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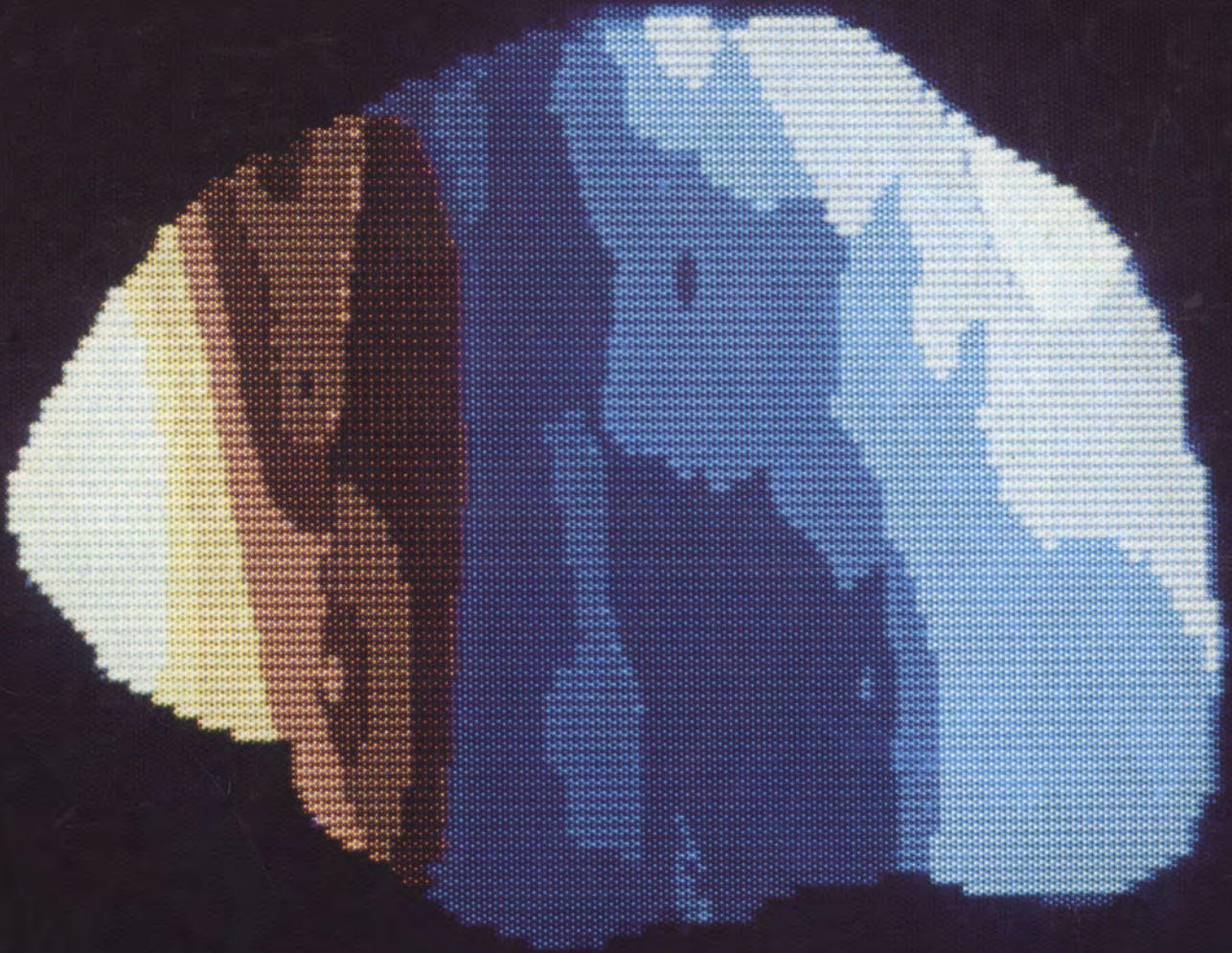
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NOVA

The University of Texas at El Paso Magazine



Research

The View from the Hill

by Dale L. Walker

A Definition in Mendel's Peas

It is an old but good example.

In 1857, Gregor Johann Mendel, an Augustinian monk, began growing peas in his monastery garden at Brunn, in Bohemia (now Brno, Czechoslovakia). The study of botany, growing out of his experiences as a youth tending the fruit trees of wealthy lords of the manor in his native Heinzen-dorf, Silesia, was Abbe Mendel's hobby and he pursued it for no other reason than a desire for knowledge, pure and simple.

For eight years he experimented in pollinating various pea plants and studying their seeds. He cross-bred dwarf pea plants with true-breeding tall plants and produced hybrid seeds. He cross-bred the hybrids, he studied other characteristics than height, he took copious notes and studied them and reached certain conclusions.

He wanted to share his discoveries with others and wrote up his researches and read them to a local natural history society. Nobody seemed much interested in the work of the well-meaning but amateur pea-grower, so Mendel sent his best paper to a Swiss botanist of some renown, hoping to hear some words of encouragement from a real man of science. This worthy, however, returned Mendel's paper with a few frigid words of dismissal.

In 1865, Mendel published his first pea-paper in the obscure *Transactions of the Brunn Natural History Society*, then followed it with another in 1869.

After that, he did no more research. He was disheartened, to begin with, and became abbot of the monastery in 1868 with administrative duties that kept him from his beloved pea plants. (He also gained a lot of weight — ah, the lessons in all of this! — which made it difficult for him to bend down to cultivate his plants.)

His work went unnoticed and gathered dust. Mendel died in 1884, two years after Darwin, whose theory of evolution by natural selection had a fundamental weakness that, unknown to either Darwin or Mendel, could have been patched up if Darwin had known of Mendel.

It was not until 1900 that the Dutch botanist Hugo Marie De Vries came

across Mendel's published papers and brought to the attention of the scientific world what are now known as the Mendelian laws of inheritance.

Research, the subject of this March, 1986, issue of *NOVA* still has a Mendelian cast to it: it remains in its truest form a careful, diligent and exhaustive search for new information — new facts to be correctly interpreted and applied. It usually begins with a simple desire for knowledge, pure and simple, and it usually finds some application. The discovery of a new poem by William Shakespeare (such as was recently heralded in the *New York Times Book Review*) by a researcher studying the Shakespearean materials in the British Museum, is being applied to what is already known about the Bard and may add significantly to that body of knowledge. The Voyager 2 discovery that the planet Uranus has more moons and more rings than we had heretofore thought will add much to what we know of our own solar system. Publication by our own Texas Western Press of history graduate student Shawn Lay's *War, Revolution and the Ku Klux Klan* is an example of sound, dedicated research producing not only something not known before, but a clearer picture of what was already known.

