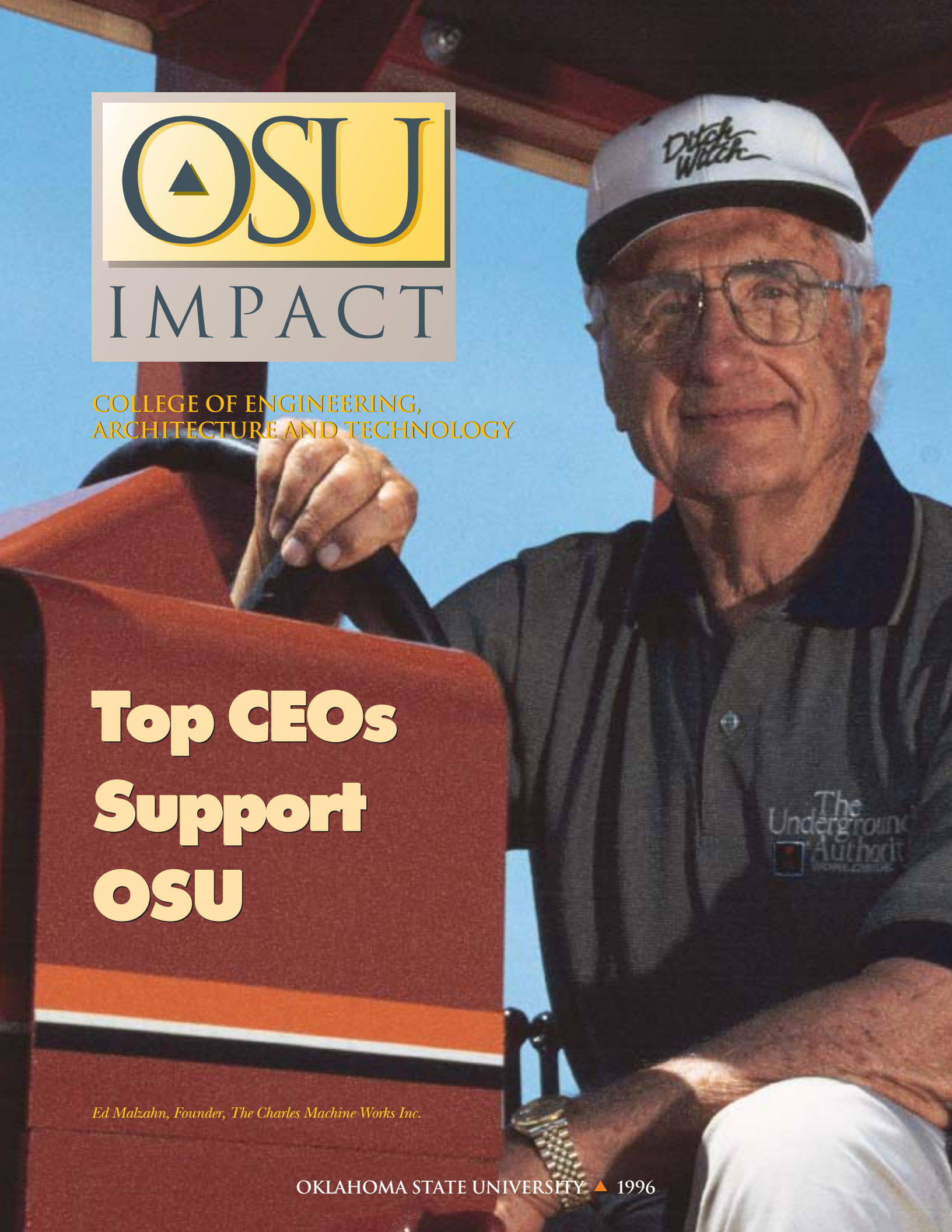
OSU IMPACT

COLLEGE OF ENGINEERING,
ARCHITECTURE AND TECHNOLOGY



Top CEOs Support OSU

Ed Malzahn, Founder, The Charles Machine Works Inc.

OKLAHOMA STATE UNIVERSITY ▲ 1996

FROM THE DEAN

When you read this issue of IMPACT, I know that you will be impressed with the people and programs associated with the College of Engineering, Architecture and Technology at Oklahoma State University!

Two CEAT professors, Tom Haan and Tim Greene, recently received special recognition; a class of architecture students has had a major impact on the renewal of downtown Oklahoma City; several student design teams have excelled in national competition; and much more has happened since we last shared our accomplishments with you.

A special feature in this issue focuses on the top executives of four Oklahoma companies - Edwin Malzahn, Jim Barnes, Wayne Allen and Frank McPherson. They all got their start at OSU in our College. These "Cowboy" CEOs have been role models for many who have sought encouragement and direction. They have been "pilots" in a changing world.

Also featured are the 1994 and 1995 Hall of Fame inductees and 1995 and 1996 Lohmann Medal awardees. You will be impressed with the profound impact these distinguished graduates have had on their profession. Each has set a marvelous example for OSU's future graduates.

Still another special feature of this issue is an update on the Advanced Technology Research Center, a facility which will ensure that the college continues to prepare our graduates to become "pilots" in a rapidly changing world.

Through people and programs, the College of Engineering, Architecture and Technology is making an IMPACT. Do not keep what you read here a secret! Help us keep turning dreams into reality.

Karl N. Reid

Karl Reid, Dean
College of Engineering, Architecture and Technology

I M P A C T

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ATRC*update*

A Dream Takes Shape

"The ATRC is not just a building. It's almost a scientific or technical instrument," says Dan Grischkowsky, professor of electrical and computer engineering. For Grischkowsky and his colleague Don Lucca, associate professor of mechanical and aerospace engineering, CEAT's new Advanced Technology Research Center will be the instrument that allows OSU's engineering students the opportunity to work on real-world problems and research.

In a proposal to the National Science Foundation's Academic Research Infrastructure Program, Lucca and Grischkowsky have requested funding for a micro-engineering research facility to be located in the ATRC basement.

The lab will feature two elements – a facility for ultraprecision engineering where experiments requiring the control of temperature and humidity can be performed, and a state-of-the-art lithographic facility. The cleanrooms in the lithographic area will allow OSU researchers to finally fabricate their own opto-electronics circuitry for laser-driven electronics.

CEAT's new Advanced Technology Research Center, scheduled to be completed in the fall of 1997, will allow students to gain exposure to real-world problems and research, enhancing even more their ability to enter the work force.

"The driving force here comes from the fact that industry now wants students who are already trained," Grischkowsky says. The proposal identifies the courses that will incorporate the facilities – using what they call "The Teaching Hospital Paradigm."

The ATRC will be a location for training engineers just as hospitals are involved in the training of medical doctors. Bringing research and instruction together, Grischkowsky says, is the overall mission of establishing the facility.

"Students will take their classes, then go to work on real projects," Lucca says. "They need to work directly with people from industry under structured conditions and with real deadlines."

Grischkowsky says the research possibilities generated by the facility will mean added responsibilities for faculty. "But research is part of the university's mission," he says, "and directly overlaps with our function as teachers.

"The ATRC will enable us to do unique projects. If we focus on some key objectives, we can do anything as well, if not better, than anyone else in the country," Grischkowsky says.

