Spanning the years:
Civil Engineering
the Rolla Way
Spanning the years:
Civil Engineering the
Rolla Way

By Jack B. Ridley
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To the alumni, faculty, staff and students of civil engineering at MSM/UMR.
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Jack B. Ridley
Rolla, Missouri
October, 1985
About The Author

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Preface

To those of you who graduated many years ago, we hope that this book will bring back some long forgotten memories. For those who have graduated in recent years, here is a history that will introduce you to some of the individuals of the past who helped our department provide the civil engineering education that is so important to our society today.

Since the opening of the University of Missouri School of Mines and Metallurgy in 1871, there has been a continuous history of civil engineering on the Rolla campus. Two of the first three graduates received their degrees in civil engineering.

Although in the formulative years there were no department heads as such, it is interesting to note that between 1897 and 1985 there have been only four department chairmen of civil engineering. As the only living past chairman, I would like to reflect on some of the lighter sides of my past experiences, those as a student and then as a faculty member serving under Joe Butler and "Skip" Carlton.

I never had the pleasure of meeting Prof. Harris, the first official chairman of the department; however, both Joe and Skip spoke of him often, and I learned that he had many of the experiences that we have today.

Although I had heard of the School of Mines from various sources, my first tangible introduction came in 1937. I was a recent high school graduate and a member of a small group of amateur astronomers in St. Louis; we came to the area to investigate a bright meteor that had exploded over the town of Dixon, Missouri. In tracing the path of the meteor, we learned that a Prof. Clarence E. Bardsley at MSM had observed it, along with his surveying class, while making a Polaris observation that evening. We visited him in Rolla; he was very helpful in describing what he saw and pointed out the location of the meteor's track in the sky. In order to establish the beginning and ending points of the sighting, we had brought along an old surveyor's transit. This was my first experience in using a transit and I was having trouble in leveling the thing, but Prof. Bardsley came to the rescue and gave me my first lesson in the proper setup of an instrument. This also gave me my first inkling that civil engineering included aspects of astronomy, particularly the area of measurements in which I was very much interested at the time. I never saw Prof. Bardsley again, since he left in 1938, but I have always felt that that meeting played an important part in determining my future direction.
After working a couple of years in an optical shop, I decided it was time to enroll at MSM and arrived there on September 3, 1939, the very day that England declared war on Germany, only a few days after the invasion of Poland. This was my second introduction to the School of Mines.

As a freshman, a few days before classes began, we were assembled one night by the sophomores in the fairgrounds west of the Trachoma Hospital and taught some of the "unofficial" miner songs. We were also told to wear our green hats and jeans with no belts. I soon found out why, since in the battle that took place later that evening, most of the freshmen lost their jeans. The next morning the freshmen, each attired in a new pair of pants, met the sophomores on Jackling Field to engage them in a mud fight and rope-pulling contest, during which we each lost another pair of jeans, and had to crawl along the creek in the sunken garden while the sophomores covered us with a syrupy liquid that smelled like rotten eggs. In addition, they shoved a large twist of green tobacco into each unwilling mouth for a bite. Unfortunately, I happened to swallow some of the green tobacco, which made me quite sick for the rest of the day. Because the hazing had been so severe, the administration banned some of the more flagrant activities in the years following. When we became sophomores, we were quite put out since we could not administer the same treatment that we had received. However, haircutting (scalping) and wrinkling were still in vogue. During my freshman and sophomore years, except for surveying, I had little direct contact with the civil engineering department, which had just moved into the newly completed Harris Hall. Both Joe Butler and Skip Carlton were professors that we heard about but seldom had occasion to see, so our knowledge of the faculty was primarily confined to those that we had for class.

One of the extracurricular activities that I enjoyed most, however, was the use of the 10-inch reflecting telescope that was located on top of the southwest corner of Jackling Gym. This telescope was built primarily for the study of lunar detail by Prof. S.R. Cooke, who had left MSM in the spring of 1939. I found it to be an excellent instrument and used it extensively during the unusual planetary lineup which occurred during the spring of 1940. The telescope, now located south of Rolla on Highway 0, is still used by students.

After my sophomore year, because of finances and the war, I left MSM; and, after serving in the Seabees, I completed my bachelor's
degree at Washington University under the G.I. Bill. It was there that I learned that MSM, straining under the enrollment of veterans, was looking for instructors.

I wrote to Prof. Butler and set up an interview which I shall always remember. Joe was very active and never talked to anyone in his office. Instead, I remember trailing him as he walked down the hall telling me about the department, stopping to fill the soda machine, and then showing me the labs in the basement of Harris Hall—my third introduction to MSM.

I accepted his offer to begin in September of 1948 as a full-time instructor at a salary of $2600, which seemed great to me at that time. In those days an instructor taught at least four courses and usually worked on a master's degree. I came to Rolla during the summer to build a home, since housing was in short supply because of the rapidly increasing enrollment at MSM. Shortly after my arrival in June, I was walking down Pine Street and ran into Dr. C.V. Mann, who had been my instructor in drawing and whom I had always admired. I introduced myself as a new faculty member but found that he was quite upset about the situation involving the concept of separation of MSM from the Columbia campus. However, being the gentleman that he was, he wished me well in my new job.

Those years were enjoyable ones. Prof. Butler had hired a number of instructors, nearly all veterans, to teach veterans. In some respects the teaching was easy since the students were dedicated and we had very few disciplinary problems. Joe's personal philosophy was that the department pretty well ran itself and his job was to guide and to nudge it a little bit here and there. He also told us that "you never flunk a student; the student flunks himself and you just record the grade." He liked to remain in the background and help others move ahead. He put me on his committee to help recruit members for the Engineers' Club in St. Louis. If we didn't recruit enough members to reach our goal, Joe would always slip us a few names that he had recruited. This way a number of us won gift certificates from the Engineers' Club for bringing in new members. Joe worked hard to get Skip elected as director to District 14 of ASCE in the early fifties and, of course, his monumental effort in organizing the Missouri Society of Professional Engineers is well documented. He never liked to drive and whenever we went to St. Louis to a meeting he would have one of us drive his car. When he did drive it was an unnerving experience, and Skip used to tell the story about the two of them returning one
night from St. Louis with Joe driving. He had several close calls, and Skip said he was apprehensive all the way until he finally saw the lights of Rolla in the distance. Skip said to himself “I believe we’ll make it.” At that moment Joe ran off the road and blew two tires, but luckily he had two spares.

Skip also liked to tell the story about one of the classes that Prof. Harris was teaching. It seems that he had two of the students’ names reversed; one was passing and the other failing. One day the passing student came to Skip quite concerned and told him about the mixup. He said “What shall I do, Professor Carlton? He thinks I’m the other student and is going to flunk me.” I believe the story had a happy ending and that each student finally received his proper grade.

Since my graduate work was in structures, I got to know Skip very well. He was my advisor and worked hard to get funding from the Welded Wire Institute to support my research. When we weren’t busy doing other things he spent hours telling me about his experiences with the school, among them his directorship of the ESMWT government program during the war years. Those were fascinating stories, and later during my chairmanship, whenever I was beset with a particular problem, I would remember that both Skip and Joe faced worse situations and usually came out on top. I left Rolla in 1954 to teach at Iowa State University and did not see Rolla again until nine years later.

Skip of course was instrumental in convincing me to return to Rolla in 1963, and I am probably the only faculty member who was hired first by Joe and then by Skip. Early in the sixties many changes were taking place on campus. Due to the emphasis on engineering and science, funding from the State was up and plans were underway to make MSM a campus of a four-campus system. Although Skip was in poor health during these years, he was still a scrapper; and during his last year as chairman of the department, he was also chairman of the policy committee, composed of all department chairmen, then the most powerful committee on campus.

The passing of both Joe and Skip was a great loss to civil engineering and to the campus, and marked the end of an era when individual departments played an important role in shaping the future of the campus.

Joseph H. Senne
1985
CHAPTER I

Preparing the Foundation:
Civil Engineering at MSM,
1871-1891

On July 2, 1862, President Abraham Lincoln signed the Morrill Act, providing each state in the union with a grant of land to be used for the creation of colleges of agriculture and mechanic arts. With this incentive, on November 6, 1871, the University of Missouri School of Mines and Metallurgy (MSM), opened its doors and one of Missouri’s contributions to the spirit of the Morrill Act became a reality.

From the beginning, civil engineering has been an integral part of the campus tradition. Though the name from 1871 to 1964, “The University of Missouri School of Mines and Metallurgy,” did not seem to reserve a special place for civil engineering, the spirit of MSM has always included this fountainhead of the engineering profession. The first director of MSM, Charles P. Williams, by implication, included civil engineering as he concluded his inaugural speech on dedication day, November 23, 1871:

Look at the energies now dormant within this State (Missouri). What force. . . . What possibilities. . . . What commercial pulsations. . . . What grand technical superstructures shall be founded on a system surcharged with numberless combinations of metalloid and metal! It is ours to assist in making these actualities—to furnish skill, which cooperating with capital, shall mold these raw materials around us on every side into forms of use and beauty.¹

The spectators who heard Williams that day included Gustavus Adolphus Duncan and John Holt Gill, men destined to be two of the first three graduates of MSM. Both majored in civil engineering.

In 1871, Rolla, the community whose destiny would be entwined with MSM’s, was a small town of about 1,300 people on the crest of Phelps County’s Ozarks. Still a relatively young community, Rolla bore some characteristics of a frontier town. For example, it had no
paved streets and no banks in 1871 though it did offer its citizens the choice of four churches, two weekly newspapers, nine physicians and a variety of retail establishments. The most recent physical addition to the city in 1871 was a “modern Italian style” public school building, now known as the Rolla Building. While awaiting construction of permanent facilities at the designated site for the campus (Fort Wyman), MSM officials arranged to rent the public school building. Four years later, the University of Missouri Board of Curators purchased the Rolla Building from the school board. This building was the MSM campus’s sole structure until a chemical laboratory was completed in 1886.

Civil Engineering in America

As MSM’s faculty and students prepared for the first school year, American society was experiencing unprecedented growth and expansion. Engineers were playing a large part in this transformation.

Although civil engineering is often called the parent of all the engineering specialties, it was a relatively young profession in 1871.
Just over a hundred years before (1750), John Smeaton of England designated himself a "civil engineer" to distinguish his interests from those of the military engineer. The American Society of Civil Engineers (ASCE) was formed in 1852. Given the objective of civil engineering, "the art of directing the great sources of power in nature for the use and convenience of man," it should come as no surprise that civil engineers played a vital role in American technological expansion in the generation following the Civil War.

Two years before MSM was dedicated, the famous gold spike was driven to complete the first United States transcontinental railroad. In 1871 construction workers were hard at work on Eads' Bridge spanning the Mississippi at St. Louis (completed in 1874), and their counterparts in Brooklyn labored on the longest suspension bridge in the world, Roebling's Brooklyn Bridge (completed in 1883). At the same time, the Druid Lake Dam near Baltimore, Maryland, the first major earthfill dam, had just been completed. These railroads, bridges and great dams were works of art and marvels of technology and all served as monuments to the civil engineers of the era. Naturally, the men responsible for these feats attracted public attention. In turn, the attention served as an incentive for young men to become civil engineers.

As the tasks of civil engineering became more complex, those who aspired to become practitioners required additional training and in contrast to earlier counterparts, a college education became increasingly important to successful engineers. The "old school" for engineers had consisted of practical experience combined with a knack for applied science, but by the 1870s some formal training had become very desirable.

Undergraduate enrollment in engineering colleges had increased from about 250 in 1852 to 1,400 in 1870. In that year, 17 institutions offered formal programs in engineering. The generation after 1870 experienced much change in engineering education. Clearly the Morrill Act reflected the society's interest in stimulating the development of engineering education. Between 1870 and 1890 the number of schools with engineering curricula increased from 17 to 110 and curricula in civil, mining, mechanical, electrical and chemical engineering developed, in that order, into what has become the traditional curricula. "Traditional" curricula implies a four-year course of study including basic education in science, mathematics and engineering science followed by more specialized classes and laboratories in
the discipline of choice.\textsuperscript{9}

Among the institutions with engineering curricula to be formed during this period were Iowa State University (classes began in 1869), the University of Nebraska (classes began in 1871), Ohio State University (classes began in 1873), Purdue University (classes began in 1874), and the University of Missouri School of Mines and Metallurgy.\textsuperscript{10} MSM’s foundations were firmly established against a backdrop of social transition and social concern for the development of American engineering education.
Civil Engineering Curriculum at MSM, 1871-1891

Civil engineering played a central role in the life of MSM from its beginning. This is illustrated by the following advertisement in the December 26, 1872, issue of the Rolla Herald:

EARLY OBJECTIVES OF SCHOOL
Shown By Advertisement In
Rolla Herald, Vol. 7, No. 18
Thu., Dec. 26, 1872.
Page 2, Col. 5
And in 9 subsequent issues

"Missouri
SCHOOL OF MINES
And
Metallurgy

ROLLA, PHELPS COUNTY, MO.

A School of Applied Science, for thorough, practical training in Civil, Mining and Mechanical Engineering, Architecture, Chemistry, etc. The collegiate year is divided into two terms with no intermediate vacation.

THE SUMMER SEMESTER OF THIS INSTITUTION
Will Begin
FEBRUARY 13, 1873

Students for partial courses admitted at any time.

For further particulars apply to or address

CHAS. P. WILLIAMS
Director"

dec 26-7w

During the earliest years, MSM students, regardless of their chosen field of specialty took the same curriculum. It included a preparatory year of algebra, basic arithmetic, rhetoric and composition, botany, chemistry, physics and geography. These courses could be waived by examination provided the individuals were at least 17 years of age. After the preparatory courses, students took the following work:
FIRST YEAR

Algebra—finished
Geometry
Trigonometry—begun
Mensuration
Surveying and Field Practice
General Chemistry and Chemical Philosophy
Physics
Mineralogy—Descriptive and Determinative
Crystallography
Outlines of Zoology
Analytical Chemistry
Blowpipe and Humid Qualitative Analysis
Drawing—Mechanical and Free Hand

SECOND YEAR

Trigonometry—finished
Analytical Geometry
Calculus
Surveying—Field Practices, Projections, Shades, Shadows
Descriptive Geometry—begun
Machinery and Motors
Chemistry—General and Industrial
Metallurgy
Physics
Analytical Chemistry—Qualitative and Quantitative Humid Analysis
Geology—Physiographical, Dynamical, Historical Lithology, Phenomena of Veins and Mineral Deposits
Drawing—Free Hand and Mechanical

THIRD YEAR

Calculus
Analytical Mechanics
Applied Mechanics
Field Practice and Engineering Topography
Metallurgy and Assaying—Wet and Dry Methods
Analytical Chemistry—Quantitative Analysis
Machinery and Motors
Mining—Methods of Explorations and Exploitation, Extraction, Crushing and Concentration, Mining Regions
Drawing—Maps, Plans, and Sections of Mines
Towards the close of the third year, a course of lectures will be delivered by the President of the University on Mining law. Throughout the course, evening public lectures on Human Physiology and Domestic Hygiene, and on special scientific studies, will be delivered.

French and German are optional studies.
In accordance with the requirements of the "Agricultural Land Grant Act", provisions are made for instruction in military tactics.\textsuperscript{11}

Though these courses applied to all students regardless of the specialty they chose, this curriculum is virtually identical to the requirements for the undergraduate degree of "Civil Engineering" at Rensselaer Polytechnic Institute, among the first American institutions to offer a major in civil engineering.\textsuperscript{12}

By the 1873-74 term, civil engineering had become a formal part of MSM's curriculum. "The University of Missouri School of Mines and Metallurgy Announcement and Register for the Year Ending June 18, 1874" included the following description of the discipline:

CIVIL ENGINEERING.
Professor Emerson.

Besides the recitations and lectures, the practical work in the field forms a prominent feature of the method of instruction in this department. The use of instruments in the field by all the students of Civil Engineering begins with the second semester of the first year and is continued throughout the course. Friday and Saturday of each week are devoted to this exercise, and, where necessary, longer time is taken for excursions to the mines, furnaces, bridges, railroad constructions, etc., of the country. The field practice consists of Land Surveying by all the methods in use, or described in the books. Railway curves are calculated and set out upon the ground; earth-work is measured and estimated from the embankments and excavations of the railroad; contours of the adjacent country are made and platted, and the student is made practically familiar with the manipulation of all instruments in common use. A general system of triangulation of the country about Rolla is begun from a base line carefully laid by the students, and will be extended from time to time for their instruction. The course is parallel with those of the pure and applied Mathematics, and is supplemented by that of

GRAPHICS.
Col. J. W. Abert, Professor.

During the preparatory year the students are instructed in the elements of Drawing with pencil and pen, according to the principles contained in Chapman's Drawing-Book. They are also practised in Freehand Drawing. These exercises develop the special tendencies of the pupil and enable the Professor to judge in what direction his greatest strength lies, and where his weak points most need to be reinforced.

This description represents the first formal mention of a civil
engineering curriculum at MSM. Civil engineering was now listed as a department of instruction. Following completion of the preparatory year all first year students took the same courses. Second year civil engineering students took courses dealing with roads and railroads, analytical chemistry, drawing, surveying, and a course entitled “civil engineering.” Third year civil engineers took courses in mechanics, drawing, and civil engineering.\textsuperscript{13}

By 1888, MSM officials created “technical” and “academic” divisions. The technical division included engineering (civil, mining and mechanical engineering), analytical chemistry and metallurgy, pure mathematics, mineralogy and geology, and physics. Academic divisions included humanities, social sciences, some physical sciences and mathematics. Despite this rather impressive array of departments within the technical division, students actually could choose only between civil and mining engineering as their major field of study.

By the 1889-1890 school year, the following made up the curriculum for civil engineering majors:

\textbf{II. Course of Study in Civil Engineering, Junior Class (1st Yr.):}

Note that prospective civil engineers now took more specialized courses including blowpipe analysis, geodesy, stability of structure, and hydraulics. Textbooks for prospective engineers included \textit{Land Surveying}, \textit{Roads and Railroads}, and \textit{Higher Surveying}, all by Gillespie, and \textit{Civil Engineering} by the pioneering engineering educator, Dennis Hart Mahan.\textsuperscript{15}

\section*{The Faculty}

During the first year of operation, the MSM faculty consisted of Director Charles P. Williams, an analytical chemist, a metallurgist and a mining geologist, and two other men, Nelson W. Allen, a mathema-
tician, and William Cooch, a chemist and assayer. In 1872, Colonel James W. Abert accepted appointment as professor of applied mathematics and civil engineering. Like most of his contemporaries in engineering Abert combined his technical interests with a career in the military. He graduated from Princeton and the United States Military Academy, entered the regular army, was appointed to the topographical corps and served in the Union Army during the Civil War. Abert was 51 when he accepted the position at MSM. In the following year, he became professor of applied mathematics and graphics in order to make room for a new colleague. Abert was among those who established the tradition of student field trips at MSM to Shannon County to visit a copper mine.¹⁶

Meanwhile, Abert’s new colleague, Major George D. Emerson, was the second civil engineer on the faculty at MSM. Emerson held a law degree from Cincinnati Law College. He was an engineer of the “old school”, that is, by merit of personal enjoyment and practical experience. Though Emerson gained his technical education informally through his work as a military engineer, he enjoyed the distinction of being the first from the Rolla campus to be accepted as a member of the American Society of Civil Engineers.¹⁷
As was the case with Abert, Emerson’s interests were broad. Not only did he teach civil engineering, he founded the “Emersonian Club,” consisting of faculty, students and townspeople interested in cultural activities ranging from book discussions to freehand sketching to photography. The talented, cosmopolitan Emerson was an imposing figure in the community and on the campus of the School in the 1870s and 1880s. His classroom demeanor was legend. His students recalled that he sat facing his class with his feet on his desk, smoking his pipe while lecturing to the class. The popular professor also took his students on field trips to explore and survey caves, examine bridges and railroads, and, in good weather, to swim in Ozarkian streams. While his students splashed in the spring-fed water, Emerson sat on the shore serenading them with selections from Gilbert and Sullivan’s “HMS Pinafore.” On at least one occasion, Emerson and Director Williams took seven junior and senior class members to St. Louis to visit various industrial sites including the Vulcan Iron Works, the Missouri Zinc Company, and coke works across the river in Illinois. Emerson remained at MSM until 1887 when he returned to field work in Michigan’s copper mines where he had worked prior to his teaching career.
Meanwhile, in 1877 Charles E. Wait became MSM’s second director. The first of a succession of graduates of the University of Virginia who would have an impact on civil engineering at Rolla, Wait earned a bachelor of science degree and professional degrees of civil engineer and mining engineer. In spite of his background in civil and mining engineering, Wait’s title was director and professor of analytical chemistry and metallurgy, and his chief contribution to civil engineering at MSM lay in administration.  

When Emerson departed, he was replaced by William H. Echols, Jr. Echols held bachelor of science and civil engineer degrees from the University of Virginia. From 1887 to 1891, he served as professor of civil and mine engineering. He was destined to play a dual role. In addition to his classroom duties, from 1888 to 1891, Echols became MSM’s third director. During his tenure, Echols transformed degree designations. Prior to the 1888-1889 school year, graduates in civil engineering received the degree of “civil engineer.” In keeping with practices in other schools of engineering, Echols decided the first degree designation should be “bachelor of science in (for example)
civil engineering.” “Civil engineer” was designated as a professional degree to be awarded those with undergraduate degrees and three years of professional experience.19

Echols was the last civil engineering professor to join MSM’s faculty between 1871 and 1891. The appointment of his successor, Elmo Golightly Harris, another product of the University of Virginia, signaled the beginning of a new era in civil engineering at MSM.

Civil Engineering Students at MSM

It is difficult to achieve sharp focus on MSM’s earliest students. Our perception of that first generation of MSM Miners is shaped by a few photographs, some newspaper accounts and occasional personal memoirs. Photographs of those young men reveal formal, late Victorian attire, complete with carefully coiffed hair, mustaches and/or beards. However, they appear too formal and somber to reveal all their human qualities. Written records attest that 31 students enrolled at MSM during the 1871-1872 school year, including eight regular students, three special students, and 21 preparatory students. Three of the regular students ultimately graduated and two of them, Gustavus Adolphus Duncan and John Holt Gill, graduated in civil engineering.20

In a lengthy memoir written in 1919, Duncan described student life at the School at Rolla in its earliest days. Initially, Duncan and John W. Pack were commuters. Pack drove daily from his father’s farm six miles from Rolla while Duncan’s round trip on horseback from Arlington, totaled 20 miles. The rigors of commuting soon took their toll and Duncan, Pack, and four others rented three rooms and a kitchen over ‘Lige Morris’ hardware store on the west side of Pine Street between 7th and 8th street. They even hired a cook. Duncan referred to these student quarters as the “club,” a serious place of work. Yet, he remembered the years spent there as a happy time, with no serious disagreements among club members.21

The first three graduates, Duncan, Gill and Pack, all took the same course of study and in 1874, the faculty permitted these first prospective graduates to choose the degree to be designated on graduation day. Pack chose the degree of mining engineer. Duncan and Gill chose the degree of civil engineer. Hence, MSM’s first two civil engineers chose that area of specialty after completing their
course work. Ultimately, Duncan’s work more closely resembled that of a mining engineer. Gill joined the U.S. Engineer Corps in Washington, D.C., and became MSM’s first alumnus to practice civil engineering.22

Subsequent students of that era were more deliberate in their choice, selecting civil engineering in order to specialize in railway, highway or municipal works.23 In 1875, Francis J. Deegan, one of a graduating class of two, earned his diploma in civil engineering. In the 1876 class of five, Cyrus H. Emerson and John E. McGrath majored in civil engineering. In 1877, Thomas H. Millsaps, one of a class of three, became a civil engineer. He left the civil engineering department one of its more cherished relics, a model bridge, that over 100 years later remains on display in UM-Rolla’s civil engineering department. In 1976, UMR Public Information writer Winona C. Roberts wrote the following account of the 1877 graduate and his model bridge:

The first graduates of MSM in 1874 were John W. Pack, John H. Gill, and Gustavus A. Duncan.
UMR’s Model Bridge Lives On

By WINONA ROBERTS
UMR PIO Writer

In 1876 when Thomas H. Millsaps built a model bridge to illustrate his senior thesis at the Missouri School of Mines and Metallurgy, he probably never dreamed it would still be around 100 years later.

Still intact and showing few signs of age, the bridge is on display in the civil engineering department of Millsaps’ alma mater, now UMR. As a centennial observance, a history of the bridge and its builder is being written and will be placed in the UMR library.

The brown-stained bridge, a lattice-girder type, is 30 inches long and built to one sixteenth scale. It is signed in gilt “Thomas H. Millsaps, ’77, Nov. 1, 1876.”

“Millsaps’ senior thesis was on ‘The Maramec Bridge of the St. Louis, Salem and Little Rock Railroad,’” says Dr. Joseph H. Senne, department chairman. “This was a branch line of the Frisco which crossed the Maramec at Steelville and at Cook Station. It is likely that young Millsaps, who had lived at Steelville, Salem and St. James, would have been familiar with both. So we don’t really know which bridge this represents. Neither is now standing.”

For 100 years, the bridge has been part of the civil engineering department’s memorabilia. It has been exhibited from time to time, used as a model in bridge construction classes or simply relegated to storage. A few months before its centennial anniversary it ended up on the desk of J. Kent Roberts, professor of civil engineering and assistant dean of engineering. He became curious about the bridge and its builder and began looking for information.

School Records Sketchy

“School records didn’t tell us much,” Roberts reports. “We learned that his guardian was William H. Ferguson of Steelville, that he attended grammar school in Salem and came to Rolla in 1872 (just a year after classes started at MSM) as a preparatory student. He then enrolled in civil engineering. We know from his academic record that he was a good student and an officer in the cadet corps. He finished degree requirements in February, 1877, and graduated, along with two others, the following June.”

Most of the information in UMR’s history on Millsaps came through the efforts of Richard S. Mills, UMR senior history student from St. James who did the work as a project in one of his social studies courses. Mills’ major sources of information were files of the Salem News and Stanley Scott of Steelville, a grand-
son of Tom Millsaps’ sister. Scott is Millsaps’ closest living relative.

“What unfolded is a story of the founding fathers of two area towns, Salem and Steelville, and the turmoil of the Civil War when residents of South Central Missouri were bitterly divided. Its tragic ending is still a mystery,” Roberts says.

The bridge builder, Thomas H. (for Higginbotham) Millsaps was born in Salem in 1856, the son of Joseph W. and Amanda Ann Vaughn Millsaps. The elder Millsaps was a pioneer surveyer, businessman and farmer. Known as the “father of Salem,” he laid out the town and was influential in getting it incorporated.

After graduating from MSM, Millsaps set up a surveying office, “Tom H. Millsaps, Civil Engineer and Surveyor,” in Steelville. But after a short time, he went to St. Louis with a friend from college days to study medicine. On Oct. 28, 1878, he withdrew a large amount of money from a St. Louis bank. He was never seen nor heard from again.

There was an extensive investigation by the St. Louis police. Newspapers advertised his description and police contacted
other cities, but there was no trace. The police concluded that he had withdrawn the money intending to return to Steelville, but was robbed and murdered and his body disposed of. The case is still listed in St. Louis police records as an unsolved murder.

**Living Symbol**

"It is ironic that the tangible record of this outstanding young man who represented two of the first families of the area is a model bridge," says Professor Roberts. "But the bridge itself, built so carefully that it will probably last another 100 years, is perhaps symbolic of the promise of his brief and tragic life."  

Charles P. Williams stepped down as MSM’s first director in 1877. During his administration, 13 students had earned baccalaureate degrees and six of them had been in civil engineering. From 1877 to 1891, the total enrollment at MSM varied from a low of 43 to a high of 110:

<table>
<thead>
<tr>
<th>School Year</th>
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<tr>
<td>1877-1878</td>
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<tr>
<td>1889-1890</td>
<td>69</td>
</tr>
<tr>
<td>1890-1891</td>
<td>80</td>
</tr>
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</table>

Of 36 degrees granted during this era, 17 were in civil engineering, 16 were in mining engineering, 2 were in general science and 1 was in chemistry. Civil engineering students of those years included John E. McGrath, class of 1876, who was employed by the U.S. Coast and Geodetic Survey and had the distinction of directing the government survey of the boundary between Alaska and Canada.

The class of 1882 included a number of civil engineers who would enjoy distinguished careers. Among them was Frank W. Gibb who designed the Arkansas state capitol building in Little Rock and 75 percent of the courthouses in the state of Arkansas. Gibb’s classmate, William R. Painter, was elected Lieutenant Governor of Missouri in 1912. In the 1920s, Painter was elected to the state senate where his
duties included service as president pro tem (1923-1925) and majority floor leader (1927).

Other civil engineering graduates of the era distinguished themselves in railroad engineering in bridge construction. These included Lindsay L. Coppedge (1878), Ashnah B. Schrantz (1882), and Francis Wilson (1884). Wilson designed and constructed the Harlem River drawbridge in New York City; in its day, the largest structure of its kind.27 Early graduates of MSM included George R. Dean, class of 1888. “Prof.” Dean became a legend on the Rolla campus over the next half century. Though trained as a civil engineer, Dean held an academic appointment in mathematics from 1888 until 1935. In 1920 he became MSM’s first registrar. Miners admired this mathematical wizard in spite of his legendary propensity for hurling erasers at students at the blackboard who failed to adeptly solve the problems he presented to them. He published in the General Electric Review, the London Electrician, and the Transactions of the American Institute of Electrical Engineers. Dean spent an occasional summer at the General Electric Laboratory in Schenectady, New York, working with the renowned Charles Proteus Steinmetz.28

Students of 1874 vintage could expect to pay entrance fees of $10 per year and library and incidental fees of $5 per semester. Those
requiring room and board could find private rooms in the city, where room and board varied from $2.50 to $4 per week. By the end of this period, students had the option of living in the School of Mines’ first dormitory (now the Chancellor’s Residence). Completed in 1889, the structure nicknamed the “clubhouse” contained “commodious and comfortable rooms for thirty young men.” 29 While school officials generously waived fees for occupying the rooms, meals cost residents about $12 per month. 30

By 1891, the University of Missouri School of Mines and Metallurgy had completed its first 20 years as an academic institution, and civil engineers had played a major role in these formative years. Two of the first three directors of the School were civil engineers and two of the first three graduates had selected civil engineering. Seventeen of the 36 graduates of that period had been “civils,” and by 1891, most of them were already securely established in a variety of jobs across the nation. The testimonials of students of those early days bear witness to the notion that George D. Emerson was MSM’s outstanding teacher of the period. In 1891, much growth and development remained to be accomplished before MSM could be deemed a leader in American engineering education, but the blocks for the institution had been laid and civil engineering was clearly an important part of the foundation.

In 1891, a 30-year-old South Carolinian, Elmo Golightly Harris, was invited to the Rolla campus. For the next 40 years, Harris dominated civil engineering at MSM and left a permanent imprint on the institution.
Footnotes, Chapter I

5 Thomas C. Clarke, “The Education of Civil Engineers,” *Transactions of the ASCE*, vol. 3 (May-March, 1874-75), pp. 255-266.
9 *Ibid*.
13 Phelps County Historical Society, History of MSM, p. 468.
23 Roberts, *MSM History*, p. 54.

29University of Missouri School of Mines and Metallurgy *Announcement and Register* for Year Ending June 18, 1874.

30Roberts, *MSM History*, p. 50.
CHAPTER II

The Harris Years, 1891-1931

In 1891, Elmo Golightly Harris, a young civil engineer who had been working for an Arkansas railroad, arrived in Rolla to replace his college classmate, William H. Echols, as director of the University of Missouri School of Mines and Metallurgy. Though Harris was director for only two years, he remained on campus as professor of civil engineering until 1931. Harris became civil engineering's first chairman when the department was created in 1897 and successfully led the department into a new era in the history of American engineering education.¹

Civil Engineering in America, 1891-1931

The years from 1891 to 1931 represented a time of transition and preparation for American engineering as the profession matured and responded to the demands of a robust new urban, industrial society which required a new type of professional engineer. The stereotype of the engineer as individualist, trailblazing a path across this vast continent, gave way to a new breed of corporate professionals capable of harnessing the new technology. The new society required men who could work within the confines of the giant corporation and who had the vision and management skills to provide direction to a brave new world. These were also years of preparation for the responsibilities that would fall upon American and engineering science in the post-World War Two era. After 1945, America assumed new global responsibilities and engineers and scientists were to play key roles.

During the Harris years, American society featured vast construction projects including railway development and highway construction, and the exploitation of our vast natural resources to provide raw materials and energy. World War One served to further accelerate the
pace of technological change, and engineers faced even greater challenges during and after the great war.

As American society became more complex, the engineering profession experienced diversification requiring greater specialization and expertise. When Harris arrived in Rolla in 1891, George S. Morison’s truss-cantilever bridge at Memphis, Tennessee, was nearing completion. This bridge established specifications that became the standard for U.S. railroad bridges. In 1893, the first concrete pavement was laid in Bellefontaine, Ohio.2

As Harris prepared for retirement four decades later, the Empire State Building, at that time the world’s tallest building at 3,500 feet, was completed. The Holland Tunnel in New York, the first vehicular tunnel to be mechanically ventilated, had just been completed (1927). Closer to home, in 1931, Rolla was selected as the site for ceremonies celebrating the completion of famed Route 66 from Chicago to Los Angeles (the Rolla-Lebanon strip was the last to be completed). All these served as testimonials to the achievement of civil engineers.

The “realms” of civil engineering—structures (buildings and bridges), transportation (tunnels, roads and canals), water resources (dams, reservoirs, aqueducts), sanitary engineering, soil engineering (foundations, roads, tunnels, and dams), and surveying, mapping and planning—all became infinitely more complex.3

The American Society of Civil Engineers (ASCE) achieved full-fledged professional status during this era. In 1893, ASCE members provided the leadership for the creation of the Society for the Promotion of Engineering Education (now the American Society for Engineering Education). In 1907, civil engineers played important roles in achieving passage of the first state licensing provision for registering professional engineers in Wyoming.4 The ASCE and its members provided a share of the impetus for the first comprehensive evaluation of engineering, the Mann Report of 1919, a project funded by the Carnegie Foundation. During the 1920’s, a civil engineer, Harry Parker Hammond, served as associate director of the Investigation of Engineering Education. This hallmark investigation represented the first comprehensive self-evaluation of engineering education and culminated in the Wickenden Report. Engineering educators recognize this report as a benchmark of high standards for American engineering education.5

In 1930, ASCE moved to establish a mechanism for accrediting civil engineering education programs. In 1932, the Engineers’ Council
for Professional Development or ECPD (now the Accrediting Board for Engineering and Technology, or ABET) was created. ECPD became the accrediting agency for all engineering curricula. Thus, while Harris and his colleagues represented civil engineering at MSM between 1891 and 1931, civil engineering in America experienced several important professional turning points.

Engineering Education

After 1890 the number of schools with engineering curricula increased dramatically. By 1918, the number of colleges of engineering in America had increased to 126 compared to 17 in 1890. This growth was accompanied by new curricula, introduction of the cooperative plan, more specialization of faculty, and more emphasis on graduate study and research. Finally, a closer relationship between professional engineers and engineering educators was of mutual benefit to all concerned. For civil engineering, a new link between educational institutions and practicing engineers is illustrated by ASCE’s interest in the Society for Promotion of Engineering Education and in the appearance of ASCE student chapters on college campuses. In 1920, ASCE had only eight student chapters but this number increased to 88 in 1938. The Rolla campus received its student ASCE charter in 1924.

By the beginning of the 20th century, emphasis on practical classroom instruction gave way to more attention to mathematics, the physical sciences, humanities and social sciences, and more time in the laboratory. The new curricula also provided more specialized courses in engineering for junior and senior students. Though educators continued to disagree as to the emphasis the above courses should have in the curricula, schools across the nation developed programs which recognized the need for change.

According to the historian Lawrence P. Grayson, the cooperative plan in engineering education was the inspiration of Herman Schneider, a civil engineer at the University of Cincinnati. Developed in 1906, this plan sought to integrate the theoretical learning in the classroom with on-the-job business/industrial experience by giving students the opportunity to alternate periods of college attendance with periods of employment.

As means of training prospective engineers changed, the teach-
ing faculty also changed. Specifically, advanced degrees became more desirable for engineering faculty. In 1894, the Massachusetts Institute of Technology offered a master’s degree in civil engineering. By the beginning of the 20th century, roughly 25 percent of the engineering faculty in America held graduate degrees. By 1920, Grayson points out that 45 percent of the faculty had graduate degrees and 60 percent of them had graduate degrees by 1940. Initially, the master’s degree was sufficient. By 1896, according to engineering educator Thorndike Saville only three earned doctorates in engineering had been granted in American institutions. During the 1920s many engineering schools began offering graduate work, and by the 1930s, there was a phenomenal growth in the number of graduate students. In 1921 there were only 368 engineering graduate students in the United States. By 1939, the number had increased to 5,206. Research went hand-in-hand with graduate studies. Although the vast research programs in American engineering schools have for the most part developed since 1945, fledging programs were established in many institutions of higher learning in the inter-war years between 1919 and 1940.

The University of Missouri
School of Mines & Metallurgy, 1891-1931

During the Harris years, MSM matured as a school of engineering. At the beginning of the period, degrees in civil, mining and metallurgical engineering, and general science were available. Baccalaureate degrees in ceramic, chemical, electrical, and mechanical engineering and in geology were added by 1931 as well as master of science degrees and professional degrees. In 1924, Clarence E. Bardsley and Joe Beaty Butler were the first to earn the master of science in civil engineering at MSM.

As the institution matured, the campus took shape. Mechanical Hall (1902), Norwood Hall (1903), the Metallurgy Building (1911), Parker Hall (1912), Jackling Gymnasium (1915), and the U.S. Bureau of Mines Mississippi Valley Experiment Station, now known as Fulton Hall (1924), made up the major campus building projects for the era. The third floor of Norwood Hall replaced the Rolla Building
as civil engineering’s home until the completion of Harris Hall in 1940. With the construction of these buildings and the completion of sidewalks, the planting of shrubs, and landscaping, MSM gradually assumed the look of an American college campus. A campus landmark of particular interest to civil engineering students, the sundial in front of Norwood Hall, was a gift to the institution from the class of 1916.

From 1891 to 1920 seven directors served the institution. They were: Elmo Golightly Harris (1891-93), Walter B. Richards (1893-97), George E. Ladd (1897-1907), Lewis E. Young (1907-13), Leon E. Garrett (1913-14), Durward Copeland (1914-15), and Austin L. McRae (1915-20). Some of the change in campus leadership came about as faculty and administrators in Rolla and Columbia, the University Board of Curators, and other interested parties sought to establish the proper direction for MSM. In 1920, Charles H. Fulton became director. Fulton would serve until 1937.
Civil Engineering Curriculum, 1891-1931

The civil engineering curriculum at MSM changed between 1891 and 1931 as it did across the nation. In 1892 all engineering programs at MSM changed from a three year curricula to four years. The curriculum was altered to keep up with advances in technology. For example, degree designations were changed to keep up with national trends. The bachelor of science in civil engineering was adopted as the standard baccalaureate degree and the designation “Civil Engineer” became the professional, post-graduate degree.\(^{13}\) In addition, civil engineers at Rolla adopted a two-year, non-degree program in surveying to meet the needs of those who required the technical skill but did not wish to earn a degree.\(^ {14}\)

Until 1897, civil engineering curricular requirements remained the same as in the previous decade though new courses such as sanitary engineering and “lines of communication” (roads, highways, railways and canals) were added. In the fall semester of 1897, the civil engineering curriculum was as follows:
CIVIL ENGINEERING: Freshman Year, 3 Terms. Lecture-Recitation: Higher Algebra (5); Solid Geometry (3); Descriptive Geometry (2); Trigonometry (5); Analytical Geometry (5); General Chemistry (15); English (15); Total Lecture term hours, 50. (Semester hour credit, 34.) Laboratory term clock hours: General Chemistry (9); Mechanical Drawing (18); Descriptive Geometry Drawing (10); Shop Practise (15); Themes (3); Total Laboratory term clock hours, 55. (Equivalent semester hours, 12.) Total equivalent semester hours, 46.

Sophomore Year: 3 Terms. Lecture-Recitation: Calculus (15); German, French, or Spanish (15); Surveying (5); Lines of Communication (Roads, railroads, etc.) (3); English Literature (2); Elementary Mechanics (2); General Physics (5); Geodesy (3); Total Lecture term hours, 50. (Equivalent semester hours, 34.) Laboratory term clock hours: Surveying, Field Practise (18); Geodesy, Forge Work (12); Total Laboratory clock hours, 53. Term credit hours, 18. (Equivalent semester hours, 12.) Total equivalent semester hours, 46.

Junior Year. 3 Terms. Lecture-Recitation: General Physics (5); Mechanics (5); Mechanics of Materials (5); Hydraulics (5); General Geology (9); Thermodynamics (5); Masonry Construction (2); Dynamo Machinery (3); Roads and Pavements (3); Railroad Economics (2); Astronomy (2); Total Lecture term hours, 46. (Equivalent semester hours, 30.) Laboratory term clock hours: Physics (6); Steam (3); Geology (6); Drawing and Graphics (18); Dynamo (12); Cement and Concrete (3); Total Laboratory term clock hours, 48. Term credit hours, 16. (Equivalent semester hours, 11.) Total Equivalent Semester Hours, 46.

Senior Year. 3 Terms. Lecture-Recitation: Framed Structures (5); Alternating Currents (5); Electric Transmission (3); Compressed Air (2); Contracts and Specifications (2); Water Supply (5); Sanitary Engineering (5); River and Harbor Improvement, and Irrigation (5); Masonry Designs and Concrete Steel (2); Bridges (Higher Structures) (5); Metallurgy of Steel (5). Total term clock hours, 44. (Equivalent Semester Hours, 30.) Laboratory term clock hours: Alternating Currents (6); Electrical Problems (3); Engineering Designs (11); Special Investigation (15). Total Laboratory term clock hours, 35. (Equivalent semester hours, 8.) Total equivalent semester hours, 38. TOTAL EQUIVALENT SEMESTER HOURS FOR FOUR YEARS, 176.15

Students majoring in civil engineering took 176 semester hours of course work which featured civil, electrical and mechanical engineering courses and emphasized shopwork or laboratories.16

Early in the 20th century the curriculum was altered. By 1911-12, a bachelor’s degree in civil engineering required 215 semester hours. All engineering students shared common courses during the fresh-
man year, including introductory mathematics and chemistry. Shop practice in mechanical drawing, woodwork and the forge were also common requirements. During the sophomore year, civil engineering students took introductory courses in their chosen specialty, coupled with advanced mathematics, physics, English and foreign languages. The junior year included more specialized courses in civil engineering such as lines of communication and hydraulics. During the senior year students took courses in design, structures, compressed air, sanitary engineering and senior thesis.¹⁷

Field trips or inspection trips, a tradition at MSM since 1871, also became more detailed and organized. Sophomores in civil engineering completed their school year in a three-week summer field excursion for practice in topography and lines of communication. The summer trip was followed by one week of topographical field work at the beginning of the junior year. Finally, the senior trip, though not a requirement for graduation in civil engineering, served as a capstone of the undergraduate experience.¹⁸

The most significant changes in the curricula took place in 1922,
shortly after Charles H. Fulton became director. After 1922, each MSM engineering course of study required 172 hours for graduation; 164 of those hours were required courses. The new civil engineering curriculum sought to prepare students for work in the field, drafting, design and structures. In part, the expansion took place to better serve the industrial requirements of America. The automobile was changing society and highway construction and maintenance were replacing the railroad as the primary industrial employer for civil engineers.19

As in the past, the freshman year was identical for all engineering students and emphasized English, basic mathematics and introductory courses in surveying. All “able-bodied male” students had to include basic courses in military science and physical education, though initially no credit hours were awarded for either.20 The sophomore year included a continuation of mathematics, science, and English in addition to classes in surveying and drawing. During the junior and senior years, civil engineering course work and laboratories dominated the requirements and included specialized study in highway engineering, reinforced concrete, stresses, sewage, drainage, and irrigation along with more traditional courses in hydraulics, surveying, and the senior thesis. Junior-senior requirements also reflected engineering educators’ recognition that prospective engineers should also be successful managers. As a result, course work in economics, engineering English, contracts and specifications, and business law were required.
### ALL ENGINEERING CURRICULUM.

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#### FIRST YEAR.

**First Term:**

- 600 ............... Plane and Spherical Trigonometry .......... 5 0
- 400 ............... Rhetoric and Composition .......................... 3 0
- 211 ............... General Engineering, Drawing ................. 0 6
- 102 ............... Plane Surveying ................................ 2 6
- 1 and 2 ........... General Chemistry .................................. 3 6
- 60 ............... Hygiene ........................................ 1 0
- M 1 ............... Military Science and Tactics ....................
- PE 1 ............... Physical Training ................................

**Second Term:**

- 601 ............... Analytical Geometry .............................. 5 0
- 401 ............... Rhetoric and Composition .......................... 3 0
- 212 ............... Descriptive Geometry .............................. 0 6
- 3 and 6 ........... General Chemistry .................................. 4 6
- Forge Shop or .................................
- 104 ............... Topographic Surveying ............................
- M 2 ............... Military Science and Tactics ....................
- PE 2 ............... Physical Training ................................
- Special Lectures .................................

### CURRICULUM III, CIVIL ENGINEERING.

#### SECOND YEAR.

**First Term:**

- 602 ............... Calculus ........................................ 4 0
- 420 ............... English ......................................... 3 0
- 1000 and 1001. .... Physics ....................................... 4 6
- 221 ............... Advanced Mechanical Drawing .................... 0 6
- 107 ............... Railroad Surveying .............................. 2 6
- M 3 ............... Military Science and Tactics ....................
- PE 3 ............... Physical Training ................................

**Second Term:**

- 603 ............... Calculus ........................................ 4 0
- 421 ............... English ......................................... 3 0
- 1002 and 1003. .... Physics ....................................... 4 6
- 651 ............... Theoretical Mechanics ............................ 3 0
- 222 ............... Civil Engineering Drawing ........................ 0 6
- M 4 ............... Military Science and Tactics ....................
- PE 4 ............... Physical Education ..............................
THIRD YEAR.

First Term:

652 .......... Mechanics of Materials  ......................... 3 0
653 .......... Materials Laboratory  .............................. 0 3
111 .......... Masonry Construction  ............................. 3 0
108 .......... Highway Engineering  ............................. 3 0
109 .......... Highway Engineering  ............................. 0 12
861 .......... Metals in Engineering  ......................... 2 0
305 .......... Economics  ................................. 3 0

Second Term:

112 .......... Reinforced Concrete  ............................... 3 6
121 .......... Stresses  ........................................... 3 6
131 .......... Hydraulics  ......................................... 3 3
514 .......... General Geology  .................................. 3 0
306 .......... Economics  ......................................... 3 0

Summer:

190 .......... Work in Practice  .................................

Students enrolled in the R. O. T. C. will replace the equivalent of 3 hours' work as scheduled by Military M 5 and 6.

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<td>Framed structures</td>
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<td>Masonry Design</td>
<td>3 6</td>
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<td>1050 and 1051</td>
<td>Elements of Electrical Engineering</td>
<td>3 3</td>
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<td>403</td>
<td>Engineering English</td>
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<td>140</td>
<td>Contracts and Specifications and Business Law</td>
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*Students enrolled in the R. O. T. C. will replace the equivalent of three hours' work as scheduled by Military M 7 and 8.
Civil Engineering Faculty, 1891-1931

At MSM the civil engineering faculty expanded from one in 1891-92 to five in 1930-31. From his arrival in 1891 until his retirement in 1931, Elmo Golightly Harris led civil engineering at MSM. Born in South Carolina in 1861, his earliest recollections were the rigors of living in the South during Reconstruction. He attended a one-room school; completed high school in Spartanburg, South Carolina; and enrolled in the civil engineering course at the University of Virginia (1880). His college classmates included William H. Echols, destined to become MSM’s third director. In 1882, Harris earned the degree of civil engineer.

For the next nine years after graduation, Harris slowly made his way westward across the American South, finding employment as a railroad engineer in South Carolina, Alabama, Mississippi, and Arkansas. He settled in Little Rock, Arkansas, where he worked as a surveyor for the Missouri Pacific and Cotton Belt railroads. In the summer of 1891, college classmate William H. Echols, then director of MSM, invited Harris to visit him in Rolla. Though Harris was unaware of it at the time, Echols was preparing to return to the University of Virginia and wanted school officials to consider Harris as his successor. The following letter of recommendation to the Executive Committee of the Missouri School of Mines and Metallurgy demonstrates Echols’ esteem for his classmate:

MISSOURI
SCHOOL OF MINES AND METALLURGY.
AN INSTITUTE OF TECHNOLOGY
Rolla, Mo., July 7, 1891

To the Executive Committee of Mo School of Mines:
Gentlemen,

I recommend to you as my successor Mr. Elmo G. Harris of Little Rock, Arkansas, believing him in every respect and qualification to be the best man you can get for the place as regards character, training and experience.

I know Mr Harris personally and intimately and I know the work of the Engineering Department of the School of Mines thoroughly and when I say that he is in all respects thoroughly capable and fit, I speak of things about which I know.

Respectfully Yours
W. H. Echols.
Harris was surprised upon returning to Arkansas, to receive a message from School officials offering him the position of director of MSM and professor of civil engineering. He was to receive a salary of $2,000 per year as a professor and a stipend of $300 per year for his services as director. Harris accepted, and devoted the remainder of his career to engineering education.\textsuperscript{24}

When Harris arrived in Rolla, he found six instructors and approximately 80 students at the school. Harris described the community, and the young School of Mines campus in 1891:

\begin{quote}
The waterworks for the School of Mines consisted of an old wire hand pump installed on an old well. . . The fire protection consisted of a wooden bucket and a tin dipper placed by the east front door of the Rolla Building.