We present here only a smattering of the research work being conducted at UTEP, with the emphasis this time on science and engineering. In future issues, you will read other research stories about the work being done at this University in literature, the arts, business, nursing, and education, as well as in other fields of science and engineering.

We extend special thanks to Prof. Keith Pannell of the Department of Chemistry for his work in gathering so much information for us on the history of research at UTEP and keeping us updated on new research work in the College of Science. Thanks also to Deans Michael Austin, Graduate School, and Robert Grieves, College of Engineering, and to Diana Natalicio, vice president for academic affairs, for their encouragement and assistance in this special issue of *NOVA*. □

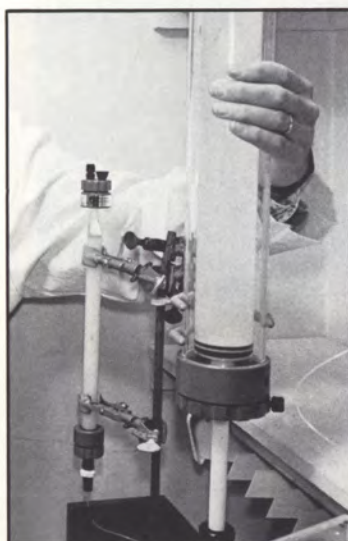
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On the Cover:



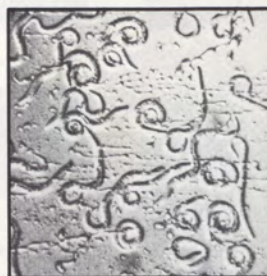
Electrical response to a flash of light from the brain of a patient suspected of suffering from Alzheimer's disease.



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R E S E



Pannell

This survey of University research was made possible through the efforts of our interlocutor, Dr.

Keith H. Pannell, professor of chemistry and a UTEP faculty member since 1970.

Pannell, born in London, England, holds degrees in chemistry and nuclear chemistry from Durham University, England, and a Ph.D. in organosilicon chemistry from the University of Toronto, Canada. Among many honors for his research, he was named a National Research Council Fellow (Canada), a Dow Corning Fellow, and received a fellowship with the Science Research Council, England, and a UTEP Award as Outstanding Faculty member (1984).

Pannell has lectured at universities in England, Canada, Belgium, Portugal, and Mexico, and participated in chemistry seminars in New Zealand, France, Hungary, Taiwan, and in American institutions from coast to coast.

He is author of many published scientific works.

— DLW

What do you think of when you hear the word 'research'?" asked Dr. Keith Pannell.

"Test tubes — your kind of laboratory in chemistry — comes to mind. Looking through mounds of big books."

"That's the popular notion," he replied. "But research can be very exciting, challenging, with implications that go far beyond the individual laboratory where it is conducted. We have a lot of that kind of research going on here at UTEP that people would be amazed to know about."

"Why not help us tell them?" invited NOVA.

"Delighted to," offered the professor. And with his considerable help, here is a summary of some of the University's research, past and present.

When the Texas Legislature established UTEP's predecessor, the School of Mines and Metallurgy, in 1913, the authorizing bill gave The University of Texas Board of Regents authority over the school, its students and courses, and "results of all important experiments and investigations . . . as may be thought useful."

The faculty members then were veterans of the mining industry who also had academic backgrounds. Early on, they established a close rapport with what was then the second largest smelter in the world. Students used smelter samples in their analytical lab-

oratory and compared their results with those of the professionals.

"The first investigations in this institution used undergraduate practitioners," Pannell points out. Today, although the institution has grown and now offers graduate studies in many fields, there continues to be an emphasis on research opportunities for undergraduates. "Such programs are a great asset to both the student and the faculty and represent an attraction for outstanding undergraduate students that is generally not available at more research-oriented universities," he adds.

In its developing years, the College of Mines/Texas Western was a small institution whose faculty members generally were called upon to teach full time on a broad range of subjects. The physicists, for example, also taught mathematics; historians and English professors might have personal specialties, but were expected to teach nearly all the courses their departments offered. As a result, few of them had time to devote to research aside from that related directly to their teaching.

Yet, examples were set by many of those long associated with the institution. The late Dr. W.W. Lake, longtime chairman of the Chemistry Department, during World War II was involved in chemical research work for the U.S. Army. Geologists contributed to the understanding of this area; Dr. L.A. Nelson discovered some local fos-

A R C H



sils that bear his name, and Dr. William Strain recovered bones of dinosaurs and other ancient creatures which are now displayed in a hall of the El Paso Centennial Museum that is dedicated to his achievements.

Professor Pannel dates the arrival of "Research with a Capital R" on the campus to 1953, the year the Schellenger Laboratory (now Schellenger Foundation for Electricity) was established under the direction of Dr. Thomas Barnes. The operation, started with a bequest from Mrs. Emma Schellenger in memory of her husband, Newton C. Schellenger, began attracting research funds for technological and scientific research.

The early focus was on heart studies, with the American Heart Association funding an investigation into vector cardiography and a collaborative project with William Beaumont Army Medical Center on new electrolytic techniques for desensitizing patients during dental treatment. (Currently Dr. Sangh-Chan Ho of the Department of Physics and his students, in collaboration with WBAMC, are researching the use of a new magnetic cardiograph that may some day complement, or even supplant, electrocardiographs.)

The U.S. Department of Defense utilized Schellenger Laboratory talent for projects involving high altitude sensors, acoustic detection systems, and some research that is still classified. In the mid-1960s the facility was

attracting research funding in excess of \$2 million per year, compared to the college's annual budget of \$3.8 million.

Among significant projects of that time was the development of rapid scanning spectrophotometers, "cine spectroscopy," that are now widely used in research laboratories around the world.

Public attention was focused on the work of Schellenger researchers in Antarctica, Hudson Bay, Alaska and Virginia, where faculty members and students performed classified research. Some of the students participating in the Antarctica project, had mountains named for them: Mount Benjamin for Ben Smith who now teaches physics at El Paso Community College, and Mount Bettle for then student president Jim Bettle.

In the early days of the Schellenger work, other departments were stimulated to take a more aggressive research posture. In the late 1950s the Department of Chemistry obtained various small grants from Research Corporation, the National Science Foundation and the Atomic Energy Commission to set up research laboratories, among them one of the earliest to study area pollution problems under the leadership of Dr. Harold Alexander.

