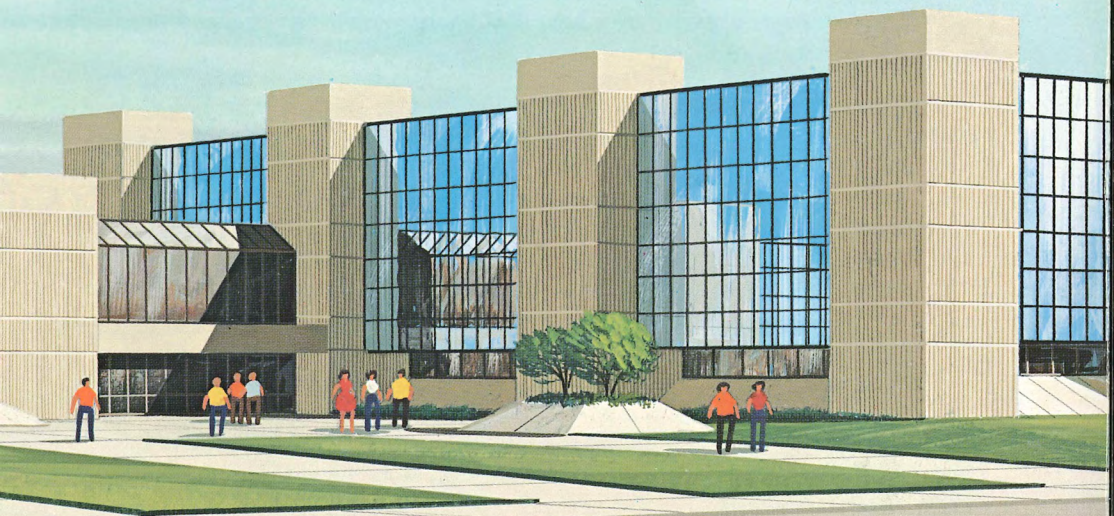
LEGACY:

Engineering at Kansas State University

by Cheryl May



This volume is issued to commemorate the dedication of
Durland Hall, Phase II

LEGACY:
Engineering at Kansas State University

by Cheryl May

This book is issued to commemorate the dedication of the College of Engineering's newest building, Durland Hall, Phase II. On this occasion we look forward to the tremendous future that lies ahead for KSU engineering. At the same time this volume takes an informal look back at some of the events of Engineering's past at K-State.

Not intended as a formal or complete history or record of the College of Engineering, this edition spotlights just a sampling of what has made the college what it is today. Included are some—but by no means all—of the outstanding teaching, strong research programs and excellent faculty that have made this College great.

Despite the fact that numerous faculty members—both active and retired—were interviewed for this project, it would be impossible to fully explain in this short volume the achievements compiled over hundreds of lifetimes by dedicated KSU faculty members and their fine departments. The broad scope of Engineering departments defies simplistic overviews. The reputations garnered by faculty members in national and international circles cannot be adequately described in a few paragraphs.

We hope that by reading this memento edition you will find your memory jogged by a reminiscence or two included in the book; that you will be entertained by remembering some of the events that have been a part of the College; and most of all that this will remain as a remembrance of an important celebration, the dedication of Durland Hall, Phase II.

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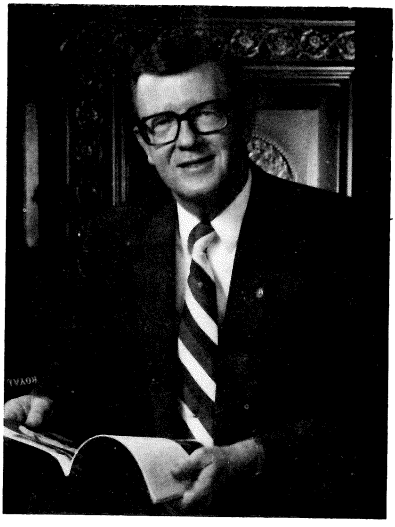
Contents

A Word From The Dean



It is a real pleasure for me to welcome you to the dedication of Durland Hall, Phase II, and to introduce you to Cheryl May's book on the history of engineering at Kansas State University.

The project evolved from Dean Roy A. Seaton's family's interest in having a book written about him. This certainly would have been a significant contribution in itself, but I felt that a book about the overall historical development of the College of Engineering at Kansas State University in which Dean Seaton played such a prominent role was equally appropriate.

The book is a history of the College for its first 100 years, from 1862 to 1962. Very visible in the College's history are two individuals, Roy A. Seaton and M.A. "Cotton" Durland, both of whom came to K-State as students and stayed for more than fifty years as first faculty and then administrators.

I feel very fortunate to have known Dean Durland personally. We become good friends, and I particularly enjoyed his telling me about many of our alumni. He seemed to know them all and rarely, if ever, forgot a face or a name.

As you will note in reading the book, the College of

Engineering at Kansas State University has had many outstanding faculty and department heads. Many have been recognized internationally. Fortunately, that is also true today.

It was impossible with this book to do justice to our many fine students who have made many outstanding contributions to society. We did manage to include members of the College's Advisory Council, those individuals who have given so generously of their time to help the College meet its many challenges.

The book originally was planned to include the present, but some thought this would present an unbalanced perspective of the past. Fortunately, Cheryl, in her research, has accumulated a considerable amount of material that will be useful should we eventually decide to write "Phase II" of our history, just as we have now added Phase II to our new engineering complex.

I want to acknowledge Cheryl May's efforts and talents in putting this book together. She spent many weeks in researching the old written records and in talking with past and present faculty, alumni and friends. She worked very hard to achieve accuracy and to be as comprehensive as possible. I felt fortunate that we were able to secure her services for this endeavor.

Finally, I want to thank all of the faculty, alumni, students and friends from the past who established such a fine College of Engineering at Kansas State University. This strong base has made it much easier for those of us who are here now, trying to carry on the tradition of excellence. Hopefully, our past will look as good to future generations as I view the past today.

Donald E. Kathbane

Thanks to Our Friends

The Advisory Committee for Durland Hall, Phase II, is a combination of the College's Advisory Council and other selected individuals, all of whom bring special strengths and expertise to the committee. Their assistance was invaluable.

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Claude Wilson
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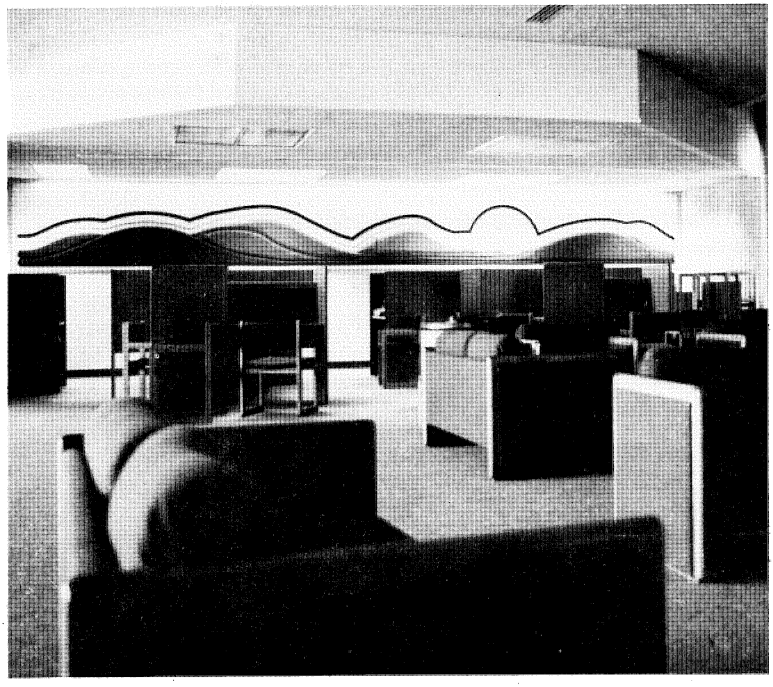
Several people, now deceased, were especially helpful and influential in making Durland Hall, Phase II, a reality. These men deserve special recognition:

Daric M. Miller, Kansas Power & Light, Topeka, Kansas
W. Leroy Culbertson, Phillips Petroleum Co., Bartlesville, Oklahoma
Howard C. Eberline, Kerr-McGee Corp., Edmund, Oklahoma
Tom Skinner, General Electric Co., St. Louis, Missouri

Additional thanks go to the members of the College of Engineering Advisory Council, both past and present, and to the members of the Financial Advisory Council.

The Rathbone Faculty/Student Lounge



College of Engineering Advisory Council

The Engineering Advisory Council was originated to aid and advise the college of engineering and the Engineering Experiment Station in ways of making maximum contributions to the economic development of Kansas. Members of the council are selected from professional, technical, industrial and educational groups connected with engineering, and are appointed for three-year terms by the president of the university. Nominations are made to the president through the office of the Dean of Engineering.

When M.A. Durland first started the advisory council, there were less than 10 individuals involved from year to year. At first the council met sporadically, usually about once a year. The council's fortunes after Durland retired were tied to the interest of the particular dean in charge. During the sixties and early seventies, the council did not meet every year. When Dean Rathbone took over, he agreed with Durland's concept of an advisory council and expanded it to include more members and initiated regular meetings twice each year.

The council has played an important role in helping the college through fund-raising and other activities.

The Advisory Council has grown both in number of members and in stature and effectiveness as it has developed. Listed below are past and present members of the council.

Ray Adee 1976-present
Vice-president, Hesston Manufacturing Company, Hesston, Kansas

Roy Bainer 1970-71
Dean Emeritus, College of Engineering, University of California, Davis

Ross Beach 1970
President, Producers Gas Equities, Inc., Hays, Kansas

Fred J. Benson 1970-present
Vice-president and executive director, Texas A&M Research Foundation, College Station, Texas

John E. Brink 1965-66
Brink & Dunwoody, Iola, Kansas

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President (ret.), ARCO Pipeline Company, Independence, Kansas

The Hon. Donald Christy 1965-79
Scott City, Kansas

J.J. Clark 1964
Boeing, Wichita, Kansas

W. LeRoy Culbertson (dec.) 1971-78
Phillips Petroleum Company, Bartlesville, Oklahoma

Don E. Curtright 1977-present
President, Greb X-Ray Company, Lenexa, Kansas

R.W. Decker 1970-73
General Motors Technical Center, Warren, Michigan

The 1983 Advisory Council included First Row (left to right): Harold Siegele, Claude Wilson, *Karen Hummel, Don Rathbone,* Dick Scherer, *Cynthia Royce-Lartigue.* Second Row (left to right): *Carolee Stark,* Dean Morton, Charlie Carter, Don Curtright, Fred Benson, Jack Way, Gordon Goering, *Bill Johnson.* Third Row (left to right): Ray Adee, Stan Smith, Gil Johnson, Jerry Wilbeck, *Dick Hayter, John Dollar,* Bob Exline.

In 1982, the Advisory Council, students, and K-State faculty gathered for this photo. First Row (front, left to right): ***Craig Alexander, Curt Lanpher, Jim Ruder, Bill Johnson, Ray Hightower, Carolee Stark.*** Second Row (left to right): John Walters, Eugene Peltier, Dick Scherer, ***Don Rathbone,*** Claude Wilson, John Bridwell, ***Darci Moore.*** Third Row (left to right): Jack Way, Martin Eby, Jr., Fred Benson, Charlie Carter, Ray Adee, Bob Exline, Gordon Goering, Gil Johnson, Jim Richards, Al Rector. Fourth Row (left to right): ***Jenise Hawley, Cynthia Royce-Lartigue, Karen Hummel,*** Al Mistler, Ernie Nelson, Stan Smith, Jerry Wilbeck, ***Don Hummels, Dick Hayter, John Dollar.***

The 1981 Advisory Council included First Row (left to right): ***Gary Weidman, Michele Perrin, Glenn Shain, Dennis Wike, Ray Hightower, Keith Wagner.*** Second Row (left to right): ***Frank Tillman,*** Martin Eby, Jr., ***Carolee Stark,*** Dick Scherer, ***Don Rathbone,*** John Slaughter, ***Paul Miller, Dean Eckhoff, Bill Johnson,*** Claude Wilson. Third Row (left to right): Joe Downey, ***Jim Miller,*** R. G. Taecker, Jerry Wilbeck, Fred Benson, Fred Eyestone, Stan Smith, Don Curtright, Al Rector, Ernie Nelson, Jack Way, Don Norman. Fourth Row (left to right): Dean Morton, Bob Exline, ***L. T. Fan, Bob Snell,*** Ray Adee, ***Bob Dahl, Jim Tracey, John Lindholm,*** John Walters, Gil Johnson, Charlie Carter, Jim Richards.

The 1975 Advisory Council was comprised of Top Row (left to right): Dick Scherer, Fred Eyestone, Jim Richards, Fred Benson, Don Christy, M. A. Durland. Middle Row (left to right): LeRoy Culbertson, Ray Adee, Claude Wilson, Daric Miller, Stan Smith, *Ted Hodges,* Tom Skinner. Bottom Row (left to right): Martin Eby, Jr., *Duane Acker, Don Rathbone,* Bob Exline. Members not pictured: R. G. Taecker, Howard Eberline.

M.A. Durland (dec.) 1970-81
Dean Emeritus, College of Engineering, Kansas State University, Manhattan

Howard C. Eberline (dec.) 1971-81
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Topeka, Kansas

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K.C. Structural Steel, Kansas City, Kansas

L.W. Hurlbut (dec.) 1964
University of Nebraska Department of Agricultural Engineering, Lincoln, Nebraska

Gilbert E. Johnson 1982-present
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Walter Johnson 1964-66
State Highway Engineer, State Highway Commission, Topeka, Kansas

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Kansas Gas & Electric Company, Wichita, Kansas

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Leawood, Kansas

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In 1969 Advisory Council members included *Standing (left to right):* E. J. Peltier, vice chairman, T. F. Skinner, *James A. McCain,* Donald Christy, Ross Beach, Roy Bainer; *Seated left to right: Ralph G. Nevins,* R. W. Decker, H. V. Rathbun, Edward J. King, Daric M. Miller, chairman.

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General Electric Company, St. Louis, Missouri

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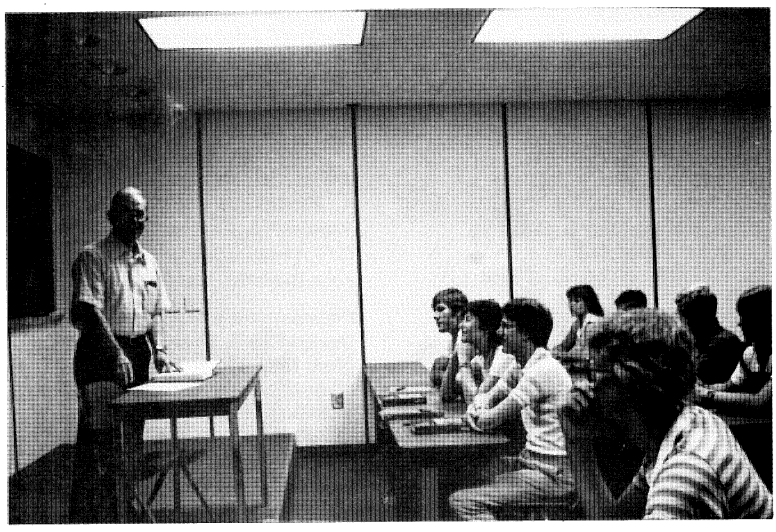
John Bridwell, Stamford, Ct.

Contributions are still coming in for Durland Hall. Those received after press time will be recognized in other publications and on the donor's wall in the new building.

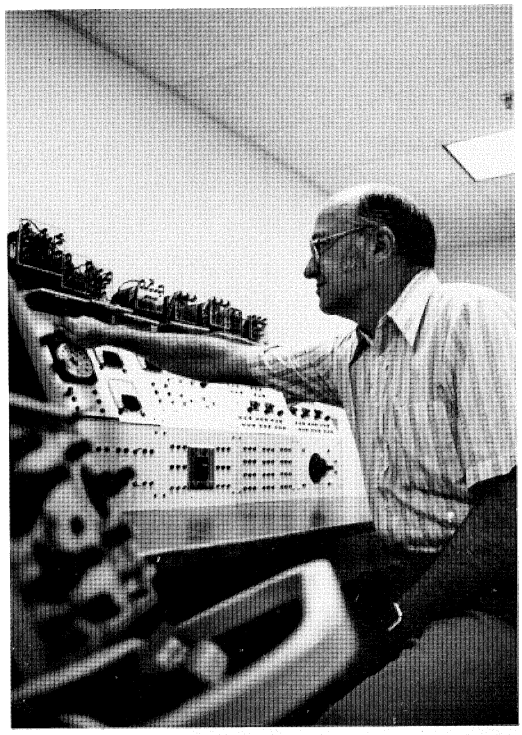
. . . And many anonymous donations.

The lobby of Durland Hall, Phase II.

The Skinner Video Classroom named for Thomas F. Skinner, ME '36

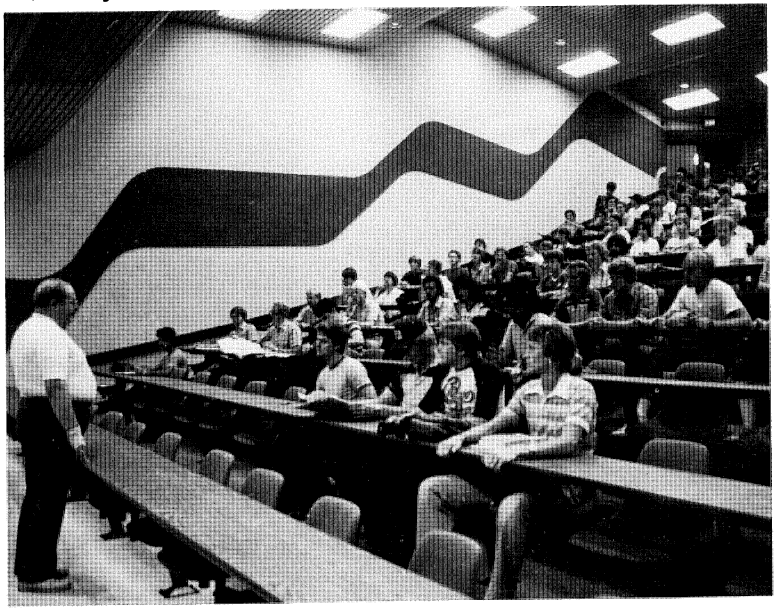


Inside Durland Hall, Phase II



The Kansas Power & Light Laboratory

The Paslay Lecture Hall named for LeRoy C. Paslay, EE '30



Construction of Durland Hall, Phase I was completed in 1976.

List of Contributors

Funding for Durland Hall, Phase I, was primarily through a Kansas legislative appropriation of 2.7 million dollars. Other funds included $100,000 from sponsored research overhead, and gifts from companies, alumni and other individuals. Donors included:

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M.J. Caldwell—Bench Laboratory
R.P. Medlin—Reading Room
L.T. Fan—Systems Institute Room
Takeichiro Takamatsu & Associates—Faculty Office
H.L. Siegele—Seminar Room
P.T. Martin—Department Office, furnishings for main entrance to building, hallways, and department office entry
Koch Engineering—Design Room
A.G. Eickmeyer—Computer Rooms (2)
Pereira, Mishra, Krishnan, Ghai, Shah—Bench Laboratory
Gilbert Chen, F.S. Lai—Bench Laboratory
Ben F. Hartman Laboratory of Chemical Reaction Engineering

Keeping Time Artistically

Combining art and technology was the goal of artists Elliott Pujol and Barbara Terrell who were commissioned to provide artwork for the pendulum clock in the lobby of Durland II. About 80 hemispheric globes of enameled spun copper from six to twelve inches in diameter were designed and prepared by the artists for the sculpture. The domes were designed by Pujol and the enameling by Terrell.

The project was a blend of both of their ideas, according to Pujol. The spun copper domes were crafted in Kansas City and a special kiln was installed in Burt Hall to accommodate their size for firing the enamel.

The enamel domes, subtle warm reds and orange-reds, are arranged in a circle on an oak base underneath a pendulum. Numerals are incorporated to make a large working clock which will be kept accurate by a computerized mechanism. Designing the clock mechanism was the challenge for professors E. E. Haft, electrical engineering, and Hugh Walker, mechanical engineering.

The project is an outgrowth of the Koerper Award, a $1,000 stipend presented to KSU in 1980 by the National Society for Professional Engineers, in recognition of the professionalism of the engineering students at KSU. The funds were made available by a grant from professional engineer and arts supporter Erhardt C. Koerper.

Pujol is head of metalsmithing and jewelry in the KSU art department. Terrell is a studio artist who received her MFA from K-State.

Installation of the art piece.

Distinguished Service Award Recipients

COLLEGE OF ENGINEERING

1956-1957

RALPH HELMREICH, (1928, Mechanical Engineering), assistant vice president (ret.), American Telephone and Telegraph, Shawnee Mission, Kan.

HERBERT M. LOW, (1924, Electrical Engineering), vice president and manager of Prichard International, J.F. Prichard Company, Prairie Village, Kan.

CHARLES SHAVER, (1915, Architecture), deceased, practicing architect, Salina, Kan.

MURRAY WILSON, (1922, Civil Engineering), deceased, president of Wilson & Company, Salina, Kan.

1957-1958

FRED H. HENDERSON, (1924, Electrical Engineering), assistant vice president (ret.), North Carolina Works, Western Electric, Winston-Salem, N.C.

MILES C. LEVERETT, (1931, Chemical Engineering), manager—Safety & Quality, Nuclear Energy Division (ret.), General Electric, San Jose, Calif.

1959-1960

W.V. BUCK, (1911, Civil Engineering), regional engineer (ret.), U.S. Bureau of Public Roads, Sun City, Calif.

THEODORE R. GRIEST, (1923, Architecture), deceased, consultant director, American Institute of Architects, Topeka, Kan.

ROY BAINER, (1926, Agricultural Engineering), dean emeritus of engineering, University of California, Davis.

1960-1961

S. FRED EYESTONE, (1941, Electrical Engineering), vice president, Varian Associates, Palo Alto, Calif.

JOHN PENNINGTON, (1939, Mechanical Engineering), vice president and general manager, Koppers Co., Inc., Baltimore, Md.

HAROLD G. LEWIS, (1928, Civil Engineering), deceased, president, Flint Steel Corp., past president, American Institute of Steel Construction, Tulsa, Okla.

1961-1962

E.L. BARGER, (1929, Agricultural Engineering), manager, Division of Agricultural Relations (ret.), Massey-Ferguson Limited, Toronto, Canada.

J.C. RICHARDS, JR., (1934, Chemical Engineering), vice president (ret.), B.F. Goodrich, Emmett, Kan.

C.C. TATE, (1927, Electrical Engineering), deceased, vice president and director, Phillips Petroleum, Bartlesville, Okla.

CLAUDE L. WILSON, (1925, Mechanical Engineering), vice president, Prairie View A&M University, Prairie View, Tex.

1962-1963

MARTIN K. EBY, SR., (1929, Civil Engineering), (Founders' Day Award), chairman, Martin K. Eby Construction Co., Inc., Wichita, Kan.

L.W. NEWCOMER, (1923, Civil Engineering), general manager and chief engineer (ret.), Kansas Turnpike, El Dorado, Kan.