Mark the date Oct. 1, 1997. That's when the ATRC is scheduled to be ready for occupancy and the dream will become reality. ▲

ADAM HUFFER

theCuttingEdge

Ring Laser Technology Circles the Earth

Only two ring lasers exist in the world bigger than the 10-inch models widely used as navigational tools for ships and airplanes – and both were designed by OSU electrical engineering professor Hans Bilger.

Not only did the professor design and help construct the 1-meter by 1-meter ring lasers located in New Zealand and Germany, but in the process he proved to a doubting scientific community that it could be done.

"Our breakthrough in ring lasers was not anticipated and, in fact, was considered impossible," says Bilger, who presented the design to a team of scientists at the University of Canterbury in Christchurch, New Zealand, as part of his 1986 Erskine Fellowship. New Zealand's ring laser, the Canterbury I (C I), produced its first signals on Oct. 4, 1991.

Significantly more accurate than a compass, small ring lasers function as gyroscopes in aircraft and ships and are also built into missiles to keep them on target.

Because of its larger size, the Canterbury I has substantially greater accuracy, with the potential capability of measuring minute changes in the Earth's rotation caused by movement of large masses such as tides, hurricanes and nuclear explosions and by seismic events. The latter abound in New Zealand and some have already been recorded with C I.

"We've gotten beautiful data from it," Bilger says. "The performance is well beyond my expectations. Our device is capable of picking up one-tenth of a millionth of the Earth's rotation rate."

In 1994, Bilger designed a second ring laser for the Institute for Applied Geodesy in Germany that should be operational this summer. Unlike the handmade C I, this newer version, named Canterbury II, is a professionally built model that's enclosed in a glass-ceramic material unaffected by fluctuating temperature.

This year, Bilger is designing a 4-meter-square ring laser. "We hope this will be working by the year 2000," Bilger says.

Bilger says his years of research with students, especially A. T. Zavodny and W. K.. Stowell in the 1970s, gave him the background necessary to create an enlarged ring laser. "Only from our extensive OSU experiments did I know the tricks to eliminate the guesswork involved in building a ring laser this big," he says.

As a consequence of C I's success, it and C II have generated much publicity in newspapers, magazines and in technical literature in New Zealand and Germany. The scientists participating from the three continents have also published many papers about the performance of these devices.

To Bilger, who came to OSU in 1963, it is remarkable that a project originating in his office is now shared on three continents. "OSU can be proud," he says. "All of this was generated here by my students and myself and it has found international recognition. Now we are able to envision new fields of applications." ▲

JANET VARNUM

PHOTO/COURTESY H.R. BILGER

Hans Bilger, third from left, OSU professor of electrical engineering, designed the world's first 1-meter-square ring laser. With him are the New Zealand ring laser team comprised of renowned scientists and professors from New Zealand and one professor from Colorado.

New Process Tapers Pole Production Costs

An idea for an innovative approach to a manufacturing process has provided dozens of students in the school of mechanical and aerospace engineering with the challenge of solving a real-world engineering problem.

Under the guidance of Richard Lowery, professor of mechanical engineering, and Larry Hoberock, professor and head of the school of mechanical and aerospace engineering, students have developed a new method for the fabrication of tapered steel poles.

Uses for the versatile poles include supporting street lights, signs and traffic signals. Currently, one U.S. manufacturer and several foreign makers, using methods developed more than 50 years ago, dominate the market for the poles.

OSU's patent-pending process incorporates two simple, inexpensive presses and a longitudinal welder. "This new process holds manufacturing costs to dramatically less than present methods," Lowery says. "It relies on less expensive equipment yet produces superior quality poles."

The idea began more than five years ago as an unfunded, undergraduate design project. Realizing its potential, Lowery and Hoberock requested and gained funding from the Oklahoma Center for Integrated Design and Manufacturing, the Oklahoma Center for the Advancement of Science and Technology and the U.S. Department of Energy.

"When we were first approached by a start-up manufacturing firm in Tulsa to devise a better process for manufacturing tapered poles, we realized taking on such a project would provide enhanced opportunities for our students to gain valuable design and manufacturing experience on a complicated problem," Hoberock says.

"The educational experience gained by students who have worked on this project has been exceptional and certainly has made them more valuable in the job market," he says.

Since it began, eight graduate students have earned master's degrees while working on aspects of the process. They have since landed employment with reputable firms such as The Charles Machine Works Inc., Deere and Company and Hewlett Packard, Lowery says.

A number of undergraduates have also benefited by completing their senior projects while studying or improving processes in the welding and press designs.

Rex Mennem, a graduate student continuing his senior design work as part of the requirements for a master's degree, credits Lowery's guidance for the success of students working on the project. "He facilitates our creativity and serves as our mentor," Mennem says. "He'll say, 'This is what we need to do,' and then he'll ask for our suggestions on how to accomplish it."

Lowery says the new process will eventually find a home on a production line.

"Prospective manufacturers have indicated an interest in continuing the project's development to produce tapered poles using OSU's new method," he says. ▲

ADAM HUFFER

With the guidance of CEAT professors Richard Lowery and Larry Hoberock, OSU undergraduates developed an innovative and inexpensive method for the fabrication of tapered steel poles. Mechanical engineering senior Pat Straughan, above, makes adjustments to the prototype.

It's a Breeze!

OSU's new wind tunnel is up and blowing ...

Professor Andy Arena was serious when he contacted OSU Food Services to order 72,000 drinking straws for the new wind tunnel being constructed in the School of Mechanical and Aerospace Engineering. Arena, professor of mechanical and aerospace engineering, needed the straws for construction of one of the most modern university wind tunnels in the nation.

"This facility, one of the finest in its class in this region, is giving OSU students hands-on experience with state-of-the-art aerodynamic test facilities and instrumentation," says Larry Hoberock, professor and head of the school.

A high degree of flow quality was the primary design consideration for the new tunnel and that's where the straws came into use. They were placed in the wind tunnel exit because they are ideal flow conditioners and were much less expensive than the honeycombs used in the inlet.

"Our intention is for the wind tunnel to provide opportunities for instruction, research and industry," Arena says. Completed in late 1995, the tunnel is expected to play a major role in contracting with Oklahoma industries for production development and analysis.

Students not only helped design the wind tunnel, they built scale models and tested flow quality using computer programs. Work done by students and faculty cut the cost of the facility in half. "That was one way we were able to cut our costs," Arena says.

All thermal-fluids faculty in the school are involved with the wind tunnel, especially Frank Chambers because of his significant experience in the use of wind tunnels. "Dr. Chambers contributed to the design as well as acquisition of the wind tunnel," Arena says.

Oklahoma businesses were the primary suppliers for fabrication and equipment purchases. For example, the fiberglass contraction and diffuser forming the major sections of the tunnel were built by Diehl Aero-Nautical Company of Jenks, owned by OSU alumni Tom Diehl, '49, economics, and his son Dan, '75, business.

To maintain the high degree of flow quality, air is drawn through the tunnel and exhausted outside. When the tunnel is in use, large doors at the end of the non air-conditioned hallway are opened to pull in air. "Even running at top speed, the air coming down that hall moves no faster than 10 feet per second and feels like a stiff breeze," Arena says.

"Noise isn't a problem either. We can go from zero to 185 feet per second in the wind tunnel with relatively little noise."

