

K-STATE ENGINEERING

impact

NEWSLETTER

COLLEGE OF ENGINEERING/KANSAS STATE UNIVERSITY

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K-State Civil Engineers Hosting Annual Concrete Canoe Race

K-State civil engineering students are preparing to host the second annual KSU Invitational Concrete Canoe Race on Saturday afternoon, May 3, at the Riverpond Area of Tuttle Creek Reservoir north of Manhattan.

The University of Missouri, Columbia, won the race last year over K-State, Iowa State University, Nebraska University, and the University of Missouri, Rolla. New entries in this year's race include North Dakota State University, Fargo, and the University of Wisconsin, Platteville.

Several student heats, and one each for faculty and coeds, are planned for the K-State invitational.

This year KSU has been selected as one of seven host schools for regional concrete canoe races where the American Concrete Institute will present best construction awards.

Dr. Jerry Zovne, assistant professor of civil engineering and faculty adviser for the race, points out that ACI has begun to coordinate concrete canoe races throughout the country.

"They have been providing a central clearinghouse for information regarding concrete canoe construction, and other information regarding race rules, locations, and coordinating entries. It's an honor to be selected as a host school for an ACI race," Zovne said.

The 1975 race at K-State is sponsored by the Chi Epsilon civil engineering honorary with help from the student chapter of the American Society of Civil Engineers. The student co-chairmen are Roger Farrell, Wamego, Kan., and Dave Olberding, Rt. 3, Shawnee Mission, Kan.



CONSTRUCTION CONTINUES on the new \$2.8 million M.A. Durland Hall, to be the home of the K-State departments of chemical engineering and industrial engineering. Faculty and students in both disciplines at K-State hope to move into the building next January.

51st Engineering Open House Set for Weekend of April 11-12

Noting the celebration of the 51st annual K-State Engineering Open House the weekend of April 11-12, Kansas Gov. Robert Bennett has proclaimed April 6-12 as KSU Engineering Open House Week in the state.

Engineering students at K-State are striving to make the exhibition the finest ever, following the theme, "Engineering, Theory to Application."

The big weekend will include the coronation late Friday morning, tours of scores of student displays and exhibits, an alumni luncheon Saturday noon, and an awards banquet that evening.

According to Byron Steward, Cedar Vale, Kan., student Open House chairman, the purpose of the Engineering Open House is to "acquaint the public with the many phases of engineering, including career opportunities. We plan to show what engineers do, plus the many challenges ahead."

First event of the engineering weekend activities will be the semi-annual meeting of the 15-member College of Engineering Advisory Council at 9:30 a.m. This will be followed at 11:30 a.m. with the coronation of St. Patrick and St. Patricia on the steps of Seaton Hall. St. Patrick is the engineers' patron saint and St. Patricia is his lady. They will reign over Open House.

Undergraduate engineering students will elect the Open House royalty in balloting in Seaton Hall on Wednesday, April 9.

The exhibits will be open from 6 p.m. until 9 p.m. Friday as well as from 9 a.m. until 4 p.m. Saturday.

The 1975 Distinguished Service Award in Engineering will be presented by President James A. McCain to an outstanding alumnus at the Engineering Open House banquet Saturday at 6:30 p.m. in the main ballroom in the Union. Also the Knight of St. Patrick award will be presented to outstanding K-State seniors in engineering at the banquet. Banquet entertainment will be provided by the Sugar and Spice Singers from Manhattan High School.

KSU Energy Symposium III Emphasizes Energy Crisis, Uses in Agriculture

K-State's Energy Symposium III, a look at energy for food production, held March 7, dealt with two prime concerns of Kansas' number one industry—agriculture.

Those concerns, says Dr. Stanley J. Clark who was in charge of the symposium:

- * Overview of the energy crisis and its effect on the agricultural industry.

- * Energy uses in agriculture.