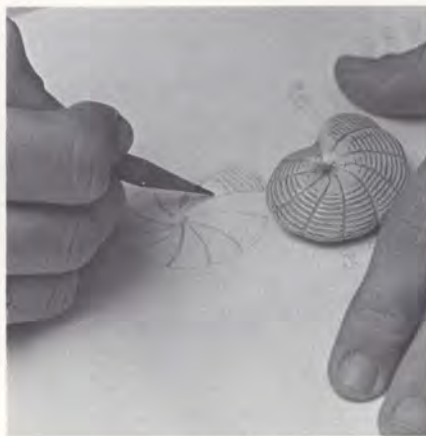
During the 1970s, portions of the income from the original Schellenger endowment were used to create the Schellenger Professorship in Electrical

Engineering. This was awarded to Dr. Jack Smith, former dean of engineering, in 1982 and has proved to be a great stimulant for research. Recently he and his associates received a grant in excess of \$500,000 from the Atmospheric Sciences Laboratory for development of meteorological sensor systems.

Today the Schellenger Laboratory is an integral part of the Department of Electrical Engineering and Computer Science, and is a major component of the College of Engineering's Office of Technology Development. It currently generates about \$300,000 per year for a broad range of sponsored research projects in such diverse areas as artificial intelligence, computer vision, and meteorological instrumentation.

Last fall the national Institute of Justice, U.S. Department of Justice, awarded the University a three-year grant valued at \$250,000 to study image enhancement techniques using artificial intelligence. A goal of the project, directed by Dr. Steve Riter, is to demonstrate how computers can be trained to replace human monitors of closed circuit television cameras focused on the U.S.-Mexico border where illegal aliens enter. This ability would free Border Patrol officers for other duties. This is but one example of new directions in teaching and research in artificial intelligence and computer processing of data.

In the College of Science, the Department of Chemistry has had as a



mainstay of its research efforts since 1967 the Robert A. Welch Foundation of Houston. Well over a million dollars in research grants, scholarships, fellowships and other help has come from the foundation. Currently the department has research grants from that foundation plus the National Institutes of Health, the Department of Energy, and other sources, amounting to almost a half million dollars per year.

Among current projects are a DOE study of strategic metal separations led by Dr. Allen Chang and an NIH project to model protein/water interfaces, headed by Dr. Michael Davis. Last fall a team headed by Dr. William Hurdon (dean, College of Science) received a Texas Advanced Technology Research Grant; \$300,000 was awarded for the study of new silicon and hydrocarbon materials for potential electronics use. The department also operates a research seminar program which over the past decade has brought more than 300 scientists from all the continents for Friday afternoon lectures.

The introduction of the M.S. degree (1967) and the doctorate (1975) in geological sciences strengthened the graduate research endeavors of the Department of Geological Sciences. Particular strengths at this time are in geophysics.

During the last decade, research funding from various sources has brought over \$3 million to the department. UTEP participated in a major

seismic study of the East African Rift, with Department Chairman G. Randy Keller among scientists pictured in a *New York Times* article about it. New heights in seismic technology were reached in another recent project in Oklahoma in which university team members utilized equipment developed locally by GUS Manufacturing.

Other current projects involve an environmental impact study of military maneuvers in the Fort Bliss area headed by Dr. Richard Marston, subsurface geologic processes associated with a proposed waste isolation project near Carlsbad, N.M., headed by Dr. Dennis Powers, and an NSF-funded project to study sedimentation, volcanism, and tectonism of the eastern Mojave desert led by Dr. Calvin James.

Last fall the University was awarded a grant of \$299,000 toward the purchase of an electron microprobe of a type now used in only a dozen other universities in the nation. It is capable of imaging to millionths of meters, magnification similar to an electron microscope, and can vaporize a tiny piece of a sample to determine what elements it contains. The grant, coordinated by Dr. Nicholas Pingitore, is from the National Science Foundation's program of Research Improvement in Minority Institutions. The instrument, valued at \$400,000, will be available to interested researchers and students in the geological sciences and in such diverse fields as metallurgical and electrical engineering, and

biological sciences.

The Department of Biological Sciences became involved with the Minority Biomedical Research Grant in the early 1970s through the efforts of Drs. Al Canaris and Gordon Robertstad. Since that time it has generated over \$3 million with a current annual budget of over \$400,000 divided among the Biology, Psychology and Chemistry departments.

Dr. Art Harris of Biological Sciences has received several National Geographic Society grants for his studies on archeopaleontology. The microbiology group working with Dr. James Zajic has several small industrial grants and gifts supporting his research in the area of applied bioprocess development — a field running the gamut from microbial synthesis of new chemicals to tertiary oil recovery.

The Department of Physics has continued its defense-related research activities which date from the heyday of the Schellenger Laboratory, and also several projects mentioned above involve active physics contributions. For example, Dr. Alan Dean has a significant role in the Geophysics program and Dr. Robert G. McIntyre has been involved in some of the meteorological projects in Electrical Engineering. Recently Dr. Rufus Bruce received a generous gift from Dale Electronics in El Paso to set up the first major laser spectroscopy facility on the campus.

Overall, research programs have begun showing significant growth in recent years and must continue to do so



if the institution is to become the full-scale university that the region needs.

Funding for research for the University as a whole is in the \$2-to-\$3 million per year range.

Newly hired faculty members are expected to possess and demonstrate the ability to attract needed funding for their research.

"It has been my experience," observes Pannell, "that those faculty not involved in the continuous analysis of their research results, the devising of methodologies for solving problems, and the constant exposure of their ideas in the form of proposals and manuscripts, soon become very poor teachers and lose the ability to impart to their students exactly those critical faculties that comprise a university education."

Seed money for some faculty projects comes from the University Research Institute, which is funded by a State appropriation for research which also assists the Kidd Memorial Seismic Observatory and the Bureau of Business and Economic Research. The Institute funds are available to, for example, faculty at the beginning of their academic careers, or embarking on new research topics, when other doors might be closed to them.

"The return on such seed money will often be spectacular," Pannell points out. "It is an excellent way to support your University. If you think this is a good idea, let Jim Peak know. Tell him Keith sent you!" □

Mark on UTEP's Research Potential

"We have to grab on to the principle that Texas needs more research universities and get together our resources," encouraged UT System Chancellor Hans Mark during a visit to UTEP last fall.

He said Texas spends only \$17 per capita per year on university-sponsored research, well below the national average of \$23.

This need to develop research, he pointed out, was expected to be a concern of the Select Committee on Higher Education.

At the time the chancellor spoke, the committee had not yet begun a series of hearings which would bring it to El Paso on February 27, with an invitation to educators and others from this part of Texas to comment on needs in higher education.

Deborah C. Kastrin, owner and president of an El Paso construction firm, is among five appointees of Governor Mark White to the committee. Its members include the governor, Lieutenant Governor Bill Hobby, four more appointees of the governor, four each named by Hobby and the House speaker, plus the chairmen of the Coordinating Board and education committees of the House and the Senate. Two senators and two representatives are ex officio members.