Wind tunnels have a variety of applications, Arena explains, including helping people understand the flow field around tall buildings and wind problems that placement of a new building might cause pedestrians. It also illustrates how air flows around an airplane wing and even how the wind moves through a wheat field, dispersing seeds or pollutants. ▲

Dottie Witter

Andy Arena, left, professor of mechanical and aerospace engineering, and Justin Cates, mechanical engineering graduate assistant, discuss the inlet contraction of OSU's new wind tunnel.

Noteworthy

Greene to Head IIE

The College of Engineering, Architecture and Technology can now claim a distinction that no other institution can match – for the fourth time an OSU faculty member has been selected to head the prestigious Institute of Industrial Engineers. In April, Timothy J. Greene began serving as president-elect of the IIE and next year he will serve as president.

Greene, professor and head of the school of industrial engineering and management since 1991, became interim associate dean for research in 1995. He has distinguished himself as a researcher and instructor, teaching 13 undergraduate and graduate courses at OSU, Virginia Tech and Purdue. For his work as an instructor, Greene received the Pritsker Outstanding Teacher Award in 1992 and in 1987 he was named an Outstanding Young Engineer by both the Society of Manufacturing Engineers and the Institute of Industrial Engineers.

Greene has been instrumental in reshaping the introduction to engineering course. With an emphasis on student success skills, motivation and professionalism, the course allows students to explore various engineering fields before selecting a specialization. As interim associate dean, Greene is responsible for OSU's field office at Eglin Air Force Base, fla. The college recently received a multimillion dollar grant to continue the project.

Other OSU faculty who have served as president of IIE include Ken Case, Joe Mize and Wilson Bentley. IIE is an international organization boasting 24,500 members in 42 countries worldwide. ▲

Adam Huffer

Haan Inducted into NAE

For the third time in history, an OSU professor has been inducted into the National Academy of Engineering. C. Thomas Haan, Regents Professor and Sarkeys Distinguished Professor of biosystems and agricultural engineering, received this prestigious recognition in September 1995.

Election to NAE is among the highest professional distinctions accorded an engineer. Other OSU professors who have been inducted into NAE are Ken Case (1990) and Joe Mize (1988), both professors of industrial engineering and management.

This honor brings recognition to CEAT for its high quality programs and the added credibility provides Haan the opportunity to sit on committees advising government agencies and Congress. Haan says he is currently serving on the National Research Council's Committee on Water Resources Research.

Haan's recognition stems from his contributions to the analysis and design procedures of storm water runoff and sedimentation control systems and stochastic hydrology. He is the author or coauthor of many technical papers and has also written and edited books on statistical hydrology, hydrologic modeling and engineering hydrology. His current research focuses on uncertainty, parameter estimation and validation of hydrologic and water quality models.

An Indiana native, Haan received his bachelor's and master's degrees from Purdue University and his doctorate in 1967 in agricultural engineering at Iowa State University. ▲

Jennifer Wingett

CEAT Honors Three with Hall of Fame Induction

In 1994 and 1995 the College of Engineering, Architecture and Technology honored three of its top alumni with induction into the CEAT Hall of Fame. Donald R. Lehman was selected in 1994 and in 1995 Ted E. Davis and Charles L. Hardt were recognized.

Like his employer, the Hoechst Celanese Corporation, **Don Lehman** ('69, chemical engineering) is unique, versatile and innovative. Since joining the company in 1969, he has spun his way to the top as president of Hoechst Celanese North American Textile Polyester, responsible for the corporation's North American polyester textile fibers businesses.

Don Lehman

In his climb through the ranks, Lehman has served as process engineer, production superintendent, process engineering superintendent, manager-international planning, technical manager, plant manager, director of operations and business services, business director, and vice president/general manager of both methyl and oxo chemicals and monomers and acetyl chemicals. His philosophy for success: "work hard and play hard."

Lehman credits CEAT faculty members John Erbar and Robert Robinson for laying the foundation for his future success.

Lehman currently serves as chairman of the CEAT Associates executive committee.

During his youth, **Ted Davis** ('62, industrial engineering and management, '65, M.S.), was intrigued with putting things together to make them work. That curiosity, coupled with his keen interest in math and science, were sure signs of an engineer in the making.

Originally Davis came to OSU on a basketball scholarship and later played varsity football, but as he worked toward his engineering degree, industrial engineering professors Wilson Bentley and Earl Ferguson encouraged him to pursue a master's degree.

Ted Davis

Degrees in hand, Davis went to work for Conoco Inc. in 1965 and has held various positions in petroleum exploration and production, natural gas operations, pipelines, gas processing, commercial and regulatory activities, and liquefied petroleum gas operations and marketing. In 1991 he was named vice president of Upstream North America, with responsibility for exploration, production, natural gas and gas products operations, and commercial activities in North America, Mexico and the Caribbean. He is also a vice president of DuPont, Conoco's parent company.

Davis served on the OSU Foundation's board of governors from 1988-94.

Charles L. Hardt ('67, civil engineering, '81, M.S.) shoulders unprecedented responsibilities for the City of Tulsa, serving both as public works director and chief operations officer. These dual appointments grew out of his ability to "engineer" departments and duties. In 1990 he consolidated four departments into the Public Works Department, taking on responsibility for streets, flood control and drainage, water and wastewater, traffic engineering, building and development permits, public buildings and public property, and refuse collection and disposal. In 1992 he accepted the additional responsibility of urban development, parks and recreation, airports, the Gilcrease Museum and public events.

Hard work, long hours and perseverance come naturally to Hardt. And by applying the principle "do more with less," he has earned the public trust.

Charles L. Hardt

Hardt's career as a professional engineer began with the Chicago Bridge and Iron Company, followed by four years as a commissioned officer with the National Oceanic and Atmospheric Administration. In 1971 he moved to Tulsa where he has worked in both the public and private sectors. One of his most noted accomplishments is his award-winning design of flood control and stormwater management programs. ▲

VONDA EVANS

Making A Difference From the Top Down

Oklahoma's 'Cowboy' CEOs

What do Wayne Allen, James E. Barnes, Edwin Malzahn and Frank A. McPherson have in common? Plenty.


Allen


Barnes


Malzahn


McPherson

All are graduates of the College of Engineering, Architecture and Technology. All are highly successful, hard working top executives of Oklahoma companies. And all four have retained strong ties with CEAT and Oklahoma State University, lending their business expertise and broad real-world experiences to assist the college in producing the best graduates possible. In fact, Allen, Barnes, Malzahn and McPherson are outstanding examples of OSU graduates whose "dreams have been brought to life."

"As OSU continues with its first comprehensive campaign, 'Bringing Dreams to Life,' it is appropriate to focus on these four. Not only are they extremely successful CEAT alumni, but all have given something back to OSU – and are continuing to do so," says Karl Reid, dean of the College of Engineering, Architecture and Technology.

"These individuals represent a special group of people – people who are making a difference. Without the backing and guidance of these CEAT supporters, the college would not be the strong institution it is today," Reid says. "For example, Wayne Allen is chairman of OSU's 'Bringing Dreams to Life Campaign.' Frank McPherson and Jim Barnes are both campaign vice chairs. Ed Malzahn has served as an OSU Regent and is currently an OSU Foundation governor. And all four are CEAT Associates – our strategic advisory committee," says Reid.

