internships will be by Memorial Hospital, according to a joint announcement by **Thomas O. Faulkner**, hospital administrator, and Dr. **Richard R. Gallagher**, director of K-State bioengineering programs.



Dr. Thomas A. Roth, associate professor of chemical engineering, is conducting basic research on beryllium and titanium that one day may help make military aircraft "failsafe structures." He is conducting zero creep tests "to determine where you strike the right balance between the load on the metal and the surface forces acting in the opposite direction."



Dr. Thomas W. Lester (right) and his graduate student in nuclear engineering, **Randy Seeker**, are using this recently-installed shock tube to study the combustible properties of coal. The suspension of pulverized coal in a shock tube and the temperature and heating rate of coal closely resemble that in a furnace.

Food Engineering Technology Gets NSF Equipment Grant

Undergraduate course offerings in food engineering technology at K-State will be strengthened thanks to a sizeable grant from the National Science Foundation to buy needed instructional scientific equipment.

The grant is being used to expand laboratory facilities for two courses in food processing operations to be offered for the first time this year.

Instructors for the courses are Dr. **Larry E. Erickson**, professor of chemical engineering, and Dr. **Do Sup Chung**, associate professor of agricultural engineering.

The new equipment, valued at \$36,800, includes such sophisticated devices as a surface tensiometer, a freeze-dryer, refrigerated centrifuge, and an ultrafiltration unit, according to Dr. **Kenneth K. Gowdy**, head of engineering technology at K-State.

Two years ago, K-State initiated the engineering technology curriculum. Food technology is one of seven areas of specialization leading to the B.S. degree in engineering technology.

Good Research Year—Hodges

(Continued from page 2)

— **Richard R. Gallagher**, and **Kendall F. Casey**, electrical engineering, "Integrated Regional and Statewide Emergency Medical Service Communications for Kansas," State of Kansas.

— **Kendall F. Casey**, electrical engineering, "Electromagnetic Shielding Effectiveness of Compressed Graphite and Wire Composite Materials," Air Force Office of Scientific Research.

— **Gary L. Johnson**, electrical engineering, "Wind Research," Farmland Industries.

— **Frederick H. Rohles, Jr.**, Institute for Environmental Research, "Thermal Requirements for Human Comfort," American Society of Heating, Refrigeration, and Air-Conditioning Engineers, and "Comfort Criteria for Automobile Air-Conditioning," Ford Motor Co.

— **Thomas A. Roth**, chemical engineering, "Interfacial Energies of Some Aerospace Metals and Alloys," AFOSR.

— **Hugh S. Walker**, mechanical engineering, "Feasibility Study of Wide Band Muffler," Hesston Corp.

— **N. Dean Eckhoff**, nuclear engineering, "Educational Modules Development for the Nuclear Fuel Cycle," NSF.

— **William H. Johnson**, agricultural engineering, and **Eckhoff**, "A Feasibility Study-Wheat-Straw Energy: Use of Crop Residue, Feedlot Wastes, and Municipal Wastes to Support a Municipal Electric Utility," Ozarks Regional Commission.

— **Paul L. Miller, Jr.**, mechanical engineering, "Modeling of Room Air Diffusion," U.S. Army Construction Research Laboratory.

— **Frank A. Tillman**, industrial engineering, and **J. Kenneth Shultis**, nuclear engineering, "Availability Models of Maintained Systems," U.S. Nuclear Regulatory Commission.

— **Donald E. Rathbone**, Dean's Office, and **N. Dean Eckhoff**, nuclear engineering, "Development of a Kansas Energy Conservation Plan for 1980.

Newsworthy Notes

Two K-State civil engineering professors—**Frank J. McCormick** and **Vernon H. Rosebraugh**—have been granted life memberships in the American Society of Civil Engineers.

Five engineering faculty members at KSU have been promoted in rank. To full professor: **Dr. Nasir Ahmed**, electrical engineering; **Dr. Stanley J. Clark**, agricultural engineering; **Dr. N. Dean Eckhoff**, nuclear engineering; and **Dr. Hugh S. Walker**, mechanical engineering. To associate professor: **Carl U. Hansen**, industrial engineering.

Dr. Richard B. Hayter, assistant professor of mechanical engineering, was one of 12 recipients of the Dow Chemical Young Faculty Award for 1976 from the American Society for Engineering Education.

K-State's associate dean of engineering and director of the Engineering Experiment Station, **Dr. Ted O. Hodges**, was made a fellow of the American Society of Agricultural Engineers in June.

Frederick C. Fenton, professor emeritus of agricultural engineering and former head of that department, has been presented a Certificate of Appreciation from the American Society for Testing and Materials Committee on Metallic-Coated Iron and Steel Products for work in establishing and running a wire corrosion test site in Manhattan.

Elected to a two-year term as a junior member of the Executive Committee of the Society for Experimental Stress Analysis is **Dr. Stuart E. Swartz**, associate professor of civil engineering.

Eugene Thorson, professor and head of architectural engineering and construction, led a three-week "People to People Goodwill Journey" to Russia and Europe for the American Institute of Constructors in June.