When the committee first met last October, Governor White charged the members to develop a "formula for the future" that would provide the state a world-class system of colleges and universities.

"We want you to tell us," he continued, "what kind of educational system a 21st-century society will need — and then tell us what we

have to do to achieve such a system."

Hobby emphasized to the committee the need for research funding in Texas. He suggested that two or three universities besides UT Austin and A&M should be expanded in order to achieve national recognition as research centers.

At a December meeting, the Select Committee was advised by Thomas Stauffer, chancellor of the University of Houston at Clear Lake and member of the Texas Science and Technology Council, that "Texas is not among the nation's leaders in research."

In order to bring the state's research and development endeavors up to the national average, they were told, the state would have to spend an additional \$3 billion per year. The suggestion was made that bringing in more federal research dollars would help ease the burden on Texans.

Chancellor Mark, when he spoke in El Paso last fall, had some challenging thoughts regarding Hobby's proposal that new research centers be established.

"I believe that presents an opportunity to make the case that here in El Paso we can build a first-class targeted research operation and get to some level that will support a large and nationally recognized research group for one or more specific purposes," he said.

UTEP can capitalize on the qualities that make it unique, he urged. Among them are the University's proximity to Mexico and its long heritage in metallurgy, geology and materials sciences. An interdisciplinary research institute focusing on these areas, said the chancellor, is a feasible goal. □

The Alzheimer's Project

by Gary Scharrer

It is a medical horror story that begins innocently, with momentary memory lapses such as forgetting the names of friends or getting lost returning from the grocery store.

Gradually the victim loses the ability to perform tasks that were once routine. And as the mind continues to crumble, the body follows: most often the victim dies in a fetal position.

This is Alzheimer's Disease, the "disease of the century," for which there is no prevention, no treatment, no cure, not even a known cause. One thing is known: because people are liv-

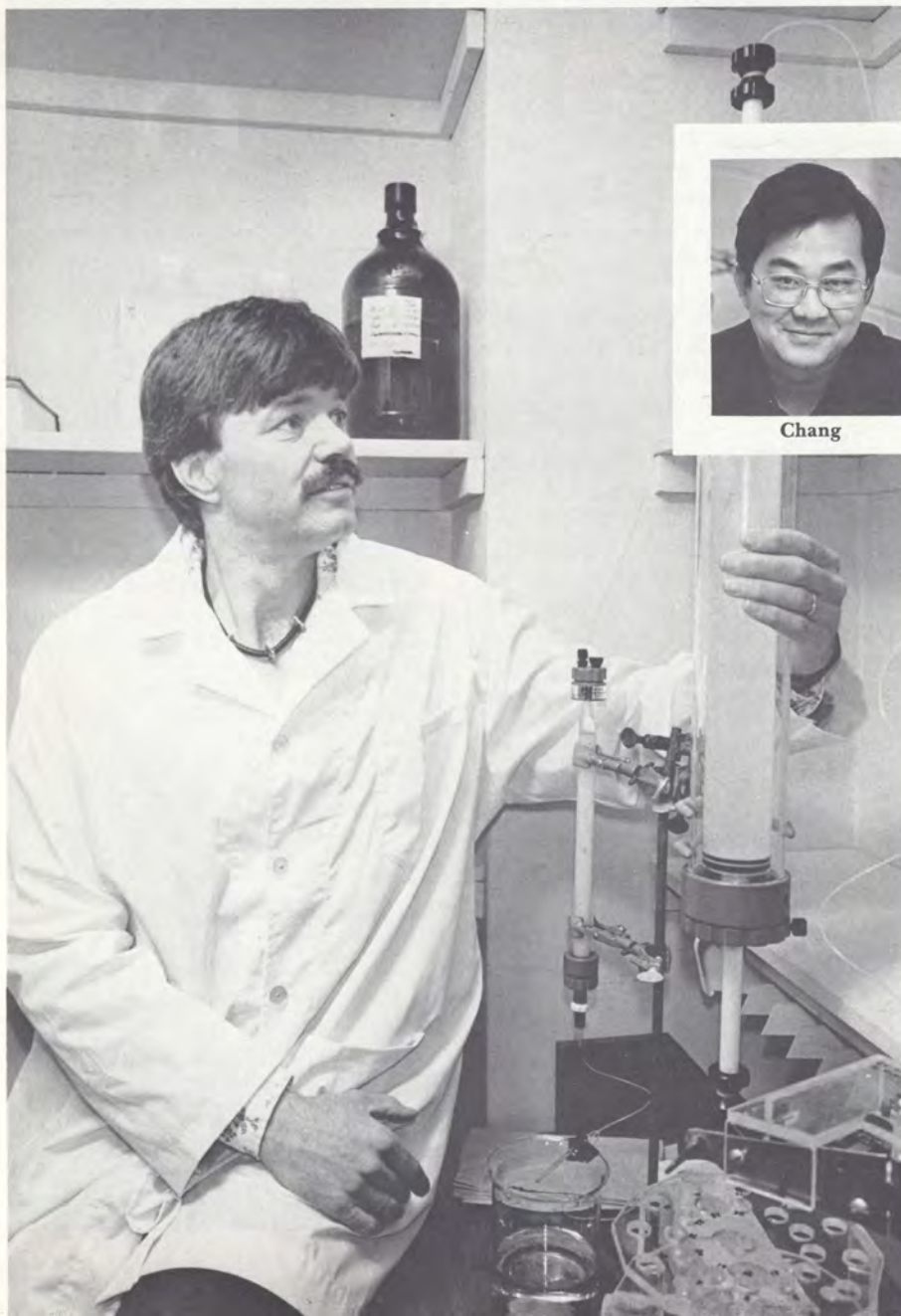
ing longer, one of every five of us is expected to be affected by this tragic affliction which preys principally on the elderly. It is further estimated that 30 percent of men and women reaching their mid-80s will suffer the effects of Alzheimer's Disease.

Dr. Donald Moss of UT El Paso's Department of Psychology is leading the University's research effort in slowing the onset of dementia (most often called "senility"), the loss or impairment of memory and mental powers, one of the earliest effects of the disease.

His work with sulfonyl fluorides in laboratory rats has proven successful in slowing an enzyme that affects the chemical imbalance that causes dementia.

Last spring the UTEP professor was one of ten scientists asked to give presentations during an international Alzheimer's conference in Israel. Since then, Moss and several other UTEP colleagues have embarked on a companion research project whose objective is "to stop the disease process so that the treatment of dementia has some chance of being successful."