In 1891 there were no sewers in Rolla, nor city waterworks. A row of outhouses for the School of Mines were distributed along State Street.\textsuperscript{25}
\end{quote}
These town and campus conditions might have discouraged some, but not Harris. For the next 40 years, he rejoiced in the natural beauty of the Missouri Ozarks:

When I came into the Ozarks, there were few better bass streams in the world than the Ozark rivers. Every summer a party would be made up for a floating trip on the Gasconade or Big Piney. We would take more fish than could be used. . . . Flocks of wild turkeys could be found within a hour’s walk of Rolla. I say walk, because there were no automobiles then. Up before daylight, far out into the woods at sun-up on a frosty morning! Not a lazy man’s choice, but the thrill! 26

As director, Harris expanded the engineering curriculum and created two-year courses in assaying, surveying and electricity. Controversy soon dampened Harris’ enthusiasm for administration. The new director had requested $10,000 in his 1892-93 budget for the construction of an engineering building at MSM. Professor W.H. Seamon of MSM sent an alternative proposal to the Board of Curators, requesting an ore dressing and metallurgical laboratory instead of the engineering building. The Board and state legislature approved Seaman’s request instead of Harris’. This action prompted Harris to step down as director in June 1893, though he remained on the faculty. 27

For the next decade, Harris served as a hard-working member of the civil engineering department. George R. Dean, civil engineering alumnus and long-time mathematics professor, recalled that Harris “. . . carried all the work in the civil engineering department and was on duty in the classroom and in the drawing room about eight hours a day or more.” 28 Students of the Harris era remembered the professor as a Victorian gentleman and a tall, sandy-haired, dignified man, usually dressed in tweeds. In the classroom, he was never seen without coat and tie. In spite of his formal demeanor and his reputation as a taskmaster, Harris is remembered as a good teacher who was always willing to spend extra time with students who required help. 29

Harris was among those early-day engineering educators at MSM whose reputation as a scholar enhanced the institution’s reputation. As a railroad engineer in Arkansas whose responsibility included bridge construction, Harris became interested in theories relating to the air-lift pump. He developed the principle of the air-lift pump, published one of the first articles on the subject in 1895, and later
Harris’ chart for the Manning Formula.
published a text on compressed air. In the course of his research at MSM, he ultimately published the first essay on centrifugal pumps, a significant development because his pump lifted a greater volume of water than all other types. In addition, he developed a chart for the Manning Formula (related to the computation of the flow of water in uniform channels), which condensed to one printed page what according to his colleagues Butler and Carlton had formerly required 200 pages of tables to achieve the same purpose. While his early work concentrated on compressed air and hydraulics, he later broadened his research to include concrete arch dams, retaining walls and highway bridges. In all, he published 34 articles and bulletins, an impressive number for an engineering educator of his day.

Harris left Rolla in 1902 and moved to Philadelphia where he accepted an academic post at the University of Pennsylvania. His move was prompted by a need to obtain medical treatment for a sinus condition. Not content in Philadelphia, Harris returned to MSM in 1903. He remained at the School until his retirement in 1931.

The cornerstone of Harris Hall, officially dedicated in 1938 (though the building was not completed until 1940), contains a fitting epitaph for civil engineering's first department chairman:

IN HONOR OF - - -
Elmo Golightly Harris, Professor Emeritus of Civil Engineering, who since 1891 has given to the Missouri School of Mines and Metallurgy his faithful and untiring efforts in building the school up to the international reputation which it now enjoys; whose able teaching has left the imprint of his high standards of education upon many of the school's alumni who have gone forth to contribute to the advancement and well-being of mankind; who has contributed to the scientific advancement of our country and of the world through his inventive genius and through the routing and construction of our railroads and highways; who by his kindly and friendly interest in those studying under him and working with him has won a lasting place in their affections, this building is named.

Harris had been a leader in civil engineering from 1891 to 1931 and served, from 1897, as the first official department chairman, but he had the able assistance of a number of faculty. Other noteworthy faculty of the period included Henry H. Armsby, Clarence E. Bardsley, Joe B. Butler and Ernest W. Carlton.

Henry H. Armsby received a bachelor of science in civil engineering at the Pennsylvania State University in 1911 and the degree of
civil engineer from the same institution in 1916. He came to MSM as an instructor in civil engineering in 1916 and had been elevated to the rank of associate professor by 1921. In that year, he was named MSM’s first full-time registrar (George Dean had served part time in the post), a position he maintained until 1941. Armsby became a noted engineering educator. Though earlier civil engineering faculty like Emerson and Harris had been active members of the American Society of Civil Engineers, Armsby deserves credit for helping establish a tradition of exemplary service to engineering education. As a professor at MSM, Armsby served as president of the Missouri Section of the Society for Promotion of Engineering Education. In 1941 he left Rolla to work as a field coordinator in the U.S. Office of Education’s Engineering, Science and Management War Training division. He later was placed in charge of engineering education in the federal Office of Education and subsequently served as vice president of the American Society for Engineering Education (1949-51). \(^{34}\)

Clarence E. Bardsley received his bachelor’s and master’s degrees in civil engineering and the professional degree of Civil Engineer from MSM. In 1926 he earned a doctorate of science from the University of Michigan. Subsequently, he did postdoctoral work at

Clarence E. Bardsley
Northwestern University and at Berlin’s Technische Hochschule. MSM’s first civil engineering professor with an earned doctorate, Bardsley held academic posts at Rolla from 1922 to 1938 when he departed for Oklahoma A&M.\textsuperscript{35} Students remembered Bardsley as an extremely bright instructor with a passion for astronomy. Bardsley was ambidextrous and literally filled the classroom blackboard with formulas from both hands. His practical advice to surveying students began with “Keep your rear end in the right direction and you’ll be okay.”\textsuperscript{36}

Joe B. Butler who would succeed Harris as department chairman in 1931, arrived at the School of Mines in 1920, having earned a bachelor’s degree in civil engineering at Oklahoma A&M. He received another B. S. in education from Oklahoma A&M (1924), and two degrees from MSM, Civil Engineer (1922) and an M.S. in Civil Engineering (1924). Prior to his move to Rolla, Butler had worked for the Santa Fe and Rock Island railroads and had served his country in World War I. From 1920 until his death in 1955, he held an academic appointment at MSM.\textsuperscript{37} Butler’s achievements will be evaluated in the next chapter.

Ernest W. Carlton came to Rolla in 1923 with a bachelor of science degree in mechanical engineering from Colorado State. He later earned a master of science degree from Colorado State. As a student at MSM, he earned a baccalaureate degree in civil engineering and the degree of Civil Engineer. His first academic appointment at MSM was assistant professor of drawing, but in 1927 his academic appointment was transferred to civil engineering. As the Harris era ended, “Skip” was an associate professor of structural engineering.\textsuperscript{38} As with Butler’s, Carlton’s great impact on the department would lie in the post-Harris era and the achievements of civil engineering’s third department chairman will be assessed in chapter four. Other members of the faculty who served during the Harris era are noted in the appendix.
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Students and Student Activities, 1891-1931

College life in a technical school, like the Missouri School of Mines, differs in many ways from life in the average academic institution. . . . The technical school today appeals more favorably to the wide-awake American youth. This is due in part to the great measure in which the engineer has contributed, in recent years, to the advance of civilization. . . .

The total cost of a four year course in the Missouri School of Mines is much less than in any other institution of equal rank offering equal opportunities. . . . Considering the cost in time and money, no better investment can be made for a young man than a four year course in the Missouri School of Mines. It means a larger opportunity in life for service, a better chance for advancement, and it opens the way to the highest salaried positions in business and industry. 39

As the quotes from a pamphlet entitled "Student Life" suggest, the Harris years marked a concerted effort on the part of the MSM administration and staff to recruit students. The national need for engineers and the natural beauty of the area combined with comparatively reasonable costs made the Rolla campus a desirable site for many students. Costs did remain low throughout the period. In 1893, total charges per year ranged from $140 to $200. In 1922, estimated cost for Missouri residents was only $275 per year. 40

In the 1891-92 school year, 83 students enrolled at MSM. During the remainder of that decade, the lowest enrollment was 72 (1895-96); the highest enrollment was 168 (1899-1900). Thereafter enrollment gradually increased (except during World War I) until a high of 680 students enrolled for the 1931-32 school year. The civil engineering department educated more than an average number of MSM students. During the 1890s, 34 of the 190 degrees granted were in civil engineering; only mining engineering granted more. From 1907 to 1920, slightly more than 10 percent of the graduates were civil engineers. By 1927-28, 112 students of a total of 505 declared civil engineering as their major, and in the following school year there were more civil engineering majors (138 of 536) than any other discipline on campus. Civils maintained the lead in enrollment until 1938. The increase in civil engineering enrollment in the late twenties reflected new societal requirements as massive highway construction and related projects required more civil engineers. 41

Most MSM students came from Missouri and surrounding states,
though most states and some foreign countries were represented on the Rolla campus. In this era, engineering was not yet a profession deemed suitable for most women, so MSM was virtually an all-male school. Not until the Butler years would a woman graduate with a degree in civil engineering at MSM.

Between 1891 and 1931, 210 baccalaureate degrees, 15 professional degrees and two master of science degrees were awarded in civil engineering at MSM. Among the degree recipients were Bardsley, Butler and Carlton, who served on the faculty. Other alumni of this era included Wayne S. Frame and Kenneth R. Teis of the class of 1923. Frame played an important role in the construction of Bagnell Dam and later worked for the Tennessee Valley Authority. James L. Pasley of the class of 1925 became head of the Missouri State Highway Department. Daniel Kennedy, class of 1926, became head of the Mid-West Regional Office of the United States Geological Survey. Vernon A.C. Gevecker, class of 1931, returned to his Alma Mater in 1938 as a member of the faculty.\textsuperscript{42}

Enoch R. Needles, class of 1914, deserves special mention. After graduating from MSM, Needles became a partner in the New York-based firm of Ash-Howard-Needles & Tammen, a company

![Enoch R. Needles](image-url)
responsible for designing and supervising construction of many of America's major bridges. The company's triumphs included the Burlington-Bristol vertical lift bridge, the Pulaski Skyway bridge, and the Missouri River bridge at Omaha, Nebraska.\textsuperscript{43}

Needles was not only a successful businessman, he was also a national leader in his profession. The Engineers' Council for Professional Development (ECPD), created in 1932, represented a joint effort on the part of America's engineering educators and the professional engineering societies to establish an accrediting agency for engineering curricula. Needles served as the American Society of Civil Engineers' representative on the first ECPD governing board in 1932 and for years afterward, he served ECPD's eastern region of the United States as a member of the inspection teams which visited campuses and evaluated programs. He was named a national honorary member of Chi Epsilon. Ultimately, Needles served as director (1937-39), vice-president (1954-55), president (1956-57), and treasurer (1959-60) of the American Society of Civil Engineers.\textsuperscript{44}

\textbf{Student Organizations}

The Harris era witnessed the creation of several student organizations of significance to civil engineering. Among them, Missouri Beta chapter of Tau Beta Pi, a general engineering honor society established in 1906, and Iota chapter of Theta Tau, a professional engineering society established in 1916, extended membership to engineering students with superior grades. In 1920, honor students at MSM also became eligible to join Phi Kappa Phi. Professor H.H. Armsby served as the first president of the local chapter of the American Association of Engineers, chartered on the Rolla campus in 1920. The Civil Engineers' Society served as Rolla's first professional organization especially for civils. Finally, a student chapter of the American Society of Civil Engineers was organized in 1923 and was chartered in 1924. Professors Butler, Harris, and Clair V. Mann sponsored the organization and Carl Sitzler of the class of 1924 provided student input at the organizational meetings.\textsuperscript{45}

Besides the professional organizations, students had the option of participating in a variety of social organizations including fraternities, YMCA, Players, the Pipe and Bowl Club, and Quo Vadis. The latter made up a select group of railroad enthusiasts whose objective was
hopping freights. Enoch Needles was among them. The school yearbook, ROLLAMO (established in 1907) and newspaper, the MISSOURI MINER (established in 1914), provided outlets for those with a penchant for journalism.

Because the School had no cafeteria, students formed eating clubs like Bonanza, Grubstakers and Prospectors. The eating clubs provided a unique quality to the student organizations on campus. The Miner band and varsity athletics provided opportunities for students with athletic or musical talents. Civil engineers also played their part in the annual Saint Patrick’s Day activities. Two civil engineering graduates, Edwin K. Schuman and Alfons J. Tiefenbrun were selected to serve as the Irish patron saint in 1919 and 1930, respectively.

American Society of Civil Engineers MSM Student Chapter, 1924.

Military Science at MSM

Military science deserves special attention because of its close association with civil engineering. Traditionally, civil and military engineering have been linked, although John Smeaton coined the
term "civil" engineer in 1750 to provide a separate identity to civilians who wished to practice engineering.

During the founding years, MSM’s first civil engineering professor, James W. Abert, U.S. Army retired, became instructor of the first student military unit in 1873. When Abert resigned his academic position in 1877, military training had to be discontinued for lack of a qualified instructor.

When America entered World War I in 1917, military training at MSM resumed and another civil engineer, H.H. Armsby, served as an instructor in military drills and training. In 1918, a short-lived Student Army Training Corps (SATC) was established on campus but was discontinued a few months later after the Armistice of November 1918, brought an end to hostilities in Europe.
In January 1919, the Reserve Officers' Training Corps (ROTC) was established at the School of Mines as a battalion and military band. Many civil engineering students have been actively involved in ROTC at MSM since. For instance, during the 1923-24 school year the practice of giving a gift saber to the Cadet Major was established. The first recipient was Jack P. Campbell, a civil engineering graduate in the class of 1924. Walter A. Burg, a civil engineer from the class of 1926, became the first Cadet Major to receive a tuition/fee scholarship. In the following decade, the battalion was transformed into an engineer regiment. Civil engineers continued to be closely linked to ROTC.

Vocational class, 1923

The Vocational Education Department

After World War I, School of Mines officials cooperated with federal authorities in establishing a special program for veterans. The vocational training program, in effect from 1919 to 1926, had an influence on the civil engineering department. The vocational education department provided special instruction for veterans who were not qualified or did not wish to pursue an academic degree. Special instruction for the vocates included topographic engineering, highway engineering, and oil field engineering. By the fall of 1921, 200 vocates were enrolled in the program. By 1926, hundreds of veterans had been afforded the opportunity to attend MSM. Though vocation-
al education made up a separate department, curriculum, and faculty, it had a definite impact on civil engineering. Many of the vocates, Daniel Kennedy among them, elected to transfer to the civil engineering degree program. Though the program was phased out in 1926, vocates left a reminder of their presence on campus when they installed the “triangulation stations.” These bronze tablets were set in concrete blocks and designed by Professor Bardsley of civil engineering and Major Charles E. Cook of the vocational department. Hundreds of surveying students over the years will recall these benchmarks of the campus.47

By 1931, the 60-year-old University of Missouri School of Mines and Metallurgy had expanded and matured as an institution of higher learning. Elmo Golightly Harris and his faculty had been active participants in the life of the institution for 40 of its 60 years. By 1931, civil engineering had become firmly established as a major academic unit at the school. Its faculty featured a professional staff with a disproportionately large number of majors. The department also received support from a coterie of loyal alumni, including men like Enoch Needles who had achieved national prominence in his profession before the era was over.

From 1931 to 1955, the nation experienced the Great Depression and World War II, and, in the post 1945 era, American affluence, power, and technological achievement cast this nation into a position of unprecedented world leadership. As the nation faced these great challenges, engineering educators had central roles to play. For that generation, the leadership for civil engineering at MSM would be provided by the department’s second chairman, Joe Beaty Butler.
Footnotes, Chapter II

3Ibid., and The Missouri Miner, March 3, 1931.
8Thorndike Saville, op. cit., pp. 149-50.
10Ibid., 259, and Saville, p. 152.
12Phelps County Historical Society, History of Missouri School of Mines and Metallurgy, p. 907.
15Ibid., p. 557.
16Ibid.
18Ibid., p. 342.
20Phelps County Historical Society, History of MSM, p. 892. Eventually, up to 8 hours of credit was given for military science.
21School of Mines and Metallurgy, University of Missouri, 52nd Annual Catalog, 1923, pp. 44, 51-52.
23W. H. Echols to the Executive Committee of the Missouri School of Mines, July 7, 1891, as cited in the Clair V. Mann Collection, R: 3/3/5 Folder 209, Curtis Laws Wilson Library Archives.
24 Harris, Brief Autobiography, pp. 18-19.
26 Harris, Brief Autobiography, pp. 32-33.
27 Christensen-Ridley, UM-Rolla, pp. 36-37.
29 Daniel Kennedy, Oral Interview, June 27, 1984.
33 Ibid., p. 40.
35 Ibid., p. 86.
36 Daniel Kennedy, Oral Interview, June 27, 1984.
38 Ibid., p. 376.
39 “Student Life,” Pamphlet published by the University of Missouri School of Mines and Metallurgy, circa 1920.
40 Christensen-Ridley, UM-Rolla, p. 86.
41 Clarence N. Roberts, History of the University of Missouri School of Mines and Metallurgy, 1871-1946 (Rolla, 1946), pp. 58, 74-75, 100.
45 Phelps County Historical Society, History of MSM, p. 955.
46 “A History of the Department of Military Science at the University of Missouri School of Mines and Metallurgy,” Rolla, Mo., June, 1964; and Phelps County Historical Society, History of MSM, pp. 956-57.
47 Christensen-Ridley, UM-Rolla, p. 102 and “Many reminders of Earlier Classes are Still Standing,” MSM Alumnus (July-August, 1947), pp. 10-12.
CHAPTER III
The Butler Years, 1931-1955

In 1920, Joe Beaty Butler, an energetic young Oklahoman with stocky physique, piercing blue eyes, and a long stride, arrived on the campus of the University of Missouri School of Mines and Metallurgy. Butler had earned a baccalaureate degree in civil engineering at Oklahoma A&M in 1915 and had served during World War I as a lieutenant in the U.S. Army Engineers in Europe. For 35 years, Butler served his profession and his academic home with unwavering loyalty. In 1931, Butler became civil engineering's second department chairman. He remained in that post until his death in 1955. Butler's predecessor, Elmo Golightly Harris had established the foundation of the department over the previous generation. It would be Butler's responsibility to lead the department through an era in which the American nation experienced unprecedented change ranging from the depths of economic depression to world war to post-war boom.

During the Butler years at MSM, engineering education experienced more dramatic challenges than at any time in its history. From 1931 to 1955, America moved into a world leadership role in technology, and engineering educators scrambled to keep institutions of technology abreast of technological change.

The Wickenden Report, sponsored by the Society for the Promotion of Engineering Education (SPEE), made public in the early 1930s, called for curricular reform and the creation of an accrediting program for engineering curricula in order to ensure a basic level of quality. The most tangible result was the creation, in 1932, of the Engineers' Council for Professional Development (ECPD), a cooperative product of the major professional societies (including the ASCE) and SPEE. Given authority to accredit engineering curricula, ECPD quickly moved to accredit 125 schools by 1940.†

In spite of the progress achieved during the 1930s, the coming of World War II served to emphasize the more glaring weaknesses in engineering education and provided the catalyst for change. On the
eve of America’s entry into the world war of the 1940s, American strategists became aware that this country did not have enough engineering graduates to cope with national defense needs. Accordingly, in October 1940, the federal government launched the Engineering, Science, and Management War Training Program. The intent of this program was to supplement the regular engineering curricula in engineering schools with short, intensive college programs intended to prepare a task-force to beef up the nation’s defensive effort. From 1940 to 1945, 227 colleges participated in the program offering some 31,000 courses to more than 1.5 million technical students.

Engineering education in the post-war setting experienced an explosion in enrollment, giant strides in technological developments related to the war effort, and unprecedented expansion in research activities. The G.I. Bill, providing financial assistance to veterans in higher education, served as an incentive for the growth in student enrollment. Because engineering education must always respond quickly to technological change in the society at large, wartime technological developments increased the importance of academic research. That, coupled with federal financial support, led to the expansion of faculty/graduate student research programs.

For engineering education on the national level, one manifestation of the changes taking place was the reorganization, in 1946, of the Society for Promotion of Engineering Education, which gave way to the new American Society for Engineering Education (ASEE). The new organization would better coordinate the diverse elements (teaching, research, geographic sections, academic sections, etc.) in post-war American engineering education.

Civil Engineering in America

From 1931 to 1955, civil engineers played an active role in the spread and integration of engineering methods and products into American society. This would be an era of new emphasis on public works. Between 1931 and 1955 much of the nation’s present infrastructure took shape. From 1930 to 1955, 159,000 miles of new highways were constructed and 260,000 miles of roads were upgraded from “unimproved” to “improved” status. Federal expenditures for highway maintenance and construction increased from $2.9 billion in 1930 to $7.4 billion in 1955. In 1932 the National Resources Board took the first
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inventory of the nation's water needs. In 1936, Hoover Dam, the world's highest dam (726 feet) and a pioneering effort in concrete structures, was completed. In 1942, the world's largest filtration plant was completed in Chicago. As the era came to a close, President Eisenhower, in 1956, signed into law the National System for Interstate and Defense Highways bill, authorizing 41,000 miles of express highways, thus creating the most advanced transportation system in history. The cost of this interstate highway network would exceed $46 billion by 1965. This was to be a special era of challenge, opportunity, and more specialization in areas such as materials, structures, transportation, bridges, hydrology, water supply, and sanitation.

Throughout this era, the American Society of Civil Engineers played a leadership role for all engineers and emphasized to the public the strong orientation of civil engineers to practice in the public works sector. As American society plunged into economic depression, the ASCE submitted to President Hoover and Congress a memorandum entitled "A Normal Program for Public Works Construction to Stimulate Trade Recovery and Revive Employment." This memorandum provided incentive for the Emergency Relief and Construction Act of 1932 and the National Industrial Recovery Act of 1933. Both laws aimed at stimulating economic recovery. In the process, they provided employment for 40,000 engineers.

Government agencies of New Deal vintage served to draw even more civil engineers into the public sector. By the late thirties, the growing federal bureaucracy included the Bureau of Reclamation, the Bureau of Public Roads, the Geological Survey, the Coast and Geodetic Survey, and the Corps of Engineers.

As the profession expanded, ASCE took the lead in advocating professional and ethical standards for all engineers, urging states to adopt engineering registration laws. Meanwhile, in 1939, MSM's own Enoch R. Needles, serving as chairman of the ASCE Committee on Professional Objectives, stated:

For 87 years, we have functioned almost exclusively as a technical society... This historic fact requires no explanation or apology...

One of the most significant things about this meeting may lie in this start toward joint thinking about problems of the professional classes. Whether we are architects, physicians, lawyers, engineers, educators, or clergymen, we must acknowledge certain common fundamentals. [The professional's] actions must comply with high
ethical standards. His endeavors are largely devoted to service to his fellow man. He seeks respectability; and aspires to be deserving of respect. 9

MSM, 1931-1955

The years Joe B. Butler spent as chairman of the University of Missouri School of Mines and Metallurgy, department of civil engineering can be divided into two distinct parts: years of retrenchment (1931-1945) and years of unprecedented expansion (1946-1955).

Butler replaced Harris as department chairman in 1931 at a time
when America was beginning to feel the full impact of the Great Depression. For the remainder of that decade, faculty and administrators at Rolla, like their counterparts across the nation, had to adjust to massive cutbacks in state appropriations. As the decade ended, the war in Europe threatened to involve the United States, student enrollments on Rolla's campus were increasing but appropriations were not, and some MSM supporters called for the School of Mines to change its relationship with the University of Missouri in Columbia. From 1941 to 1945, the demands of war determined priorities at the School of Mines as campus leaders attempted to cope with the critical shortage of competent engineers in this highly technological war.

When Butler became department chairman in 1931, Charles H. Fulton was beginning his twelfth year as director of the School of Mines. Fulton served until 1937 when he resigned, citing a desire to return to his laboratory. William R. Chedsey replaced Fulton. The new director faced an insufficient operating budget, increasing enrollments and resulting student housing shortage, and the prospect of a division between MSM and the University of Missouri in Columbia. Amidst the controversy, the University of Missouri announced Chedsey's resignation in 1941.

Curtis Laws Wilson replaced Chedsey. Wilson's title, "dean," symbolized a demotion in rank to many, but University of Missouri administrators insisted that the new title merely reflected administrative reorganization within the system. For the next 22 years, Wilson provided leadership to MSM. Shortly after Wilson arrived on the Rolla campus, the Japanese attack on Pearl Harbor catapulted the United States into World War II and the divisive issues of the past decade were placed on hold as Missouri's School of Mines did its part to train the desperately needed technologists for the war effort. The years from 1931 to 1945 had been years of retrenchment for the School.

In contrast, the decade following World War II were years of dramatic change as the student body, bolstered by veterans, reached a record 2,565 in the 1946-1947 school year. The year before, 905 students had enrolled. Fourteen barracks sprang up to dot the MSM landscape; a more sympathetic legislature approved the construction of several permanent structures before the decade ended; and, by the mid-'50s, a $4.9 million bond issue was approved for MSM that would result in a host of new buildings, including the present Butler-Carlton Civil Engineering Hall.
In the midst of this unprecedented growth, the separation issue reached a climax and was put to rest. Wilson had received a mandate from University President Frederick Middlebush to end the controversy over separation, but America’s entry into World War II caused the issue to be set aside. After the war, the separation issue intensified when the administration and certain faculty members clashed. Separationists said that President Middlebush and Dean Wilson treated the Rolla campus like a "stepchild" and refused to allocate a fair share of state funds for MSM. In 1948-1949, the administration decided to discipline some of the more outspoken separationists on the MSM faculty by transferring them to the Columbia campus. The five faculty members, none of whom were civil engineering faculty, resigned rather than accept the transfer. This action prompted other separationists, led by Phelps County Representative Booker H. Rucker, to introduce a bill in the Missouri House of Representatives which, if passed, would have made MSM’s top administrator directly responsible to the Board of Curators. The University administration in Columbia would have been bypassed. The bill was defeated and after 1949, for a variety of reasons, University officials became more receptive to development at MSM, and the creation of the University of Missouri at Rolla in 1964, essentially laid the issue to rest.12

By the end of Joe B. Butler’s tenure as department chairman in 1955, the School of Mines exhibited a new look with a larger faculty and student body.

Norwood and Harris Halls

Civil engineering classes in the 1930s were held in Norwood Hall. Space for civil engineering in Norwood included two lecture rooms on the west end and some offices for faculty. Laboratories were spread over the campus, including the materials lab in the basement of the mining building and an instrument lab in the old power plant.13 In 1940, civil engineering faculty and students moved into the newly completed Harris Hall, the first new building on campus in a generation. Named for Elmo Golightly Harris, the new building was a replica of the hydraulics laboratory at Karlsruhe, Germany. Professors E.W. Carlton and Vernon A.C. Gevecker participated in the design of the new stone structure. The building, of reinforced concrete frame construction and faced with native dolomite, original-
Harris Hall

Elmo Golightly Harris giving the first lecture in Harris Hall.
ly housed the civil engineering, mechanics, and biology departments. The basement housed the hydraulics testing laboratory, mechanics testing lab, highway materials lab, and blueprint equipment facilities. The first floor included a large drafting room, offices, surveying instrument lockers, and the hydraulics lab shop. The second floor contained the soil mechanics and bituminous materials lab, offices, and lecture rooms. The third floor included an auditorium and lecture rooms. In addition, the drafting rooms and offices for the Central Section and the offices for the Central Division of the Topographic Branch of the United States Geological Survey were also located in Harris Hall. Harris Hall served as civil engineering's campus home for the next twenty years.

Curriculum, 1931-1941

In order to serve the growing industrial requirements of society, the civil engineering curriculum expanded during the Butler era. As Americans acquired mass-produced automobiles, the construction and maintenance of highways became a major business, and civil engineers assisted in the location, construction and maintenance of the nation's highways. At MSM, courses in highway-materials testing and highway-transport economics were added to the roster of courses in the early thirties. In addition, hydraulics assumed a new significance as water power engineering techniques were applied to gigantic projects such as Boulder Dam and the Tennessee Valley Authority. Accordingly, MSM's civil engineering course offerings expanded to include water-power engineering, advanced hydraulics, and river and harbor engineering.

When Butler became department chairman, a sanitary engineering option was added to the curriculum. Courses in water supply, sewerage, and drainage were expanded to assist future sanitary engineers in coping with the challenge of providing pure water and disposing of sewage in the nation's cities.

In 1937, Charles H. Fulton's last year as director, MSM offered eight undergraduate degree curricula, including civil engineering. As in the past, the freshman year was the same for all students, regardless of their major field. This first year included introductory courses in chemistry, mathematics, engineering drawing, surveying, English, and military science. During the sophomore year, civil
engineering students continued their studies by taking courses in calculus, physics, English, and military science. By the third academic year, prospective civil engineers began their specialized work, taking courses in highway engineering and highway materials, structures, hydraulics and excavation, tunneling, and blasting. The senior year included courses in design, water supply, business law, engineering English, sewerage, drainage and irrigation, and, finally, the senior trip. The senior trip, a capstone of the undergraduate experience, was a required two-week tour of industrial sites throughout the Midwest. The seniors were always accompanied by a member of the faculty.

FRESHMAN YEAR. ALL CURRICULA

First Semester.—General Chemistry, 4-6; General Engineering Drawing, 0-9; Rhetoric and Composition, 3-0; Trigonometry and College Algebra, 5-0; Military Science and Tactics, 1-2; Physical Training, 0-1 (no credit); Special Lectures, 1-0 (no credit). Second Semester.—General Chemistry, 4-6; Descriptive Geometry, 0-9; Rhetoric and Composition, 3-0; Analytical Geometry, 5-0; Military Science and Tactics, 1-2; Physical Training, 0-2 (no credit); Special Lectures, 1-0 (no credit). Summer School.—Plane Surveying, 4. (Lect.-Lab.)

CURRICULUM III. CIVIL ENGINEERING.

Second Year: First Semester.—Railroad & Highway Surveying, 2-6; English, 3-0; Calculus, 4-0; Physics, 4-6; Military Science & Tactics, 2-1. Second Semester.—Topographic Surveying, 0-6; English, 3-0; Calculus, 4-0; Theoretical Mechanics, 5-0; Physics, 4-6; Military Science & Tactics, 2-1.

Third Year: First Semester.—Highway Engineering, 3-0; Highway Materials Testing, 0-3; Economics, 3-0; Mechanics of Materials, 4-0; Physical Metallurgy, 0-3; Bacteriology, 1-6; Electrical Machinery, 3-3. Second Semester.—Masonry & Reinforced Concrete, 2-3; Stresses & Framed Structures, 2-6; Hydraulics, 3-3; Economics, 3-0; Geology, Rocks & Minerals, 3-3; Excavation, Tunneling & Blasting, 2-0. Summer: Work in Practise.

Fourth Year: First Semester.—Masonry Design, 2-6; Bridge Design, 1-6; Water Supply, 3-0; Contracts, Specifications, & Business Law, 3-0; Engineering English, 2-0; Metals in Engineering, 2-0; Electives. Second Semester.—Designing 1-6; Sewerage, Drainage & Irrigation, 5-0; Engineering Economics, 3-0; Senior Trip. Electives. Technical Option, 0-6. [This involved choice of 6 laboratory hours from one of the following: Highway Design, Advanced Structural Design, or Sanitary Science (courses in Biology & Chemistry).]
ECPD Accreditation

After 1936, ECPD accreditation became a benchmark of excellence in engineering education. Although the accrediting process was voluntary, a favorable report from the regional inspection team was beneficial. Rules and bases for ECPD accreditation included evaluation of the qualifications, achievements, and productivity of the faculty of the department being reviewed. The inspection team also considered the quality of instruction in service departments, admissions requirements for students, overall student quality, and the achievements of graduates as well as the curricula, physical plant, and financial support.

In 1936, an ECPD team visited the Rolla campus and appraised all degree-granting engineering disciplines. The team approved four of the seven engineering curricula and conditionally approved a fifth curriculum. The four fully approved programs were civil, ceramic, metallurgical, and mining engineering. Electrical engineering was approved on condition that it hire an additional faculty member, preferably one with an earned doctorate. Chemical and mechanical engineering curricula were approved at a later date.18

The civil engineering curriculum was approved without condition. Of the accredited programs, only civil and electrical engineering were outside mines and metallurgy. The civil engineering staff deserved special credit for its efforts in achieving full accreditation of its curriculum at MSM.

Curriculum During World War II

Aware of the need for an accelerated program as America went to war, MSM officials altered the curricula to meet war needs. More than ever before, society looked to science and technology to provide solutions so critically needed to win the war. Beginning in 1942, a three-year baccalaureate program was adopted, which included a 12-week summer session. Graduation requirements were reduced from 150 to 144 credit hours. In addition, MSM became one of the sites for the Engineering, Science, and Management War Training Program, a non-degree program intended to provide technically trained personnel for the military and for industry. Beginning at MSM in 1942, the program included study in six areas; two of them, drafting and topographic mapping and photogrammetry, in the realm...
of civil engineering. Professor Ernest W. (Skip) Carlton of the civil engineering department served as director of this defense training program.

In 1943, the United States Army created the Army Specialized Training Program (ASTP), which was to provide technical training required of military personnel for the war effort. MSM participated in ASTP from August, 1943 to April, 1944 when the army discontinued the program.19

With the conclusion of the war in 1945, the special programs and the accelerated degree program were replaced with the pre-war curriculum. Between 1945 and 1955 the curriculum changed little. The 1952-1953 MSM Bulletin reduced degree requirements for all curricula to 148 semester hours plus 8 hours of required military science and in 1955 the senior inspection trip passed into history. The following is the civil engineering curriculum at the end of the Butler era:

CIVIL ENGINEERING

The Curriculum in Civil Engineering is designed to afford a thorough training in fundamental principles upon which the practice of professional civil engineering is founded. It is the aim of the department to prepare the graduates for technical and administrative positions in the promotion, design, construction, operation, and management of engineering projects.

The instruction is by lecture and practice, in classrooms, laboratories, and field. The first two years of the curriculum in addition to covering the scientific, mathematical and humanistic subjects common to all curricula, include the sub-professional courses in surveying and highway materials testing, while the last two years are devoted to those subjects of a more definitely professional nature.

Civil Engineering is the oldest of the engineering professions. It comprises Surveying and Geodesy, with its problems of location and mapping of engineering enterprises and division of lands; Transportation Engineering, including the building of railways, highways, airports, canals, waterways, docks, and tunnels; Hydraulic Engineering, with its questions of water-power development, flood
control, irrigation and drainage; Sanitary Engineering, including water supply, sewage disposal and public health; Structural Engineering, dealing with the design, construction and maintenance of bridges, steel and concrete buildings, foundations, etc., and Municipal Engineering, which includes to a large extent a combination of the above branches. This wide range of subjects renders impossible the attempt to treat them all in detail in a four-year curriculum, hence the student is given considerable opportunity in the third and fourth years of the curriculum to select, subject to approval of his adviser, elective and optional subjects, to permit him to prepare for some definite field or branch of civil engineering.
# ALL CURRICULA

<table>
<thead>
<tr>
<th>Number.</th>
<th>Name of Course.</th>
<th>Hours per week</th>
<th>Credit hours</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Lect.</td>
<td>Lab.</td>
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</tbody>
</table>

## FRESHMAN YEAR

### First Semester:

- **Chem. 1 and 2**: General Chemistry ........................................ 4 3 5
- **C. E. 1**: Elementary Plane Surveying .......................... 1 3 2
- **Draw. 11**: General Engineering Drawing (1) ............. 0 6 2
- **Engl. 1**: Rhetoric and Composition ............................... 3 0 3
- **Math. 5**: Trigonometry and College Algebra ............... 5 0 5
- **M. 1**: Military Fundamentals ................................. 2 1 2
- **PE 1**: Physical Education ......................................... 0

### Second Semester:

- **Chem. 3 and 6**: General Chemistry and Qualitative Analysis ........................................ 3 6 5
- **C. E. 1**: Elementary Plane Surveying .......................... 1 3 2
- **Draw. 12**: Descriptive Geometry ................................. 0 6 2
- **Engl. 2**: Rhetoric and Composition ............................... 3 0 3
- **Math. 8**: Analytical Geometry .............................. 5 0 5
- **M. 2**: Military Fundamentals ......................................... 2 1 2

- **14 or 15** 10 or 13 17 or 19

*Students presenting credit in Trigonometry will schedule Elementary Plane Surveying in the first semester. Those without credit in Trigonometry will schedule Elementary Plane Surveying in the second.*

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## CURRICULUM III, CIVIL ENGINEERING

<table>
<thead>
<tr>
<th>Number.</th>
<th>Name of Course.</th>
<th>Hours per week</th>
<th>Credit hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Lect.</td>
<td>Lab.</td>
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## SOPHOMORE YEAR

### First Semester:

- **C. E. 5**: Land Surveying ........................................ 1 0 1
- **C. E. 7**: Railroad and Highway Surveying .................. 0 6 2
- **C. E. 61**: General Bacteriology .............................. 1 3 2
- **C. E. 112**: Highway Materials Testing .................. 0 3 1
- **Engl. 102**: World Literature I ................................ 3 0 3
- **Math. 21**: Differential Calculus ........................... 4 0 4
- **Phys. 21**: General Physics Lectures .......................... 4 0 4
- **Phys. 32**: General Physics Laboratory .......................... 1 3 2
- **M. 3**: Basic Military Engineering ................................. 2 1 2

- **16** 16 21
### JUNIOR YEAR

#### First Semester:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>C. E. 101</td>
<td>Advanced Surveying</td>
<td>1</td>
</tr>
<tr>
<td>C. E. 131</td>
<td>Elementary Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>C. E. 132</td>
<td>Elementary Fluid Mechanics</td>
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<tr>
<td>Econ. 100</td>
<td>Principles of Economics</td>
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<tr>
<td>E. E. 121</td>
<td>Electric Circuits and Machines</td>
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<tr>
<td>Geol. 51</td>
<td><strong>Physical Geology</strong></td>
<td>3</td>
</tr>
<tr>
<td>Mech. 103</td>
<td>Mechanics of Materials</td>
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<tr>
<td>Mech. 104</td>
<td>Materials Testing</td>
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<td></td>
<td><strong>Total</strong></td>
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#### Second Semester:

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<th>Course</th>
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<tr>
<td>C. E. 121</td>
<td>Stresses and Framed Structures</td>
<td>2</td>
</tr>
<tr>
<td>C. E. 231</td>
<td>Hydrology</td>
<td>2</td>
</tr>
<tr>
<td>C. E. 243</td>
<td>Engineering Law and Contracts</td>
<td>2</td>
</tr>
<tr>
<td>Econ. 356</td>
<td><strong>Personnel Management</strong></td>
<td>3</td>
</tr>
<tr>
<td>E. E. 122, 123</td>
<td>Electric Circuits and Machines</td>
<td>2</td>
</tr>
<tr>
<td>M. E. 121</td>
<td>Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>Mech. 102</td>
<td>Engineering Mechanics-Dynamics</td>
<td>2</td>
</tr>
<tr>
<td>Min. 307</td>
<td>****Explosives and Their Uses</td>
<td>2</td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
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#### Summer:

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<tr>
<td>C. E. 196</td>
<td>Work in Practice</td>
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**Alternate option: Math. 201, Differential Equations.
***Alternate options: Econ. 201, 314 or 315.
****Alternate options: Math. 302, 304, 310, Mech. 303, Min. 100 or 251.
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<thead>
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<th>Number.</th>
<th>Name of Course.</th>
<th>Hours per week</th>
<th>Credit hours</th>
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<tr>
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<td></td>
<td>Lect.</td>
<td>Lab.</td>
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<td></td>
<td><strong>SENIOR YEAR</strong></td>
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<tr>
<td></td>
<td><strong>First Semester:</strong></td>
<td></td>
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<tr>
<td>C. E. 111</td>
<td>Highway Engineering</td>
<td>2</td>
<td>0</td>
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<tr>
<td>C. E. 221</td>
<td>Bridge Design</td>
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<td>3</td>
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<tr>
<td>C. E. 225</td>
<td>Design of Concrete Structures</td>
<td>2</td>
<td>3</td>
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<tr>
<td>C. E. 229</td>
<td>Foundations and Earthwork</td>
<td>2</td>
<td>0</td>
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<tr>
<td>C. E. 237</td>
<td>Water Supply and Sewerage</td>
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<td>Mech. 105</td>
<td>Materials of Engineering</td>
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<tr>
<td></td>
<td><strong>C. E. Optional Course</strong></td>
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<td>3</td>
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<tr>
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<td><strong>Second Semester:</strong></td>
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<tr>
<td>C. E. 205</td>
<td>Elementary Aerial Mapping</td>
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<tr>
<td>C. E. 211</td>
<td>Soil Mechanics</td>
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<td>3</td>
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<tr>
<td>C. E. 227</td>
<td>Design of Concrete Structures</td>
<td>2</td>
<td>3</td>
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<tr>
<td>C. E. 241</td>
<td>Engineering Economy</td>
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<tr>
<td>C. E. 321</td>
<td>Advanced Structures</td>
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<td>3</td>
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<tr>
<td>C. E. 198</td>
<td>Senior Trip</td>
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<tr>
<td>Hist. 160</td>
<td>American Civilization</td>
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<td>3</td>
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<td><strong>C. E. Optional Course</strong></td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td><strong>Sanitary Science Group or</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Departmental Minor</strong></td>
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<td></td>
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<tr>
<td></td>
<td><strong>Credit hours</strong></td>
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<td>9</td>
</tr>
<tr>
<td></td>
<td><strong>Subject to be chosen by consultation with department chairman.</strong></td>
<td></td>
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</tr>
<tr>
<td></td>
<td><strong>Choose each semester, after consultation with department chairman, from the following:</strong></td>
<td></td>
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</tr>
<tr>
<td>C. E. 300</td>
<td>C. E. 312</td>
<td>C. E. 329</td>
<td>C. E. 368</td>
</tr>
<tr>
<td>C. E. 301</td>
<td>C. E. 313</td>
<td>C. E. 332</td>
<td>Draw. 21</td>
</tr>
<tr>
<td>C. E. 303</td>
<td>C. E. 315</td>
<td>C. E. 333</td>
<td>Draw. 22</td>
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<tr>
<td>C. E. 305</td>
<td>C. E. 321</td>
<td>C. E. 365</td>
<td>Draw. 26</td>
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<tr>
<td>C. E. 309</td>
<td>C. E. 323</td>
<td>C. E. 367</td>
<td>Draw. 292</td>
</tr>
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</table>

**Students desiring to specialize in Sanitary Science may replace courses C. E. 221, 227, E. E. 121, 122, 123, with 12 hours of credit as approved from the following courses directly relating to Sanitary Science: Chem. 7, 8, 16, C. E. 300, 350, 361, 363, 365, 367, and 368.**

**Students taking a minor of at least 12 credit hours of approved correlated courses in any other department than Civil Engineering may replace courses Geol. 51, Min. 307 and the two C. E. Optional Courses of the senior year. Courses regularly required in Curriculum III shall not be used to count toward the minimum of 12 credit hours.**

**Alternate option: C. E. 325.**
Another significant feature of the Butler years was the growth of the graduate program. A few master of science degrees were awarded in the twenties (Butler was among the earliest recipients) and a handful of graduate degrees in civil engineering were awarded during the thirties. However, a dramatic growth in graduate education came after World War II. Candidates for a master of science degree in civil engineering after 1945 were required to complete 36 semester hours of work and to submit a thesis. The Ph.D. degree was offered by the University of Missouri in Columbia. Civil engineering students could partially fulfill requirements for the Ph.D. at Rolla, but only with the approval of the dean of the graduate school at the campus in Columbia.\textsuperscript{21}

The Faculty, 1931-1955

From 1931 until the conclusion of World War II, the civil engineering faculty changed little. Butler was professor of civil engineering; Henry H. Armsby, an associate professor of civil engineering, had little time for teaching after he became the school’s registrar and student adviser in 1923. Armsby remained in this capacity until his departure from MSM in 1941. Clarence E. Bardsley was professor of hydraulic engineering until 1938 when he left Rolla for a position at Oklahoma A&M. Ernest W. Carlton was associate professor of civil engineering until 1936, when he was promoted to the rank of professor of structural engineering. Herbert E. Ahrens was an assistant professor for the 1932-33 school year and Ernest E. Decker served as an instructor beginning in 1932. Vernon A.C. Gevecker joined the faculty in 1938. C.W. Eshbaugh became an instructor in civil engineering in 1942. Several other faculty held adjunct appointments in civil engineering: Rex Z. Williams taught part time in civil engineering from 1934 to 1936 when he transferred to the engineering mechanics department; David J. Peery served as an instructor in 1936-37; and Charles J. Millar, department of biology, taught courses in sanitary engineering for many years. Civil engineering faculty of this era also served in important campus administrative positions. Rex Z. Williams became assistant dean of the School in 1946 and retired as associate dean in 1952. Vernon A.C. Gevecker served as the assistant dean from 1953 to 1959.\textsuperscript{22}

The coming of the war disrupted faculty expansion and Butler and
Vernon A.C. Gevecker

Carleton, the two men whose names were becoming synonymous with civil engineering at MSM, served as the department’s stalwarts during the war.

After 1946, the vast number of majors in civil engineering made additional faculty essential. As shown in the 1946-47 Catalog, the civil engineering department had expanded to include 10 faculty. One of the newcomers that year was Leon Hershkowitz. As the post-war boom continued, the department expanded to sixteen in 1947-48, including J. Kent Roberts. In 1948-49, the department reached a high of eighteen faculty, and C.D. Muir and Joseph H. Senne were listed as new instructors. Some of the new post-war instructors, Hershkowitz, Muir, Roberts and Senne remained on the faculty and helped shape the future of civil engineering at MSM. By 1950, the post-war boom in enrollment had ended, and the number of faculty dropped to 10 and remained at that number until the Butler era ended.

The primary task of the MSM faculty from 1931 to 1955 was teaching. Some research was conducted, but undergraduate teaching was clearly the first priority for the faculty. James S. Anderson (class of 1955), Harvey B. Leaver (class of 1948), John H. Livingston (class of 1939), and Peter F. Mattei (class of 1937), are among the students of
the Butler era who remembered that the faculty were always on call to assist the student with academic or personal problems. Butler's daughter, Betty Jo Snowden, remembered that her father reserved the basement of the family home for those students who could not afford to pay standard room rentals.\(^{23}\)

The civil engineering faculty also excelled in the realm of community and professional service. Professors Butler and Carlton established this tradition and served as examples to their junior colleagues. Butler and Carlton were organizers and founders of the Missouri Society of Professional Engineers (MSPE). Butler was organization chairman and first president of MSPE, an organization which held its first meeting in Norwood Hall in January, 1937.

Carlton, in turn, served as the organization's second president. MSPE was instrumental in achieving a state registration law for engineers, passed by the 61st General Assembly of the Missouri legislature in 1946. Both the MSPE and the state registration law represented hallmarks in extending full professional status to engineers in Missouri.\(^{24}\)

**Joe B. Butler**

Throughout his professional career, Joe B. Butler was a booster. He promoted his profession, his school, his department, his students, his church, and his community. Students and colleagues of his era will also remember him striding purposefully across campus armed with a cardboard box stuffed with professional materials and pamphlets. An active participant in national organizations such as ASEE and ASCE, he invariably carried a sheath of articles and pamphlets with him to these meetings to distribute to colleagues. At one meeting, he allegedly circulated 80 articles and pamphlets to his associates. During the Great Depression when federal relief made workers available, Butler was involved in a project resulting in detailed road maps of all Missouri counties. This project led to a series of papers and bulletins on highway planning and engineering.

One of Butler's students remembers him as a compassionate man:

One of the outstanding traits that I recall, as being a Professor Joe Butler trademark, was his untiring effort to get a civil to graduate. Joe never had a bad student and he honestly felt that
with a little effort, any student who really wanted to be a civil, could graduate—he actually proved that many times.

There was an incident that happened to three of us in the fall of 1942 that I will always remember. Professor Butler taught the Topography Survey course and in our party was Paul Carlton (Skip’s son); Ernie Wienel and Harvey Leaver. The plot that we were given to survey was mainly across 66 adjacent to and west of Vichy Road. It did include a corner of the campus—principally the old upper practice field. The three of us hardly made it through a complete afternoon of surveying without quitting early. . . As a result, we ran out of time and just 2 weeks before the map was due, I volunteered to finish it myself. So I went out and looked over the unsurveyed part and started to draw in the contour lines. Then at the last minute, I ran out of time and ended up drawing the final part at night by referencing an old contour map of the area.

The finished product was neat—the lettering was near-perfect—all in ink and my partners agreed that we would get the top grade. When the grades were published, we all got an M (same as current C), so I was elected to talk to Professor Butler. He confirmed that it was the best looking map turned in. “Then why the M?” I asked. “Well, Harve, you must have used an old map for the campus part because there is no 5’ contour in the middle of the practice field.” My response was, “Thanks, Professor, for the M.”25

In 1954, Butler was recognized for his service to the Engineers’ Club of St. Louis by his election to the Board of Directors. He was the first non-resident member of the Board. In 1950, the MSM professor had established the tradition of “Rolla Night” at the Engineers’ Club, an annual meeting which continues today where students, faculty, alumni, prospective students, and friends of MSM/UMR meet in St. Louis.26

A student and colleague of Butler’s, J. Kent Roberts, provided a fitting epitaph for the department’s second chairman when he said “St. Patrick is the patron saint of all engineers, but in his day, Joe Butler was the patron saint of civil engineers at MSM.”27

Students, 1931-1955

When Joe B. Butler became department chairman, 161 of the 680 students on campus had declared civil engineering as their major. That constituted the largest number of majors on campus. As the
Depression deepened, enrollment at MSM declined, but civil engineers continued to be the largest single group on campus until 1937. From 1931 to 1946, the proportion of civil engineering majors to the total student population remained about the same—approximately one of every ten Miners was a civil engineer.\textsuperscript{28}

The majority of civil engineering students and, for that matter, the majority of students at MSM, were Missourians. In the 1936-37 school year, 80 percent of the student body were native sons, though 23 other states and a few foreign countries were represented.\textsuperscript{29}

After World War II, a distinguishing feature of American higher education was the dramatic growth in student numbers. As mentioned previously, 2,565 students enrolled at MSM in 1946-47 and 401 declared civil engineering as their major. Of the 1,262 freshmen that year, roughly 75 percent were veterans. These former GIs represented a new breed of student for they were older, more experienced, and more mature. Many had wives and children and they pursued their educational goals in a more mature manner. These veterans were at MSM to acquire an education so they could continue to pursue the goals that had been interrupted by the war. Because few of them participated in student social activities that had been characteristic of campus life prior to World War II, freshman beanies, the freshman fight, dress codes and hazing disappeared.\textsuperscript{30}

Between 1946 and 1955, total enrollment varied from a high of 2,704 students in the 1948-49 school year to a low of 1,210 students in the 1951-52 school year. Civil engineering claimed a significant number of students in the post-war years. The number of civil engineering majors increased and declined with the ebb and flow of general enrollment.