Robert W. Clack, an assistant professor of nuclear engineering at K-State for 21 years, resigned from the KSU faculty at the end of the spring semester to devote his attention to business interests.

For the second time in the past three years, electrical engineering students have chosen **Dr. Donald R. Hummels**, associate professor, as the top educator in that curriculum.

President of Engineering Council for the coming year is **Craig W. Rundle**, Ax-tell, Kan., an outstanding junior majoring in civil engineering.

Steel Ring, organization of seniors in engineering coordinating Engineering Open House each spring, has named 15 new members for 1976-77.

K-State's student chapter of the American Society of Civil Engineers has been awarded a Certificate of Commendation for its 1975 activities. It was the third consecutive year the chapter has been commended, and the 17th time in the last 18 years.

Edward H. Hsu, senior in chemical engineering from Manhattan, Kan., has been named the outstanding student in his curriculum by the Omega Chi Epsilon national chemical engineering honor society student chapter at K-State.

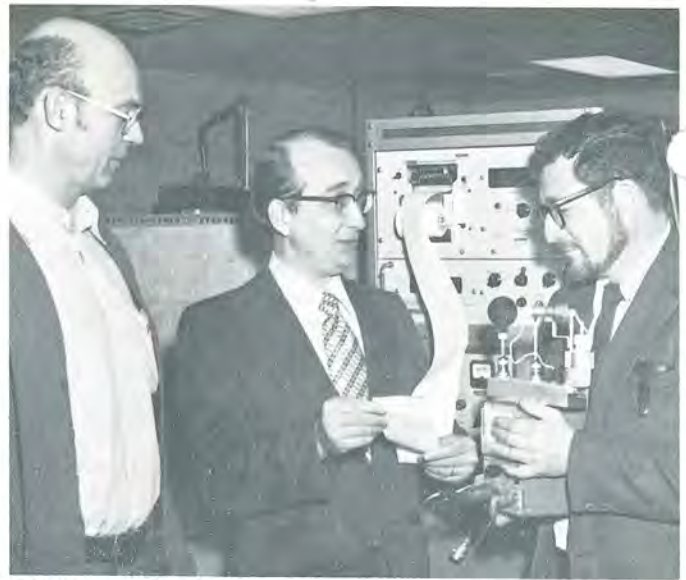
Nicholas F. Koch, Baileyville, Kan., was named the outstanding student in agricultural engineering at K-State this past year.

For the first time in the history of civil engineering at KSU, two students—**Eldon F. Mockry**, Manhattan, Kan.; and **Keith D. Tucker**, Wichita, Kan.—shared the annual outstanding senior award this past academic year.

Philip A. Harden, Ashland, Kan., senior in agricultural engineering, is the new president of K-State's Tau Beta Gamma chapter of Tau Beta Pi, the Phi Beta Kappa of engineering honor societies.



A color portrait of **Dr. Kuo Kuang (Tony) Hu** (center), associate professor of civil engineering, is displayed in the main lobby of Seaton Hall recognizing him as the recipient of the sixth annual K-State engineering award for excellence in undergraduate instruction. Hu received his \$500 award from **Dr. John C. Lindholm** (left), professor of mechanical engineering and engineering technology, and **Dr. Donald E. Rathbone**, dean of the College.



K-STATE CONDUCTS TESTING OF NAVY EQUIPMENT—**Dr. Herbert D. Ball** (center) and **Dr. Robert L. Gorton** (left) are evaluating various heat-stress meters used to determine the effects heat has upon on-duty Navy crew members. A special \$8,000 building was constructed for the study. **Francis W. Shepherd** (right), senior project engineer for Designers & Planners, Inc., Hyattsville, Md., monitored the K-State study.

Wind Energy, Ethanol Fuel Developed in SCORE Project

A team of 15 engineering students at Kansas State University, Manhattan, began work this summer to develop and construct an alternative energy system to provide sufficient energy for a small Kansas home.

The system will be K-State's entry in the fourth annual Studer Competitions on Relevant Engineering (SCORE), an intercollegiate engineering contest. The national competition is attracting teams from engineering schools across North America.

The K-State entry will use a combination of wind energy and ethanol produced from grain sorghum. "The idea behind the use of these two alternate energy sources is that they are both abundantly available in Kansas," noted **Dr. Richard B. Hayter**, KSU faculty adviser to the project.

"Wind energy will be used as the primary source to supply power to operate an electrical generator for the small home. The ethanol will be used during low wind conditions," explained Hayter who has been serving as the K-State energy conservation engineer.

K-State graduate and undergraduate engineering students developing the design must come up with a "system providing 20 kilowatt hours of energy in a 24-hour period, the average energy demand of a small home in the U.S. The system also must provide for a peak of 2.5 kilowatts in a relatively short period of time," added Hayter.

Entries in the national competition will be judged on design, economy, marketability, performance and innovation.

Partial funding for the K-State entry will come from SCORE headquarters at Washington State University, Pullman. The remainder of support for the KSU project will be supplied by industry in Kansas and the KSU College of Engineering.

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