

College of Engineering Annual 'Open House' Set for March 20-21

It is not too early for you to start making preliminary plans to attend the 46th annual Engineers' Open House set for March 20-21 at Kansas State University. A throng of more than 7,000 attended last year's Open House.

This 1970 festivity will be held in conjunction with K-State's All-University Open House, now in its second year, set for the same dates.

The second annual KSU College of Engineering Alumni Symposium, of real interest to many engineering graduates and former students, will again be an added attraction to Engineers' Open House. Most who attended the first symposium "found it a most worthwhile, mutually beneficial session. I hope to get back to campus for this as often

"I can," one grad said.

Many unique student-innovated and -created displays as well as several industrial exhibits will be shown.

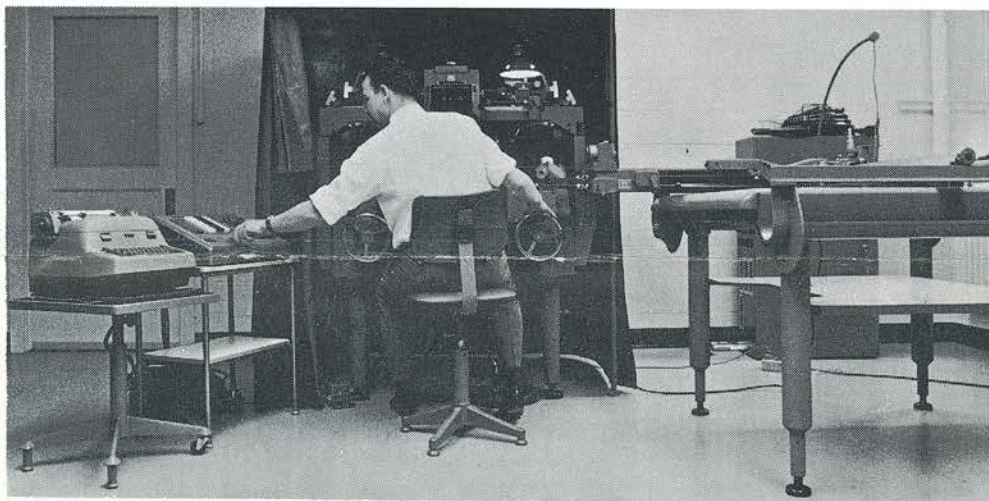
You might also begin thinking now of one or more young persons interested in a possible career in engineering whom you might invite to attend the Open House with you. Perhaps you may wish to bring your family along.

If you have questions or need additional information, please phone or write John Kipp, Department of Applied Mechanics, Kansas State University, Seaton Hall, Manhattan, Kansas 66502. His phone number is Area Code 913 532-6741.

Know a Prospective Student? Fill Out, Mail Reply Card

There is a business reply card enclosed with this edition of IMPACT on which you can insert the name of a recommended prospective engineering student for K-State. This is an excellent opportunity for you to advance the engineering profession as well as promote KSU's engineering program in your locale.

"There was a significant number of active engineering alumni who were able to send us names of prospective students last year," Dr. Kenneth K. Gowdy, assistant dean, pointed out. "We're hoping for an even better response this year."



WILD A-9 WIDE ANGLE AUTOGRAPH—Wild Company of Heerbrugg, Switzerland, has loaned this sophisticated land-mapping device valued at \$55,000 to the K-State department of civil engineering to be used for teaching and research in topographic and contour mapping. This autograph makes K-State's civil engineering program one of the best equipped in the nation for photogrammetric studies.

College Research Budget Soars, Attains Second Highest Totals

K-State's College of Engineering, through its experiment station, received 29 grants and contracts totaling more than \$840,000 in non-state support for research and graduate study in 1968-69.

Despite budget cutbacks in many federal agencies, this is the second highest year in experiment station history, said the new director, Prof. Dwight A. Nesmith. In 1967-68, the total reached more than \$2 million.

In number of grants, the 1968-69 total of 29 equaled the station's average of 29 grants a year for the past five years. Many grants and contracts received extend through 1971 and 1972.

This funding level assures attainment of an outside support goal, established by the College of Engineering five years ago, at an annual \$1 million rate for the next few years. State funding of research this year will be about 20 per cent of the total.