Allen, Barnes, Malzahn and McPherson are all inductees into the CEAT Hall of Fame. To date, only 48 CEAT alumni have received this prestigious honor. Malzahn is a 1966 inductee, McPherson and Barnes were inducted in 1985 and 1986, respectively, and Allen was honored in 1992.

"The qualities of those we pay tribute to on the following pages include modesty and integrity, dignity and quiet leadership, aspiration and perseverance, and sound judgment and vision – the qualities inherent in all our Hall of Fame inductees," says Reid.

"They serve as inspiration to us all."

Stories by Jennifer Wingett and Adam Huffer

ENGINEERING AN OKLAHOMA FUTURE – WAYNE ALLEN

Wayne Allen has come a long way since his days at Stillwater High School when he dreamed of becoming an engineer. If he could have peered into the future, no doubt he would have been astonished to see himself serving as the CEO of Phillips Petroleum.

"When preparing to attend OSU I met with the dean of engineering, Edward R. Stapley. We talked about what I liked to do – which was probably work with cars at that time – and we concluded that I should study mechanical engineering."

Arbitrarily, Allen selected the petroleum industry as the focus of his studies. "It seemed to fit well with Oklahoma, and I knew I wanted to stay in the state," Allen says.

Allen received a bachelor's degree from OSU in 1959 in mechanical engineering and a master's in industrial engineering and management in 1969. Influential engineering professors remembered by Allen include Jay Boggs, Ernest Fitch Jr. and Earl Ferguson.

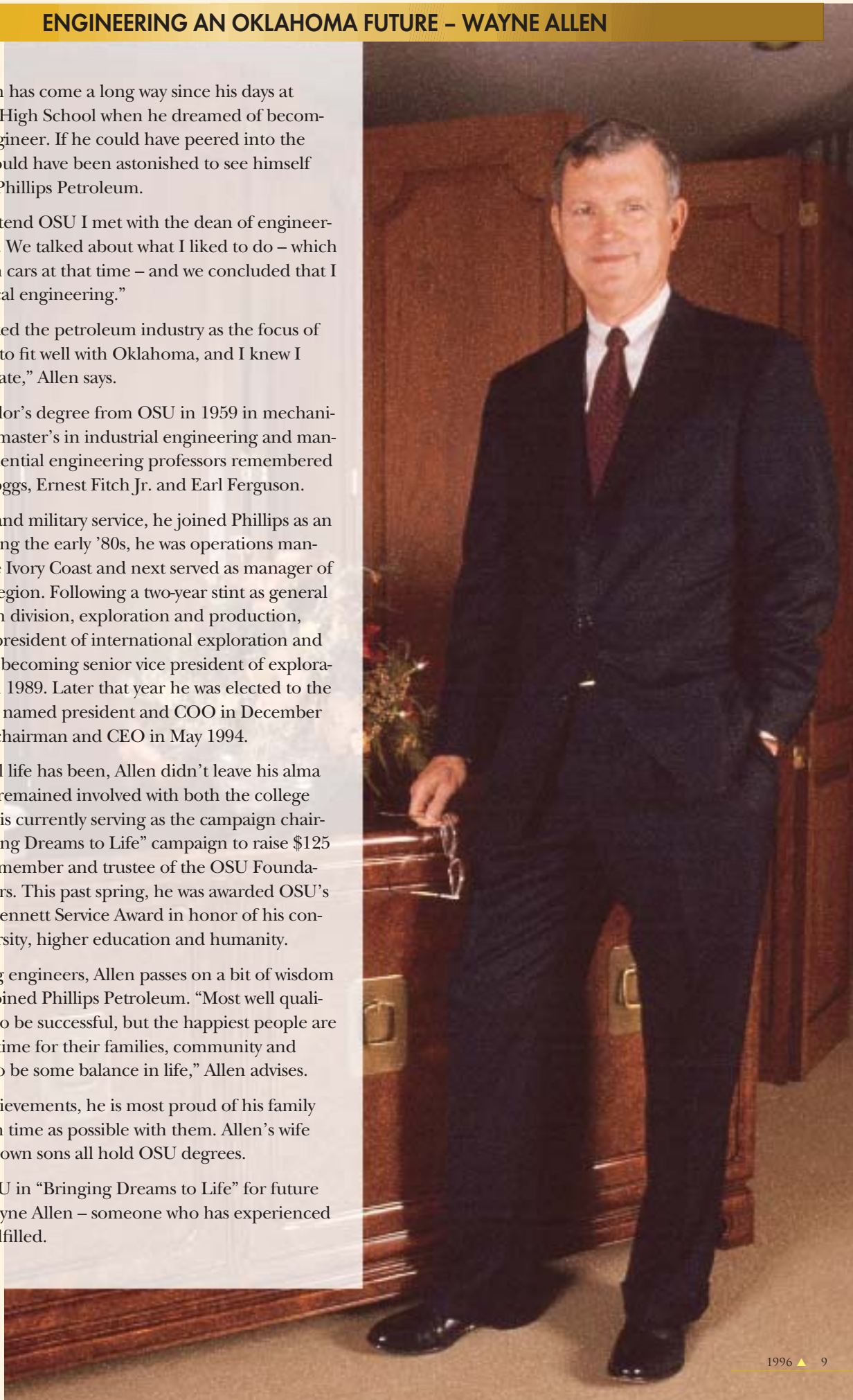
Following graduation and military service, he joined Phillips as an engineer in 1961. During the early '80s, he was operations manager for Phillips on the Ivory Coast and next served as manager of the United Kingdom region. Following a two-year stint as general manager of the western division, exploration and production, Allen was named vice president of international exploration and production at Phillips, becoming senior vice president of exploration and production in 1989. Later that year he was elected to the board of directors, was named president and COO in December 1991, and was named chairman and CEO in May 1994.

Busy as his professional life has been, Allen didn't leave his alma mater behind. He has remained involved with both the college and the university and is currently serving as the campaign chairman for OSU's "Bringing Dreams to Life" campaign to raise $125 million. Allen is also a member and trustee of the OSU Foundation Board of Governors. This past spring, he was awarded OSU's prestigious Henry G. Bennett Service Award in honor of his contributions to the university, higher education and humanity.