CHARLES H. SCHOLER, (1914, Civil Engineering), deceased, professor emeritus, Applied Mechanics, KSU.

CLARENCE E. BREHM, (1932, Architecture), Oil Producer and Drilling Contractor, Mt. Vernon, Ill.

ROY A. SEATON, (1904, Mechanical Engineering), President's Assembly Award, deceased, dean of engineering, KSU.

1963-1964

HARRY R. WEGE, (1925, Electrical Engineering), vice president and general manager (ret.), Defense Electronics Products, RCA, Merchantville, N.J.

WALTER R. MITCHELL, (1932, Electrical Engineering), president (ret.), National Geophysical Company, Dallas, Texas.

1965-1966

EARLE L. KENT, (1935, Electrical Engineering), data processing manager (ret.), Oaklawn Psychiatric Center, Elkhart, Ind.

LOUIS E. FRY, (1927, Architecture), principal of firm (ret.), Fry and Welch Architects, professor emeritus of architecture, Howard University, Washington, D.C.

1966-1967

AIMISON JONNARD, (1938, Chemical Engineering), U.S. Tarriff Commission, Washington, D.C.

FRED J. BENSON, (1935, Civil Engineering), vice president, Texas A&M University, College Station.

EDWARD J. KING, (1943, Electrical Engineering), president, King Radio Corp., Olathe, Kan.

HOWARD C. EBERLINE, (1942, Electrical Engineering), technical director, Kerr-McGee Corp., Oklahoma City, Okla.

1967-1968

WILLIAM C. HIGDON, (1934, Mechanical Engineering), vice president (ret.), Armco Steel Corp., Houston, Tex.

1968-1969

WALTER M. CARLETON, (1938, Agricultural Engineering), director for Eastern Regional Research Office, U.S. Department of Agriculture, New Delhi, India.

1969-1970

W. LeROY CULBERTSON, (1939, Mechanical Engineering), senior vice president, Phillips Petroleum, Bartlesville, Okla.

1970-1971

L.M. VAN DOREN, (1938, Civil Engineering), partner, Van Doren-Hazard-Stallings, Topeka, Kan.

1971-1972

WILLIAM R. KIMEL, (1944, Mechanical Engineering), dean of engineering, University of Missouri, Columbia.

1972-1973

WILLIAM C. EXLINE, deceased, chairman of the board, Exline, Inc., Salina, Kan.

1973-1974

HENRY J. BARRE, (1930, Agricultural Engineering), professor emeritus, Ohio State University, consulting engineer, Worthington, Ohio.

1974-1975

CHARLES T. CARTER, (1938, Mechanical Engineering), vice president, Atlantic Richfield, Los Angeles, Calif.

1975-1976

RAY A. ADEE, (1947, Mechanical Engineering), vice president of Corporate Engineering, Hesston Manufacturing Co., Hesston, Kan.

MORTON SMUTZ, (1940, 1941, M.S., Chemical Engineering), associate dean of engineering research, University of Florida, Gainesville.

1976-1977

M.A. DURLAND, (1918, Electrical Engineering), dean emeritus of engineering, KSU.

RICHARD C. ALLEN, (1941, Electrical Engineering), president, Empire District Electric Co., Joplin, Mo.

1977-1978

HAROLD L. SIEGELE, (1947, Chemical Engineering), president, Esso Standard Libya, Inc., Tripoli, Libya.

1978-1979

VINTON D. CARVER, (1943, Mechanical Engineering), chairman & chief executive officer of GRT Corporation, Sunnyvale, Calif.

CHARLES A. FRANKENHOFF, (1918, Mechanical Engineering), chairman of the board (ret.), Kenite Corporation, Scarsdale, N.Y.

BRUCE E. ROBERTS, (1939, Civil Engineering, executive partner, Wilson & Company, Salina, Kan.

1979-1980

DONALD CHRISTY, (1933, Agricultural Engineering), chairman of the board of directors, First National Bank of Scott City.

JOEL P. KESLER, (1933, Electrical Engineering), retired partner, Black & Veatch Consulting Engineers, Kansas City, Missouri.

1980-1981

EUGENE J. PELTIER, (1933, Civil Engineering), consultant and retired president and chief executive officer, Sverdrup, Parcel & Associates, St. Louis, Missouri.

JOHN B. SLAUGHTER, (1956, Electrical Engineering), Director of the National Science Foundation, Washington, D.C.

ALWIN H. RECTOR, (1937, Electrical Engineering), senior vice-president and manager of administration and support services (ret.), Burns and McDonnell, Kansas City, Missouri.

ALVIN J. MISTLER, (1936, Geology and Chemistry), senior vice-president and assistant to the president (ret.), Armco, Inc., Middletown, Ohio.

1982-1983

CHARLES V. JAKOWATZ, (1944, Electrical Engineering), former dean, now professor, Electrical Engineering, Wichita State University, Wichita, Kansas.

LeROY PASLAY, (1930, Electrical Engineering), Manalapan, Florida.

1983-1984

JOHN W. FRAZIER, (1935, Civil Engineering), partner, Finney & Turnipseed Consulting Engineers, Topeka, Kansas.

GORDON D. GOERING, (1945, Chemical Engineering), senior vice-president, petroleum products group, Phillips Petroleum Co., Bartlesville, Okla.

JOHN H. BATEMAN, (1938, Civil Engineering), retired president, Marley International, Inc., and vice-president of The Marley Co., Mission, Kansas.

Acknowledgement

Robert Seaton, son of the late dean, Roy Seaton, was interested in learning more about his father's tenure as dean, the longest in K-State engineering history. Robert Seaton spent many hours researching the early years of engineering at K-State and brought his idea of publishing the information to the attention of Dean Donald E. Rathbone. Dean Rathbone expanded the project to include all the deans up to Durland's time. Since the information we have compiled is being released at the dedication of Durland Hall, Phase II, it seemed particularly appropriate to use the date of Durland's retirement as dean, 1961, as a stopping place.

Seaton family members including the late Mrs. Roy A. Seaton gave freely of their time and shared reminiscences of Dean Seaton's life at K-State.

Many professors, both retired and those still teaching, spent hours telling how engineering grew and developed. That information had not been written down and was unavailable anywhere else.

The late M.A. Durland shared his vast memory for people and events and was an important and vital source of information. He had researched the history of K-State engineering in the 1960's and was able to provide some interesting highlights.

The appendix lists faculty members who were with K-State engineering for five or more years. Compiling those lists was difficult and time consuming. Those people who compiled the lists worked many hours. In particular, Professor Wilson Tripp took charge of the lengthly mechanical engineering and machine design lists, while Joe Ward compiled the electrical engineering list. Thanks to them and to others who helped in the various departments.

Betty Slemen from the dean's office researched numerous names and dates to make the information included here as accurate as possible. Her help was invaluable.

To all who took the time to read a section or chapter pertaining to their own areas, who spent an hour or so talking about their departments, who helped in so many ways, thanks. May you enjoy reading it as much as I enjoyed writing it.

—Cheryl May

Introduction

St. Pat is known as the patron saint of all engineers, but at K-State, it would be more accurate to place that honor upon a former college president, Thomas E. Will. Although Will held office only two years, one of his major accomplishments was setting up a curriculum in engineering.

The trend in the late 1800s not only at K-State, but in institutions throughout the nation, was leaning toward education of a more practical nature, and practical education had gotten off to a sound start with help from president John Anderson. In fact, engineering education goes back a long way—some say engineering itself is as old as history. Dean M.A. Durland explained the history of engineering at an Engineering Experiment Station luncheon in 1961. Here is what he said:

> "Engineering is as old as history. The pyramids of Egypt were a pretty fair construction job, also the roads, aqueducts and stadia of ancient Rome. There is a considerable amount of very high class engineering described in the Bible. The highway job across the Red Sea was really something. There was, however, very little engineering progress for many centuries. The explanation is very simple—there were no engineering colleges.
>
> "Engineering education may be said to have begun almost exactly 200 years ago with the creation in France of the still famous Ecole des Ponts et Chausees. There was little development elsewhere in the next fifty years. In 1800, there was no school of applied science in the English speaking world. Germany possessed two small mining academies and a feeble school for surveyors. France had two successful schools for civilian engineers and two others for military engineers.
>
> "The next half century was much different. France was still in the lead but Germany was in the early stages of her great industrial advance with eight rapidly developing polytechnic schools, three mining academies and numerous technical schools of lower rank. Great Britain still was making little progress in technical education and only a single technical school had been in operation in the U.S. for any length of time.
>
> "The Rensselaer Polytechnic Institute at Troy, New York, founded in 1824 is generally recognized as the first engineering school in the United States. This honor sometimes is claimed by Norwich University and also by our military academy at West Point. The long established universities not only in the U.S., but all over the world were making it very difficult for technical education to get a foothold. Practical education, that is, teaching students to do something really

useful, was not academically respectable. This is not too far from some of our current philosophy.

"About 1850, several schools, including Harvard and Yale, took steps to create schools of applied science, but very little was accomplished.

"The Morrill Land Grant Act of 1862 really marks the beginning of engineering education in the United States. In the space of a single decade, from 1862 to 1872, the number of engineering schools increased from six to seventy.

"The provisions of the land-grant act passed by congress, July 2, 1862, specified that colleges established in accordance with it should have as their object:

> 'Without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the respective states may prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life.'

. . . "The Kansas State Agricultural College was granted a charter in 1863 and, in accepting the conditions of the land-grant act, four departments—science and literature, mechanic arts, agriculture, and military science—were specified in the charter. As a matter of fact, only one, that of science and literature, was put into effect, and for the first 10 years of its existence, the college was really only one of the old classical type. It is true that in 1866 a position, professor of mechanics and civil engineering, was created and a curriculum (called at that time a course) in mechanic arts and civil engineering was mentioned in the catalogue, but neither appear to have progressed beyond the paper stage. In 1869 Brevet Major-General J.W. Davidson, professor of military science and tactics and teacher of French and Spanish, was given the added title professor of civil engineering and the following year J.S. Hougham, professor of agricultural chemistry and commercial science, was made also professor of mechanic arts. Quite obviously such positions, which were only added duties for already overworked teachers, could be of little service and they soon were discontinued.

"The first serious intention toward any real mechanic arts is indicated in the catalogue for 1871 in the statement, 'A small blacksmith shop and carpenter shop afford a beginning to the department of mechanics.'

. . . "The acceptance by John A. Anderson in 1873 of the presidency of the institution marks probably the first positive attempt to comply with the terms of the land-grant act. President Anderson's creed was expressed by himself as follows: 'Instead of the aim of the college being the making of thoroughly educated men, its greater aim should be to make men thoroughly educated farmers, carpenters, masons, or blacksmiths.' Even he was more interested in training me-

chanics than engineers. Anderson, a Junction City preacher, was more of a politician than an educator and Kansas State was very fortunate when President Anderson was elected to congress."

Lawrence P. Grayson of the National Institute of Education, in commenting on the history of engineering in the United States, said, "Its entire history parallels the changing needs of a growing, continually developing nation for scientifically and technically trained manpower."

Although Anderson could not foresee the development of today's engineering curriculum out of the shopwork he touted, the emphasis by the Anderson administration on practical education helped the progress of engineering at K-State.

The manual work introduced during Anderson's tenure was an early attempt at teaching systematic shopwork to college classes, and was at least a beginning of what later became the engineering curriculum.

As mentioned earlier, the big boost for engineering came during the two-year administration of President Thomas E. Will. Will succeeded George T. Fairchild, who had had little interest in engineering.

During Fairchild's administration the college was in a poor financial position and the changes and improvements made during his tenure were in areas he personally supported.

The most productive move made for the future of engineering during Fairchild's term of office was the hiring of O.P. Hood as superintendent of the workshops in 1886. Hood was a graduate of Rose Polytechnic Institute and was the first engineer to be given a place on the college faculty. Although he met with some stiff opposition from other members of the faculty, Hood was determined to teach his students more than simple mechanics.

Although a curriculum in mechanic arts and civil engineering had been listed in the college catalogue of 1866-67, and another in mechanic arts several years later, neither had ever functioned. No one has been able to determine whether the "paper" courses were not taught due to lack of interest, lack of teachers, lack of equipment, or some other unknown. Until 1897 only one course was in actual operation in the whole college which, with the limited substitutions allowed, was expected to fit its graduates for the professions of home economics, agriculture, engineering, or almost any other.

When Will took over the college presidency he divided the curriculum into four options: Agricultural; General; Engineering; and Household Economics. Electives were allowed in the engineering option so that architectural design could be taken by those wishing to become architects.

Through the year 1897 when Will took over as president, only six KSAC graduates called themselves engineers. Thirty of its

graduates were lawyers or students of law and the college had never even claimed to offer work in law. After the initial help from President Will, progress in engineering continued rapidly.

In the early part of the twentieth century, engineering had done so well at the college that its work was organized into a division, with several departments coordinated within it. Soon a dean of mechanic arts was appointed—E.B. McCormick. He had been responsible for much of the organizational work, putting the division together, and, in effect, had been in charge even before taking the title of dean.

Engineering at Kansas State has faced many challenges in its history, not the least of which was a major campaign by the University of Kansas and her supporters to have engineering abolished at KSAC and moved to KU. How the deans of engineering and the presidents of KSAC met those challenges and built the engineering curriculum to its present level of excellence is the real legacy left by men of vision and understanding. They believed that engineering was an important curriculum worth preserving at K-State. The true legacy left to modern students, faculty and alumni is not just one of new and better buildings and facilities, but rather it is the engineering program itself and its tradition for excellence and perseverance even when under fire. Because KSAC deans of engineering were willing to stand up and be counted, the engineering curriculum exists today.

Chapter 1

The Early Years

The first engineering students at Kansas State received less than the technical education that has come to be associated with engineering in recent times. Rather, the instruction in "mechanic arts" was often more of a trade skill program. In the very early years (pre-1880) it is doubtful whether some of the courses mentioned in the catalog even were offered to students.

Ozni Hood

In the 1880's, the administration and faculty at KSAC looked upon the mechanic arts as a necessary but minor part of a young farmer's education. When Ozni P. Hood came to K-State as superintendent of workshops in 1886, a senior faculty member told the young engineer:

> "Hood, we have no use for you here whatever, except to teach boys to nail palings on a fence and build a pigpen square!"

Hood, a graduate of Rose Polytechnic Institute, took the statement as an admonition to keep the shops in their proper relation to other college affairs. Nevertheless, Hood took it upon himself to offer advanced work, moving the curriculum out of the trade skill category and into engineering. Hood came to K-State at a propitious time: He prepared the way for engineering to become a viable department.

Many believed that there should be a strong agricultural course at the college with no competition from other courses. Some Kansans feared that KSAC would follow the path of eastern land grant colleges which had developed in the direction of the mechanic arts, diverting money and interest from the training of farmers who were expected to stay on the land.

Mechanic Arts as a Novelty

Farm youths were keenly interested in the mechanic arts, often because the topic was new to them. Also, the facilities for teaching the mechanic arts were better developed in the late 1880's than were those for teaching agriculture. Professor Hood said engineers were criticized for using those superior facilities—it was considered that engineering was thus taking an unfair advantage over agriculture.

Years later, Hood commented that because the future of Kansas was supposed to depend entirely upon its farmers, the majority of the faculty in the 1880's believed that a single strong general course in agriculture was the answer to the immediate educational problem.

Curriculum

Shopwork comprised the entire mechanic arts program until 1884 when four terms of drawing and two terms in applied mechanics and construction materials were added. Descriptive geometry was added in 1893 and in 1897-98 additional courses were offered, including elementary mechanics, hydraulics, machine design, mechanics of materials, measurement of power and engineering laboratory, advanced machine design and engineering of power plants.

Political Waves

An administrative upheaval occurred in 1897 and that summer saw four-year professional courses organized in agriculture, mechanical engineering, domestic science and general science. Apprentice courses in the shops were also organized and continued until 1905.

Although some might argue that tumult and political appointments are out of place on college campuses, it was just such a political volcano that erupted to create what is now the college of engineering. A turbulent two-year period saw the established leadership of college president George T. Fairchild displaced by a new administration headed by Thomas E. Will, which, in turn was displaced by a third group of leaders under Ernest R. Nichols.

The period of the late 1890's was one in which the mood of the country demanded reform. The National People's Party, called Populists, demanded increased social control of agencies that distributed commodities, expansion of the money supply, and other reforms. In Kansas the movement was a popular one, and Populists defeated Republicans in the elections. John W. Leedy was the new Populist governor, and he controlled the appointments to the board of regents of the college. When the smoke cleared there were five Populists and two Republicans on the board.

Faculty Fired

One of the first actions by the reorganized board was to terminate the employment of all Kansas State Agricultural College employees effective June 30, 1897. The board said that everyone was eligible to apply for their former jobs, but it was clear that reappointments were more likely for some faculty members than for others. Most notably, President Fairchild removed his

name from the list of those applying for reappointment. It was clear that he would have been fired if he had not resigned.

Will the Reformer

Thomas E. Will, an economics professor who had raised the ire of Republicans by making public speeches on modern economic theory and teaching an advanced course called "Socialism and Social Reforms," was promptly elected president by the reform-minded board. The press latched onto the "socialism" aspect and labeled Will as a fanatic who would ruin the college.

Although Will's tenure as president was short, he made several achievements. Prior to his appointment, only one faculty member had a Ph.D. Will added three more. He supported freedom of teaching in the same way that he supported the freedom of press, religion and speech. Oblivious to complaints from local merchants, Will directed the establishment of both a college bookstore and a college cafeteria. Also, enrollments for graduate study increased during his short term of office.

His most notable work as far as engineering is concerned, however, dealt with the reorganization of the college separating the courses of study into four curriculums: agriculture, engineering, general, and household economics. When Will was named president of the college in July 1897 he was eager to make improvements. Partly because of Hood's groundwork, one of the changes Will was able to make was forming an engineering curriculum.

During the stormy two years that President Will headed the college, he expanded engineering from its former position as a "paper" department, mentioned in the catalog but in reality fighting for its existence, into a very real curriculum with a department head.

An unfortunate loss to the developing engineering curriculum was the departure of Professor Hood. Over the years Hood had worked energetically in engineering, progressing to the post of professor of mechanics and engineering. His loyalty to the Fairchild administration resulted in his being unhappy under Will so he moved on to another post. Hood was succeeded by Joseph D. Harper who became head of the mechanical engineering department under Will. When Harper resigned early in the Nichols administration, his position was filled by a newcomer to the college, Edmund B. McCormick.

Had Fairchild not been deposed, engineering would not have developed as quickly as it did. J. T. Willard, college historian and a staunch supporter of President Fairchild, stated for the record that Fairchild would not have supported the development of an engineering curriculum. Fairchild approved of basic shopwork and farm mechanics as appropriate for an agricultural college,

but Willard doubted that technical training in engineering would have won Fairchild's approval.

Another engineering-related achievement of Will's was the formulation of an electrical engineering curriculum. The name

Ozni P. Hood moved the shop curriculum in the direction of engineering education.

Thomas E. Will introduced engineering as a curriculum.

of the orignal engineering course was then changed to mechanical engineering to differentiate the two.

Carey's View of Will

James Carey, college historian, noting that many discussions of the Will administration fail to take a fair viewpoint, provided some perspective on the Will years:

> "We need to keep in mind that Thomas E. Will was president during the era of the most heated partisan political battles that both the state of Kansas and the Kansas Land Grant institution have ever experienced. It was a time when no central board of regents for higher education existed in Kansas, but it was a time when the board and the KSAC president were subject to extremely bitter partisan attacks from legislators, citizens, and editors. Today the latter would likely be punished under stricter libel laws. The state Board of Agriculture, the state Republican Party, and the state Populist party were all determined to dominate that 'College in Manhattan.' Especially did the Republicans and Populists battle viciously in debates, in newspapers, in the courts, and in many areas of higher education. For a short time the Populists controlled the state government, so for a time that party also—as was customary then—controlled K-State. The Kan-

sas Populists were more farm oriented than anything else, and as K-State was more farm oriented than anything else, the campus was thrown into turmoil as the Republican Party determined to oust the Populists both in the State House and at the College.

"In this upheaval, President Will kept a rather cool head and a steady hand on the helm . . . his division of the course offerings into four curriculums was a needed innovation here and it initiated the movement which led to our later schools and present eight undergraduate colleges . . .

"His administration originated the engineering curriculum at K-State and thus was instrumental in setting the stage to prevent that area of education from being taken over by the University at Lawrence."

Despite his many achievements in the short space of two years, Will's administration, which had come in by the grace of political victory was to go out the same way. The Republicans were successful at the polls in 1898 and those elections foretold the doom of the Will administration.

Will Followers Ousted

On June 30, 1899, President Will and four members of his faculty were fired by the board of regents. Until a permanent successor could be found, the board selected Ernest R. Nichols as acting president. A year later Nichols was named president. He had taught in the physics department for a decade and had been listed as professor of physics and electrical engineering when that curriculum was added by President Will in the last year of his term.

Professor Benjamin F. Eyer took over for President Nichols in physics and in electrical engineering. Eight years later when those disciplines were divided into separate departments, Eyer was chosen to head the department of electrical engineering.

The strong foundations built in engineering by early pioneers such as Professor Hood, and the curriculum development by President Will, gave engineering a sound foothold at the college. It was a basis the engineers would need in 1908-09 when the engineering curriculum became embroiled in a fight for its life.

The "Problem" of Engineering Interest

An increasing percentage of students at KSAC were choosing engineering as a course of study. Because of increased enrollments, more buildings were needed to house the engineering classes. The "problem" of a growing engineering curriculum at Kansas State attracted attention from the governor himself, E. W. Hoch. In April 1908, Hoch called a meeting of the heads and the regents of the three state educational institutions to consider the interrelations between the colleges. The goal was to develop a sound educational policy in regard to all three. When the group

met again in July they all agreed that each school was, at present, legally free to duplicate the work of the others without infringing upon any current laws. Duplication, it was felt, wasted taxpayer money. A suggestion which arose from the group was that the engineering course at Kansas State be confined to practical mechanical engineering, while professional engineering should be left to the state university. Judge A. M. Story, a Manhattan resident and president of the board of regents of KSAC, opposed the suggestion.

A learned proponent of engineering at the state agricultural school, Story presented an eloquent argument in favor of engineering which was published first in the **Industrialist** on October 10, 1908, and later published in pamphlet form.

He based his argument on the fact that Kansas State was a land-grant college established under the terms of the Morrill Act approved by President Lincoln in 1862. Kansas was granted 90,000 acres of land for the founding of an institution "related to agricultural and mechanical arts."

Story's Argument

> Story argued, "You will observe by a careful reading of [Morrill Act] that Senator Morrill had in mind the education of a certain class of people. It seems strange, in the light of the present day, that it was necessary, or considered necessary, to provide by law for the education of certain classes. However, when we look at the educational system as it was in 1862, and prior to that time, we find that there was no system of higher education within the reach of the classes or class that Senator Morrill sought to benefit. The colleges were of the old classical style. They educated lawyers, doctors, and ministers. At that time there were but four or five schools or colleges in the United States teaching engineering in any of its phases. Senator Morrill, himself not a college graduate, being a small farmer and country storekeeper, but a man of good judgment and great perception, saw the necessity of doing something that would permit and encourage the education of the industrial classes."