A KSU Convocation Series address by Dr. Roy Bainer, engineering dean emeritus from the University of California, Davis, in the Forum Hall of the K-State Union keyed the symposium. A K-State graduate who holds the KSU Distinguished Service Award in Engineering, Bainer presented an overview of the energy situation and its relationships to the agricultural industry.

The March 7 symposium was the third annual one on energy at KSU. Previous symposia focused on "Toward a National Energy Policy" and "Toward a Kansas Energy Policy."

Clark, an associate professor of agricultural engineering, says the symposium benefited the State of Kansas in at least two ways: provided an overview of the energy crisis as it affects the state, and furnished information on how present and potential sources of energy might be utilized better by agriculture.

K-State engineering faculty who were on the symposium program: Clark; Dr. N. Dean Eckhoff, director of the K-State Center for Energy Studies; Dr. Ted Hodges, associate dean of engineering; Dr. William H. Johnson, head of agricultural engineering; Ralph I. Lipper, professor of agricultural engineering; and Dr. Donald E. Rathbone, dean of engineering at K-State.

Mechanical Engineer at KSU Tests Diamond Cutting Tools

Researchers at K-State are often on the cutting edge of research. In fact, that's where one of them is—studying wear in diamond cutting tools.

Dr. Fredric C. Appl, mechanical engineering professor at K-State is studying the ways in which diamonds cut other materials and how they wear when used in this way. Carl U. Hansen, assistant professor of industrial engineering, is assisting Appl in his experiments.

Appl's research is financed by a renewable two-year grant of \$10,000 from Christensen Diamond Products Company, Salt Lake City, a leading producer of diamond drilling and coring tools for the petroleum and mining industries.

For many years diamond bits have been used in drilling through hard rock formations. Certain types of hard sandstones, dolomites and quartzitic rocks can't be cut in any other way according to Appl.

He explained that surface-set diamond cutting tools consist of diamonds cast in a very hard matrix material, usually a metallic alloy containing tungsten carbide. The diamonds, hardest substance known to man, protrude from the surface of the matrix and act as the cutting elements.

The diamonds used in oil field bits are natural, industrial-quality diamonds that are not suitable for use as gemstones. They vary in weight from one-eighth carat up to four carats.

Appl said that synthetic diamonds of such large size are not commercially available and this makes diamond cutting tools very expensive. A large diamond drill bit can cost \$20,000. Down time caused by the failure of a diamond drill bit on an off-shore drilling rig can cost up to \$1,200 per hour.

According to Appl, the use of industrial diamonds is rapidly increasing throughout the world:

- * Concrete highways and runways are planed and grooved with diamond saw blades to improve tire traction and reduce the possibility of hydroplaning.

- * Diamond saw blades are also used in sawing expansion joints in continuously-poured concrete highways and runways.

- * Diamond mill cutters are used to cut non-metallic refractory materials such as bricks for interior lining of glass and steel furnaces.

- * Carbide tools used in cutting steel are sharpened with diamond grinding wheels.

Because of the high costs, there is great need to improve the durability of diamond cutting tools and to find ways of using them more efficiently, Appl said.

The K-State researcher has been investigating the ways diamonds cut and wear since 1960 when he joined the K-State faculty. He has advised two graduate students whose master's theses involved research in this area.



MOTIONLESS MIXERS — Drs. Larry E. Erickson (left) and L.T. Fan of the K-State department of chemical engineering are using motionless mixers in a quest to find economical, efficient processes for producing single-cell protein from petroleum.



TAKE SECOND SPOT NATIONALLY—A team of K-State civil engineering students won second place in the National Urban Bikeway Design Competition in November, reports Dr. Bob L. Smith (above right), faculty adviser. Out of 10 student teams entered, K-State placed second in overall design and first in safety design.

Potpourri . . .