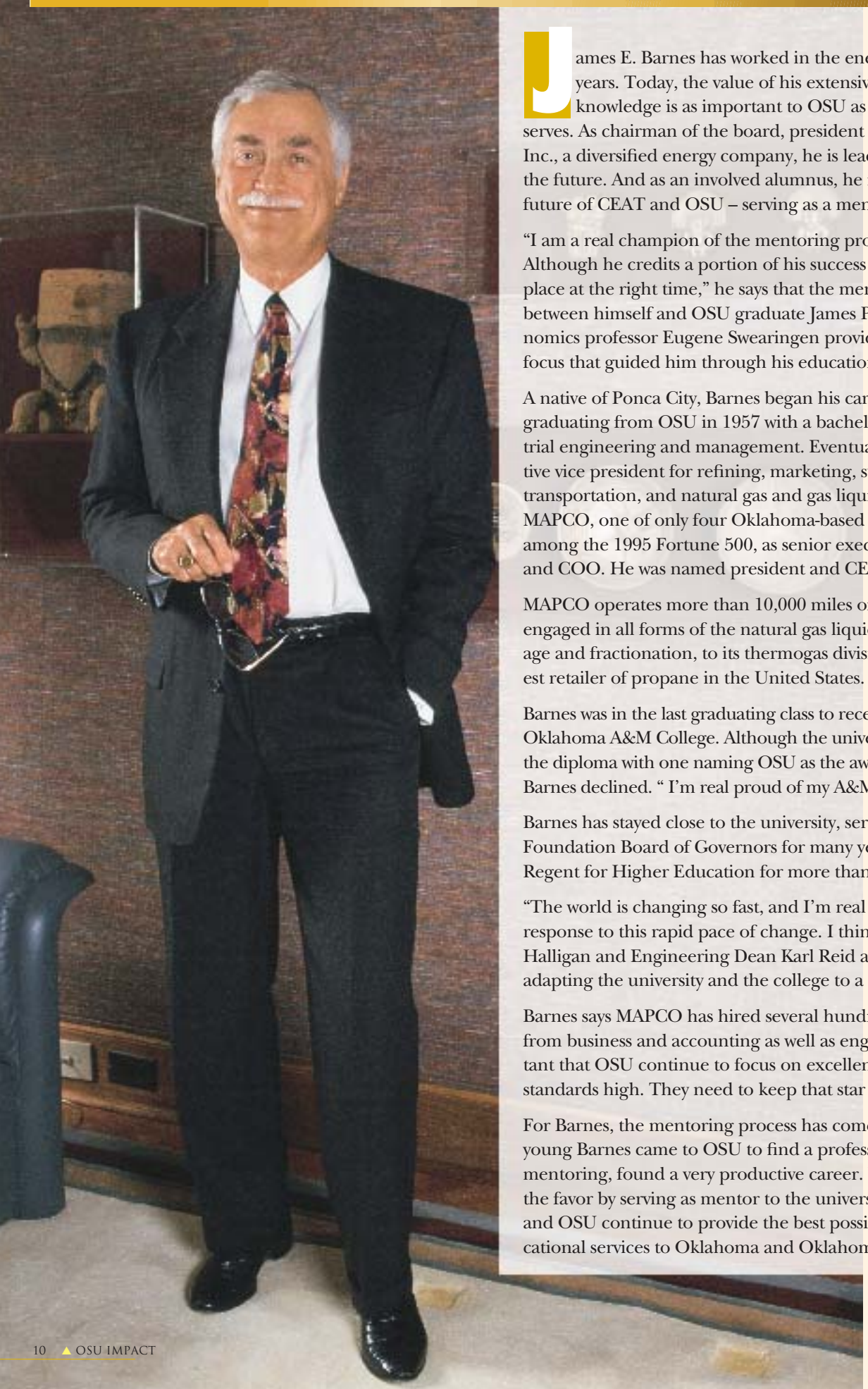
When advising aspiring engineers, Allen passes on a bit of wisdom he received when he joined Phillips Petroleum. "Most well qualified people are going to be successful, but the happiest people are those who take a little time for their families, community and church. There needs to be some balance in life," Allen advises.

Allen says of all his achievements, he is most proud of his family and he spends as much time as possible with them. Allen's wife Judith and their two grown sons all hold OSU degrees.

Who better to lead OSU in "Bringing Dreams to Life" for future OSU students than Wayne Allen – someone who has experienced a lifetime of dreams fulfilled.



JIM BARNES – PUTTING ENERGY INTO MENTORING



James E. Barnes has worked in the energy industry almost 40 years. Today, the value of his extensive background and knowledge is as important to OSU as it is to the industry he serves. As chairman of the board, president and CEO of MAPCO Inc., a diversified energy company, he is leading the company into the future. And as an involved alumnus, he is helping shape the future of CEAT and OSU – serving as a mentor to the university.

"I am a real champion of the mentoring process," says Barnes. Although he credits a portion of his success to "being in the right place at the right time," he says that the mentoring relationships between himself and OSU graduate James Phelps and OSU economics professor Eugene Swearingen provided the focus that guided him through his education and career.

A native of Ponca City, Barnes began his career with Conoco after graduating from OSU in 1957 with a bachelor's degree in industrial engineering and management. Eventually he became executive vice president for refining, marketing, supply and transportation, and natural gas and gas liquids. In 1983 he joined MAPCO, one of only four Oklahoma-based companies listed among the 1995 Fortune 500, as senior executive vice president and COO. He was named president and CEO in 1984.

MAPCO operates more than 10,000 miles of pipeline and is engaged in all forms of the natural gas liquids business from storage and fractionation, to its thermogas division – the fourth largest retailer of propane in the United States.

Barnes was in the last graduating class to receive a diploma from Oklahoma A&M College. Although the university offered to replace the diploma with one naming OSU as the awarding institution, Barnes declined. " I'm real proud of my A&M degree," he says.

Barnes has stayed close to the university, serving on the OSU Foundation Board of Governors for many years and as a State Regent for Higher Education for more than eight years.

"The world is changing so fast, and I'm real proud of OSU's response to this rapid pace of change. I think OSU President Jim Halligan and Engineering Dean Karl Reid are doing a good job of adapting the university and the college to a changing world."

Barnes says MAPCO has hired several hundred OSU graduates from business and accounting as well as engineering. "It is important that OSU continue to focus on excellence – on keeping the standards high. They need to keep that star out in front of them."

For Barnes, the mentoring process has come full circle. The young Barnes came to OSU to find a profession and, through mentoring, found a very productive career. Now he is returning the favor by serving as mentor to the university, helping CEAT and OSU continue to provide the best possible research and educational services to Oklahoma and Oklahomans.

'MR. DITCH WITCH,' ED MALZAHN, LIVES HIS DREAM

Edwin Malzahn has truly lived the American dream. "If retirement is doing just what you want to do, then I've been retired since graduating from college," jokes the founder and president of The Charles Machine Works Inc., based in Perry, Okla.

Less than five years after his 1943 graduation from Oklahoma A&M with a bachelor's degree in mechanical engineering, Malzahn was inventing what would become his legacy – the small, mechanical trencher known worldwide as the Ditch Witch.

In the spring of 1948, standing at the backdoor of the machine shop that he and his father, Charles, operated, Malzahn watched a plumber's assistant dig a trench for a water line with only a pickax and shovel. Recognizing the need for an inexpensive compact trencher, Malzahn and his father began working to design one.

With their ladder-style Ditch Witch trencher, the Malzahns created their own market in 1950. In less than 10 years, Charlie's Machine Shop became The Charles Machine Works Inc., a manufacturing company.