Story firmly believed that the wording of the Morrill Act decreed that, although classical education could be a part of the agricultural school, military tactics, agriculture, and branches of learning related to the mechanic arts must be taught. The act provided that the education must be liberal and practical, and not of the manual training grade. Story said that although shopwork was very essential and desirable, it by no means filled the requirements of the law. Senator Morrill himself became embroiled in a similar dispute in Vermont about 1890, when an effort was made to make the agricultural college in that state teach nothing except agriculture. Since that college also had been established under terms of the Morrill Act, it concerned Senator Morrill. He appeared before the legislature in Vermont to give

his interpretation of the original "Land Grant Act"—whether or not the state should or could direct that nothing could be taught in its agricultural college except agriculture. He said:

> "The object of the act of 1862 was to give a chance to the industrial classes of the country to obtain a liberal education, something more than was bestowed by our universities and colleges in general, which seemed to be based more on the English plan of giving education only to what might be called the professional classes—in law, medicine, and theology.
>
> "I would regard that as a revolution and subversion of the whole idea of the Land Grant Act of 1862 which has a much broader meaning. It included, to be sure, the idea that agriculture and mechanic arts were to have a leading or first position, but it included much more . . . I should regard any change from the original plan as a diversion of the fund and a revolution of the whole practical idea."

Story acknowledged that a great deal of criticism had been generated simply because the engineering curriculum had

Students in early farm engineering classes learned how to build, repair and operate farm equipment. (Courtesy of Mrs. William Johnson.)

grown so much in the agricultural colleges, especially compared to the growth of the agriculture curriculum. Story urged opponents of the engineering school to look at the direction of the country. Since the Civil War, he noted, the country had experienced tremendous commercial and industrial growth.

> "There is a large demand for young men graduates of engineering schools," he said. "As long as such demand exists young men will be provided to fill the positions: they will be in the drafting room; they will be engaged in the designing, the construction and the operation of machines and appliances. It is just as necessary in the interest of agriculture and

farming that some man make or construct a self-binder as it is that some man sit on the binder and operate it in the actual work of cutting the grain. One man must make a cultivator, another must hold the handles in the field. One man must survey the route where the railroad is built, another will raise the wheat that is shipped over the line and a mill will be constructed by other skilled men. It is the rankest nonsense for any man to say that all farmers' boys should be farmers. Develop the young man along lines for which he is adapted. If it be farming, he should follow that; if it be something else, he should follow that."

Arguing that K-State was not merely a college for farmers, but rather a college especially for education of the industrial classes, Story's strong support of engineering at KSAC helped measurably in the battle to retain an engineering school at the college.

Strong's Rebuttal for KU

No less eloquent than Story, but with opinions on the other side of the argument, was Chancellor Frank Strong of the University of Kansas. In a 103-page review of the educational system in Kansas, Strong attacked KSAC, its meager entrance requirements, and its engineering curriculum. As might be expected, the KU head believed that KSAC should offer only manual training in the mechanic arts. In his view, the designers would be taught at KU and those who might execute the designs would be taught at KSAC. Strong's viewpoint was a popular one in Lawrence, and declined in popularity as one headed west toward Manhattan, where Strong's view was widely held as ludicrous.

Although bills were introduced in the legislature in early 1909 with provisions for transferring all engineering work from Kansas State to KU, KSAC students and faculty were determined not to let those bills become law. Members of the legislature were invited to the campus, and a special train was hired to deliver them to Manhattan, with the nearly $1,000 cost paid for by student contributions. The enthusiasm of the students so impressed the legislators that they later decided not to remove engineering from KSAC.

The matter officially was dropped for a couple of years, but rumblings of discontent continued to be heard from eastern Kansas. The question of engineering at KSAC had not yet been settled for good.

Waters Enters the Fray

In November 1909 H. J. Waters took the reins as president of Kansas State, succeeding Nichols. Waters wanted a strong image for the college he headed and he set to work to improve the public's impressions of the "agricultural school."

Four years after his appointment the state legislature

passed a bill to create a State Board of Administration to provide management and control over the various state schools in Kansas. The move proved to be a good opportunity for Waters and for K-State. Using his persuasive personality Waters was able to turn the developments to positive advantage for the Manhattan school with personal contacts with various members of the new board.

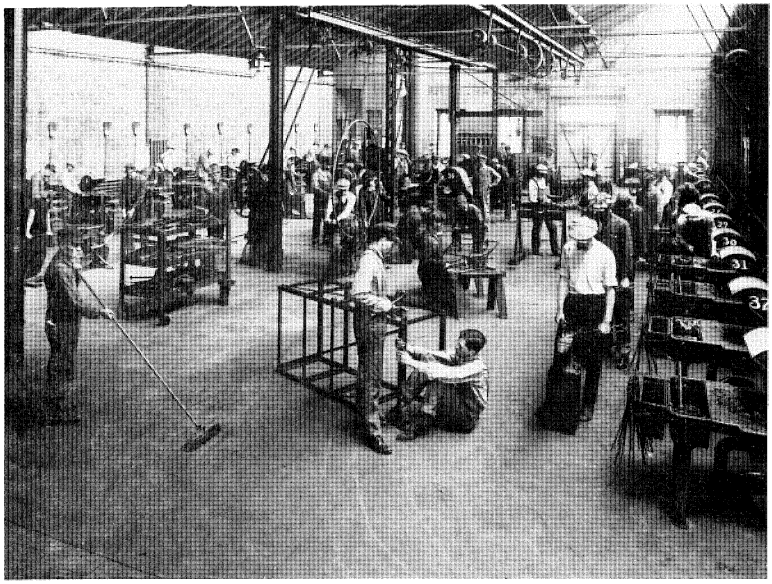
Instead of suggesting that K-State drop all engineering work—a development that might have occurred if not for Waters' strong personality and stalwart support for engineering —the board merely suggested that the two schools make some compromises.

The board requested that President Waters and Chancellor Strong confer and differentiate the engineering work at the two schools, eliminating as much duplication as possible.

This done, the board reported that:

> "The deans of the engineering schools at the University and at the Agricultural College, after the most painstaking consideration, suggested a course of study for their respective schools which should satisfy the critics of these two schools, because it furnishes a reasonable solution of the long-mooted and much-discussed problem of duplication in them."

The agreement between the two administrators called for KSAC to teach students engineering work especially relating to farm life, with KU preparing its students more especially for ur-



1914 shop classes followed President Waters' suggestion to teach engineering skills especially relating to farm life.

ban work. The board emphasized that "the lines of demarcation could not be drawn too closely, but in the main their respective fields are thus well defined."

Waters resigned the presidency in 1917 but remained a friend of K-State until his death in 1925. Explaining his pro-engineering position in a radio address for the Engineers' Open House he said:

> "To some the development of a great engineering school in an agricultural college such as you are now visiting may seem incongruous; the place, you think perhaps, for engineering instruction is a university or an industrial college in the city and not in an agricultural college supported by an agricultural people. In taking this view, however, we overlook the fact that agriculture has received its greatest impetus from engineering.
>
> "I am merely stating what you already know when I say that more agricultural progress has been made within the last 60 or 70 years than in all the time preceding that period, and most of that progress can be traced directly to mechanical invention and to the applications of engineering to the world's industries.
>
> "If modern agriculture were to attempt to discharge its obligation to the engineer I do not really know where it would begin or where it would end."

Housing the Engineering Classes

Even while the battle raged over which school would offer engineering to its students, K-State was busy trying to find space to teach a growing number of student engineers. Under President Nichols, some additions were made to engineering facilities, and more were added under Waters.

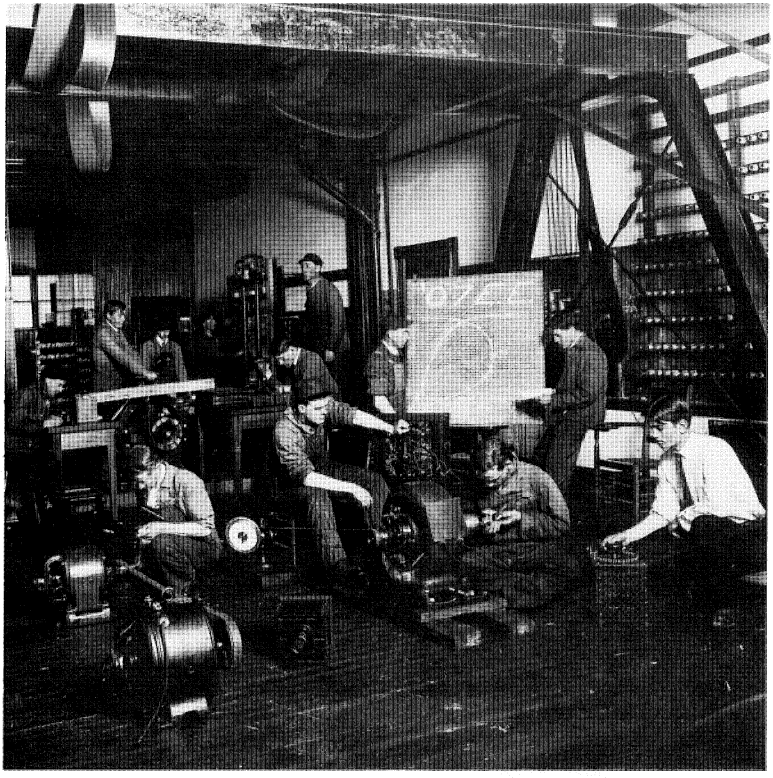
A wing was added on the north side of the wood shop in 1904-05 with an appropriation of $5,000. At the same time, construction was near completion on a building for the dairy department. In 1923 the dairy department building was reassigned and given over to the department of chemistry and was named Chemical Engineering Hall.

In 1907 an engine room addition was completed for $3,000. The following year, 1908, saw the construction of a south wing on Mechanics Hall for $15,000. This wing was designed to complement the wing on the north side of Mechanics Hall, and thereby restore symmetry to the front of the building. The wing was to provide room for a growing variety of machinery. The first floor was to be used for the carpentry and pattern shop, while the second floor was to be used for recitation rooms.

The Kansas Legislature had a number of KSAC supporters in 1907 and an appropriation of $85,000 was made for the construction of the east wing of what is now Seaton Hall. The building was to be known as Mechanical Engineering Hall. Groundbreaking took place in June 1908 and construction began the next year. The

building was completed in 1911 for $80,000, a savings of $5,000 less than the appropriation. The interior of the new addition was divided into three bays. The first bay, on the northern end of the building, contained the power laboratory boiler and coal- and ash-conveying equipment. The second bay was the location of the steam and gas engines, steam turbine, air and ammonia compressors, and switchboards furnishing power and lights to the college. The power transmission and materials laboratories were in the third bay. The latter was open from the basement to the roof, except for two floors of balconies, added later. This permitted the testing of vertical drives 30 feet or more in height and also the testing of columns 25 feet long.

Additional remodeling in the engine and boiler rooms was completed later at a cost of $15,000.



Electrical engineering students used equipment belonging to the physics department when this photo was taken in 1907.

Chapter 2

Organization and High Ideals

A central feature of the administration of President Ernest R. Nichols was organization. For engineering, organization meant not only that the division was given a dean, but also that the division itself was organized into several departments, accurately reflecting the numerous engineering options then open to students.

The board of regents authorized a committee to convert the organization of the college into deanships. The committee worked quickly. Over a period of only four months the committee was appointed, did its work, and disbanded. Included in the new Council of Deans was a position for a dean of mechanic arts. The new post supervised the areas of architecture and drawing, civil engineering, electrical engineering, mechanical engineering, and printing. E. B. McCormick was elected dean when the new post was created in 1908.

McCormick as Dean

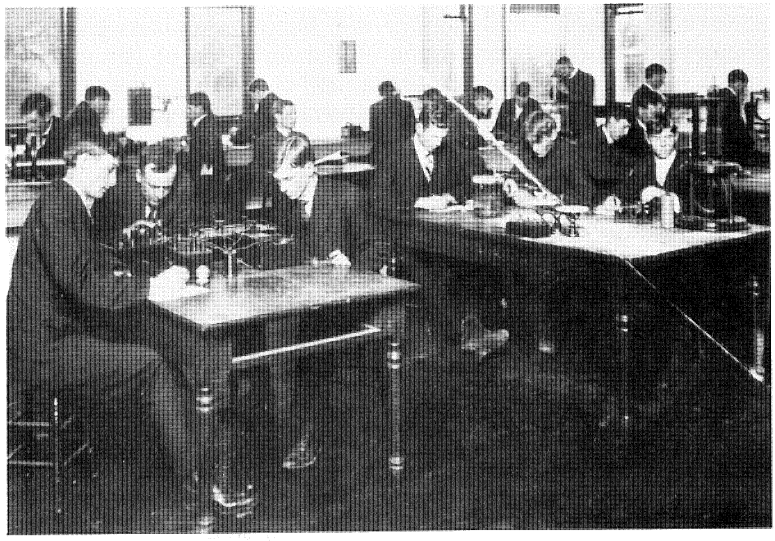
The naming of McCormick as dean was primarily a formality because he had been unofficially supervising the mechanic arts program anyway. He had been responsible for creating most of the departments in his division when he was head of the mechanic arts department. Exceptions were the departments of

Dean E.B. McCormick organized the mechanic arts program and supervised the work even before being named dean.

architecture and drawing and electrical engineering, which were already established when McCormick was hired.

Electrical Engineering Splits With Physics

Electrical engineering and physics had been one department since the beginning of electrical engineering work nine years



An electrical engineering class.

earlier. The reorganization into deanships caused the administration to divorce physics and electrical engineering.

Civil Engineering

When McCormick first came to K-State, just after the turn of the century, work in surveying had been given for years, most of it under the direction of the department of mathematics. In 1907 the surveying work was transferred to the department of mechanical engineering. That fall the board of regents voted to establish a curriculum in civil engineering.

One of McCormick's first appointments as dean was naming L. E. Conrad head of civil engineering work. When the department was formally organized Conrad continued at the helm as department head.

Curriculum

The board of regents in 1910 authorized a division of the mechanical engineering department into the new departments of applied mechanics and hydraulics, mechanical drawing and machine design, power and experimental engineering, shop methods and practice, and steam and gas engineering.

At the same time, the board authorized the establishment of

an Engineering Experiment Station, based on plans submitted by Dean McCormick. Under McCormick's plan, the dean of the division of mechanic arts was to be director of the Experiment Station. The board was familiar with assigning additional tasks to faculty members without increasing their salaries proportionately, so McCormick added this title to his others.

McCormick also was the official head of the department of power and experimental engineering. Because of his mechanical engineering background, much of the direction of the departments formed out of the old mechanical engineering department came from him personally, even though others were named as official department heads.

Hiring practices were simple in McCormick's time. If the dean wanted a particular person on his staff, he hired him on the spot. McCormick had the distinction of hiring two individuals who later became deans of engineering at K-State. He induced Roy A. Seaton, a young K-State graduate working in the math department, to transfer to engineering. He became the head of the department of applied mechanics and hydraulics before moving to the deanship. McCormick also hired Andrey A. Potter. He progressed to head the department of steam and gas engineering. When McCormick resigned in 1913 Potter was selected as acting dean.

McCormick had preferred working for the government to the academic life he led at K-State. He had taken a leave of absence in 1906 to do "expert work" for the Bureau of Roads of the U.S. Department of Agriculture in Washington, D.C. The lure of a permanent position with USDA proved strong, and he resigned seven years later to return to Washington as mechanical engineer and director of the test laboratories in the Office of Public Roads.

Potter Promoted

Potter came to K-State in 1905 as an assistant professor of mechanical engineering. For several years prior to his move to Manhattan he had been a scientific expert for the General Electric Company of Schnectady, New York. Potter quickly developed a liking for the Manhattan community and K-State in particular which was to continue throughout his life. Further cementing his ties to this central Kansas area, he married a local woman, Eva Burtner, a year after his arrival in the community.

Potter was born in Russia and attended school in his native country. In 1897 he came to America to study engineering at the Massachusetts Institute of Technology in Boston where he earned a B.S. in electrical engineering. His area of concentration had been thermodynamics and theoretical electricity. Soon after his graduation he began work for General Electric Co., and became fascinated with steam turbines. Research on superheated steam became a life-long project.

At G.E., Potter was so enthusiastic that he spent spare time thinking of better ways to do things and, as a result, made frequent contributions to the suggestion box. Since G.E. employees were compensated for money-saving suggestions, Potter found his salary augmented by his enthusiasm.

He brought that same enthusiasm to K-State.

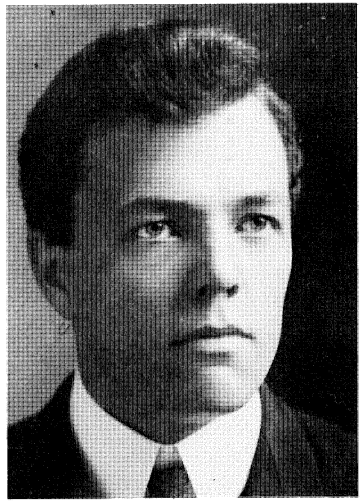
Potter was a diligent worker, preparing himself for future responsibilities by devoting himself fully to his current ones. In 1910 he was promoted to professor of steam and gas engineering. He was head of that department when he was chosen to serve as acting dean following McCormick's departure. A few months later he was named dean at a salary of $3,000 a year.

With McCormick's departure from K-State, the department of power and experimental engineering was dismantled and its courses distributed among other departments.

Semester System

As dean, Potter made a number of influential changes at K-State. One of the most wide-reaching was his role in changing KSAC over to the semester calendar system. The K-State admin-

Dean Andrey A. Potter was instrumental in changing the college over to the semester calendar system.



Roy Seaton graduated from K-State in 1904 and went to work for the mathematics department. (Courtesy of the Seaton family.)

istration had tried several approaches to the college calendar. For most of its history, the college's instructional year was divided into the three terms, but it had not worked out well. In the mid 1870's a two-term arrangement was attempted but it was not satisfactory either, so the college returned to the three-term system.

President Henry J. Waters, a progressive individual, ap-

pointed Dean Potter and Dean J. T. Willard of the Division of General Science as a committee of the Council of Deans to study the problem. Potter and Willard suggested that KSAC opt for the semester system, thus making it simpler for students to transfer credit to and from other colleges (since most others were on the semester system already), and simplifying the work assignment of students by the change.

Potter was described by his co-worker Willard as having "intelligence, energy, technical preparation and limitless industry [which] earned him the appointment of dean . . . and determined the outstanding success of his later executive work."

Potter had a knack for innovation. The semester system had been his suggestion and he made other innovations within his own division, some of which were admired and instituted campus-wide. One example was the practice of assembling personnel data concerning students. The instructors filled out information on a standard form which was adopted and used for a time all over the campus. War-time disruptions caused personnel shortages and the forms were abandoned in many of the divisions. Engineering, however, continued to make use of the personnel forms and in fact, in some departments expanded upon them. In later years, mechanical engineering developed a professional-looking personnel form, complete with student photos, for distribution to potential employers. The forms helped find engineering jobs for many graduates even at times when jobs were scarce.

Curriculum Under Potter

During Potter's tenure as dean the department of agricultural engineering was formed in 1913, and a department of flour-mill engineering in 1916. Flour-mill engineering was later discontinued (1933) but helped form a basis for the very successful Department of Grain Science and Industry in the College of Agriculture.

Division of Engineering

The name of the division was changed in 1917 to Division of Engineering, to move K-State into the mainstream with other colleges. A general engineering department was created for the newly required courses, Engineering Lectures and Seminar.

War Training

When World War I broke out the country wanted to mobilize all its resources as effectively as possible. Part of the plan was to mobilize the facilities at universities, colleges, and other schools for the training of soldiers. In 1918 Potter was appointed educational director for the eighth district of the Committee on Education and Special Training of the War Department. A major part of his responsibilities was to set up and supervise the educational

effort in Nebraska, Iowa, Minnesota, North and South Dakota. Later Kansas (including Kansas City, Missouri) and Colorado were added to his responsibilities.

In 1918 Dean Potter expanded the college shops to provide technical mechanical training to the military. Under three detachments, nearly 1,300 men were given crash courses to become auto mechanics, blacksmiths, electricians, radio operators, machinists, and carpenters. They lived in seven-year-old Nichols gym.

The board of regents approved an arrangement whereby Dean Potter devoted half his time to the Committee on Education and Special Training and the other half to K-State. His salary was reduced to $200 a month by the college for as long as he continued to work for the War Department.

Various individuals filled in for Potter when he was away on government business, which was a good part of the time. One phase of his work for the war effort involved making a special study of the training of drafted men in the various educational institutions throughout the country. That project alone accounted for a great deal of travel.

Although Potter was not getting rich working for both K-State and the War Department, he was making a name for himself as a top-notch administrator. His efforts were noticed by many. The **Industrialist** commented:

> "As one of only two men in the United States in charge of more than one educational district for the War Department Committee on Education and Special Training, A. A. Potter, dean of engineering in the Kansas State Agricultural College, has made a brilliant record for efficiency in war work."

Potter had made a great many friends on campus, in the community, and throughout the state. Most of them had mixed feelings when, on August 31, 1920, Potter concluded his final day at Kansas State and prepared to move on to the deanship at Purdue University. Potter's supporters were happy that he was moving to a larger school with additional opportunities for professional growth, but sorry to see him leave K-State. When he left, however, he did not leave his memories of K-State behind. His knowledge of his successor, Roy Seaton, led Potter to recommend him for a special assignment in the second World War.

Seaton Honors Potter

Potter and Seaton held each other in mutual admiration and respect. With his colleague gone to Purdue, Seaton proposed that KSAC confer on Potter the degree of doctor of engineering and the presentation was made as a feature of the college's commencement exercises in 1925. It was the first of 10 such degrees he would receive in his lifetime.

Potter's Suggestions to Students

Potter's philosophy of hard work and dedication to his profession was one that he recommended to the students with whom he came in contact. In 1932 in a talk to prospective Kansas State engineering graduates, Potter pointed out that continuous study is a requisite to success in life. He told the students they must be able to utilize the opportunities they were given. He said the biggest mistake that college graduates make is the fact that they sell their books immediately upon graduating.

As dean of the largest engineering college in the country at Purdue, Potter was in a highly visible spot. Had he performed badly his mistakes would have been easily noticed. Instead he used that high visibility as a showcase for quality engineering. Many credit Potter with setting the direction for K-State's engineering program by providing an example of high ideals and quality work.

In a letter to the **K-State Engineer** in 1934 Potter recalled his years at K-State:

> "On January 1, 1905, or thirty years ago beginning the first of next month, I took up my duties as assistant professor of mechanical engineering at the Kansas State College, and for over fifteen years it was my privilege to develop many friendships among the students and faculty of your institution. I shall always have a warm spot for Kansas State College and feel that I am greatly indebted to your institution for such success as I have had in my profession.
>
> "When I came to Kansas State College, the engineering staff consisted of a professor of mechanical engineering, who was superintendent of shops and of the physical plant of the college and assistant professor of mechanical engineering, an assistant, and four shop foremen. The shop foremen did practically all of the repair work of the institution. Electrical engineering was taught by the head of the physics department, who with the assistance of one person carried on all of the instruction in physics as well as in electrical engineering.
>
> "When I came to Kansas State College I had to teach every subject in the mechanical engineering curriculum with the exception of shopwork. In addition to this I gave lectures on practical electricity, having had some experience with General Electric Company. The classes were small and the relations between students and faculty were most intimate. I was always impressed with the sterling qualities of the student body of Kansas State. Last year when it was my privilege to serve my profession as president of the American Society of Mechanical Engineers I met large numbers of my former students in different parts of the country. So many of these held important positions in the purely engineering as well as administrative branches of industry and a considerable number are considered leaders in their profession. What

Kansas State lacked in the early years in equipment it made up in the quality of its students and in the superior staff members.