Doubts Feasibility of Screening For Entrance into Engineering

By Donald E. Rathbone, Dean
K-State College of Engineering

It has been only this past Fall that freshmen engineering enrollment at K-State increased after a ten-year decline. Yet, I am now wondering about the wisdom of going out into the state to preach the joys of engineering. This we have done with vigor for the past 18 months. We have similar plans for the next few months. My concern isn't with job opportunities for our graduates since the demand for engineers appears excellent for the next decade. I guess the thought that bothers me is, "Shouldn't we begin doing more in the selection of our students in engineering?"

Eric Walker, former President of the National Academy of Engineering, has been quoted as follows: "Consider with me first the profession's attitudes and practices with respect to the young engineers on whom its future existence depends. I deeply believe that one of the hallmarks of the true and worthy profession is the concern its practitioners have for the selection and development of their successors."

Dr. Walker's observation makes a lot of sense to me. However, as a state institution, I doubt if we can implement any screening committees for entrance into the College of Engineering. I am not sure that I would agree to this procedure even if we had the option. One certainly cannot use high school grades or college entrance exams alone as a basis for judgment since some of our most successful engineers haven't been the top (academic) students. It is interesting to contemplate what our criteria would be. Perhaps the answer to the selection process lies in our curricula. Let the program itself do "the screening." This is basically what we are doing today. You and your fellow classmates were the output of the system. Have we been effective in the selection and development of our successors?

I would appreciate hearing from you on the above issue with your recommendations on how to improve our system. Academically, it is well-known that the College of Engineering gets the best student of any of the Colleges on campus. Do we also have the best end product?



GETS CRC ACHIEVEMENT HONORS—Eddie Ross Hoover (r.), Phillipsburg, Kan., incoming senior in nuclear engineering, received last year's Chemical Rubber Company Engineering Science Achievement Award for top scholastic achievement. Hoover is congratulated by KSU Engineering Dean Donald E. Rathbone.



HELENA VERGARA NOLAN—This attractive December 1973 graduate of K-State is now working for Wilcox Electric, Kansas City, Mo. Mrs. Nolan completed her M.S. in electrical engineering and turned down job offers from firms in Indiana and Nebraska.



JOHN MEIN GETS INVOLVED—John Mein, senior in electrical engineering, Walnut, Kan., is the newly-elected president of the Engineering Student Council. He has few if any lazy bones in his body. Typical of Mein's high-tempo involvement last year at K-State was a model windmill dramatizing the use of hydrogen for future farm energy needs.



MAC SHORT AWARD TO DON GLASER — The Mac Short Award is given annually to an outstanding senior in mechanical engineering interested in aerospace engineering and honors the memory of Short who had an important role in World War II aircraft production. An inscribed wristwatch was presented to Donald J. Glaser (c.), 22, Emporia, Kan., May 1974 graduate, by Dr. J. Garth Thompson (r.) and Prof. Alley H. Duncan of the KSU mechanical engineering faculty.



SEVERE WEATHER WITHIN a 100-mile radius of Manhattan will soon be detected on the screen of this radar set designed in the early 1950s for forward surveillance on a Boeing B52. Dr. Donald R. Hummels—judged the top educator in electrical engineering last year by students in that department—is making minor repairs on the radar set and recently was successful in obtaining an FCC license for its operation.



DR. FRANK A. TILLMAN (shovel in hand), professor and head of industrial engineering, was among those who participated in the April 29 groundbreaking ceremonies held in a heavy downpour. Ground was broken for the new \$2,851,000 Durland Hall [chemical engineering and industrial engineering].



K-STATE'S CHI EPSILON CIVIL ENGINEERING HONORARY members edged out their counterparts from Iowa State for third place April 27 in the first annual K-State Invitational Concrete Canoe Race. Dr. Jerry Zovne said another half-mile race is planned at K-State next April to be held in the River Pond area of Tuttle Creek Reservoir. K-State's "Portland Queen" competed with entries from MU-Columbia, MU-Rolla, and Nebraska in addition to Iowa State. MU-Columbia placed first.