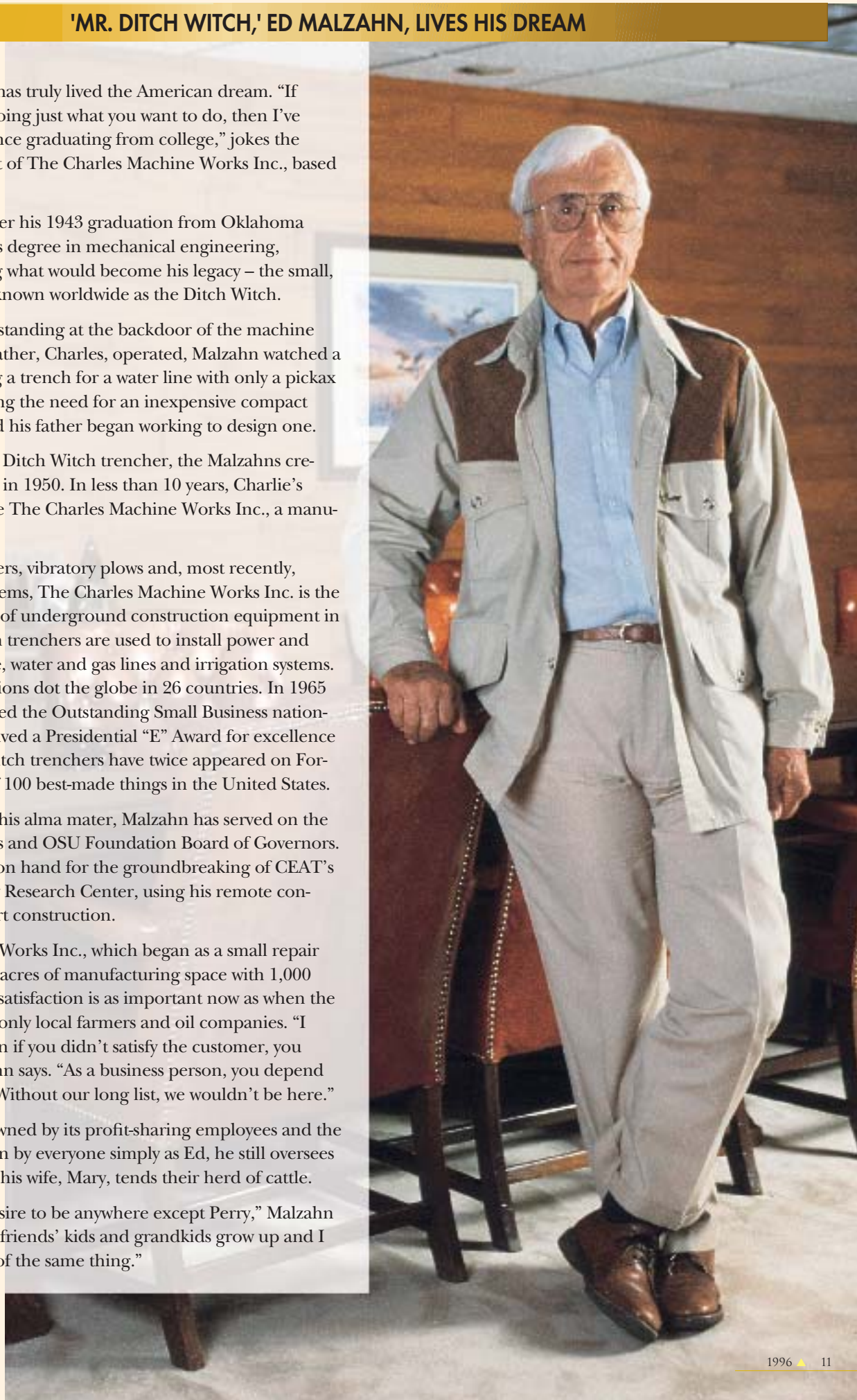
With its line of trenchers, vibratory plows and, most recently, directional boring systems, The Charles Machine Works Inc. is the leading manufacturer of underground construction equipment in the world. Ditch Witch trenchers are used to install power and communications cable, water and gas lines and irrigation systems. Service and sales locations dot the globe in 26 countries. In 1965 the company was named the Outstanding Small Business nationwide and in 1971 received a Presidential "E" Award for excellence in exporting. Ditch Witch trenchers have twice appeared on Fortune magazine's list of 100 best-made things in the United States.

A strong supporter of his alma mater, Malzahn has served on the OSU Board of Regents and OSU Foundation Board of Governors. Most recently, he was on hand for the groundbreaking of CEAT's Advanced Technology Research Center, using his remote controlled trencher to start construction.

The Charles Machine Works Inc., which began as a small repair shop, has grown to 25 acres of manufacturing space with 1,000 employees. Customer satisfaction is as important now as when the operation was serving only local farmers and oil companies. "I grew up in an era when if you didn't satisfy the customer, you didn't survive," Malzahn says. "As a business person, you depend on repeat customers. Without our long list, we wouldn't be here."

The company is still owned by its profit-sharing employees and the Malzahn family. Known by everyone simply as Ed, he still oversees daily operations while his wife, Mary, tends their herd of cattle.

"I've never had any desire to be anywhere except Perry," Malzahn says. "I've watched my friends' kids and grandkids grow up and I want a lot more years of the same thing."



FOR FRANK McPHERSON, FAMILY VALUES COME FIRST

"I would like to be remembered as a good father, an individual who stood for Christian principles and as a person of integrity," says Frank McPherson, chief executive officer and chairman of the board for the Kerr-McGee Corporation.

Although he has led one of America's Fortune 500 companies since 1983, those who know him will tell you McPherson speaks sincerely. Despite his 30-year climb to the top of Kerr-McGee, McPherson remains grounded by family values and sees his children and grandchildren as his greatest accomplishments.

"If I fail as a father, I get an 'F' in life," says McPherson, who prizes the time he and his wife, Nadine, spend with their children and grandchildren. "It is the obligation of parents not to fail their children."

McPherson's use of grades to describe life's successes and failures is not by chance. An ardent supporter of education, he was instrumental in organizing Kerr-McGee's contributions to public and higher education, including establishing the first endowed chairs at CEAT and the College of Business Administration.

"Although I have many interests," says the avid outdoorsman who enjoys snorkeling, golfing, fishing, hunting and downhill skiing, "I have a real soft spot for education." McPherson's involvement in education includes serving on the OSU Foundation Board of Trustees and as president of the Oklahoma Foundation for Excellence.

McPherson was exposed to a variety of work experiences during the summers of his high school and college years including working on a derrick barge in Galveston Bay, a riverboat on the Mississippi, "roughnecking" on barge drilling rigs in the Louisiana Gulf Coast and "roustabouting" in a Texas oil field. With each experience, his resolve to become an engineer was strengthened.

McPherson has worked for Kerr-McGee since graduating from OSU in 1957, except for two-and-a-half years of military service. Starting as a petroleum engineer, he held a number of jobs in the company's Gulf of Mexico drilling and producing operations. In 1973, he was named president of the company's newly formed coal unit, with responsibility for uranium operations added in 1976 and chemical and refining units in 1978. McPherson was named president of Kerr-McGee in 1980 and was elected chairman of the board and chief executive officer in 1983.

McPherson's involvement with OSU is definitely a family affair and he is quick to point out that he, his wife, their four children and two of their children's spouses all hold OSU degrees.

In giving advice to today's young engineers, McPherson says, "Today's engineers need to be technically strong, but they also must understand the relationship between technical knowledge, capital and the work force. And they need to understand the elements that drive business decisions." Good advice for *all* success-driven people. ▲

Technology Delivers Degrees

Distance learning is a hot topic in educational circles worldwide.