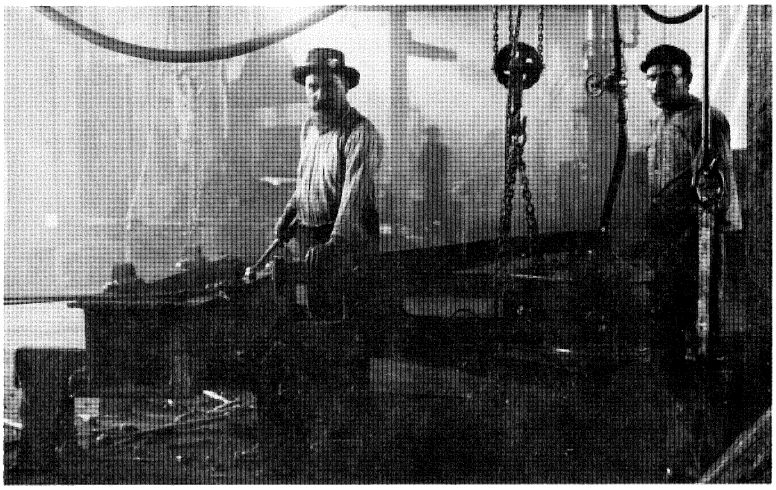
"It pleased me greatly to know that a former student and colleague of mine at Kansas State was president of the Society for the Promotion of Engineering Education and one of the most outstanding members of the engineering teaching profession. Another is head of one of the most important research laboratories in the country. Still others are holding important posts in industries, public utilities and public works.

"Kansas State is to be congratulated upon its record of accomplishment during the past fifteen years."

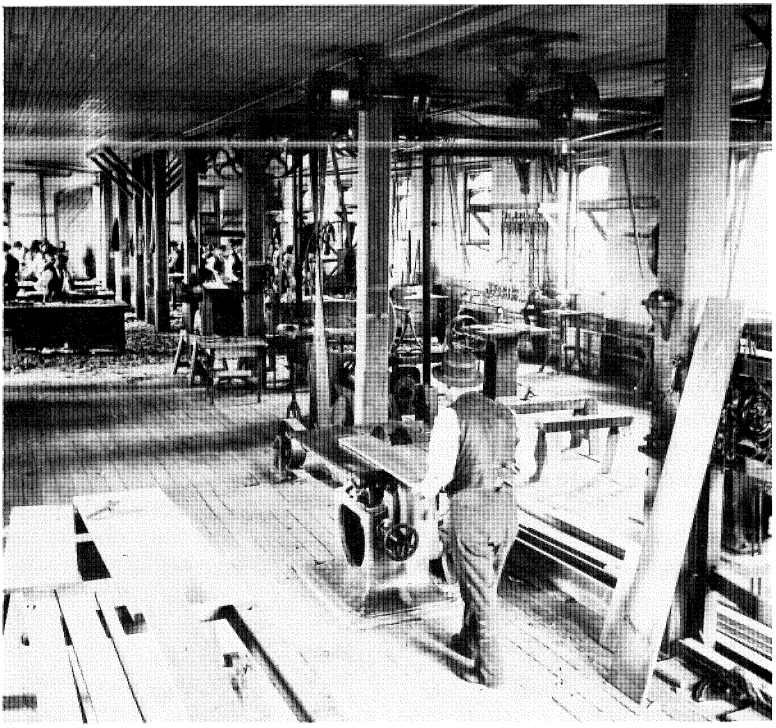
Having been born in Russia, Potter was able to look at his adopted country with a perspective different from that of many Americans. He failed to understand criticism of American education by Americans. He termed such comments unfair and unrealistic.

"Some attribute America's greatness to its natural resources, not realizing that these have never been more than 20 percent of the world's, and that they have been greatly depleted by the two world wars since 1917," Potter commented. "Actually, American achievement is largely the result of the constructive efforts of its idealistic, creative, and hard working people, encouraged by a government which stimulated the development of an economic system based upon the individual's ability, and with rich rewards for creative accomplishments. Our economy has succeeded not only in filling material needs, but, for the first time in human history, has been able to spread the benefits of science and technology to its entire population. The people of our country are most fortunate to have had throughout its history a form of government, which is based on truth, respect for the individual, and maximum emphasis on ethical and spiritual values."

Potter was an ardent supporter of land-grant institutions, believing that they democratized higher education by emphasizing education for all the people and the relevance of all learning to a better life. He once commented that land-grant colleges contributed richly to the permanent welfare of our people through the services of their graduates and staffs; and they should receive much credit for the happy homes of so many of their graduates.



The various shopwork classes were an integral part of the budding engineering curriculum at K-State.



Chapter 3

Growth and Development

When Roy Seaton came to the state college in Manhattan as a student just after the turn of the century, there was much open land in the sparsely settled town. On cold, windy winter days he had a bone-chilling walk to class because he roomed at Eighth and Humboldt—in what is now known as the Ulrich-Dary House (listed on the Register of National Historic Sites). Mrs. Ulrich lived there alone at the time and needed someone to help her manage the house and grounds. In return for his room, Seaton stoked the coal furnace, mowed the lawn, shoveled the snow, and did odd jobs around the house. Seaton took his meals at a boarding house nearby and later married the daughter of the woman who ran the boarding house.

Upon his graduation from the mechanical engineering curriculum in 1904, Seaton hired on at K-State as an assistant in the mathematics department. Two years later he was promoted to assistant professor of mathematics and was quickly snapped up by an eager engineering department.

Dean E. B. McCormick told one of his young faculty members, A. A. Potter, about Seaton, thinking Seaton would make a good addition to the engineering faculty.

McCormick said, "There is a young man who graduated from the college in 1904 who is teaching in the mathematics department and who is now working for his master's degree. How would you like to take him on as a graduate student and give him a course in steam turbines?"

"He was my my only [graduate] student," Potter recalled. "I think I gave him the highest grade I could give him—90, and our friendship continued for a great many years—ever since that time."

With engineering in its early growth years, Seaton grew with the department. When mechanical engineering was divided, Seaton was promoted to full professor of the new section, applied mechanics and hydraulics. The administration decided to give Seaton two years leave of absence without pay to gain additional engineering education. Because both McCormick and Potter were graduates of M.I.T. they exerted some friendly pressure encouraging Seaton to head for M.I.T. He spent one year at

M.I.T., graduating with honors, and then followed up his schooling with a year in industry with General Electric Co., developing some of the earliest compressors which were the introduction to the supercharger.

Washington and War

Campus life was proceeding smoothly for up and coming engineers until war reared its head in 1917. Suddenly Potter, who had become dean after McCormick's departure, was spending most of his time in work for the War Department. Several of the engineering faculty entered the military, Seaton included.

Seaton was appointed a captain in the ordnance department of the Army. Engineers were in particular demand during the "war to end all wars" when even such mechanical skills as driving a car or truck were not common. Seaton's skills went beyond the ordinary, into what many of the military called "impossible."

Paris was being bombarded by "Big Bertha" cannons and the Army wanted to know where these were based so they could put them out of action. While military personnel secretly were scouring Europe for the location of the big guns, Seaton mathematically determined their location based on the trajectory of the shells. The problem had been that the shells were explosive and obliterated all indications of their line of flight. Luckily, one shell was a partial dud and this one enabled Seaton to make his calculations.

"A lot of West Point men came down to watch us work," Seaton later recalled. "They didn't think it could be done."

Nevertheless, Seaton and his assistants had pinpointed the location of the "Big Bertha" within 24 hours after being given the assignment.

After a few months in Washington, Seaton was made responsible for the safety and satisfactory mechanical functioning of all designs of artillery ammunition for the Army. He improved the method of calculating stress in projectiles, and the resulting modification of the design helped bring stresses during the firing of the shells to within safe limits. This prevented premature detonation which had too often resulted in loss of life to American gun crews. Improved shape and design resulted not only in greater safety and reliability, but also in increased range.

Flu Epidemic

While Seaton was on assignment in Washington a flu epidemic swept the nation. Seaton, his wife and baby son all were hospitalized victims of the epidemic. Seaton's wife and new-born twins died and soon after he returned to Kansas State with his toddler son.

More Construction

Dean Potter, foreseeing increasing engineering enrollments following the end of the first World War sought appropriations for the construction of the central and west sections of the engineering building. KSAC engineering had faced a history of crowded conditions and the early 1920's looked to harbor more of the same, Potter thought.

Responding to a definite need, the Kansas Legislature appropriated $50,000 for the years 1919-20 and $90,000 for the years 1920-21. Total appropriations for the construction of the engineering building came to approximately $200,000.

The west wing of the engineering building was to somewhat resemble the east wing in its outward appearance. It would have a basement and two floors. The central section of the building was to have a basement and three floors.

And so the building that was later to be named Seaton Hall began to take on its final shape and the man for whom the building would be named was about to become dean.

A New Dean

Potter once commented that if it had not been for L. E. Conrad's stubborn refusals to become dean of engineering, neither he nor Seaton would have been deans of engineering at K-State. Conrad was an excellent teacher and a beloved member of the faculty. He had been petitioned by the administration to become dean when McCormick left and again when Potter left for Purdue. Conrad was adamant, however. He said he did not want to "waste his life doing dean's work."

Potter was called to Purdue, Conrad once again declined the dean's post, and Seaton was the next logical choice. Seaton had had a close, productive relationship with Potter and was an able administrator. By the time he was selected as dean, he had been associated with K-State for almost 20 years.

Seaton settled quickly into academic life, remarried, and went to work organizing and expanding engineering at K-State.

Faculty pay

One of the major problems facing Seaton in the early years of his administration was the low pay for the engineering faculty, especially when compared with salaries the same individuals could command if they entered industry. Although faculty salaries had always been notoriously low, the exceptional demand for engineers in post-war America made the situation even worse. President Jardine was exceptionally able when it came to extracting money from the legislature. Seaton pressed the president with the problem and they were able to bring about a modest pay raise for the faculty, although salaries never compared with those in industry.

President Jardine

Relations between Dean Seaton and President Jardine were amicable. Seaton credited Jardine with being largely responsible for the 1921 additions to the engineering building and for obtaining funds to equip the addition.

Jardine had stated publicly that be believed that engineering and agriculture were mutually necessary at KSAC and that training in both should be given at the college.

He supported his views with funding: The number of engineering teachers increased from 32 to 51 during his tenure and salaries and maintenance budgets were increased as well. Jardine was a common-sense type person and he used that approach for obtaining money from the legislature. Despite his ability to increase salaries somewhat, the problem of low faculty pay continued to plague the engineers. Faculty made real financial sacrifices in order to stay on and teach—they could have earned more money working in industry.

Open House

The spring celebration known today as All-University Open House began in 1920 when a few enthusiastic engineers wanted to let the public and the rest of the college know what engineering was all about. At the time of the first open house, controversy continued over whether a state agricultural school should offer engineering at all. Despite the controversy, K-State opened its doors to the public for its first engineering open house in December 1920. The first open house suffered from a lack of organization and the various divisions spread the event out over a period of several days. The architects' portion of open house was first, with the public invited to view sketches and drawings in the department during a two-day period. Then the departments of mechanical, electrical and civil engineering opened their doors, offering displays of work and equipment.

The first open house was primarily a student effort. The young engineers, proud of their school and of their major fields of study, wanted to show off their efforts and the engineering school at the same time. With no financial backing from the administration the students inaugurated an "Engineers' Day" which became the fore-runner of the annual Engineering Open House, and eventually, of All-University Open House.

The next year, the main attractions of Engineers' Day were homecoming and the dedication of the new engineering building (later Seaton Hall).

An engineers' parade was held on Friday, featuring several engines built by the students, and mobile farm machinery. The engineers' parade had once been an annual event but had been discontinued during the war years.

The 1921 open house marked the beginning of the annual

event in a well-organized, coordinated manner. The efforts of the entire engineering division were turned toward entertaining the public and demonstrating the work of the engineers. Support for open house was high and enthusiasm for engineering was unflagging among students and alumni. The completion of the new engineering building gave them a rallying point—now, certainly, engineering had come to stay at Kansas State.

In 1922, in what would have been the third year of open house, students and administrators were not able to have a Farm and Home Week (the annual meeting of farm men and women at K-State). It was decided that the Engineers' Day could not succeed without the visitors drawn by the Farm and Home function so no engineering open house was held that year. Farm and Home Week returned the following year and Engineers' Day was a part of the February event once again.

Featured speaker was former college president H.J. Waters. Waters, long a supporter of engineering at the agricultural college, reiterated his views at the open house:

> "If in the interest of economy, the suggestion should be made to you that Kansas ought to support but one engineering school, the Kansas farmer's answer should be, 'In that case, since the farmer is the greatest consumer of the engineers' output; since his boys supply a majority of the students in such schools, and since the farmers pay most of the taxes for support of state institutions, the state's engineering activities should be centered at our school, the Kansas State Agricultural College, and not elsewhere.' "

Following Waters' address, the engineers opened their building for inspection and each department offered displays of its equipment and examples of its work for viewing.

The 1920's were important, formative years for engineering's open house. The prestige and importance of the event grew each year. The administration decided that open house could provide a good opportunity to demonstrate to high school students what might be expected from an engineering education. Recruitment of high school students was given a high priority and enrollment increased during the 1920's. Some of the displays at open house were particularly fascinating for the younger set. A favorite was the "Drunkard's Delight," a bottle seemingly suspended in mid-air, pouring liquid continuously into a pail. Other displays which drew a great deal of interest were the artillery exhibit, a telephony lab, and a box, set on a table with a student's head peering out the top, and a gaping vacancy where one expected his body to be. Labeled "all head, no body," the display drew quite a bit of attention.

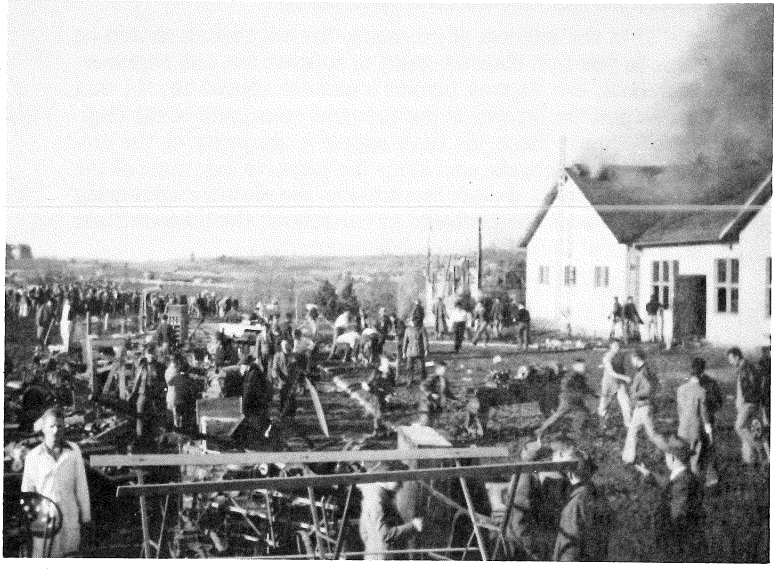
In 1929, the name Engineers' Day was scrapped in favor of Engineers' Open House. For the first time, open house was held the week of St. Patrick's Day, divorcing the event from Farm and Home Week. The event had grown to such proportion

that a full committee of students and faculty was chosen to put on open house.

St. Patrick, the "patron saint of all good engineers," was chosen for the open house theme. St. Pat's Prom was added to the festivities, taking the place of the Sigma Tau's "Slide Rule Slide" dance. The selection of St. Pat and St. Patricia were a part of the prom, along with a just-for-fun male beauty contest judged by coeds.

Steel Ring was formed that year and stated in its constitution that it was organized for the purpose of furthering the work of open house. A major contribution of Steel Ring was its awarding of a cup to the department whose display was judged best. This element of competition was instrumental in improving the quality of, and interest in, the exhibits.

An unscheduled portion of the 1941 open house drew a lot of attention and proved costly for the engineers. On March 15, 1941, about a half hour before the open house was to end, a fire was



Fire was an unscheduled part of the 1941 Open House.

sighted in the frame building housing the small animal laboratories. That building was only about 30 feet north of the agricultural engineering instruction and laboratory building. Both buildings were of wood construction—WWI Student Army Training Corp barracks converted to classroom use.

The college whistle blasted the air as dense black smoke poured from the burning building. A crowd of several thousand people gathered to watch and to offer help. Fire fighting crews were quickly formed to fight the fire, but it became obvious that the small animal labs would be a total loss. Streams of water

were directed to the roof and sides of the engineering building but the roof caught fire. Because most of the equipment normally housed in the building had been moved outside for open house, the fire fighting volunteers had less equipment to carry out. Spectators formed lines and carried out lighter material and equipment from the building while others moved the workshop machinery, the laboratory testing stationary engines, and other pieces of farm machinery out to open spaces, safe from the fire. By the time the fire was brought under control, half of the agricultural engineering laboratory building had been destroyed or seriously damaged. The department suffered a loss of approximately $3,500 in tools, farm machinery and equipment. The cause of the blaze was never determined.

Long before the days of television, when few people owned a radio, rural Americans were starved for entertainment. With that perspective it is easy to understand why people from neighboring towns and much of the Manhattan population flocked to engineering's first open houses. Alley Duncan, first a student and later a professor in engineering, recalled people jammed together trying to watch the engineers' clever displays. Frying hamburgers on ice and electrocuting hot dogs were favorites, but there were many more and the people seemed to love them all.

Each year the engineers drew big crowds, all eager to see what new wonders were in store for them through the magic of engineering. The atmosphere must have been one combining the festivity of a huge party with the excitement of a fair, all displayed with theatrical aplomb.

Except during World War II, the magic of open house continued to excite the imagination of eager visitors.

Construction Projects

During his long tenure as dean, Seaton personally supervised the construction of not only the engineering building which later would bear his name, but also a myriad of buildings all over the campus.

And despite the fact that the engineers were pleased to see the construction of their new engineering building in 1920, it was a case of too little too late. In the November 1920 issue of the **K-State Engineer**, C. F. Baker, professor of architecture, gave a detailed explanation of the design and proposed use of the new building, noting that the division of engineering "will have outgrown the new building before even moving into it."

The building was designed and planned by the department of architecture, after the requirements had been worked out by each of the departments within the division of engineering. Still, more room was needed.

Completion of the building was delayed because of labor problems. The delay in finishing the building caused newly-mar-

ried Roy Seaton and his bride to delay their honeymoon. Seaton hesitated to leave Manhattan with the construction of the engineering building in limbo.

Before the completion of the new building, instruction was given anywhere an empty space could be found. A report prepared in 1918 for Potter to use to convince President Jardine of the need for more space presented a convincing argument. The report (also intended to convince the board of regents and the Kansas Legislature) said that the division had given instruction to more than 1,800 students in 1916-17, the last normal year before World War I. The report estimated that when the war ended enrollments would burgeon and the division would be cramped and unworkable.

Eight wooden buildings were constructed during the war and six of those were designated for the over-crowded engineering division. The buildings provided a roof and little more. Described as fire hazards, they nevertheless continued to be used for lack of anything better.

The central and west sections of the engineering building were completed in 1921. Potter had originally requested an appropriation of $125,000 for the project. Between the time of the legislative appropriation for the building and the time of letting

During the 1920's the street in front of the Engineering building was a dirt road. (Courtesy of the Kansas State Historical Society, Topeka.)

the contracts, the cost of building increased so greatly that it was necessary to omit part of the planned addition.

Engineers were proud of their new building and many campus observers believed the new structure to be the most fire-resistant building at K-State. A member of the Kansas Senate termed the building, "one that would last forever."

The architecture department moved into the third floor of Engineering Hall in 1921. For the first few years of the department's existence, work had been carried out in Anderson Hall.

Seaton established landscape architecture in 1924 and architectural engineering in 1925. A chemical engineering curriculum was added in 1924. Landscape architecture was discontinued in the late thirties. Also, in 1937 an industrial arts program was established and continued until 1958.

K-Hill

Perhaps because the "KS" on Prospect Hill was so closely identified with school pride, no other campus engineering topic seems to engender so much folklore and legend as the construction of the two concrete letters. For instance, estimates of the number of students helping to construct the "K" in 1921 range from 500 to 1,000. However many really were there, alumni recall them as a rowdy and enthusiastic group.

The idea for a "K" had been tossed around for several years in the time before 1921. One class even went so far as to build a "K" from loose rock. The loose rock did not last long so the next plan was for a reinforced concrete letter. The Civil Engineering Society took the lead in promoting construction of a permanent letter. The General Engineering Seminar voted funds sufficient to build it. The work was to be done with the freshmen and juniors excused from classes in the morning and the sophomores and seniors in the afternoon. Apparently it did not work out quite according to plan. Students met in Aggieville and marched to Prospect Hill led by a brass band. Addison C. DePuy, an early supporter of the project, recalled that the effort started off according to plan, but it turned into a three day holiday. Nearly all the students and many faculty members worked with their sleeves rolled up building the "K" on the slope of Prospect Hill. DePuy recalled hauling form lumber to the top of the hill and making some changes in the concrete mix to keep it from running down the hill before it had time to set up.

In the morning workers cleared the ground, excavated the area for the letter, and set the forms. In the afternoon the reinforcing was set in place, and by early afternoon the first batch of concrete was poured into the forms. By that evening the "K" was practically completed. On the following day the finishing work was done by men who volunteered to work.

Alumni recalled that on the first day of the project, rain was pouring down, drenching the participants.

Construction cost $350 for the 80 by 60 foot by one foot deep letter. It was anchored by concrete lugs and reinforced by wire netting. The original construction used 210 sacks of cement and about 50 cubic yards of sand. The concrete was whitewashed and then lined with luminous paint. In the center of the letter stu-

dents inset a bronze star in memory of the K-Staters who died in World War I. The star is no longer visible.

Enthusiastic students wanted to add an "S" immediately but nothing was done until Sigma Tau organized the project around 1930. Increasing costs were a problem even in the thirties, and the "S" was estimated to cost $500. Raising the money became a major effort for engineers. The fraternity sponsored tag day, movies, boxing matches and promoted donations from everyone they could think of—faculty, businessmen, and $125 from the Seminar treasury. They finally succeeded in raising enough cash.

Warren P. Lyttle recalls participating in construction of the "S" as one of his favorite memories of his college days.

"Extending large steel cables over the top of K-Hill, and anchoring on the other side, helped to keep the letters from sliding down into the river. Moving rock, sand, cement, and making forms to hold all of it was a big experience for all of us," he recalled.

Before the students could start work on the letter they had to repair the road, clear away the rocks and brush and haul cement to the top. The city fire department pumped all of the necessary water to the top of the hill and that saved a considerable amount of student labor.

At various times students have lobbied to add a "U" to the "KS" on Prospect Hill. The land on which the letters were constructed changed hands several times, however, and no clear agreement assuring the engineers the right to maintain the letters could be found. A movement to acquire the title to the land was begun by Sigma Tau in 1937. Sufficient funds were not available to buy the entire 28-acre tract, so proceedings were begun to have the section set aside as a park. This was not successful and a practical solution was agreed upon in the spring of 1946.