The mysterious, complex brain disease is named after German neurologist Alois Alzheimer who, in 1906, discovered clumps of twisted nerve cell fibers in the brain of a 51-year-old woman. Before her death, the woman



Chang



Sands



Whitworth

showed all the symptoms of severe dementia — memory loss, disorientation and hallucinations.

Because the post-World War Two "Baby Boom" population will join the senior citizen class by the end of the century, research on the deadly affliction is an imperative, Moss says, and he is optimistic: "There are a lot of people working on it everywhere in the world. It is a major research effort."

He envisions that a simple blood test will be developed before the end of the century "that will provide a definite diagnosis early in the disease." He adds, "I think a way will be found to stop the disease from progressing through its various stages to death. Stopping it and treating it depends on early detection and right now we don't have that."

The works by Moss and his UTEP colleagues, Dr. C. Allen Chang, chem-

Dr. Donald Moss in his laboratory.

ist, and Drs. Stephen Sands and Randolph Whitworth, psychologists, is related to the search for a method of early diagnosis and effective treatment of the disease, something presently nonexistent.

Moss has already spent five years on his first project with sulfonyl fluorides, experiments with rats which stopped 90 percent of an enzyme affecting the dementia-producing chemical imbalance in the brain. This research stands out since many other scientists are searching for a drug that produces the results Moss can claim. Other researchers using other drugs have obtained 40-50 percent inhibition of that target enzyme in the brain but have been plagued by unacceptable toxic side-effects in the heart, smooth muscle and skeletal muscles of their lab animals, Moss says.

His first project has advanced to long-term toxicity testing in rhesus monkeys.

"The first step is to determine what dose produces an effect in the monkey that we think would be therapeutic in humans," Moss explains. "The second step is to give that dosage in monkeys over several months and see if it affects the liver and kidneys, or if there is any other toxic manifestation."

Randolph Whitworth's effort is concentrated on neuropsychological testing intended to obtain a better and earlier diagnosis of Alzheimer's. He is working closely with Stephen Sands whose project involves the electrophysiology of the functioning brain.

Sands conducts a computer analysis of the electrical activity in the human brain while people undergo a memory test. He has developed his own software program to map this electrical activity and Moss calls Sands's system the most sophisticated of its kind anywhere in the country.

Moss's newest research project is aimed at learning "how calcium and aluminum may interfere with some enzymes in the brain that are related to learning and memory." If successful, Moss's team hopes to learn how to stop the Alzheimer's disease process.

The research being conducted by C. Allen Chang, a bioinorganic chemist, involves proteins in the brain that bind aluminum.

"The brains of Alzheimer's patients accumulate aluminum," Moss says, "but we don't know why. If we can learn why, it is our hypothesis that we can stop it, and I think that's the key to stopping the progress of the

disease."

The professors are working with human brain tissue from Alzheimer victims supplied by a New York brain bank. Moss calls the gift "a huge opportunity" because no animal model exists. "Only humans are cursed with Alzheimer's Disease," he adds.

"The goal is to find out how aluminum participates in the pathology of the brain and in the destructive process of the disease," Moss says. "Aluminum does not cause Alzheimer's Disease, but the disease process may let aluminum into the brain in some preferential way."

As the disease progresses, the brain's metabolism changes, resulting in excess aluminum and those levels may cause brain cells to die—and eventually the brain to die, he explains.

Evidence also suggests that Alzheimer's victims may have inadequate metabolism levels of calcium and magnesium, which give aluminum a chance to enter the brain. And because aluminum can't act as a substitute for calcium and magnesium, brain cells die.

But the research is complicated because all these elements, with other metal ions, are involved in many chemical processes.

Chang's project seeks to separate proteins from the brain by a luminescing process that will disclose their biological activity. If that can be accomplished, Moss says, "we will intervene and replace a biological activity that is not sufficient, or find a way to kill it if there is an abnormal biological activity that is part of the disease process."

Of course, he adds, the entire scenario remains a scientific hypothesis: "You have to kind of pay your money and then take your bets. It's a big game. Maybe you can win it and maybe you can't. We may be working on this for 20 years and we may be wrong."

Moss, who earned his doctorate in psycho-biochemistry at Colorado State University, has been doing research for 20 years already, trying to figure out how the brain records and retains memory. The drugs that he has experimented with during that time, he says, "are the drugs that affect acetylcholine, and since memory loss is a significant symptom of Alzheimer's, this tragic disease was a natural for me," he says.

Although they do not know what causes it, researchers can trace the

trail of Alzheimer's as it destroys its victim's brain. The severe memory loss seems to be related to a collection of cell bodies (nucleus basalis of Meynert) in the brain that make acetylcholine, Moss explains. An imbalance of acetylcholine triggers memory loss and brain deterioration for Alzheimer victims.

Acetylcholine is vital because it acts as a neuro-transmitter so brain cells can communicate with each other. If cells that make acetylcholine die, then many connections between cells and parts of the brain are lost. Thus do Alzheimer victims experience memory loss and have trouble making "connections" between past and present experiences.

Normally, an enzyme called cholinesterase maintains the proper balance of acetylcholine, Moss continues, but in Alzheimer's, the ability to make acetylcholine is severely reduced.

One of Moss's published research reports reached Japan and so impressed pharmacologist Dr. Haruo Kobayashi that he gathered his family, packed up and flew to El Paso to work with Moss. He plans to spend 11 months at UTEP.

Because the University does not enjoy the same research stature of such centers as Harvard, Johns Hopkins or Stanford, Moss acknowledges that other academic scholars sometimes express surprise at the budding accomplishments at the UTEP campus.

Moss has been at the University since 1975 and says, "I like El Paso and UTEP has been very good to me. I have important colleagues in biology and chemistry and psychology, of course, that help me. It is a very good atmosphere of cooperation . . . It would take a lot to get me out of here."

UTEP, Moss says, is one of El Paso's most underrated resources.

So far, he has shepherded his research on a shoestring budget. One of the largest grants he has had to work with was \$5,000 last year from the El Paso chapter of the Alzheimer's Disease and Related Disorders Association.

"We need money," he says flatly. He has applied for a \$250,000 grant from the Dallas-based Meadows Foundation and plans to submit a request this summer for up to \$300,000 from the National Institutes of Health.

In the meantime, Moss uses whatever trickles in. "Actually," he says, "as little as a few hundred dollars makes a difference."

(Continued on inside back cover)

A black and white photograph showing two young men, likely engineering students, working on a large, shallow, rectangular solar pond. They are leaning over the edge of the pond, which is lined with a dark, reflective material. One student is holding a long, white, flexible pipe or hose that extends into the water. The other student is also reaching into the pond, possibly to adjust the pipe or another component. The background shows the vast expanse of the solar pond under a clear sky.