In Oklahoma we've gone from the Talk-back TV Network of the '70s to state-of-the-art techniques using satellite uplink and the new OneNet fiber optic cable system. Some of the fastest growing programs at OSU are those offered by the College of Engineering, Architecture and Technology involving the delivery of courses via distance learning technologies.

One of the newest developments in distance learning is a cooperative agreement between OSU and the University of Oklahoma engineering colleges to exchange courses using OneNet. Bill Cooper, CEAT professor and director of extension, says, "By sharing we are able to maximize the value our these programs to Oklahomans."

Another collaborative effort is the new master's degree in telecommunications management. CEAT, the College of Business Administration and the College of Arts and Sciences, initiated the degree in 1995-96 with an enrollment of 185 students. "The response was overwhelming," says Ramesh Sharda, interim program director.

Meanwhile, CEAT is meeting the needs of lower division undergraduates at smaller Oklahoma institutions. Statics, was offered in the fall of 1995 at Northern Oklahoma College in Tonkawa and there are plans to expand the program to other schools soon.

Distance learning also benefits working engineers by offering graduate degrees over the Oklahoma fiber optic system. Courses are delivered to employees at Halliburton Services Inc. (Duncan), Phillips Petroleum Company (Bartlesville), Seagate Technology (Oklahoma City) and Conoco (Ponca City).

CEAT continues to share courses with universities nationwide through the National Technological University. Six to eight classes are broadcast from OSU via satellite each semester. Karl Reid, CEAT dean, is chairman of the NTU Board of Trustees.

As the college prepares for the next century, the expansion and enhancement of distance learning programs will play an increasingly important role. ▲

JENNIFER WINGETT

Both satellite and fiber optic delivery systems are being used at CEAT to offer distance learning opportunities to students and working engineers across Oklahoma and the nation.

*focus*On Design

Teamwork a Big Success

Incorporating their knowledge of kinetics, reactor design, heat transfer and economic analysis, a group of students in OSU's school of chemical engineering recently received a national award.

Undergraduates Ulrike Krause, Jamie Simmons and Janet Wilson were members of the first-ever team to receive a first-place award in the National Student Design Competition sponsored by the American Institute of Chemical Engineers. The contest was held at the AIChE National Meeting and Design Competition in Miami Beach, Fla.

Each of the students has since found employment. Wilson works for Amoco and Krause and Simmons have joined Hoechst Celanese. ▲

Chemical engineering's award-winning undergraduate team includes, from left, Janet Wilson, Ulrike Krause and Jamie Simmons.

SHPE Chapter Makes Finals

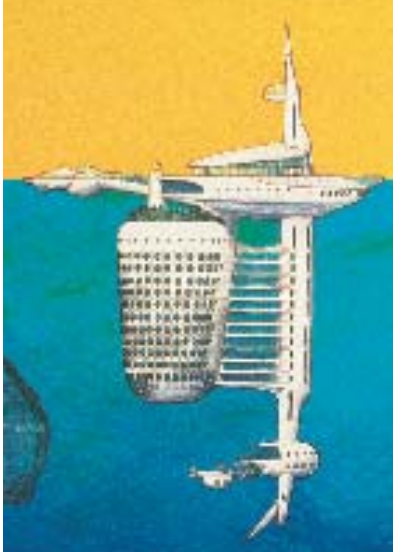
Less than a year after the Cowboys made an appearance in Seattle at the Final Four basketball tournament, a team of OSU engineering students carried the university name back to that city, again bringing national acclaim to the campus.

The team's original design of a bicycle lock was presented in the finals of the Student Chapter Design Contest. The event was sponsored by the Society of Hispanic Professional Engineers and held at the 18th Annual National SHPE Technical and Career Conference in February. Only the top 10 designs in the nation were selected for presentation in the final competition.

OSU team members were Kari Gutierrez, chemical engineering senior; Matt Cuellar, aerospace engineering senior; Chris Cuellar, mechanical design technology junior; Jennifer Turner, chemical engineering senior; Juan Gomez, electrical and computer engineering junior; and Brian Smith, electrical engineering sophomore.

The project, OSU's first-ever entry in the contest, placed third in the nation, defeating teams from Colorado, Stanford, San Diego State and New Mexico State universities. ▲

STORIES THIS PAGE BY ADAM HUFFER



PHOTO/CHAD SCHMIDT

Ocean Hotel Places First

OSU architecture students have never been afraid of a "little" competition. To prove it, this spring a team of seniors competed in an international "Hotel of the Future" design contest held in Washington D.C. – and won.

"The students challenged conventional planners, locating their hotel in the year 2045 on the Earth's oceans," Bob Wright, professor of architecture, says. "The proposal attempts to bring people back into contact with each other and their Earth origins."

Students on the winning team were Chad Schmidt, Peng-Han Tan, John Campbell and Brian Fitzsimmons. Joining the prominent architects judging the competition were trends forecaster John Naisbitt and science fiction writer Ray Bradbury.

This latest success in a design contest adds to the long list of more than 100 victories and placings generated by OSU architecture students in national and international contests in the last 10 years. ▲

Student digest

Undergrads Document Bombing

Last summer and fall a group of OSU Fire Protection undergraduate students took on a huge task — cataloging and organizing two van-loads of documents generated by emergency response personnel during the days immediately following the April 19 bombing in Oklahoma City.

Nancy Trench, assistant director of Fire Service Training, and John Hoss, Fire Protection Publications analyst, met soon after the bombing with Oklahoma City officials as part of a documentation team to devise a plan for the report.

"No one had ever written this detailed a report following such an incident, so this was uncharted territory for us," says Hoss, who began coordinating OSU's contribution to the project in May.

Student intern Josh Arrott (right) worked with project coordinator John Hoss to document the response of emergency workers following the April 19 bombing in Oklahoma City.

For the students, the work was similar to doing a huge research paper, Hoss says. "The students adapted well to the work — they were a natural fit for the need that was there."

A large portion of the early work fell to two students, Josh Arrott and Russell Kohl, who worked with Hoss as interns on the OSU Oklahoma City campus during the summer of 1995. "It was a great experience to be able to talk to the people involved and find out how things were handled," Arrott says. The work was completed in Stillwater the following fall with the assistance of three additional fire protection undergraduates, Jason Wills, Chrissy Goins and Jeremy Bale.

The students sifted through field notes, daily logs and handwritten notes. They also interviewed people who were involved but whose activities were not previously recorded. All elements were assembled in a logical order, entered into a computer database and then turned over to the Oklahoma City documentation team. The team then used these materials to write the final report, a 200-plus page document.

"This report will be an invaluable training aid — one that I expect will be studied for at least 25 years," Hoss predicts. ▲

Jennifer Wingett

Students Make MAPS

Anyone visiting the Myriad Convention Center or Oklahoma City area shopping malls in recent months has probably seen the 12-by-32-foot detailed layout of the seven Metropolitan Area Projects (MAPS).

The massive, traveling model was built by OSU architecture students who spent as many as 80 hours a week on its intricacies.

Pictured above with their model of the MAPS project are, from left, David Hanser, architecture professor, seniors Lesley Morgan and John Ford and Bob Heatly, architecture professor.