In exchange for a 220-foot strip of land, including enough space for the "C", later a "U", plus easement rights permitting entrance at any time, Sigma Tau members agreed to survey and subdivide 30 acres of property for the landowner. This was completed before the end of the 1947 school year, after many Fridays and Saturdays of work.

In an all-school assembly on October 16, 1947, the deed was presented to the college by Professor L. V. White, faculty advisor to Sigma Tau and consistent promoter of the project for 10 years, President Milton Eisenhower accepted for the college.

Special observances have added to the mystique of the "KS". In 1947, as a homecoming project, Sigma Tau lit up the letters for three hours. From seven until ten p.m. the illuminated letters served as a symbol and guide to returning alumni.

The letters were lit through an arrangement with the Military Science department. A search light was beamed from Sunset Hill across Manhattan to the letters.

"K-Hill" and the construction of the "K" in 1921 and of the "S" in 1930 were sources of alumni pride. (Courtesy of the *K-State Engineer.*)

Sure-footed engineering students made annual treks to whitewash the "KS" letters. (Courtesy of the *K-State Engineer.*)

In the early 1950's the hill was lit to spark the beginning of engineers' open house. Twelve athletes, each running about a quarter of a mile, carried a lighted, oil-soaked torch from Engineering Hall to K-Hill where more torches lit up the hillside for several hours.

It has been almost a tradition for the "KS" to be changed to "KU" just before the two schools play each other in football. Lyttle recalls that when he was on campus in the thirties it was the engineers' responsibility to guard the campus from KU students.

"Each year, guarding the K-State campus before football games was a must for all of us engineers," he said. "The college whistle was used to warn us of KU men coming. One night a KU car tried to run through a street I was helping to guard." Lyttle said that the occupants of the car left Manhattan in a hurry with "very little hair on their heads and sore behinds."

The campus may have been protected from the KU fans, but the letters on Prospect Hill rarely were. It then became the responsibility of the Sigma Tau pledges to whitewash and clean up the letters.

Sure-footed engineering students armed with rakes, brooms, and containers of white cement, lime, and water, began making annual treks to Prospect Hill on the Kaw River to "whitewash" the letters "K" and "S" on the hill.

The Dean's Office

During the Seaton years the dean's office was a gathering place for students with problems. They might not have sought out the dean on their own, but the dean sought them out. Seaton had his methods of monitoring what was going on with the students. Each professor was required to give at least one examination during the first few weeks of the semester. Low grade slips, if merited, then were sent to both the student and to the dean's office. Class attendance was also monitored. Students who accumulated several low grade slips or numerous absences were called to talk with the dean to determine the problem.

Seaton reminisced in later years that often those students who had trouble in engineering were those who did not want to be in engineering at all. He often counseled parents to respect their children's desires so that they would be happy in their career fields. He commented that he had influenced students to transfer out of engineering into many other fields—not because he was unenthusiastic about engineering—but because he wanted the students to be in the field they wanted for themselves.

Teaching Excellence

Although Seaton was a perfectionist about his own activities, he insisted that teachers should be reasonable in their expectations of students. He used low grade slips to monitor his faculty as much as the engineering students. If many low grade slips came out of one teacher's classes, it was a red flag to Seaton that perhaps the problem was not with the students but with the instructor. If an individual instructor issued too many low grade slips he might find himself summoned to the dean's office for an admonition to stop expecting miracles from the students.

Despite Seaton's desire to provide students with every opportunity to improve themselves after having had a low grade slip, there was one transgression with which he had little patience—class cutting. He believed that in every class there should be something going on that a student should not miss.

Although Seaton was certain to be wrathful over class cutting, many students called to his office would have preferred to talk with him than with his secretary, who often dealt with students summoned there.

"Dean" Schwensen

One of the most unforgettable women in engineering was not an engineer at all. Although the official titles of the positions she held were traditionally "women's" jobs, Louise Schwensen brought something extra in terms of dedication to her work and in turn, earned a spot in the memories of most students who met her.

Miss Schwensen started her K-State career in July 1914 in the Department of Steam and Gas Engineering when A. A. Pot-

ter was dean. When Seaton became dean in 1920 Miss Schwensen moved into a new post as an aide to Seaton. Throughout nearly 34 years in engineering, Miss Schwensen had a variety of job titiles including secretary and clerk in the engineering division.

But the title the students gave her is the one most of them remember—"Dean" Schwensen.

When a student was called to the dean's office to discuss an absence or a bad grade, most of them hoped they could get in to see Dean Seaton or Assistant Dean Durland. Both were considered "softies" compared with "Dean" Schwensen. Pity the unfortunate student with a poor excuse called to the Schwensen office. One alumni from the 1930's recalled that "You could reason with Dean Seaton but Miss Schwensen wasn't interested in excuses."

Despite her gruff exterior, Miss Schwensen loved the college, engineering, and its students. She helped students when she could. She was giving some students a ride into Manhattan when she was in an auto accident that caused her death. It was a cold January morning near the Manhattan airport. Miss Schwensen and three students—Junction City residents like herself—were enroute to the college. Her car slipped on the icy highway and collided head on with a truck.

She was hospitalized in serious condition and died three weeks later, February 16, 1948, as a result of the head injuries she incurred in the accident. The list of pallbearers at her funeral read like a "Who's Who" of KSU engineering: Dean Seaton, Assistant Dean Durland, Professors L. E. Conrad, R. G. Kloeffler, C. E. Pearce, and T. A. Southers.

Rules

Throughout his career, Seaton was a stickler for rules. If people did not like a rule, he suggested they work to get it changed. Until it was amended, though, Seaton insisted that rules be followed.

In his own case, one of the hardest rules to follow was the one that specified no smoking on college grounds. Mrs. Seaton recalled that the dean used to go home for lunch each day so that he could smoke. Sometimes she would drive Seaton back to the campus, and as soon as he got to the campus gate he would put out his cigar. M. A. Durland, who also smoked, said it was second nature to throw away one's cigar or cigarette upon reaching the campus gate.

Professor Joe N. Wood of machine design and later mechanical engineering encountered Dean Seaton's attitude toward rules one day when his office-mate had locked him out and gone home.

"It was about five o'clock and my office partner had locked our door and my coat and keys were still in the office," Wood recalled. "I started downstairs to look for the building custodian—he was always around somewhere in the building at five. I looked up over the transom of the dean's office and saw that the light was on. I thought he might be able to help me. I went over and gently knocked and the dean came to the door.

"I said, 'Dean, would you loan me your keys?' Well, that was a bad thing to say. Really gruffly he said, no, but then he brightened up and said, 'I will walk upstairs and let you in. It's against the rules of the college to loan anybody your keys.' That sort of shows the way he operated. He went by the rules but he was fair."

National Activities

Throughout his career, Seaton was not only interested in the improvement of engineering education at Kansas State, but also interested and involved in upgrading engineering education, research and professional competence on a national level. One of the organizations he joined for this purpose was the Society for the Promotion of Engineering Education. (Later named American Society for Engineering Education.) Seaton joined the organization in 1912 and served as national president in 1932-33.

As chairman of the ASEE Committee on Engineering Research, he made a survey in 1930 of all the engineering research activities of the engineering colleges of North America. It was the most complete study of the subject which had been attempted up to that time. It led to a series of conferences which helped to promote and upgrade research in engineering schools.

He concluded from the study that "it would be highly beneficial to engineering research if the work were more definitely organized in many of our institutions."

Seaton believed that it would be "highly desirable" for all engineering schools to regard engineering research as a normal function of their faculties. Research is valuable, he believed "both for the results obtained in extending the boundaries of knowledge of fundamental principles and their applications, and for the effects of such research work in developing students and faculty members."

He later wrote that research in engineering colleges benefitted four groups: the students, the instructors, the industries and the general public.

"The general public is doubtless the principal beneficiary, since the benefits to the other groups are ultimately reflected to the public in new and better services and products and in lower costs. Students benefit from the research directly, through training in research methods and through the

> inspiration and motivation which contact with research brings. They also benefit indirectly, through better teaching which results from the stimulation research brings to the instructors . . . With the development of graduate work in engineering colleges, the participation of students in research work assumes a somewhat different aspect. The graduate student brings to his research work a greater maturity and a fuller training than did the senior student. . . . Conditions are . . . much more favorable for real research work and some really valuable contributions to our knowledge may occasionally [result]."

Despite his own interests, in Seaton's time graduate study meant at most a master's degree in engineering and budgetary problems severely limited research.

K-State spent the early years of its development concentrating on providing a quality undergraduate education. A dearth of extra personnel and equipment prevented the faculty from delving too deeply into research or graduate education. A couple of factors helped the picture to change. First, Charles Scholer and his highway materials research made an impact nationally and abroad, thereby increasing interest in research in engineering. Secondly, Dean Seaton arranged for six graduate research assistantships to be funded for 1929-30. With that, more people became interested in obtaining a master's in engineering from K-State.

While increased research was one factor in improving engineering education, another was the development of standards and accreditation of engineering schools. When the Engineers Council for Professional Development was organized, Seaton took an immediate and active interest in its work. He was very involved during the period of 1936-40. It was during these years that the ECPD undertook and carried through the examination and accreditation of engineering schools all over the United States.

Licensing for Professional Engineers

Early in Seaton's career he singled out as an objective for Kansas engineers the securing of a state registration law to raise the standards of professional engineering practice. From 1930 when Seaton, as president of the Kansas Engineering Society, laid the foundation for a law, to the following year when a voluntary registration law was passed, through 1947 when a new engineers license act finally was passed, Seaton worked unceasingly to mold the image of the professional engineer. The early law provided for voluntary registration of professional engineers and prohibited the practice of professional engineering as a **registered engineer** without being registered as such. During the 16 years this law was in effect nearly 800 professional engineers were registered in the state, but many others did not

register, either because they did not possess the necessary qualifications for registration or for other reasons.

Registration under the early law served a useful purpose as a certification of at least minimum legal qualifications to practice professional engineering, but it did not adequately protect the public, Seaton believed. He said anyone was free to practice engineering without being registered, whether or not he was qualified as long as he did not represent himself to be a registered engineer. It was for this reason that the members of the professional engineering societies and others interested in raising the standards of engineering service in Kansas sought support for a compulsory license law. The 1947 legislature agreed and the new law repealed the old one, but provided for the automatic licensing of all engineers who had registered in Kansas under the old law.

A "grandfather clause" in the new law allowed incompetent practitioners to continue their practice, Seaton complained, but agreed that the clause was considered necessary in any compulsory license law. Commenting on the passage of the new law, Seaton said:

> "The purpose of requiring engineers to be licensed, and of setting up high standards for securing licenses, as stated in the act, is 'to safeguard life, health, and property, and to promote the public welfare.' While much benefit will undoubtedly result to well qualified engineers from the eventual elimination of incompetent practitioners of engineering and the consequent increased esteem of the public for engineers and their work, this benefit to the engineers is incidental to the real purpose of benefit to the public through raising the standards of engineering service. If this were not the case, the law would be class legislation and consequently would be unconstitutional."

Social Life on Campus

Faculty members active during the Seaton years recall vividly the annual evening receptions held by the Seatons honoring new faculty members and their wives. Professor Alley Duncan recalled the party as the "social event of the year."

Mrs. Seaton, hostess for the events, knew many faculty members not active socially, who said the only party they attended all year was the engineering reception. Social life on campus was more organized at the time than it became in later years. The faculty had opportunities to attend many parties and gala events if they chose.

Engineers' Alloy

The Engineers' Alloy was an annual engineering social function of the 1930's co-sponsored by Sigma Tau and Steel Ring. Programs consisted of talks by faculty members and students,

music, boxing matches, and refreshments. The engineers' scandal sheet, **The Intake and Exhaust,** was sold during the event. The publication was heralded as "the one publication that will print anything that you would like to have printed regarding the faculty members or students."

Finally, the publication died mostly due to that willingness to print anything and everything. Its final issues were labelled tasteless by many.

K-State Engineer

Originally, the idea for a student-written engineering magazine had been that of A. A. Potter. Potter had gotten the idea off the ground in the spring of 1915. Then titled the **KSAC Engineer,** the first issue included an abstract of an address at the college assembly by R. A. Seaton titled "Kansas As a Manufacturing State."

Subscription price was fifty cents a year, in advance, and the publishers vowed to publish once each term during the college year. The engineers managed to publish again in 1916 but then the magazine died until Seaton revived it after he became dean.

When the **Engineer** resurfaced in the fall of 1920 it had been redesigned to a larger, standard magazine size, and the announcement was made that the magazine would be published quarterly.

Perhaps explaining in part the price increase to 35 cents per copy, Seaton, in an article titled "Greetings from Dean Seaton," pointed out that a dollar was now worth only 40 cents in terms of pre-war values.

The following year the name was changed to **Kansas State Engineer.** In 1931 the **Engineer** became a monthly during the school year, putting out eight issues annually.

Over the years the publication changed a great deal. Although written by students, it was never free from censorship and thus tended more to give a feel for the times, rather than giving voice to student's complaints. For a time under Dean Seaton, when M.A. Durland was faculty advisor, the magazine featured jokes, many of which might be described as risque, given the strict times.

Durland recalled a command appearance before the school administration suggesting that off-color humor had no place in a publication sent out with the school's approval. From then on, the jokes became tamer and eventually died out altogether.

> "President Farrell was offended by some of the jokes that the boys put in the **Kansas State Engineer,**" Durland said. "He told me to clean it up. I tried to get him to tell me exactly how he wanted it—if the kinds of jokes that were in the **Reader's Digest** at the time were okay. He said no, that

wouldn't do, that some of their jokes were off-color too. (I knew that when I asked him)."

Other features of the magazine were problems at various times. For instance, a monthly pin-up girl was featured in each issue for several years until it was suggested to the staff that the leering feature presented engineers in a chauvinistic light.

The Depression

A lack of money had been a frequent problem for engineering all during its history. When the depression began, however, even slow trickles of money into engineering were halted. The state legislature was reluctant to spend any money at all during the depression years and many of the things that needed to be done in engineering were let go because of a shortage of funds. The legislature had been fairly receptive to providing money for housing engineering classrooms, but was unwilling to fund any construction at all on campus from 1929 to 1936. The situation at KU was similar—the sounds of busy construction crews were not heard there either. Dean Durland commented later that although many universities throughout the country were receiving federal funds to help finance building construction, President Farrell declined most of the aid that was available.

Farrell had a reputation for austerity and the faculty learned that the reputation was true when about two-thirds of the telephones on campus were taken out to save money. President Farrell had a committee working on the problem of eliminating "unnecessary" phones. In engineering, the dean's office and two other offices shared one phone.

While other areas of the college were laying people off, that was never the case with engineering during the depression. Some faculty members may have been encouraged to look for work elsewhere, and many did. It was relatively easy for engineers to find work that paid at least as much as their college salaries. Others went on leave to do research or to work in industry temporarily. Many of them returned to the college when the financial picture was better on campus.

Finding work was an easier task for an experienced faculty member than for new engineering graduates, however. Companies were able to take their pick of the most outstanding graduates for the few jobs that came open each year.

Professor Alley H. Duncan recalled that during the depression only three companies regularly came to campus to recruit engineers—General Electric, Westinghouse, and Allis Chalmers. All interviews for electrical engineers were held in the office of R. G. Kloeffler, the department head.

Recalling his experiences as a student during those depression years, Duncan said:

"Most every student was anxious to get an offer from

G.E. From about 40 students they would select only three or four. Through the thirties the job opportunities were not good. Then, around 1937 the prospects for engineering students were looking brighter."

With help from Professor Kloeffler, Duncan took a job with Westinghouse.

Engineering Defense Training

The federal government, in the days preceding Pearl Harbor, knew that the world's troubles could not be long held at bay and began to plan for the nation's defense. It provided for the setting up of an Engineering Defense Training Program "to meet the shortage of engineers with specialized training in fields essential to the national defense."

When it came to engineering, the country looked to Purdue and its dean, A.A. Potter. President Roosevelt, who Potter knew personally from associations during WWI, requested that he administer the program. Potter declined, citing a lack of time, and recommended Seaton of Kansas State for the post. For the second time in his career, Seaton was called to Washington on a government assignment. Potter had a large part in establishing the program and to its close served as chairman of the National Advisory Committee and as consultant to the Office of Education. Seaton, with his knack for administration, organized the project, with more than two hundred colleges participating. About 1,700,000 people were trained through the program.

After Pearl Harbor, the name of the program was changed to Engineering, Science and Management War Training. It had a final cost of $60 million but was credited by analysts after the war with materially helping to win the war. Employers were swamped with new demands which involved the training of workers. Then they were hit sharply with a great turnover of workers as the draft became effective. Many companies in industry found themselves manufacturing items they had very little knowledge of, with laborers who knew even less. Their only hope for success was in these short courses devised by the government. That they were a success was a credit to both the students and to the institutions—the colleges which came through when called upon to provide hurried training in an efficient manner. Graduates from the programs were commonly referred to as "six-month wonders." Seaton later was awarded the prestigious Lamme Medal by the American Association for Engineering Education for his contributions to the war effort and his leadership in engineering education.

Like other schools across the nation, K-State offered defense courses. The 1941 course offerings under the Engineering Defense Training Program included: Materials Inspection and Testing, Tool Engineering, Engineering Drawing, Explosives,

and Aeronautical Engineering. Each course was of twelve weeks' duration except Explosives which lasted eight weeks.

The government paid all the college fees. The only expenses for the student were room, board and books. Students in Engineering Drawing had to purchase a drawing set. The Civil Service Commission accepted the Engineering Drawing course for entrance to the examination for Junior Engineering Draftsman.

Army Specialized Training Program

K-State established an Army Specialized Training Program on campus. Hundreds of soldiers were rushed to K-State for short programs to teach them engineering skills.

The War Department set up the ASTP program to give specialized technical training to soldiers on active duty. The Army engineers in the program received their training in twelve week sessions. As advancement was made the soldiers received technical training in electrical, mechanical, and civil engineering. The courses were progressive and became more specialized as the course neared completion. The first six months of training were general and covered the fundamentals of nearly every area of engineering. After the initial six-month period, the selection for specialization was made by tests which indicated the soldiers' aptitude and knowledge in the various lines of study. Upon completion of the course the soldiers were placed in permanent Army positions. Some were sent on to Officers Candidate School and others were given technical ratings.

Dean Durland pointed out that many of the Army students resented being sent to school, even for the short courses, and their resentment grew with the length of the course.

"They joined the Army to fight the war, not to go to school," he said, "and they resented being shipped to Kansas when there was a war going on."

Durland commented that the common characteristic of each Army program was that if it was successful, it was promptly revised.

It was not often that K-Staters admitted that KU had gotten the better of them, but many football fans believed KU had gotten the better deal with the military training programs. The Army set up training facilities at K-State while the Navy had a program at KU. The Army leaders refused to allow the young soldiers to play football while the Navy allowed it at KU. Alumni groaned that many tough young soldiers could have been a big help to K-State's football program but were not given the chance.

Wartime Short Courses

Under pressure from the board of regents, K-State set up a two-year program in industrial technology in 1943. It was one of

many programs set up in rapid succession which were essentially "quickies" for engineers and technicians.

Army-Air Force Inspection Course

In another contribution to the defense effort, K-State offered a 12-week Army-Air Force inspection course to train inspection personnel. Because of stepped up production in the materials industries supplying parts for the war effort, more inspectors were needed to check for competent construction.

Many women enrolled in these short courses and went on to work in plants on a large scale. The age of women enrolled in the course varied from 20 to about 40 years. Some men enrolled, too, and the age limit for the men was higher since in order to qualify for the course the men had to be deferred from the draft.

The **K-State Engineer** featured frequent patriotic articles calling for support of the war effort, and noting how proud K-Staters should be to have soldiers on campus.

Signal Corps Training

Signal Corps training at K-State began about the same time the United States entered the second world war. In both World War I and II, the motto of the Army Signal Corps was "Get the Message Through." In the second war, however, the Signal Corps was given additional duties such as location of gun emplacements, wire and radio communications, aircraft detection, electronic sentries and photography.

K-State's job was to train technical communications engineers, junior radio engineers and assistants in the new fields.

Training was divided into three main divisions depending on previous education or training. The initial stage was that of junior repair trainee. Its general purpose was to prepare men and women to take positions in the field installations of the Signal Corps for overhaul, maintenance, repair and inspection of miscellaneous equipment. The second or intermediate stage was that of pre-radar training, a continuance of the initial training and a prerequisite to radar training. The third phase dealt with ultra-high frequency techniques training. The latter required considerable technical knowledge obtained through at least a communications engineering course.

To equip K-State to teach the Signal Corps courses, Professor Martin of electrical engineering went to the east coast to take a short course for instructors in ultra-high frequency radio. When he returned, additional radio equipment was ordered for the department, and some was designed and built by the faculty.

All students taking the course were under U.S. Army Signal Corps control as civilians. After passing the course, if recommended, the students could take advanced training or act as instructors in less technical training. They also could go to the Army

service shops where all kinds of radio and communications equipment was sent for repair. Graduates from the ultra-high frequency course could take more specialized training on the east coast and at the same time take officers' training. College graduates were free to enlist in the Signal Corps or to go into private industry or government research.

Additional teachers were needed for these special programs and one of the new faculty members was an alumnus, Alley Duncan. Pearl Harbor was history and the war effort was gearing up. Duncan met Professor Kloeffler at an engineers' meeting in Kansas City and Kloeffler asked Duncan if he would like to return to campus to teach a short course for pre-radar students.

Duncan asked the department head, "What is radar?"

Kloeffler told him it was a military secret and he could not tell him, but assured Duncan, "I know you will do all right." So, not knowing exactly what he was going to be teaching, Duncan returned to K-State to teach in the electrical engineering department.

The pre-radar classes were cancelled after the first semester and Duncan was making plans to return to Westinghouse. However, an opening teaching ASTP students was available in mechanical engineering. Department head Linn Helander urged Duncan to take the job.

After spring, 1944, all teaching for military personnel stopped. With smaller enrollments because so many students were in the service a smaller faculty was needed. Duncan and others took the hint. They wanted to be useful and helpful to the war effort so many took jobs in industry. Duncan and Wilson Tripp took jobs in California with aircraft companies and planned to return to teaching after the war. O.D. Hunt took a job with Sylvania Electric Co. in Salem, Massachusetts. He, too, later returned to K-State.

While Dean Seaton was in Washington organizing the national defense program for American colleges, Professor L. E. Conrad of civil engineering was acting dean. Eschewing the dean's job on a permanent basis, Conrad was willing to help out in an emergency. Head of civil engineering since 1909, he was familiar with the college and how it was run.

Women & World War II

After Pearl Harbor, women throughout the country were urged to do their part to help in the war effort. For women with backgrounds in math and physics, this often meant encouragement to enter engineering. Emergency engineering courses were devised to equip women for jobs as draftsmen, inspectors, supervisors and engine-testers.

The U.S. Navy was an enthusiastic employer of women engineers and sent word to colleges that women with degrees in me-

chanical, chemical and electrical engineering were desperately needed. The need was there but the engineers were not. Only one of every 2,000 engineers was a woman.

Otto Trechter, a chemical engineering student, in an article for the **K-State Engineer**, pointed out that the war and the resulting shortage of manpower opened up new fronts for women in engineering.