NEWSWORTHY NOTES

Dr. Wellington W. Koepsel of K-State will be secretary the coming year for the Electrical Engineering Department Heads Association, which includes 180 colleagues at schools accredited by the Engineering Council for Professional Development.

Gustave E. Fairbanks, professor of agricultural engineering, has been named a "fellow" of the American Society of Agricultural Engineers.

Steve Muck, incoming senior in mechanical engineering from Leawood, Kan., is the winner of the 1973-1974 Outstanding Student Journalism Award of the Kansas Engineering Society. Muck is news editor for **The K-State Engineer** student magazine.

New president of the Tri-Valley Chapter, Kansas Engineering Society, is Dr. William H. Honstead, director of the Kansas Industrial Extension Service at K-State.

A two-week seminar for transportation engineers in Kansas was coordinated June 3-14 at K-State by Dr. Bob L. Smith, professor of civil engineering.

Dr. Douglas A. Wallace, on the K-State civil engineering faculty the past three years, on June 1 joined Stanley Consultants, Muscatine, Iowa, as the principal environmental engineer.

A former K-State visiting professor, Dr. Paule Rey, University of Geneva, Switzerland, lectured on "Chronic Bronchitis and Air Pollution" May 3 during a visit to campus.

Will Cook, senior, Stark, Kan., has been elected president of the National Council of Student Branches of the American Society of Agricultural Engineers for 1974-1975.

Eric W. Schoeff, CE '74, Columbus, Ohio, was named the outstanding graduating civil engineer at K-State by the civil engineering faculty. Schoeff is employed by a Columbus consulting engineering firm.

Students in electrical engineering selected Dr. Donald R. Hummels, an associate professor, as the top 1973-1974 educator in that curriculum at K-State.

Dr. Peter B. Cooper, professor of civil engineering, received a Key Member Award during the 66th annual meeting of the Kansas Engineering Society in Wichita in early June.

Almost 100 Kansas high school students took part in the 10th annual Engineering and Science Summer Institute which was conducted in two sessions: June 9-14 and June 16-21.

Russell L. Bone, 20, Shawnee Mission, Kan., junior in chemical engineering, won the 1973-1974 scholastic achievement award of the K-State student chapter, American Institute of Chemical Engineers.

Alan L. Sylvester, Salina, Kan., is president of Tau Beta Pi engineering honorary at K-State for 1974-1975.

Steel Ring, headed by Rick Koelsch, Great Bend, Kan., will coordinate the 51st annual KSU Engineering Open House next April 11-12.



FIVE ATTRACTIVE KSU ENGINEERING COEDS received their B.S. degrees May 17 and have done well in the job market and acceptance to graduate school. Dr. Doris Grosh (l.) of industrial engineering was a constant friend to the girls in her role as faculty advisor to the KSU student chapter, Society of Women Engineers. Coeds (seated from left): Karen Hoefgen, ChE, 1974 St. Patricia, from Topeka; Aida Pertsch, EE, Caracas, Venezuela; (standing from left): Marla Sheets, NE, Aloha, Ore.; Kathleen Carley Parrish, NE, Kansas City, Kan.; and Vicki Swisher, NE, Gering, Neb.

Frosh Enrollment Up 50%, 25 Coeds in 1st Year Class

Revised

Preliminary figures indicate a promising future for KSU engineering enrollments as well as for employment opportunities for graduates of the College.

B.S. Program Okayed In Engineering Technology

(Continued from Page 1)

will entail considerable course work in the liberal arts disciplines.

In food engineering, and in the radiation protection area of environmental engineering, it's to the student's advantage to come to K-State for all four years due to KSU's unique capabilities in these two areas. However, transfer students will be accepted in these areas if necessary preliminary course work is taken at other institutions, Rathbone said.

Further details are available by writing or phoning (913-532-5590) Prof. D. A. Nesmith, Office of the Dean of Engineering, Kansas State University, Manhattan.