Solar Powered Salsas

by Caroline Garland

Above and right: Engineering students at the Bruce Foods/UTEP .8-acre solar pond, capacity 2 million gallons.

A food processing plant in El Paso, using solar energy to manufacture the number one product of the Mexican Food Capital of the World . . . it's a natural combination. And, it's exactly what Bruce Foods Corporation is doing.

Two years ago, Bruce Foods entered into a joint venture with The University of Texas at El Paso's Mechanical and Industrial Engineering Department, the U.S. Bureau of Reclamation, and the El Paso Electric Company to re-engineer its El Paso plant to take advantage of the Southwest's abundant solar energy. Under the direction of a UTEP engineering team headed by Professor Robert Reid and Assistant Professor Andrew Swift, the company converted an existing deep-water storage pond adjacent to the plant and is now operating the world's largest commercially operational solar pond. This pond has already provided solar-heated hot water and will continue to provide significant amounts of hot water for the food processing plant

which manufactures Casa Fiesta Mexican Foods and Bruce's Yams. By the end of 1986, the Bruce Foods pond is expected to generate electrical power as well.

Gordon S. Brown, president of Bruce Foods Corporation, explained: "A canning plant uses massive quantities of hot water that is normally heated by oil or gas. Just visualize how much hot water is used in a home kitchen, multiply that many times over, and you'll have an idea of how much is needed in a commercial operation." He also noted, "Americans are using up more and more non-renewable natural resources such as natural gas and oil every year. So, when Professor Robert Reid approached us about the possibility of building a solar pond to generate heat to displace natural gas at our El Paso plant, we decided the concept had sufficient merit to give it a try."

According to Brown, the partnership formed to construct the Bruce Foods pond has been a model of cooperation between academia and the

private and public sectors. And, he says it has made available the expertise, manpower, materials, and equipment no single entity could supply.

The Mechanical and Industrial Engineering Department at UTEP needed a location at which to conduct their solar research. The Bruce Foods pond gave them that location in a "real-life" industrial environment. Five graduate students and several undergraduates have worked at the pond, among them Vijay Kane, who completed his Master's degree in mechanical engineering last August. In addition, a paper on the design, construction, and initial operation of the pond has been written by the University team and the U.S. Bureau of Reclamation for presentation at an international solar energy conference.

The primary role of the U.S. Bureau of Reclamation in the project has been to study the feasibility of such ponds as a means of furnishing the large amounts of heat required for desalinization. This is a process which will soon be needed in the arid South-



west where salty water is available but unsuitable for consumption or agricultural or industrial use. In the solar pond process, salt is removed from the water rendering the water usable in addition to providing a source of energy.

The Bureau also maintains a PROBE station at the pond site to monitor weather conditions. Every five minutes, meteorological data is transmitted via satellite to a central computer for processing and storage.

The cogeneration of electricity on a large scale prompted El Paso Electric Company's interest in the solar pond. The utility company has a department of engineers who explore alternative energy resources and assist in research. When electricity is actually produced at the Bruce Foods pond, El Paso Electric will lend technical assistance and conduct inspections to ensure safety of the equipment. The agreement between Bruce Foods and El Paso Electric stipulates that Bruce Foods will share any excess power generated by selling it back to the utility company.

A 100,000 watt electrical generator, to be powered by heat from the solar pond, is now on order. An Organic Rankin Cycle engine provided by the Bureau of Reclamation will be used to drive the electrical generator. In this system, hot water is used to vaporize freon to "steam," turning a turbine, which runs the generator.

Many methods have been tried to utilize the sun's energy, but most have the common problem of energy storage during cloudy periods or at night.

A solar salt-gradient pond overcomes this difficulty.

In a solar salt-gradient pond, large amounts of salt are dissolved in water. In the Bruce Foods pond, 1,700 tons of salt obtained from the Carlsbad, New Mexico, nuclear storage site were used. As it is heated by the sun, the salt water becomes sufficiently heavy to remain at the bottom of the pond, rather than rise to the top. Fresh water

is floated on top of the salt water. A boundary gradient layer between the salt water and the fresh water acts as a transparent insulator and enough heat can be stored in the Bruce Foods pond to provide hot fresh water to the plant for several days.

"Solar ponds remain an innovative technology in the United States though they have been studied extensively in Israel and India," Brown noted. "They show definite promise as an alternative supplier of industrial power, but before we can realistically expect to have widespread use of solar energy we must make extensive refinements in our techniques. Research such as that being done by UTEP and the federal government needs to be repeated around the country." Brown said, "I encourage others within private industry to give their support to similar studies. We're sure glad to have had a chance to get in on these 'pioneering' efforts. It's always exciting to be the first at something, you know." □

Caroline Garland is a public relations account executive with Mithoff Advertising in El Paso. She is a journalism graduate of George Washington University and is married to UTEP alumnus H. Paul Garland.

SPIN

SPIN is the latest improvement in the University's Office of Research.

A computer link with the Sponsored Projects Information Network gives faculty members immediate access to listings of possible funding sources for their projects.

"This works just like the Library's reference searches on computer," explains Dr. Harmon Hosch, associate dean of the Graduate School and Research. "We have on-line search capability that is a real boon to our faculty."

The Office of Research, administered by Dean Michael Austin and Hosch, helps researchers in three main steps: It provides information on available funding, it assists in the application preparation process, and once a grant is received, it works with the investigator in preparing the budget and filing timely reports.

Hosch is optimistic that the cur-

rent fiscal year will bring in more money than last year, based on the first four months' activities. As of January 16, 1986, 74 proposals had been submitted, compared to 43 by the same date last year; \$1.8 million had been received in award funds, compared to \$1.6 million last year.

In fiscal year 1984, UTEP investigators submitted 140 proposals and awards received totaled \$2.9 million. For fiscal year 1985, there were 149 proposals with funding of \$4.2 million.

The Office of Research, says Hosch, is charged with the responsibility for processing proposals for grants and contracts through the University.

"The productivity of our faculty has increased a lot," says Hosch. "I anticipate that this year's research projects and funding will be well above the figures for last year." □

Das Dynamics

by Nancy Hamilton

The book *Fundamentals of Soil Dynamics* sells for \$48 in the American edition, but costs only \$1.50 in the paperback Chinese version. In English it is 398 pages; in Chinese, only 224.

News that his book was out in Chinese came as a surprise to the author, Braja Das, UTEP professor of civil engineering, when he attended the 11th International Conference on Soil Mechanics and Foundation Engineering in San Francisco last fall.