> "Of course many prejudices must be overcome before women will be accepted in industry," he wrote, "but day by day there is an ever increasing need for trained women technicians . . . It is increasingly evident that we have paid too much attention to sex differences and too little attention to the difference between efficiency and inefficiency."
>
> Trechter observed that "the incomes received by women engineers after the war will probably not be amazing, but they will surely be much greater than the average income of women in other occupations. The future of the women engineers is an interesting and a debatable question . . . Many of the women in industry will return to the home and allow the returning soldiers to fill their places in the plants. However many of the women will occupy important places in the factory, and it may be very difficult to replace them entirely. The last war brought women political rights and this war may give women a place with men in industry."

Post-War Growth

After World War II, K-State braced for an incoming flood of what many expected to be rowdy students looking for a good time. The students came in droves but surprised their potential critics by being serious students.

With the advent of veterans' benefits to help returning service personnel go to college, many students were able to afford an education. Most were anxious to go to school, graduate, and move on to good jobs. Many were married and building programs were hastily organized to construct Jardine Terrace as housing for the new students.

Some short courses along technical lines were begun in the early part of the post-war period but were quickly discontinued because of a lack of faculty time. The pressures of increased student loads on faculty for the regular collegiate engineering courses made finding time to teach additional technical courses impossible.

Retirement

Seaton had lived by the rules all of his professional life. One that he found even harder to adjust to than the no-smoking regulation of his early years at K-State was the one that required his retirement. Being forced to step down from the deanship at age

65 was a tremendous blow to Seaton. He had devoted his life to K-State engineering and was not ready to stop working.

Seaton looked upon mandatory retirement as a dehumanizing affront to loyal employees. He told his family that he felt like an old tire tossed upon the scrap heap once its usefulness was passed. Seaton, accustomed to long years of activity and usefulness, was not willing to give up an active career with his retirement as dean. He moved to another office and set up shop as K-State's building expediter. The task was a familiar one—he had been supervising building construction on campus for years. As an authority on concrete, he paid special attention to being sure

Seaton supervised the construction of nearly two dozen buildings on campus during his long career. An authority on concrete, here he watches the pouring of a concrete pedestal on the field house in 1949. (Courtesy of the Seaton family.)

the foundations of each building were done correctly, and if they were not done to his specifications, then they were to be redone. Seaton wanted to be sure that none of the construction he supervised would result in faulty buildings.

> President McCain said, "I don't see how K-State could have done without the services of Dean Seaton as building expediter on the construction of the fieldhouse. He has saved the president and other campus officers many hours of work by the supervision he has given all of the building program . . . His training and experience as an engineer together with his good judgment make him ideally qualified to perform this service."

He administered a building program called "A Greater K-State" which had topped the $12 million mark when he retired in 1954.

Wright-Patterson

At age 70 when mandatory retirement called for him to leave K-State entirely, he headed for the U.S. Air Force Institute of Technology at Wright-Patterson Air Force Base near Dayton, Ohio. Because of his age, government appointments were for one year at a time, renewable each year. During Seaton's four years there the Institute progressed from what was commonly called the Air Force engineering school to a recognized university-type facility with an expanded curriculum. There were an additional 4,000 airmen in 400-plus educational institutions throughout the U.S. and Europe. Through Seaton's efforts, the A.F. Institute of Technology was accredited in 1955. This accreditation was a goal which had eluded all previous efforts and was the primary reason for Seaton's employment. Accreditation greatly aided recruitment of Air Force officers, as well as improving their educational training. The Air Force awarded Seaton a Certificate and Medal for Exceptional Civilian Service, when, at age 74, he declined reappointment for another year. In 1957 he decided it was time to return to Manhattan and pursue some of the interests he had been too busy to enjoy. Seaton was the developer of several varieties of iris and was recognized throughout the region for his extensive garden of iris, peonies, and lilies.

Deans Durland and Seaton confer at a meeting at Wright-Patterson Air Force Base. (Air Force photo courtesy of the Seaton family.)

Chapter 4

Into the Modern Age

When Milton Eisenohwer came to head K-State in 1943 he brought progressive ideas and a goal of bringing the college into the modern era of education. During his seven year tenure as president, he initiated a construction boom to accommodate the influx of veterans returning to school, worked to eliminate racial discrimination on campus, and increased faculty salaries by 75 percent.

Eisenhower told Tom Carlin, editor of the **K-Stater**, "You couldn't believe the discrimination that was in that place when I arrived. Blacks couldn't use the swimming pool, live in campus housing, belong to honor societies, participate in varsity athletics, or do any number of other things." By the time of his departure in 1950 Eisenhower had seen Harold Robinson break the color line by becoming the first black football player in the Big Seven Conference, and had spurred a gradual program of integration in the college.

Following World War II conditions all over campus loosened up a great deal. Eisenhower instituted a number of changes aimed at easing restrictions in several areas of college life. The dormitory regulations were relaxed and sorority houses no longer had to lock up at midnight. Attendance in engineering classes was no longer required and students were not called into the dean's office for missing classes.

Naming Durland Dean

An important task of the later years of Eisenhower's tenure as president was selecting a new dean of engineering.

Mandatory retirement age was approaching for Seaton and the college administration looked around for a successor as dean. Probably the most logical choice was Seaton's long time assistant, M. A. Durland. Durland had been associated with the college since 1914 when he enrolled as a freshman in electrical engineering. He had progressed from an instructor in applied mechanics and machine design to assistant dean. He looked to be the logical choice but Charles Scholer, head of applied mechanics, was taking no chances. If Durland was going to be made dean, fine. If not, Scholer was heading elsewhere.

As Durland explained it:

> "Charlie Scholer had a job offer in Washington paying twice as much as he was making here. It was right after Dean Seaton retired as dean. Scholer came into my office and said, 'I want to ask you a personal question, I've had a good job offer in Washington and I'm going to take it if they don't make you dean.' I told him they are going to make me dean, Charlie, and he said, 'Well, okay, then I'll stay.' "

The general feeling among engineering faculty was that Eisenhower was a clever politician who was adept at encouraging the legislature to fund his projects. Since some of that funding filtered to engineering, he was regarded as a successful president. The fact that he chose Durland as the next engineering dean was another point in his favor.

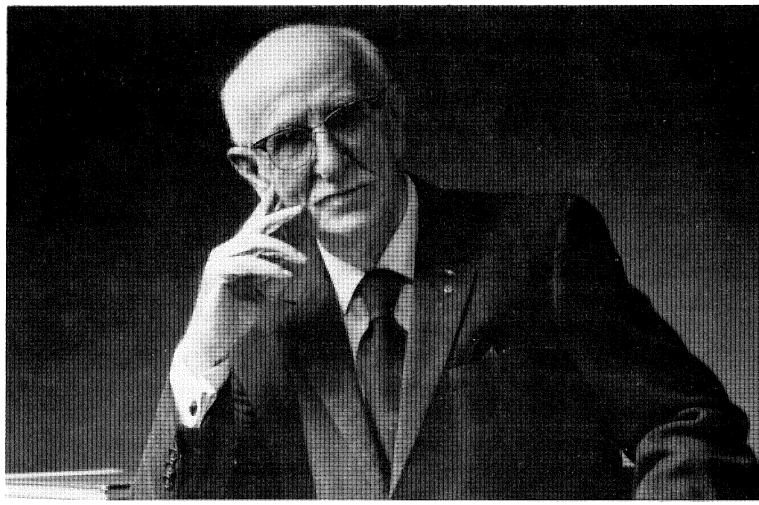
Durland, having worked for Seaton for so many years, might have at first glance appeared to have been cast from the same mold. But there were differences. The similarities were mostly in matters of administration. Seaton had been a master of organization and Durland saw no need to change what had been so successful for nearly 30 years. As most everyone who worked for Seaton agreed, he was a tough taskmaster. People always knew exactly where he stood. The latter was an attribute that Durland admired and sought to emulate.

Durland reminisced about his early days as an instructor when speaking at the recognition dinner for Dean Seaton at the time of Seaton's retirement.

> "When I came back from making the world safe for democracy, one of the first things that occurred to me was that the college owed me a job because I had let them educate me. So I came down to see Dean Potter. Now this illustrates how easily a young graduate can be trapped and before I knew it I was teaching drawing. Dean Potter said it was a temporary job. Certainly they weren't going to want me for more than one semester but he said he would help me find a better job. Well, I think it was probably as hard to get help then as it has been since this war. But I suspect if the dean had known how hard I was going to be to get rid of he wouldn't have even given me a temporary job. However, Dean Potter ran out on us before I had a chance to get him in much trouble. I think Dean Seaton didn't know what a temporary job I had here and he went ahead and pretended that I was working. But in all seriousness, it has been an education and an experience that is certainly unique to me to have worked under Dean Seaton, I am proud to say, almost thirty years. The dean always gave me enough to do and I think most of you will believe that. But he never gave me an unreasonable amount, well hardly ever anyway. He always backed me up in any reasonable mistake or if he thought it was reasonable he would back me up. I don't think he ever

gave me any bad advice. At least, I don't recall any of it. I do recall a time or two when I didn't take it but then looking back on it I think he was probably just about right. All in all it was quite an experience."

Durland often said that he learned a lot from Seaton and that probably was due to Durland's openness in listening to advice from other people. When faced with a knotty problem he would talk with Seaton or Professor L.E. Conrad, then weigh their opinions with his own and make his decision. Seaton encouraged



Dean Durland amazed alumni with his excellent memory for names, faces, and important details about each person.

him to always go by the rules and not make any exceptions. Seaton told him that when you start making exceptions then you get into trouble.

Probably the major difference between the Seaton administration and that of Durland was Durland's relationship with engineering students. Seaton cared about the students, but maintained a more formal relationship with them than did Durland.

More than any dean before or since, Durland had a unique and uncanny memory not only for student's names and faces, but for their life histories as well. When alumni would return to the college and look up Dean Durland they were amazed when he would make comments like, "Remember when you flunked algebra?" or, "Are you still working for (name of company)?" Often, Durland could remember more details about an individual than anyone could believe possible.

Durland had worked with the students and their records in his post as assistant dean and rather than forgetting the details of students' lives, had logged them in a special repository in his brain, ready for instant recollection when needed. This knack for

making each student feel very special was one of the things that made Dean Durland so well loved by generations of students.

Betty Slemen, of the dean's office staff, said that probably one reason Durland was so popular with the students was because they could see through his gruff facade.

> "Durland always was outwardly very brusque, but inwardly was a very kind-hearted and sensitive man," she explained. "I found that out after I went to work for him. I know that students would want to come in and see him rather than anyone else."

Durland was a person of very definite opinions and he let his views be known.

> "One of the things I most admired about Dean Durland," Ms. Slemen commented, "was that when policies were being established he would fight hard for the position he believed in. When policies were set, even if he didn't agree with them, he would fight just as hard to be sure that they were upheld, even if he disagreed with them. He would say, 'This is the way things are and we have to work it out.' "

Durland has said that one of his best abilities was in the area of hiring good people. All of the deans since Durland have benefitted from one choice he made, although he didn't actually hire the individual.

"Good secretarial help is very important," Durland noted. When he found himself in need of good secretarial help he didn't have far to go to recruit a new secretary. Betty Slemen had come to work for Leland S. Hobson when Hobson was assistant director of the Engineering Experiment Station. Hobson had made the mistake of bragging to Durland about how efficient Ms. Slemen was in doing her work.

Durland filed the information in his memory and when he needed a secretary decided to raid Hobson's office.

> "I knew Betty Slemen was an excellent employee and I wanted her to work in the dean's office," Durland recalled. "Hobson liked having her in his office though and I didn't know if he would want to let her go or not. So I just went in there and told her she was now working for me. I didn't ask because I thought Hobson might say no."

Except for a four-year transfer to the business administration department, Ms. Slemen continued to work for engineering from 1953 to the present. She has worked for four deans and one acting dean during her engineering career, moving up to administrative officer.

> "I have learned a lot working with all the deans," she said, "each new dean has his programs to initiate and his way of doing things. In my position, it's almost like changing jobs. I guess that's why I've enjoyed it and stayed here as long as I have."

She was the 1980 recipient of the E. Walter Morrison Award

from the KSU Foundation given to an employee who best exemplifies the qualities of hard work and perseverance. She also has been a finalist for the Classified Employee of the Year award.

One of the attributes of the K-State engineering faculty and staff is their ability to communicate a very real interest in the students. Dean Durland, who had counseled so many students during his years as assistant to Dean Seaton, put in writing his advice, emphasizing that students should never hesitate to call on their teachers, the assistant dean, or himself when they needed help.

In an open letter to engineering students published in the **K-State Engineer,** Dean Durland repeated some of the advice he had emphasized so much during his years of counseling as assistant dean.

> "You are now at the very beginning as far as engineering is concerned. Success in engineering and architecture in our present world requires as a minimum preparation, graduation with professional college training. Four years of college, including such subjects as chemistry, mathematics, and mechanics, seem both rugged and long as viewed from the beginning end. Looking back, say ten years from now, it will seem neither long nor particularly hard. The facts are that your engineering assignments are laid out to be a full time job and certainly will require much more effort than in high school. It is very important that you start out to do the best you can with your first assignments. If you get your work well, you will enjoy college more, your succeeding work will be much easier and you will be successful on your first engineering job.
>
> "Do not think, however, that your required courses are all that are important for you to get out of your college education. Extra-curricular activities are a very important part of your training at Kansas State College. Prospective employers always ask graduating seniors, 'What extra-curricular activities did you participate in?' These may be student politics, debating, athletics, student professional societies, editorial or managerial work on the **Kansas State Engineer,** social fraternities, and many others. Pick out such activities as interest you and take an active part. How to work with people is one of the most important things to learn, and college offers many such opportunities. "But keep in mind that your studies come first. To accomplish a successful college education you must make reasonably good grades. Be a little slow in taking on outside activities until you are certain that you have your class work well in hand. Also, do not forget that all members of the faculty including myself are here to give you all possible help. Do not hesitate to call on your teachers for extra help whenever you need it, and at any time when you have any problem at all that you would like to talk over with [Assistant Dean Richard C.] Potter or me, our doors are always open."

Faculty Salaries

Faculty salaries had never been exorbitant but over Durland's long career he saw them go from bad to worse and back to bad again.

"Some years we didn't get a raise at all," he recalled. "Once when I worked for Dean Seaton I went into his office and told him I really could use a raise. He got out the budget and went over it. He said he thought he could find an extra $100 (per year) raise for me. I was glad to get it.

"Mrs. Durland was very frugal. We were saving for retirement. They hadn't invented social security or state retirement yet so people had to plan for retirement on their own. Later on some of the faculty members who retired found that they were getting more money for retirement than they had made when they were teaching."

Research

Before World War II, research at K-State was minimal. Federal financing of research programs became more available after the war and research at K-State, as at colleges all over the United States, began to pick up.

"Research didn't become of real importance until after World War II," Durland explained. "We had very few research-oriented people on the staff and we had very little money to pay anybody to do it. We used to chisel out some few dollars in the engineering college and let somebody do some research work although we had very little appropriated money to do it with. After the war we got a lot of federal aid and we got a lot more people in graduate school which contributes to your research program. I can remember when I thought if we had 25 percent of our faculty with doctor's degrees it would be a miracle and now we have a very, very high percentage of them with doctorates."

Durland's achievements as dean were many. Among those was the hiring of more Ph.D.'s, and sparking interest of the faculty in going on for doctorate degrees. Not a single Ph.D. was to be found among the engineering department heads at the end of World War II. Then an M.S. degree plus experience in industry was considered excellent preparation for the engineering educator. Near the end of his tenure as dean, Durland had increased the number of faculty Ph.D.s and seven of nine department heads held doctorates.

With Ph.D.'s as department heads and 14 more Ph.D.'s among the teaching staff, the graduate program was expanded by 1960 so that four of the nine departments had doctorate programs: electrical, chemical, mechanical and applied mechanics. The tone of the times, however, emphasized work experience as well.

"Important as Ph.D. training is, it can't take the place of practical experience," Durland commented. "We urge all our faculty to use their summers for work in industry and to

take a year off now and then for special projects. We risk losing them, of course, but it's a calculated risk, and we get most of them back."

Departmental Changes

During Durland's tenure, one old department was abolished, one was phased into a new department and another was spun off from an older department.

The machine design department was disbanded when the department head, C.E. Pearce, retired in the mid-fifties. Durland talked with the faculty before making a decision to disband, found no opposition, and transferred the machine design work into the mechanical engineering department.

The second change, the conversion of the shop practice department into Industrial Engineering and Industrial Arts, came about in 1954. Six years later, in compliance with an all-school move to eliminate vocational education, the Industrial Arts portion of the department was discontinued.

Durland said that making the industrial engineering program attractive to students in its early years was a problem.

> "We added the industrial engineering curriculum when I was dean," he explained. "We thought it had great potential, but it was slow getting started. "We had trouble getting the program off the ground. It didn't attract students at first. We thought it had real possibilities for attracting managerial students for industry but apparently mechanical engineering was serving those students well."

Durland attached a great deal of importance to the ability to hire intelligent people, and then induce them to stay at K-State.

"I hired some very smart people. McCain called that my greatest achievement—hiring smart people and getting them to stay."

With increased requirements for meeting federal regulations in hiring people, it became more difficult in later years to hire new employees than it was in Durland's time.

> "When I was dean, if you wanted to hire someone, you did. Cecil Best and his wife came in to talk to me about a job once. He had been a Fulbright scholar and came to apply for a job. I talked with him for about 10 minutes and told him that if he wanted the job it was his. I also told him that if he didn't work out, hiring him would be the last mistake I'd make as dean because I was retiring in about a week. His wife thought that story was really funny and she's retold it dozens of times. Of course, hiring Cecil Best was no mistake—he's been a fine teacher. But hiring was much simpler in years past."

Also established during Durland's tenure was the nuclear engineering department which split off from chemical engineering in 1958. William R. Kimel, who went on to the University of Mis-

souri, Columbia, to be dean of engineering was the first department head in nuclear engineering.

Building Construction

Two major additions to Seaton Hall were added during Durland's tenure as dean. The first, approved by the legislature in 1949, was a nearly $500,000 extension of the west wing primarily for the electrical, civil and mechanical engineering departments. Begun two years later, the addition was completed in the spring of 1953 at a final cost of $675,000.

The building was to be 235 feet long and more than 50 feet wide with a floor area of more than 50,000 square feet. The construction of the new wing was to provide room and facilities for all branches of the school of engineering and architecture. Construction was by the McNuff Construction Company of Fort Scott.

Five years later the agricultural engineering wing was added. Completed in the fall of 1957 it had a total cost of $487,000. Until this time, the department had been located in the north part of the engineering wing built in 1953. Space was restricted and the growing department needed more room for its experimentation and research. The new wing was composed of three-stories, including a basement, and measured approximately 142 feet long, 118 feet wide. The emphasis in this new wing was placed on laboratory space, as plans called for the addition of ten laboratories with adjoining classrooms. More than 75 percent of the total floor area of 47,430 feet was devoted to laboratories. To construct the addition it was necessary to raze two barracks which had served as a paint shop and a storehouse for lumber since the First World War. The building addition was constructed, by the Milligan-Stevenson Construction Company.

In the years between these two major additions smaller projects were completed. In 1955 the older central section of the building gained one new room, the engineering lecture hall, currently room 63 in the basement of Seaton Hall, and a new floor was added to the east wing giving more laboratory and equipment space for fluid dynamics work.

In February 1955 President McCain officially announced that the building would be named Seaton Hall in honor of Roy A. Seaton, then dean emeritus.

The late fifties saw the legislature appropriate $280,000 for a nuclear laboratory to house a new atomic reactor. The building, later to be named Ward Hall, was to be constructed between the power plant and the military science building. The college spent $175,000 on an atomic reactor. The staff built two sub-critical reactors themselves to save money.

In 1961 an $80,000 grant was approved by the National Institute of Health to match an appropriation of $80,000 by the Kansas Legislature for the construction of the Institute for Environ-

mental Research. The section housing the new research center was constructed behind the lecture hall and completed in 1963.

Open House

Criticism of open house surfaced in the fifties. Many students saw no purpose for open house and wondered why all the effort was needed. Interest in the project seemed to be waning.

In an effort to revive the event, Steel Ring revised its system of judging displays for the "Best Departmental Display" and a campaign was launched in the K-State Engineer to encourage more student participation.

Before 1955, judges of open house exhibits had been people from outside the school of engineering. The group usually included a housewife, a high school student, a graduate engineer and a layman. That system aroused criticism, particularly one year when the high school student was planning to enter K-State engineering the next year and had already chosen his department! Steel Ring agreed with the detractors and decided to make some changes. Under the new system each department head picked a faculty member and a student to be judges. The judges' names were not disclosed and there were a total of 20 judges. Each judge graded all the departmental displays except his own. Entries were to be judged on originality, arrangement and attraction, time and effort, continuity with the open house theme, and entertainment value.

The new system worked better than the old and the event has grown in visibility and importance in recent years as a showcase for what the KSU engineer can do for society.

St. Pat and St. Patricia

The mechanical engineering department selected St. Pat and St. Patricia in the early fifties. The other departments felt that, although mechanical had selected apt candidates, that department was not the only one capable of making the selection. A lobbying effort was begun to make the selection one to be decided by all of the engineers.

Bob Tointon, then editor of the **Kansas State Engineer**, suggested that the engineers come up with some good ideas and present them to Sigma Tau. "Let Sigma Tau know you want an improvement in the method of selecting St. Pat and St. Patricia," he urged in an editorial.

The selection method was changed to allow all of engineering an opportunity to participate in selecting the candidates.

K-State Engineer

Occasionally the **Engineer** staff would step over the bounds of propriety as defined by some on campus. Their regular "joke" page sometimes contained humor that was thought to be inap-

propriate for a campus publication. Dean Durland usually let the students publish what they wanted and only rarely imposed censorship. The 1950 editors wrote an appropriate poem to respond to their critics and note Dean Durland's occasional censorship:

"He who thinks our jokes are risque
Should see the four really 'juicy' ones
Dean Durland made us throw away."

Athletic Council

Durland, always an active rooter for KSC athletics, was elected chairman of the Big Eight, the Missouri Valley Intercollegiate Athletic Association, for 1960. He had been chairman of the K-State Athletic Council and Big Eight faculty representative since 1957.

Although most of the engineering deans have been active in athletic recruiting and support of athletic programs, Durland probably was the dean who was most involved over the longest period of time.

The Big Eight's faculty representatives meet four times a year, with three of the meetings held in Kansas City, and the fourth held on a conference campus. The faculty representatives are the policy setting group for the athletic conference. The Big Eight commissioner carries out this policy. Faculty representatives are appointed by the University presidents.

Return to Teaching

Durland took early retirement from the dean's job. He told President McCain a year in advance that he would be stepping down, but no successor was chosen. Many observers at the time thought McCain was hoping that if he did nothing about it, Durland would stay on as dean. Durland loved teaching, however, and was anxious to get back to teaching and away from the dean's job. So, as he had announced that he would, he retired from that post in 1961.

"I like teaching very, very much," he said. "This being dean was a pain in the neck, I didn't ever like that. I like kids and when I was associate dean I had charge of all the student personnel work and I always liked that. Students in general are fun to deal with.