As to graduate enrollment, for the 1946-47 school year, 10 of the 320 students in civil engineering were graduate students. There were 86 graduate students in all disciplines on campus that year. The number of graduate students increased to 29 in 1949-50. After that, enrollment across campus declined.\textsuperscript{31}

In May, 1950, MSM graduated its largest class in the history of the school. To date, one hundred and eleven earned the B.S. in civil engineering; 10 (including J. Kent Roberts) earned the M.S. in civil engineering. For Professor Vernon Gevecker, the 1950 spring graduation was especially memorable. Not only did he earn the professional degree of Civil Engineer, but as chairman of the commencement committee that year, he had to decide whether to hold the ceremony
outdoors. Having checked the weather forecast, Gevecker and his fellow committee members decided it would be safe to proceed with the outdoor ceremony. As the graduating class marched to their seats, however, storm clouds gathered. There followed what was undoubtedly the fastest graduating ceremony in the history of the school. As the first drops of rain began to fall, school officials broke with the tradition of reading the names of all degree recipients and conferred *en masse*, all undergraduate degrees. All then beat a hasty retreat from the athletic field. Graduate and professional degree recipients moved to Parker Hall auditorium to receive their degrees as a torrential rainstorm raged outside.\(^{32}\)

Another student milestone of the Butler years included the first woman to earn a degree in civil engineering at MSM. The 1936 graduating class included Margaret Geraldine Grimm. During that school year, 14 of the 446 students were women, Ms Grimm among them. In 1941, Jane Hall became the second co-ed from MSM to earn a B.S. in civil engineering. In 1952, Virginia F. Sabo enjoyed the distinction as MSM's one thousandth civil engineering degree recipient. Grimm, Hall and Sabo were part of a handful of pioneering women engineers. They would serve as models for their more numerous sister engineering counterparts of the following generation.


Students of the Butler era worked hard, but also found time for social activities which centered on fraternity life, party weekends, dances, and other school-sponsored entertainment. As always, the St. Pat’s celebration remained the most important school-sponsored social activity. Except for a few years during World War II when the
celebration seemed inappropriate and was not observed, St. Patrick would arrive at the Frisco station on Friday to signal the beginning of festivities, and until the next evening, students joined with townspeople in activities including a knighting ceremony, parade, dances and other forms of merriment. Students and faculty of the post-war years may also recall the famous walnut cracker made from a surplus artillery shell packer. That nut cracker made the civil engineering department a popular place for visitors on Engineer’s Day.\textsuperscript{33}

As to student organizations, civil engineers participated in a variety of activities including varsity and intramural athletics, social fraternities, religious clubs and professional and eating groups. For civil engineers, three organizations had special significance. The student chapter of the American Society of Civil Engineers, chartered in 1924, continued to play an important role for students as did the Reserve Officers’ Training Corps. ROTC had been an important feature on campus during the 1930s and continued to be popular after 1945. The ROTC Band, Color Guard, and Pershing Rifles took active part in area parades and festivals and were important symbols of student life from 1931 to 1955. In 1950, the MSM chapter of Chi Epsilon, the civil engineering national honor society, was chartered.
The following recounts the conception of Chi Epsilon at MSM:

The MSM chapter of Chi Epsilon was conceived in the fall of 1949, by two recent graduates of Auburn University, Mr. Thomas H. Whitfield and Mr. Howard Nunez [instructors in Civil Engineering at MSM] who had previously been initiated into Chi Epsilon at the Auburn campus. It was evident to these two men that among the 460 members of the Civil Engineering Department enough support could be found to initiate a Chi Epsilon Chapter, so a letter was sent to Professor Ray S. Owen, then national secretary-treasurer, to determine the procedures necessary. On November 14, 1949, then Assistant Professor V.A.C. Gevecker (now Professor Emeritus) sent another letter to Professor Owen stating that he had been appointed by the chairman of the Civil Engineering Department; Joe B. Butler, as the official representative and that a new chapter was in the making.

Petitions were sent out in the early part of 1950 to each of the other 33 chapters of Chi Epsilon so that the Rolla chapter might be approved. On May 5, 1950, a telegram arrived from Prof. Owen announcing that the Rolla Chapter had been approved. An installation team from Columbia traveled to Rolla on May 22, 1950 and on that day the Missouri School of Mines Chapter of Chi Epsilon was born.34

Campus scene
Chi Epsilon has long emphasized service on the part of its members. For example, a long-standing tradition of its pledges has been the requirement to build or develop a structure or display for an instructor to use in the classroom or laboratory. At various times, the MSM chapter has been the largest in the United States.

Throughout the Butler era, the student input at MSM is well summarized by the following quote:

I have long found myself puzzling over the one big thing which makes a college, which gives it life and vitality, character and individuality. Our school possesses this thing or quality. . . . The one big thing to me is the student body. . . . They are the life blood and soul of the institution. They are the ones who know what love of alma mater means. As students and graduates, we are the School of Mines.35

Thus, civil engineering’s most famous graduate, Enoch R. Needles, captured the essence of MSM’s spirit. His words had meaning in 1914 when Needles graduated and in 1948, when he presented the homecoming convocation address.
For civil engineering, an era ended with Butler's death in 1955. Between 1931 and 1955, the nation had endured an economic depression, had emerged triumphant from a world war which tested the national character, and, at the conclusion of that war, had witnessed the birth of the atomic age. This had been an era of challenge and maturation for the University of Missouri School of Mines and Metallurgy. The civil engineering department, under Joe B. Butler's able leadership, had done its share to meet those challenges.

Because of his experience, status and optimism it was fitting that E.W. Carlton was selected to lead the civil engineering department in the next decade—a time that would be characterized by exhilaration, commitment, and a conviction that society, with the assistance of engineering and science, could solve all of its problems.
Footnotes, Chapter III

3 Grayson, p. 260.
4 Saville, p. 157.
6 Ibid., p. 157.
8 Ibid., p. 151.
9 Ibid., pp. 69-70.
10 Christensen and Ridley, UM-Rolla, pp. 110-12.
11 Ibid., pp. 147-49. The Butler-Carlton Building was completed during E. W. Carlton’s tenure as chairman.
14 MSM Catalogue, 1940-1941.
16 Ibid.
17 Phelps County Historical Society, MSM History, pp. 896-98.
18 Ibid., p. 858.
20 MSM Catalogue, 1955-56.
21 Ibid., 1946-47.
22 Phelps County Historical Society, MSM History, pp. 907-08.
24 MSM Alumnus (Fall, 1942), pp. 1-2. (Together, Butler and Carlton left quite a legacy of civic and professional service. Carlton’s contributions will be assessed in chapter 4, "The Carlton Years.")
26 Rolla Herald, October 28, 1954.
27 J. Kent Roberts Oral Interview, May 9, 1984.
28 Clarence Roberts, MSM History, 1871-1946, pp. 100, 106-08, 118.
29 The Missouri Miner, March 31, 1937.
30 Christensen & Ridley, UM-Rolla, p. 172.
33 Bayless, Gevecker, Muir Oral Interview.
CHAPTER IV
The Carlton Years, 1955-1965

Ernest W. (Skip) Carlton became the third chairman of the civil engineering department in 1955. Carlton was already an experienced engineering educator when he assumed the chairmanship. His leadership over the next decade represented the capstone of his professional career. A specialist in structural engineering, the tall, slender, gregarious Carlton presented a gruff exterior which hardly concealed a warm, generous heart of gold. Carlton arrived at the Missouri School of Mines in August 1923, fresh from a teaching position at the University of Nebraska. During his tenure as chairman, the department moved into a proud new structure, later named the Butler-Carlton Civil Engineering Hall. By the early 1960s, MSM's civil engineering department could boast the largest undergraduate civil engineering enrollment in the United States. In addition, Carlton presided over the department when, in 1964, MSM's civil engineering department received approval for a Ph.D. program. Finally, Carlton led the department into a new era for the Rolla campus as MSM became the University of Missouri-Rolla.

Civil Engineering in America

For the civil engineer with the appropriate tools, the decade 1955-1965 could be dubbed “the glory years.” American society had never had it so good. Economic expansion began in the 1940s and continued through the 1960s with only an occasional slump. Here was an age of affluence for the majority of Americans. Affluence meant economic growth and this, for civil engineers, meant construction projects ranging from highway construction to participation in the quest to put a man on the moon. The interstate highway system authorized by Congress in 1956 made possible the construction of bridges, cuts and fills of enormous size and complexity. The growth of urban areas placed great demands on water supplies. Airports
capable of handling large jet aircraft required new designs and materials. Missiles, whether for space exploration or national defense, required launching pads and structural stands or silos for launching. Specialization constituted a major feature of the profession in its second century. The civil engineer could no longer move with ease from, for example, railroad to sanitary engineering. Increased specialization and complexity of techniques rendered this impossible.

In 1955, the ASCE announced the "Seven Modern Wonders of the World." They included the Chicago Sewage Disposal System, the Colorado River Aqueduct, the Empire State Building, the Grand Coulee Dam/Columbia Basin Project, the Hoover Dam, the Panama Canal, and the San Francisco-Oakland Bay Bridge.² Because all had been constructed by 1955, these were tributes to the success of technology in the first half of the twentieth century. By the early 1960's, certain projects under construction would make up future wonders of the world. They included the Chesapeake Bay Bridge Tunnel in Virginia, the Verrazano-Narrows Bridge in New York, and the California State Water Project.³
Engineering Education, 1955-1965

American higher education from 1955 to 1965 saw a period of growth. Education had become America’s priority. The quality of scientific and technological education constituted a special concern. Until 1957, Americans felt relatively secure with American science and technology but the launching of the Russian sputnik in 1957 was cause for alarm. After 1956, the American scientific and technical community faced the challenge of winning a Soviet-American competition for superiority in space. In 1965, American industry and government expended $2.2 billion for research and development in contrast to 1947 when the two spent a total of $1.1 billion.

Following a slump during the Korean War, enrollment in America’s technological institutions gradually increased through the late 1950s and into the 1960s. The G.I. Bill had been introduced at the conclusion of World War II and continued to provide educational opportunities for veterans during the Carlton years. In addition, the National Defense Education Act of 1958 contributed to larger enrollments in the nation’s colleges and to the idea that all Americans should have a chance to earn a college degree.

In 1955, the American Society for Engineering Education published one of its periodic studies entitled “Report on Evaluation of Engineering Education.” A committee, led by L.E. Grinter, considered means by which engineering educators could keep abreast of changes in science and technology and how future engineers should be educated. The “Grinter Report” provided guidelines which offered prospective engineers a broad education and the necessary specialized technical training. Achieving breadth and the specialized professional training within a four-year undergraduate program posed a unique problem for engineering educators. The Grinter Report recommended a more flexible four-year undergraduate curriculum, which included 25 percent emphasis on engineering science, 25 percent on engineering technology, 25 percent on mathematics and science, 20 percent on humanities and social sciences, and 5 percent on electives. The committee encouraged more engineers to attend graduate school for the more highly specialized training required for many engineering positions. The national trend in engineering education was toward graduate study and by the 1960s, graduate enrollment in engineering was growing faster then undergraduate enrollment.
Thus, engineering educators acquired a new status in American society by the 1960s:

... industry and government have projected the colleges of engineering into the main stream of American life. The professor of engineering, with his additional responsibilities for continuing education for industry, for research and training for national defense, for advisory services for international assistance programs, for research and education for the space program, and for research in water resources and extension services for promoting economic growth, is truly a vital member of contemporary society.

... today, engineering educators are men of influence... men of stature, competence, and involvement in the practical affairs of everyday life in this technical age and society. Their future role will continue to enlarge.

MSM to UMR, 1955-1965

By 1955, MSM had become a small, cosmopolitan school of technology with an enrollment of 1,911 students from 25 countries. Physically, the face of the campus had changed somewhat over the past generation. The post-war boom had resulted in the construction of several dormitories, a few more permanent buildings and many temporary buildings. Still, familiar landmarks such as Jackling Gymnasium, the Rolla Building and Harris, Norwood, and Parker Halls dominated the campus landscape.

The Carlton years witnessed a considerable growth in the physical plant. Officials renovated the old Experiment Station in 1957 and renamed it Fulton Hall. The new civil engineering building, an electrical engineering building and a physics building were completed, along with a nuclear reactor building and a student union building. Missouri citizens approved a $75 million bond issue in the mid-fifties; $4.9 million of that amount was allocated for MSM to finance construction of the civil, electrical and physics buildings. Federal loans and grants funded construction of the nuclear reactor and student union buildings.

The transition from MSM to UMR represented the most significant change for the Rolla campus during the Carlton years. In 1963, the University of Missouri Board of Curators with the authorization of the Missouri General Assembly, created the University of Missouri system, adding the Kansas City and St. Louis campuses to the
Columbia and Rolla campuses. In an effort to provide more uniformity among the four campuses, it seemed appropriate to change the name of the Rolla campus. Student enrollments in chemical, civil, electrical and mechanical engineering along with proposed expansion in the sciences meant that "School of Mines and Metallurgy" no longer completely described the school. Accordingly, officials of the School appointed an advisory committee, which included civil engineering’s Joseph H. Senne, to recommend a new name for the campus. In 1964, the title "University of Missouri at Rolla" was adopted (in 1968, the name was altered to University of Missouri-
Rolla). The new name signaled major administrative reorganization as indicated below:

The civil engineering department became a part of the School of Engineering. Aaron J. Miles served as the new School’s first dean.

During Carlton’s years as department chairman, another significant change occurred in campus leadership. Curtis Laws Wilson, dean of MSM since 1941, retired in 1963. Wilson had presided over the campus longer than any administrator. Merl Baker, a mechanical engineer from Kentucky, succeeded Wilson. In 1964, when the University of Missouri School of Mines and Metallurgy became the University of Missouri at Rolla, Baker became the first chancellor of UMR.
The New Civil Engineering Building

In April 1960, officials dedicated the new million dollar civil engineering building. Constructed with funds from a state bond issue, the new structure was of steel frame construction with buff brick, aluminum and blue porcelain on the exterior. A three-story structure, the building included 18 classrooms, an auditorium, four design rooms, 20 offices and five laboratories including bituminous, fluid mechanics, materials, sanitary engineering and soil mechanics laboratories. Enoch Needles, the distinguished alumnus of the class of 1914, equipped a special conference room named the “Needles Room.” The new building also housed the School’s first computer. It is appropriate that this new building, with 47,350 square feet of floor space, was the largest structure on campus, for by 1961 UMR’s civil engineering department had the largest undergraduate enrollment in civil engineering in the United States.\textsuperscript{10}
The Curriculum, 1955-1964

Some major changes in curricular requirements and course offerings occurred between 1955 and 1964. Namely, the 1955-1956 school year was the last year for CE 196, “Work in Practice,” a tradition of granting credit for eight weeks of practical on-the-job experience. In addition, the senior trip was dropped from the Bulletin after 1955-1956.

In keeping with national trends in engineering education, college algebra and trigonometry ceased to be credit courses. Henceforth, Math 8, analytical geometry and calculus I, became the basic mathematics credit course. Further, many new electives in design, soil mechanics, structural analysis and sanitary engineering became available and as expected, the variety of graduate courses increased. Finally, a new area of specialization, “engineering construction and management,” became available to civil engineering majors. The following constitutes the catalog description and curriculum for civil engineering in Carlton’s last year as chairman:

The curriculum in Civil Engineering is designed to afford a thorough training in fundamental principles upon which the practice of professional civil engineering is founded. It is the aim of the department to prepare its graduates for technical and administrative positions in the promotion, design, construction, operation, and management of engineering projects.

Instruction is by lecture and practice, in classrooms, laboratories, and field. The first two years of the curriculum in addition to covering the scientific, mathematical and humanistic subjects common to all curricula, include the subprofessional courses in surveying and highway materials testing, while the last two years are devoted to those subjects of a more definitely professional nature.

Civil engineering is the oldest of the engineering professions. It comprises surveying and geodesy, with its problems of location and mapping of engineering enterprises and division of lands; transportation engineering, including the building of railways, highways, airports, canals, waterways, docks, tunnels; hydraulic engineering, with its questions of water power development, flood control, irrigation and drainage; sanitary engineering, including water supply, sewage disposal and public health; structural engineering, dealing with the design, construction and maintenance of bridges, steel and concrete buildings, and foundations, and municipal engineering, which includes to a large extent a combination of the above branches. This wide range of
subjects renders impossible any attempt to treat them all in detail in a four year period, hence the student is given considerable opportunity in the third and fourth years of the curriculum to select, subject to approval of his adviser, elective and optional subjects, to permit him to prepare for some definite field or branch of civil engineering.

Graduate work and some undergraduate specialization are available in the fields of highway engineering, hydraulic engineering, sanitary engineering, stress analysis and structural design, airport and transportation, soils investigations and foundation problems.

Students desiring advanced work toward a master’s degree may arrange a graduate program with the approval of the chairman of the department.

CIVIL ENGINEERING

FRESHMAN YEAR

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<td>Engl 1—Rhetoric and Comp</td>
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<tr>
<td>Math 8—Anal Geom and Cal I</td>
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<td>M 10—Military Fundamentals</td>
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<tr>
<td>Math 21—Anal Geom and Cal II</td>
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<td>Phy 22—General Physics Lab</td>
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<td>M 20—Military Fundamentals</td>
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SOPHOMORE YEAR

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<td>CE 111—Highway Engineering</td>
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<td>Math 22—Anal Geom and Cal III</td>
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<td>Mech 51—Eng Mech—Statics</td>
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<td>Phy 25—General Physics</td>
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<td>Phy 26—General Physics Lab</td>
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<td>M 30—Military Fundamentals</td>
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<td>CE 116—Construction Materials</td>
<td>3</td>
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<tr>
<td>Econ 100—Principles of Econ</td>
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<tr>
<td>Geol 50—Geology for Engineers</td>
<td>3</td>
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<tr>
<td>Math 201—Differential Equations</td>
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<tr>
<td>Mech 103—Mechanics of Mat</td>
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<tr>
<td>Mech 104—Materials Testing</td>
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<td>M 40—Military Fundamentals</td>
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JUNIOR YEAR

First Semester 

Credit

CE 102—Advanced Land Surv .......... 3
CE 131—Elem Fluid Mech ............ 3
CE 132—Elem Fluid Mech Lab ......... 1
CE 121—Elem of Struct Theory ....... 3
CE 215—Soil Mechanics ................ 3
Engl 102—World Literature \(^1\) .......... 3
Hist 160—American Civilization ...... 3

19

Second Semester 

Credit

CE 231—Hydrology .................... 2
CE 235—Water Supply and Sew ....... 4
CE 125—Indeterm Structures .......... 3
EE 171—Electrical Circuits .......... 3
Mech 102—Eng Mech—Dynamics ....... 2
Mech 304—Adv Mech of Mat \(^2\) .......... 3
Electives .................................. 3

20

1 Or Engl. 75, 105, 110, or 125.
2 Or Mech. 105, Min. 307, 308, Math. 302, 304, 310, 318, Chem. 211, or Phy. 251.

SENIOR YEAR

First Semester 

Credit

CE 223—Rein Concrete Design ......... 4
CE 229—Found and Earthwork .......... 2
CE 243—Eng Law and Contracts ....... 2
EE 173—Electronic Devices \(^5\) ........ 3
ME 121—Thermodynamics .............. 3
Electives \(^1\) or San Eng courses .......... 3

17

Second Semester 

Credit

CE 221—Struct Steel Design .......... 3
CE 241—Engineering Economy ........ 3
Econ 356—Personnel Manage \(^4\) ........ 3
Engl 170—Public Speaking ............ 3
Electives \(^1\) or Sanitary Eng group \(^2\)  
or Electives, other depart \(^3\) ........ 7

19

\(^1\) Electives for both junior and senior year are to be chosen in conference with the 
department chairman and are subject to his approval. Six credit hours of electives 
must be chosen from the following: C.E. 305, 309, 311, 312, 313, 315, 317, 318, 320, 322, 325, 327, 328, 329, 331, 333, 343, 345, 349, 362, 365, 369, 373.
\(^2\) Students desiring to specialize in Sanitary Engineering may replace ten hours of 
electives with ten hours of credit approved from the following courses directly 
relating to sanitary engineering: Chem. 6, 7, 8; C.E. 300, 350, 362, 368 and 369.
\(^3\) Students presenting twelve credit hours of previously approved correlated courses in 
a department other than Civil Engineering, not otherwise required, may replace 
Mech. 304 and nine credit hours of the required electives. Students presenting credit 
for courses in Advanced Military Science will be excused from Mech. 304 and three 
credit hours of the required electives only.
\(^4\) Or Econ. 201, 314, or 315.
\(^5\) Or E.E. 175, or 177.

Engineering Construction and Management

The fields of Construction Engineering and Engineering Management constitute two of the most attractive employment outlets for civil engineers. Students interested in these fields will find the following 26 credit hours of courses the best preparation for such positions.
Econ 130—Accounting ................................................................. 3
Econ 314—Industrial Organization and Management ............... 3
Econ 315—Labor Relations .......................................................... 3
Econ 356—Personnel Management ............................................... 3
Psych 153—Applied Psychology .................................................. 3
CE 325—Building Construction .................................................. 2
CE 343—Construction Estimates and Costs .................................. 2
CE 345—Construction Methods ................................................... 3
CE 349—Engineering Specifications and Ethical Practices .......... 2
CE 373—Airport Planning and Design ......................................... 2

Total ....................................................................................... 26

By completing a departmental (12 credit hour) minor from the economics courses listed above, and by using his free electives, any student in Civil Engineering may take the 26 credit hours required for graduation.

Any one or more of these courses may be taken as a progressive preparation for construction or management.

J. Kent Roberts
Civil Engineering Faculty, 1955-1965

The faculty increased from eight in 1955 to 22 in 1964-65. Additions to the staff during the Carlton tenure included Jerry R. Bayless, John L. Best, Frank Gerig, Jr., Sotirios G. Grigopoulos, John B. Heagler, Paul R. Munger and Donald E. Modesitt. Joseph H. Senne, Jr. returned to the campus in 1964. Senne had left MSM for Ames, Iowa, in 1954 where he earned his Ph.D. and then served on the civil engineering staff at Iowa State until he returned to Rolla.

Between 1955 and 1964, the faculty increased in size and in breadth. While the department continued to emphasize quality classroom instruction, several new faculty members of this period had earned the Ph.D. and greatly enhanced the research functions of the department. The new emphasis on research produced an enhanced graduate program and improvements in soils, fluid mechanics, hydraulics, materials and sanitary engineering research laboratories. The faculty acquired grants from federal agencies such as the National Institute of Health, the National Science Foundation and various state agencies. These grants provided a needed boost for graduate education and research.12
The civil engineering faculty during the Carlton years represented a fine blend of teaching, research and service. Newcomers such as Grigoropoulos and Senne provided leadership in the development of a research program, Frank Gerig contributed to curricular development, and veterans like Vernon A.C. Gevecker, Leon Hershkowitz, and J. Kent Roberts continued the fine tradition of professional and community service. Roberts, for example, was elected president of the Missouri Society of Professional Engineers in 1964; Vernon Gevecker served as assistant dean of MSM from 1953 to 1959; and, Leon Hershkowitz succeeded Gevecker in that position in 1959.

Ernest W. Carlton

Students and colleagues referred to their department chairman from 1955 to 1965 as “Skip” or “the Skipper.” Carlton had acquired this nickname some years earlier when he led civil engineering seniors on the senior trip, where prospective graduates visited industrial sites in the upper midwest. Traditionally, the trip included an overnight ferry boat trek from Chicago to Milwaukee. On one occasion, Carlton, who had made the trip many times, took the seniors on a tour of the ferry boat. As they approached the bridge of
the boat, a new ferry boat captain who did not know Carlton, challenged his right to approach the bridge saying, “Who do you think you are, the skipper?” The nickname stuck and a generation of students and colleagues referred to the lanky Carlton as “Skip” or “the Skipper.”

Carlton arrived at MSM in 1923 from the University of Nebraska where he taught for three years. Prior to that, he earned a B.S. in mechanical engineering at Colorado State College in Fort Collins. Initially, he served the Rolla campus as an assistant professor of drawing and at the same time, earned B.S. and M.S. degrees in civil engineering as well as the professional degree of “Civil Engineer.” In 1927, Carlton was promoted to associate professor of civil engineering, and in 1936, he became professor of structural engineering. Carlton’s career attests to his belief that engineering was a public service profession. He assisted in the creation of the Missouri Society for Professional Engineers, and is the only man to serve two terms as president of that organization. Active in the American Society for Engineering Education and the American Society of Civil Engineers, Carlton served on the regional Engineers’ Council for Professional Development inspection team. In 1955, he became a director of the American Society for Civil Engineers. His commitment to service carried over to the community where he served in the Rolla Chamber of Commerce, the Lions’ Club and Masonic Lodge.

**The Asphalt and Concrete Conferences**

Other traditional services of the civil engineering faculty which began during the Carlton years were annual conferences such as the asphalt and concrete conferences. Initiated in 1957 and sponsored by the department in cooperation with state agencies and industry, over the years these conferences have served to advise thousands of engineers and technicians on the latest developments in asphalt and concrete technology.

**Students and Student Activities**

The number and variety of students made up an outstanding feature of the Carlton years. Enrollment at the institution increased from 1,911 in 1955 to 4,009 in 1964. In 1955, the institution had 13
women students and about 58 graduate students. By 1964, the number of women had increased to 57 and graduate enrollment increased to 82. By the end of the Carlton years, 45 states and 41 foreign countries were represented in the student body. The number of civil engineering majors increased from 338 in 1955 to 734 in 1964. Fifty-seven students in that year were working toward graduate degrees in civil engineering. By 1961, as mentioned above, civil engineering at MSM had the largest enrollment at the undergraduate level of any department of civil engineering in the United States. The exceptional growth attested to the need for civil engineers in the marketplace and MSM’s reputation of leadership attested to the quality and popularity of Carlton’s department.

Program variety constituted another strength of civil engineering at MSM/UMR. The department participated in the new co-op program which enabled students to take course work one semester and receive on-the-job training the next semester. In addition, in 1955, the Missouri Highway Commission initiated a cooperative program with 10 civil engineering freshmen who could work during the summers or alternate semesters. Jerry R. Bayless was among the 10 students who launched this program. In 1957, the highway department also established a special summer training program for employees on the Rolla campus in which 60 employees attended an eight week summer session which allowed employees to upgrade their competence.

The increasingly sophisticated skills required of engineers in the second half of the twentieth century prompted the expansion of engineering graduate education. Accordingly, the civil engineering
department at Rolla experienced considerable growth in the number of students in pursuit of the master of science degree. The number of civil graduate students expanded gradually during the Carlton years. In 1955 when Carlton became chairman, the entire campus had 58 graduate students. In 1964-65, Carlton’s department alone had 57 graduate students enrolled. In 1964, the UMR Graduate Engineering Center on the University of Missouri-St. Louis campus opened and in 1965, those attending the Center could obtain a graduate degree in civil engineering. Also, after 1964, the Ph.D. in civil engineering became available on the Rolla campus.17

Chi Epsilon Student Chapter, 1964

Students and Student Organizations

Civil engineering students of the Carlton years continued their activities in the student chapter of ASCE and in Chi Epsilon. Chi Epsilon members of 1964 deserve special mention, for in February of that year, the local chapter hosted this civil engineering honor society’s national conclave.

Among the civil engineering graduates of the Carlton years who were to have distinguished professional careers are Donald S. Ballard, class of 1957, Lucien M. Bolon, Jr., class of 1959, Don J. Gunther, class of 1960, Donald E. Henderson, class of 1959, Dale Klohr, class of 1958, Donald J. Kozeny, class of 1957, Paul R. Munger, class of 1958,
and Russell H. Wiethop, class of 1961. All of the above have been honored for their accomplishments by election to the UMR Academy of Civil Engineers. Also included among the distinguished graduates of the Carlton years are Jerry R. Bayless, class of 1959, and Donald E. Modesitt, class of 1958, both civil engineering professors at UMR. Bill L. Atchley, class of 1957, became president of Clemson University. Paul Harrawood, class of 1951, became dean of engineering at Vanderbilt University. In addition, Kenneth E. Buttry, class of 1964, became chairman of the civil engineering department at the University of Wisconsin-Plattville.

Lelia Mae Thompson, class of 1960.

Lelia Mae Thompson’s graduation in 1960 constituted another student hallmark during Carlton’s tenure. The fourth female to earn the bachelor of science in civil engineering at Rolla, Ms. Thompson was the first black woman to graduate from the University of Missouri School of Mines and Metallurgy. She attended school on a scholarship and served as a pioneer for her race and sex in the field of sanitary engineering.18

In 1956, the department initiated a program for army officers in
which military personnel were assigned to MSM to complete their baccalaureate degrees or begin graduate work. The first group of 10 officers arrived in June, 1956 to begin course work. This student officer program gradually expanded until 55 enrolled in the program during the 1963-64 school year. Though the bulk of the students were Corps of Engineers officers, a few enlisted men were included.19

ACLU meeting, Ernest W. Carlton presiding.

ROTC

As mentioned in earlier chapters, the civil engineering department has had a long relationship with the Reserve Officer’s Training Corps. During the Carlton years, the Chief of Engineers of the United States Army announced that MSM’s engineering ROTC regiment had become the largest in the nation. During the 1956-57 school year, the regiment counted 1,125 cadets. In 1957, because of the expanding program, the cadet regiment gave way to a brigade. Throughout the Carlton years, UMR enjoyed the distinction of having the nation’s largest ROTC unit. The ROTC band, Color Guard and Pershing Rifles continued their traditional performances throughout the region, pro-
viding, among other things a reminder of the association between MSM/UMR and ROTC.\textsuperscript{20}

Carlton retired at the conclusion of the 1964-65 school year. Although his tenure as chairman had been brief by comparison with his predecessors, the Carlton years had been a decade of significance. The civil engineering department and the campus had experienced growth and maturity. Carlton’s effective leadership during this decade elevated the department to a new plateau. On the horizon, the University of Missouri-Rolla expanded from an engineering school to a technological university with degree programs in the humanities and social sciences, graduate programs in engineering and science and a strong commitment to research.

Carlton helped prepare the department and the campus for the challenges of the next generation. As Carlton stepped down, Joseph H. Senne, Jr. prepared to lead the department into the new era.
Footnotes, Chapter IV

1 MSM Alumnus (April, 1963), p. 6.
3 Ibid., 135-36.
7 H. R. Loughman, as cited in Dougherty, op. cit., p. 1030.
8 Christensen-Ridley, UM-Rolla, pp. 161-63.
9 Ibid., p. 189.
13 J. Kent Roberts Oral Interview, May 9, 1984.
15 MSM Alumnus (April, 1963), p. 3.
17 The first Ph. D. was awarded in 1967. See below, chapter 5.
18 Newspaper clipping, St. Louis Globe Democrat, no date attached.
20 Ibid.
CHAPTER V
The Senne Years, 1965-1985

With E.W. Carlton's retirement, Joseph H. Senne took command of a department with a sound undergraduate program and a growing graduate research facility. Senne had received a B.S. in civil engineering from Washington University in St. Louis, his M.S. in civil engineering from MSM in 1951, and a Ph.D. in civil engineering from Iowa State in 1961. After serving on the faculty at Iowa State, he returned to Rolla in 1963 as professor of civil engineering. A specialist in structures, Senne shared an interest with an MSM civil engineer from an earlier generation. Like Professor Bardsley of the Harris era, Senne's avocation was astronomy.

By 1965, civil engineering students, facilities and the curriculum were firmly established. These accomplishments resulted from the work of the faculty of past generations. For the next generation, civil engineering education would combine a quality undergraduate teaching program with a research thrust that included opportunities for graduate work, laboratory equipment and externally supported research efforts. Senne became department chairman at a time when such external funding was more available than ever before.

When he became chairman, Senne and three other departmental colleagues had earned doctorates. Between 1966 and 1970, Senne was able to expand the staff considerably. These additions were part of the largest faculty expansion in the School's history. The faculty at Rolla increased from 243 in the 1963-64 school year to 389 in 1970-71.¹

Civil Engineering in America

Each generation in American history has posed special problems for the professional engineer. Technology in the 1960s and succeeding decades continued to revolutionize aspects of life, perhaps more rapidly than ever before. Before the close of the decade of the 1960s, a
centuries-old dream became reality when man walked on the moon. During the 1970s, economic vulnerability and energy dependence combined to form new challenges for technologists. Decreased supplies of natural resources and decreasing federal funds for defense and space activities caused a shift in emphasis in applied science and technology to domestic problems such as housing, transportation, health care, pollution control, and energy conservation. Engineers now faced not only technological challenges, but as never before, they would be called upon to solve complex social problems.2

In the past 25 years, American civil engineers have taken part in a dramatic change in the landscape of this nation. The John Hancock Building in Chicago (1969), featuring use of the exterior structure to resist wind, the 1,350 foot World Trade Center in New York City (1973), and the 1,450 foot high Sears Tower in Chicago (1974) changed the face of American cities. In transportation, the interstate system begun in 1956, near completion by the mid-80s, the appearance of futuristic international airports by the score signaled the arrival of the jet age, and astronauts traveled almost routinely into outer space. In the realm of water resources, the Oroville Dam in California (1968) became the highest earth or rock fill dam at 770 feet. In sanitary engineering, Chicago officials announced plans in 1969 to develop the first tertiary treatment plant for waste materials.3 Finally, in the 1980s computer applications continued to revolutionize many aspects of contemporary life.

Engineering Education

As the tempo of technological change accelerated and emphasis on certain technological applications shifted to the social arena, engineering educators had to adjust accordingly. Society required more engineers than ever and these new engineers had to be introduced to more sophisticated technology. Moreover, the new engineer had to be more aware of the social consequences of his or her work.

In 1968, the American Society for Engineering Education published its most recent, and possibly its most significant report, the "Goals of Engineering Education" study. The "Goals Study" shifted emphasis from undergraduate study to graduate work, research, and the role of the engineer in the society of the future. The study
affirmed the conviction that more engineers would be required, that their level of competence would have to be without precedent, and that tomorrow’s technologist would have to measure the social consequences of technology upon society.4

Engineering educators faced the task of providing curricula which not only offered the appropriate engineering methodology, but also introduced the prospective engineer to the principles of science and to the framework of the humanities and social sciences. In keeping with the recommendations of the Goals Study, engineering educators encouraged many students to continue their formal education by one or more years of graduate work for specialized training. Accordingly, graduate studies and research became a more fundamental part of engineering education. Perhaps no branch of higher education has been more severely tested in the present generation.
UM-Rolla, 1965-1985

During the past 20 years, the Rolla campus has become a multi-faceted university featuring undergraduate and graduate programs in engineering and science and undergraduate education in the humanities and social sciences. As the breadth of the academic offerings increased, the face of the campus also changed. This change was very much in evidence by 1968 as public information writer Winona C. Roberts explained: "In all directions there are modern new buildings... The sounds of even more construction echo around the campus... All in all, the new face of the campus is a promising picture—a blend of old and new, of utilization of the best of tradition and the best of the new."5

This physical transformation continued throughout the Senne years. Between 1972 and 1974, four more new buildings were completed, Parker Hall was remodeled and the quadrangle was redone. Subsequently, the Rolla Building has been refurbished, a new wing has been added to Thomas Jefferson Residence Hall and V.H. McNutt Hall (Mineral Engineering Building) is under construction in 1985.
For the civil engineering department, dedication of the civil engineering building constituted a hallmark of the Senne years. On June 24, 1977, the University of Missouri Board of Curators approved the recommendation that the civil engineering building be named Butler-Carlton Civil Engineering Hall, in honor of the two department chairmen who had personified civil engineering at Rolla since the 1920s. On April 14, 1978, the hall was officially dedicated. The following is a portion of the dedication program:

Master of Ceremonies ......................... Joseph H. Senne, Chairman, Department of Civil Engineering
Invocation .......................................................... Rev. Scott Porter
Speakers
Jim C. Pogue ............................. Interim Chancellor, UMR
Robert D. Bay ....................... Black & Veatch, St. Louis Office
Vernon A.C. Gevecker ...................... Professor Emeritus, Civil Engineering
Harold J. Bruegging ....................... Retired Professional Engineer
Eugene E. Northern ...................... 25th Judicial Circuit Judge
William R. Gibbs ........................ National President, American Society of Civil Engineers
Rex Z. Williams .......................... President, Board of Curators
Honored Guests ........................ Betty Jo Snowden, Myrtle Carlton

A larger faculty accompanied the physical transformation of the campus. The faculty almost doubled in size during the tenure of Chancellor Merl Baker (1964-73) and student enrollment increased to a high of 5,285 in 1970 before sliding to 4,017 in 1973, reflecting national economic and social changes. By the mid-70s, enrollment increased again. During Chancellor Joseph M. Marchello’s administration (1978-1985), campus student enrollment reached an all-time high of 7,066 students in the fall of 1982.

Curriculum

The undergraduate curriculum established in the early 50s remained intact until the mid-60s. The 1965-66 Catalog revealed the first significant curricular change for the period when credit hours for graduation fell from 148 hours to 143, excluding required courses in physical education, basic military science, algebra, and trigonometry.
Basic military science ceased to be a requirement in the fall of 1964. The 1970-71 Catalog illustrated more curricular changes. Now, 132 credit hours were required for graduation, excluding algebra, trigonometry and basic military science. The curriculum of the 1980s remained at 132 semester hours. For civil engineers that included courses in construction, geotechnical, environmental and sanitary engineering, fluid mechanics and hydraulics, structural analysis and design, and transportation and planning. By requiring course work in each of the above areas, the prospective civil engineer is given broad preparation. The student also has the opportunity for some specialization. Thus, the UM-Rolla graduate in civil engineering is prepared to take on a specialized task while possessing the breadth to perceive how his/her particular on-the-job assignment relates to the entire project.

The civil engineering department offers the following degrees: bachelor of science, master of science, doctor of philosophy, doctor of engineering and the professional development degree. The complete undergraduate curriculum in the 1984-85 school year was as follows:

### Civil Engineering

#### FRESHMAN YEAR

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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<td>Intro to Civil Engr</td>
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<td>Chem 1</td>
<td>Gen Chem</td>
<td>4</td>
</tr>
<tr>
<td>Math/Stat 8</td>
<td>Calc w/ Anal Geom I</td>
<td>5</td>
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<tr>
<td>Engl 1</td>
<td>Rhet &amp; Comp</td>
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#### Second Semester

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<th>Course Name</th>
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<td>CE 102</td>
<td>Advanced Surveying</td>
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</tr>
<tr>
<td>GE 50</td>
<td>Geology for Engrs</td>
<td>3</td>
</tr>
<tr>
<td>EMe 110</td>
<td>Mech of Materials</td>
<td>3</td>
</tr>
<tr>
<td>EMe 120</td>
<td>Materials Test Lab</td>
<td>1</td>
</tr>
<tr>
<td>EMe 150</td>
<td>Engr Mech—Dynamics</td>
<td>2</td>
</tr>
<tr>
<td>Math/Stat 204</td>
<td>Differential Equat</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>Hum</td>
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#### SOPHOMORE YEAR

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<td>Psy 50</td>
<td>Gen Psychology</td>
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<td>EMe 50</td>
<td>Eng Mech/Statics</td>
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<tr>
<td>Math/Stat 22</td>
<td>Calc w/ Anal Geom II</td>
<td>4</td>
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<td>Phy 24</td>
<td>Engr Physics II</td>
<td>4</td>
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#### Second Semester

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<tr>
<td>Elective</td>
<td>Hum</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Credits

- 18

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1. Field Engineering
2. Urban Engineering
3. Environmental Engineering
4. Structural Engineering
5. Materials Engineering
6. Transportation Engineering
### JUNIOR YEAR

**First Semester**  
- CE 215—Elem Soil Mech .......... 3  
- CE 218—Struc Analysis .......... 5  
- CE 230—Elem Fluid Mech .......... 3  
- CE 241—Econ of Engr Design .......... 3  
- CE 261—Micro in San Engr .......... 2  

**Second Semester**  
- CE 216—Construct Matls .......... 3  
- CE 211—Transportation Engr .......... 3  
- CE 223—Reinforced Conc Design .......... 3  
- CE 229—Found Engr I .......... 2  
- CE 233—Hydraulic Engr & Hydrol .......... 3  
- CE 265—Water & Waste Water Engr .......... 4  

**Credit:** 16

### SECOND YEAR

**First Semester**  
- CE—Professional Guidance .......... 0  
- CE—Struc Design Metal .......... 3  
- CE—Engr Law & Contracts .......... 2  
- EE—Electrical Circuits .......... 3  
- Elective—Hum 5 .......... 3  
- Elective—Technical (CE) .......... 3  
- Elective—Free 4 .......... 1  

**Second Semester**  
- ME 227—Thermal Anal .......... 3  
- Elective—Technical (CE) .......... 3  
- Elective—Free 4 .......... 3  
- Elective—Humanities or Soc Sci .......... 3  
- Elective—Communications 6 .......... 3  

**Credit:** 15

1Chem. 2, General Chemistry Lab, also is required for students who do not have at least two semesters credit in high school chemistry with laboratory.  
2Hist. 112, 175, 176 or Pol. Sci. 90.  
3Or Econ. 111, Principles of Econ. II.  
4May include pass/fail courses and basic and advanced ROTC. Students who have not had high school chemistry may use Chem. 2 for one hour of free elective.  
5Humanities courses are to be selected from literature, philosophy, music, art appreciation.  

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**Emphasis Area Programs**  
for Civil Engineering  
Students:

**Construction:**  
- CE 311—Highway Engineering  
- CE 345—Construction Methods  
- CE 346—Management of Construction Costs  
- CE 349—Engineering and Construction Contract Specifications  
- CE 373—Airport Planning and Design  

**Transportation:**  
- CE 311—Highway Engineering  
- CE 317—Pavement Design  
- CE 337—River & Harbor Engineering  
- CE 353—Trans System Anal & Control  
- CE 373—Airport Planning & Design
Planning:
  Env E 326—Bldg Plan &
  Design
  Env E 351—Urban & Regional
  Plan & Design
  Env E 371—Traffic &
  Transportation
  Systems
  CE 309—City Planning
  CE 321—Housing Systems
  CE 325—Building
  Construction
  CE 373—Airport Planning &
  Design
  CE 380—Water Resources &
  Engr

Geotechnical Engineering:
  CE 312—Bituminous Materials
  CE 315—Intermediate Soil
  Mechanics
  CE 317—Pavement Design
  CE 320—Advanced Structural
  Analysis
  CE 327—Advanced Structural
  Design
  CE 329—Foundation Engineering
  II

Fluid Mechanics and Hydraulics:
  CE 331—Hydraulics of Open
  Channels
  CE 332—Experimental Fluid
  Mechanics and
  Hydraulics
  CE 337—River and Harbor
  Engineering
  CE 338—Hydrologic Techniques
  CE 380—Water Resources and
  Engineering

Environmental and Sanitary:
  CE 362—Public Health
  Engineering
  CE 363—Solid Waste
  Management
  CE 365—Sanitary Engineering
  Analysis
  CE 367—Air Pollution Abatement
  I
  CE 369—Sanitary Engineering
  Design

Structural Analysis and Design:
  CE 320—Advanced Structural
  Analysis
  CE 322—Analysis and Design of
  Wood Structures
  CE 324—Numerical Methods of
  Structural Analysis
  CE 327—Advanced Structural
  Design
  CE 328—Prestressed Concrete
  Design
  CE 329—Foundation Engineering
  II
  EMe 361—Theory of Vibrations I
  EMe 354—Energy Methods
The Ph.D. Program

Although the Ph.D. program in civil engineering was approved in 1964 for UM-Rolla, the first Ph.D. was not awarded until 1967 when David L. Fenton became the department’s first Ph.D. recipient, Joseph H. Senne served as Fenton’s dissertation director. In 1976, George E. Cannon became the first civil engineer to earn the doctor of engineering degree at UM-Rolla. The following list makes up the department’s Ph.D. recipients:

- David Leon Fenton, 1967
- John W. Smith, 1968
- Glendon T. Stevens, 1970
- Danny L. Fread, 1971
- C. Stuart Ferrell, 1971
- Wendelin H. Mueller, III, 1972
- James E. Spooner, 1972
- Charles S. Davis, 1972
- Trinh Ngoc Rang, 1973
- Mark E. Botkin, 1973
- Wu-Hsiung Tseng, 1973
- James Matthews, 1974
- Victor Liu, 1974
- Checkman Yuo, 1974
- J. Leroy Hulsey, 1976
- Muthiah Mariappan, 1976
- Kenneth Byron Oster, 1976
- Ali Abdou Selim, 1976
- Kuo-Chun Tsai, 1977
- Seid Hossein Abtahi, 1977
- Roger Allen LaBoube, 1977
- Suppamas Prachakvej, 1977
- Nipon Hetrakul, 1978
- Charles Orrick Riggs, 1978
- William Donald Webster, Jr., 1978
- Dhiraphorn Srijuengfung, 1978
- Nguyen Phung, 1978
- Roger Haden Smith, 1978
- Melvin George Schaefer, 1979
- Prasert Kitipitayangkul, 1979
- Ghazi Saleh Hasanain, 1981
- Boonsong Supornsilaphachai, 1981
- Gregory W. Carpenter, 1982
- Tsung-Wen Yang, 1982
- Gunnar Ingi Birgisson, 1983
- Chandrashekh Narayan Bapat, 1983
- Jalal Uddin Khandoker, 1984
- Billy Thornton Ray, 1984
- Janardanan Ondan Uppot, 1984
- Vijay Kumar Puri, 1984
- David Newton Richardson, 1984
- Mymoon Zoukaghe, 1985

The Faculty

When Senne became department chairman he inherited a department with a sound academic program and a quality faculty devoted to teaching and service. In keeping with national trends in engineering education, Senne’s challenge was to maintain the vital teaching and service functions and to expand the research function of the department. The professional engineering educators, all with earned doctorates, that Senne added to the department provided strength to both the traditional areas and to the newer research emphasis. For example, William A. Andrews has earned 15 UM-Rolla Outstanding
Teacher Awards and in 1985 was one of three faculty members from the University of Missouri’s four campuses to receive a Burlington-Northern Award for excellence in teaching. Jack H. Emanuel, Norbert O. Schmidt, and Lawrence K. Sieck excelled in professional service through extension activities, workshops, short courses, and conferences. Franklin Y. Cheng’s work in earthquake engineering has been noteworthy. Bobby G. Wixson, in addition to his research efforts in environmental health, became dean of the Center for International Programs and Studies. Wei-Wen Yu has received international recognition for his pioneering research in cold-formed steel structures and is currently one of the seven curators’ professors on the faculty at Rolla (and the first from the School of Engineering). Ju-Chang (Howard) Huang succeeded Sotirios G. Grigoropoulos as director of the Environmental Research Center. Other new faculty such as Samuel Clemence and J. Charles Jennett later entered administrative careers at other universities. Clemence became chairman of the civil engineering department at Syracuse University and Jennett became dean of engineering at Clemson University.

Under Senne’s leadership, the faculty increased from 25 in the

The most dramatic shift in emphasis for the civil engineering faculty during Senne’s years has been the success of the research effort. One measure of this is funded research. During the 1966-67 school year, departmental faculty claimed three projects totaling $47,100 in funded research. By the 1980-81 school year, the department conducted 34 research projects totaling $479,643 in funded research.⁶

The research efforts of the civil engineering faculty have been augmented considerably in recent years by the activities of four institutes and research centers: the Environmental Research Center, the Institute of River Studies, the International Institute of River and Lake Systems, and the Transportation Institute.

The Environmental Research Center

The UMR Environmental Research Center came into being in 1965 with the purpose of assessing the nation’s environmental problems including water supply, water pollution control, air pollution control, and solid waste management. The largest single project has been a long-term study, directed by Bobby G. Wixson, of the environment of the New Lead Belt. Though the staff of the center includes professionals from several disciplines, civil engineering faculty have been the driving force. Sotirios G. Grigoropoulos served as the center’s first director. He was succeeded in 1979 by the current director, Ju-Chang (Howard) Huang, a professor of civil engineering and environmental health. Other civil engineering faculty who have held appointments in the center include Shouou-Yuh Chang, Brian A. Dempsey, Donald E. Modesitt, J. Kent Roberts, and Purush K. Terkonda.

The Environmental Research Center has maintained a significant level of research over the years, much of it through research contracts with industry and government, and has a prolific list of publications on the results of this research.⁷
The Institute of River Studies

The Institute of River Studies began in 1972 when civil engineering staff launched a study of environmental aspects of the Missouri River. The institute received official status as a unit of the Rolla campus in 1976. Paul R. Munger, professor of civil engineering, has served as director of the institute since its inception. The institute investigates problems and conducts research in all water and water-related problems including water resources planning and the adequacy and quality of surface and groundwater supplies.