Working closely with the OSU alumni-laden Frankfurt-Short-Bruza architecture firm, and under the watchful eyes of architecture professors David Hanser and Bob Heatly, the students added the MAPS projects to a model of existing downtown structures. Next they positioned their own designs of structures the revitalization project is expected to generate.

This spring, another group of students designed and built the California Street Canal project model for the Bricktown Associates. This detailed view encompasses a larger portion of the downtown area. ▲

Adam Huffer

the LOHMANN MEDAL

This year the College of Engineering, Architecture and Technology awarded the Lohmann Medal for the sixth time. Featured here are the 1995 recipient, D. Ray Booker, president of Aviation Technologies Inc. of Tulsa, and the 1996 awardee Jerry D. Holmes, technical director at Texas Instruments.

The Melvin R. Lohmann Medal, established to honor Dean Emeritus M. R. "Pete" Lohmann, is awarded annually to a graduate of the College of Engineering, Architecture and Technology who has made, "outstanding technical or managerial contributions to his or her profession and/or contributions to the education of engineers, architects or technologists that merit the highest recognition." Lohmann served as dean of the college from 1955 to 1977.

During Lohmann's tenure at OSU, he led the college from relative obscurity to national prominence. With strong powers of persuasion, he was able to obtain private funds for scholarships, faculty development and research. Due to Lohmann's efforts the Halliburton Chair in Engineering was established. And it was his vision that led OSU to national leadership in distance learning.

Lohmann's legacy to the college and the university continues to grow because his vision led CEAT from relative obscurity to national distinction. By presenting the Lohmann Medal each year, the college recognizes those individuals who epitomize the high standards set by its namesake.

D. Ray Booker
1995

Jerry D. Holmes
1996

D. RAY BOOKER

D. Ray Booker, founder, president and chief executive officer of Aviation Technologies Inc., of Tulsa, received the 1995 Lohmann Medal in recognition of his contributions in the development of airborne instrumentation, autonomous unmanned reconnaissance aircraft and unique techniques for measurement of meteorological and optical data.

Born in Magnum, he attended public schools in Hall Corner and Antlers, Okla. In 1957 he completed a BSME degree at Oklahoma A&M and was commissioned in the U.S. Air Force the same year. He completed a master's degree in 1962 and a doctorate in 1965 at Pennsylvania State University.

In 1964 Booker founded Weather Science Inc., serving as president until 1974. WSI specializes in airborne data collection and analysis for meteorological applications.

In 1974 Booker founded Aeromet Inc., which has become a leading supplier of engineering and scientific services related to special airborne applications. His conservative management and business practices have led this 100-person company to sound profitable growth. He recently started a new company, Aviation Technologies Inc., to develop and manufacture pilot advisory systems for corporate aircraft.

Booker is a Fellow of the American Meteorological Society. He has served the AMS in many capacities including: council

member, executive committee member, chairman of the Board on Certified Consulting Meteorologists, and member and chairman of the Board of Professional Ethics. He has served as an active member of the American Association for the Advancement of Science, the National Council of Industrial Meteorologists and the Weather Modification Association. He has published more than 60 papers and major reports on meteorological, engineering and aviation subjects.

Booker and his wife Linda make their home in Jenks. With a variety of interests ranging from reading to classical music to golf, finding leisure time activities is no problem for Booker. He also enjoys operating any kind of machinery, in particular using a bulldozer to clear portions of his farm south of Tulsa near Haskell or flying his Enstrom F28F helicopter.

PREVIOUS LOHMANN MEDAL AWARDEES

J. TINSLEY ODEN, 1991

WOLTER J. FABRYCKY, 1992

JACK P. HOLMAN, 1993

KERRY S. HAVNER, 1994

JERRY D. HOLMES

Jerry D. Holmes, TI Fellow with the Systems Group of Texas Instruments in Dallas, was recently named the 1996 Lohmann Medal winner. Holmes was singled out for his extensive work in the development of global positioning systems, signal processing techniques and components, and transform processing theory.

Born in a farmhouse near Lockney, Texas, 50 miles northeast of Lubbock, Holmes graduated from Lockney High School. In 1959 he received a BSEE degree from Texas Tech University. Continuing his education, Holmes earned a master's at Massachusetts Institute of Technology in 1960 and a doctorate in 1965 at Oklahoma State University in electrical engineering. Since then, he has worked at Texas Instruments.

From 1965 to 1975, Holmes performed analysis and simulation for multiple communications and radar systems. Beginning in 1975, he became the chief engineer for a new program termed the Ground/Airborne Integrated Terminal. His work supported TI efforts to build terminals to receive messages from a constellation of 24 GPS satellites. His greatest achievements occurred during the period from 1975 to 1990 when he contributed to TI's efforts to become a world leader in global positioning systems.

He became a member of Texas Instruments' elite engineers in 1987 when he was named TI Fellow, a distinction reserved for less than one percent of the company's engineers. In 1989, his alma mater, Texas Tech, named Holmes a Distinguished Engineer and in 1993 he received the Crystal Award from Texas Instruments' Defense Systems and Electronics Group, for patent contributions to the company.

Jerry holds eight patents and has published numerous papers related to global positioning systems and signal processing techniques and components. He is a senior member of the Institute of Electrical and Electronic Engineers (IEEE); Sigma Xi; Eta Kappa Nu; and Phi Kappa Phi. He is a registered professional engineer in Texas.

Holmes and his wife Kay make their home in Plano, Texas. The majority of their summer vacation time is spent in the Colorado Rockies where Holmes and his brother built a cabin during the late '70s. There they enjoy the spectacular scenery, the native wildlife and the camaraderie of family and neighbors. ▲

JENNIFER WINGETT

VIP INVITATION

Have you been away from OSU for awhile? If so, you may be unaware of the enormous changes. So, we would like to invite you to be our guest for a VIP visit to campus and CEAT.
Just contact Dean Karl Reid by phone at 405-744-5140, by FAX at 405-744-7545, or by e-mail at: kreid@okway.okstate.edu, or through the OSU homepage at: www.okstate.edu.

BRINGING DREAMS TO LIFE: THE CAMPAIGN FOR OSU

Choong-shik Cho, Chairman, Hopewell Enterprises Inc.

Choong-shik Cho is an OSU civil engineering graduate ('58) who has achieved international business success. But he has never forgotten his "Cowboy" roots. Cho has been one of the campaign's earliest and strongest supporters, and CEAT is proud to call him one of our own! With his help, along with that of many of our other outstanding alumni, OSU should meet it's goal of $125 million before the campaign ends in the year 2000.

"The future belongs to those who dare to dream. When many dream together, their future is without limit." – James Halligan, OSU president

Jack Zink, President, Zeeco Inc.

Jack Zink ('51, mechanical engineering), campaign chair for the College of Engineering, Architecture and Technology, is lending his energies toward helping CEAT achieve the goal of raising $21.5 million. The college's priorities include student scholarships, faculty chairs and professorships and completion of the Advanced Technology Research Center. Zink's leadership and experience as one of OSU's most successful graduates is helping CEAT bring it's dreams to reality.

Bringing Dreams to Life
The Campaign for OSU

For more information about "Bringing Dreams to Life: The Campaign for OSU," contact: Marc Thompson, CEAT develop director at 405-744-5142, or by e-mail at: thompsm@okway.okstate.edu.