"I think I was a good teacher. I treated the students well and fairly. I was honest with the faculty. Mrs. Durland used to tell me I should try to be nicer to people, less disagreeable. I think I found out that people don't mind if you're disagreeable if you're fair and honest and they know you're trying to help them."

Chapter 5

Engineering Experiment Station

Edmund B. McCormick, the dean of mechanics arts (engineering), developed a plan for an Engineering Experiment Station which would make the latest technical advances readily available to Kansas industry. McCormick's plan for an Engineering Experiment Station was supported by the **Industrialist** in an article of February 29, 1908:

> "Every argument for the agricultural experiment station is also one for the engineering and technical experiment station."

McCormick had a faculty familiar with applied research, eager to share their knowledge with Kansans interested in the latest research findings. Few could disagree with the advantages of having an experiment station for the dissemination of engineering information—the Agricultural Experiment Station had been extremely successful and well received.

McCormick submitted his plan to the board of regents and it was approved March 24, 1910. The EES staff consisted of the heads of the departments within engineering and the dean became also the director of the experiment station.

The first EES publication was a bulletin on "Illumination For Farm and Town Homes" published in the December 1914 issue of the **Industrialist.** The bulletin compared relative costs for both installation and use of various lighting methods. The author, Grayson B. McNair, an instructor in electrical engineering, estimated the cost of operation of a city lighting system at $30 annually. City electricity was, at the time, one of the least expensive lighting systems.

Dean McCormick had resigned from K-State more than 16 months before the first bulletin was published. McCormick moved to the U.S. Department of Agriculture as mechanical engineer and director of the test laboratories in the Office of Public Roads.

Succeeding him was Andrey A. Potter first as acting dean and later as dean of the division of mechanic arts. Potter was director of the experiment station when it published its first bulletin. Potter co-authored the second bulletin, "Boiler-Room Economics." That bulletin also was published in the December, 1914

Industralist. Thirteen months later bulletin No. 3 on "Tests of Kansas Sands for Use in Mortar and Concrete" was published, co-authored by the young head of the applied mechanics and machine design department, Roy A. Seaton.

The Engineering Experiment Station continued publishing its research findings, and later, under Dean Seaton, increased the frequency of its publications. Although not heavily funded in the early years, the EES produced numerous well-received publications for interested Kansans.

Seaton became dean late in 1920. The first bulletin published under his direction was issued in 1921, "Water Heating in the Home" by R.G. Kloeffler.

The college was fortunate to have Charles H. Scholer, professor of applied mechanics, on the faculty. He was a well-known expert in road materials and published several bulletins on the topic. Seaton enjoyed traveling by car and was particularly interested in the development of better roads throughout the country. In the 1920's a "good road" was one that the road grader had just driven over. Since most roads were made of dirt, a "good road" could become a bad one within moments after a hard rain began. Scholer's tests began in the early 1920's with discussions of sand, gravel, and broken stone roads. As early as the mid-20's he and M.A. Durland, then associate professor of machine design and later dean, were studying cement and published "Some Strength Characteristics of Portland Cement." Scholer, of course, later developed an international reputation as an authority on concrete. The Scholer Laboratory in K-State's Durland Hall is named for him.

Scholer wrote an entertaining booklet, **From Your Car Window, Travelling Over Kansas Highways,** which was published by the State Highway Department, presumably to encourage car travel in Kansas. At least one copy still is circulating at the library of the Kansas Historical Society in Topeka.

Wind Energy

> "The idea of utilizing the energy in the wind for the production of electricity is particularly fascinating to people who live in the prairie states of North America where winds are prevalent and where electricity is so desirable in rural areas. For years man has dreamed of using the free energy in nature to perform useful work and to raise his standard of living."
>
> —R. G. Kloeffler and E. L. Sitz
> September 1, 1946

Kloeffler's and Sitz's views were ahead of their time. But pioneer thinking was not unusual at K-State. Engineering advances were continuously sought and the faculty was encouraged to find alternative answers. Kloeffler, Sitz and Frederick C.

Fenton, agricultural engineering department head, all found the topic of wind power a fascinating one. In those years when electricity was cheap and readily available, wind power was not considered a convenient method for obtaining energy, though, so their research became background material for later work.

Durland as Director

Seaton retired as dean in 1949 and became building expediter in charge of K-State construction. Durland was promoted to dean and director of the experiment station. He put his own stamp on the publications of the EES. He soon supplemented the bulletins with a summary publication, "Research Activities," which listed each department's projects and the researchers in charge. The foreword to the publication invited readers to write the department head or Durland himself for more information on any of the topics. The "Research Activities" publication was so well-received that it continues to be published by the experiment station today.

The Case for Basic Research

The need for applied research was well understood among Kansans. Many people had found effective uses for information supplied by the Engineering Experiment Station. Less appreciated, however, was the need for basic research. In his introduction to the 1957 issue of "Research Activities," Durland explained:

> "Some of the applied research projects covered in this report may be of particular interest because of their value to certain engineering and industrial fields. Other basic research projects are of interest because they may, in the long run, be even more beneficial to society, generally. However, the greatest value to this research, both applied and basic, is the important position research has in the engineering educational program and in helping our School of Engineering maintain a high quality and forward looking faculty."

Durland's interest came at a time when engineering schools all over the country were devoting more of their efforts to basic research. Although the Kansas Engineering Experiment Station wanted to increase its budget for basic research, simple economics intervened. It was more difficult to obtain funds for basic research since the benefits are not as apparent as in the case of applied research.

Division of Engineering and Industrial Services

In 1958 the board of regents authorized a new division to coordinate the efforts of various groups within engineering which assist industry, business, and government groups in Kansas. The action allowed K-State to continue to perform services for indus-

try, but changed the name of the service organization. Instead of the services being provided by the Engineering Experiment Station, they would, after that date, be provided by the Division of Engineering and Industrial Services. Durland continued as director of EES and also of the new division. Leland S. Hobson, long the associate director of EES became associate director of the new division.

Dwight A. Nesmith, then an associate professor, was in charge of an Industrial Survey Program which began in 1947. That program was placed under the wing of the new division also.

M. R. Hodgell, associate professor of architecture, was in charge of City and Regional Planning Services, also incorporated into the new division. Special assistance to communities in that project involved preparation of land use maps, writing of preliminary drafts of new zoning ordinances, traffic and parking studies, and adequacy surveys on schools and recreation facilities.

The new division was to "aid the economic welfare of the state and the people of Kansas." One of the objectives of K-State, as the land grant college, has been to "give practical and effective assistance at a professional level to those enterprises in the state that serve as the economic foundation of Kansas." In the early years of K-State's history, that task fell primarily to the school of Agriculture because farming was the state's primary industry. As industrial development in manufacturing increased, the need for engineering assistance increased. It was upon that basis that the Division of Engineering and Industrial Services was founded.

In 1960 a Management Development Series was added to the division with additional sponsorship from the department of industrial engineering with John P. Clifton in charge. The program sponsored seminars and short courses throughout Kansas for industrial personnel.

Institute for Environmental Research

In 1961, the National Institutes of Health approved a grant of $80,000 for the construction of a new research center at K-State for the study of human responses to various thermal environments. The grant was matched by an appropriation of $80,000 from the Kansas Legislature. The equipment for the laboratory was donated by the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE). The equipment had an estimated value of $150,000. The environmental testing chamber was located in Cleveland, Ohio, when ASHRAE donated it to K-State. K-State representatives went to Cleveland to oversee the dismantling of the chamber, and, upon their return to Man-

hattan, supervised the process of setting it up again in its new home as a part of the KSU mechanical engineering department.

Henry Neely, then an assistant professor of mechanical engineering, was placed in charge of the dismantling and reconstruction project. Rather than drawing many detailed sets of construction plans, Professor Neely used a more modern method—a three-dimensional "design model" was constructed of balsa wood and wire. The three-dimensional view eliminated many difficulties that might have been encountered using the conventional blueprints. The model was displayed in Seaton Hall for awhile so engineers could get an idea of what the completed project would look like. Also used in the construction was a computer program to determine the most economical sequence of tasks, an innovative idea for the time. Computers were beginning to come into prominence in the sixties, but had not yet become commonly used.

The ASHRAE environmental test room itself was one of the most sophisticated facilities of its type. The walls of the room were constructed of individual aluminum panels, as were the ceiling and floor. Copper tubing attached to the back of the panels contained an ethylene glycol solution which could keep the room surface temperatures constant over a range from 20 to 150 degrees Fahrenheit. The panels were designed so that the temperature of each could be controlled individually. This arrangement allowed many different combinations of conditions to be achieved within the room. Conditioned air entered from perforated ceiling strips and left next to the floor by way of a continuous slot around the perimeter of the room. At the time of its transfer to K-State, there was no other facility of its size and versatility where human comfort tests could be made. To this day, only two similar facilities exist in the world.

The IER building also contained an air pollution laboratory where studies were made on fine-particle sizes, grease spatterings, and hood development. Another part of the institute was the biomedical engineering laboratory where research on biological heat transfer and fluid flow was carried on.

The following chart shows the overlapping periods of service of Kansas State University presidents and deans of engineering. The chart begins with Will because of his role in developing an engineering curriculum at K-State:

Year	1897	98	99	1901	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
President	Will———			Nichols———								Waters											Jardine——
Dean of Engineering											McCormick			———		Potter							

Year	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
President						Farrell																		
Dean of Engineering	Seaton																							

Year	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
President	Eisenhower							McCain															
Dean of Engineering							Durland												Shupe		Russell——		

Year	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
President	———										Acker							———
Dean of Engineering	——	Nevins									Rathbone							———

Terms of Presidents:

Joseph Denison	1863-73
John Anderson	1873-79
George Fairchild	1879-97
Thomas E. Will	1897-99
E. R. Nichols	1899-1909
Henry J. Waters	1909-17
Wm. M. Jardine	1918-25
F. D. Farrell	1925-43
Milton Eisenhower	1943-50
James A. McCain	1950-75
Duane C. Acker	1975-

Terms of Deans of Engineering:

*Edmund B. McCormick	1908-13
*Andrey A. Potter	1913-20
+Roy A. Seaton	1920-49
Merrill A. Durland	1949-61
John W. Shupe (acting)	1961-63
Paul B. Russell	1963-67
Ralph G. Nevins	1967-73
Donald E. Rathbone	1973-

* The title until 1918 was Dean of Mechanic Arts

+Dean, Division of Engineering, 1920-38; Dean of Engineering and Architecture, 1938-49

CHRONOLOGY KANSAS STATE ENGINEERING

1862 Morrill Act signed by President Abraham Lincoln
1863 Provisions of the Act accepted by state of Kansas
1863 Kansas State Agricultural College opened
1884 Drawing and applied mechanics offered for first time
1886 Ozni P. Hood comes to K-State as superintendent of shops
1890 Second Morrill Act approved
1891 Machine shop added to shop building at southwest corner
1893 Descriptive geometry offered for first time
1894 Provision made for heating campus buildings by steam
1894 Electric lighting installation begins
1897 Administrative upheaval; Thomas E. Will elected president of the college
1897 Apprentice courses organized in the shops
1897 Four-year professional course organized in mechanical engineering
1897 Elementary mechanics, hydraulics, machine design and advanced machine design, mechanics of materials, measurement of power and engineering laboratory, and engineering of power plants introduced
1897 O.P. Hood resigns
1897 Joseph D. Harper joins engineering faculty
1899 Ernest R. Nichols becomes president of the college
1899 Electrical engineering curriculum added
1900 Extensive additions made to shops
1902 Denison Hall built for chemistry, physics and electrical engineering
1904 Architecture added to curriculum
1905 Addition to woodshop
1907 Civil engineering curriculum established
1908 South wing of mechanics hall added
1908 Position of Dean of Mechanic Arts created; E.B. McCormick named first dean
1909 H.J. Waters elected president of the college
1909 Bill introduced in Kansas legislature with provisions for transferring all engineering work to KU
1910 Engineering Experiment Station established
1910 Mechanical engineering divided into applied mechanics and hydraulics; mechanical drawing and machine design; power and experimental engineering; shop methods and practices; and steam and gas engineering
1911 East wing of mechanical engineering hall (Seaton) completed
1912 College organized into divisions including a Division of Engineering
1913 A.A. Potter named acting dean of engineering
1913 Department of steam and gas engineering dissolved
1913 Agricultural engineering (farm machinery) curriculum mentioned in catalog
1915 Farm machinery courses transferred from Agronomy to Engineering to form beginnings of an agricultural engineering department
1915 First issue, **KSAC Engineer**
1916 Flour mill engineering course offered
1917 Waters resigns; J.T. Willard named acting president for two-month period
1918 William M. Jardine named college president
1918 College shops expanded to provide technical mechanical training to the military
1918 Dean A.A. Potter works half-time for KSAC, half-time for the War Department
1918 Six wooden buildings erected for students' army training corps
1920 Potter resigns to become dean of engineering at Purdue University
1920 Roy A. Seaton named dean
1920 Engineer's Day held—forerunner of Open House
1921 Central and west wing of mechanic arts building (Seaton Hall) completed
1921 "K" constructed on Prospect Hill

1923 Dairy department building reassigned and renamed "Chemical Engineering Hall"
1924 Landscape architecture, chemical engineering curricula added
1925 Architectural engineering curriculum added
1925 Jardine resigns; F.D. Farrell named president
1930 "S" added to Prospect Hill
1931 Named changed to Kansas State College of Agriculture and Applied Science
1933 Flour mill engineering dissolved; replaced by milling industry curriculum
1937 Industrial arts program established
1937 Landscape architecture curriculum dissolved
1941 Seaton to Washington to organize war training effort nation-wide
1941 Defense training courses initiated
1943 Milton Eisenhower named president
1949 Seaton becomes building expediter
1949 M.A. Durland named dean of engineering
1950 James A. McCain named president of the college
1953 Extension of west wing of engineering building
1954 Seaton retires; moves to Wright-Patterson Air Force Base Institute of Technology
1954 Shop practice converted to industrial engineering and industrial arts
1955 Engineering building named "Seaton Hall" by President McCain
1956 Machine design discontinued
1957 Agricultural engineering wing completed
1958 Nuclear engineering established; William R. Kimel named first department head
1958 Industrial arts program dissolved
1960 Industrial engineering and industrial arts shortened to "industrial engineering"
1961 Durland retires as dean; returns to teaching
1961 John Shupe named acting dean
1963 Institute for Environmental Research completed; Ralph Nevins named first director
1963 Paul Russell named dean
1966 Engineering lecture hall remodeled
1967 Ralph G. Nevins named dean
1972 Ward Hall (nuclear engineering) dedicated
1973 Donald E. Rathbone named dean
1975 Applied mechanics disbanded
1975 Duane C. Acker named president of the college
1975 Engineering technology and architectural engineering and construction science added
1975 Seaton Hall remodeling projects completed
1976 Durland Hall, Phase I completed
1976 Undesignated Ph.D. program initiated
1977 Shop areas remodeled; renamed Seaton Court
1980 Kansas Engineering Extension Service formed
1983 Durland Hall, Phase II completed

About the Deans

Edmund B. McCormick

K-State's first dean of engineering (then called mechanic arts) was Edmund B. McCormick, a native of Normal, Ill. Born November 24, 1870, he graduated from Illinois State Normal University in 1889.

He began his career with a job as machinist with the C & A Railroad. After working for a few years he decided to return to school, this time opting for the Massachusetts Institute of Technology, (MIT), where he earned a degree in mechanical engineering in 1897.

Upon graduation he took a post as an instructor at Montana State College. He was promoted to assistant professor the following year. While at Montana State he married the former Jeanette Maxey. She died in 1915, leaving him with two young sons.

McCormick moved to Kansas as a professor of mechanical engineering in 1901. He stayed with K-State until 1913, the last five years as dean. He was largely responsible for the development of many curricula in the engineering division and developed the idea for the Engineering Experiment Station. When he convinced the administration to approve the EES, he became director in addition to his work as dean. He left Kansas to work as a consulting engineer for the U.S. Department of Agriculture. He ultimately moved to Alameda, California as chief of the equipment division for U.S.D.A.'s Bureau of Public Roads. He was a consulting editor for the Agricultural Engineering Series published by McGraw-Hill Book Company. McCormick died Jan. 15, 1926.

A. A. Potter

Andrey A. Potter was born in Vilna, Russia on August 5, 1882. Dreaming of a future in America, he came to the United States as a teenager in 1897 and became a citizen in 1906. He earned a bachelor's degree from the Massachusetts Institute of Technology (MIT) and was awarded 10 honorary doctoral degrees during his long career. After graduation he worked for General Electric Co. before taking a teaching post at Kansas State. Potter married Eva Burtner in 1906 and the couple had two children. He was presented the prestigious Lamme Medal for 1940 recognizing his contributions to engineering education. In 1943 the Western Society of Engineers presented him with the Washington Award for distinguished leadership in engineering education and research and patriotic service in mobilizing technical knowledge for victory in war and peace. He was presented the McCor-

mick Medal for contributions to agricultural engineering. His text, **Steam and Gas Power Engineering** written with J. P. Calderwood, KSAC professor of mechanical engineering, was published four months prior to his move to Purdue. The same year, **Elements of Engineering Thermodynamics**, co-authored with Calderwood and James S. Moyer, was published. Potter also was the author of **Farm Motors** published in 1913. In addition to his books, he authored more than 70 technical articles.

Even after his formal retirement from Purdue in 1953, he continued to make himself available for consultation. He continued as president of the Bituminous Coal Research, an industrial organization, until 1960. The man known affectionately as the "Dean of the Deans of Engineering Universities" died November 5, 1979.

Roy A. Seaton

Associated with the university over a longer period of time than all but one other individual, Roy A. Seaton came to be thought of as "Mr. K-State Engineering." Born in Glasco, Kansas, April 17, 1884, Seaton studied engineering at K-State, the University of Wisconsin, and Massachusetts Institute of Technology (MIT). He held B.S. and M.S. degrees from K-State, the S.B. degree from M.I.T. and an honorary doctor of science from Northeastern University, Boston.

After graduation in 1904 Seaton joined the K-State faculty as an assistant in mathematics and advanced to become dean of engineering in 1920.

He married a Manhattan woman, Gay Perry, in 1913. She died when a flu epidemic swept Washington, D.C. where the Seatons were living while he served as a captain in the U.S. Army Ordnance. Seaton returned to K-State after World War I to resume his academic career. He married the former Elnora Wanamaker of Blue Rapids in 1921. The Seatons raised five children, including a son from his first marriage.

From 1940-42 Seaton was again in Washington where he organized and directed the Engineering, Science and Management War Training program of the U.S. Office of Education. The program of short courses was offered in more than 200 colleges and universities throughout the country and trained nearly two million people.

He retired from administrative duties in 1949 at age 65, but continued to serve as building expediter until 1954. His career spanned half a decade as a K-State educator.

When he retired from K-State in 1954, Seaton was tapped as academic director for the U.S. Air Force Institute of Technology at Wright-Patterson Air Force Base near Dayton, Ohio. He was in charge of organizing and directing undergraduate and graduate technical programs for the Air Force.

Seaton was a national president of the Society for the Promotion of Engineering Education, later known as the American Society for Engineering Education. He was awarded the Lamme Medal in 1942 in recognition of his contributions to war training during World War II. He was a director of the National Council of State Boards of Engineering Examiners and served for nearly a quarter of a century as chairman of the Kansas Registration Board for Professional Engineers. He also had been president of the Kansas Engineering Society.

He authored several articles and bulletins as well as a textbook, **Concrete Construction for Rural Communities,** which was published by McGraw-Hill.

Seaton died May 24, 1970 in Manhattan after a prolonged illness.

M. A. Durland

M. A. "Cotton" Durland enrolled at K-State in 1914 in electrical engineering. His father had told him that if he attended K-State, his education would be financed but if he chose another school, the young man would have to pay for it himself. Durland said K-State would be fine with him, and it continued to be fine throughout his 53-year association with the college of engineering. He earned a B.S. and two M.S. degrees from K-State.

Born January 6, 1897 in Centralia, Kansas, Durland graduated from K-State in 1918. He was number one in his class and the only one to graduate with honors. World War I was in progress when he graduated and he was whisked off to France with the Army Corps of Engineers. After a year of service he returned to campus for some advice on where to look for employment.

"I think we can find a temporary job for you here, Durland," Dean A. A. Potter told him. "That's the last time I heard the word 'temporary,' " Durland recalled. He set to work teaching drawing in Professor Seaton's machine design department and was gradually promoted up the ranks. In 1923, as an assistant professor, he was asked to move into the dean's office half-time to take charge of student personnel work for Dean Seaton. He continued that facet of his career until becoming dean in 1949. It was while handling the student personnel work that Durland became closely associated with so many K-State students. His uncanny memory for names, faces, and information about each person was utilized to its fullest in his close contact with the young engineering students.

From 1949 to 1961, Durland was dean and director of the Engineering Experiment Station. He retired as dean but returned to the faculty as a professor until his retirement in 1967.

Known to many as "Cotton," Durland picked up that name as a student. Members of his fraternity, Phi Delta Theta, called him "Cotton" because of his white hair.

During Durland's tenure as dean, two major additions were made to Seaton Hall and two new departments, nuclear and industrial engineering, were established. Also, graduate study in engineering was expanded.

From 1957 through 1965, Durland was a member of the K-State Athletic Council. He was also K-State's faculty representative to the Big Eight Conference.

Durland established the KSU College of Engineering Advisory Council, composed of midwestern leaders in engineering, education and industry to review and advise on instruction, research, and new programs at K-State. He continued to serve on the advisory council even after his retirement.

Dean Durland, and his wife, Lorna, had two children, Audrey Jean Emmons and Mary Lee Kind, both of California.

He died January 2, 1982 at the age of 84.

Evolution of the Departments

Mechanics' Course—all engineering before 1897

Steam and Gas Engineering—1897 (became **Mechanical Engineering** 1922)

Electrical Engineering—1899

Architecture—1904 (began in 1871 as drawing course) separated from engineering in 1963

Civil Engineering—1907 (for a short time called Civil and Highway Engineering)

Printing—1907 (discontinued 1912)

Applied Mechanics and Hydraulics—1910 (changed to Applied Mechanics and Machine Design 1913, split in 1923—Applied Mechanics discontinued in 1975; Machine Design discontinued in 1956)

Shop Methods and Practice—1910 (name changed to Shop Practice and later to Industrial Engineering and Industrial Arts; finally in 1960 to **Industrial Engineering**)

Power and Experimental Engineering—1910 (discontinued 1913)

Mechanical Drawing and **Machine Design**—1910 (changed to Applied Mechanics and Machine Design 1913, split in 1923, discontinued in 1956)

Farm Machinery—1915 (changed to Farm Engineering in 1918 and to **Agricultural Engineering** in 1922)

Flour-Mill Engineering—1916 (discontinued 1933)

Chemical Engineering—1924 (under the Department of Chemistry until 1940)

Landscape Architecture—1924—(discontinued 1937)

Architectural Engineering—1925 (renamed Architectural Structures in College of Architecture and Design, 1963; returned to Engineering in 1975)

Industrial Arts—1937 (discontinued 1958)

Industrial Technology—1955 (discontinued 1960)

Nuclear Engineering—1958

Construction Science—1975 as **Architectural Engineering and Construction Science**

Engineering Technology—1975

Student Organizations

Date Formed	Name
1908	American Institute of Electrical Engineers
1912	Civil Engineering Society
1913	Sigma Tau - Epsilon Chapter
1914	American Society of Mechanical Engineers
1921	American Society of Agricultural Engineers
1929	Steel Ring
1934	American Institute of Chemical Engineers
1939	Eta Kappa Nu - Beta-Kappa chapter
1939	Pi Tau Sigma
1958	American Nuclear Society
1962	American Institute of Industrial Engineers
1968	Association of General Contractors of America
1969	Alpha Pi Mu - Industrial Engineering honorary
1972	Society of Women Engineers
1974	Tau Beta Pi - Gamma chapter
1975	American Institute of Architectural Engineers
1976	Omega Chi Epsilon - Chemical Engineering honorary
1976	Kansas State Engineering Technologists
1978	Alpha Nu Sigma, Nuclear Engineering honorary
1981	Society of Manufacturing Engineers
1982	Tau Alpha Pi - Engineering Technology honorary

Superintendents of the Shops

Ambrose Todd	1871-78
T.T. Hawkes	1878-86
Ozni P. Hood	1886-98
*E.B. McCormick	1901-08

*Elected Dean of Engineering

Buildings Erected at K-State Under the Supervision of R. A. Seaton as Building Expediter.