By the spring of 1985, the institute had conducted over 40 projects totaling $3 million. Major projects include a water supply study of the Meramec Basin and the largest and most comprehensive potomology study ever conducted of the lower Mississippi Valley region. In addition to Munger, other civil engineering faculty who have been involved in the Institute of River Studies include Samuel Clemence, Charles D. Morris, Clifford D. Muir, Glendon T. Stevens, Roger H. Smith, Jerome Westphal, and Bobby G. Wixson.

The International Institute of River and Lake Systems

One of the most recent of the UM-Rolla research centers is the International Institute of Rivers and Lake Systems. Professor Paul R. Munger serves as director of this multi-national group. Among participants in the institute with UM-Rolla are Alexandria University, Egypt; Ruhr University, Federal Republic of Germany; and, University College Dublin, Ireland. The institute serves as a centralized, international information and professional resource base. The data and related research information, including predictive modeling, statistical comparisons and problem solving relating to water resources, are made available to agencies and research groups throughout the world. Initially, the institute is focusing on the Mississippi, Nile and Rhine river systems. Other river and lake systems will be added.
The Transportation Institute

The UM-Rolla Transportation Institute received official status in 1969 when the U.S. Department of Transportation provided funds to establish this interdisciplinary institute on the Rolla campus. Frank A. Gerig, Jr., professor of civil engineering, became the institute's first director. In keeping with national concerns regarding issues and problems relating to transportation, the institute has conducted a number of externally funded research projects relating to both rural and urban transportation, public transportation services for the elderly, and transportation planning. Since 1978, Charles Dare, associate professor of civil engineering, has served as the institute's director. The most recent achievement of the institute is a $250,000 grant to continue the work of the UMR Transportation Technical Assistance Office, an adjunct of the Transportation Institute which focuses on problems related to rural roads, bridges, public transportation, and traffic improvements.

In addition to Dare and Gerig, other civil engineering professors who have been involved in the work of the Transportation Institute include John L. Best, Frank J. Capek, John B. Heagler, James L. Josey, Lawrence K. Sieck, and Bobby G. Wixson.10

The Glasphalt Experiment

Included among the innovative research activities of the Senne years was the glass-asphalt or "glasphalt" experiment. Initiated by Delbert Day, Curators’ Professor of ceramic engineering, the concept was to use crushed glass as an aggregate material instead of limestone and gravel in a bituminous road. Civil engineering professors Ward R. Malisch and Bobby G. Wixson were key members of this project which resulted in the installation of a glasphalt test strip 600 feet long and 20 feet wide. Sponsored by the Bureau of Solid Waste Management, U.S. Public Health Service, this experiment attracted national attention.11

Faculty Service Activities

While the civil engineering department of the Senne years developed an impressive research record, traditional activities such as
service were not neglected. In 1968, J. Kent Roberts, a stalwart of the department, became assistant to the dean of engineering. In 1970, Roberts was promoted to assistant dean of engineering and charged with the responsibility of coordinating undergraduate studies and curricula. In addition, Professor Roberts served for two years (1973 and 1974) as vice president for the north central region of the National Society of Professional Engineers. Roberts also served on the Registration Board for Architects, Professional Engineers and Land Surveyors and is currently chairman of the National Society of Professional Engineers Board of Ethical Review. In 1968, Roberts and colleague Jerry R. Bayless were honored by the MSM/UMR Alumni Association. Roberts received the alumni merit award for professional societies and Bayless received the alumni merit award for teaching. In the same year, the Rolla Chapter of the Missouri Society for Professional Engineers named Bayless Outstanding Young Engineer of the Year. 12

Both Bayless and William A. Andrews have served as chairman of the campus academic council. Paul R. Munger served on the Registration Board for Architects, Professional Engineers and Land Surveyors. Munger was named Outstanding Young Engineer of the Year by the Rolla Chapter of the MSPE in 1966. From 1979 to 1982, he served as director of District Sixteen for ASCE and in October, 1985 he began his tenure as national vice president of the ASCE. Members of the department continued the tradition of annual meetings such as the concrete and asphalt conferences. In addition, two civil engineers, John B. Heagler, Jr. and Norbert O. Schmidt, deserve special credit for their extension work. Heagler, professor of civil engineering and assistant dean of continuing education for the school of engineering, has developed a host of extension programs aimed at providing solutions to problems in the inner city as well as in rural Missouri. From 1967 to 1972, Heagler organized an engineering aides program, sponsored by a grant from the Kansas City Model Cities Agency and the Missouri Department of Community Affairs. This program provided on campus technical training during the summer to minority students from urban Missouri. 13 In 1975, Schmidt, professor of civil engineering, began offering one-week short courses in soil mechanics.

Bobby G. Wixson’s broad range of interests and talents also made their mark on the service arena when Wixson succeeded departing professor Robert Carlile as director of the Center for International
Programs and Studies which offers short courses, institutional development projects, intensive seminars, cooperative research projects, and a degree program out-of-country, to interested parties throughout the world.\textsuperscript{14}

**Emeritus Faculty**

From 1965 to 1985, six civil engineering educators who contributed to the stature of their department over the years were awarded emeritus status in recognition of their contributions to the department, the campus and the profession. Those who have received emeritus status were E.W. Carlton (1965), Leon Hershkowitz (1969), Vernon A.C. Gevecker (1974), Frank A. Gerig, Jr. (1983), J. Kent Roberts (1985) and Joseph H. Senne, Jr. (1985). Collectively, these men provided more than two generations of invaluable teaching, research and service to the university.

**Students and Student Organizations**

As recently as 1969-1970, UM-Rolla led the nation in the number of B.S. degrees awarded in civil engineering. Other than the record number of students who elected to enroll in civil engineering or some other program at UMR during the Senne years, perhaps the arrival of coeds in large numbers constituted the most significant change in the student population. As women entered the profession of engineering, the female student population steadily increased at UMR. In 1965, 118 women enrolled. By the fall of 1984, the number had increased to 1,327 of a total campus enrollment of 6,423.

In Senne's first year as chairman, civil engineering graduate enrollments totaled 71. By the fall of 1984, student population included 65 civil engineering graduate students.

Throughout the past 20 years, the number of students who chose to major in civil engineering reflected societal needs. In the fall of 1965, 797 students listed civil engineering as their major. In 1984, 423 undergraduates majored in civil engineering. For the 1983-1984 school year, UMR's graduating class of civil engineers constituted the fifth largest graduating class of civil engineers in the nation. UMR is among the top 10 nationally in bachelor's degrees granted in engineering. It is expected that the number of majors will steadily rise in
the future as the nation’s requirements for civil engineers increase.

Salaries increased as the national demand for engineers accelerated. In 1967, a graduate of one of UM-Rolla’s engineering programs could expect an average salary of $735 per month. By 1985, the most recent group of civil engineering graduates commanded an average salary of $1,891.\textsuperscript{15}

In 1973, civil engineering students established a new tradition when they participated for the first time in the national concrete canoe race, placing 13th in a field of 30 contestants.

Civil engineering majors continued the tradition of taking part in professional organizations such as the local chapters of the American Society of Civil Engineers and Chi Epsilon. In 1976, the local chapter of Chi Epsilon again hosted the national conclave and faculty member Paul R. Munger served as national president of the organiza-
tion in that year. In March, 1985, UM-Rolla’s student chapter hosted for the third time the annual Mid-Continent conference of the student chapters of the ASCE. In 1985, the student chapter was one of nine finalists for the prestigious Ridgeway Award. For four consecutive years, the local ASCE student chapter received a special commendation from the national organization.

As for the Missouri Society of Professional Engineers, the following UMR alumni have served as president—Harold J. Bruegging, class of 1932, Joe B. Butler, class of 1924, E.W. Carlton, class of 1926, Thomas A. Herrmann, class of 1950, Peter F. Mattei, class of 1937, R. David Plank, class of 1959, and J. Kent Roberts, M.S., 1950. MSPE has honored the following UMR civil engineers as Young Engineer of the Year since the advent of the award in 1962: Robert D. Bay, class of 1949, Jerry R. Bayless, class of 1959, R. Michael Salmon, class of 1963, J. Charles Jennett (at the time of the award, an associate professor of civil engineering at UMR), V. Darryl Orr, class of 1970, W.E. Anderson, Jr., class of 1967, Robert T. Berry, class of 1972, Gary M. Lee, class of 1971, and Richard L. Elgin, class of 1974. In addition, both James E. Beavers, class of 1963 and Robert T. Berry have been honored by the National Society of Professional Engineers as Young Engineer of the Year.

Achievements of graduates continued to attest to the quality of the civil engineering program at UM-Rolla. Lelia Mae Thompson, class of 1960, was listed in the 1965 edition of Outstanding Young Women of America. Kurt Keller, class of 1957, served as resident engineer for the Poplar Street Bridge, spanning the Mississippi at St. Louis. In 1969, the Mayor of New York City appointed the former deputy mayor of Chicago, John G. Duba, class of 1949, administrator of municipal services in New York City. In the same year, Duba became director of the Center for Urban Environmental Services and chairman of the civil engineering department, Brooklyn Polytechnic Institute. In 1970, John P. Soult, class of 1939, and president and chairman of the board of the Fruin-Colnon Corporation, became the third civil engineering alumnus to receive an honorary doctorate from his alma mater (Enoch Needles and Daniel Kennedy received honorary doctorates earlier as mentioned in previous chapters). Ernest L. Perry, class of 1940, received an honorary doctorate in 1977; James J. Murphy, class of 1935, received an honorary doctorate in 1978; and, Fred S. Kummer, class of 1955, was so honored in 1984. Enoch
Needles, class of 1914, received UM-Rolla’s Silver Centennial Medal of Honor in 1971. Peter F. Mattei, class of 1937, served as president of the MSM/UMR Alumni Association in 1971-72. Also Robert D. Bay, class of 1949 was president of the association from 1980 to 1982.

At the 1972 spring commencement, Ronald G. Faust, B.S. in civil engineering, had the distinction of being the 20,000th graduate of MSM/UMR. Danny L. Fread earned three civil engineering degrees from the Rolla campus (B.S., 1961, M.S., 1969, Ph.D., 1971), and received the Huber Research Prize and the J.C. Stevens award from the American Society of Civil Engineers in 1976 in recognition of his research achievements in hydrology. In 1984, James B. McGrath, class of 1949, became the current president of the MSM/UMR Alumni Association.

In 1985, Robert D. Bay, class of 1949, assumed his duties as national president of the American Society of Civil Engineers. The second MSM/UMR graduate to claim this mark of achievement in the profession, Bay joined the select company of Enoch Needles.

Throughout the Senne years, Rex Z. Williams (B.S. in civil
engineering, 1937), served his alma mater in a variety of ways, including membership on the University of Missouri Board of Curators. In recognition for his work for the University community, Chancellor Joseph M. Marchello awarded Williams the first UM-Rolla Chancellor Medal. In 1985, the civil engineering department honored Williams by electing him to the UMR Academy of Civil Engineers. Among his fellow members of the Academy was James S. Anderson, class of 1955, who serves on the University of Missouri Board of Curators.

Civil engineering students also excelled in athletics. Thomas J. Owens, class of 1968, Larry J. Oliver (B.S., 1972, M.S., 1976), Robert T. Berry, class of 1972, David L. Wisch, class of 1975, and Randy Shed, class of 1985, were among the school’s outstanding football players of the era. Basketball fans will remember Richard E. Peters, class of 1973 and Mark Franklin, class of 1980, as key members of especially successful Miner basketball teams. These and others joined civil engineering students of earlier eras such as James B. McGrath, class of 1949, and Roger L. Feaster, class of 1957, as scholar athletes.
The Academy of Civil Engineers

The Academy of Civil Engineers is a special organization sponsored by the civil engineering department. Founded in 1971 to honor outstanding civil engineers who are graduates of MSM/UMR, the academy members serve as advisers to the civil engineering department and act as a link between the university and the business/industrial community. As of the spring of 1985, the Academy of Civil Engineers had inducted the following into the organization:

1985
Academy of Civil Engineers
Members

Robert W. Abbett .................. '27
William C. Alsmeyer ............ '41
James S. Anderson .............. '55
Chester H. Baker ............... '55
Donald S. Ballard .............. '57
Robert D. Bay .................. '49
Robert G. Bening .............. '55
Lucien M. Bolon, Jr. .......... '59
Robert K. Boyd ................ '41
Coy L. Breuer .................. '49
Harold G. Butzer .............. '47
Edward L. Calcaterra .......... '52
Paul F. Carlton ............... '47
W. Dale Carney ............... '49
Harold R. Crane .............. '53
Joseph E. Crowe .............. '58
Eugene Daily .................. '36
Donald L. Dean ............... '49
Stanley Dolecki .............. '50
John G. Duba .................. '49
Donald L. Evans .............. '61
Herman A. Fritschen ....... '51
Vernon A.C. Gevecker ....... '31
James Glover .................. '43
Jack B. Haydon ............... '58
Ronald M. Kingsbury .......... '55
Dale Klohr .................... '58
Donald J. Kozney ............ '57
Joseph F. Krispin .......... '54
Fred S. Kummer ............ '55
Harley W. Ladd ............. '40
Allan H. LaPlante .......... '63
Harvey Leaver ............... '48
Robert G. Livingston ....... '39
Joel F. Loveridge .......... '39
Francis D. Lyons .......... '50
Peter F. Mattei ............ '37
John F. McCarthy .......... '48
James B. McGrath .......... '49
Garth G. McKinney .......... '43
Arthur R. Meenen .......... '46
Paul R. Munger .......... '58
Leroy Perry ................. '40
J. Kent Roberts .......... '50
Kenneth W. Schoeneberg .... '48
Joseph H. Senne, Jr. ....... '51
J. Russell Snowden ....... '47
John P. Soult ............... '39
Neil Stueck .................. '43
Otis H. Taylor .......... '42
Donald E. Henderson .......... '59
Thomas A. Herrmann .......... '50
Leroy Jackson .......... '34
Vernon T. Jones .......... '53
Raymond O. Kasten .......... '43
Robert J. Kemper .......... '49
Daniel Kennedy .......... '26
Charles A. Kiefer .......... '61

John C. Theiss .......... '51
Vester B. Unsell .......... '50
Robert E. Vansant .......... '51
Ernst A. Weinel .......... '44
Carl J. Weis .......... '43
Russell Wiethop .......... '32
William L. Wisch .......... '50

Honorary Members

Joe Beaty Butler .......... '24
Ernest W. Carlton .......... '26

Enoch R. Needles .......... '14

Distinguished Past Members

Wayne S. Frame .......... '23
Leon Hershkowitz .......... '41
James J. Murphy .......... '35
Clarence Palmer .......... '40

Joseph E. Rigg .......... '50
Warren R. Wieland .......... '50
Joe Williamson, Jr. .......... '29

New Members

Tom R. Beckley .......... '63
Elmer W. Belew .......... '47
Carl Gene Penzel .......... '55
Humbert E. Sfreddo .......... '58

James K. Van Buren .......... '63
Rex Z. Williams .......... '37
Walter A. Zimmerman .......... '62

The Development Program

In the spring of 1984, the UM-Rolla civil engineering faculty, with the approval of the Academy of Civil Engineers, adopted a three year development plan with the intention of increasing faculty-alumni communication, encouraging more alumni participation in the civil engineering program on campus, and increasing external funding. Additional funds would enable the department to acquire needed equipment and increase the number of student scholarships. Central to the initial stage of the development was a Phone-a-Thon which, by the spring of 1985, had already yielded over $45,000 which made possible the creation of three new scholarship funds in honor of Joe
B. Butler, Ernest W. Carlton, and Vernon A.C. Gevecker. The following constitutes the current student scholarships made available by the civil engineering department:

- Academy of Civil Engineers
- AMOCO Foundation
- Bannes - Shaughnessy
- Black and Veatch
- Wayne Broaddus
- Joe B. Butler
- Ernest W. Carlton
- Chi Epsilon
- Civil Engineering Department
- Charles Christian
- Consolidation Coal
- Fruin - Colnon
- C. J. Grimm
- Albert Happy
- Larkin and Associates
- Needles Outstanding Senior Award
- Needles Scholarship in Civil Engineering (5)
- Clarence C. Palmer (3)
- Roy Perry Scholarship in Civil Engineering
- Thomas H. Reese, Jr.
- U. B. Senter Scholarship
- Sverdrup and Parcel

The development program has also made possible the creation of two special endowed professorships—The Thomas H. Reese, Jr. and the Academy of Civil Engineers Professorships. Appointments to these positions are pending.

Transition

The 1984-85 school year was one of considerable transition. Chancellor Joseph M. Marchello elected to resign his position at Rolla in order to accept the position of president of Old Dominion. John T. Park, vice-chancellor for academic affairs, was appointed interim chancellor.

After serving 28 years on the faculty and 20 years as department chairman, Joseph H. Senne, Jr. elected to retire, effective September 1, 1985. The quiet, scholarly department chairman led the department for 20 formative years. During Senne’s tenure, the Rolla campus had become a university and the civil engineering department had
expanded its activities far beyond the traditional roles of teaching and service.

![Image of three men standing in front of Stonehenge replica]

David A. Summers, Joseph M. Marchello and Joseph H. Senne, Jr., at UMR's Stonehenge.

Senne will also be remembered for his participation in designing and providing the astronomical calculations for UM-Rolla's replica of Stonehenge. Located on the northwest corner of the campus, UMR's Stonehenge received a National Society of Professional Engineers’ award as one of the 10 outstanding engineering achievements of 1984.

Jerry R. Bayless, associate professor of civil engineering, became interim chairman of the department following Senne's retirement. Bayless, who holds B.S. and M.S. degrees in civil engineering from M.S.M., joined the faculty in 1959. For the past several years, Bayless had worked closely with Senne in departmental administration.

Bayless has been active in local and state organizations which promote the activities of the professional engineer. In addition, Bayless has worked to improve his campus and community in a variety of ways. Accordingly, his appointment as interim chairman seemed particularly appropriate for not only is he well-acquainted
with the administration of the department, he also personifies the
fine tradition of service which links him to Senne, Carlton, Butler,
Harris and other civil engineering leaders at MSM/UMR.

It is impossible to imagine the Rolla campus, from its origins to the
present, without civil engineering. Since Gustavus Adolphus Duncan
and John Holt Gill set foot on campus as civil engineering students in
1871, they and their successors have served as campus leaders. Civil
engineering graduates have made their presence felt in state and
national affairs, and when called upon, they have always been
willing to return to campus to assist their alma mater.

The civil engineering faculty has been central to the life of
MSM/UMR since 1872 when Colonel James W. Abert became the
school's first civil engineering professor. Over the past century, as
illustrated in this book, civil engineers have served in important
leadership roles on the Rolla campus. Today, monuments to civil
engineers dot the campus landscape. Harris Hall, Butler-Carlton Civil

Jerry R. Bayless
Engineering Hall and UMR's Stonehenge are among the structures which will remind future generations that civil engineers have been central to the spirit and tradition of MSM/UM-Rolla.

Civil engineers have helped shape much of the current urban landscape of this nation—skyscrapers, freeways, airports, dams, reservoirs, sewage-treatment plants—these are vital parts of the American superstructure. One challenge to the American civil engineer of today and the future is clear. Much of the nation's infrastructure will need to be repaired or replaced within the next generation. Professional engineers with vision and commitment to public service will be needed. The University of Missouri-Rolla civil engineering department will, as in the past, help to meet this vital challenge.
Footnotes, Chapter V

1Christensen-Ridley, *UM-Rolla*, p. 204.
3“Milestones in U. S. Civil Engineering”, pp. 142-43.
6*Engineering Education*, vol. 58 (February, 1968), p. 670, and vol. 72 (March, 1982), pp. 534-35. For the latter, civil engineering research funds include $120,688 in funded research conducted by the Institute of River Studies.
9*UM-Rolla* Brochure, “International Institute of River and Lake Systems.”
12Ibid. (December, 1968), pp. 9-11.
16Accomplishments of students are recorded in the *MSM Alumnus* from 1965 through 1985.
## Appendix

### DEANS OF THE SCHOOL OF ENGINEERING

<table>
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<tr>
<th>Name</th>
<th>Years</th>
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<tbody>
<tr>
<td>Aaron J. Miles</td>
<td>1965 - 67</td>
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<tr>
<td>J. Stuart Johnson</td>
<td>1967 - 77</td>
</tr>
<tr>
<td>James E. Halligan</td>
<td>1977 - 79</td>
</tr>
<tr>
<td>Robert L. Davis</td>
<td>1980 - Present</td>
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### ORDER OF THE GOLDEN SHILLELAGH

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<td>Painter, John L.</td>
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<td>Soult, John P.</td>
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<td>Williams, Rex Z.</td>
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### DOCTOR OF ENGINEERING, HONORIS CAUSA

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<td>Perry, E. L. Roy</td>
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<td>Soult, John P.</td>
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PROFESSIONAL DEGREE RECIPIENTS

Abbet, Robert W.
Bardsley, Clarence E.
Barton, Robert A.
Bay, Robert D.
Bolon, Harry C.
Bossert, Harry F.
Boyd, Robert K.
Brookshire, Robert R.
Bruegling, Harold J.
Bryan, Jean P.
Bryant, Russell A.
Burkhart, Edgar C.M.
Bush, William H.
Butler, Joe B.
Campbell, Fulton H.
Carlton, Ernest W.
Carney, W. Dale
Casey, Walter E.
Chamberlain, Ernst L.
Clark, John W.
Claypool, William M.
Coco, Matteo A.
Cowen, Herman C.
Crowe, Joseph E.
Dacey, Robert J.
Daily, Eugene J.
Doll, Warwick L.
Dubois, John G.
Dumm, Lee D.
Evans, Donald L.
Flynt, Frank L.
Fralicher, Isaac P.
Fritzsche, Herman A. Jr.
Garst, Harvey O.
Gerard, Floyd A.
Gevecker, Robert V.
Gevecker, Vernon A.C.
Grove, Claude D.
Hackmann, Glen N.
Halcomb, Samuel P.
Hardy, Rolland L.
Haydon, Jack B.
Heagler, John B. Jr.
Heagler, Richard B.
Herschkowitz, Leon
Hurd, Frederick W.
Jackson, Leroy H.
Jones, Vernon T.

Kasel, Rudolph G.
Kasten, Raymond O.
Kehr, William Q.
Kennedy, Daniel
Kersting, Felix J.
Kirkham, John E.
Kruse, Cornelius W.
LaPlante, Allan H.
Leaver, Harvey B.
Lehman, John L. G.
Livingston, John J.
Livingston, Robert G.
Loveridge, Joel F.
Lyons, Francis D.
Mattei, Peter F.
McCannless, William A.
McCauley, John E.
McGrath, James B.
Mikell, Waring
Murphy, James J.
Naylor, Arch W.
Needles, Enoch R.
Palmer, Clarence C.
Pasley, James L.
Patterson, J. Robert
Peel, Wesley, E.
Perry, David J.
Plank, R. David
Rucker, Booker H. Jr.
Sanderson, Lawrence H.
Scheer, Randall A.
Schulze, Herman O.
Scott, Guy R.
Shaffer, Walter J.
Sheldon, Wilbur E.
Short, John A.
Soult, John P.
Stueck, C.F.P.
Tees, Howard J.
Tevis, Charles C.
Tuttle, Lauren P.
Vansant, Robert E.
Ward, Ronald D.
Webster, Royal S.
Werner, Walter A.
Wieland, Warren R.
Williams, Arthur J. Jr.
Wright, John C.
Zeuch, Walter C.
ALUMNI AWARDERS

William A. Andrews
Bill L. Atchley
Jerry R. Bayless
Elmer W. Belew
Jerome T. Berry
Robert K. Boyd
Joe B. Butler
Ernest W. Carlton
David L. Fenton
Wayne S. Frame
Herman A. Fritschen, Jr.
Peter G. Hansen
Leon Herschkowitz
Anthony Homyk, Jr.
Vernon T. Jones
Raymond O. Kasten
Daniel Kennedy
Frederick S. Kummer
Harley W. Ladd
Harvey B. Leaver
Joel F. Loveridge
Peter F. Mattei
Karlheinz C. Muhlbaumer
Paul R. Hunger
James J. Murphy
Enoch R. Needles
Clarence C. Palmer
E.L. Roy Perry
J. Kent Roberts
Edwin K. Schuman
John H. Schuman
Joseph H. Senne
John P. Soult
C.F.P. Stueck
Otis H. Taylor
Carl J. Weis
Russell H. Wiethop
Rex E. Williams
Bobby G. Wixson
Wei-Wen Yu
Charles Penrose Williams, Director, 1871 - 1877
Charles Edmund Wait, Director, 1877 - 1888
William Holding Echols, Director, 1888 - 1891
Elmo Golightly Harris, Director, 1891 - 1893
Walter Buck Richards, Director, 1893 - 1897
George E. Ladd, Director, 1897 - 1907
Lewis Emmanuel Young, Director, 1907 - 1913
Leon Ellis Garrett, Director, 1913 - 1915
Durward Copeland, Director, 1915
Austin Lee McRae, Director, 1915 - 1920
Charles Herman Fulton, Director, 1920 - 1937
William Revel Chedsey, Director, 1937 - 1941
Curtis Laws Wilson, Dean, 1941 - 1963
Dudley Thompson, Acting Chancellor, 1973 - 1974
Raymond L. Bisplinghoff, Chancellor, 1974 - 1976
Jim C. Pogue, Interim Chancellor, 1977 - 1978
Joseph M. Marchello, Chancellor, 1978 - 1985
John T. Park, Interim Chancellor, 1985 -

C.E. ST. PATS THROUGH THE YEARS

1918---Meryl McCarthy
1919---Edwin K. "Toots" Schuman
1930---A.J. Tiefenbrun
1934---John C. Settle
1935---Frederick W. Arnold
1943---Raymond O. Kasten
1946---Robert T. White
1948---James B. McGrath
1953---James A. Gerard
1960---Don Gunther
1966---John C. Henry
1969---John J. Moll
1973---Roger L. Kramer
1978---Russell Goldammer
1981---Wayne V. Schmidt
CHI EPSILON CHAPTER
HONOR MEMBERS

Robert William Abbett
William C. Almeyer
James S. Anderson
William Allen Andrews
Chester Baker
Merl Baker
Lorenz T. Bannes
Robert D. Bay
Jerry R. Bayless
Henry Claus Beckman*
Elmer W. Belew
Robert T. Berry
Robert K. Boyd
Erwin R. Breihan
Coy L. Breuer
Joe Beaty Butler*
Ernest Wilson Carlton*
Paul F. Carlton
Robert J. Dacey
Stanley Dolecki
Garvin Henry Dyer
Clifford Wayne Eshbaugh*
Charles J. Fiala
Thomas A. Fry
Frank A. Gerig, Jr.
Vernon A.C. Gevecker
William R. Gibbs
William Joseph Hedley
Thomas A. Herrmann
Leon Hershkowitz
Anthony Homyk
Clark Hungerford*
Emerson C. Itschner
Raymond Oliver Kasten

Daniel Kennedy
Thomas A. Lane
Allan H. LaPlante
L.J. Lukrofka
Peter Felix Mattei
A.C. McCutchen
James B. McGrath
Melford E. Monsees
Paul R. Hunger
James J. Murphy
Enoch R. Needles*
Jack R. Niemi
Thomas J. Niles
C.C. Palmer
Wesley E. Peel
Ernest L. Perry
Louis G. Petro
Paul N. Robbins
J. Kent Roberts
Kenneth W. Schoeneberg
Joseph H. Senne (elevated)
William H. Shaw
John Pelham Soult
Neil F.P. Stueck
Leif H. Overdruz
Vester B. Unsell
E.C.L. Wagner
A. Carl Weber
Robert C. West
Rex Marion Whitton
Warren R. Wieland
Curtis L. Wilson
John C. Wright
Wei-Wen Yu
## ACADEMY OF CIVIL ENGINEERS

### MEMBERS

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<td>Rex Z. Williams</td>
<td>'37</td>
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<tr>
<td>William L. Wisch</td>
<td>'50</td>
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<td>Walter A. Zimmerman</td>
<td>'62</td>
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### HONORARY MEMBERS

<table>
<thead>
<tr>
<th>Name</th>
<th>Year</th>
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<tbody>
<tr>
<td>Joe Beatty Butler</td>
<td>'24</td>
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<tr>
<td>Ernest W. Carlton</td>
<td>'26</td>
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<tr>
<td>Enoch R. Needles</td>
<td>'14</td>
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</table>

### DISTINGUISHED PAST MEMBERS

<table>
<thead>
<tr>
<th>Name</th>
<th>Year</th>
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<tbody>
<tr>
<td>Wayne S. Frame</td>
<td>'23</td>
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<tr>
<td>Leon Hershkowitz</td>
<td>'41</td>
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<tr>
<td>James J. Murphy</td>
<td>'35</td>
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<tr>
<td>Clarence Palmer</td>
<td>'40</td>
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<tr>
<td>Joseph E. Rigg</td>
<td>'50</td>
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<tr>
<td>Robert E. Vansant</td>
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<tr>
<td>Warren R. Wieland</td>
<td>'50</td>
</tr>
<tr>
<td>Joe Williamson, Jr.</td>
<td>'29</td>
</tr>
<tr>
<td>MAY 1950</td>
<td>NOVEMBER 1950</td>
</tr>
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<tr>
<td>Allmeyer, Milton A.</td>
<td>Arnold, John M.</td>
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<tr>
<td>Andreasen, Ralph A.</td>
<td>Balliew, James E.</td>
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<tr>
<td>Arnold, Hubert T.</td>
<td>Bishop, Billie J.</td>
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<td>Averbach, Philip</td>
<td>Burkhart, Billy L.</td>
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<td>Bartels, Eugene A.</td>
<td>Elwood, William H.</td>
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<td>Bellis, Gerald B.</td>
<td>Firman, Harry W.</td>
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<td>Bounds, Ivan L.</td>
<td>Gevecker, Vernon A.</td>
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<td>Griffith, John B</td>
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<td>Butler, Joe B.</td>
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<td>Clark Jr., John W.</td>
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<td>Craig, Curtis L.</td>
<td>Hoffman, Ronald A.</td>
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<td>Deppe, Eugene</td>
<td>Huffman, Gene A.</td>
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<td>Dressler, Robert D.</td>
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<td>Edgington, Anthony N.</td>
<td>Moy, Harry</td>
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<td>Eshbaugh, Clifford</td>
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<td>Faith, Robert V.</td>
<td>Pawloski, Bernard L.</td>
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<td>Floro, Robert E.</td>
<td>Roetzel, J.D.</td>
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<td>Fritschen Jr., Herman A.</td>
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<td>George, R.J.</td>
<td>Stopkeyo, Waldemar</td>
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<td>Gore, Arthur G.</td>
<td>Swisher, Roger H.</td>
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<td>Greenberg, Aaron J.</td>
<td>Wohlert Jr., William H.</td>
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<td>Hardy, Rolland L.</td>
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<td>Horsley, Joseph J.</td>
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<td>Hubbard, Jack L.</td>
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<td>Jayne, Harold M.</td>
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<td>Johnson, Ray B.</td>
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<td>Johnson, Warren H.</td>
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<td>Kaplan, Newton H.</td>
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<td>Knepper, Andrew E.</td>
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<td>Knowles, Carl M.</td>
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<td>Lay, George</td>
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<td>McNelly, Warren E.</td>
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<td>Miller, James E.</td>
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<td>Ross Jr., Leroy E.</td>
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<td>Sabo, Virginia</td>
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<td>Slankard, Robert C.</td>
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<td>Tester, Hubert G.</td>
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<td>Varsant, Robert E.</td>
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<td>Walker, Dale E.</td>
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<td>Carlton, Ernest W.</td>
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<td>Dean, Donald L.</td>
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<td>Lange Jr., Clarence</td>
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<p>| Borberg, James R. |               |
| Dannenbring, Wayne C. |               |
| Gotsen, Eugene M. |               |
| Hansen, Peter G. |               |
| Haynes, Myron B. |               |
| Hays, Donald L. |               |
| Hershkowitz, Leon |               |
| Kennedy, Daniel |               |
| Knook, Daniel C. |               |
| Laytham Jr., John W. |               |
| Ordemann, Robert G. |               |
| Robbina, Clay |               |
| Stovall, Johnnie N. |               |
| Taylor, Cleo E. |               |
| Thompson, Homer N. |               |
| Topel, Maurice R. |               |</p>
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<td>Crabtree, Barnett O.</td>
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<td>Van Bebber Jr., James A.</td>
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<td>Fowler, Thomas R.</td>
<td>Elswick, James L.</td>
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<td>Frey, Martin A.</td>
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<td>Gerard, James A.</td>
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<td>Long, James E.</td>
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<td>Augustson, Luther B.</td>
<td>Anderson, Robert W.</td>
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<td>Carroll, Frank L.</td>
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Chi Epsilon Initiates / 131

DECEMBER 1956

Ballard, Don S.  
Crowe, Joseph E.  
Frankenberg, Ray H.  
Haydon, Jack B.  
Heagler, Richard B.  
Hill, Frank W.  
Hoffman, Charles R.  
Klohr, Dale L.  
Langford, Hugh A.  
Lichius, Howard W.  
Littlefield, Jerry K.  
Molesitt, Donald E.  
Moore, John W.  
Strub, Dale A.  
Thye Jr., Carl J.

DECEMBER 1957

Bayless, Jerry R.  
Bruegging, John J.  
Feaster, Donald R.  
Fuller, John E.  
Gazda, Lawrence  
Gunn, Gary Y.  
Hager, Chester L.  
Hertzberg, Donald H.  
Kruger, William A.  
Lindsey, Kenneth R.  
Luebber, William J.  
McHugh, Alan H.  
Munger, Paul R.  
Paynton, Jan H.  
Peel, Wesley  
Ringenberg Jr., Charles  
Roberts, Troy R.  
Schuering, Robert L.  
Solie, Gerald O.  
Sullivan, Charles H.  
Winkler, Norman E.  
Winter, Lester H.  
Wright, Robert R.  
Zieba, Bill D.

MAY 1956

Ballard, Darrell D.  
Couch, Patrick S.  
Demzik, William G.  
Feaster, Jack L.  
Frey, Charles, A.  
Grinstead, Willis G.  
Hilmes, Ralph C.  
Kalinowski, Joseph  
Kick, David D.  
Miller, Charles L.  
Skouby, Marion C.  
Soul, John P.  
Stribling, Jerry D.  
Winn, Leon D.  
Worman, Forrest D.

MAY 1957

Itschner, Emerson C.

APRIL 1958

Cain, Larry J.  
Dunn, Karl H.  
Gazda, Andrew J.  
Gilmore, Rex A.  
Giolosa, Thomas E.  
Hall, Johnnie E.  
Henderson, Don E.  
Henson, James W.  
Kennedy, Ralph C.  
Landry, Robert L.  
Popp, Lawrence  
Randels, Dale K.  
Reichert, Joseph F.  
Shoemaker, James L.  
Volkner, Ronald E.  
Weeke, William H.  
Wood, William S.

APRIL 1957

Aloch, Wayne F.  
Baskin, Charles G.  
Degenhart, Edward R.  
Harbaugh, Terrence  
Heagler, John B.  
Henderson, Robert L.  
Jones, Floyd C.  
Kobs, Ernest C.  
Kreigh, Wilbur K.  
McLean, Robert W.  
Meyer, Larry B.  
Needham, William R.  
Nelson, William D.  
Rives, James C.  
Roberts, Joe B.  
Schumacher, Carl R.  
Singer, Paul L.  
Smith, William J.  
Wolverton, Joseph H.

DECEMBER 1958

Boston, Lawrence  
Boughton, Richard B.  
Buckner, Boyce B.  
Carver, Ronald P.  
Dickens, Walter H.
Chi Epsilon Initiates

DECEMBER 1958 (con't)

Fisher, Gerald L.
Gunther, Don J.
Halbrook, Thomas R.
Ingle, William L.
Logsdon, Donald L.
Madow Jr., Henry L.
Odendahl, Leo A.
Pate, Jr., Henry A.
Plank, Robert D.
Rizer, Gene C.
Simpson, Charles R.
Taylor, Richard K.
Tharp, Charles E.
Thompson, Leila M.
Trabue, Donald L.
Tross, Ralph G.
Williams, Ross L.
Wisdom, Gerald H.

MAY 1959

Bannister, Larry C.
Blevins, Howard L.
Bradley, James E.
Brunjes, William S.
Cain, Clarence
Craig, Charles M.
Flaim, Louis P.
Henry, Richard L.
Hooper, Ronald T.
Hyatt, Gordon R.
Kurz, Caryl M.
Lane, Thomas A.
Melsenheimer, Harold D.
Sturm, John F.
Woods, Alvin H.

APRIL 1960

Anderson, John C.
Anderson, William A.
Barraud, Kerwood W.
Callaway Jr., Luke L.
Dennis, John H.
Hahn, Jimmy D.
Henson, Lowell
Kelsick, Robert W.
Kieffer, Robert C.
Pearce, Robert L.

DECEMBER 1960

Ahmed, Tumkur
Akey, Charles D.
Brake, Richard L.
Breitenfeld, Richard T.
Brown, Norman L.
Buchanan, John O.
Capek, Frank J.
Chew, Terry D.
Deli, Jack H.
Dennis, Ralston K.
Elfrink, Lindell H.
Evans, Donald L.
Farmer, Larry E.
Fread, Danny L.
Gallilher, Kay D.
Green, Lawrence
Hannlin, Harold L.
Hill, Jimmie L.
Hutchenson, Dwight R.
Kiefer, Charles A.
Knald, John B.
Leaver, Harvey B.
Meha, Bhupat H.
Moore, Kenneth D.
Mungle, Burlin D.
O'Brien, Michael G.
Prothero, Ronald P.
Randolph, Robert W.
Rankin, Rolfe M.
Rathburn, Vinton L.
Rice, John L.
Richard, Russell R.
Spieldooh, Richard B.
Stickeley Jr., Douglas D.
Stidham, James A.
Teague, Martin W.
Tavis, Charles C.
Ulugonul, Yurdakul
Williamson, Rayburn L.
Yolar, Ismail
Zimmerman, Bob G.

JANUARY 1960

Adams, Charles T.
Angle, Ralph G.
Baumgartner, Gary R.
Bell, Dewayne A.
Blalock, Charlie L.
Brunkhart, Gerald E.
Corbin, Kenneth D.
Davis, Garrett L.
Derx, Wayne R.
Pink, Gerald A.
Fulton, Frank W.
Gilbert, William J.
Housholder Jr., Farmer
JANUARY 1960 (con't)
Kern, John H.
Lemke, Merrill M.
Lortz, Francis E.
Love, Harlie M.
Lovelace, James T.
Lynch, Arthur C.
Owley, David V.
Patrick Jr., Gilbert W.
Patterson, Robert W.
Ponzer, Henry L.
Sidwell, James E.
Stevenson, Curtis W.
Swier, George A.
Whelan, Raymond A.
Wisdom, Donald A.
Wolf, Sherman A.

APRIL 1961
Boe, Richard I.
Carney W.D.
Carr, Virgil E.
Carter, Larry L.
Hayes, Paul G.
Kilburn, Darrell D.
Lenox, William H.
Loncarich, Donald W.
Mansbridge, Herbert L.
Martignon, Anthony K.
McCarthy, Basil E.
Pezza, Anthony D.
Ray, David
Schlemmer, Lee
Stovesand, James H.
Wood, Graham W.

NOVEMBER 1961
Bates Jr., Donald E.
Boyd, Gerald M.
Bridges, Walter R.
Brunjes, Franklin
Cline, Larry D.
Cole, Fred V.
Fields, Sidney L.
Gardner, Morris L.
Gentry, Roy C.
Hyde, James L.
Ligon, William R.
Martin, Wade A.
McMurtrey, Gerald D.
Nack, Thomas P.
O'Farrell, Thomas P.
Patterson, Robert W.
Rickard, Melvin D.

Schillinger, George R.
Shafizadeh, Jamshid
Siebels, James E.
Stemler, Orvin A.
Taylor, Thomas M.
Torno, Harry C.
Van Vranken, Robert L.
Williford, Henry G.
Williford Jr., Michael L.

APRIL 1962
Chapman, Keith E.
Daoulas, Arthur
Gronemeyer, Gary F.
Haynes, William D.
Huber, Richard G.
Larason, Norman G.
Mason, Donald G.
McKee, Paul E.
Obermark, James R.
Perry, Michael M.
Rintoul, Richard O.
Samrad, Ardehshir
Savas, Sam M.
Saxer, Meredith
Wegener, Wilbert F.
Wilson, William L.
Young, Alwin C.

NOVEMBER 1962
Bentley, James R.
Cissell, Donald E.
Craver, Roger H.
Daniels Jr., John M.
Ferrell, Charles S.
Fritscher, William R.
Harris, Donald M.
Lamb, Robert L.
Loth, William D.
Lyon, Charles G.
Markland, Robert E.
Muth, Arnold J.
Newsom, Robert L.
Nodland, Stanley K.
Rakowitz, James A.
Rhohmiller, Paul L.
Schaeffer, David M.
Sutherland III, Graham G.
Wilson, Curtis L.
Zieba, John D.
Adsit, John M.
Brown Jr., Dewey F.
Brown, Dallas L.
Buttry, Kenneth E.
Choat, Buddy J.
Custer, Phillip E.
David, Edward G.
Dobson, Dale E.
Duncheon, Daniel W.
Dobson, William L.
Ellebracht Jr., Clarence
Fenton, David L.
Pry, Thomas S.
Gerig Jr., Frank A.
Hoepker, Elmer C.
Hughes, Earle M.
Jaguary, Richard L.
LaPlante, Allan H.
Lischer Jr., Alan A.
Montgomery, Billy L.
Padgett Jr., Harry W.
Peters, Donald G.
Picker, Melvin L.
Prutt, Lyle L.
Reid, Bill H.
Roberts, Donald
Roeder, Eugene A.
Smart, John D.
Tang, John L.
Taylor, Glenn R.
Timmons, Harrell W.
Warning, Clarence
Wendleton, John L.

FEBRUARY 1964

Felch, James F.
Galloway, Gerald D.
Gardner, Donald T.
Haygood, Jack L.
Herrmann, Frederick
Hughey, Bobby R.
King Jr., James H.
Lehman, Fred D.
Lofftus, Ervin D.
Lyons, Francis
Mueller, Dale D.
Orrison, Gerald K.
Petro, Louis G.
Pierce, Ronald R.
Raney, Edward M.
Robb, Kenneth A.
Smith, Roger H.
Stevens Jr., Glendon T.
Tharp, Edward L.
Wood Jr., Joseph S.

NOVEMBER 1964

Andesilich, John V.
Baldwin, Michael H.
Barks, James H.
Bicknell, Hilton B.
Bradford, Bruce H.
Brown, William R.
Darnell, Paul E.
Degaeare, Truett V.
Gaebel, John L.
Haden, Roney L.
Hamm, William P.
Hansen, Ronald A.
Huckabee, John W.
Hoffman, David J.
Honyk, Anthony
Jacobson, Walter R.
Littlefield, Larry W.
Martin, Terence N.
Myers, Ralph A.
Myers, Wesley E.
Nortrup, Donald E.
Patterson, Lowell B.
Richardson, Richard A.
Ruser Jr., John R.
Shilt, Eldon R.
Smedley, Larry M.
Smith, Robert S.
Snowden IV, Edgar
Steele, Frederick
Steele, James D.
Thiede, Alfred J.
Turner, Dennis R.
Walsh, Thomas S.
Wells, William L.
Wunderlich, Norbert J.

Andrews, William A.
Bader Jr., Frank S.
Bailey, Edwin C.
Beavers, James E.
Betz, Raymond R.
Clayton, Michael S.
Dressler, Donald R.
Evans, James H.
Franke, Richard M.
Greer, Ronald E.
Hamby, Denzil D.
Jordan, Thomas H.
Kern, Anthony E.
Klein, Dale E.
Lyons, James J.
Mack, Thomas E.
McGinnis, Michael J.
Moran, Robert W.
Muckvichit, Pichit P.
Presley, John R.
Reedy, Clyde M.
Rice, Roy D.
Rowlan, Charles W.
Schweizer, Gilbert C.
Stockhausen, William T.
Trippel, Robert C.
Vinci, Jr., Frank N.
Worts, James E.

Alexander, Terry W.
Altmansberger, Wayne A.
Anderson, Jerry M.
Bell, Kenneth H.
Brown, Raymond L.
Byington, Marvin L.
Carlin, John C.
Dattilo, David O.
Dimitri, James R.
Ford, William C.
Foreman, Alan R.
Goldsmith, Stanley I.
Gress, George H.
Hayden, Charles B.
Horton, Barry W.
House, Bob L.
Huang Hao Y.
Hulsey, John L.
Lund, Niels H.
Martin, Charles R.
McDuff, Charles R.
McMahan, Joseph L.
Miller, Gary L.
Patterson, Efton K.
Poepping, Paul P.
Rapp, Edward G.
Stuart, Robert L.
Vansteen bergen, Albert R.

Abbott, Rohn D.
Allison, Laton D.
Carl, James W.
Dodd, Vernon O.
Faust, Terry L.
Gerig, Frank A.
Gilstrap, James W.
Godfrey, William H.
Graham, William J.
Jagtiani, Arjan S.
Jennings, Donithan
Kasten, Raymond O.
Miller, Samuel P.
Raby, Olin R.
Smart, Neil A.
Turner, Gary M.
Van Dover, Richard

Brookhaus, Douglas a.
Browning, Fred R.
Chapman, Kenneth R.
I
Chi Epsilon Initiates

DEC 1966 (con't)

Choate, Larry D.
Decker, Ray C.
Evans, Ronald E.
Gorrell, James W.
Hardie, Madonna K.
Hedley, William J.
Hueft, Michael S.
Jackson, Richard B.
Ludwig, Lonny L.
Mathes, John A.
Meisenheimer, James K.
Miller, Gerald B.
Mingo, Robin R.
Petty, Thomas M.
Ray, J.A.
Simmons, Richard E.
Smith, Carlton L.
Sanner, Donald L.
Webb, William D.
Wohlberg, Richard W.

JANUARY 1966

Bolen, Gary R.

APRIL 1967

Anderson Jr., William E.
Botkin, Mark E.
Brady, Steven L.
Brooks, Ronnie E.
Dasaro, Donald E.
Gaines, Gary L.
Groves, Christopher
Koechlein, William H.
Lebo, Jerome M.
Logie, James R.
McMillen, Thomas M.
Monsees, Melford E.
Pitchford, Larry J.
Potter, Otis L.
Powell, Doyle W.
Scheibel, Larry L.
Scott, Larry W.
Storrs, Stuart M.
Stover, Dennis W.
Vedder, Richard C.
Yost, Kenneth D.

DECEMBER 1967

Armstrong, Roy M.
Asrat, Richard F.
Black, Paul D.
Brinkopf, Robert L.
Brown, Bryant S.
Bruns, George H.

Connolly, Dana P.
Eydmann, Phillip S.
Frasco, Lynn A.
Geile, Robert J.
Green, William J.
Gullic, Robert C.
Hitt, Gerald W.
Kaiser, Stephen J.
Lewis, Leland
Long, Joseph J.
Lynch, Joseph F.
Magee, Russell J.
McCalla, Carl R.
Reed Jr., John F.
Robbins, Paul H.
Story, Austin B.
Zenge, Thomas L.

APRIL 1968

Arnoldy, Richard R.
Bay, Robert D.
Crane, Vincent P.
Frazee, Richard W.
Grabski, Frank L.
Hurst, Ronald D.
Korth, Michael V.
Lowe, Joseph W.
Mitchell, Jeffrey C.
Moeller, Thomas J.
Mueller, Edward A.
Nudd, Barry C.
Plemon, Joseph O.
Rhea, Charles J.
Smid, Fred F.
Stratman, Ronald A.
Thompson, John E.
Webb, Earl V.

DECEMBER 1968

Albert, Donald B.
Andrew, William K.
Arney, Donald E.
Books, Edward F.
Cross, John K.
Ethridge, Max M.
Harms, Kenneth D.
Hoenerhoff, Richard B.
Jacobs, Philip W.
James, Ronald L.
Koehn, Charles E.
Litzinger Jr., William K.
Mattei, Peter F.
Matthews, James R.
Meyerholtz, John D.
Niehaus, Robert L.
Reed, Robert L.
Richards, David M.
Shafer, Raymond T.
Sweeney, William T.
Waring, Alvin D.
Watkins Jr., James F.

Horn, Larry S.
Jaeger, Mark E.
Jansen, Raymond J.
Kirmeyer, Gregory J.
Klumsmeyer, Richard A.
Langemach, Wayne E.
Mays, Larry W.
Mendell, Frederick
Niedringhaus, Edward L.
Notehine, Stanley W.
Oneal, William F.
Price, Harry L.
Raby, David L.
Rankin, Richard F.
Rinne, Robert A
Sander, Joseph W.
Schmitz, Robert L.
Schmitz, James F.
Sears, Thomas
Stack, Dennis L.
Sweyers, Don R.
Thrakel Jr., Hubert R.
Trexler, Garry R.
Wagner, John R.
Ward, Richard F.
Wege, James R.
Wolff, Thomas F.

Alcott, Arthur D.
Barrett, Richard J.
Breuer, Coy L.
Delay, Russell G.
Fahey, Bernard F.
Frankenfield, Dewey J.
Freeman, Richard L.
Fuller, Jerry K.
Gibbins, Donald E.
Jensen, Paul E.
Joplin, Raymond A.
Mouser, Gerald F.
Nelson, Michael L.
Oliver, Jack G.
Rector, Michael R.
Rezvan, Kamran
Ricoon, Marion P.
Ryan, David A.
Shanks, Billy R.
Shini, Asaad S.
Strauser, Bradford
Thornton, Kenneth W.
Turlin, Charles L.
Vinson, Alan R.
Waggoner Jr., Jay E.
Wehmeyer, W.E.
Zimmerman, David H.