Through the help of a Chinese professor friend, Guoxi Zeng of Zhejiang University in Hangzhou, he was sent a copy of the book by Shiming Wu, associate professor of civil engineering at that university. Wu assured him that "this book was well distributed nationwide as a basic reference for graduate studies in geotechnical engineering."

The book, added Wu, serves as a link of friendship between him and Das and he hopes that they can work together in research sometime in the future.

The enthusiasm of the Chinese for Das's work is not unusual; his textbooks are also published in Taiwan, India, The Netherlands, Germany, and the Philippines.

His involvement in writing textbooks came out of genuine need. In teaching courses in soil dynamics, he found there were only two books in English available on the subject, both from the 1960s. He was constantly researching journals in the field, assembling up-to-date materials for his students to use.

"I got tired of preparing handouts for my classes, so I started writing textbooks," he recalls.

Das's production rate averaged a book a year from 1979 to 1985. He was also teaching his regular classes and working with graduate students.

The early titles were *Introduction to Soil Mechanics* (Iowa State University Press), *Advanced Soil Mechanics* (McGraw-Hill) and *Soil Mechanics Laboratory Manual* (Engineering Press), the third lab manual to come out in that field and quickly put into use in many school for the introduc-



tory soil mechanics course taken primarily by civil engineering seniors.

(UTEP civil engineering majors study soil mechanics in their junior year, learning about the physical and mechanical properties of soils and how they affect, for example, the designing of structures and highways.)

Fundamentals of Soil Dynamics (Elsevier) won him international attention and is in use in universities all over the world. It was only the third book in English published in the United States on soil dynamics. It includes a chapter, researched from technical journals from all over the world, on the subject of soil liquefaction in sandy soils due to earthquakes, something not available in book form before. That has been the subject of significant research only since about 1966, he says.

In 1984 the publisher of *Principles of Foundation Engineering*, Brooks/Cole Engineering Division of Monterey, California, allowed Das to suggest the color scheme for the book cover.

"I picked the UTEP colors, orange, white and blue, and they used them," he says proudly. He recommended the same for the second edition of the

laboratory manual, due for release in March 1986.

The book on foundation engineering became a club's book of the month selection — the August 1984 choice of the McGraw-Hill Civil Engineers' Book Club. It was described as "a guide to state-of-the-art design techniques." It is offered also by the Professional Civil Engineering Book Club of Macmillan Publishing Co.

His latest book, *Principles of Geotechnical Engineering* (Brooks/Cole) has captured approximately one-third of the U.S. market in its field.

Das's book research also led him to prepare extensive bibliographies of published materials available in his specialty.

"Somebody has to do this updating," he figures. "Nobody else was doing it and I needed the information for my graduate courses. Students need to know what's going on in this fast-developing field."

During the San Francisco convention, Das found that his fame as a textbook author came in handy. One evening he and his wife forgot to take their tickets to a banquet, but the man at the door, who was a graduate student at the University of California at Berkeley, saw their badges and said, "I know you. You wrote the textbook I use," and admitted them to the banquet hall.

His new fame has won him invitations and awards as well.

One was to visit his native India to teach a short course to engineers, under the auspices of the United Nations Development Program. In 1985 he was the soils consultant for General Dynamics Corp. (Convair Division) for design of a hard mobile launch project related to the Midgetman missile.

Among his awards are the 1985 Ralph R. Teeter Educational Award, presented by the Society of Automotive Engineers, Inc., and the 1984 Western Electric Fund Award for excellence in instruction of engineering students, presented by the Gulf-

(Continued on inside back cover)

Dr. Goldstein & *Caenorhabditis elegans*:

'These Are Very Special Worms'

by E. Patrick McQuaid

Genetic research on worms, being conducted at UT El Paso, might someday lead to a discovery for preventing human birth defects such as Down's syndrome, researcher Paul Goldstein says.

Equally unusual are the tools and approach Dr. Goldstein, associate professor in the Department of Biological Sciences, is using in his work. These include an electron microscope and camera, computer graphics and video tape.

Goldstein has identified structures

he calls disjunction regulator regions (DRRs) on the chromosomes of certain worms and these DRRs govern how the chromosome divides. In all cells, chromosomes must divide properly or genetic defects will result that are sometimes lethal, the professor says.

In May, Goldstein presented his findings at a scientific meeting held at the Cold Springs Harbor laboratory in New York, concluding that the DRR structures issue "a product" that either promotes the division process or inhibits the forces that would deter normal

chromosome separation.

"So far we have only seen the effects of this genetic regulatory substance," he says. "Now I am looking to find the product."

Once found, scientists could then identify where production takes place and have a better understanding of genetic mutation, the Brooklyn-born geneticist explains.

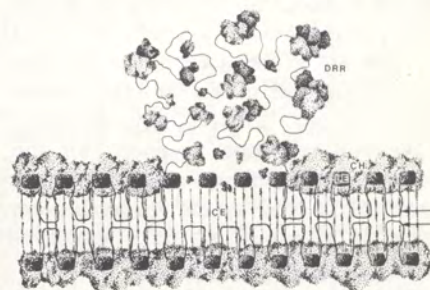
If the same regulatory substance is found to exist on human chromosomes, it may explain the cause of many birth defects and even some forms of cancer.

"There is no way to cure something unless you know the cause of it," he says.

Though his research thus far is all "after the fact," and of little comfort to the families of those afflicted with Down's, Turner's or Klinefelter's syndromes, in the near future doctors may be able to tell not only if a pregnant woman is carrying a Down's baby, but if the same defect is likely to occur again in another child, Goldstein says.

All human cells have 23 pairs of numbered chromosomes and Down's syndrome is the result of an extra No. 21 chromosome. The structures Gold-

(Continued on inside back cover)



Paul Goldstein with an electron microscope used in his research. Inset is a regular microscopic view of "*Caenorhabditis elegans*"; drawing above illustrates the "disjunction regulator region" (DRR).

Ysleta Schools, Language Arts, 'Centers of Excellence'

When three of their language arts programs won national awards last year, administrators of the Ysleta Independent School District were quick to credit the involvement of UT El Paso in that success.

They gave special praise to Dr. Tommy J. Boley, director of English Education at UTEP, and the College of Education whose teacher education programs they believe were factors in the school district's recognition.

Three YISD language arts programs were cited as "Centers of Excellence" by the National Council of Teachers of English at the 1985 convention in Philadelphia.

The three programs singled out were: Summer School Alternative, English as a Second Language, and Teaching Basic Writing/Staff Development.

They were among 158 programs honored nationwide by the NCTE. Chosen from among 700 nominees, the Ysleta finalists were visited by NCTE evaluators whose reports resulted in the awards.