Small Animals Research Laboratory, 1949
Chemical Engineering Laboratory, 1949
Engineering Lecture Hall, 1950
Fieldhouse and Gymnasium, 1951
Women's Residence Hall No. 4, 1951
Classroom Building, 1951
Women's Residence Hall No. 6, 1952
Connecting Wing, Waters Hall, 1952
West Wing Engineering Hall, 1952

Directors, Engineering Experiment Station:

Deans McCormick, Potter, Seaton and Durland during their terms as dean also directed the Engineering Experiment Station.

Leland S. Hobson..... 1961-69
Dwight A. Nesmith 1969-74
*Ted O. Hodges 1974-81
William H. Johnson..... 1981-
*also Associate Dean

Directors, Institute for Environmental Research

Ralph G. Nevins..... 1963-67
Frederick H. Rohles 1967-

Directors, Institute for Systems Design and Optimization

L. T. Fan..... 1967-

Directors, Institute for Computational Research in Engineering

John O. Mingle..... 1969-

Director, Center for Energy Studies

N. Dean Eckhoff 1977-

Director, Center for Occupational Safety and Health

Jacob J. Smaltz 1977-

Directors, Kansas Industrial Extension Service*

John Sutherland..... 1965-66
Kenneth Razak 1966-70
William H. Honstead..... 1970-81
Richard B. Hayter..... 1981-

Director, Kansas Engineering Extension Service*

Richard R. Hayter..... 1980-

*Combined under the umbrella of Director, Engineering Extension Services in 1981

Director, Office of Minorities and Women*

Karen Hummel 1977-
R. Cynthia Royce-Lartigue 1982-
*Split, 1982 with Hummel as Director of Women's Programs and Lartigue Director of Minorities' Programs

Associate Deans of Engineering

Richard C. Potter
William Honstead
John Shupe
Cecil Best

Department Heads

Agricultural Engineering

Karl J. T. Ekblaw 1917-19
*W. H. Sanders..... 1919-21
Harry B. Walker 1921-28
Frederick C. Fenton 1928-56
George H. Larson 1956-70
William H. Johnson..... 1970-81
*Gustave E. Fairbanks ... 1981-82
Charles K. Spillman 1982-

Applied Mechanics

Roy A. Seaton..... 1910-23
Charles H. Scholer..... 1923-56
M. E. Raville 1956-62
Philip G. Kirmser 1962-75

Architectural Engineering and Construction Science+++

I. Eugene Thorson..... 1976-79
Robert E. Dahl..... 1979-

Chemical Engineering++

W. L. Faith 1940-42
John W. Greene 1942-46
F. A. Rohrmann..... 1946-47
Henry T. Ward..... 1948-60
W. H. Honstead 1960-68
L. T. Fan..... 1968-

Civil Engineering

L. E. Conrad 1907-49
Reed F. Morse 1949-63
Jack B. Blackburn 1963-72
Robert R. Snell 1972-

Electrical Engineering+

Benjamin F. Eyer 1908-12
J. O. Hamilton 1912-14
Clarence E. Reid 1914-27
R. G. Kloeffler 1927-55
R. M. Kerchner 1955-64
W. W. Koepsel 1964-76
*E. E. Haft 1976-78
James H. Tracey 1978-82
Donald R. Hummels 1982-

Engineering Technology

Kenneth K. Gowdy 1975-79
John C. Lindholm 1979-

Industrial Engineering

(formerly Shop Practice)
G. E. Bray 1910-17
W. W. Carlson 1917-46
G. A. Sellers 1946-59
Irvin L. Reis 1959-62
G. F. Schrader 1962-66
Frank A. Tillman 1966-

Machine Design

Roy A. Seaton 1910-23
Clinton E. Pearce 1923-56

Mechanical Engineering+++

Joseph D. Harper 1898-1901
Edmund B. McCormick 1901-13
Andrey A. Potter 1913-18
J. P. Calderwood 1918-34
Linn Helander 1934-57
Ralph Nevins 1957-67
Preston McNall, Jr. 1967-71
J. Garth Thompson 1971-74
Paul L. Miller, Jr. 1975-

Nuclear Engineering

William R. Kimel 1958-68
C. G. Chezem 1968-72
R. E. Faw 1972-77
N. Dean Eckhoff 1976-

* Acting Head
+Administered under Physics Department from 1899-1908
++Under Chemistry Department until 1940
+++Known as Steam and Gas Engineering from 1910-1922
++++Curriculum started in 1925

Every effort has been made to make the following listing as complete and accurate as possible. Inaccuracies and omissions in old records made the task of compiling the listing a difficult one. Although the list has been checked and rechecked it is possible that someone has inadvertently been omitted, or that the dates listed for some faculty members might be approximations. We apologize for any errors and hope the reader will understand our desire to preserve for posterity the names of those faculty members who have meant so much to the history of K-State engineering.

Listed below are faculty members with K-State for five or more years:

Agricultural Engineering

Anderson, Carl E.	1967-72
Axthelm, Larry	1969-74
Barger, Edgar Lee	1930-38
Baugher, Earl E.	1967-
Chubbuck, Edwin R.	1948-56
Chung, Do Sup	1965-
Clark, Stanley J.	1966-
Decker, Martin	1951-62
Fairbanks, Gustave E.	1946-
Fenton, Frederick C.	1928-56
Funk, J. W.	1947-67
Gartung, Jimmy L.	1976-81
Herpich, Russell L.	1951-73
Holmes, Elwyn S.	1966-
Jacobs, Clinton O.	1949-67
Jepsen, Richard L.	1953-
*Johnson, William H.	1970-81
Kuhlman, Dennis K.	1976-
Larson, George H.	1946-
Lipper, Ralph I.	1946-
Manges, Harry L.	1956-
Murphy, James P.	1968-
Otis, Charles	1936-42
Powell, G. Morgan	1977-
Roberts, June	1934-41
Rogers, Danny	1976-
Schindler, Dale	1966-79
Schrock, Mark	1973-
Selby, Walter E.	1969-74
Smith, Bruce B.	1916-31
Spillman, Charles K.	1969-
Steichen, James M.	1978-
Stevenson, Paul N.	1957-
TenEyck, George R.	1964-
Thomas, James G.	1975-

Walker, Harry B.	1910-28
Wendling, Leo T.	1947-81
Zink, Frank J.	1930-35

*To Director, Engineering Experiment Station

Applied Mechanics

Best, Cecil H.	1961-75
Burgess, Danny	1958-63
Crary, J.	1947-75
Dawley, Earle R.	1920-4__
Dillion, R. K.	1966-72
Haft, E. E.	1961-75
Hu, K. K.	1968-75
Huang, C. L.	1964-75
Kipp, John	1959-75
Kirmser, Philip G.	1942-44 (and) 1954-75
Koenitzer, L. H.	1929-44
Lin, S. W.	1949-54
Lindly, E. C.	1949-75
McCormick, Frank	1939-75
McDonald, C. R.	1969-74
Munger, Harold H.	1939-61
Pickett, Gerald	1929-45
Railsback, Geo.	1924-31
Raville, M. E.	1947-62
Robert, Jules H.	1916-45
Scholer, Charles	1923-56
Setterlund, Gordon	1949-54
Shupe, John	1951-65
Taylor, D. C.	1931-70
Wojtaszak, I. A.	1920-25

Architectural Engineering and Contruction Science

*Beckman, Morris	1948-56
Bissey, Charles R.	1969-
Blackman, Merrill E.	1965-
*Brenneman, John	1950-56
Burton, Charles L.	1969-
*Byers, Norman R.	1947-65
*Chadwick, Theodore	1927-64
**Dahl, Robert E.	1952-54 (and) 1976-
*Deibler, G. W.	1956-63
*Dronberger, M.D.	1949-63
*Durgan, Jack C.	1954-62
Goddard, James F.	1971-
*Graham, F. P.	1949-55
*Hafermehl, Charles L.	1946-54
*Heintzelman, J. C.	1947-64
*Helm, J. F.	1924-64
*Hodgell, Murlin Ray	1949-63
***Hodges, Teddy O.	1959-
*Keith, R. E.	1947-52
*Krider, Glen A.	1949-63
*Larmer, O.V.	1950-60
Lindly, Edwin C.	1949-
*Strohmeyer, Donald K.	1957-63
*Thorson, I. Eugene	1948-81
*Walters, John Daniel	1876-1917
*Ware, J. T.	1929-37
*Whiteley, Ronald	1947-57
*Wichers, Henry E.	1924-40

*From Architecture in College of Engineering and Architecture
**From Civil Engineering
***Associate Dean of Engineering and Director of Engineering Experiment Station 1975-81; from Agricultural Engineering

Chemical Engineering

Akins, Richard G.	1963-
Bates, Herbert	1958-78
Brown, Wilson F.	1924-33
Chen, Michael	1964-69
Erickson, Larry E.	1965-
Faith, W. L.	1933-42
Fan, L. T.	1958-
Glasgow, Larry A.	1978-
Greene, John W.	1937-46
Hall, Raymond C.	1952-
*Honstead, William H.	1943-68
Kyle, Benjamin G.	1958-
**Lai, F. S.	1975-
Matthews, John C.	1962-
Roth, Thomas A.	1965-
Taecker, Rollin G.	1947-55
Walawender, W. P.	1969-
Wang, S. L.	1952-57
Ward, Henry T.	1948-60
Woodard, Claude	1949-79

*To Kansas Industrial Extension Service
**Adjunct

Civil Engineering

Aguilar, Antonio M.	1965-70
**Best, Cecil H.	1975-
Blackburn, Jack B.	1963-72
*Conrad, L. E.	1907-49
Cooper, Peter B.	1966-
**Crary, James F.	1947-
Crawford, W. W.	1923-48
Creech, Tom	1957-65
++Dahl, Robert E.	1952-54
Frazier, F. F.	1911-54

Funk, Monroe L.	1956-72
Furr, M. W.	1917-40
**Hu, Kuo-Kuang	1968-
**Knostman, Harry D.	1957-
***Koelliker, James K.	1973-76 (and) 1978-
Kubitza, Wilhelm	1953-64
**+Lindly, Edwin C.	1949-
**McCormick, Frank J.	1939-77
Morse, Reed F.	1923-63
**Munger, Harold H.	1939-61
Musterman, John L.	1975-80
**Raville, Milton	1947-62
Robohn, Walter	1952-61
Rosebraugh, Vernon H.	1953-78
Russell, Eugene R.	1974-
Schmid, Lawrence	1968-77
**Scholer, Charles	1918-56
Shedd, Jack P.	1947-52
Shupe, John	1951-65
Smith, Bob L.	1948-
Snell, Robert R.	1957-
Swartz, Stuart E.	1968-
White, L. V.	1918-51
Williams, Wayne W.	1965-
Zovne, Jerome J.	1970-81

*Acting dean 1940-42
**From Applied Mechanics
***Also in Agricultural Engg.
+Transferred to Arch. Engg., 1981
++To Arch. Engineering, 1976

Electrical Engineering

Ahmed, Nasir	1968-
Bertnolli, Edward C.	1958-65
Brenneman, Jesse L.	1920-44
Bueche, Harry S.	1925-33
Carlson, Gordon E.	1959-64
Casey, Kendall F.	1970-79
Cottom, Melvin C.	1955-
**Dollar, John	1960-75
Eyer, Benjamin F.	1900-13
Ford, William R.	1949-56
Gagliardi, Ugo	1956-62
Gallagher, Richard R.	1968-
*Haft, Everett E.	1975-
Halijak, Charles H.	1956-66
Harris, Floyd	1965-81
Hearn, Norval	1966-72
Hegler, Burns E.	1957-68
Hewson, Kenneth D.	1945-51
Ho, Ping Liong	1957-64
Hummels, Donald R.	1970-
Hunt, Orville D.	1923-70
Johnson, Gary L.	1966-
Jorgenson, Louis M.	1925-54
Kaufman, Dale E.	1966-75
Kerchner, Russell M.	1922-65
*Kirmser, Philip G.	1954-
Kloeffler, Royce G.	1916-60
Koepsel, W. W.	1964-
Lenhert, Donald H.	1966-
Lucas, Michael S. P.	1968-
Martin, Karl H.	1941-48
Moss, Donald G.	1949-56
Neuenswander, John R.	1958-66
Pasley, Leroy C.	1931-36
Rathbone, Donald E.	1973-
Reid, Clarence E.	1914-27
Sitz, Earl L.	1927-69
Soldan, David	1975-80
Tracey, James H.	1978-82
Wakabayashi, Isaac	1956-
Ward, Joe E., Jr.	1940-
Weathers, Benton D.	1958-64
Wirtz, Leo A.	1947-71
Wolfe, J. Edmond	1946-55

*From Applied Mechanics
**To Assistant Dean

Engineering Technology

Dawes, William H.	1978-
Gilliland, Don A.	1978-
*Gowdy, Kenneth K.	1957-80
*Lindholm, John C.	1960-
Vaughan, Arthur R.	1977-
**Walker, Duane E.	1970-79

*From Mechanical Engineering
**From Electrical Engineering

Industrial Engineering

*Aiman, Harry W.	1918-41
*Ballard, Charles P.	1946-51
Ballou, Corliss J.	1954-60
Bennett, Corwin A.	1970-
Biegel, John E.	1978-
*Bray, G. E.	1910-17
Bussey, Lynn E.	1971-79
Byers, Earle C.	1946-78
*Carlson, Walter W.	1910-49
*Clifton, John P.	1947-70
*Darby, Earl G.	1941-63
Dickey, G. L.	1961-62 (and) 1963-67
*Dietrich, Harvey F.	1948-67
*Dodge, Merle R.	1927-40 (and) 1943-58
Elias, Samy	1960-65

*Flagg, Ray	1921-25
*Graham, Eugene C.	1923-36
*Granell, Eddie	1919-23
*Grant, Edward	1913-43
*Greeley, Fred F.	1923-34
Grosh, Doris L.	1968-
Grosh, Louis E., Jr.	1965-
Hansen, Carl U.	1957-77
*Hooper, John L.	1943-48
*Hostetter, A. E.	1931-69
Hwang, Ching-Lai	1965-
*Irwin, Wm. Henry	1919-31
*Jones, Edward C.	1916-49
Konz, Stephan A.	1964-
Lee, E. Stanley	1966-
*Loomis, Alden	1926-31
*Lynch, Daniel E.	1914-54
*McClure, William J.	1946-53
*McCollum, Sterling A.	1930-41
*Moore, Leo A.	1935-41
*Nelson, Clarence L.	1943-72
**Pauli, Ross I.	1951-64
*Sellers, Gabe A.	1919-60
*Shaw, Leslie M.	1941-48
*Smaltz, Jacob	1940-
*Smethers, Howard D.	1947-68
*Strom, H. C.	1919-24
*Stutzman, Milo J.	1934-40
Tillman, Frank A.	1965-
*Timmons, George G.	1946-52
Wilson, C. Carl	1977-
*Wilson, M. R.	1936-41
*Winter, Andrew	1919-24
*Woodard, Claude L.	1949-79
*Yost, Charles	1913-18
*Yowell, Allen R.	1947-58
*Zabel, Dale E.	1946-56

*Shop Practice Department
**Transferred to Mechanical Engg.

Machine Design

Branigan, George Francis	1927-43
Bowerman, Myron Ralph	1910-16
Byers, Norman R.	1947-52
*Durland, Merrill A.	1919-56
***Gingrich, Randolph F.	1923-47
Heckethorn, Lester O.	1947-52
Hunt, Stanley Paul	1920-26
*Kimel, William R.	1946-56
Kolsky, Gerald C.	1946-51
**Kubitza, Wilhelm Karl	1953-55
Mellard, George A.	1947-53
Messenheimer, Alva D.	1947-52
*Messenheimer, Alva E.	1942-56
Olsen, John Carl	1927-35
*Pauli, Ross I.	1947-56
*Pearce, Clinton E.	1917-56
Reinecke, Marvin E.	1946-52
*Sieh, Wayne D.	1946-56
****Sitz, Earl L.	1927-28
Smutz, Floyd A.	1918-56
Sullivan, Francis J.	1938-47
*Wood, Joe Nate	1936-56

*Transferred to Mechanical Engineering
**Transferred to Civil Engineering
***Transferred to Physical Plant
****Transferred to Electrical Engineering

Mechanical Engineering

Annis, Jason Carl	1959-79
Appl, Fredric Carl	1960-
Azer, Naim Zaki	1958-59 (and) 1964-
Ball, Herbert D.	1958-
Bell, Clarence A.	1964-72
Berns, Richard R.	1961-66
Bowyer, J. M., Jr.	1948-49 (and) 1963-71
Brainard, Boyd B.	1923-67
Byers, Norman R.	1947-52 (and) 1958-66
Calderwood, James Park	1918-34
*Clack, Robert Wynandus	1955-60
Crank, Robert E.	1947-
**Deines, Vernon P.	1957-59
Duncan, Alley H.	1942-78
Durland, M. A.	1919-67
Eggeman, George W.	1978-
Flinner, A. O.	1929-73
Gorton, Robert L.	1960-
Gowdy, Kenneth K.	1957-80
Hayter, Richard B.	1975-77 (and) 1980-
Helander, Linn	1935-61
Hobson, Leland S.	1946-73
Huang, Chi-Lung	1964-
Jones, Byron W.	1978-
Kent, Albert C.	1958-66
*Kimel, William R.	1946-60
Kipp, John E.	1959-
Knee, Loren B.	1951-56
Lindholm, John C.	1960-
Mack, Albert John	1917-48
Mason, Walter F.	1954-60
McNall, Preston E.	1965-73

Mercanti, Enrico Paul	1949-62
Messenheimer, Alva E.	1942-70
Michaels, Kenneth B.	1958-66
Miller, Paul L., Jr.	1957-
Myers, Kermit B.	1947-52
Neely, Henry Mason, Jr.	1958-66
Nesmith, Dwight A.	1948-
Nevins, Ralph G.	1948-73
Pauli, Ross I.	1947-
Pearce, Clinton E.	1917-62
Pippin, Clarence A.	1937-43
Potter, Andrey A.	1905-20
Potter, Richard C.	1949-60
Rohles, Frederick H., Jr.	1963-
Rose, Harve D.	1947-58
Schindler, L. W.	1947-52
Seaton, Roy A.	1906-20
Sieh, Wayne D.	1946-66
Sinha, Subhash C.	1977-
Smutz, Floyd A.	1918-56
Sprague, Clyde H.	1963-74
Swearingen, Thomas B.	1965-75
Thompson, J. Garth	1971-
Tripp, Wilson	1936-77
Turnquist, Ralph O.	1959-
Walker, Hugh S.	1964-
Ward, E. Dawson	1965-71
Wilson, Charles E.	1963-68
Wood, Joe Nate	1936-80
Yen, Shee Mang	1951-58

*Transferred to Nuclear Engineering

**Transferred to Architecture

Nuclear Engineering

Chezem, C. G.	1968-73
Clack, R. W.	1955-76
Donnert, Hermann J.	1966-
Eckhoff, N. Dean	1964-
Faw, R. E.	1962-
*Hightower, Ray E.	1960-
Iotti, Robert C.	1964-70
Kaiser, Richard E.	1959-67
Kimel, William R.	1946-68
Krick, M. S.	1970-75
Lester, Thomas W.	1975-
Merklin, J. Fred	1967-
Meyer, W.	1964-72
Mikhail, S. Z.	1958-66
Mingle, J. O.	1960-
Robinson, M. J.	1966-73
Simons, Gale G.	1965-66 (and) 1977-
Shultis, J. Kenneth	1969-
Verser, Fort A.	1969-74

*To Assistant to the dean, 1976

Award Recipients
College of Engineering James L. Hollis Memorial Award for Excellence in Undergraduate Teaching

Michael S.P. Lucas, Electrical Engineering	1971
Clyde H. Sprague, Mechanical Engineering	1972
Ted O. Hodges, Agricultural Engineering	1973
J. Fred Merklin, Nuclear Engineering	1974
Hermann Donnert, Nuclear Engineering	1975
Doris Grosh, Industrial Engineering	1975
K.K. Hu, Civil Engineering	1976
Robert Crank, Mechanical Engineering	1977
Richard R. Gallagher, Electrical Engineering	1978
Edwin C. Lindly, Architectural Engineering and Construction Science	1979
Charles R. Bissey, Architectural Engineering and Construction Science	1980
Donald R. Hummels, Electrical Engineering	1981
Cecil H. Best, Civil Engineering	1982
Muthuraj Vaithianathan, Industrial Engineering	1983

All-University Excellence in Teaching

N. Dean Eckhoff, Nuclear Engineering	1970
Gerald R. Potts, Mechanical Engineering	1970
Rodney T. Nash, Mechanical Engineering	1971
Edwin C. Lindly, Architectural Engineering and Construction Science	1980
Charles R. Bissey, Architectural Engineering and Construction Science	1981

Alumni Fellow

Gilbert E. Johnson	1983

Honorary Doctorate

A.A. Potter	1925
Ernest H. Freeman	1935
George W. Wildin	1935
William L. Enfield	1938
Glen E. Edgerton	1944
Eugene J. Peltier (LLD)	1961
Murray A. Wilson	1963
Fred J. Benson	1980
Claude L. Wilson	1982
Roy Bainer	1983

Alumni Medallion

Martin K. Eby	1970
W. LeRoy Culbertson	1973
Eugene J. Peltier	1975

First Ph.D. graduates

Applied Mechanics	Charles Stoneking, January 1956
Electronics	Dale R. Lumb, June 1962
Mechanical Engineering	Enrico P. Mercanti, June 1962
Electrical Engineering	Gordon Carlson, January 1964
Nuclear Engineering	Richard E. Kaiser, January 1968
Industrial Engineering	Fu-Tong Hsu, March 1971
General Engineering	Surya Nath, May 1978
Chemical Engineering	Larry Erickson, June 1964

The Board of Regents approved Ph.D. degree programs:

Mechanical Engineering	January 1957
Chemical Engineering	December 1958
Electronics	December 1958
Nuclear Engineering	October 1963
Industrial Engineering	February 1968
General Engineering	March 1976

After March 1976 all engineering Ph.D. degrees carried the designation "General Engineering"

100,000th K-State Graduate

Simpson, Jeffrey M., Engineering Technology ..... May 1983

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