Bell, James A.
Bradshaw, Samuel C.
Buechler, Thomas J.
Daniels, David E.
Davis, Charles S.
Dennis Jr., Norman D.
Dufner, Dennis L.
Edwards Jr., John W.
Feldman, Charles N.
Franklin, Stephen R.
Freese, Keith F.
Gross, Edward P.
Hayden, Thomas M.
Loesch, Gerald W.
Luth, William L.
Miche, George A.
Miller, Charles C.
Miller, William D.
Murphy, James J.
Myers, Benjamin
Oliver, Daniel L.
Simpson, Daniel E.
Steffee, Richard E.
Stephenson, Michael W.
Thompson, Darrell L.
Titus, Russell
Visintainer, David A.
Ward, Robert L.
Welsch, Paul L.
Whitford, Jerald L.
Williams, David W.

MARCH 1970

Ashbaugh, Brian W.
Basler, David L.
Branham, John E.
Canfield, Dan G.
Carter, John B.
Cragg, Thomas M.
Davidson, Sam R.
Feager, Joe A.
Gold, Robert L.
Groeper, Burl D.
Kline, Gary L.
Kramer, John L.
Kuhn, Thomas E.
Lawson, Montie R.
Loudermilk, Abraham H.
Lupberger, David D.
Martin, James H.
McKinney, William M.
Moran, Mark F.
Mueller III, Wendelin
Niles, Thomas M.
Orr, Victor D.
Phillips, Richard F.
Reynolds, Joseph C.
Sanders, Dee A.
Schreiner, Robert W.
Siesener, Robert M.
Simoneaux, Joseph A.
Smith, Beverly D.
Summers, James B.
Swyers, Dan R.
Walker, Rodger A.
Welsh, John D.
Williams, Jerome H.
Yao, Peter S.

APRIL 1971

Bailey, Herbert R.
Burke, Larry R.
Clark, Ralph H.
Dale, Robert F.
Erickson, Gordon L.
Ferry, Charles T.
Gallup, Archibald
Grana, Dominic N.

DECEMBER 1970 (con't)  APRIL 1971 (con't)

Hemenover, Donald E.
Jacka, Robert W.
Juneau, Charles E.
Laskoher, Richard J.
Lee, Gary M.
Lynch, Daniel F.
Parker, John M.
Polka, Ronald A.
Raithel, James F.
Sherwood, Gregory A.
Stanley, Robert L.
Tansu, John
Torgeson, David N.
Visintainer, Alan D.
Williams, Dale E.

DECEMBER 1971

Arthur, Billy R.
Baldus Jr, Melvin W.
Booyce, Daniel E.
Burke, Steven M.
Butler, Randy R.
Campbell, Dennis L.
Chenoweth, Darryl W.
Coartney, Charles R.
Colombatto, Phillip J.
Dewald, Leonard N.
Dimmitt, Robert G.
Ernst, William G.
Finn, Gerald W.
Gogg, Harry F.
Gray, Howard W.
Hill, John E.
Lauth, John A.
Lett, Steven K.
Liu, Victor A.
McGrath, James B.
Miller, Terry E.
Nachtar, Jerry A.
Niford Jr., Chester R.
Powell, Charles E.
Reineke, Dennis E.
Sachs, Jacques B.
Santucci, Ceasar A.
Smith, Wayne D.
Stewart, Robert L.
White, Richard L.
Wilhelm, Steven C.
Woods III, Roy B.
Wright, David R.
Zeidlik, Richard C.
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<td>MAY 1973</td>
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<td>NOVEMBER 1972</td>
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<td>Bowd Jr., James E.</td>
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<td>Hurst, Michael D.</td>
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<td>Johnson, Bruce L.</td>
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<td>Kramer, Gary R.</td>
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<td>Kwong, George S.</td>
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<td>Laxton, Earl G.</td>
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<td>Linnemann, Stephen M.</td>
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<td>Oligschaeger, David F.</td>
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</tr>
</tbody>
</table>
140 / Chi Epsilon Initiates

NOVEMBER 1973 (con't)

Foil, James L.
Frey, James E.
Greer Jr., James F.
Harrison, Diana L.
Huston, Samuel M.
Hutson Jr., Edward P.
Kothe, E.R.
Laboube, Roger A.
Ma, Po-Tauan
Milane, Robert J.
Oldham, Steven C.
Porter, Joel E.
Reddy, Thomas E.
Serls, Anthony F.
Tuttle, David
Veesaert, Chris J.
Wilmont, David A.
Wood, Dennis L.

DECEMBER 1974

Mengel, Matthew L.
Van Houten, James H.

MAY 1974

Bowers, Craig R.
Cheng, Franklin
Cornwell, George C.
Daniels Jr., Charles P.
Grither, Larry J.
Kerns, Dan L.
Kimball, Michael J.
Larson, Rick E.
McCord, Hal H.
McCray, Bruce W.
Mengel, Matthew
Michnimer, Terry L.
O'Rourke, Carol A.
Patterson, James S.
Satterlee, Stephen C.
Shaw, William H.
Sheahey, David J.
Shorter, James D.
Temme, Ronald C.
Vance, Jack L.
Wild, Phillip H.
Williamson, Richard F.
Wisch, David J.
Yue, Chekman

NOVEMBER 1974

Bechtold, Michael S.
Beitch, Gary N.
Boyd, Robert K.
Brendel, Jerome C.
Cannon Jr., George E.
Chasteen, William C.
Coyne, Michael N.
Cower, Patrick E.
Hall, Ralph D.
Harris, Stanley J.
Holcomb, William J.
Josey, James L.
Kambol, Stephen A.
Kile, Dennis D.
Lueckenhoff, William
Maddox, Hubert R.
Maxwell, Robert S.
Mittler, Thomas J.
Perry, Ernest L.
Rackers, Dennis S.
Rechtien, Thomas J.
Storck, William F.
Trower, Ronald B.
Zgraggen, Thomas R.

APRIL 1975

Austin, Margot H.
Bradley, Dale E.
Dabler, Edward R.
Dimakis, Al
Dinapoli, Michael A.
Eubanks, Roger J.
Fenske, Thomas E.
Finley, Larry R.
Gordy, Thomas W.
Heideman, David L.
Kempf, Frederick
McGowan, Thomas J.
Muenks, Caroll D.
Parkes, David A.

MARCH 1975

Elfrink, Lindell H.

MAY 1975

Dolecki, Stanley
Loesing, Vernon T.
Nguyen, Phung
MAY 1975 (con't)

Repp, Donald P.
Rieser, Catherine
Rodgers, Edward W.
Rollings, Robert R.
Schaefer, Melvin G.
Seely, Frank D.
Selim, Ali A.
Stuart, Dennis L.
Underhill, Thomas N.
Wilson, William F.
Woods, Kenneth L.

APRIL 1976

Petersen, Robert D.
Hau, James T.
Reed, Ronald M.
Ryan, Tom C.
Schneebelen, Paul C.
Schwartz, Andrew J.
Stack, Irvin R.
Stevens III, Glendon T.
Sudholt, Terry A.
Summers, Danny C.
Sverdrup, Leif J.
West, Robert C.

NOVEMBER 1975

Bass, Robert L.
Daneshgar, Joseph
Freese, Guy R.
Harris, Danny L.
Hausladen, F. Steven
Hummel, Robert J.
Kuhn, David H.
Laughlin, Richard D.
Lowsley, Ivon H.
Lueckenhoff, Michael J.
Melster, William G.
Mink, David W.
Muenks, Caroll D.
Otto, Robert L.
Pool, John M.
Shanks, Richard A.
Stelb, Stephen S.
Strain, Clint
Sweny, Brian J.
TerKonda, Purush K.
Unsell, Vester B.
Wagner, Stephen C.
Weibelhuth, Ron F.
Wills, Matthew J.

DECEMBER 1976

Bodenhamer, Kevin C.
Donham, John C.
Edelman, Thomas M.
Fennessey, Thomas W.
Gibbs, William R.
Hasanain, Ghazi S.
Keebler, James H.
Leonard, Robert G.
Liescheidt, Brenda E.
McCallister, Larry D.
Melo, Richard A.
Mosby, Randy L.
Schwenk, Joseph L.
Steib, Sherry A.
Webster, William D.
Weddle, Philip B.

APRIL 1977

Anderson, James F.
Brugnara, Michael A.
Carter, Thomas G.
Deckerd, Harold L.
Filla, Michael J.
France, Paulletta
Haggard, Henry E.
Hogenmiller, Glenn D.
Holcomb, Charles L.
Johnson, Stanley C.
Lukrofka, L.J.
Mitchell, Robert C.
Parrish, Bradley R.
Pearson, Russell M.
Richardson, Lee A.
Sees, David H.
Spears, Rick K.
Summer, Richard A.
Weeks, David B.
Baker, Chester H.
Dale, William M.
Fisher, Alvin J.
Ford, Stephen P.
Gold, Robert E.
Gredoll, Thomas R.
Gunter, James D.
Janko, Stephen R.
Kunkel, Katherine
Manning, Jon A.
Meyer, Sandra D.
Meyer, William D.
O'Clock, Gregory P.
Reynolds, Ronald W.
Rudy, Mark R.
Ruester, David E.
Turek, Leo J.
Wilson, Lloyd C.
Wilson, Randall W.
Winter, David G.

Eisenbeis, Kevin R.
Englehart, William E.
Harding, William G.
Haatainen, Kirk R.
Henson, Darrell K.
Horton, Duane K.
Johnson, Kathryn P.
Krahenbuhl, Mark D.
Lewis, David B.
Louiselle, Allan R.
McCoy, Patrick M.
McEvilly, Michael J.
Mertz, Gregory E.
Miller, George H.
Schaeffer, Michael R.
Shirley, Jerry W.
Simac, Michael R.
Snyder, Brian K.
Westerman, James E.

Barrow, William A.
Brekerus, Bernard J.
Brotherton, Marilyn R.
Calise, John S.
Costello, Robert A.
Durbin, Robert C.
Foster Jr., Kenneth R.
Geerlings, Jack F.
Green, Alan W.
Harrington, Nancy E.
Heintzelman Jr., Verle J.
Heitzman, Michael A.
Hovis, Mark A.
Jacobi, Carl L.
Kirn, Wilma M.
Loxton, Steven M.
Marble, Duane A.
Myers, Jimmie B.
Niemi, Jack R.
Ohmer, Gregory D.
Ostapowicz, Phillip G.
Poultar, Bijan
Proost Jr., Edward D.
Rapp, Robert J.
Redhage, Kevin L.
Roenfeldt, Mark A.
Seppelt, Mark E.
Stringer, Michael J.
Tan, Robert Y.
Zimmerman, Michael

Blattel, Terry L.
Buckwalter, John R.
Dearing, Larry E.
Fu, Ho-Ming
Hall, James V.
Herr, Mark A.
Herrmann, Thomas
Hord, Douglas E.
Jackson, Robert
Kellett, Joseph
Kruse, Ronald
Lasley Jr., Harold
Lui, Chun-Chi
McGregor, Edward
O'Daniel, Michael
Schmidt, Eric
Schmitt, David
Sullivan Jr., Thomas J.
Supornsilaphan, Boonsong
Volker, James
Wille, Robert J.

Ashton, Harlan R.
Atchley, Bill L.
Dare, Charles E.
Dittmaier, Thomas A.
Ellerbrake, Barbara E.
Horst, William D.
Miller, John T.
Naeger, David J.
O'Malley, Anthony P.
O'Rourke, Mary A.
Rodriguez, Mariana G.
Smith, Mark S.
Stueck, Neil F.
Thompson, David B.
Torr, Douglas F.
Westphal, Jerome A.

Hawkins, James C.
Huck, Mark S.
Marshall, Brent G.
Parrish, Tamnie L.
Roberts, Terry J.
Rogers, Roddy J.
Schmerbauch, Karl J.
Schoeneberg, Kenneth
Sikes, Stanley
Soudani, Yvette D.
Walker, Mark T.
Wang, David P.
Williams, Tammy A.

Adams, David L.
Bannes, Lorenz T.
Barbour, Koelle G.
Berry, Chris W.
Boland, Bonnie A.
Brown, Geri K.
Brown, John K.
Cothern, Charles K.
Dykan, John R.
Fehl, Barry D.
Glauz, William W.
Green, Kenneth O.
Hubert, Bonnie S.
Janke, Paul D.
Jasper, Randal L.
Kopsky Jr., Raymond J.
Kremer, William B.
Leach Jr., Russell F.
Morris, Charles D.
Mueller, David S.
Mueller, Mark N.
Nixon, Richard R.
Overton, Ronald E.
Prakash, Shamsher
Quick, Robert E.
Sauceman, Gregory P.
Simac, David W.
Spicknall, Stephen L.
Taylor, Charles H.
Thebeau, Dennis
Tinker, Kevin L.
Todd, W. Stephen
Tolbert, Michael
Wankum, John L.
Wesselschmidt, Keith D.

Agge, Ralph K.
Andrews, Frank E.
Birgissson, Gunnar I.
Booher, Paul D.
Boyle, William L.
Buncher, Mark S.
Burchett, Craig G.
Campeau Jr., Benjamin
Darst, Jeffrey
DeWeese, David W.
Germaine, Robert
Glauz, Robert
Grogg, Max G.
Hart III, John A.
Hausmann, Diedrick
Henry, Chris L.
Holman III, James R.
Keith, Marion C.
Loebs, Stacy A.
Majora, Mark E.
Minks, Allen G.
Monie, Charles B.
Richards, Jon A.
Richardson, David N.
Stewart, Michael D.
Swanback, Steven G.
Whitecotton, Thomas III
Woodring, Wade D.

Aurig, Billy G.
Balsiger, Samuel P.
Borei, Glennon J.
Carson, Wayne K.
Gnade, Joseph

Bergmann, William C.
Cook, Phillip
Dohogne, Lisa A.
Elliott, Larry E.
Huang, Yei-Zen
Kirby, James R.
Chi Epsilon Initiates

NOVEMBER 1981 (con't)

Miller, David
Pourazari, Shahram
Smith, Mark S.
Sutterer, Kevin
Truman, Kevin Z.
Wright, John C.

MAY 1982

Burke, Gregory
Caiazzo, Anthony
Dawson, Bruce A.
Hierholzer, Joyce E.
Hinkamp, Stephen
Hood, John
Juang, Der-Shin
Khandoker, Jalal U.
Kriewall, Kevin A.
Lee, Chau
Liaw, Shu-Liang
Litrus, X.
Lukey, Mark P.
Maze, Jason C.
Mooney, Thomas
Niu, Fu-Hua
Perkinson, Randall
Puri, Vjay
Ray, Billy T.
Ruesshoff, Thomas
Schnieders, John P.
Shaffer, Gary W.
Srivastava, Padmakar
Stringer, Shelton
Toms, Nidol G.
Villhard, Wesley
Westerman, Thomas

NOVEMBER 1982

Al-Hakkak, Qassem M.
Bahn, Steven A.
Busse, David
Chang, Shou-Yuh
Denise, Garet W.
DeRuntz, Joseph G.
Hamilton, Randolph
Jaber, Tarif M.
Johnson, Douglas
Jourdan, Mark R.
Judd, Leta B.
Keeling, Steve W.
Killian, Keith E.
Leimberg, Robert E.
Loos II, Louis G.

Pan, Lan-Cheng
Pezeshk, Farid
Sallee, Randy W.
Selle, Steve M.
Shin, Chang-Jn
Southard, Rodney E.
Stevens, Mark L.
Taqieddin, Salah A.
Testor, Gerald
Thornberry, Marcus J.
Webb, Dennis
Wieland, Jeffrey P.
Wieland, Warren R.

MAY 1983

Dillingham, Sheryl L.

APRIL 1983

Ajemian, Gregory
Baker, John E.
Barhomi, Bassam
Hinkebein, Stephen
Hock, John A.
Lakinger, Susan
Leeds, Terry C.
Mitchler, Steve
Moeller, Karen S.
Parks, Brad M.
Petering, Ronald
Pursley, Charles
Raitz, Cathy J.
Ralph, Gregory J.
Reed, Maurice
Renne, Mark J.
Schleiter, Cynthia
Sharkawi, Samir O.
Sheu, Hueymei
Solati, Sadroldin
Thielking, Ralph
Vong, Feng C.
Weilz, Todd A.
Yu, Wei-Wen
Zink, David E.

NOVEMBER 1983

Bonifield, Kevin D.
Burton, Peter
Chang, Chein-Chi
Church, Jeffrey W.
Fiala, Charles
Fochtman, Virginia
George, Randy G.
Grozembacher, Mark D.
Hager, B.
Hanaia, Tony A.
Hilty, John H.
Kimes, Steven D.
Kinneman, Dale H.
Lin, Shin-Hau
Lynn, Kent W.
Mudnawi-Nejad, Saied
Martenus, Patrick A.
Perera, James
Purol, David M.
Randolph, Robert K.
Riggs, Sharrl L.
Robertson, Christine I.
Rolf, Robert C.
Stovall, Thomas M.
Tiegjen, Marg A.
Uppot, Jan
Welty, Lawrence
Werner, Anne M.
Wilhelm, Gregory A.
Wilkinson, Renate A.
Wise, Andrew C.

APRIL 1984

Anderson, James S.
Baltz, Rebecca J.
Carmody, Daniel D.
Chang, Gee Tai
Davis, Don M.
Eagle, Gene H.
Glauz, Rebecca J.
Graham, James C.
Maly, Andrew R.
Neal, Vance A.
Nowaskowski, Louis V.
Pyatt, James N.
Riechers, Kevin L.
Scribens, David A.
Shelton, Mark E.
Warnecke, Mark R.
Willnow, Lindle D.
Witcher, Sandra J.

Armstrong, Michael B.
Bales, Jimmie D.
Bennett, Roger M.
Camplin, Chris F.
Coser, Lisa K.
Green, Sigrid A.
Karnie, Richard D.
Kaufmann, Phillip G.
Kohler, Jon-Paul
McCue, John J.
Moffitt, Scott D.
Newhouse, Carla M.
Riggs, Brian E.
Sackett, Kimberly
Schneller, Timothy M.
Tappendorf, Timothy M.
Zavadil, Matthew E.

NOVEMBER 1984

Anders, Anton A.
Bowers, Bryan E.
Carlson, Brian E.

APRIL 1985

Cottrell, Carris L.
Dacey, Robert J.
Ellenberger, Wayne L.
Grozewski, Paul G.
Harms, Mark A.
Henslee, Kimberly
Jurgiel, John P.
Kinsey, John M.
Krause, Joann
Lee, Gary J.
Long, John D.
Massengill, Jeffrey B.
Medler, Edward A.
Meier, Michelle
Mertz, Raymond P.
Morris, Daniel M.
Owen, Susan P.
Pantelides, Chris
Sewester, Edward G.
Thomas, Tracy Jo
Tohmeh, Mohammad
VanDer Merwe, Pieter
Wiles, Timothy T.
Wiseman, Curtis D.
1874
* Duncan, Gustavus A.
* Gill, John H.

1875
* Deegan, Francis J.

1876
* Emerson, Cyrus H.
* McGrath, John E.

1877
* Millsap, Thomas H.

1878
* Bean, William Y.
* Coppedge, Lindsay L.

1879
* Hoyer, Rudolph C.

1881
* Summers, Edward B.

1882
* Gibb, Frank W.
* Painter, William R.
* Schrantz, Ashuah B.
* Vandevander, Herman N.

1883
* Wash, James A.

1884
* Davis, Floyd

1885
* Alexander, Curtis
* Claypool, William H.
* Wilson, Francis W.

1886
* Wilson, Freemont C.

1887
* Cullings, Jay C.
* Fulcher, James E.

1888
* Cole, George W.
* Wiles, George B.
* Yater, Merritt W.

1890
* Dean, George R.

1892
* Jones, Fayette A.
* Tyrell, Frank L.

1893
* Spencer, Clifton B.
1894
* Dyer, Temple
* Grove, Claude D.
* Herdman, George W.

1895
* Cowen, Herman C.
* Florreich, Philip Jr.
* Kirkham, John E.

1897
* Anderson, Perry B.
* Kerstling, Felix J.
* Torrence, Leslie C.

1898
* Cowen, Herman C.
* Terrell, Arthur D.
* Torrence, Ewart C.

1899
* Hendricks, James O.
  Schulze, Herman O.
* Taylor, Howard J.
* Tayman, Francis J.

1901
* Alexander, Thompson
* Fraizer, Isaac P.
  Spengler, Albert
* Watkins, Joseph C.

1902
Walsh, Francis H.

1903
* Daily, Cornelius M.
* Fraizer, Isaac P.
* Luther, Walter A.
* Walker, John E.
* Webster, Royal S.

1905
* Kerstling, Felix J.
* Lehman, John L.G.
* Sheldon, Wilbur E.

1906
* Barton, Robert A.
* Burgher, Mark B.
* Phelps, Tracy I.
  Rivera, Ramon

1907
* Cook, Eldon E.
* Perkins, William C.
* Vitt, John T.

1908
* Fowler, James D.
* Neer, Don M.
* Philippi, Paul A.
  Zirulick, Hyman

1909
* Chamberlain, Ernst L.
* Garst, Harvey O.
  Michael, Pearl F.
* Nachtman, Frank X.
1910
* Barton, Robert A.
* Flynt, Frank L.
* Park, Albert
  Peterson, Howard K.

1912
* Hurtgen, John D.
* Naylor, Arch W.

1913
* Ehlers, William Jr.

1914
* Needles, Enoch R.

1915
* Gleason, August W.
* Hatch, Sidney R.
* Smith, Clinton D.

1916
* Ashdown, Byron L.
* Benedict, Ralph R.
* Beyer, Emil L.
* Chamberlain, Ernst L.
* Damotte, Edward V.
* Hoppock, Lewis N.
* Maher, John R.
* McCague, Thomas P.
* Morgan, Don H.
* Naylor, Arch W.
* Sailer, Edward L.
* Schuman, John M.

1917
* Eames, Frederick L.
* Hauenstein, Frederick
* McCandliss, Edgar S.
* Peterson, Carl A.
* Shipley, John J.
* Shriver, Ray O.
* Teas, Howard J.
* Wilson, George B.

1918
* Burkhart, Edgar C.M.
* Zeuch, Walter C.

1920
* Ashlock, Evan E.
* Bardsley, Clarence E.
* Barnard, Charles R.
* Burnet, George Sr.
* Heimberger, Karl W.
* McCarthy, Louis M.
* Needles, Enoch R.
* Novak, Joseph Jr.
* Schuman, Edwin K.
* Wills, Ronald B.
* Zieseniss, Harry W.

1921
* Burkhart, Edgar C.M.
* Colbert, Jules P.
  Williams, Anvil C.

1922
* Bardsley, Clarence E.
* Bolles, Frank C.
* Butler, Joe B.
  Denison, William R.
* Erickson, Roy O.
* Garst, Harvey O.
* Hollow, Edward J.
* Kaullen, Fred A.
* Machin, Edwin G.
* Turnbull, Louis A.
* Zeuch, Walter C.
1923
Brown, Paul M.
* Evans, Owen R.
* Frame, Wayne S.
* Kasel, Rudolph G.
* Teis, Kenneth R.
* Tevis, Charles C.
* Webster, Royal S.
* Werner, Walter A.

1924
Alton, William J.
* Bardsley, Clarence E.
* Bryan, Jean P.
* Butler, Joe B.
Campbell, Jack P.
* Casey, Walter E.
* Crutcher, Welborn B.
* Dierking, George T.
* Drouot, Harold R.
* Naylor, Arch W. Jr.
* Rountree, Newton M.
* Scott, Guy R.
* Sitzler, Carl W.B.
* Teas, Howard J.

1925
* Burnet, Leo L.
* Bush, William H.
* Fink, Frank O.
* Fleming, John W.
Gaines, George D.
* Hauck, William F.
* Heidtman, Homer H.
* Irving, Charles C.
* Lehman, John L.G.
Latts, George B.
* Meng, Paul K.
Mikell, Waring
Pasley, James L.
* Rathbone, Stuart M.
Sanderson, Lawrence H.
Simpson, Wyatt E.
Ward, Ronald D.
* Westgard, James A.

1926
Birchard, Harry C.
* Burg, Walter A.
* Carlton, Ernest W.
* Jett, Daniel B.
Kennedy, Daniel
* Miller, William L.
* Murphy, Harold A.
* Shaffer, Walter J.
Smith, Paul A.
* White, Ronald M.

1927
Abbott, Robert W.
* Blickensderfer, Herman
Bossert, Harry F.
* Chaney, Banner L.
* Diers, Herbert M.
* Gerard, Floyd A.
* Gunther, Roy
Luckfield, Charles F.
* McCauley, John E.
* O'Brien, Edward B.
* Oster, Richard H.
* Rankin, Rolfe M.
Robinson, Lyman M.
* Scheer, Randall A.
* Smith, Alfred T.

1928
Ahrens, Herbert E.
* Burg, Louis J.
* Campbell, Ralph W.
* Dodge, Ralph C.
Faulkner, Edward C.
* Gage, John F.
* Gerber, Theodore C.
* Heckman, John R.
Hill, Albert L.
* Laytham, John W. Sr.
* Machin, William B.
* McGanless, William A.
* Moreland, Howard B.
* Newcombe, Harold H.
* Smith, J. Warren
Walther, John R.
Ward, Ronald D.
1929
* Bolon, Harry C.
  Bryant, Russell A.
* Dittrich, Russell S.
  Kemp, Arthur H.
* Letts, James O.
  Murray, Luther U.
  Palmer, Russell P.
* Parker, Russell H.
* Snyder, Lawrence K.
* Tucker, Francis E.
* Williamson, Joe Jr.
* Young, Enoch C.

1930
  Alexander, Verne
  Barton, Jason E.
* Brand, Fritz H.
  Brickner, Hugo J. Jr.
* Bush, William H.
  Dillingham, Marion A.
  Dover, Thomas J.
  Gerhard, Floyd A.
  Heath, George F.
* Jennings, Charles H.
  King, Lewis H.
  Lacy, Roy M.
  Martin, Roy S.
  McCauley, John E.
  Miller, Dennis H.
* Moore, Percy E.
  Osterwald, Herbert R.
* Pickles, Louis W.
  Regenhardt, Edward T.
* Rucker, Booker H. Jr.
* Scheer, Henry O.
* Wright, Ralph L.

1931
* Broadduus, Wayne R.
* Carlton, Ernest W.
  Damotte, Earl K.
  Donlon, Thomas F.
  Elliott, Ben R.
  Galbraith, Thomas V.
  Gevecker, Vernon A.C.
* Gunther, Arthur W.
* Harrison, Albert
  Hassler, Milburn
  Heilig, Warren
  Huebner, John B.
* McCormick, Raynard E.
* McRae, Austin L.
* Reeve, Lowell E.
  Ross, Charles E.
  Sanderson,
  Lawrence H.
  Shelden, Wilbur E.
  Sperling, Elmer J.
  Sohre, Maurice E.
  Thomas, Ralph P.
  Tiefenbrun, Alfons J.
  Tiemann, Martin G.
  Towse, William R.
  Walter, Edwin G.
  Ware, Walter J.
* Wengcr, Francis E. Jr.
  Wilhite, Clyde E.
* Wilson, Loren A.
  Woelfler, Wilmer H.
  Worseck, Wilford H.

1932
  Andres, Otto M.
* Biggs, Gerald F.
  Birt, Floyd D.
  Brewer, William
  Buegging, Harold J.
  Bryant, Russell A.
  Burke, John C.
* Campbell, Robert L.
* Casey, Walter E.
  Crawford, Edwin O.
* Darnell, William E.
  Davis, Stuart L.
* Flynt, Frank L.
  Happy, Albert W.
  Hinchenh, James B.
* Hollingshead,
  Homer A.
* Hunt, Oliver P.
  Lumbus, Roy H.
* Malik, Frank J.
* Matsuk, John
* McCreight, Richard L.
1932
McGrath, James J. III
Pasley, James L.
* Paulette, Robert J.
* Roesser, Robert J.
* Rydstrom, Richard
* Scheer, Randall A.
* Scott, Guy R.
* Smith, Albert V.
* Snyder, Lawrence K.
Sperling, Elmer J.
Sturm, John T.
* Thoroughman, Frank M.
Tomlinson, Elmer H.
Webb, Clement H.
White, Charles S.
Wiethop, Russell H.

1933
Abbott, Robert W.
Asher, Vernon L.
* Beardsley, Coleman H.
Brown, William A.
Cummins, Thomas V.
* Dodson, Virgil I.
* Doll, Warwick L.
Dumm, Lee D.
Everett, Edred N.
* Ferbrache, Charles P.
* Groom, Robert J.
* Hall, Harold M.
* Harmon, James J.
* Harris, Gene L.
* Hedges, Harry G.
* Helmkamp, Arthur R.
Hickman, Henry S.
* Holderbaum, Charles W.
* Huckins, Julian G.
Hunt, Theodore W.
Kehr, William Q.
Koopmann, William Jr.
Krattly, Homer W.
* Lamers, Clarence W.
Lanz, Fred H.
Livingston, John J.
Mikell, Waring
Pinkley, Rex E.
Putnam, John S.
Roemer, Elmer A.
* Steen, George P.
Tittel, Herbert O.
Wehrman, Alvin A.

* Wiley, Max R.
Williams, Arthur J. Jr.

1934
Absher, Harold R.
* Brasaeme, Ray I.
* Bryan, Jean P.
* Bury, Charles L.
* Campbell, Fulton H.
Darling, James W.
Fagan, Durward E.
* Gettler, Warren R.
* Hedges, William E.
* Henrickson, Hardin O.
* Hurd, Frederick W.
Jackson, Leroy H.
* Krattler, Gilbert L.
* Kruse, Cornelius W.
McKinley, John H.
Miles, Guy R. Jr.
* Murphy, Charles J.
* O'Hearn, John J.
Oswald, Albert W.R.
* Peery, David J.
* Reese, Thomas H. Jr.
* Sackwitz, Robert A.
* Shafter, Walter J.
* Smelser, Paul E.
Sullentrup, Leo J.
* Tuttle, Lauren P.
* Zeil, John H.

1935
Atkinson, H. Budd
* Bates, William E.
Boles, Aubrey J.
* Bolon, Harry C.
Borgstede, George J.
Breuer, Marvin H.
* Campbell, William J.
* Carlson, Ernest W.
Edgar, Max E.
* Gibbons, Howard T.
* Gilisdorf, Nicholas J.
Kennedy, Daniel
* Klee, Fred W.
Mashek, John W.
* McDill, William H.
1935

* Murphy, James J.
* Nixon, Eager W.
* Penzel, George A.
* Rucker, Booker H. Jr.
* Simpson, Raese W.
* Szczuka, Anthony J.
* Tevis, Charles C.
* Towe, Arthur R.
* Turken, Morris W.
* Weissman, Daniel

1936

Adams, Nyle M.
Alper, Albert
Arnold, Frederick W. Jr.
* Aylward, Andrew T.
* Barrow, Carlton W.
* Breunung, George H.
* Cardosi, Louis A.
* Clanton, Jack R.
* Daily, Eugene J.
* Eggleston, Donald A.
* Haines, Frank N.
* Hall, John H.
* Harr, Margaret G.
* Hermann, Arne K.P.
* Kirchoff, Elmer
* Hennefer, James H.
* Michel, Hilbert F.
* Nations, George O.
* Prange, Robert L.
* Schwab, Fred A.
* Thornton, Harry R.
* Worseck, Arthur L.

1937

Bentley, Harold R.
Bishop, Dorse S.
Bommer, Theodore J.
Bossert, Harry P.
* Breuer, Walter F.
* Brown, Buran W.
* Campbell, Fulton H.
* Carrolla, Ross R.
* Dewey, John M.
* Elgin, Robert L.
* Fenwick, Colman L.
* Folsom, Wendell G.

Gould, Edward P.
Graff, Leland E.
Grewis, Oscar E.
Grimm, Donald F.R.
Hackett, Glen N.
Harris, Clarence H.
Harwell, Glen A.
Heslet, Charles G.
Jones, Walter T.
*Kirkham, John E.
* Mattei, Peter F.
* McClanahan, Arthur L.
* Ottinger, Harold N.
* Rodman, Wilfred K.
* Settle, John C.
* Smart, Hillard K.
* Stogsdill, Harry G.
* Stutzke, John F.B.
* Tuttle, Lauren P.
* Vincent, James A.
* Williams, Rex Z.
* Wommack, Thomas W.

1938

Blish, Lewis D.
* Bowden, Don C. Jr.
* Buck, William N.
* Carpenter, Forrest L.
* Cornett, Roy C.
* Decker, William W.
* Doll, Warwick L.
* Folsom, Dudley
* Freidank, Roland D.
* Goodrich, Frank N.
* Holtman, Orvid J.
* Hurd, Frederick W.
* Kelsey, Elmer E.
* Lanier, Eugene B.
* Livingston, John J.
* Murphy, Joseph H.
* Peery, David J.
* Prange, Herbert L.
* Robertson, Cecil W.
* Rogers, Raymond H.
* Scarborough, Ralph L.
* Short, John A.
* Sibert, Kenneth V.
* Stedelin, Kenneth J.
* Stokes, Homer B.
* Wilkey, Ralph W.
* Wolf, Herbert C.
* Woodman, Eugene H.
1939
* Blickensdorfer, Herman
* Brannock, William R.
Bursten, Abraham H.
Clarkson, Arthur W.
Gardner, Robert L.
Gentry, James R.
* Kasel, Rudolph G.
Kenyon, Robert R.
Kidd, Harold S.
* Kruse, Cornelius W.
Livingston, John H.
Livingston, Robert G.
Logrbrinck, Jesse M.
Loveridge, Joel F.
McCaw, Jack
* Mullis, Walter E.
* Pipkin, Philip H.
Pohlmann, Edgar F.
Soult, John P.
Tuckett, Kenneth H.
Ulak, I. James
Vandergriff, Willard C.
Williams, Arthur J. Jr.

1940
Baumstark, Walter A.
* Ferrell, James O.
Hall, Charles E.
Hall, Ralph D.
Hanes, Robert W.
Ladd, Harley W.
Lorance, Robert N.
Miller, Edgar S. Jr.
* Palmer, Clarence C.
Perry, E.L. Roy
* Ross, William A.
Rueff, Edward L.
Rushing, James F.
Schaller, Ronald A. Jr.
Welch, John F. Jr.
* Werner, Walter A.
Wilson, James C.

1941
Alsmeyer, William C.
Ambrose, George G.
Bourne, William H.
Boyd, Robert K.
Brookshire, Robert R.
Burgett, Fred F.
* Danson, Warren R.
* Davidson, R. Fred
DeWitt, Russell E.
Dreste, Jerome P.
Grisham, Marvin C.
Hardine, Kenneth L. Jr.
* Hershkowitz, Leonard
Holland, Edward F.
Johnson, Jane C.
Kyle, Frank K.
Livingston, Kermit F.
* McNerney, John M.
Nickerson, A. Henry
Pace, George H.
Stockton, Herbert R.
Strawhun, Joseph O.
Trisch, Donald L.

1942
Beard, Mark W.
Brockman, Glen C.
Burberry, Roland S.
Cunningham, Richard J.
* Cutler, Robert R. Jr.
Decker, Paul E.
DeForest, Walter R.
Dunn, Lee D.
* Homyk, Anthony Jr.
Hopkins, Rex L.
Hughes, Thomas A.
Knittel, Joseph C.
Love, John W.
* McCallough, Herbert A.
Pollock, William L.
Proctor, Miles W.
* Quick, Jack W.
Sandhaus, Elmer H.
Taylor, Otis H.
* Trotter, Charles R.
Vogelgesang, Edwin C.
Weiss, Robert J.
1943

Amli, Harold E.
Boland, John V. Jr.
Brown, Elmer R.
Davis, James W.
DeValve, Albert S.
Doerrres, John H.
Dolginoff, Wesley J.
Durst, Sterling H.
Glover, James
Hoffmann, William G.
Jett, Glendon D.
Kasten, Raymond O.
Keevil, Albert S.
Kehr, William Q.
Landis, Bruce R.
Lowrey, Joseph J.
Magee, Horace L. III
Marlow, Max L.
Mckinney, Garth G.
Meyer, Orville L.
Mitchell, Charlie K.
Short, Donald H.
Spinner, Leo G.
Studebaker, Donald J.
Stueck, C.F.P.
Weis, Carl J.

1944

Cook, Arthur K.
* Daily, Austin E.
Emerson, Billy F.
Mellis, Robert W.
Presnell, Albert W.
* Sanderson, Lincoln A.
Schoeneberg, Kenneth W.
* Short, John A.
Staley, Glenn L.
* Walsh, Francis R.
Waltenspiel, Edmund J.
Weinelt, Ernst A.

1945

Boyd, Roy H.

1946

* Rankin, Robert C.
Sellers, George A.

1947

Burke, George E.
Cowan, Joseph D.
Fishman, Phillip S.
Hogan, Earl M.
Mann, Robert L.
* Mathews, Ralph A.
Heenen, Arthur R.

Andrews, John A.
Barmeyer, Robert L.
Belew, Elmer W.
* Boyd, D. Dane
Butzer, Harold G.
Carlton, Paul F.
Galavis, Hely J.
Hammann, Eugene E.
Henning, Paul
Henry, George E.
Herrmann, John O.
Holliday, Henry W.
Kendall, Robert H.
* Kruse, Henry J. Jr.
Laehmeyer, Raymond H.
Leone, Anton
* Lewis, Dwight E.
Liddell, John W.
Little, J. Edward
Livingston, Robert G.
Loffelholz, Ervin H.
Lyle, Samuel H.
Perryman, George I. Jr.
Rankin, Norman O.
Snowden, J. Russell
Thorwagen, Albert H.
Topping, Alanson D.
Vaughan, Kenneth W.
Wegener, Wilbert F.
1948

Anderson, Nels A.
Austin, Thomas E. Jr.
Ayers, Oscar B.
Benn, Edward H.
Bermel, Peter F.
Bott, Winston F.
Bowman, James R.
Broadbent, Elmer R.
Cardin, Audie V.
Chaffin, James E.
Collar, Donald H.
Conyers, Jesse M.
Cooper, John A.
Corrigan, John E.
East, Joe C.
Ellis, Maurice H.
Fisher, James R.
Fitzpatrick, Joseph W.
Fleher, Walter C.
Gardner, Rufus H.
Gevecker, Robert V.
Gollub, Wayne
Goren, Ralfrd
Grady, William J. Jr.
Gunter, Joseph W.
Hackman, Glen N.
Halcomb, Samuel P.
Held, Robert E.
Heuembourg,
Frank D. Jr.
Hershkowitz, Leon
Irwin, Worth A.
Jambor, James R.
Johnson, Charles C.
Jones, Eugene F.
Kinsman, Theodore J.
Kram, Paul
Leake, William A.
Leaver, Harvey B.
Masterson, John H.
McCarthy, John F.
McGuire,
Albert G. Jr.
McKinney, John D.
Moe, Harold G.
Needham, Honell E.
Neustaedter, William E.
O'Neill, Lawrence F.
Paschal, Edward F.
Price, Charles W.
Raining, Richard C.
Rhoads, Donald E.
Riley, Donald A.
Robbins, Irvin D.
Schoeneberg,
Kenneth W.
Smith, David G.
Spinzig, Edgar W. Jr.
Stauffer, Clyde M.
Swientek, Raymond H.
Thurman, William H.
Warren, Glenn W.
Watkins, Paul A.
Watts, Aubrey B.
Weinel, Ernst A.
White, Robert T.
Wicker, Grover R.
Wilson, William E.
Wurth, Maurice D.

1949

Anderson, Douglas
Barkley, James E.
Bay, Robert D.
Becker, Alan A.
Berry, Jerome T.
Bieber, Philip F.
Boaz, Robert V.
Boeckman, George O.
Bottermuller,
Charles A.
Brouer, Coy L.
Brookshire, Robert R.
Bullock, Rupert E.
Carney, W. Dale
Coplen, Roy I. Jr.
Daniells, Charles P.
Danzer, Carl J.
Davidson, R. Fred
Dean, Donald L.
Deason, Roy B.
Dougherty, Eddie L.
Duba, John G.
Ellis, Robert C.
Findlay, John F.
French, Robert G.
Graham, Alfred E.
Grojean, Theon F. Jr.
Hartz, Frederick R.
Helm, R. William
Hershkowitz, Leon
Hook, Henry A.
Hutton, Hugh S. Jr.
Ingold, Louis B.
Jenkins, Roger W.
Jones, Sam P.
Juenger, George J.
Juneau, Edward N.
Kelly, Roy G.
Kemper, Robert J.
* Kimmick, Edward J.
Lenox, William H.
Lester, Howard E.
Letizia, Daniel P.
Lightfoot, Edward S.
Lloyd, Charles H.
* McCord, Monte W.
McGrath, James B.
Miller, Fred J. Jr.
Mulinaux, Clifton K.
Myers, Bob B.
Myers, Howard R.
* Pace, John H.
Pankiewicz, Charles E.
* Parsons, Robert R.
Ratcliff, John J.
Raymer, Gordon E.
Robinson, Forrest G.
* Russell, Raymond H.
Sappington, Walter L.
Schaefer, Emmett A.
* Schlemmer, Lee R.
Schultz, Edward C.
Shaver, Arthur J.
Shaw, William H.
* Short, Keith E.
Steele, Harry B. Jr.
Strubert, Joe N.
Tanner, Paul E.
Teas, William C.
Telthorst, Harold M.
Tindall, Robert F. Jr.
Tippit, Vaughn E.
Tucker, Arthur L.
* Turner, William E.
Twombley, Robert C.
Viles, Landon C.
Weber, Arthur H.
Weismantel, William L.
Werner, Edwin J.
Winters, Fred E.
Wirfs, Thomas P.
* Wisdom, David G.
Workman, William F.
Yochum, Robert J.

1950

Akkoseoglu, Faruk O.
Andreasen, Ralph A.
Arnold, Hubert T.
Auld, Thomas
Averbach, Phillip
Bailey, Allen B.
* Baker, James R.
Bartels, Eugene A.
Benson, Clark H.
Benson, Francis M. Jr.
Berger, Laurel D.
* Bounds, Ivan L.
* Bowling, Charles P.
Breuer, D. Wallace
Bucha, William F.
Cantwell, Laurence W.
Carney, John L. Jr.
Chambers, Frank T.
Chapman, Harrison E. Jr.
Clark, William W.
Clifford, Richard E.
Coffelt, Jack K.
Cox, William H.
Craig, Curtis L.
Crimmins, William M.
Crowell, Homer
* Daetz, Charles K.
Day, Russell
* Beckard, John C.
Deppe, Eugene
* Deshon, William R. Jr.
Detjen, Richard F.
Dickinson, Daniel R.
Dolecki, Stanley
* Dressler, Robert D.
Dun, Karl H.
Durusam, Melih S.
Edgington, Anthony N.
Edwards, Robert W.
Elliott, James O.
Enfield, Bernard M.
Faires, Glenn R.
Faith, Robert V.
Farrow, Charles T.
Faulkner, William C.
* Ferrero, Dominic
Fiebelman, Jacob P.
Fleming, Robert G.
George, O. Kenneth
George, R.J.
Gevecker, Vernon A.C.
Glenn, Donald L.
Gminski, Eugene S.
Gore, Arthur G.
Green, Paul W. Jr.
Greenberg, Aaron J.
Greenblatt, Albert M.
Guth, Jack E.
Hagan, Warren E.
Hardy, Rolland L.
Harrison, Richard N.
Hawkins, Irvin J.
Henderson, William B.
Herrmann, Thomas A.
* Hoffman, George C.
Hofstaedter, Gerard F. Jr.
Horsley, Joseph J.
* Houska, Howard
Hughes, William P.
Hyde, James C. Jr.
Johnson, Ray B.
* Johnson, Warren H.
Keller, Herman C.
Kanatsiz, Necati
Kellison, George B.
Kelly, Peter B.L.
Kennedy, J.C.
Knowles, Carl M.
Kruse, Arthur O.
Kuehnert, Arlen E.
Laumann, James L.
Lay, George R.
Lieber, Gerald
Liebsch, Jack A.
Lindimore, Eldon C.
Livingston, Robert G.
Longolius, Walter C.
Lukrofka, Lovell J.
Lyons, Francis D.
Manetzke, Joseph C. Jr.
Marshall, Donald W.
McCarthy, John F.
McNally, Warren E.
McNulty, Patrick J.
* Mendell, Robert H.
* Meyer, Roy G.
Miller, Bruce F.
Miller, James E.
Miller, Lester L.
Muir, Clifford D.
Newlin, Phillip B.

Nichol, Alexander J.
Nichols, John W.
Norris, Marion E.
* O’Connor, James W.
O’Dell, Harry B.
Oliphant, John D.
* Ouzer, Seymour
* Ozilien, Kaya I.
Painter, John L.
Parker, R.C.
Patten, Robert I.
Paulselli, Robert E.
Pendracky, Walter J.
Phillips, Lloyd B.
Poliquin, Thomas E.
* Randle, Joe E.
Rapp, Robert A.
Reeves, Theodore J.
* Rigg, Joseph E.
Rigo, Henri S.
Roberts, J. Kent
Robison, Leslie B.
Rose, Robert T.
Saml, Ragip M.
Satterlee, John D.
Schmidt, Robert N.
Schneider, Robert W.
Schwab, Richard E.
Scoom, Roy J.
Serafini, E. Max
Slocum, George G.
Smith, Robert E. Sr.
Snyder,
L. Phillip Jr.
Sontag, Jack A.
Speace, William E.
Steble, Robert R.
Steuterman, Jack A.
Strong, John F.
Tate, David E.
Terry, R. Milton
Theerman, Harold B.
Thompson, Homer F.
Timmer, Donald H.
Tindall, Robert F. Jr.
Trianda, John
Turk, James
Unsell, Vester B.
Van Nort, John R.
* Vories, Alfred D. III
Wagner, Bernard C.
Walker, Dale E.
* Warren, Eugene W.
Wegener, Wilbert F.
Weinstein, William
Whitfield, Thomas H.
* Wieland, Warren R.
Williams, Richard C.
Wisch, William L.
Wood, Dustin J.
Yeckl, Frank M.
Zerweck, Carl E. Jr.

1951

Altmann, Stanley
Arnold, John M.
Baldwin, William M.
Ballestero,
  Antonio P. Jr.
Ballew, James E.
Beatty, Joseph A.
Bellis, Gerald B.
Bertel, Donald
* Bishop, Billie J.
Borgers, Julian W.
Brakensiek,
  William E.
Broadus, Richard D.
Burkhardt, Billy L.
Burkhead, Kenneth C., Sr.
Burstein, Murray
* Buss, Robert W.
Chappell, John R.
Clark, Howard T.
* Clark, John W.
Cohen, Donald A.
Cook, Laverne F.
Cotten, Merrill R.
Crowell, Gilbert L.
Dalton, Thomas J. Jr.
Dasenbrock, Arthur A.
* Day, George P.
Dean, Donald L.
Dubois, Robert D.
Eissinger, Karlheinz
Elwood, William H.
Fahs, Donald G.
Fritschens,
  Herman A. Jr.
Ganley, Robert J.
Gorman, William H.
Griffith, John B.
Hackel, William K.
Halcomb, Samuel P.
Harrawood, Paul

Heagler, John B. Jr.
Henson, Gerald L.
Heyl, Arthur N.
Houghton, Clark F.
* Hubbard, Jack L.
Huber, Richard G.
* Hughes,
  Chester K. Jr.
Jayne, Harold M.
Johannesmeyer,
  Herman M.
Kaplan, Newton H.
Keller, Russell M.
Kircacacioglu,
  Ali A.
Knepper, Andrew E.
Koedding, August F.
Kramer, Frank A.
Lancaster, Edgar M.
Lange,
  Clarence A. Jr.
Laumand, Kenneth J.
Lesniak, Louis P.
Lillibridge, Robin
Llewellyn, Henry D.
McDaniel, Halon D.
McIntyre, Albert B.
McLuckie, Walter L.
Meyer, Daniel
Moy, Harry
Nelson, Donald A.
Niemeler, Herman R.
Norton, Marion J.
Oldham, William R.
Parrish, David D.
Payne, Grover C.
Pearson, Walter O.
Penick, Marion S.
Peterson, Forest R.
Roach, Warren D.
Roberts, William H.
* Roetzel, J.D.
Ross, Leroy E.
Sabo, Eugene L.
Sale, Jack R.
Schweizer, Charles T.
Senne, Joseph H.
Slankard, Robert C.
Smith, John E.
Smith, Leslie E.
Spilman, James A.
Swisher, Roger H.
Tester, Hubert G.
Theeran, Wilber K.
1951 (cont)

Theiss, John C.
* Vansant, Robert E.
Warner, George H.
Waters, Charles R.
Watson, Harry G.
Wees, Francis E.
Wehmeier, Lee M.
Wenel, Robert
* Winchester, Billie J.
Winchester, Robert L.
Wohlert, William H.
Yali, Cevat H.
Zane, Robert I.

1952

Abernathy, Thomas S.
Alvarado, Frank T.
Anderson, George V.
Arnold, William J.
Basler, Francis S.
Boeckman, George O.
Borberg, James R.
Bowlin, William H.
Bredesen,
Karsten A. Jr.
Calcaterra, Edward L.
Corrigan, Richard J.
* Crabtree, Barnett O.
DeLapp, Kenneth L.
* Drewel, Billy H.
Dye, Robert A.
Ferguson, Wallace
* Finegar, William A.
* Fink, Clyde H.
* Firman, Harry W.
Flore, Robert E.
Fons, Rodney C.
Gleiser, Marcos
Harman, Charles W.
Helgerson, Wayne E.
Henry, Richard L.
Henslee, Radius T.
Heying, Lewis M.
Hoffmann, Ronald A.
* Hubbard, James R.
Huffman, Gene A.
Hutchinson, Leigh
King, Gerald S.
Knock, Daniel C. Jr.
Laytham, Eugene M.
Laytham, John W. Jr.
Linneman, Joseph F.
Lush, Rolla S.
McCannmon, Donald P.
McLeane, Robert W.
Menke, Gregory V.
* Moore, Franklin L.
Mosley, Forrest C.
Moy, Hong S.
Mulholland,
John E. Jr.
Nolan, John B.
Nunez, Howard W.
Pawloski, Bernard L.
Penney,
William M. Jr.
Priest, John E.
Rafferty, Raymond F.
* Robinson, David H.
Sabo, Virginia F.
Samimi, Mehmet K.
Schoenbeck, Robert H.
* Searcy, James K.
Sheehan, Maurice K.
Stites, Wilbur D.
Stopkey, Waldemar D.
Stovall, John N.
Tankersley, James H.
Taylor, Cleo E.
Thompson, Homer F.
Van Bubber,
James A. Jr.
Vaporean, Paul O.
Varancouskas,
Joseph P.
Westmoreland,
Darus S. Jr.
Wong, Arthur S.
Wong, Hong
Zvanut, William H.