A decade ago, annual College of Engineering research expenditures were \$140,000 with \$120,000 from the state. Five years ago when the annual goal of \$1 million was set up, expenditures for research were \$415,000 with state support covering about 40 percent of that total.

At that time, the most optimistic predic-

tions indicated it might take many years to approach the present \$1 million a year rate, Nesmith pointed out.

THEMIS Extensions

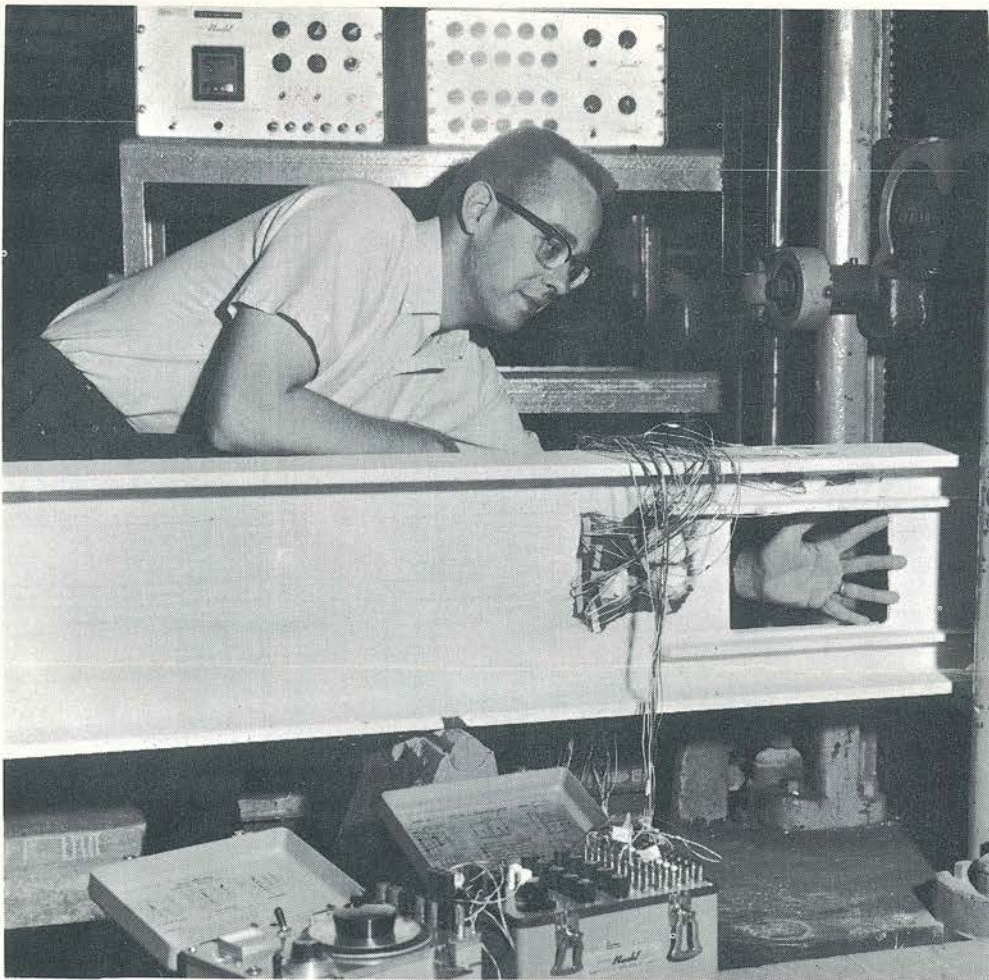
For '69-'70: \$488,500

Kansas State University, through its Engineering Experiment Station, has been awarded two, one-year extensions of major Project THEMIS research contracts. Their total funding for 1969-1970 is \$488,500.

One of these two extensions, for \$200,000, is not included in the 1968-1969 engineering research budget totals listed in the news article just above this one.

The larger contract extension, for \$288,500 this year, was awarded to several K-State nuclear engineering and physics faculty researchers by the Office of Naval Research (ONR). This renewal now insures a total funding of \$865,000 under this contract through July 1972.

The Air Force Office of Scientific Research (AFOSR) has awarded the other \$200,000 renewal to the K-State Institute for Environmental Research.