Lauds Success Rate On Research Proposals

(Continued from Page 1)

particular). He also plans some remodeling of the lower main entrance way to Seaton.

These renovations and equipment improvements have been made possible, says Dean Rathbone, through federal, private and state resources.

Hopefully, the total program of renovations and other improvements will be completed in time for the 51st annual KSU Engineering Open House set for April 11-12, 1975. You will want to see all these physical changes in Seaton Hall as well as the construction progress on the new \$2,851,000 Durland Hall (chemical and industrial engineering). — T.G.

Steel Ring is a selective organization recognizing outstanding ability in leadership and scholarship of seniors in engineering at K-State.

Assistant Dean Kenneth K. Gowdy reports that K-State undergraduate engineering enrollment is over the 1,000 mark this year after dipping to 946 this past year. Last year there were 196 new freshmen. Gowdy indicates over a 50 per cent increase in new freshmen this fall with a total of 299.

More women are enrolling in engineering. There were 34 coeds enrolled in the College in 1972-1973. In the freshman class alone this year, there are 25 girls compared with only seven the last academic year. There will also be an increased number of minority students in engineering.

The 180 graduates this past year averaged over three job offers each with \$12,000 a year typical for starting salaries. The highest single offer to a B.S. engineering graduate of K-State was \$1350 per month.

For the 1974 engineering class at K-State, 76 per cent accepted engineering positions. The remainder either entered graduate school or the military.

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Dean of the College
Dr. Donald E. Rathbone
Associate Dean of Engineering
Dr. Ted Hodges
IMPACT Editor
Tom Gerdis

Engineering Experiment Station Celebrating 60 Years of Growth

In 1974-1975 the K-State Engineering Experiment Station is celebrating 60 continuous years of unity and growth in serving the needs of the state and nation through innovative engineering research.

The Engineering Experiment Station staff headed by Dr. Ted Hodges, KSU associate dean of engineering, administers research activities in the College of Engineering. This center was established in 1914 by the Kansas Board of Regents to conduct tests and research work of engineering and manufacturing value to the State of Kansas.

While the experiment station still functions to meet the obligations of its original charge, its activities have expanded to include research of national and international significance.

The experiment station funds research activities and serves as a support arm for engineering faculty in the development of proposals for funding of research from outside private, state, and federal sources. In recent years, as high as \$1 million in annual research activities has been coordinated through the experiment station, according to Hodges.

In the early years, information bulletins of the results of research activities were published by the experiment station for industry and people of the state as well as for other interested individuals and agencies.

Most of the early bulletins were aimed at educating the people of Kansas in the most elementary aspects of home sanitation and comfort. Today, some 60 years later, this is still carried on. However, most of the results of K-State engineering research are now published in technical reports, journals and proceedings.

Said Dean Hodges of K-State engineering research, "We believe that research activities enrich the educational opportunities of both undergraduate and graduate students who pursue their professional degrees in our College."

The scope and potential impact of research in the K-State College of Engineering encompasses eight broad areas: engineering science, energy, physical environment, food and fiber, bioengineering, transportation, properties of materials, and quality of life.

Energy—that topic you hear so much about these days—historically has been a concern of the College's research faculty, but is now being emphasized more because of energy shortages revealed in the past few years.

Notable K-State engineering research on energy problems include the search for alternative sources of fuel for the farm, home and industry.

Dean Hodges believes that KSU's engineering research efforts continue to make a vital contribution to the State of Kansas in these and many more areas.

Applied Mechanics Faculty Are Merged Into Other Engineering Departments

The K-State department of applied mechanics in the College of Engineering has been merged into other departments of the College, announced Dr. Donald E. Rathbone, K-State dean of engineering.

Dr. **Philip G. Kirmser**, professor and head of applied mechanics the past several years, has joined the staff of the engineering dean. Other members of the applied mechanics faculty have joined three other departments in the College.