1953

Akers, James E.
Anderson, Charles A.
Augustson, Luther B.
Barton, C. Dean
* Christian, Charles E.
* Clark, John W.
Cole, Henry M.
Crane, Harold R.
Dannenbrink, Wayne C.
Diebold, Francis L.
Dill, Earl R.
Dinc, Ali E.
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1953 (cont)

Eason, Jack L.
Edwards, Gene W.
* Fisher, Robert B. Jr.
Fosha, Albert A. Jr.
Frey, Martin A.
Garten, Randall L.
Gogel, Donald D.
Getson, Eugene M.
Gillham, Virgil Jr.
* Greaves, Bruce A.
Hansen, Peter G.
Haynes, Hyron B.
* Hayns, Donald L.
Hoefer, Charles H.
Heimbaugh, Kenneth G.
Jenkins, Robert D.
Jones, Robert A.
Jones, Vernon T.
Jost, Robert D.
Kent, Nevada A. III
Kronmueller, William W.
LaBouff, Gerald J.
Leitner, Wells N.
* Lilly, Donald L.
Lischer, Harry R. Jr.
Ludewig, James F.
McMasters, Richard N.
Nodde, Dale E.
Myers, Eugene W.
Ordemann, Robert G.
Orer, Dundar S.
Proctor, Donald E.
Reyes, Mauricio
Reynolds, Joe B.
Robbins, Clay
Roberts, James F.
Schaefer, Louis A.
* Schiermeyer,
Harry J. Jr.
Schurick, Nicholas
Seipel, John R. Jr.
Smith, Walter R.
Spencer, Donald W.
Steele, David I.
Stephenson, Bennie E.
Strohbeck, Eugene E.
Thompson, George W.
Thompson, James E.
Thrall, Dowell J.
Topel, Maurice R.
Valla, Robert R.
Vienhage, Robert P.
Wade, Jack K.

1954

Affolter, Earl G.
Allmeyer, Milton A.
* Argo, James W.
Auten, Roy D.
Burgett, Max A.
* Camenzind, Jack H.
Cole, Kenneth D.
Conci, Frank B.
Fowler, Thomas R. Jr.
Geisler, William F.
Gerard, James A.
Gevecker, Robert V.
Hake, Bruno H.
Heagler, John B. Jr.
Highfill, James K.
* Hinken, Lawrence R.
Humphries, Richard N.
Ilter, Ahmet
Jolly, John G.
Jones, James C.
Juskie, Bernard R.
Kemp, Arthur H. III
Krispin, Joseph F.
Krueger, Roger A.
Lincoln, Herbert E. III
Munson, William P.
Niemeyer, Norman W.
Norris, Sidney B.
O'Brien, Robert G.
Patterson, J. Robert
* Rabe, Harold E.
Ravies, Richard E.
Riemenschnitter, Donald L.
Schmidt, Milton E.
Shoolbred, Robert A.
Southall, Morris G.
Stewart, William H.
Woodall, William R.
Young, Edward H. Jr.

1955

Allison, David E.
Anderson, James S.
Baker, Chester H.
Bening, Robert G.
Best, John L.
Broaddus, Wayne R. Jr.
1955 (cont)

Bushko, Joseph G.
Carroll, Frank L.
Casler, Walter J.
Chillik, Julius A.
* Cowan, Harry D.
Davis, David J.
DeLarm, Leon N.
Elswick, James L.
Friederich,
Garland C.
Germer, Charles B.
Gollhofer, Frank R.
Heavlin, Harold D.
Held, Lawrence Jr.
Hutchings, Paul A.
Johnson, Richard E.
Kingsbury, Ronald M.
Kosakowski,
Zygmond S.
Kummer, Frederick S.
Lane, Thomas F. Jr.
Leong, Judson
Lidster, William A.
Marlow, James W.
Martin, Robert J.
McCarthy, John M.
O'Neill, William J.
Owens, Robert E.
Parker, Perry L. Jr.
Penzel, G. Gene
Picker, Delmar E.
Plache, Kurt O.
Prager, Martin
Randolph, John B.
Ray, Herman A.
Redel, Peter O.
Rethmeyer,
James W. Jr.
* Roberts, Joe B.
Roesler, Ralph R.
Rutsky, Joseph M.
Schaefer,
Robert K. Jr.
Schuman, Charles W.
Scott, Julius N.
Senter, Lloyd O.
Skubic, Raymond J.
Smith, Floyd T.
Sprick, Robert W.
Stewart, Gene E.
Stewart, Raymond A.
Stimson, William R.
Summers, John W.
Thompson, Harold S.

Walsh, Robert P. Jr.
Webster, Royal S. Jr.

1956

Atkinson, Henry R.
* Barnard,
Charles R. Jr.
Berger, Charles A.
Block, Carl G.
Burleson, Otto L.
Capek, Frank J.
* Clark, John W.
DeWitt, Carl L.
Dillon, Joseph B.
Doerr, Earnie J.
Edmonds, David G.
Gribble, Valgene
Grinstead, Willis G.
Hammond, John R.
Hardy, Rolland L.
Hartman, Bert E. Jr.
Hercules, Hubert R.
Herndon, Richard S.
Hirsch, Richard P.
Houser, Daniel J.
Hughes, Richard A.
* Jackson, Frederick E.
Jenkins, Lloyd H.
Ketcham, David L.
Kleberger, Kenneth A.
* Long, James E.
Mahoney, Michael G.
* McCrea, Robert E.
Meyer, Frederick E.
Midgley, Myles J.
Muhlbauer,
Karlheinz C.
* Parker, Richard A.
Peck, Edwin R. Jr.
Queen, David F.
Resnick, Rudolf
Rhoades, Richard A.
Robbins, Robert L.
Roemer, William E.
* Schloemer, Thomas D.
Senior, George L.
Statler, Kennyn D.
Stephenson, Norman D.
Stewart, Bobby J.
Taetz, Phillip J.
Tausser, Raymond H.
Teodor, Phillip F.
1956 (cont)

Thompson, David E.
Thompson, LeRoy E.
* Townsend, David W.

1957

Adams, Kenneth D.
Alch, Wayne F.
Anderson, Robert W.
Atchley, Bill L.
Baldwin, William M.
Ball, Bill D.
Ballard, Darrell D.
Ballard, Donald S.
Bardelmeier, August R.
Barton, Glenn E.
Basford, Donald E.
Bayless, John W.
Best, John L.
Campen, Edward B.
Carpenter, Herbert W.
Cole, Carl D.
Collins, Thomas J. Jr.
Couch, Patrick S.
Demzik, William G.
Dugan, Robert L.
Feaster, Jack L.
Feaster, Roger L.
Franklin, Billy W.
Frey, Charles A.
Geil, Warren C.
Glover, James R.
Godzwon, Gerald C.
Gray, William K. Jr.
Groppe, Norbert A.
Grunz, Domm G.
Harrwood, Paul
Heagler, Richard B.
Henson, Hershel L.
Hilmes, Ralph C.
Hinds, Robert E.
Huffman, Roy G.
Illert, Harry W.
Jennings, Theodore L.
Jones, Floyd C.
Kalinowsky, Joseph F.
Keene, William C.
Keller, Kurt A.
Kick, David D.
Kobs, Ernest C. Jr.

Kozeny, Donald J.
Landers, Robert G.
* Long, Charles A.
Lorenz, James B.
* Lueke, Eugene E.
Lush, Rolla S.
Marschel, Ronald E.
Marshall, Donald L.
McLeane, Robert W.
Melton, Harold L.
Meyer, Harry M. Jr.
Miller, Charles L.
Moore, John W.
Mueller, Richard D.
Needham, William R.
Nelson, William D.
Pyle, Elmer G.
Rives, James C.
Roberts, Ronald J.
Schneider, Robert W.
Scoggins, John R.
Sontag, Kenneth E.
Spilman, James A.
Stites, Wilbur D.
Stribling, Jerry D.
Tanquary, Clifford C.
Thye, Carl J. Jr.
* Venable, Wilford G.
Watteu, James E. Jr.
Wenthe, David H.
Wiemken, Carl F.
Williams, H. Bob
* Winn, Leon D.
Wolverton, Joseph H.
Wommack, Richard M.
* Worman, Forrest D.

1958

* Armer, Virgil C. Jr.
Ball, Jack E.
Baruch, Richard M.
Behnken, Rolland W.
Bennett, Riden T. Jr.
Boyett, Richard E.
Buchanan, John O.
Burlbaw, Herbert G.
Correll, Howard D.
Crowe, Joseph E.
Dajani, Walid Z.
Degenhart, Edward R.
Duddridge, Kenneth J.
1958 (cont)

Dunn, Karl H.
Dye, William B.
Elliott, Leslie M.
Farrell, Thomas J.
Foster, Calvin W.
Franke, George E.
Frankenberg, Raymond H.
Farrell, Richard R.
Gaebler, Arnold E.
Geil, Walter C. Jr.
Gioiosa, Thomas E.
Gray, George B. Jr.
Gregory, Donald B.
Gruel, Fred W.
Gunther, Roy J.
Hager, Chester L.
Hall, Floyd

* Harbaugh, Terence E.
* Hart, Donald R.
* Haydon, Jack B.
* Head, Eldon W.
* Headger, John B. Jr.

* Henderson, Robert L.
* Heumann, Carl J.
* Hill, Frank W.
* Hoffman, Charles R.
* Jackson, Philip W.
* Kilgo, Robert R.
* Kirse, John F. Jr.
* Klohr, Dale L.
* Kreigh, Wilbur K.
* Kruger, Arthur R.
* Landry, Robert L.

* Lenox, Marion W. Jr.
* Leong, Judson
* Lichius, Howard W.
* Littlefield, Jerold K.

Luebbert, William J.
Lund, Niels H.
Mantovani, Eugene O.
McNeill, Richard L.
Meyer, Dwight L.
Meyer, Larry B.
Mickes, Joseph A.
Miloro, Joseph Jr.
Nodesitt, Donald E.
Montgomery, William R.
Mueller, Theodore B.
Muhlbauer, Karlheinz C.
Mulford, Luis A.

* Hunger, Paul R.
* Newton, Kaye E.
* Northup, Wallace E.
* Nowacki, C. Raymond
* Peel, Wesley E.

* Ringenberg, Charles P. Jr.
* Roberts, Joe B.
* Robson, Eugene
* Russell, Eugene R.
* Schriever, Byron N.

* Schuerman, Robert L.
* Sfreddo, Humbert E.
* Shea, James M.
* Showaki, Joseph A.
* Singer, Paul L.
* Skouby, Marion C.
* Smith, William J.
* Strain, Robert E.

* Straub, Frank W.
* Strub, Dale A.
* Sullivan, Charles H.

* Watson, Robert L.
* Weddle, Curtis E. Jr.
* Weeke, William H.
* Weisenstein, Don J.
* Werbitzky, Harry M. Jr.
* Williams, Rex C.
* Winter, Lester H.
* Wright, Gerald L.
* Zieba, Robert G.
* Zieba, William D.

1959

Anders, Donald G.
Andros, Nick J.
Asher, Charles E.
Atchley, Bill L.
Aubuchon, Robert D.
Baskin, Charles G.
Bayless, Jerry R.
Beard, Dale F.

* Blankenship, James E.
* Bolon, Lucien M. Jr.
* Boughton, Richard B.
* Bowlin, Leo L. Jr.
* Bradley, James E.
* Bramon, Gerald A. Jr.
* Brew, Francis R.
* Brown, Brisbane H.
1959 (cont)

Bruegging, Harold J.
Bruegging, John J.
Brunjes, William S.
Buckner, Boyce B.
Burke, William G.
Cain, Clarence Jr.
* Canady, John E. Jr.
Casagrande, Ronald C.
Chaney, Joe L.
Chullaio, Gary B.
Clem, Carroll A.
Cornell,
William W. Jr.
Deddens, Allen E.
Dennis, Ralston K.
Biler, Anthony
Donelson, David L.
Erkman, Erkman
Ewing, Amos D.
Feaster, Donald R.
Fuesting, Arthur W.
Fuller, John E.
Gambill, Charles L.
Gazda, Andrew J.
Gazda, Lawrence P.
Gilmore, Rex A. Jr.
Godsy, James D.
Goldin, Herbert A.
Groves, Richard B.
Gunn, Gary Y.
Hall, Daniel D.
Handkins, Robert E.
Hoagler, Robert M.
Heidemann, Joseph E.
Henderson, Donald E.
Henson, James W.
Hertzberg, Donald H.
Hess, Robert M.
Heston, Wayne E.
Horky, William F.
Ingle, William L.
Jackson, James D.
Jackson, John R.
Jones, Denzil E.
Joslin, James L.
Kelley, Kent C.
Kennedy, Ralph C.
Krugger, William A.
Kurz, Caryl M.
Lindsey, Kenneth R.
Hallow, Henry L. Jr.
Mason, John H.
Matlock, Clarence D.
McCarthy, Thomas A.
McHugh, Alan H.
Meisenheimer,
Harold D.
Moore, Robert L.
Mount, Ronald J.
Niedringhaus,
Edward L.
Olson, Harold A.
Olson, Philip T.
Pasley, John L.
Pate, Henry A.
Payton, Jan H.
Pearson, Richard D.
Plank, R. David
Pollard, Charles E.
Ramsey, Robert E.
Randels, Dale K.
Reichert, Joseph F.
* Rhea, Charles F.
Robert, Troy R.
Ross, Richard G.
Ryder, Thomas
Schumacher, Carl R.
* Schaible, Billy L.
Selle, Gerald O.
Sherwood, Lloyd J.
Shoemaker, James L.
Simpson, Charles R.
Sisk, Paul B.
Slinkerd, Paul H. Jr.
Smith, Gaylon G.
Smith, Jerry E.
Soulit, John P.
Spruill, Victor F.
Stadelman, J.R.
Street, Thomas J.
Thompson, Richard L.
Thompson, Richard N.
Trabue, Donald L.
Tross, Ralph G.
Ulmer, Jack L.
Volkert, Ronald E.
Wakefield, Edward O.
Werner, Donald E.
Williams, Ross L.
Willig, Karl D.
Winkler, Norman E.
Wood, William S.
Wright, Robert R.
Wulfers, Carl E.
Ziegler, Larry N.
1960

Amend, John T.
Anderson, John C.
Anderson, William A.
Angle, Ralph G.
Bangs, Joseph F.
Bannister, Larry C.
Barrand, Kerwood W.
Bell, Dewayne A.
Benz, Paul W.
Bhalani, Shreel K.
Blackwell, Carrol L.
Blalock, Charlie L.
Blevins, Howard L.
Boss, Ronald J.
Boston, Lawrence A.
Bowers, Martin J.
Brauer, Arthur W.
Burke, Thomas D.
Cain, Larry J.
Carlstrom, Edward C.
Carlton, Paul F.
Carpenter, James A.
Carver, Ronald P.
Cassady, Thomas G.
Chen, David K.
Coats, Willis R. II
Cooper, Thomas W.
Corbin, Kenneth D.
Craig, Charles M.
Daubel, Karl J.
Davidson, Danny E.
Davis, Garrett L.
Dex, Wayne R.
Dickens, Walter H.
Eaves, Kenneth F.
Ferrero, James K.
Fink, Gerald A.
Fisher, Gerald L.
Flagg, Lelia M.
Flaim, Louis P.
Frankenberg, Raymond H.
Fulton, Frank W.
Gilbert, William J.
Girijavallabhan, Chilyyarath V.
Godzwon, Gerald C.
Groner, Richard S.
Grubba, Edward C.
Gunther, D. J.
Halbrook, Thomas R.
Hall, Johnnie E.
Harty, John W.
Hauth, Leland D.

* Hollenberg, Robert L.
Hooper, Ronald T.
Housholder,
Farmer Jr.
Hyatt, Gordon R.
Jankowski, Edward J.
Karakurt, Tuncer
Kelsick, Robert W.
Kern, John H.
Kieffer, Robert C.
Klebb, Kenneth T.
Lee, Winhow C.
Lemberger, Robert A.
Lemke, Merrill M.
Logsdon, Donald L.
Love, Harlie M.
Lovelace, James T.
Lynch, Arthur C.
Marshall, Robert C.
Martin, Henry T.
Mehta, Bhupat H.
Mayerhoff, Roger L.
Moellenbeck,
Albert J. Jr.
Morris, Edgar L.
Mulherin, Thomas L.
Munnell, B. Douglas
Odendahl, Leo A.
O'Neill, William J.
Owens, Boyle F.
Ozoguz, Ugur
Patterson, Robert W.
Pearce, Robert L.
Phelps, Walter D.
Ponzer, Henry L.
Popp, Lawrence W.
Reeves, Charles R.
Rizer, Gene C.
Robison, Carol L.
Sands, Samuel E.
Schabbing, Charles E.
Schwartzburt,
Allen H.
Senter, Lloyd O.
Shelton, Jerry L.

* Spencer,
Morris D. Jr.
Taylor, Leo F.
Taylor, Richard K.
Tharp, Charles E.
Uline, Clark C.
Vahrenhorst,
Melvin H.
Volker, Ronald E.
Wade, Billy C.
### 1960 (cont)

- Wallace, Charles R.
- Walther, James J.
- Walton, Edward E.
- Watson, Frank
- Whelan, Raymond A.
- Wisdom, Donald A.
- Wisdom, Gerald H.
- Woods, Alvin H.

### 1961

- Abernathy, William E.
- Adams, Charles T.
- Ahmed, Tumkur M.A.
- Akey, Charles D.
- Avery, M. Ronald
- Ayik, Necdet
- Barr, Richard J.
- Barton, Stephen F. Jr.
- Baumgartner, Gary R.
- Biermann, Robert G.
- Blichmann, Donald J.
- Bobbitt, Ronald I.
- Boe, Richard I.
- Bosse, William R.
- Boyer, Lester O.
- *Bradley, S. Keith
- Brake, Richard L.
- Brenning, Eugene D.
- Brinkman, Glen A.
- Brunkhart, Gerald E.
- Buchanan, John O.
- Burke, David H.
- Capek, Frank J.
- Charboneau, Robert A.
- Chiodini, Louis J. Jr.
- Collman, Charles D.
- Craig, Robert L.
- Cunha, Frederick R.
- *Dennis, John H.
- Denton, Lyn A.
- Donshoe, Thomas E.
- Ealum, Richard L.
- Edisson, Jerry D.
- Ellicott, Edward L.
- End, James L.
- Evans, Donald L.
- Farmer, Larry E.
- Franke, Earnest R.
- Fread, Danny L.
- Galliher, K. Don
- Hahs, Jimmy D.
- Hake, Orville L.
- Hampe, Richard A.
- Hanlin, Harold L.
- Hare, Norman W.
- Harris, Robert A.
- Hartman, Donald F.
- Havens, John D.
- Heatherly, Ronald L.
- Heglin, Russell S.
- Henson, Donald L.
- Hill, Jimmie L.
- Hollenbeck, Charles F.
- Huff, Fred V.
- *Hutchenson, Dwight R.
- Kamicar, James R.
- Kern, John H.
- Kiefer, Charles A.
- Kilburn, Darrell D.
- Kincaid, John B.
- Klein, James E.
- Koesterer, Herman L.
- Koke, Robert J.
- Kron, James F.
- Leslie, Jerome A.
- Lewis, Robert L.
- Loncarich, Donald W.
- Lortz, Francis E.
- Lucas, Wayne L.
- Mansbridge, Herbert L.
- Mathews, William E.
- McCarthy, Basil E.
- McGillan, Cecil E.
- McShannon, Malcolm
- Mehta, Bhupat H.
- Mehta, Dinker L.
- Meller, Ralph J.
- Merkel, Edward F.
- Merritt, John F.
- *Mitchell, Frank B.
- Moore, Kenneth D.
- Munger, Paul R.
- Mungle, Burlin D.
- *Murphy, James J.
- Nelson, Jack D.
- Noggle, Thomas G.
- Oberkramer, Ray E.
- Owasley, David V.
- Patel, Hasmukhbbhai S.
- Perkins, Joseph L.
- Perry, Ernest B., Jr.
- Pettibon, Robert B.
- Pezza, Anthony D.
Pfefferkorn, Bill J.
Prothero, Ronald P.
Randolph, Robert W.
Rathburn, Vinton L.
Redington, Eugene C.
Reuter, Jack L.
Robinson, Richard W.
Rodolph, Carl P. Jr.
Saxer, Robert M.
Skelton, Metz K.
Smith, Neil Ed
Smith, Roy B.
Southern, Merle E.
Spieldoch, Richard B.
Stadelman, John F.
Stevenson, Curtis W.
Stidham, James A.
Story, Jesse A.
Stovesand, James H.
Striebel, Ronald I.
Sturm, John P.
Swier, George A.
* Teague, Martin W.
Thompson, Robert L. Jr.
True, Daniel W.
Turner, Terry G.
Twelle, Michael N.
Ulugonul, Yurdakul O.
Waddell, Joseph F.
Walton, John W.
Weber, Roger C.
Whitehead, Robert W.
Wiethop, R. Harve
Willey, Robert B.
Williamson, Rayburn L.
Wolf, Sherman A.
Wolfinbarger, Samuel L.
Wood, Graham W.
Wright, John C.
Wu, Ping Y.
Ying, William H.
Yolar, Ismail
Zieba, Donald J.
Zimmerman, Robert G.

1962

Barksdale,
Clifford B.
Bates, Don E.

Baumgartner,
William L.
Baxter, Boyd R.
Bayless, Jerry R.
Behrens, Ralph L.
Beuerlein, Donald E.
Bhatia, Kanaya L.
Boje, William A.
Boyd, Gerald M.
Brashers, Jim G.
Breitenfeld,
Richard T.
Brown, Norman L.
Burris, Elmer L.
Carr, Virgil E.
Carrasco,
Valentine E.
Carter, Lawrence L.
Chapman, Keith E.
Cheng, Aylmer P.
Cline, Larry D.
Coad, Edmond L.
Coester, Jan W.
Cole, Fred V.
Douglas, Arthur
DeLarm, Dale L.
Dell, Jack H.
Dennis, Ralston K.
Dischner, Edward E.
Duncan, Jack L.
Edmonson, Roger A.
Elfrink, Lindell H.
Engel, Byrl J.
Engineer, Rajendra B.
Ferguson, Gary L.
Fields, Sidney L.
Fouraker, Joe F.
Fuemmeler, Norbert E.
Gardner, Norris L.
Gentry, Roy G.
Grate, George R.
Green, Lawrence D.
Hahn, Floyd H.
Hammond, Michael W.
* Harbaugh, Terence E.
Harmon, James R.
Hasrajani, Murli U.
Hassler, Emmet K.
Hayes, Paul G.
Heagler, Richard B.
Henson, Lowell L.
Hoffman, Charles R.
Hoffmeister, Jack L.
Hopper, Richard A.
Horst, C. Allen

* indicates deceased
1962 (cont)

Huber, Richard G.
Hyberger, Robert L.
Hyde, James L.
Jacobsmeyer, Arthur J.
Kamper, Russell A.
Kick, David D.
King, Jerry A.
Knoll, Patrick G.
Larason, Norman G.
Leonard, Karl G.
Lucas, Earl W.
Lux, Ken C.
Mainprize, Othel H.
Malsch, Peter H.F.
Marler, James F.
Martignon, Anthony K.
Martin, Larry D.
McCrary, Murray M.
McKean, Gilbert R.
McLain, Jimmie H.
McMurtrey, Gerald D.
Meyer, William B.
Minton, James W. Jr.
Moore, Louis H.
Morgan, Donald E.
Muench, Carl J. Jr.
Musgrove, Samuel O. Jr.
Nack, Thomas P.
Netzer, Joseph T.
Nichelson, G. Rex Jr.
Nisbett, Donald L.
Nowinski, Stanley W.
Obermark, James R.
Odom, Robert W.
O'Mealy, Patrick R.
Ozok, Sedat
Paiewonsky, Albert
Patrick, Gilbert W. Jr.
Patton, Eugene H.
Perrey, Edgar E. Jr.
Perry, Michael M.
Phillips, Thomas E.
Powell, Winifred W.
Powers, Robert R.
Ray, David E.
Reuck, Aaron M.
Richard, Russell R.
Rickard, M. David
Roberts, James B.
Rozell, Benny T.
Rullkoetter, Gerald W.

Samrad, Ardesthir
Saner, Kenneth L.
* Savas, Sam M. Jr.
Saxer, Robert M.
Schaefer, Robert L.
Schmied, Joseph M.
Scoggin, Jerry L.
Shafizadeh, Jamshid K.
Sheraden, Edvin E.
Shields, Ralph E. Jr.
Siebers, James E.
* Simmonds, Hoyt L.
Smith, Menard O. Jr.
Snow, James W.
Stokely, William S.
Taylor, Thomas M.
Teske, James E.
Tidmore, Robert L.
Torno, Harry C.
Van Vranken, Robert L.
Waltrip, Lee A.
* Willems, Donald R.
Williford, Henry G. Jr.
* Wilson, James W.
Wilson, William L.
Woldman, Michael L.
Wuerz, Donald E.
Yang, David D.
Young, Alwin C.H.
Zimmermann, Walter A.

1963

Adam, Everett E. Jr.
Adsit, John M.
Arms, Robert L.
Bagley, Ronald P.
Beckley, Tommie R.
Bentley, James R.
Blevins, Zenas C.
Bridges, Walter R.
Brown, Dallas L.
Brown, Dowey F. Jr.
Brown, Glenn M.
Brunjes, Franklin E.
Bryant, William S.
Chaat, B. Jack
Church, Jerry W.
Cox, David L.
Craver, Roger H.
Custer, Phillip E.
Daniels, John M. Jr.
David, Edward G.
Dobson, Dale E.
Duncheon, Daniel W.
Durham, William L.
Dyhouse, David E.
Erisman, Lester R.
Fenton, David L.
Forbes, Stanley R.
Frank, Vernon E.
Fritsch, William R.
Frost, David L.
Fryer, Kenneth E.
Fuerst, Fred F.
Fuka, Louis R.
Gajjar, Ashokkumar K.
Gardner, Robert H. Jr.
Gianchandani, Jiwat D.
Gosney, Chester H.
Green, Lawrence D.
Gronemeyer, Gary F.
Hanson, Bruce
Hardwick, Forman W.
Harris, Donald M.
Hassmall, Harry P.
Haynes, William D.
Herron, George F.
Hey, Donald L.
Hilton, Jon D.
Horton, Ruel K.
House, Ronald L.
Houshmand, Hosseinboli
Hubenthal, William L.
Hughes, Earle M.

Hunt, Charles M.
Hunton, Roger K.
Jackson, Raymond F.
Jaquay, Richard L.
Jarman, R. Dean
Jett, Clifton R.
Jhala, Mahendra Sinhji
Jogani, Chandrakant C.
Johnson, Joseph P.
Johnston, Lyle D.
Kafati, Oscar S.
Kahl, Richard A.
Kaiser, Donald R.
Kirby, James R.
Klier, Jerome M.
Kohnen, James L.
Lane, Robert L.
LaPlante, Allain H.
L'Hommedieu, Ronald L.
Ligon, William R.
Lina, John A.
Lischer, Alan A. Jr.
Loveridge, Joel F.
Mann, John F.
Markland, Robert E.
Marosek, Charles F.
Martin, Robert L. Jr.
Martin, Wade A.
Mason, Donald G.
Mattel, Peter F.
McKee, Paul G.
Mehta, Manyu K.
Melchor, Manuel J.
Miller, Clifford E.
Mills, Richard D.
Montgomery, Randall R.
Murray, Hugh V. III
Muth, Arnold J.
Naiyer, Shafique
Nelson, David A.
Nodland, Stanley K.
Northcutt, Maurice L.

* Oberhaus, Thomas K.
O'Brien, Michael G.
O'Farrell, Thomas P.
Palma, Oscar H.
Parikh, Rashmikant D.
Patel, Ramaschandra
Peterson, Donald L.
Rader, Leroy A.
Rakowitz, James A.
Redington, Edward A.
Reid, Bill H.
Rice, John L.
Rickard, M. David
Ringhausen, Roger J.
Rintoul, Richard O.
Roberts, Donald J.
Rock, Joseph P.

* Rohmaller, Paul L.
Salmon, R. Michael
Sander, Gary W.
Schilling, George R.
Schneider, Karl G.
Schuster, Walter J.
Sedovic, John T.
1963 (cont)

Sieckhaus, Robert H.
Sing, Charles T.
Spencer, David W.
Starwalt, Willard G.
Stemler, Orrin A.
Sutton, William R.
Tang, James J.
Taylor, Glenn R.
Timmons, Harrel W.
Trautman, Dennis R.
Van Buren, James K.
Vidal, Arturo S. P.
Volpe, Michael
Wiegand, Paul J.
Willard, Dickie E.
Zieba, John D.
Zinzuwadia, Natver T.

1964

Abel, Dan L.
Adams, James E.
Adams, Stanley B.
Amin, Rajinkant C.
Anderson, James J.
Badgley, Robert E.
Bannister, Edwin J.
Basler, Thomas J.
Bauman, Conrad H.
Britton, Jerry A.
Broeking, Kenneth W.
Brown, Paul Jr.
Bryan, John W.
Buescher, Gene E.
Burkart, Matthew J.
Butery, James L.
Buttry, Kenneth E.
Carey, Robert C.
Carpenter, Maxey B. Jr.
* Casale, James E.
Case, Ralph W. Jr.
Charboneau, William B.
Chen, Ten-Hsi
Chew, Terry D.
Chopin, Lamy J. Jr.
Cissell, Donald E.
Coffman, Robert M. Jr.
Conley, Carl D.
Cook, John J.
Cotelyou,

Abram L. Jr.
Cottin, Daniel J.
Couch, Patrick S.
Couse, Gary A.
Covell, Dennis E.
Cowles, Phillip R.
Craig, Thomas A.
Crosnoe, Clifford W.
Crowell, Roscoe H.
Curnutt, Jerry L.
Dacey, Robert J.
Desai, Vasantrai V.
Downey, Robert E.
Dyhouse, Gary R.
Ebert, Bernard C. Jr.
Eckhoff, Gerald J.
Ellebracht, Clarence A. Jr.
Evans, Donald L.
Fee, Gene B. Sr.
Felch, James F.
Ferrell, C. Stuart
Folk, James L.
Follett, Arthur G.
Franklin, James D.
Gales, Carl D.
Galloway, Gerald D.
Gardner, Donald T.
Gates, Norman B.
Gillette, Jerry A.
Griffith, David M.
Gunn, William J.
Hahn, Emmett W. Jr.
Harle, James C.
Harper, Alan S.
Harris, Daniel J.
Hayes, Paul G.
Haygood, Jack L.
Heiskell, Jesse W.
Heim, Gunther A.
Herrmann, Frederick W. Jr.
Hoepker, Elmer C.
Hoge, Philip R.
Huber, Harold D.
Hudson, Charles E.
Hughes, Bobby R.
Hulsey, J. Leroy
Jalbert, Leonard S.
Johnson, Thomas P.
Jones, David S.
Jones, Wendell M.
Kamp, Alan A.
Keim, Lyle E.
Kelley, Donald R.
1964 (cont)

Kelty, Thomas M.
Kerr, Albert L.
King, James H. Jr.
Koehlein, William H.
Kornberger, Paul
Kraus, Ronald W.
Lahde, Frank U.
Lanese, Gary D.
Langford, Hugh A.
LaRose,
    T. Harrell Jr.
Lehman,
    Fredrick D. III
Loftus, Ervin D.
Long, John E.
Loth, William D.
Lyons, Charles G.
Mackie, Roscoe L.
Martin, Carl D.
Hausshardt, David A.
Mehta, Dolatray S.
Mehta, Harishkumar M.
Merrell, David L.
Nills, Charles S. Jr.
Ninton, John C.
Mochel, William R.
Mueller, Dale D.
Huns, Bennett L.
Murphy, Robert J.
Murray, James O.
Myers, Albert T.
Myers, Carl E.
Nelson, Robert C.
Neville, Robert J.
Newsom, Robert L.
Nichols, Elwood B.
Nickerson, Charles R.
Niemeier, William R.
Norusky, James M.
Northcutt, Maurice L.
Oendahl, James P.
O’Farrell, Thomas P.
Ombalski, Stephen Jr.
Orrison, Gerald K.

* Overleas, Gary L.
Padgett, Harry W. Jr.
Patel, Rameshchandra
Patel, Vithalbhai G.
Perl, Rodger J.
Peters, Donald G.
Pruitt, Lyle L.
Raber, Richard F.
Radentz, Donald E.A.
Raney, Edward M.
Rapp, Edward G.

Rex, Ronald C.
Reynolds, Charles L.
Rice, Clifford R.
Riggs, Charles O.
Rightnowar, Donald H.
Roeder, Eugene A.
Ruzich, Robert L.
Sagarmomo, Daniel E.
Sanghavi, Mahendra K.
Saunders, John G.
Savoldi, William R.
Schaeffer, David H.
Schlegel, Kent J.
Smith, Samuel H.
Son, Jayant C.
Sowell, Lewis C. Jr.
Sowell, Mark S. Jr.
Spruill, Victor F.
Stevens,
    Glendon T. Jr.
Strunk, Lawrence T.
Stuart, Robert L.
Sukow, Dale E.
Sutherland,
    Graham G. III
Tafreshi,
    Manouchehr M.
Tailor, Richard J.
Valentine, Craig A.
VanSteenbergens, A.R.
Wang, Ting H.
Warning, Clarence R.
Wendleton, John L.
Wilbur,
    Merritt G. Jr.
Williams, Stuart H.
Wink, Ralph
Wittenauer, Ronald C.
Wolf, John H. Jr.
Wood, Joseph S. Jr.
Zinzuwadia,
    Haubhbai R.

1965

Altmanberger,
    Wayne A.
Anderson, Jerry M.
Anderson, Kirby R.
Arnold, Richard I.
Atkinson, Charles H.
Bahgat, Abd-El G.A.E.
Baldwin, Michael H.
Bass, Paul J.
Behnke, Robert E.
Bennett, George C. Jr.
Bicknell, Hilton B.
Boaz, James K.
Bommarito, Joseph C.
Bradford, Bruce H.
Branum, William H.
Braswell, Sylvester W.
Brown, Roy A.
Bucchiere, Andrew R.
Buttrey, John W.
Byington, Marvin L.
Carlin, John C.
*Casale, James E.
Cashman, William J. Jr.
Chang, Dick J.
Chang, Randy L.
Chen, Winston W.
Chilton, Danny L.
Chu, Chao-Ping
Cornelson, James E.
Crockford, Richard H.
David, D. Dan Jr.
Deken, Louis R.
Dierker, John W.
Driemier, Allen H.
Durnell, Noland R.
Erwin, Larry L.
Faenger, Eugene H.
Fenner, Roland W.
Flora, John G.
Foreman, Alan R.
Gaebel, John L.
Goldsmith, Stanley I.
Grimes, Gary W.
Haag, William O. Jr.
Haden, Roney L.
Halbach, Ronald E.
Hamm, William P.
Hamtil, Raymond L.
Hansen, Ronald A.
Hayden, C. Barry
Heyer, John R.
Heldman, James A.
Hicks, Roger D.
Ho, Vie-Der
Hoffman, David J.
Hohman, Joe A.
Holder, William B. Jr.
Holen, Douglas E.
Horton, Barry W.
House, Bob L.
Howard, C. Martin Jr.
Hu, Kuo-Chu
Hu, Teh Y.
Huang, Hao-Yang
Huckabee, John W.
Hustad, Paul A.
Jacobson, Walter R.
Jaiyesimi, Olatunde S.
Jansen, Edward M.
Jersa, Michael J.
Jobson, Harvey E.
Junge, Gregory
Kaiser, Philip B.
Kalbfleisch, Charles E.
Kasten, Raymond O.
Kenworthy, John H.
Kiefer, Dale F.
Kircher, William C.
Latham, James S.
*Lee, Ermin E.
Lemons, James T.
Link, William R.
Liu, Wan-Cheng
Lyons, Francis D.
Magurik, David W.
Mao, Ping-Chi
Marshall, C. Dale
Martin, Charles R.
Martin, Terence N.
Mehta, Rashmi K.
Meyer, Norman R.
Meyer, Richard P.
Miller, Howard A.
Molitor, John D.
Montgomery, Billy L.
Moreland, William C.
Morshed, Abdullah
Mount, Jerry B.
Myrick, Charles R. III
Nielsen, Darrell M.
Norup, Donald E.
Osick, Glenn L.
Otto, Robert L.
Parker, John J.
Patel, Jayantibhai V.
Picker, Melvin L.
Pierce, Ronald R.
Poepping, Paul P.
Polka, William E.
Powell, John K.
Pratt, Joseph  
Province, Edward Jr.  
Richardson, James E.  
Riney, Charles Jr.  
Ropp, Kenneth A.  
Rusck, Ronald A.  
Sayegh, Maurice A.  
Schulz, Robert H.  
Shah, Jayendra J.  
Shah, Vinodchandra  
Shilt, Eldon R.  
Smart, John D.  
Smith, John W.  
Smith, Robert S.  
Snow, Roger H.  
Snowden, Edgar IV  
Spindler, Herbert E. III  
Steele, Frederick C.  
Steeb, Carl R.  
Stemler, Orrin A.  
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Stuart, Robert L.  
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Sunkel, Thomas M.  
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Teague, Gwyn A.  
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Thiede, Alfred J.  
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VanSteenbergen, A.R.  
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Wells, William L.  
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Bennett, Patrick B.  
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Coco, Matteo A.  
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Copenhaver, Roger L.  
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Cross, Ralph L.  
Curran, George H. Jr.  
Dattilo, David O.  
Davis, Jerry W.
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Rintoul, Richard O.
Ross, Anthony O.
* Rothwell, Peter E.
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Batteen, Earl R. Jr.
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Chao, S. (Steve)
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Cho, Shing-Fu
Choate, Larry D.
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Koechlein, William H.
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Lewis, Leland
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Achelpohl, Fredrick P.
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Andrew, William K. V
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Arney, Donald E.
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Webb, E. Victor 
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Wissel, Fred O. 
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Abboud, Mohamed M. 
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Alm, Darrell R. 
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William E. Jr. 
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Gordon, John A.
Gottlieb, Charles L.
Grawe, John D.
Griffin, Francis L.
Guille, Robert C.
Gupta, Dwarka P.
Habegger, Ronald L.
Hammad, Mohammed I.
Hampel, Ronald C.
Hardwick, J. Robert
Harris, Marvin T.
Harris, Michael D.
Havens, Phillip G.
Heyes, Jerry D.
Heilen, Richard E.
Heisserer, Larry D.
Herman, William L.
Hilton, James W.
Himmell, Stephen E.
Hockett, Mark L.
Holliger, Fredric L.
Hollrah, David F.
Holt, Eric M.
Horn, Larry S.
Horsley, Michael B.
Houchin, Richard L.
Jacobs, Philip W.
Jan, Der-Wang
Jansen, Raymond J.
Jensen, Paul E.
Johannpeter, Walter G.
Johns, Gary A.
Jones, Glen W.
Kalbac, Raymond L.
Kammerer, Joseph J. Jr.
Keith, Thomas E.
Kelly, David P.
Keohane, William E.
Kesler, Michael R.
Ketsavasdivong,
Kriengkrai
Khouri, Ziad H.
King, Douglas R.
Kirmeyer, Gregory J.
Klatt, Manfred
Kline, Gary L.
1970 (cont)
Klausmeyer, Richard A.
Koenemann, Barry D.
Kopf, Kent M.
Korth, Michael V.
Kramer, John L.J.
Kuhn, Thomas E.
Kuss, Joseph K.
Kutl1cis, Poul J.
Kuss, Joseph K.
Kutscher, William E.
Lanoue, Kenneth E.
Lauer, Daniel P. Jr.
Langomach, Wayne E.
Lee, Huo-Yuan
Lewellen, Frank
Lewis, Wayne E.
Lewis, William R.
Liao, Cheng S.
Lindquist, Craig A.
Litzinger, William K. Jr.
Loesch, Gerald W.
Long, Michael W.
Loudermilk, Abraham H. Jr.
Lowe, Harry R.
Ludewig, James F.
Lupberger, David D.
Lynchard, Jimmy
Magee, Russell J.
Mahanna, Simon A.
Mahlandt, Joseph N.
Malcolm, Steven J.
Mann, John C.
Manning, Thomas W.
Marshall, Daniel P. Jr.
Martin, James H.
Massey, James L.
Mattern, Robert A.
Max, Douglas W.
Mays, Larry W.
McCaffrey, James M.
McCluskey, Hugh J. Jr.
McKee, Steven E.
McKee, William D.
Manning, Thomas W.
Marr, Sonn B.
Mardell, Fredrick N.
Michie, George A.
Milde, James R.
Millenbruck, Mel M.M. II
Miller, Charles A.
Miller, Ronald J.
Moallem, Habib
Mochle, Carm R.
Moeller, Thomas J.
Moftashemi, Ali A.
Moore, Ben L.
Moore, Theodore K.
Moore, William S.
Moran, Mark F.
Moran, Michael J.R.
Morris, Albert G.
Morris, James L.
Morrison, Paul C.
Moss, Kenneth E.
Mouser, Gerald E.
Muckvichit, Pichit
Mudd, Thomas J.
Mundwiller, John L.
Muzumdar, Aravind S.
Nadziejk, Paul S.
Niedringhaus, Edward L.
Noori, Haider A.
Norris, Roger D.
Notestine, Stanley W.
Oliver, Larry J.
O'Neal, William F.
Orr, V. Darryl
Palisch, Allen E.
Pan, James C.
Parks, Roger H.
Parsons, Jerry D.
Peebles, Donald S.
Pellegrino, Danny R.
Pena Plaza, Luis
Perry, Edgar E. Jr.
Phillips, Marvin D.
Phillips, Richard F.
Player, William O.
Pollack, Leslie A.
Poppleston, Jerry D.
Poster, George J.
Price, Harry L.
Pursley, Terry C.
Raby, David L.
Ranieri, James J.
Rankin, Richard F.
Ray, Earl D.
Reed, Robert L.
Reid, Jack A.
Rehder, Ronald A.
Reynolds, Joseph C.
Rezvan, Kamran
Rhodes, Terry L.
Rhyne, Charles A.
Ricks, Dale L.
Ricono, Marion P.
1970 (cont)

Riley, Bob L.
Rinne, Robert A.
Roes, Theodore A. III
Rogers, Richard G.
Romine, Barry R.
Rommelmann, David W.
Ross, Lawrence R.
Ross, Lenard H.
Rusch, Neil R.
Sago, William L. Jr.
Sander, Joseph W.
Sanocki, Peter W.C.
Schamel,
   Walter S. III
Schellman,
   Leon H. (Max)
Schmidt, Robert L.
Schmitz, James F.
Schnake, John S.
Schneider, James J.
Schreiner, Robert W.
Schuck, William J.
Schwab, Frederic Jr.
Sears, Thomas S.
Sha, Yung-Chau
Shafer, Lynn O.
Shah, Satish G.
Shanks, Billy R.
Shen, Tzai F.
Shen, William C.
Shepard, James E.
Shepherd, Charles A.
Sherrell, Robert E.
Sherrick, Harold D.
Shorter,
   Lawrence W. Jr.
Slebert, Paul R.
Simoneaux, Joseph A.
Smith, Beverly D.
Smith, Brian W.
Smith, Carlton L.
Smith, Charles A.
Smith, Ronald T.
Snow, Martin R.
Spellman, Daniel J.
Spencer, David W.
Stack, Dennis L.
Starkweather,
   Stephen W.
Steele, Harry B. III
Stephenson,
   Michael W.
Stevens,
   Glendon T. Jr.

Stokes, James H.
Strauser, Bradford M.
Stueck, C.F.P.
Summers, James B.
Sun, Frank Y.S.
Swift, Larry R.
Sweers, Dan R.
Sweers, Don R.
Tang, Yee-Ping
Tawill, Parid J.
Taylor, Bruce G.
Taylor, Cecil R.
Thomas, Verner E.
Thompson, John E.
Thompson, Vernon D.
Threlkeld,
   Hubert R. Jr.
Tijan,
   Fredrick A. Jr.
Timbrell, Hamilton C.
Torres, William
Trexler, Garry R.
Tsay, Yeong-Jin
Tung, Chung-Yuan P.
Turnbow, James H.
Unterreiner,
   Charles P.
Van Buren, James K.
Vaughn, James L.
Vicente, Timothy N.
Visherw, Ronald G.
Vogel, William M.
Waggoner, Jay E. Jr.
Wagner, Stanley K.
Wagner, John R.
Wagner, Peter
Wakefield, Clyde F.
Walk, Howard J.
Walker, Rodger A.
Wang, Fu-Yuan
Wang, Pao-Tsan F.
Warde, John D.
Ward, Richard F.
Wattenbarger,
   James C.
Weber, Lawrence E.
Wege, James R.
Wells, Dennis L.
Welsh, John D.
Wesely, Robert J.
Whitaker, Rodney E.
White, Robert T. Jr.
Whitehead, James D.
Wiegela, George L.
1970 (cont)

Williams, Jerome H.
Wolff, Thomas F.
Woods, Warren C.
Yao, Peter S.
Yue, Checkman M.
Zaborac, T. Alan

1971

Alkemeyer, Charles H.
Andrew, William K. V
Arant, William S.
Austin, Lee S.
Bailey, Herbert R.
Barnes, William M.
Becker, Roy A.
Bell, James A.
Bendapudi, Kasi V.
Benoy, Leslie D.
Bertrand, Paul M.
Boehm, William F.
Boyce, Daniel E.
Boyle, Gerry J.
Brandenburg, Carl E.
Brendel, Ronald A.
Brinkman, Robert G.
Buehler,
Thomas J. Jr.
Bulla, Robert C.
Bullock, Gary
Burke, Larry R.
Butchko, Robert G.
Butler, Randy R.
Call, Daniel M.
Camacho, Ariel C.
Campbell, Dennis L.
Campbell, Robert J.
Cantello, Tony H.
Chaffin, Joe D.
Chaudhury, Suresh K.
Chen, Tak M.
Chow, Peter S.
Clark, Bruce B.
Colombatto,
Phillip J.

Conzelman,
Robert E. Jr.
Crane, Clifford D.
Craver, Claud R.
Creason, Gary W.
Dale, Robert F.
Daniels, David E.

* Dare, John K.
Dennis, Norman D. Jr.
DeWald, Leonard N.
Dimmitt, Robert G.
Donn, Dee
Doyle, John D.
Drawe, Stephen L.
Dressler, Donald R.
Dufner, Dennis L.
Dumay, Richard A.
Dunard, John D. Jr.
Durham, Thomas G.
Ellis, P. Roger
Engelhardt,
William R.
Erickson, Gordon L.
Erickson, Larry V.
Etwert, Charles M.
Feldman, Charles
Ferrell, C. Stuart
Ferry, Charles T.
Fischer, Richard K.
Flowers, Daniel H.
Frankenfield, D. Jay
Franklin, Stephen R.
Fread, Danny L.
Freen, Karl L.
Freen, Keith F.
Fry, Henry N.
Fry, Timothy R.
Gaines, Gary L.
Gallup, Archibald M.
Gayer, John G.
Gold, Robert L.
Grabski, Stanley E.
Graham, John T.
Gray, Howard W.
Gregory, Robert H.
Groeper, Burl D.
Gunter, James D.
Hader, Richard G.
Hale, Donald A.
Hallquist,
John B. III
Halter, Edward M.
Hance, Calvin W.
Hansmann, Jack
Hardie, Michael G.
Harris, Daniel J.
Haun, Myron S.
Hayden, Thomas M.
Heck, August E. Jr.
Heisler, Dennis G.
Heithaus, Kenneth M.
Hemenover, Donald E.
1971 (cont)

Henricks, Ronald H.
Herbst, Stephen R.
Hermesmeyer, Michael T.
Herrin, Richard R.
Hervey, Dennis J.
Hilterbrand, Choyes K.
Hinkle, Lloyd A. Jr.
Hoel, Robert F. Jr.
Honghiranrueng, Phimit
Ingersoll, Charles J.
Irvin, Larry C.
Jacang, Bernard O.
Jacks, Robert W. Jr.
Jaeger, Mark E.
Janssen, James A.
Johnson, Bruce P.
Johnson, Christian R.
Johnson, Leland R. Jr.
Johnson, Philip P. Jr.
Jolly, Jack A.
Juneau, Charles E.
Khan-Abadi, Mohammad H.
Komisarek, George D.
Korth, Michael V.
Kremmel, Lawrence D.
Kriengsiri, Pirote
Kuo, Rong-Heng
Lakie, Leslie A.
Lammers, Dennis R.
Lane, James F.
Lawson, Montie R.
Lae, Gary M.
Lile, Roger G.
Liou, I-Der
Liu, Victor Al-Shen
Llewellyn, Daniel J.
Lu, Ching-Tzu
Luth, William L.
Lynch, Daniel F.
Lynch, Joseph F.
Maher, Gerald F.
Martin, Henry T.
Martin, Kenneth E. Jr.
Mayo, Howard D.
Mays, Larry W.
McAllister, Darrell
McGrath, James B.
McInerney, Bernard M.
McKinney, William M.
Merritt, Lyle W.
Mezines, Steven A.
Miller, Terry E.
Miller, William D.
Montgomery, C. Dale
Mouser, Gerald F.
Muniz, Raymond J.
Munshi, Siddharth N.
Myers, Benjamin J.
Nalford, Chester R. Jr.
Odabasi, Kadir
Orr, V. Darryl
Pagan, Ronald C.
Parker, John H.
Pearl, Bryan
Pennington, David J.
Pincince, George S.
Plank, William E.
Poka, Ronald A.
Potashnick,
Reginald B.
Powell, Charles E.
Powell, Richard F.
Rains, Ronald D.
Raithel, James F.
Reddy, John L. III
Redington, Stephen L.
Richardson, David N.
Robertson,
Lester E. Jr.
Salcedo, Daniel
Sanders, John A.
Sanders(Stevens), Dee A.
Sandhaus, Henry W.
Sandheinrich,
Otto Jr.
Schall, Larry J.
Schultz, Robert L.
Sease, Charles M.
Shah, Pramod M.
Shaw, David E.
Sherwood, Gregory A.
Shih, Cho-Fin
Shibgrotroth, David H.
Siesener, Robert M.
Simpson,
Daniel E. Jr.
Smart, Robert F.
Smith, Robert E.
Smith, Wayne D.
So, Richard K.
Steffee, Richard E.
1971 (cont)

Struckhoff,
   Robert M. Jr.
Suphanit, Ratana
Supkapong, Verasak
Suthar, Bhogilal G.
Suen, Larry D.
Sweet, Edward M. Jr.
Taksar, Ronald J.
Tansu, John
Tayloe, Charles H.
Thompson, L. Darrell
Torgeson, David N.
Treadwell, John S.
Turner, Robert A.
Usook, Vinai
Varrone,
   Nicholas J. Jr.
Visintainer,
   David A. III
Vogt, Carl M.
VonKaeenel,
   Frederick W.
Waggoner, Jay E. Jr.
Wagner, John R.
Wang, Liezern
Ward, Robert L.
Watson, Henry C. III
Weinrich, Dennis R.
Welsch, Paul L.
White, Richard L.
Whitford, Jerald L.
Whitney, Roger B.
Wiechens, Stephen W.
Williams, David W.
Wycoff, Ronald L.