DR. PETER B. COOPER, associate professor in the K-State department of civil engineering, is working on a research project calling for the investigation of the reinforcement requirements around openings in the webs of rolled steel beams. This 12-month, \$14,255 research contract is funded by the American Iron and Steel Institute, and coordinated through the KSU Engineering Experiment Station.

Institute, Vet Med Researchers Study Air Change Requirements

A new \$47,830 research contract from the National Institute of Health (NIH) to study ventilation requirements of laboratory animals has been awarded to Kansas State University.

The contract has been granted to the department of physiological sciences in the College of Veterinary Medicine and the Institute for Environmental Research.

Heading this 12-month research effort is Dr. Emerson L. Besch, associate professor and head of physiological sciences.

Principal collaborating researchers are Dr. Ralph G. Nevins, professor of mechanical engineering and KSU engineering dean, and Dr. S. M. Kruckenberg, instructor in surgery and medicine and head of the experimental animal resource facility.

There KSU faculty investigators are collecting information on the environmental requirements for the humane care of laboratory animals—mice, rats, rabbits and dogs—in accordance with federal legislative requirements for such care.

Initially, Besch, Nevins and Kruckenberg will attempt to determine ventilation requirements. In this step, they will measure the heat and moisture production of these laboratory animals in varying numbers,

different-sized confinements, and under different thermal conditions.

But to do this, a new six by eight foot environmental test chamber is being built. The chamber will be calibrated so that measurements of heat and moisture production rates will be optimally accurate.

Present NIH regulations for laboratory animal care call for from 12 to 16 air changes an hour in the animal quarters. Dr. Besch and his faculty team will try to determine if this number of changes is reasonable. Perhaps more or less changes are actually needed.

Dr. Besch said that the reasoning for as many as 12-16 changes may be because of simply making it expedient to maintain odor control.

Another question these researchers will

(Continued on page 4)

Interdisciplinary Effort Evaluates Technique For Lowering Pollution

An interdisciplinary research group at Kansas State University is working on an innovative technique for reducing feedlot pollution of Kansas' lakes, rivers & streams.

Researchers from the university's engineering and agricultural experiment stations are collaborating in this venture.

The six-member faculty investigative team is employing a land disposal method of feedlot pollution control in a project they are conducting in cooperation with Pratt Feedlot, Inc., Pratt.

The K-State researchers, headed by principal investigator Harry L. Manges, assistant professor of agricultural engineering, are conducting this pilot study under a \$136,608, two-year contract from the U.S. Department of Interior.

Research is being conducted at the Pratt Feedlot where some 20,000 head of cattle are now fed daily.

First step will be to characterize the stormwater runoff from the feedlot, "determining the amount of pollutants in that runoff," Dr. Manges explained.

Then investigators will characterize manure on the feedlot. This involves determining the amount of phosphorous, nitrogen, sodium, potassium and calcium in the solid waste materials.

Final step will be to dispose of the runoff and solid wastes from the feedlot onto a selected site of agricultural cropland. cornfield will be utilized in this pilot project.

"We plan to determine the quantities of these solid and liquid wastes which can be disposed on the cornfield without polluting the groundwater below the surface or the stormwater runoff," Dr. Manges said.

If this land disposal method works out as well as the K-State team anticipates, it could mean that water resources in Kansas would be subjected to far less danger from pollution from the state's growing number of animal feedlots.

"Should this project be successful, it means there would not likely be a reoccurrence of the closing of a water sports facility because of feedlot pollution. This happened last year at John Redmond Reservoir below Cottonwood Falls," Dr. Manges pointed out.

Faculty investigators working with Dr. Manges on this project which began June 1: Carl E. Anderson, instructor, agricultural engineering; Ralph I. Lipper, associate professor, agricultural engineering; Dr. Larry S. Murphy, associate professor, agronomy; Dr. William L. Powers, assistant professor, agronomy; and Dr. Lawrence A. Schmid, assistant professor, civil engineering.

In addition to providing for faculty an university financial support, this Department of Interior research contract will support four graduate students during the next two academic years.



COMPUTERIZED FUEL INJECTION—Alley H. Duncan (l.), K-State professor of mechanical engineering, shows Bruce L. Wilson, senior from Abilene, Kan., a Volkswagen engine's computerized fuel injection system. This \$850 engine, controlled by integrated computer circuits, is being used for teaching. The engine was donated to the KSU department of mechanical engineering through the Manhattan VW dealer, Larry K. Allingham. This semester a class taught by Dr. Ralph O. Turnquist, associate professor, will study the automatic control features of the engine.