Joining civil engineering: Dr. **Cecil H. Best**, **James F. Crary**, Dr. **K.K. Hu**, Dr. **Harry D. Knostman**, Dr. **Edwin C. Lindly** and **Frank J. McCormick**.

Electrical engineering: Dr. **Everett E. Haft**.

Mechanical engineering: Dr. **C.L. Huang** and Dr. **John E. Kipp**.

The Applied Mechanics Shop, formerly operated by **Wallace Johnston** who retired this past August, is now administered by the department of civil engineering.



GETS OUTSTANDING PAPER PRIZE — Jerry R. Duncan (seated), Manhattan, Kan., Ph.D. student in industrial engineering, won \$100 and a certificate this fall for the best student paper presented at the 18th annual Human Factors Society meeting in Huntsville, Ala. His paper reported on his research under Dr. Stephan Konz (left) and Dr. Corwin A. Bennett, professors in the department, which showed that illumination does affect legibility of display boards on electronic devices such as small pocket calculators.

Former Dean, Ralph G. Nevins, Dies, ASHRAE Sets Up Memorial Scholarship

Dr. Ralph G. Nevins, dean of engineering at K-State from 1967 to 1973, died Oct. 30 at a hospital in New Haven, Conn. After leaving K-State, he became a fellow of the John B. Pierce Foundation, an internationally-known research center.

It was discovered Oct. 6 that Nevins, a member of the K-State engineering faculty for 25 years, had inoperable cancer. Burial was in Maple Grove Cemetery, Dodge City, Kan. He is survived by his wife, Janet, Madison, Conn., and two daughters of Manhattan.

A memorial scholarship fund in memory of Nevins has been established through the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) "to assist outstanding students in the field of thermal comfort."

A special issue of the K-State Engineer student magazine citing Dean Nevins' many contributions to engineering at KSU was published this past November.

Long active in ASHRAE, Nevins was a fellow of that society and was the recipient of the ASHRAE Distinguished Service Award. Contributions to the fund may be made through ASHRAE, 345 East 47, New York, N.Y. 10017.

Dr. Dale E. Kaufman, KP&L Professor, Dies March 30, On Faculty 9 Years

Dr. Dale E. Kaufman, 44, Kansas Power and Light Company Professor of Electrical Engineering at K-State, died Sunday, March 15, at Memorial Hospital in Manhattan. He was critically injured in an automobile accident March 15 and had been under intensive care since the mishap.

On the faculty for nine years, he was an associate professor of electrical engineering and was named to the KP&L professorship in August 1973. Kaufman had worked extensively in the design of microwave devices and development of nano-second sampling circuits.

Newsworthy Notes

Dr. **Thomas W. Lester**, who received his Ph.D. at Purdue University, is a new assistant professor in the department of nuclear engineering effective spring semester.

The 1974-1975 faculty initiate of the Chi Epsilon civil engineering honorary is Dr. **Eugene R. Russell**, who joined the K-State civil engineering faculty this past August.

Rodney S. Horn, an engineer-in-training with the Hesston (Kan.) Corp., and 16 K-State engineering seniors were inducted into the "Order of the Engineer" in ceremonies Nov. 15 at K-State.

George DeTar, senior in electrical engineering from Iola, Kan., is the 1975 editor of the K-State Engineer student magazine. He succeeds **Robert G. Focannon**, senior in electrical engineering, Prairie Village, Kan.

The fifth annual shelter survey technician course for 20 K-State architectural and engineering students was taught January 6-10 at K-State by Dr. **Edwin C. Lindly**, associate professor of civil engineering.

Bedford A. Magnus, 1950 electrical engineering graduate from El Dorado, has been nominated for a position on the K-State Alumni Association board of directors. Magnus coordinated a K-State engineering alumni meeting Feb. 6 in El Dorado with Dean Donald E. Rathbone as the honored guest and speaker.

A **Milan W. Smerchek** Memorial Loan Fund has been established at K-State honoring Smerchek, a 1940 chemical engineering graduate who died earlier this fall. A son, **Dana**, is a KSU graduate student in mechanical engineering.