1972

Arampongpan, Witoon
Arthur, Billy R.
Baldus, Melvin W. Jr.
Beale, John O.
Bechtel, James L.
Berry, Robert T.
Biederman, Steven A.
Blalock, Randy W.
Boshears, Jimmy L.
Boyd, Stephen J.
Bradshaw, Samuel C.
Branch, John E.
Brand, Charles P.
Britt, Alvin F.
Brody, Steven R.
Brown, Charles S.
Brown, James C.
Brown, Phillip L.
Brueummer, Michael A.
Burke, Paul S. Jr.
Burke, Steven M.
Burke, Teriel E.
Busch, Kenneth L.
Butcher, James W.
Camenzind,
   Crandall S.
Carmichael,
   Kenneth W.
Carson, Alan W.
Chanlmpong, Suchat
Chanswangphuwan, Wanchai
Chenoweth, Darryl W.
Chiang, Loh-Tien
Chien, John F.
Choi, Sam N.
Crow, Michael L.
Curby, Norma J.
Curnutt, Jerry L.
Curth, F. Oscar
Davidson, Don A.
Davis, Charles S.
Dean, Donald N.
Deifallah,
   Abdelrahman
Douglass, Bruce E.
Duffey, Gary J.
Eckelkamp, Ronald M.
Edwards, John W. Jr.
Effertz, Joseph G.
Ellis, Frank R. II
Ernest, William G.
Ernst, William J. Jr.
Evers, David E.
Faust, Ronald G.
Feld, Walter C.
Finn, Gerald W.
Fitzpatrick, James L.
Flannaus, Richard J.
Follmer, Frank F. Jr.
Ford, William C.
Forsee, Gary D.
Frake, Terrence G.
Frisbee, Daniel E.
Gaal, John A.
Gegg, Harry F. Jr.
Giles, Michael L.
Goodman, Samuel R.
Grana, Dominic J.
Graves, Robert P. Jr.
Gredell, Thomas E.
Green, Allen J.
Gross, Edward P.
Hale, Michael C.
Haley, John P.
Hamm, Michael E.
Hampel, James K.
Hanke, Brett L.
Hanson, Steve A.
Harms, Barry A.
Harris, George L.
Harrison, Dwayne W.
Hellrich, Linus H.
Henry, Dennis L.
Herr, Michael R.
Heseman, Calvin R.
Hettrakul, Nipon
Hoepchner, Douglas E.
Holland, Robert L.
Hopkins, Douglas A.
Hornak, Milan W.
Houdesell, Dale L.
Howard, Thomas W. III
Huffman, William G.
Hunyar, Daniel C.
Hunziker, Eugene C.
Huston, Samuel M.
Illian, Don L.
Izmirli, Aydin O.
Jacques, Donald M. Jr.
Jensen, Donald K. Jr.
Jilg, Michael J.
Jones, Ted L. Jr.
Jung, Richard A.
Justice, John B.
Kaempfer, Christopher
Kaminsky, Horst W.
Kaplan, Alard
Keith, Thomas E.
Keith, Warren N.
Kepley, Gary L.
Kifer, Kenneth K.
Kincaid, John B.
Klein, Robert E.
Konradi, Keith E.
Kramer, Gary R.
Kremser, Jon A.
Kuo, Paul P.
Kuo, Robert L.
LaPlante, Allan H.
Laschober, Richard J.
Lattis, Don L.
Lauth, John A.
Layton, Earl G.

Leach, Edward A.
Lindstrom, Carl E.
Loudermilk, Abraham H. Jr.
Marshhaus, Kurt K.
Haschmann, Daniel E.
McCormack, Howard F. Jr.
McGary, Frederick A.
McGinnis, Michael J.
McSpadden, Alan W.
McVeigh, Stephen H.
Merten, Peter M.
Miller, Paul D.
Montgomery, Dennis M.
Mooney, Thomas F. Jr.
Moore, Martin F.
Mueller, Wendelin H. III
Naas, Alan R.
Naqvi, Hashkoor A.
Nash, Lee A.
Neutzling, Gary M.
Newman, Raymond R. Jr.
Niermann, Frederick J. Jr.
North, Michael A.
Norton, William E. Jr.
Oestreich, Helvin C.
Oliver, Daniel L.
Pai, Chin-Ming
Parsi, Faraidoon K.
Partridge, Ralph M.
Payne, Ronald J.
Perez, W. Marie
Phillips, Gary V.
Pitta, Loren W.H.
Prukpitakkul, Pitak
Qaddumi, Abdul-Qader T.
Rains, Ronald D.
Ramsey, Marcus L.
Ranek, William F.
Rathgeber, William E.
Reineke, Dennis E.
Reinhardt, Raymond P.
Reynolds, Joseph C.
Riegel, Richard J.
Rilovick, J. Sheppard
Rush, Steven D.
St John, Leslie L.
St Peters, Leonard M.
Salmon, Jerry R.
Santucci, Caesar J.
Schaffroth, Raymond B.
* Sechrest, Roger W.
Shanklin, Gary E.
Shukla, Pravinchandra
Smith, Richard L.
Smith, Robert E.
Somerville, Robert D.
Souders, Wilbur M.
Spencer, Lon C.
Spooner, James E.
Sriphirod, Sarid
Stallion, Michael W.
Stanley, Robert L.
Stephens, Dennis L.
Stone, Michael J.
Tate, Ralph D.
Thompson, Thomas G.
Thornton, Kenneth W.
Tice, Everett D.
Titus, Russel L.
Turner, Eldon L.
Turner, Gary M.
Underwood, Dennis R.
Unger, Robert W.
Visintainer, Alan D.
Vosburgh, Thomas J.
Waite, Terry A.
Wang, Peter C.
Ward, Jacque E.
Weekley,
Martin L. Jr.
Welker, Dennis J.
Wethington, Robert L.
Williams, Dale E.
Willis, David C.
Wissmann,
Harold J. Jr.
Wong, Hau-Tak
Wood, N. Douglas
Woods, Roy B. III
Woods, Warren C.
Woosley, David E.
Wright, David R.
Yates, Theodore W.
Zeidlik, Richard C.
Ziegler, Kenneth J.
Zimmerman, Wayne H.

1973

Alberici, Gabriel J.
Anderson, Gary L.
1973 (cont)

Anderson, Gregory T.
Anderson, Jerry M.
Assadi, Mostafa
Astrack, Richard F.
Badruddoza, Mohammed
Baker, John W.
Barkau, Robert L.
Bauer, Mark G.
Behan, Thomas A.
Bergman, Barry M.
Bergner, Larry G.
Best, David C.
Black, Harold E. Jr.
Blanke, Edward E.
Borgmeyer, Kenneth H.
Borusiewich, Daniel A.
Botkin, Mark E.
Bowie, James E. Jr.
Brandt, Robert J.
Brose, Martin A.
Brown, Thomas S. III
Bruns, Bernard A. III
Buechel, Robert M. Jr.
Burke, Harold L.
Burton, James H.
Byrne, Patrick M.
Caldwell, Terry W.
Capelle, David P.
Carroll, Paul F.
Chatman, James W. Jr.
Chumley, Timothy G.
Clark, Juanita K.
Coartney, Charles R.
Cohrs, William H. III
Cori, Jay K.
Crafton, Jerry D.
Cryderman, Ward M.
Cunningham, William P.
Darr, Robert J.
Davis, Charles R. III
Deken, Louis R.
Dempsey, Randall G.
Dennis, Norman D. Jr.
Dieckmeyer, Donald D.
Dierker, Steven B.
Dismuke, Tommy V.
Dolata, Edward W.
Dowling, John J.
Duc, Trinh Huu
Dumser, Paul J.
Earnest, Randal E.
Eckles, Jon W.

Ellis, Frank R. II
Elmore, James H.
Erwin, David L.
Escalera, Walter A.
Etling, Norman G. Jr.
Evans, Craig M.
Falkenberg, Peter
Figueroa, Marco F.
Flaminio, Charles L.
Fletcher, Stanley T.
Freund, Raymond P.
Frikken, Donald R.
Fulkerson, Frank M. Jr.
Gibson, Jeffrey A.
Guiley, George H.
Habegger, Ronald L.
Hale, Charles D.
Hansel, Kyle K.
Harris, Daniel J.
Harris, Gerald L.
Hartle, Arthur A. Jr.
Hibbits, Darrell D.
Hill, John E.
Hillhouse, Jim L.
Hinkle, Lloyd A. Jr.
Hofer, John R.
Huster, Ronald C.
Huston, Samuel M.
Hung, Jeng-Sheng
Jaeger, Mark E.
Johannpeter, Walter G.
Jones, Thomas B.
Kelly, Paul W.
Kirn, David C.
Klemetson, Stanley L.
Knoll, David A.
Knuth, Douglas C.
Koehler, William A.
Kongswan, Sak
Kozich, Anthony L.
Kramer, Roger L.
Kuechenmeister, Kenneth W.
Kunkel, Arthur K. III
Kuntz, Richard D.
Kwong, George S.
LaBoube, Roger A.
Ladner, John G.
Larson, Dennis W.
Lauth, John A.
Lawson, Stanley C.
Lee, William A.
Lett, Steven K.
Lewis, David A.
Linnemann, Stephen M.
Logston, Michael A.
Lowe, Joseph W.
Luce, Philip E.
Luck, Michael W.
Ma, Po-Tsuan
Maggert, Gary G.
Mauzy, Alan R.
McAlpin, J. Gary
McCormack,
Howard F. Jr.
Meier, Anthony L.
Nertens, Joseph P.
Nihevc, Robert J.
Hillman, Robert J.
Hilne, Robert J.
Minoiff, Jerry
Mitchell, Michael E.
Motherwell, David N.
Nachtrab, Jerry A.
Nobe, Toshihiko
Obermeyer, Dusty W.
Obley, William W.
Ogle, H. Richard
Oligschlaeger, David
Oliver, Daniel L.
Owens, Rosemary F.
Patterson,
J. Scott Jr.
Pederson, Paul E.
Perandakos, Dimitris
Peters, Richard E.
Pickett, Mark E.
Pippin, Kenneth W.
Poe, Earl J. III
Popejoy, Dale W.
Potts, Eric R.
Puetz, Lynne E.
Raby, David L.
Rayfield, Bradley M.
Reel, Dana V.
Reynolds, Lloyd A.
Rezzonya, Carl W.
Richardson, David N.
Richter, Michael G.
Richter, Thomas W.
Robertson, Stephen L.
Ross, Michael S.
Rowfa, Garry J.
Sachs, Jacques B.
Saha, Sukumar
Schilling, John R.
Schneider, James J.
Schwalbe, Gerald V.
Schwartz, Gary W.
Schwenk, Joseph L.
Sit, Steve
Skasick, Steven M.
Slovensky, R. Clayton
Smit, Jan M.
Smith, Nickie L.
Starnes, Gordon A.
Steffens, Charles T.
Steffens, Michael H.
Stephens, Dennis L.
Stevens, Raymond L.
Stewart, Robert L.
Stoupe, Timothy L.
Stovall, David L.
Tamer, Mehmet N.
Taylor, Richard M.
Teske, David J.
Thies, Fredrick J.
Toch, Maximilian
Trinh, Rang N.
Tsai, James H.
Tseng, Wu-Hsiung
Tuttle, David F.
Underwood, Delmer D.
Vaeth, Richard M.
Visnouske, Stanley F.
Wade, Edward N.
Watkins, Wesley S.
Wavering, Mark E.
Weber, Charles A. Jr.
Weddle, Philip B.
Weisenborn, Harold D.
Welsch, William E.
Wesley, Michael S.
Whaling, Robert E.
Whitehead, Robert W.
Whiteside, Larry L.
Wilhelms, Steven C.
Wilkinson, Jerome B.
Williams, Curt T.
Williams, Dale E.
Wilmont, David A.
Wilson, Chris D.
Wilson, Willis J.
Yang, Hsieh-Ho
Yates, Frank M.
Yu, Michael H.

1974

Jackson, James L.
Amsinger, Mark T.
Aubuchon, Martin R.
Bachmann, Roy O.
Baker, Richard M.
Barber, Keith D.
Bechmann, Diane M.
Blechle, David H.
Bodenheimer, Lee N.
Bonczyk, Bruce S.
Breece, David R.
Brendel, James B.
Briggs, James A.
Burnham, Michael W.
Burns, Paul J.
Bybee, Edwin M.
Byers, Dan R.
Cappa, Joseph A.
Carney, Joseph T.
Chittenden, John D.
Choudhary, Ashok K.
Clarke, William P.
Clavenna, Mark D.
Collebrusco, Robert L. II
Corbin, Kenneth D.
Critchfield, John W.
Cropp, Kenton A.
Derrick, Robert P.
Dexter, James R.
Dickerson, Richard F.
Dieker, Stephen R.
Do, Nguyen T.
Dobrynski, Robert P.
Dolan, Francis J.
Duane, Nicholas C.
Dunavant, David A.
Eckelkamp, Ronald M.
Elgin, Richard L.
Emmenegger, Frederick I.
Eydmann, Phillip S.
Farley, Lyn R.
Feldmann, Mark A.
Ferrante, Joseph S.
Foil, James L.
Fowler, Mitchell G.
Frangie, Edward T.
Frey, James E.
Gale, Douglas E.
Gardiner, Kenneth D.
Gee, Ming-Lee
Gibbons, Theodore R.
Goen, Johnie L.
Gold, Dennis R.
Goldstone, Craig S.
Golisch, Robert G. Jr.
Gonzalez-de-Cosio, Jaime
Goold, Ronald R.
Govedarica, Jovan L.
Green, Charles R.
Greer, James F. Jr.
Gresham, John D.
Griscom, Robert W.
Grither, Larry J.
Hamilton, John W.
Hanson, Patricia A.
Hashemi, Ali
Hayden, Dennis M.
Hayes, Thomas E.
Haynes, Wilson L.
Heavin, Jerry W.
Hellrich, Mark H.
Hertz, Jerome B.
Hokierti, Jammarn
Holcomb, W. Jeffrey
Hurst, Michael D.
Hutchison, Gary L.
Hutson, Edward P. Jr.
Jaidée, Omphol
Jearls, Louis B. Jr.
Johnson, Bruce L.
Jones, Vernon T.
Keeling, Michael F.
Keen, James M.
Kelley, John M.
Kerns, Danny L.
Kinsella, Michael J.
Kirk, Charles P. Sr.
Kissel, James H.
Kosman, Richard E.
Kothe, E. Ray
Kotter, Wayne A.
Kuntz, Richard D.
Lahmeyer, Thomas J.
Langley, Claude L.
Larkins, Richard R.
Lee, Gary M.
Legate, John E.
LeGrand, Rodney J.
Leifield, Richard J.
Lillard, Randall H.
Lin, Ter-Far E.
Liu, Victor Al-Shen
Matthews, James R.
Maurath, Jerome A.
May, Leland M. Jr.
McCown, Patrick J.
McCray, Bruce W.
McKenzie, David L.
McKinney, Michael S.  
McKinney, William M.  
McMillian, Richard D.  
Mengel, Matthew L.  
Moody, Wayne S.  
Motherwell, Jonathan T.  
Mueller, David L.  
Nagabhushana, Rama Rao S.  
Narasimhan, K.A.  
Nichols, William J.  
Noah, Richard D.  
Oldham, Steven C.  
Olsen, Billy G.  
Ortwerth, Craig N.  
Paczkowski, Stanley J.  
Payne, Richard D.  
Peveler, Gerald L.  
Phillips, Roger D.  
Phromprasert, Kasem  
Pirano, Vincent E.  
Pohlig, Kenneth D.  
Pooker, Norman H.  
Pool, John M.  
Porter, Joel E.  
Powell, Steven T.  
Prachakvej, Suppamas  
Price, Bernard W. III  
Purvis, Ray L.  
Queatham, Robert L.  
Quinn, William F. Jr.  
Raab, Charles L.  
Reddy, Thomas E.  
Rinas, David L.  
Roe, Denne L.  
Rogers, William L.  
Rojas, Pedro E.  
Roth, John P. III  
Sanders (Stevens), Dee A.  
Sauerwien, Richard P.  
Saxon, David L.  
Schlumberger, Stephen H.  
Schwartz, Andrew J.  
Selim, Ali A.  
Seres, Anthony F.  
Sewell, Steven L.  
Shah, Pramod M.  
Sheahey, David J.  
Sherard, Ronald E. Jr.  
Smith, Kenneth E.  
Smith, Ricky D.  
Smith, Willard B.  
Spence, Malcolm D.  
Spradlin, Stephen R.  
Steitzleni, Michael J.  
Stewart, John J. Jr.  
Swetnam, James C.  
Swers, Don R.  
Szafr, John M.  
Teevey, John J. Jr.  
Tillman, Steven M.  
Tool, Allen R.  
Toth, Diana L.  
Utterback, Thomas G.  
Vance, Jack L.  
VanHouten, James H.  
Vroedenburg, James M.  
Ward, Robert L.  
Weidinger, Mark L.  
Wendleton, John L.  
White, Randall B.  
Wibbenmeyer, Dale J.  
Wokurka, Robert A.  
Yocom, Charles W.  
Yousefian, Javad  
Yue, Checkman M.  
Zaner, William J.  

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Abdallah, Mohammed E.  
Albers, Dennis J.  
Alper, Marc H.  
Aronberg, Garry R.  
Bagby, Claude W.  
Barger, Ricky L.  
Basye, Richard E.  
Bechtold, M. Scott  
Benoy, Leslie D.  
Berning, Duane E. Jr.  
Berry, Carrick H. Jr.  
Birchler, Mark W.  
Black, Danny R.  
Boehme, Vernon P.  
Bogler, Thomas J.  
Branstetter, John H.  
Brayfield, Bob O.  
Brendel, Jerome C.  
Brewer, Monroe F. Jr.  
Broshs, William E.  
Brugger, Patrick H.  
Calhoun, Alan J.  
Calvert, Michael W.
Capps, Jeffrey C.
Chapman, Stephen R.
Chappell, Harry A.
Chasteen, William C.
Cheasangul, Chukiat
Chen, Wen-Liang W.
Cheng, Paul H.
Cobb, David E.
Colvin, David A.
Cornwell, George C.
Coyne, Michael N.
Cravens, Robert C.
Dace, Timothy L.
Daniells, Charles P. Jr.
Davis, Gayle D.
Davis, James S.
Davis, Michael L.
DeClue, Dale R.
Dein, Robert H.
Dickerson, Richard F.
Dierker, Donald M.
Dimakis, Al G.
Drake, Kenneth D. Jr.
Dunn, Robert L.
Durington, David A.
Ebert, Joseph J.
Ellis, Thomas B.
Ernst, William K. Jr.
Eubanks, Roger J.
Finley, Larry R.
Flack, Frank L.
Foil, James L.
Forster, Terry J.
Freeze, Guy R.
Fruhe, Richard H.
Garrett, Jack T. Jr.
Giuvezan, Mark S.
Goeeke, Patrick M.
Gold, Robert E.
Gower, Patrick E.
Grana, Dominic J.
Hall, Ralph D.
Hall, Richard L.
Hamilton, David E.
Harmon, Stanley N.
Harris, Stanley J.
Hausladen, F. Steven
Hawkins, Francis C. III
Heideman, David L.
Held, Bernard D.
Henson, Marty C.
Herndon, Jeffrey G.
Hill, John E.
Hillhouse, Jim L.
Hites, Eugene J.
Hitt, Robert S.
Honse, Steven A.
Hood, Charles E.
Huang, Jong-Chin
Ingrassia, Samuel F.
Kambol, Stephen A.
Katterhenry, Rick W.
Keebler, James H.
Kile, Dennis D.
Kladiva, Allen J.
Kroeger, William H.
Kuspa, John P.
Lampe, Arthur F.
Langenbacher, William E.
Larson, Rick E.
Laughlin, Richard D.
Lewis, David A.
Lewis, David R.
Linkhart, Steven F.
Linker, Rodney E.
Linnenmann, Stephen M.
Loesch, Gerald W.
Lohman, Edward J.
Lotz, Christopher J.
Lu, Chia Soul J.
Lueckenhoff, William F.
Lurtz, Bruce D.
Lytle, Christine M.
Maddox, Hubert R.
Mahaney, Michael T.
Mahlandt, Joseph N.
Nansker, Joseph H. Jr.
Matthews, David L.
Maxwell, Robert S.
McGowan, Thomas J.
Mertens, Lawrence R.
Meyer, Charles M.
Meyer, Steve A.
Mclachmier, Terry L.
Middleton, Daniel R.
Mills, Richard D.
Milne, Thomas J.
Mittler, Thomas J.
Montana, Duane L.
Muckerman, David K.
Murray, Bill M.
Myers, Jack A. II
Nash, Terry S.
Noland, John W.
Opfer, Frank M.
1975

O'Rourke, Carol A.
Ousley, Natalie J.
Parker, David A.
Parks, John C.
Peckworth, Dana
Perko, Steven R.
Phung, Nguyen
Plank, R. David
Polcyn, Andrew J.
Prange, Neil E.
Rakowstraw, Robby Ray
Rechtien, Thomas J.
Reed, Thomas J.
Reynolds, Lloyd A.
Riedy, Rory R.
Riggs, Terry M.
Rodgers, Edward W.
Rollings, Robert R.
Rosenbaum, William G.
Roy, Daniel C.
Santhong, Vinai
Schaefer, Melvin G.
Schilling, Dan L.
Schlueter, Daniel M.
Schmidt, Frederick G.
Schneider, Thomas P.
Seely, Frank D.
Seibel, Dennis L.
Shorter, James D.
Siagian, Narwan
Sickman, John T.
Simpson, Donald E.
Skibinski, Kevin C.
Smith, Richard L.
Solar, Karen M.
Steele, Donald D.
Stein, Clarence R. III
Steinkoetter, William T.
Stewart, Robert L.
Stoops, James L.
Storck, W. Fred
Strain, Clintion F.
Stuart, Dennis L.
Sturm, Wallace F. II
Sweet, Darrell L.
Tang, Shou-Hin
Temme, Ronald C.
Thomson, Craig G.
Tichy, Laurence
Timmermann, George J.
Trower, Ronald B.
Tucker, Darrell K.
Underhill, Thomas N.

Veesaert, Chris J.
Visintainer, David A. III
Weese, John R.
Wessel, Gerald J.
Wessel, Robert A.E.
Wild, Phillip M.
Wilkerson, William I.
Williamson, Richard F.
Wilson, William F.
Wisch, David J.
Wood, Dennis L.
Woodruff, Dennis A.
Yamnitz, William P.
Young, Mark C.
Zgraggen, Thomas R.

1976

Ahal, William R.
Amen, Mark E.
Arndt, Terry L.
Austin, Margot H.
Bagnall, Kent A.
Barclay, Dennis G.
Barker, John J.
Bates, Valentino T.
Battiest, Dane G.
Bellassai, Jacques J.
Bert, Robert J.
Bowers, Craig R.
Bradford, Bruce R.
Bradley, Dale E.
Bradley, David R.
Broekelmann, Donald D.
Brown, Michael D.
Cannon, George E. Jr.
Chambers, David J.
Chughtai, Masood A.
Coberly, David L.
Coffey, Steven M.
Consolino, Michael A.
Crane, Russel J.
Dahler, Edward R. Jr.
Dabney, Marc E.
Daneshgar, George
Daneshgar, Joseph
Dickensheet, Hilton G.
Dimakis, Al G.
DiNapoli, Michael A.
Bolecki, Mark S.
Domagalski, Thomas J.
Donham, John C.
Dunn, John F.
Dutton, Dennis L.
Eastep, Lawrence W.
Edelman, Thomas M.
Edney, John W.
Ehrhard, William E.
Elgin, Richard L.
Emmerich, Michael L.
Entwistle, Ronald L.
Feldmann, John C.
Fenske, Thomas E.
Fleis, William J.
Forney, Larry D.
France, Paulette R.
Fribis, Eugene A.
Garvin, Barry G.
Gawlik, Douglas J.
Glynn, David H.
Gordy, Thomas W.
Griffith, Edward P.
Grundel, Peter N. Jr.
Haigh, Bruce W.
Harms, Dulany R.
Harris, Danny L.
Harris, Stanley J.
Haug, Gregory G.
Hawen, William G.
Hayes, Robert A.
Hendrix, Ronald R.
Hesse, Paul J.
Hicks, Gregory K.
Hough, David L.
Hussey, J. Leroy
Hummel, Robert J.
Huq, Mohamad A.
Iantuntee, Buntiam
Jaeger, John J.
Janson, Frank E.
Jerome, Michael L.
Jones, Thomas B.
Kates, Bruce C.
Keebler, James H.
Kempf, Frederick J.
Kinder, Stephen N.
Kittrell, Kyle R.
Kleber, Brian K.
Klopfner, Danny J.
Klouzek, Ronald D.
Kramer, Roger L.
Kuhn, David H.
Kunnemann, Edward S.
Lange, Lonnie L.
Larkins, Richard R.
Lavelle, Jerry F.
Lee, Jae Yon
Leeds, Milton E.
Lortz, Richard D.
Lovell, Walter H. III
Lueckenhoff, Michael J.
Lueckemeyer, Kenneth E.
Mahin, Clifford A.
Mariappan, Muthiah
Markey, Richard A.
Mattingly, John A.
Haurseth, Jerome A.
McAllister, William C. III
McCann, Lewis A.
McCarthy, Michael F.
McCoy, Thomas H.
McGavock, Michael W.
McLaughlin, James L.
Meister, William G.
Merciel, James A. Jr.
Meyer, Carey S.
Meyer, Charles E.
Meyer, Thomas E.
Miller, Thomas C.
Mills, James A.
Millsap, Steve A.
Mink, David W.
Molloy, Daniel M. Jr.
Mudd, Richard W.
Muenks, Carroll D.
Myers, Frederick R.
Nail, Matthew E.
Neher, Leland D.
Neumann, Michael G.
Noah, Richard D.
Oberdick, R. Kevin
O'Hara, John J.
Oliver, Larry J.
Olvera, Primo Juan L.
Oster, Kenneth B.
Ostrooka, David L.
Parks, John C.
Pool, John M.
Porter, Paul D.
Rackers, Dennis S.
Rath, John A.
Reed, Ronald M.
Rembold, Ronald J.
Repp, Donald P.
Rhodes, Gary W.
Rhodes, W. Bruce  
Rieser, Catherine M.  
Rodgers, Edward W.  
Rogge, Ronald T.  
Rovak, Gene L.  
Satterlee, Stephen C.  
Schenke, Karl R.  
Schmitt, Robert W.  
Schulte, Mark A.  
Selim, Ali A.  
Shanks, Richard A.  
Sheahan, David J.  
Sheehan, James J.  
Simon, Dennis M.  
Skibiski, Kevin C.  
Skillman, Daniel W.  
Smith, Wayne D.  
Sneed, Paul A.  
Spradlin, Stephen R.  
Stack, Irvin R.  
Stellern,  
   Catherine L.  
Stewart, James S.  
Stinson, David E.  
Sutton, David L.  
Swent, Brian J.  
Terschluse, Gary F.  
Tierney, William J.  
Tindall, John W.  
Vail, Roger I.  
Velilla, Carlos D.  
Verheyen, Paul E.  
Vollmar,  
   Joseph E. Jr.  
Votrain, Steven J.  
Wagner, Harold W. Jr.  
Wagner, Stephen C.  
Wassilak, Jeffrey P.  
Webelhuth, Ronald F.  
Weddle, Philip B.  
Wells, Paul L.  
Weishon, R. Allen Jr.  
Wiegele, George L.  
* Wieland, Warren R.  
Willkerson, Susan K.  
Wille, Matthew J.  
Woessner, Michael E.  
Wohlert, William D.  
Woodruff, Dennis A.  
Woods, Kenneth L.  

1977  

Abtahi, S. Hossein  
* Allen, Paul E.  
Althani, Abdulrahman  
Alvey, Mark S.  
Anderson, William E.  
Aronberg, Garry R.  
Ascoli, Douglas J.  
Ashraffzadeh,  
   Azarnoosh  
Bass, Robert L.  
Bockelman, Keith L.  
Boehme, Vernon P.  
Bradfield, James F.  
Brockman, David F.  
Burford, Edward E.  
Carter, Thomas G.  
Cowan, Keith J.  
Cox, Herbert R.  
Daher, Timothy A.  
Dickman, John J.  
Diestelkamp, David A.  
Ebersohl, Stanley F.  
Ehrhard, Raymond A.  
Feaster, Jeffrey L.  
Filla, Michael J.  
Fischer, Dennis A.  
Foehs, Mary E.  
Fu, Ho-Ming  
Gibbs, William R.  
Godwin, Wesley R.  
Gold, Robert E.  
Greenswal, Ted A.  
Groennemann, Gary L.  
Gunter, James D.  
Haggard, Henry E.  
Hatcher, Price III  
Heine, Robert S.  
Holmes, Gary G.  
Hunton, Pamela J.  
Jarrett,  
   Christopher M.  
Javammadarian, Mehran  
Johnson, Stanley C.  
Kappus, Hans-Peter F.  
Kauffmann, Mark A.  
Kienstra, Stephen C.  
Kim, Seon K.  
Kimler, Mark A.  
Kirn, Michael D.  
Koepfer, Paul E.  
LaBoube, Roger A.  
Lai, Stanley Sing-Y  
Lampe, Dominic P.  
Leonard, Robert G.  
Linck, Richard P.
Loos, Louis G. II
Lueckenhoff,
Kenneth C.
Mahin, Clifford A.
Mann, William D.
Martin, Steve A.
Mason, Marc L.
McCann, Patrick M.
McGuire, Keith W.
McKenzie, James R.
Meloy, Richard A.
Meyer, William D.
Meyerkord,
Kathleen M.
Mikhimer, Terry L.
Mohktari,
Amir-Majdi S.
Moran, Mark J.
Morgan, Twyla D.
Mosby, Randall L.
Nguyen, Hua Quy
Obermeyer, Michael B.
Owen, Patrick K.
* Palmer, Clarence C.
Palmer, Niels I.
Palmer, Patrick G.
Parrish, Bradley R.
Patel, Kaushik K.
Patterson, John W.
Peavler, Charles R.
Peter, Steven W.
Petersen, Robert D.
Poulard, Bajan
Prachakwej, Suppamas
Quagliata, Michael G.
Ray, Edgar V. Jr.
Renner, John W.
Reynolds, David L.
Reynolds, Ronald W.
Richter, Micahel G.
Riley, William A. Jr.
Rinella, Stephen M.
Rossi, John A.
Rowe, Reginald L.
Ruhling, Gary A.
Ryan, Mark E.
Ryan, Thomas C.
Salisbury, Daniel K.
Sammet, Dennis M.
Schnettgoecke,
Lambert G.
Schneebelen,
Paul C. III
Schroeder, Rene G.
Schwartz, Roger A.
Sebree, Mark M.
Seeley, David W.
Short, John D.
Simpson,
Daniel E. Jr.
Smart, Robert K.
Spears, Rick K.
Steffens, Charles T.
Steib, Stephen S.
Stevens,
Glendon T. III
Strelow, David L.
Sudholt, Terry A.
Summers, Danny C.
Summer, Richard A.
Tidquist, Dwight N.
Tsai, Kuo-Chun
Turney, Carroll T.
Uding, William C.
Unterreiner,
Charles P.
Vaill, Jerry E. Jr.
Van Houton, D. Larry
Vazinpour, Paramarz
Veesaert, Chris J.
Veille, Roger D.
Vento, John A.
Vinson, Michael D.
Walker, Larry D.
Weber, B. Scott
Weidinger, Donald J.
Weinkein, Daryl R.
Wenzlick, John D.
Williams, Ronald J.
Wisch, David J.
Wolverton, Jon A.
Woodruff, Paul M.

1977 (cont’t)

Adkison, Kevin B.
Anderson, James F.
Bates, Valentino T.
Birenbaum, David M.
Bodenhamer, Kevin C.
Brekrus, Bernard J.
Brody, Steven R.
Brown, David A.
Brown, James R. III
Brugnara, Michael A.
Burton, James H.
Busby, Michael J.
Carney, W. Dale
Carpenter, Gregory W.
Chamberlain, Ethan A.
Chenoweth, Dennis L.
Chittenden, John D.
Costello, Robert A.
Cox, Lee A.
Crockett, Michael J.
Davidson, Glen R.
Davis, David M.
Deckard, Harold L.
Dial, Gary E.
DiNapoli, Michael A.
Doering, Thomas W.
Durbin, Robert C.
Ehrhardt, James H.
Everett, William M.
Fatemi, Reza
Fennessey, Thomas W.
Ganz, Randall A.
Ghazvinian, Amir B.
Ghiasian, Mohammad R.
Goldammer, Russell L.
Goodlet, Roger F.
Gossett, Gary B.
Gredell, Thomas R.
Green, Alan W.
Green, Richard A.
Greene, Jeffry J.
Hargis, Gary L.
Harland, Stephanie A.
Harrington, Nancy E.
Hartman, Joseph P.
Hayes, Robert S. Jr.
Heatherly, Nicholas A.
Heider, Dennis W.
Heindselman, Verle J. Jr.
Heitzman, Michael A.
Hemmard, Howard N.
Hepler, Thomas E.
Hettrakul, Nipon
Hilton, Wilma K.
Hirsch, Eric L.
Hogenmiller, Glenn D.
Holcomb, Charles L.
Holtgrieve, Kenneth R.
Itheshamuddin, Syed K.
Ismail, Habib A.
Ivy, James M. II
Janke, Stephen R.
Johnson, Robert L.
Kasten, Bradley W.
Keaster, Daniel J.
Kolkmeier, Patricia A.
Kuhlmann, Edward F. Jr.
Kuyucuoglu, Erdogan
La Follette, Patricia A.
Lamkins, James A.
Lekar, Mark W.
Lesire, John L.
Lewis, David B.
Liescheidt, Brenda E.
Louiselle, Allan R.
Love, Rosemary M.
Lueckenhoff, Michael J.
Lun, Chack-Kau
Marble, Duane A.
Mathews, Fred M.
Maxfield, William L.
McAllister, William C. III
McCallister, Larry D.
McCoile, Patrick M.
McGavock, Michael W.
Melcher, John P.
Micka, Daniel A.
Miller, Gary H.
Mitchell, Robert C.
Muldoon, Richard A.
O'Brien, Joseph R. Jr.
Ortmann, David W.
Ostapowicz, Phillip G.
Pace, Gregory P.
Padfield, Lawrence J.
Parks, James S.
Parrish, Bradley R.
Pearson, Russell M.
Perkins, Gregory S.
Phung, Nguyen
Pouldar, Bijan
Pouldar, Morris
Rau, James T.
Rezazadeh-Dibaei, Mohsen
Rhodes, Gary W.
Richardson, Kent
Riggs, Charles O.
Roenfeldt, Mark A.
Roughani, Morteza
Ruester, David E.
1978 (cont)

Ryan, Thomas K.
Sauer, Stacy J.
Schaefer, Michael E.
Scheihing, Terry R.
Schenk, Daniel C.
Schiemann, Michael F.
Sees, David H.
Seppelt, Mark E.
Simac, Michael R.
Slack, Marilyn R.
Smith, Roger H.
Srifengfung,
  Driraphorn
Steib, Sherry A.
Tenholder, Robert J.
Theising, David A.
Tillman, Steven M.
Tyan, Chang-Chyh
  Vansant, Robert E.
Velloff, Thomas M.
Wagner, Ramona E.
Wang, Munshang
Ward, Ernest P. Jr.
Warmack, John P.
Weber,
  William D. Jr.
Weeks, David B.
Winter, David G.
Wootten, John H.
Work, Robert B.
Wu, Shih-Chun
Yeh, Hsang-Yang A.
Yin, Robert W.
Zachritz,
  Walter H. II
Zimmerman, Michael H.

1979

Akinsanya,
  Adebowale O.
Bach, Thomas E.
Baugh, Christopher A.
Bazzi, Riad A.
Bell, Ralph R. Jr.
Benton, Reginald H.
Benz, Larry J.
Beshir, Hassen
Beyer, Brian J.
Bilgram, Walter R.
Birchler, Donald C.
Blackburn, Samuel C.
Blankenship, James C.
Blattel, Terry L.
Bone, Gregory L.
Bowers, Craig R.
Breuer, Rodney K.
Brock, Kenneth R.
Bruce, David K.
Brueggenjohann,
  Daniel T.
Buckwalter, John R.
Bueker, Frederick Jr.
Burg, Kenneth M.
Calise, Salvatore J.
* Chaney, Brian A.
Clarke, William P.
Comstock, Gary O.
Conroy, Patrick J.
Dale, William M.
Dearing, Larry E.
Deckard, Harold L.
Dieckmann, Ronald J.
Ditch, Mark A.
Drury, Terry V.
Dutton, Dennis L.
Eales, Christopher J.
Eisenbeis, Kevin R.
Englehart, William E.
Fallon, James M.
Fazel, Bahman
Feeler, Steven S.
Field, Linn A.
Fisher, A. Jay
Flaunus, Richard J.
Fletcher, Michael L.
Ford, Stephen P.
Forrester, John K.
Foster,
  Kenneth R. Jr.
Fu, Ching-Chih
Fu, Ho-Ming
Hall, James V.
Hamed, Bashir H.
Harding, William G.
Haslett, Susan J.
Hastain, Kirk R.
Hehmeyer, John M.
Heideman, Brian D.
Heiskell, Janice T.
Helton, David L.
Helton, Jesse D.
Henson, D. Kent
Herman, Dennis J.
Herr, Mark A.
Himmell, Stephen E.
Hoff, William J.
Holcomb, Timothy J.
Hord, Douglas E.
Horton, D. Keith
Hovis, Mark A.
Hrenak, John A. Jr.
Hummel, John E.
Hurd, John P. Jr.
Jacobi, Carl L.
Jennemann, Stephen A.
Johnson, Kathryn A.
Johnson, Stephen C.
Jones, Richard A.
Kaakani, Walid M.
Karim, Khodadad K.
Kates, Bruce C.
Kaveler, Paul R.
Kemper, David A.
Kerns, Danny L.
Kinsella, Michael J.
Kitipitayangkul, Prasert
Klamert, Kenneth R.
Knuckles, Carl W.
Koch, Richard A.
Koenemann, Kent P.
Krahenbuhl, Mark D.
Kreienheder, Robert J.
Krusie, Ronald S.
Kuebler, Eugene L.
Ladley, Harold E. Jr.
Levengood, John T.
Lewis, Jeffrey S.
Liu, Chun-Chi S.
Lockington, Steven M.
Lodderhose, John R.
Madden, Timothy J.
Manning, Jon A.
Marques, Juan C.
Masnawi, Reyhanolla
Mauzy, Alan R.
Mayo, Randy L.
McCallister, Larry D.
McCann, Christopher E.
McGregor, Edward G.
Mertz, Gregory E.
Milburn, Darrell E.
Miller, George H.
Miller, Leon W. Jr.
Mills, James A.
Muckerman, David K.
Myers, Jimmie B.
Nankivil, Mark A.
Nelson, Rebecca S.
Neumann, James P.
Niermann,
Frederick J. Jr.
Obee, Ronald L.
O'Daniell, Michael W.
Ohmer, Greg D.
Pagan, John C.
Paschal, James W.
Peel, Wesley E.
Pesich, Radisav L.
Petersen, Timothy S.
Prost, Edward D. Jr.
Rapp, Robert J.
Ray, Susan J.
Redhage, Kevin L.
Riesz, Robert A.
Robinson, Jerry N.
Rosghani, Morteza
Rudy, Mark R.
Schaefer, Melvin G.
Schaefer, Michael R.
Schneider, Michael A.
Schurk, Mark J.
Scott, James T.
Shaffer, Gary W.
Sheng, Li-Hong
Sherman, Terry A.
Shirley, Jerry W.
Sikes, Stanley C.
Simac, Michael R.
Staab, Kenneth F.
Stevens,
Glendon T. III
Stock, Michael D.
Stringer, Michael J.
Summerford, Breck E.
Talley,
William S. Jr.
Thomure, Robert E.
Tochen-Bell, Paula L.
Todd, W. Stephen
Torr, Douglas F.
Turek, J. Leo
Tyweford, Harold J.
Vahedi, Mohsen
Wadsworth, Stanley L.
Ward, Gregg D.
Wargier, Steven M.
Wesselschmidt,
Katherine K.
Wiesehan, Theodore M.
Willy, George G.
Wilson, Lloyd C.
Wilson, Randall W.
Wingfield, Rebecca S.
1979 (cont)

Wolf, Lawrence D.
Yem, Alfred Wai-On
Zimmerman, Michael H.

1980

* Abtahi, Mohammad S.
Adams, David L.
Amsinger, Gary J.
Asfour, Karim W.
Ashton, Harlan R.
Asbur, Koelle G.
Bay, Catherine S.
Bean, Fred L.
Bereswill,
Wilfred F. Jr.
Bertoglio, Gregory E.
Birkemeier, Thomas M.
Blindauer, Denis H.
Booher, Paul D.
Boresi, Glennon J.
Breuer, Rodney K.
Bright, Paul K.
Brown, John K.
Buffington, Darrel L.
Chambers, Robert S.
Cheng, Chi Kit
Christy, Thomas M.
Coleman, Donald M.
Collins, Arthur L.
Coombs, Michael D.
Crump, Thomas L.
Cunningham, James C.
Davinroy, Robert D.
Dittmaier, Thomas A.
Durham, James A.
Dykman, John R.
Eckardt, Michael E.
Elliott, Larry E.
Engberg, Robert A.
Espinosa G. Carlos
Etem, Richard D.
Fahrenkrog,
Richard A.
Fehl, Barry D.
Franklin, Mark S.
Frazee, Richard W.
Fritschen,
Herman A. Jr.
Geerlings, Jack F.
Glauz, William W.
Gredell, Thomas R.
Green, Kenneth O.

Grelle, Regina
Groh, Donald R.
Guerdan, William J.
Hanneke, Firmin C.
Harnagel, David W.
Hartwig, Paul T.
Helfrich, Thomas J.
Hommel, John T.
Henehan, Dean P.
Henry, Lindsey R.
Hirtz, Darrall R.
Hoell, Roger J.
Hoolehan, James W. II
Hosp, Howard K.
Isbell, Richard W.
Jackson, Robert A.
Jany, Richard W.
Jones, Gregory A.
Jones, Ralph C.
Karney, Patrick T.
Kellett, Joseph P.
Kelley, Glennon J.
Key, Robert W. Jr.
Kovac, Steve A.
Langerak, Jon W.
Lasley, Harold E. Jr.
Latina, Harry D. Jr.
Le, Quyen Cong
Lewis, David B.
McCole, Patrick M.
McEvilly, Michael J.
Menkus, John M.
Miller, John T.
Mueller, Mark N.
Neeger, David J.
Nash, Wesley K. Jr.
Nixon, Richard R.

* Olson, John J.
Ott, Stephen A.
Owerton, Ronald E.
Perry, Michael J.
Pfitzinger, Geri K.
Quick, Robert E.
Ramey, Doratha A.
Richter, Wayne D.
Rodriguez R, Mariana
Roenfeldt, Mark A.
Rouse, Joseph D.
Ruether, Steve A.
Ruf, Thomas R.
Sales, Angelina A.
Sales, Lindolfo N.
Schmidt, Eric A.
Schmitt, David W.
Schwalb, Greg A.
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Schwenk, Joseph L.
Shackelford, Charles D.
Sharma, Ranjit K.
Siegel, Thomas M.
Siemsglusz, Mary E.
Siervers, Donald A.
Simac, David W.
Simmons, Sandra M.
Sites, Richard L.
Smith, Kenneth C.
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Smith, Thomas A.
Snyder, Brian K.
Solar, James L. Jr.
Sontag, Steven J.
Stassevitch, Eric
Stewart, Michael D.
Strauss, Gary L.
Sullivan, Charles A.
Sullivan, Thomas J. Jr.
Thebeau, Joseph L.
Theerman, Jeffrey L.
Thompson, David B.
Tinker, Kevin L.
Tockstein, William E.
Todd, Sheri J.
Turnbough, Rodney E.
Turner, Susan I.
Udoro, Joel E.
Van Malsle, Kevin H.
Vermette, Glen K.
Visio, George M.
Volker, Fredric W.
Volker, James A.
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Weeks, Greg A.
Wessel, James L.
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Westerman, James E.
Whitecotton, Thomas E. III
Wille, Robert J.
Williams, Timmy A.
Wilson, Lloyd C.
Wolters, Michael A.
Wright, John C.
Yakey, Randy P.
Zimmerman, Kenneth M.