Offers to KSU Engineering Grads Rose An Average of \$50 a Month

Salary offers made to the latest crop of engineering graduates at Kansas State University averaged higher than ever—\$810 a month—according to Bruce Laughlin, director of career planning and placement.

"Offers to 1969 K-State engineering graduates were up an even \$50 a month over the 1967-68 average, \$96 a month over 1966-67 and a whopping \$144 higher than the average offer made to 1965-66 grads," Laughlin said.

Although chemical engineers again had the highest offer average at \$841 a month, electrical engineers received the greatest number of offers and boasted the highest individual offer reported to a B.S. candidate—a healthy \$1,035 a month.

Demand for all K-State engineering curricula remained high; this includes agricultural, civil, industrial, mechanical, and nuclear engineering in addition to the disciplines mentioned above. Offers to electrical engineers averaged \$821; industrials, \$820; mechanicals, \$807. In fact, five-figure offers to the better students in all these fields have become common.

Engineering graduates are not the only ones enjoying a "seller's market." Computer science, accounting, mathematics, architecture, building construction, and most other curricula offered by the university attracted solid employer attention.

K-State accounting seniors received offers averaging \$742 a month—compared to \$680 a month a year ago, and \$632 the year before that. Business administration

majors were offered \$663 a month this year as opposed to \$627 a month last year and \$585 in 1966-67.

Statistics recently released by the College Placement Council show that, nationally, monthly salary offers to technically educated college seniors averaged \$819, and offers to seniors in non-technical curricula average \$711. Comparable amounts a year ago were \$767 and \$657, respectively. K-State is one of 135 selected universities from coast to coast involved in the annual salary survey.

"Most K-State students participating actively in the K-State career planning and placement center's on-campus employment interviewing program receive at least two or three job offers. Outstanding candidates may receive a dozen or more. For the first time in our history more than 10,000 student interviews were held in our facilities during a single academic year," Laughlin noted.

Kansas State University has a centralized career planning and placement office to assist employers in searching for talent among many departments.

For National Firm . . .

Engineer, Architect Conducting Evaluation Of Biomechanic Chair

A chair designed for comfort rather than style is being evaluated at Kansas State University by an industrial engineer and an architectural engineer.

Dr. Stephan A. Konz, associate professor of industrial engineering, and Badreldin E. Labib, instructor in the College of Architecture and Design, are evaluating a chair designed by the biomechanics laboratory of a national electronics firm.

The laboratory designed the biomechanic chair after studying the design of more than 100 chairs now on the market.

Desirable design points from all these chairs were incorporated into this new chair, designed around the structure of the human body.

Almost any chair, Konz explained, is comfortable for a short period. However, after prolonged sitting in a poorly designed chair, individuals often will complain of backaches and other discomforts.

Secretaries and production line workers whose jobs require them to sit in a chair as many as eight hours a day suffer most from poor chair design. This is because most chairs on the market are designed for style rather than comfort, Konz feels.

"Chairs have been around for 3,000 years or longer," he said, "yet very little work was done before this to design a chair that would adjust to the human body."

Like most chairs, the biomechanic is adjustable in height. However, the lowest level of this chair is considerably lower than that found in most chairs on the market.

"Most women workers are not very tall," Konz said, "and so even when they lower the chairs as much as possible, their feet do not reach the floor. It is very uncomfortable to sit with your feet in the air for eight hours."

Its backrest is concave in shape, adjustable in height and angle of inclination. It is free to move back and forth, but can be fixed in any one position when desired.

Seat of the chair is not the bucket type. "A bucket seat holds a person in a fixed position," Konz explained, "and does not let him move around and distribute his weight. However, the seat of the biomechanic chair does taper into a waterfall front which provides for thigh support."

The chair swivels and is manufactured with or without casters. It is priced at approximately \$40.

It is very comfortable, said Konz, who uses one as his office chair. "As more and more people become aware of these chairs," he predicts, "they will replace conventional ones in offices and on production lines."