Dr. **N. Dean Eckhoff**, director of the K-State Center for Energy Studies, was a panelist Jan. 13 on an educational television program, "Issue: Nuclear Power," over KTWU-TV, Topeka, Kan.

Steven T. Brumbaugh, 20, Hutchinson, Kan., junior in chemical engineering, won the 1974-1975 scholastic achievement award of the K-State student chapter of the American Institute of Chemical Engineers.

K-State alumnus, **L.W. Newcomer**, El Dorado, Kan., is acting highway director in the State of Kansas.

Balderson, Inc., Wamego, Kan., has established a **Ronald Michels** Scholarship in Engineering at K-State. The annual \$500 scholarship "is to perpetuate the memory of Ronald Michels and to give recognition to outstanding students majoring in engineering at KSU."

The K-State student chapter of the American Nuclear Society is offering spring semester instruction for earning the Atomic Energy Merit Badge to scouts in Riley and nearby counties.

Mrs. **Sheila Nelson**, 20, secretary in the K-State department of applied mechanics, died of an apparent heart attack Jan. 15. Her husband, Raeborn Lee Nelson, is a senior in animal science and industry.

Dr. **Bob L. Smith**, professor of civil engineering, conducted a Jan. 6-10 Traffic Engineering and Safety Seminar at K-State.

John H. Bateman, 1938 engineering graduate from Kansas City, has set up a scholarship program at K-State endowed with funds derived from the sale of Tuttle Creek real estate previously given to the KSU Endowment Association.

Jason Annis on APCA Executive Board, Starts 'Kansas Air Quality News'

Dr. Jason C. Annis, associate professor of mechanical engineering at K-State, has been re-elected to the Executive Board of the Midwest Section of the Air Pollution Control Association for 1974-1975.

Annis, first elected to the board a year ago, is K-State's expert on air pollution studies. He is a staff associate of the K-State Institute for Environmental Research.

Kansas Air Quality News (KAQ), a new publication edited by Annis, began publication this past fall. The newsletter is a collective effort of a new organization—the Kansas Air Quality Resource Group.



HONORED BY TAU BETA PI — President Charles T. Carter (center), ARCO Pipeline Co., Independence, Kan., was honored Dec. 6 with a distinguished guest plaque. Carter is a 1938 mechanical engineering graduate of K-State. He posed for this photo after an awards ceremony along with Dr. Donald E. Rathbone (left), K-State dean of engineering, and Alan Sylvester, Salina, Kan., who was Tau Beta Pi president fall semester. Carter and two other KSU engineering graduates—H.P. Buser, ME '46, and G.L. Schumann, ME '51, also of ARCO, spoke to K-State classes as part of "ARCO Pipeline Day" at K-State.

K-State Chemical Engineers Transform Wastes Into Energy

Hard working chemical engineers at K-State are seeking to solve problems facing Kansas agriculture and industry through several ambitious research efforts.

Dr. **Larry E. Erickson**, professor of chemical engineering, explained that because of Kansas State's setting, its research is strongly influenced by agricultural factors. For example, techniques for transforming farm wastes such as cow manure into sources of energy, and processes for production of fertilizers are being researched by several faculty members including Drs. **L.T. Fan**, **B.G. Kyle**, **John C. Matthews** and **Walter P. Walawender**. Erickson and Fan are also investigating methods for analyzing water quality data to develop improved mathematical models for water quality predictions.

All Kansas residents benefit from the chemical engineering research at K-State, according to Erickson. The benefits include:

- * Research solving local problems or serving local needs directly aids Kansas agriculture, government and industry. Waste treatment and water research in Kansas streams and reservoirs are examples.

- * Production costs are reduced by technical developments which lower prices for the Kansas consumer.

- * Competent faculty are attracted to K-State who in turn relay their knowledge to the students, who are potential professional engineers for the Kansas employer.

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