1981

Adams, Tamara J.
Agee, Ralph Kendell
Ajemian, Gregory H.
Akeman, Kemp Eugene
Andrew, Paul D.
Arendt, Kenneth R.
Balsiger, Samuel P.
Becker, Patrick John
Bennett, William Jr.
Berry, Christopher W.
Best, Keith A.
Biddle, Richard W.
Bodine, Terrance M.
Booher, Paul D.
Boyle, William L.
Bruns, Fredric N.
Burchett, Craig G.
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Bussey, Joe P. Jr.
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Calise, Salvatore J.
Calmet, Enrique M.
Campeau, Benjamin Jr.
Carter, Barry D.
Cates, Terris Lee
Clark, Michael Lynn
Colborne, Bruce J.
Copeland, Kris A.
Costain, Michael D.
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Crannell, Ann M.
Craven, Ronald W.
Cronin, Steven Grant
Dacev, Robert J.
Daneshfar, Kouros
Darst, Jeffrey W.
Dashni, Gholam Hossein
Deweese, David Wayne
Dick, Raymond A.
Dizjani, Gholam Ali
Dolan, Francis J.
Dreiling, Randall
Emanuel, Duane Arthur
Ernst, Gregg M.
Evans, Donald L.
Fazel, Bahman
Figueroa, Marco F.
Filla, Michael J.
Frankenberg, Raymond H. II
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George, John W.
Giles, James Laurance
Goerz, Keith E.
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Grimes, Joseph Ray
Grindinger, Gregory J.
Gvillo, Mark Alan
Haldeman, Earl E. Jr.
Hamed, Bashir H.
Hannigan, Patrick J.
Harris, Daniel W.
Harrison, Mark R.
Hart, John A. III
Harvilll, George Jr.
Hamad, Daa hl II.
Hannigan, Patrick J.
Harris, Daniel W.
Harrizon, Mark R.
Hart, John A. III
Harvill, George Jr.
Hasanain, Ghazi S.
Haussmann, Diedrich A.
Hawkins, James C.
Henderson, Gary R.
Horn, Larry S.
Horst, William D.
Huang, Yei-Zen
Hubert, Bonnie S.
Huck, Mark Stephen
Jaeger, John J.
Janke, Paul D.
Jasper, Randal L.
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Keith, Marion C.
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Kinzinger, Douglas
Kirby, James R. IV
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Kowelman, Dennice
Kremer, William B.
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Larson, J. Donovan II
Larson, Rick E.
Lawler, Mary E.
Leach, Russell F. Jr.
Liebel, Scott A.
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Lockington, Steven M.
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Lun, Chack-Kau
Majors, Mark Evan
Makanvand, Shahram
Malone, Elquin L.
Marshall, Brent G.
Mayfield, Frank M.
McCoy, Karen R.
McGartland, Kevin G.
McMichael, Gary P.
McPherson, Barbara A.
Mendonca, Emanuel S.
Neyssami, Ahmad Reza

Miller, David L. Jr.
Minks, Allen G.
Monley, Donald Edward
Moore, Harry E.
Morgan, Walter J.
Mueller, David Scott
Murphy, Malcolm J. Jr.
Mustapha, H. Akimola
Nance, Arthur Raymond
O'Malley, Anthony P.
O'Rourke, Mary A.
Petering, Kathy Jo
Powers, Rhonda Sue
Rackers, Steve Gerard
Ralston, Keith A.
Ratliff, Jack D.
Rees, Mark Edward
Renick, Thomas Jerome
Richards, Jon Anthony
Rody, Robert D.
Rogers, Roddy Jack
Safaei, Shahin
Sandoval, John A.
Sauceman, Gregory P.
Scanlon, John C.
Schoen, Joseph W.
Scott, Kevin C.
Shah-Slah, Madijd
Sharkus, Charles J.
Sheppard, Charles A.
Shipley, Norman G.
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Soudani, Amer Z.
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Spicknall, Stephen L.
Sprinkle, Kevin Ray
Starkey, Daniel Jim
Stuart, Jimmy E.
Sucharit, Sompop
Summer, Richard A.
Sun, Yei A.
Sunde, Gregory G.
Supornsilaphachai, Boonsong
Swanback, Steven G.
Taylor, Charles M.
Taylor, Natalie J.
Thebeau, Dennis J.
Tolbert, Michael V.
Tsui, Anthony Po H.
Tucker, Dennis J.
Vakil, Behrooz M.
Vance, Jesse W.
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1982 (cont)

Massie, Herling
McCann, Christopher E.
McDonald, Steven A.
Nettles, Thomas More
Militzer, James C.
Mizer, Gary J.
Monie, Charles Bruce
Mooney, Thomas M.
Moran, Patrick John
Nightingale, Stephen E.
Niu, Fu-Hua
O'Connor, David M.
Ogden, Karen Rae
Ogden, Michael Layne
O'Sullivan, Stephanie Lynn
Park, John Harris
Parker, Jeffrey Lynn
Parks, Thomas Keith
Perkinson, Randall M.
Pezeshk, Farid
Pfost, Donald Brock
Pierson, David R.
Pourazari, Shahram D.
Puetz, Lynne E.
Puspo-Yudo, Bamhang W.
Roberts, Terry J.
Rose, Brent D.
Rothery, Mary Frances
Rueschoff, Thomas
Sanders, Keith M.
Schauer, Jeffrey D.
Schmerbauch, Karl J.
Schnell, William Joseph
Selle, Steve M.
Shaffer, David M.
Shaffer, Gary W.
Sharafuddin, Michael
Sifuentes, Marsha Renee
Singh, Inder Paul
Skouby, Elizabeth Jan
Snyder, Brian K.
Sparks, Richard Terry
Steegner, James Rich
Stevens, Mark Lee
Stewart, Michael D.
Strain, David Joseph
Strope, Kenneth G.
Sutterer, Kevin G.
Tarkington,

John Thomas
Thomas, Todd Michael
Toume, Nidal Gergi
Tool, Allen R.
Uhl, William Conrad
Vaughn, Stephen H. Jr.
Volker, James A.
Vong, Peng Chun
Wang, Wei-Ming
Webb, James Joseph
Westerman, Thomas J.
White, Wade James
Whitehead, Wayne Lee
Wieland, Jeffrey P.
Wilmot, John Paul Jr.
Williams, Christopher E.
Williams, Tammy
Woodring, Wade Dodd
Wunderack, Bruce Miles
Yahyavi, Amir H.
Yang, Tsung Wen
Zoukagh, Mimoun

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Al-Kour, Yassin
Allen, David Robert
Allen, Gerald Dean
Allen, William Eugene
Al-Hajri, Allam Ziad
Baker, Cathy Jane
Baker, John Edward
Baldwin, Douglas A.
Bapat, Chandrashekhar
Barhomi, Bassam Hafez
Berry, Christopher W.
Birginsson, Gunnar I.
Blandina, Joseph Jay
Brown, Randall Kent
Bruckner, Robert A.
Bryant, Dennis
Bundschu II, Anton J.
Burke, Gregory
Burlhead, Nicholas W.
Burns, Donald Raymond
Bnsse, David R.
Caiazzo, Anthony A.
Campbell, Robert J.
Canady, Douglas R.
Carla, Diana Lynn
1983 (cont)

Carlton, Jeffrey C.
Chen, Jing-Wen
Clark, Stephen Paul
Cody, Timothy J.
Conley, James Lee Jr.
Conroy, John James
Cook, Mark A.
Cook, Phillip
Czar, Lamont Henry
Diebold, Wayne G.
Doering, Mark Alan
Dohmen, Diana T.
Dohogne, Lisa Ann
Duffy, Kevin
Duncan, James Michael
Elwood, Robert Todd
Fackler, Ervin Henry
Feldmann, Joseph D.
Fitzpatrick, John T.
Geiser, Amy Elizabeth
Goehri, Scott Roger
Graham, Martin Dean
Gray, Richard W. III
Grogg, Max Gordon
Grossenbacher, Mark
Gruender, John J.
Hamilton, Randolph N.
Hanania, Tony Aniss
Harms, Mark Alan
Hartmeister, Paul E.
Hatfield, Vicki Lynn
Hawthorne, Bassam Suleima
Heaton, Stanley Dean
Hediger, Kenneth R.
Henry, Christopher L.
Henry, Richard A.
Hierholzer, Joyce E.
Hill, Kenneth Leland
Hillis Jr., Donald B.
Hinkebein, Steve G.
Humphrey, Scott D.
Israel, Caroline Ann
Israel, Lewis Daniel
Jamaludin, M. Kamarul
Johnson, Douglas B.
Johnson, Ivan Taylor
Jourdon, Mark R.
Judd, Leta Beth
Kamal, Nirman Bin
Kamphoefner, Mark F.
Kartsann, Amy Lynn
Kasperski, Elizabeth
Kaufmann, William W.
Khanafi, Shaharin Bin
Kottwitz, John David
Kozlowski, Ken John
Kronlage, Paul Joseph
Lakinger, Susan E.
Liao, Shu-Liang
Litzsinger, Barry
Loethen, Mark Leonard
Long, John R.
Mahdavi-Nejad, Saied
Mahmoud, Toufiq M.
Mahnken, Joel Lynn
Markus, Donald Gerard
Martens, Patrick A.
Masek, John Albert
Maze, Jason Charles
McCown, Allen Leroy
Mcgaughy, Anthony J.
Meiners,

Marie Christin
Mentink, Jack Richard
Meyer, Scott Aaron
Meyssami, Ahmad Reza
Miller, John T.
Miltiadou,

Eleftherios Charalam
Minks, Allen G.
Mitchler, Steven C.
Noose, Devin Anton
Morgan, Kenneth C.
Mudd, Michael Lee
Mueller, Catherine R.
Mueller, David Scott
Muret, Carolyn Louise
Nasr, Antoine Said
Nasser,

Fakhreddin D.
Nejat, Seyyed Alireza
Noe, Glenn E. Jr.
Oakes, Alfred Jerome
O’Daniell, Russell J.
O’Leary, Florence Ann
O’Reilly, Thomas P.
Pan, Lan-Cheng
Pantelides,

Christakis
Parks, M. Brad
Parrish,

Perry Mitchell
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Raja Sirajuddin,

Mohamad
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Rassuli, Roohbeh
Rhodes, Robert C.
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<td>Whitchurch, Joseph A.</td>
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1984

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<td>Abdul, Hai Muhammad S.</td>
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<td>Acker, Sharon Kay</td>
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<td>Name</td>
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<td>DeVries, Douglas M.</td>
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<td>John Aldous Fiebig,</td>
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<td>Monica L. Georgesen,</td>
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<td>Randy G. Gillam,</td>
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<td>James E. Hamoud,</td>
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<td>Thabit Hadi Hayes,</td>
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<td>Dennis Ray Henslen,</td>
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<td>Kimberly Ann Hilty,</td>
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<td>John Aloys Holland,</td>
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<td>Barry Dean Hull,</td>
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<td>Sheryl L. Husayni,</td>
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<td>Mahmud Y. Jeams,</td>
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<td>Edward R. Jackson,</td>
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<td>Douglas A. Jacobi,</td>
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<td>Carl L. Jean, Tzzy-Hwang</td>
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<td>Khandoker, Jalal U.</td>
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<td>McDougal, Daniel Scott</td>
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1984 (cont)

Shillito, Michael J.
Shore, Mary C.
Shukor, Ahmad Shukri
Southard, Rodney E.
Sprengnether, Ronald
Stalzer Jr, Richard
Stello, Michael
Steutermann, Mark G.
Stock, Mark A.
Stone, William Alan
Sutterer, Kevin G.
Tabatabai, Hossein
Tajkowski, Craig E.
Thielking, Ralph L.
Tolmeh,
Mohammad Basha
Triller, Danny Joseph
Uppot, Janardanan O.
Veteto, Jefferson B.
Vong, Peng Chun
Wade, Michael Leroy
Wobb, Mark A.
Welz, Todd A.
White, Wayne Clayton
Wichern,
Donna Gerard
Wise, Andrew Colt
Witcher, Sandra Jean
Wohlinger, William D.
Wong, Peng Keong
Woody, J. Bruce
Yahyavi, Amir H.
Yarnell, Christopher
Zeigler, James Robert
Zeltmann, Michael D.

1985

Abdullah, Mohammod A.
Ahmed, Tanzeer T.M.
Al-Par, Hisham Husni
Al-Tanjii, Abderrahman
Andrew, Christa
Baker, David James
Bouffard, Henri A.
Bowers, Bryan Everett
Brendel, John William
Bretzke, Virginia L.
Brimer, Eric Stuart
Calmet, Hector Jose
Cates, Terris Lee
Gottrell, Carrie Lou
Grane, Kamila Jean

Davis, Laurie E.
Dell'Orco,
Louis A. III
Divanbeigi, Davar
Dvorsky, Karen Sue
Eagle, H. Gene
El-Akra,
Mohammad Abdel
Eppy, Thomas M.
Eselman, Marc W.
Finch, Michael D.
Geerlings, Jack F.
Glauz, Rebecca Jean
Graham, James Chester
Gramling,
Timothy Paul
Grieshaber, Matthew
Groszewski, Paul G.
Guthrie,
Keith Patrick
Hargis, Stephen L.
Haydon, Jack B.
Haxlett, Robert C.
Hediger, Robert T.
Hillier, Jeffrey Allen
Hiller, Sharri Lynn
Hitz, Boyd Alan
Howard, Lisa Ann
Huskey, Lindell Gene
Ibrahim, Hussein Ali
James, Mark David
Jost, Linda Joan
Jurgiel, John Peter
Kawinski, Steve Paul
Kimbrough, Cherrie D.
Knobbe, Steve G.
Krause, Joann
Lakinger, Susan E.
Lee, Gary Joseph
Lown, Donna Marie
Lyon, Kent W.
Makoumi,
Bassem Asssem
Massengill,
Jeffrey B.
McGuire, Pat D.
Mevey, John Joseph
Meyer, Michelle Jean
Meyer, David Vincent
Mueller, Paul G.
Neal, Vance Allen
Newhouse, Chris J.
Nickels, Michael G.
O'Brien, David J.
Polk, Robert E. Jr.
Randolph, Robert Kirk
Reilly, Kevin John
Riechers, Kevin Leroy
Riney, Suzanne Marie
Riolo, Greg M.
Robertson, Christine
Rogers, Forrest W.
Rohr, Lawrence F.
Sandstedt, Erik Roger
Scrivens, David Allen
Sewester,
Edward Gerard
Shed, Randy Jerome
Shepard, Kevin Howard
Shore, Mary C.
Shrewsbury, John
Smith, Steven D.
Smith, Vince Edward
Steiniger, Michael T.
Stephens, Scott Dee
Tappendorf, Daniel E.
Tarr, John Edward
Truman, Kevin Zane
Warnecke, Mark Robert
Werner, Anne Marie
Willnow,
Lindle Douglas
Wiseman, Curtis Dean
Yanez, Sabin A.
Yousef, Yousef Mahmoud
Zoukaghe, Himoun
Civil Engineering Faculty
1872 - 1986

This data was compiled from information from the undergraduate bulletin, from the faculty directory, and from other sources. The timing of publication of the bulletin was such that the time persons joined or left the faculty is not entirely accurate.

* indicates that the instructor was not on the staff the previous year
** indicates the last year the instructor was on the staff

1872-1873
James W. Abert, Professor
(Abert remained on the faculty until 1877, but became professor of applied mathematics and graphics in 1873)

1873-1887
George D. Emerson, Professor

1887-1891
William H. Echols, Professor

1891-1895
Elmo G. Harris, Professor
Thomas G. Poats, Instructor

1895-1896
Elmo G. Harris, Professor
George E. Miller, Instructor

1897-1901
Elmo G. Harris, Professor and Head of Civil Engineering
1901-1902
   Elmer J. McCaustland, Professor

1902-1903
   Ira W. McConnell, Professor

1903-1904
   Elmo G. Harris, Professor and Head

1904-1905
   Elmo G. Harris, Professor and Head
   Arthur W. Conner, Assistant Professor

1905-1907
   Elmo G. Harris, Professor and Head
   Elwyn L. Clarke, Instructor

1907-1908
   Elmo G. Harris, Professor and Head
   Theodore H. Grams, Instructor

1908-1909
   Elmo G. Harris, Professor and Head
   James V. Howe, Instructor

1909-1911
   Elmo G. Harris, Professor and Head
   J. Terrence McVey, Instructor

1911-1912
   Elmo G. Harris, Professor and Head
   Ralph D. Brown, Instructor

1912-1913
   Elmo G. Harris, Professor and Head
   Edgar S. McCandliss, Instructor

1914-1917
   Elmo G. Harris, Professor and Head
   Edgar S. McCandliss, Assistant Professor
1917-1918
Elmo G. Harris, Professor and Head
Henry H. Armsby, Assistant Professor
Edgar S. McCandliss, Assistant Professor (on leave)
Roland S. Wallis, Assistant Professor
R. Stuart Lillard, Instructor

1918-1919
Elmo G. Harris, Professor and Head
Edgar S. McCandliss, Associate Professor (on leave for part of year)
Henry H. Armsby, Associate Professor
Roland S. Wallis, Assistant Professor
Edgar M. Burkhart, Instructor
R. Stewart Lillard, Instructor

1919-1920
Elmo G. Harris, Professor and Head
Henry H. Armsby, Associate Professor
Edgar S. McCandliss, Associate Professor

1920-1921
Elmo G. Harris, Professor and Head
Henry H. Armsby, Associate Professor
Clarence E. Bardsley, Assistant Professor of Topographic Engineering
Joe B. Butler, Instructor

1921-1922
Elmo G. Harris, Professor and Head
Henry H. Armsby, Associate Professor
Clarence E. Bardsley, Assistant Professor of Topographic Engineering
Joe B. Butler, Instructor
T. G. MacCarthy, Instructor
1922-1923
Elmo G. Harris, Professor and Head
Henry H. Armsby, Associate Professor
Clarence E. Bardsley, Assistant Professor of Topographic Engineering
Joe B. Butler, Assistant Professor
T. G. MacCarthy, Instructor

1923-1925
Elmo G. Harris, Professor and Head
Joe B. Butler, Associate Professor
Clarence E. Bardsley, Assistant Professor
T. G. MacCarthy, Assistant Professor
Ernest W. Carlton, Assistant Professor of Engineering Drawing

1925-1926
Elmo G. Harris, Professor and Head
Clarence E. Bardsley, Associate Professor of Hydraulic Engineering
Joe B. Butler, Associate Professor
Ernest W. Carlton, Assistant Professor of Engineering Drawing
T. G. MacCarthy, Assistant Professor

1926-1927
Elmo G. Harris, Professor and Head
Clarence E. Bardsley, Associate Professor of Hydraulic Engineering
Joe B. Butler, Associate Professor
T. G. MacCarthy, Associate Professor
Ernest W. Carlton, Assistant Prof. of Engineering Drawing

1927-1928
Elmo G. Harris, Professor and Head
Clarence E. Bardsley, Associate Professor of Hydraulic Engineering
Joe B. Butler, Associate Professor
Ernest W. Carlton, Associate Professor
1928-1929
Elmo G. Harris, Professor and Head
Joe B. Butler, Associate Professor
Clarence E. Bardsley, Assistant Professor (on leave)
Ernest W. Carlton, Assistant Professor
Theordore N. Ingraham, Instructor**
Ernest E. Decker, Instructor

1929-1930
Elmo G. Harris, Professor and Head
Joe B. Butler, Associate Professor
Clarence E. Bardsley, Assistant Professor
Ernest W. Carlton, Assistant Professor
Ernest E. Decker, Instructor

1930-1931
Elmo G. Harris, Professor and Head
Joe B. Butler, Associate Professor
Clarence E. Bardsley, Associate Professor
Ernest W. Carlton, Associate Professor
Ernest E. Decker, Instructor

1931-1932
Joe B. Butler, Professor and Head
Elmo G. Harris, Professor Emeritus
Clarence E. Bardsley, Professor
Ernest W. Carlton, Associate Professor
Ernest E. Decker, Instructor
Donald P. Barnes, Instructor*

1932-1933
Joe B. Butler, Professor and Head
Elmo G. Harris, Professor Emeritus
Clarence E. Bardsley, Professor
Ernest W. Carlton, Associate Professor
Herbert E. Ahrens, Assistant Professor*
Donald P. Barnes, Assistant Professor (on leave)**
Ernest E. Decker, Instructor
1933-34
E.G. Harris, Professor Emeritus of Civil Engineering
J.B. Butler, Professor of Civil Engineering (Chairman)
C.E. Bardsley, Professor of Hydraulic Engineering
E.W. Carlton, Associate Professor of Civil Engineering
** H.E. Ahrens, Assistant Professor (on leave)
E.E. Decker, Instructor in Civil Engineering

1934-35
E.G. Harris, Professor Emeritus of Civil Engineering
J.B. Butler, Professor of Civil Engineering (Chairman)
C.E. Bardsley, Professor of Hydraulic Engineering
E.W. Carlton, Associate Professor of Civil Engineering
E.E. Decker, Instructor in Civil Engineering
* R.Z. Williams, Instructor in Civil Engineering from the Dept. of Mechanics

1935-36
E.G. Harris, Professor Emeritus of Civil Engineering
J.B. Butler, Professor of Civil Engineering (Chairman)
C.E. Bardsley, Professor of Hydraulic Engineering
E.W. Carlton, Associate Professor of Civil Engineering
E.E. Decker, Instructor in Civil Engineering
R.Z. Williams, Instructor in Civil Engineering from the Dept. of Mechanics

1936-37
E.G. Harris, Professor Emeritus of Civil Engineering
J.B. Butler, Professor of Civil Engineering (Chairman)
C.E. Bardsley, Professor of Hydraulic Engineering
E.W. Carlton, Professor of Structural Engineering
E.E. Decker, Instructor in Civil Engineering
* ** D.J. Peery, Instructor in Civil Engineering
1937-38
E.G. Harris, Professor Emeritus of Civil Engineering
J.B. Butler, Professor of Civil Engineering (Chairman)
C.E. Bardsley, Professor of Hydraulic Engineering
E.W. Carlton, Professor of Structural Engineering
E.E. Decker, Instructor in Civil Engineering
* C.J. Millar, from the Dept. of Biology
* ** W.W. Hodge, from the Dept. of Military Science and Tactics

1938-39
E.G. Harris, Professor Emeritus of Civil Engineering
J.B. Butler, Professor of Civil Engineering (Chairman)
** C.E. Bardsley, Professor of Hydraulic Engineering (on leave of absence)
E.W. Carlton, Professor of Structural Engineering
E.E. Decker, Instructor in Civil Engineering
* V.A.C. Gevecker, Instructor in Civil Engineering
* ** R.E. Zink, Instructor in Civil Engineering
C.J. Millar, from the Dept. of Biology
* ** W.F. Powers, from the Dept. of Military Science and Tactics

1939-40
E.G. Harris, Professor Emeritus of Civil Engineering
J.B. Butler, professor of Civil Engineering (Chairman)
E.W. Carlton, Professor of Structural Engineering
E.E. Decker, Instructor in Civil Engineering
V.A.C. Gevecker, Instructor in Civil Engineering
* Ivan C. Crawford, Jr., Instructor in Civil Engineering
C.J. Millar, from the Dept. of Biology

1940-41
E.G. Harris, Professor Emeritus of Civil Engineering
J.B. Butler, Professor of Civil Engineering (Chairman)
E.W. Carlton, Professor of Structural Engineering
V.A.C. Gevecker, Assistant Professor of Civil Engineering
** E.E. Decker, Instructor in Civil Engineering
** Ivan C. Crawford, Jr., Instructor in Civil Engineering
* Wm. C. Alsmeyer, Instructor in Civil Engineering
C.J. Millar, from the Dept. of Biology
1942
E.G. Harris, Professor Emeritus of Civil Engineering
J.B. Butler, Professor of Civil Engineering (Chairman)
E.W. Carlton, Professor of Structural Engineering
V.A.C. Gevecker, Assistant Professor of Civil Engineering (on leave)
* ** T.L. Vander Velde, Assistant Professor of Civil Engineering
  Wm. C. Alsmeyer, Instructor in Civil Engineering
* W.P. Hatfield, Instructor in Civil Engineering
** C.J. Millar, from the Dept. of Biology

1943
E.G. Harris, Professor Emeritus of Civil Engineering
J.B. Butler, Professor of Civil Engineering (Chairman)
E.W. Carlton, Professor of Structural Engineering
* Roy Bremer, Assistant Professor of Civil Engineering
V.A.C. Gevecker, Assistant Professor of Civil Engineering (on leave)
  Wm. C. Alsmeyer, Instructor in Civil Engineering
* C.W. Eshbaugh, Instructor in Civil Engineering
** W.P. Hatfield, Instructor in Civil Engineering

1944
E.G. Harris, Professor Emeritus of Civil Engineering
J.B. Butler, Professor of Civil Engineering (Chairman)
E.W. Carlton, Professor of Structural Engineering
V.A.C. Gevecker, Assistant Professor of Civil Engineering (on leave)
Roy Bremer, Assistant Professor of Civil Engineering
** Wm. C. Alsmeyer, Instructor in Civil Engineering
  C.W. Eshbaugh, Instructor in Civil Engineering

1945
** E.G. Harris, Professor Emeritus of Civil Engineering
  J.B. Butler, Professor of Civil Engineering (Chairman)
  E.W. Carlton, Professor of Structural Engineering
  V.A.C. Gevecker, Assistant Professor of Civil Engineering (on leave)
  Roy Bremer, Assistant Professor of Civil Engineering
  C.W. Eshbaugh, Instructor in Civil Engineering
1945-46
J.B. Butler, Professor of Civil Engineering (Chairman)
E.W. Carlton, Professor of Structural Engineering
V.A.C. Gevecker, Assistant Professor of Civil Engineering
Roy Bremer, Assistant Professor of Civil Engineering
C.W. Eshbaugh, Assistant Professor of Civil Engineering

1946-47
J.B. Butler, Professor of Civil Engineering (Chairman)
E.W. Carlton, Professor of Structural Engineering
V.A.C. Gevecker, Assistant Professor of Civil Engineering
Roy Bremer, Assistant Professor of Civil Engineering
C.W. Eshbaugh, Assistant Professor of Civil Engineering
* E.R. Broadbent, Instructor of Civil Engineering
* ** G.N. Hackmann, Instructor in Civil Engineering
* L. Hershkowitz, Instructor in Civil Engineering
* ** D.H. Short, Instructor in Civil Engineering
* E.A. Weinel, Instructor in Civil Engineering

1947-48
J.B. Butler, Professor of Civil Engineering (Chairman)
E.W. Carlton, Professor of Structural Engineering
V.A.C. Gevecker, Associate Professor of Civil Engineering
** Roy Bremer, Assistant Professor of Civil Engineering
C.W. Eshbaugh, Assistant Professor of Civil Engineering
* A.A. Becker, Instructor in Civil Engineering
** E.R. Broadbent, Instructor in Civil Engineering
** J.G. Duba, Instructor in Civil Engineering
* F.R. Heartz, Instructor in Civil Engineering
L. Hershkowitz, Instructor in Civil Engineering
* E.J. Kimmick, Instructor in Civil Engineering
* ** G.G. Mc Kinney, Instructor in Civil Engineering
* ** R.C. Pletz, Instructor in Civil Engineering
* J.K. Roberts, Instructor in Civil Engineering
* W.F. Wegener, Instructor in Civil Engineering
** E.A. Weinel, Instructor in Civil Engineering
1948-49
J.B. Butler, Professor of Civil Engineering (Chairman)
E.W. Carlton, Professor of Structural Engineering
V.A.C. Gevecker, Associate Professor of Civil Engineering
C.W. Eshbaugh, Assistant Professor of Civil Engineering
** A.A. Becker, Instructor in Civil Engineering
** J.G. Duba, Instructor in Civil Engineering
** F.R. Heartz, Instructor in Civil Engineering
L. Hershkowitz, Instructor in Civil Engineering
** E.J. Kimmick, Instructor in Civil Engineering
* J.L. Laumand, Instructor in Civil Engineering
* J.F. McCarthy, Instructor in Civil Engineering
* C.D. Muir, Instructor in Civil Engineering
* R.A. Rapp, Instructor in Civil Engineering
J.K. Roberts, Instructor in Civil Engineering
* J.H. Senne, Instructor in Civil Engineering
* J.J. Trace, Instructor in Civil Engineering
W.F. Wegener, Instructor in Civil Engineering
* T.H. Whitfield, Instructor in Civil Engineering

1949-50
J.B. Butler, Professor of Civil Engineering (Chairman)
E.W. Carlton, Professor of Structural Engineering
V.A.C. Gevecker, Associate Professor of Civil Engineering
C.W. Eshbaugh, Assistant Professor of Civil Engineering
L. Hershkowitz, Assistant Professor of Civil Engineering
* D.L. Dean, Instructor in Civil Engineering
** J.L. Laumand, Instructor in Civil Engineering
J.F. McCarthy, Instructor in Civil Engineering
C.D. Muir, Instructor in Civil Engineering
* H.W. Nunez, Instructor in Civil Engineering
** R.A. Rapp, Instructor in Civil Engineering
J.K. Roberts, Instructor in Civil Engineering
J.H. Senne, Instructor in Civil Engineering
J.J. Trace, Instructor in Civil Engineering
** W.F. Wegener, Instructor in Civil Engineering
** T.H. Whitfield, Instructor in Civil Engineering
Appendix

1950-51
J.B. Butler, Professor of Civil Engineering (Chairman)
E.W. Carlton, Professor of Structural Engineering
V.A.C. Gevecker, Associate Professor of Civil Engineering
C.W. Eshbaugh, Assistant Professor of Civil Engineering
L. Hershkowitz, Assistant Professor of Civil Engineering
J.K. Roberts, Assistant Professor of Civil Engineering
D.L. Dean, Instructor in Civil Engineering
** J.F. McCarthy, Instructor in Civil Engineering
C.D. Muir, Instructor in Civil Engineering
H.W. Nunez, Instructor in Civil Engineering
J.H. Senne, Instructor in Civil Engineering
** J.J. Trace, Instructor in Civil Engineering

1951-52
J.B. Butler, Professor of Civil Engineering (Chairman)
E.W. Carlton, Professor of Structural Engineering
V.A.C. Gevecker, Associate Professor of Civil Engineering
C.W. Eshbaugh, Assistant Professor of Civil Engineering
L. Hershkowitz, Assistant Professor of Civil Engineering
J.K. Roberts, Assistant Professor of Civil Engineering
D.L. Dean, Instructor in Civil Engineering
C.D. Muir, Instructor in Civil Engineering
** H.W. Nunez, Instructor in Civil Engineering
J.H. Senne, Instructor in Civil Engineering

1952-53
J.B. Butler, Professor of Civil Engineering (Chairman)
E.W. Carlton, Professor of Structural Engineering
V.A.C. Gevecker, Associate Professor of Civil Engineering
C.W. Eshbaugh, Assistant Professor of Civil Engineering
L. Hershkowitz, Assistant Professor of Civil Engineering
J.K. Roberts, Assistant Professor of Civil Engineering
J.H. Senne, Assistant Professor of Civil Engineering
D.L. Dean, Instructor in Civil Engineering
C.D. Muir, Instructor in Civil Engineering
* R.A. Shoolbred, Instructor in Civil Engineering
1953-54
J.B. Butler, Professor of Civil Engineering (Chairman)
E.W. Carlton, Professor of Structural Engineering
V.A.C. Gevecker, Associate Professor of Civil Engineering
C.W. Eshbaugh, Associate Professor of Civil Engineering
L. Hershkowitz, Assistant Professor of Civil Engineering
C.D. Muir, Assistant Professor of Civil Engineering
J.K. Roberts, Assistant Professor of Civil Engineering
J.H. Senne, Assistant Professor of Civil Engineering
D.L. Dean, Instructor in Civil Engineering (on leave)
R.A. Shoolbred, Instructor in Civil Engineering

1954-55
**J.B. Butler, Professor of Civil Engineering (Chairman)
E.W. Carlton, Professor of Structural Engineering
V.A.C. Gevecker, Associate Professor of Civil Engineering
C.W. Eshbaugh, Associate Professor of Civil Engineering
L. Hershkowitz, Assistant Professor of Civil Engineering
C.D. Muir, Assistant Professor of Civil Engineering
**J.H. Senne, Assistant Professor of Civil Engineering
D.L. Dean, Instructor in Civil Engineering
* P. Harrawood, Instructor in Civil Engineering

1955-56
E.W. Carlton, Professor of Structural Engineering (Chairman)
**V.A.C. Gevecker, Associate Professor of Civil Engineering
C.W. Eshbaugh, Associate Professor of Civil Engineering
L. Hershkowitz, Associate Professor of Civil Engineering
J.K. Roberts, Associate Professor of Civil Engineering
**D.L. Dean, Assistant Professor of Civil Engineering
C.D. Muir, Assistant Professor of Civil Engineering
* J.L. Best, Instructor in Civil Engineering
P. Harrawood, Instructor in Civil Engineering
* J.B. Roberts, Instructor in Civil Engineering
W.D. Stites, Instructor in Civil Engineering
* C.E. Weddle, Instructor in Civil Engineering
1956-57
Professor:
    Carlton (Chairman)
Associate Professors:
    Eshbaugh
    Hershkowitz
    J.K. Roberts
Assistant Professors:
    * Heagler
    Muir
Instructors:
    Best
    * Capek
    * Dunn
    * Nowacki
    ** Harrawood
    ** J.B. Roberts
    Stites
    Weddle

1957-58
Professor:
    Carlton (Chairman)
Associate Professors:
    Eshbaugh
    Hershkowitz
    Muir
    Roberts
Assistant Professor:
    Haegler
Instructors:
    Best
    Capek
    Dunn
    * Grubbs
    * Henry
*   Mc Leane
    Nowacki
*   O’Neill
    Stites
    Weddle

1958-59
Professors:
    Carlton (Chairman)
    Hershkowitz
    Roberts
Associate Professors:
    Eshbaugh
    Muir
Assistant Professors:
    Best
    Heagler
    Stites
Instructors:
    Capek
    ** Dunn
    Grubbs
    Henry
    * Munger
    Nowacki
    O’Neill
    * Pearson
    Weddle

1959-60
Professors:
    Carlton (Chairman)
    * Furr
    ** Hershkowitz
    Roberts
Associate Professors:  
Eshbaugh  
Heagler  
Muir  

Assistant Professors:  
Best  
Stites  
Weddle  

Instructors:  
* Bayless  
Capek  
Grubbs  
** Henry  
Munger  
Nowacki  
** O’Neill  
** Pearson  

1960-61  
Professors:  
Carlton (Chairman)  
Furr  
Gevecker  
Roberts  

Associate Professors:  
Eshbaugh  
* Grigoropoulos  
Heagler  
Muir  

Assistant Professors:  
Best  
Stites  
** Weddle  

Instructors:  
Bayless  
Capek  
** Grubbs  
* Modesitt  

1961-62  
Professors:  
Carlton (Chairman)  
Furr  
Gevecker  
Roberts  

Associate Professors:  
Best  
Eshbaugh  
* Fry  
* Gerig  
Grigoropoulos  
Heagler  
Muir  

Assistant Professors:  
** Nowacki  
Stites  

Instructors:  
Bayless  
Capek  
Modesitt  
Munger  
Thompson  

1962-63  
Professors:  
Carlton (Chairman)  
** Furr  
Gevecker  
* Petro  
Roberts  

Associate Professors:  
Best  
Eshbaugh  
Fry
Gerig  
Grigoropoulos  
J.B. Heagler  
Muir  

Assistant Professors:  
  Capek  
  Munger  

** Stites  

Instructors:  
  Bayless  
  * Brown  
  * Evans  
  * Jobson  
  * Kick  
  Modesitt  
  L.E. Thompson  

1963-64  

Professors:  
  Carlton (Chairman)  
  Gevecker  
  Petro  
  Roberts  
  * Senne  

Associate Professors:  
  Best  
  Eshbaugh  
  Fry  
  Gerig  
  Grigoropoulos  
  Heagler  
  Muir  

Assistant Professors:  
  Capek  
  Munger  
  * Spooner  

Instructors:  
  Bayless  
  Brown  
  Evans  
  Jobson  

** Kick  
  * Lemberger  
  Modesitt  
  L.E. Thompson  

1964-65  

Professors:  
  Carlton (Chairman)  
  Gevecker  
  Grigoropoulos  
  ** Petro  
  Roberts  
  Senne  

Associate Professors:  
  Best  
  Eshbaugh  
  Fry  
  Gerig  
  Heagler  
  Muir  
  * Taylor  

Assistant Professors:  
  Bayless  
  Capek  
  Munger  
  Spooner  

Instructors:  
  Brown  
  ** Evans  
  * Hahs  
  Jobson  
  Lemberger  
  Modesitt  
  L.E. Thompson
1965-66

Professors:
   Carlton (Emeritus)
* Andrews
* Fry
* Gevecker
* Grigoropoulos
* Roberts
* J.H. Senne (Chairman)

Associate Professors:
  Best
** Eshbaugh
  Gerig (on leave)
  Heagler
  Muir
  Taylor

Assistant Professors:
  Bayless
  Capek
* Farmer
* Kincannon
* Koehler
  Munger
  Spooner

Instructors:
  Brown
** Hahs
** Jobson
  Lemberger
  Modesitt
  L.E. Thompson

1966-67

Professors:
  Andrews
** Carlton (Emeritus)
  Fry
  Gevecker

1967-68

Professors:
  Andrews
  Fry
  Gevecker
  Grigoropoulos
  Heagler
  Hershkowitz

Associate Professors:
  Best
** Eshbaugh
  Gerig
  Munger
  Muir
  Taylor

Assistant Professors:
* Armstrong
  Bayless
  Capek
* Cheng
  Farmer
* Harbaugh
** Kincannon
** Koehler
* Malisch
* Schmidt
  Spooner

Instructors:
  Brown
** Lemberger
** Modesitt
** L.E. Thompson
* Hubler
Roberts
Senne (Chairman)

Associate Professors:
  Best
  Gerig
  Munger
  Muir
  * Sieck
** Taylor

Assistant Professors:
  * Ahmed
  Armstrong
  Bayless
  Capek
  Cheng
  ** Farmer
  Harbaugh
  * Huang
  Malisch
  * Purushothaman
  Schmidt
  Spooner
  * Tinoco
  * Ural
  * Wixson

Instructor:
  Brown

1968-69

Professors:
  Andrews
  Fry
  Gevecker
  Grigoropoulos
  Heagler
  Hershkowitz
  Hubler

  Roberts
  Senne (Chairman)

Associate Professors:
  Best
  * Emanuel
  Gerig
  Muir
  Munger
  Sieck
  * Yu

Assistant Professors:
  Ahmed
  Armstrong
  Bayless
  Capek
  Cheng
  * Dare
  Harbaugh
  Huang
  * Kovacs
  Malisch
  Modesitt (on leave)
  Purushothaman
  Schmidt
  * Stevens
  L.E. Thompson (on leave)
  Tinoco
  Ural
  Wixson

Instructors:
  Brown
  Spooner

1969-70

Professors:
  Andrews
  ** Fry
  Gerig
Appendix

Gevecker
Grigoropoulos
Heagler
Hershkowitz
Hubler
Roberts
Senne (Chairman)

Associate Professors:
  Best
  * Clark
  Emanuel
  Harbaugh
  Muir
  Munger
  Sieck
  Yu

Assistant Professors:
  Ahmed
  ** Armstrong
  Bayless
  * Branum
  Capek
  Cheng
  ** Dare
  * Hahs
  Huang
  Kovacs
  Malisch
  Modesitt
  Purushothaman
  Schmidt
  Stevens
  L.E. Thompson
  Tinoco
  Ural
  Wixson

Instructors:
  Brown
  Spooner

1970-71

Professors:
  Andrews
  Best
  Gerig
  Gevecker
  Grigoropoulos
  Heagler
  Hershkowitz (Emeritus)
  Hubler
  Roberts
  Senne (Chairman)

Associate Professors:
  Cheng
  Emanuel
  Harbaugh
  Muir
  Munger
  Schmidt
  Sieck
  Ural
  Wixson
  Yu

Assistant Professors:
  Ahmed
  Bayless
  Capek
  Clark
  Huang
  * Jennett
  Kovacs
  Malisch
  Purushothaman
  Tinoco

Instructors:
  Branum
  * Green
  Hahs
Modesitt
Spooner
Stevens
Thompson

1971-72

Professors:
  Andrews
  Best
  Gerg
  Gevecker
  Grigoropoulos
  Heagler
  Hershkowitz (Emeritus)
  Roberts
  Senne (Chairman)

Associate Professors:
  Bayless
  Celis
  Cheng
  Emanuel
  Harbaugh
  Huang
  Muir
  Malisch
  Munger
  Schmidt
  Sieck
  Ural
  Wixson
  Yu

Assistant Professors:
  Ahmed
  Capek
  Clark
  Green
  Jennett
  Josey

Modesitt
Purushothaman
* Stephenson
Stevens
Tharp

Instructors:
  Hahs
  Loesing
  Spooner
  Thompson

1972-73

Professors:
  Andrews
  Best
  Geri
  Gevecker
  Grigoropoulos
  Heagler
  Hershkowitz (Emeritus)
  Roberts
  Senne (Chairman)

Associate Professors:
  Bayless
  Celis
  Cheng
  Emanuel
  Harbaugh
  Huang
  Muir
  Malisch
  Munger
  Schmidt
  Sieck
  Ural
  Wixson
  Yu
Assistant Professors:
Ahmed Capek Clark Green Jennett Josey Modesitt Purushothaman Stephenson Stevens Tharp

Instructors:
Hahs Loesing Spooner Thompson

1973-74
Professors:

Associate Professors:

Assistant Professors:
Nazeer Ahmed Frank J. Capek Ralph H. Clark


Instructor:
Vernon Loesing

1974-75
Professors:
Associate Professors:
Jerry R. Bayles
Antonio J. Celis
Franklin Y. Cheng
Jack H. Emanuel
Ju-Chang Huang
Ward R. Malisch
Clifford D. Muir
Paul R. Munger
Krishnier Purushothaman
Norbert O. Schmidt
Oktay Ural

Assistant Professors:
Nazeer Ahmed
Frank J. Capek
Ralph H. Clark
Samuel P. Clemence
Bruce H. Green
Joseph C. Jennett
James L. Josey
* Ivon Lowsley
Donald E. Modesitt
James E. Spooner
Glendon T. Stevens
Richard W. Stephenson
Edward L. Tharp
Roy E. Thompson

Instructor:
Vernon Loesing

1975-76

Professors:
William A. Andrews
John L. Best
Franklin Y. Cheng
Frank A. Gerig
Vernon A.C. Gevecker (Emeritus)
Sotirios G. Grigoropoulos
Appendix

John B. Heagler
Leon Hershkowitz (Emeritus)
Paul R. Munger
J. Kent Roberts
Joseph H. Senne (Chairman)
Lawrence K. Sieck
Oktay Ural
Bobby G. Wixson
Wei-Wen Yu

Associate Professors:
Jerry R. Bayless
Antonio J. Celis
Jack H. Emanuel
Ju-Chang Huang
Joseph C. Jennett
Ward R. Malisch
Donald E. Modesitt
Clifford D. Muir
Krishnier Purushothaman
Norbert O. Schmidt
*Jerome A. Westphal

Assistant Professors:
Frank J. Capek
Samuel P. Clemence
Bruce H. Green
James L. Josey
Vernon Loesing
Ivon Lowsley
James E. Spooner
Glendon T. Stevens
Richard W. Stephenson
Edward L. Tharp

1976-77

Professors:
William A. Andrews
John L. Best
Franklin Y. Cheng
Frank A. Gerig
Vernon A.C. Gevecker (Emeritus)
Sotirios G. Grigoropoulos
John B. Heagler
Leon Hershkowitz (Emeritus)
Paul R. Munger
J. Kent Roberts
Joseph H. Senne (Chairman)
Lawrence K. Sieck
Oktay Ural
Bobby G. Wixson
Wei-Wen Yu

Associate Professors:
Jerry R. Bayless
Antonio J. Celis
Jack H. Emanuel
Ju-Chang Huang
Joseph C. Jennett
Ward R. Malisch
Donald E. Modesitt
Clifford D. Muir
Krishnier Purushothaman
Norbert O. Schmidt
Jerome A. Westphal

Assistant Professors:
Frank J. Capek
**Samuel P. Clemence
Bruce H. Green
James L. Josey
Vernon Loesing
Ivon Lowsley
James E. Spooner
Glendon T. Stevens
Richard W. Stephenson
Edward L. Tharp
* Richard B. Jacquez

Instructor:
* Edwin R. Orwat
1977-78

Professors:
  William A. Andrews
  John L. Best
  Franklin Y. Cheng
  Frank A. Gerig
  Vernon A.C. Gevecker (Emeritus)
  Sotirios G. Grigoropoulos
  John B. Heagler
  Leon Hershkowitz (Emeritus)
  Paul R. Munger
  J. Kent Roberts
  Joseph H. Senne (Chairman)
  Lawrence K. Sieck
  Oktay Ural
  Bobby G. Wixson
  Wei-Wen Yu

Associate Professors:
  Jerry R. Bayless
  Antonio J. Celis
  Jack H. Emanuel
  Ju-Chang Huang
  Joseph C. Jennett
  Ward R. Malisch
  Donald E. Modesitt
  Clifford D. Muir
  Krishnier Purushothaman
  Norbert O. Schmidt
  Jerome A. Westphal

Assistant Professors:
  Frank J. Capek
  Bruce H. Green
  James L. Josey
  Vernon Loesing
  Ivon Lowsley
  James E. Spooner
  Glendon T. Stevens
  Richard W. Stephenson
Edward L. Tharp
Richard B. Jacquez

Instructor:
Edwin R. Orwat

1978-79

Professors:
William A. Andrews
John L. Best
Franklin Y. Cheng
Frank A. Gerig
Vernon A.C. Gevecker (Emeritus)
Sotirios G. Grigopoulos
John B. Heagler
Leon Hershkovitz (Emeritus)
Paul R. Munger
J. Kent Roberts
Joseph H. Senne (Chairman)
Lawrence K. Sieck
Oktay Ural
Bobby G. Wixson
Wei-Wen Yu

Associate Professors:
Jerry R. Bayless
Antonio J. Celis
Jack H. Emanuel
Ju-Chang Huang
Joseph C. Jennett
Ward R. Malisch
Donald E. Modesitt
Clifford D. Muir
* Shamsher Prakash
Krishnier Purushothaman
Norbert O. Schmidt
Jerome A. Westphal

Assistant Professors:
Frank J. Capek
Bruce H. Green
James L. Josey
Vernon Loesing
Ivon Lowsley
James E. Spooner
Glendon T. Stevens
Richard W. Stephenson
Edward L. Tharp
Richard B. Jacquez

Instructor:
Edwin R. Orwat

1979-80

Professors:
William A. Andrews
John L. Best
Franklin Y. Cheng
Frank A. Gerig
Vernon A.C. Gevecker (Emeritus)
Sotirios G. Grigoropoulos
John B. Heagler
Leon Hershkowitz (Emeritus)
Ju-Chang Huang
Paul R. Munger
J. Kent Roberts
Norbert O. Schmidt
Joseph H. Senne (Chairman)
Lawrence K. Sieck
Bobby G. Wixson
Wei-Wen Yu
Jack H. Emanuel

Associate Professors:
Charles E. Dare
Jerry R. Bayless
** Antonio J. Celis
** Ward R. Malisch
Donald E. Modesitt
Clifford D. Muir
Purush K. TerKonda (formerly Purusothaman)
Glendon T. Stevens
Assistant Professors:
Frank J. Capek
Bruce H. Green
Richard B. Jacquez
Vernon Loesing
Ivon Lowsley
Charles Morris

Instructor:
Edwin R. Orwat

1980-1981

Professors:
William A. Andrews
John Best
Franklin Cheng
Jack Emanuel
Frank Gerig
Vernon Gevecker (Emeritus)
Sotirios Gregory Grigoropoulos
John Heagler
Ju-Chang Huang
Paul Munger
Shamsher Prakash
J. Kent Roberts
Norbert Schmidt
Joseph Senne (Department Chairman)
Lawrence Sieck
Bobby Wixson
Wei-Wen Yu

Associate Professors:
Jerry Bayless
Charles Dare
Donald Modesitt
Clifford Muir
Richard Stephenson
Glendon Stevens
Purush TerKonda  
Jerome Anthony Westphal

Assistant Professors:
  Frank Capek  
  Bruce Green  
  ** Richard Jacquez  
  Rodney Lentz  
  Vernon Loesing  
  * Roger Smith

Lecturer:
  * Richard L. Elgin

1981-1982

Professors:
  William A. Andrews  
  John Best  
  Franklin Cheng  
  Jack Emanuel  
  Frank Gerig  
  Vernon Gevecker (Emeritus)  
  Sotirios Gregory Grigopoulos  
  John Heagler  
  Ju-Chang Huang  
  Paul Munger  
  Shamsher Prakash  
  J. Kent Roberts  
  Norbert Schmidt  
  Joseph Senne (Department Chairman)  
  Lawrence Sieck  
  Bobby Wixson  
  Wei-Wen Yu

Associate Professors:
  Jerry Bayless  
  Charles Dare  
  Donald Modesitt  
  Clifford Muir  
  Richard Stephenson  
  Glendon Stevens
Purush TerKonda
Jerome Westphal

Assistant Professors:
Frank Capek
Shou-Yuh Chang
* Brian Dempsey
Bruce Green
Rodney Lentz
** Vernon Loesing
   Roger Smith

Lecturer:
Richard L. Elgin

1982-1983

Curators' Professor:
Wei-Wen Yu

Professors:
William Andrews
John Best
Franklin Cheng
Jack Emanuel
Frank Gerig
Vernon Gevecker (Emeritus)
John Heagler
Ju-Chang Huang
Paul Munger
Shamsher Prakash
J. Kent Roberts
Norbert Schmidt
Joseph Senne (Department Chairman)
Lawrence Sieck
Richard Stephenson
Bobby Wixson

Associate Professors:
Jerry Bayless
Charles Dare
Donald Modesitt
Charles D. Morris
Appendix

Clifford Muir
Glendon Stevens
Purush TerKonda
Jerome Westphal

Assistant Professors:
Frank Capek
Shou-Yuh Chang
Brian Dempsey
Richard L. Elgin
Bruce Green
Rodney Lentz
Roger H. Smith

Lecturer:
* John B. Kincaid

1983-1984

Curators’ Professor:
Wei-Wen Yu

Professors:
William Andrews
John Best
Franklin Cheng
Jack Emanuel
Frank Gerig (Emeritus)
Vernon Gevecker (Emeritus)
John Heagler
Ju-Chang Huang
Paul Munger
Shamsher Prakash
J. Kent Roberts
Norbert Schmidt
Joseph Senne (Department Chairman)
Lawrence Sieck
Richard Stephenson
Bobby Wixson

Associate Professors:
Jerry Bayless
Charles Dare
Donald Modesitt
Charles Morris
Clifford Muir
Glendon Stevens
Purush TerKonda
Jerome Westphal
Assistant Professors:
Frank Capek
Shoou-Yuh Chang
Brian Dempsey
** Richard L. Elgin
Bruce Green
Rodney Lentz
Roger Smith
Lecturer:
John B. Kincaid

1984-1985
Curators’ Professor:
Wei-Wen Yu
Professors:
William Andrews
John Best
Franklin Cheng
Jack Emanuel
Frank Gerig (Emeritus)
Vernon Gevecker (Emeritus)
John Heagler
Ju-Chang Huang
Paul Munger
Shamsher Prakash
J. Kent Roberts
Norbert Schmidt
Joseph Senne (Department Chairman)
Lawrence Sieck
Richard Stephenson
Bobby Wixson
Associate Professors:
   Jerry Bayless
   Charles Dare
   Donald Modesitt
   Charles Morris
   Clifford Muir
   Glendon Stevens
   Purush TerKonda
   Jerome Westphal

Assistant Professors:
   Frank Capek
   Shoou-Yuh Chang
   Brian Dempsey
   Bruce Green
   Rodney Lentz
   * David Richardson
   Roger Smith

Lecturer:
   John B. Kincaid

1985-1986

Curators' Professor:
   Wei-Wen Yu

Professors:
   William Andrews
   John Best
   Franklin Cheng
   Jack Emanuel
   Frank Gerig (Emeritus)
   Vernon Gevecker (Emeritus)
   John Heagler
   Ju-Chang Huang
   Paul Munger
   Shamsher Prakash
   J. Kent Roberts (Emeritus)
   Norbert Schmidt
   Joseph Senne (Emeritus)
Richard Stephenson
Bobby Wixson

Associate Professors:
  Jerry Bayless (Interim Chairman)
  Charles Dare
  Rodney Lentz
  Donald Modesitt
  Charles Morris
  Clifford Muir
  Glendon Stevens
  Purush TerKonda
  Jerome Westphal

Assistant Professors:
  Frank Capek
  Shoou-Yuh Chang
  Brian Dempsey
  Bruce Green
  David Richardson
  Roger Smith

Lecturer:
  John B. Kincaid
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