NEW ADVISORY COUNCIL OFFICERS—Daric M. Miller (c.), electric production manager at Kansas Light and Power Company, Topeka, has been elected to a two-year term as chairman of the K-State Engineering Advisory Council. Admiral Eugene J. Peltier (l.), president of Sverdrup & Parcel Associates, St. Louis, was elected vice chairman, and Dr. Cecil H. Best, KSU's associate engineering dean, was named secretary.

Nevins Says Faculty Conference Worthwhile, Valuable Experience

Curriculum, course work and overall needs of the KSU College of Engineering were discussed in depth during the second annual faculty conference-retreat September 4-5.

Site for this session which included 102 faculty members, administrators, and guests was Rock Springs Ranch, operated by the Kansas 4-H Foundation 11 miles south of Junction, Kan.

It was an extremely worthwhile meeting in the opinion of Dr. Ralph G. Nevins, engineering dean.

"I look at the conference as a valuable experience in bringing the faculty together to discuss curriculum and course work, and to assess the overall needs of the College—to continue the formulation of long-range goals," Dr. Nevins said.

Comprehensive consideration was given to design courses in the curriculum, re-evaluating the engineering honors program, and long-range planning.

Among other important items discussed but not acted upon were a common first year of classes for all engineering students, establishing a new course entitled "Introduction to Engineering and Engineering Concepts," and matters related to courses including Thermodynamics and Graphics, and Introduction to Applied Linear Analysis.

A contingent from Black and Veatch Consulting Engineers, Kansas City, Mo., led by J. P. Kesler made a presentation on the activities, projects, and manpower needs of an engineering consulting firm.

C. Kenneth Razak, director of the Kansas Industrial Extension Service, presented a report on the activities of his office. K-State engineering faculty delivering reports were Dr. Nevins; Dr. Cecil H. Best, associate

dean; and Dr. Paul L. Miller Jr., head of the new K-State Center for Effective Teaching.

Representing the K-State Engineering Advisory Council at this gathering were Daric M. Miller, Topeka, chairman; Dr. Fred J. Benson, College Station, Tex.; and H. V. Rathbun, Great Bend, Kan.

Paul E. Newcomer and Edward Hamilton of the Kansas Engineering Society took part in the conference-retreat. Dr. J. Bruce Laughlin, director of the KSU Career Planning and Placement Center, also participated.

Six current K-State student engineers representing the College's Student Council were involved: Steven R. Bootman, Randall S. Ellis, Harry J. Evans Jr., David J. Kuckelman, Charles A. Stryker, and David D. Swenson.

Institute-Vet Med Study

(Continued from page 2)

attempt to answer: "Is the number of changes in the best interests of the animal or the animal caretaker?" he added.

Results from this project may be helpful in determining the number of animals which can be adequately housed in a room under varying thermal, humidity and ventilation conditions.

K.E.S. Careers Film Given National Award, Earns Excellent Rating

"Engineering Makes a World of Difference," a careers film developed at Kansas State University last year, has been granted a prestigious national award.

An "excellent" was given to the film by the American Association of Agricultural College Editors at their 53rd annual conference this year at the University of Missouri, Columbia.

This colorful film was sponsored by the Kansas Engineering Society (KES) in cooperation with the film unit of the Office of Extension Radio-TV-Film at K-State. John R. Stockard was the producer.

If you wish to boost the engineering profession by showing this captivating 14-minute color movie to a group of interested youth before they enter senior high school, it can be scheduled for you. Contact Paul Newcomer, Kansas Engineering Society, 4125 Gage Center Drive, Topeka, Kansas, or your local KES chapter.

The film's industrial and university sponsors and many state headquarters of professional engineering societies also have prints available to loan for showings.

Englishman, Dutch Physician Now on Engineering Faculty

A British physicist and a Dutch industrial physician are serving as visiting professors in the College of Engineering at Kansas State University this year.

Derek J. Stirland, on a leave from Plessey Company's Allen Clark Research Centre, Caswell, Northamptonshire, England, is teaching in the department of electrical engineering through May 31, 1970.

Dr. Paul A. van Wely, one of 40 medical staff members of the Phileps Factory, an electronics equipment firm in Eindhoven, Holland, is serving in the department of industrial engineering. Second semester he will hold a visiting professorship at Oklahoma State University, Stillwater.

Stirland is teaching a seminar in electron microscopy with emphasis on techniques for examining ion-implanted materials. He is also associated with the K-State Solid State and Thin Film Technology Laboratory.

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