The YISD was one of only five districts in the nation that had more than one program honored, and the only multiple winner in Texas.

Superintendent Jim Hensley attributes much of the success in Ysleta to the relationship the district has with UT El Paso.

"We are grateful for the work that Dr. Boley and others at UTEP have done in our district," says Hensley. "We will continue to count on the University to provide us with quality teachers as well as the leadership we need to continue to make improvements throughout the district."

Boley has been directly involved with the YISD's summer writing workshops since their inception in 1980. He developed the textbook for the course, "Writing Teacher's Notebook," which is updated annually to include the latest research on writing as well as



Pat Withers and Tommy Boley

practical ideas to use in the classroom.

"This grew out of inservice training I did for 11th and 12th grade teachers," recalls Boley. "Then we began to offer graduate level courses after school at Eastwood High School. That in turn led to organizing five-day workshops in which about 180 teachers have been trained in recent years."

He conducted the intensive workshops with Ginna Rhodes, YISD secondary English supervisor. Together, they give teachers in all areas of instruction the tools they need to make students better writers.

"For many years English teachers have taught the tools of the craft, but not the craft of writing itself," Boley says. "In the workshops we take teachers through the process of being writers, not just talking about writing."

The composition and rhetoric movement of recent years has focused on improving writing skills, he adds. This fall, Texas textbooks for the first time will reflect this new emphasis on writing skills. Boley looks for the literacy problem in written English to change for the better as the teaching techniques change.

Rhodes says that Dr. Boley is responsible for much of the Ysleta program's success.

"Even before the citation, we knew we had developed a great program," she says. "Since we started the workshops, our students' writing scores have improved. YISD students raised their scores on the Texas Assessment of Basic Skills from 58% to 92% mastery. The same is true on other

standardized tests. Much of that is because of Dr. Boley's skill in working with public school teachers."

The NCTE praised the Centers for Excellence winners for allowing teachers to take a hand in developing the programs. The council said that the winning programs accommodate the diversity of students they serve.

The administrators who oversee the English for Speakers of Other Languages (ESOL) program are always looking for ways to expand and improve their services. Approximately 1,200 limited English proficient students are served by the program, which helps them learn how to acquire and use English rapidly.

This year Eddie Endlich, secondary ESOL supervisor, involved teachers of subject areas such as science, mathematics, and social studies, in the work with limited English proficient students in grades 7-12.

The top priority is the student's acquisition of English, using a successful technique called "The Natural Approach." A teacher and a teacher aide work with the students in small groups learning to read and to speak English. Group discussions help the students develop their skills in listening, reading, speaking and writing. They are being prepared to successfully enter as soon as possible the mainstream of students who already have a command of English.

The YISD Summer School Alternative Program provides a new approach to learning and grade-level promotion for academic underachievers in the seventh and eighth grades. Historically, these students have tended to drop out of school. Through the new program, they are given new incentives to stay in school.

The target groups for the program are students who have completed sixth grade, are overaged and failing; seventh and eighth graders and ESOL and special education students in

(Continued on inside back cover)

EXTRACTS

by Marianne Fleager

DEVELOPMENT & ALUMNI ASSOCIATION NEWS

1985 Matrix Society Honored

More than 300 members of the 1985 Matrix Society were honored for an outstanding year of academic support at a dinner hosted by President and Mrs. Haskell Monroe on January 10, 1986, at the Marriott Hotel.

Outgoing Chairman Michael Wieland spoke to those attending about the progress of the Society which, in 1985, contributed private gifts of over \$525,000 for the academic programs at UT El Paso. Assisted by Dr. Monroe, Wieland presented plaques to outgoing members of the Society's Executive Committee who included John Akard, Ledford F. Beard, Don S. Henderson, Mrs. Jean Kahn and Philip Stoner.

The newest members of the committee, appointed to two-year terms, are James P. Maloney, James Crouch, Mrs. Margie Licon, Dr. Ralph Ivey, Algie Felder and Mrs. Stanlee Rubin. Steve Tredennick and Charles "Lucky" Leverett will serve as Chairman and Vice Chairman, respectively, in 1986.

Guest speaker for the evening was Mrs. Peggy Elliott Goldwyn

(nee Krutilek), Vice President of the Samuel Goldwyn Foundation which established the George Krutilek Graduate Fellowships at the University in 1979. Mrs. Goldwyn, a native El Pasoan, attended Texas Western College and has lived in Los Angeles since 1959. In her address to the membership of the Matrix Society, she compared the strengths of two men who were important in her life — her father, George Krutilek, and her father-in-law, Samuel Goldwyn. Both were of eastern European heritage, both were achievers who believed in hard work, and both were devoted family men.

Mrs. Goldwyn described the history of the Samuel Goldwyn Foundation, on whose board she serves, and its efforts in providing not only scholarship funds, but seed money for needed social services and even a new public library to replace one that was destroyed by fire. She encouraged her listeners to explore ways in which they might participate in or influence similar programs that help others.

Alumni Scholarships Awarded

Steve DeGroat, 1986 President of the UT El Paso Alumni Association, announced the selection of three students to receive the Association's scholarships for the 1985-86 academic year.

Susan Lopez, a senior majoring in Microbiology/Pre-Med, is the recipient of the James DeGroat Memorial Scholarship for Outstanding Seniors. She is a 1982 graduate of Ysleta High School. At UTEP, she is active in the National Chicano Health Organization and Cardinal Key Honorary Society. She is also a member of several pre-med honorary societies.

Lawrence Finney is the recipient of the Thomas I. Cook Schol-

arship Award for a student from the Dallas/Fort Worth area attending UT El Paso. His home is in Fort Worth and he graduated from Brenham High School in 1984 in the top 10% of his class. He is a freshman majoring in both Civil Engineering and Accounting.

Michael Mendoza is the recipient of the Association's Guaranteed University Scholarship under the Presidential Scholarship Program. He is a freshman majoring in Criminal Justice with the intent of pursuing a law degree. He graduated from Burges High School in El Paso in the top 8% of his class.



UTEP President Haskell Monroe with recipients of the 1986 Gran Paseno Awards: Hal Daugherty, left, and Judson F. Williams, right.

Take Note: 1936 Grads

Notices will be mailed soon about the Class of 1936 Reunion scheduled for Homecoming on October 17-18th. One of the activities planned is the Golden Grads Luncheon for all ex-students of classes of 1936 and earlier.

Each year's Golden Grads luncheon has become larger and more successful in terms of at-

tendance. At Homecoming 1985, 23 of the 40 graduates of 1935 attended. They came from Arizona, California, Colorado, Louisiana, and many other states across the country. Graduates of 1936 are encouraged to make plans now for Homecoming '86. More information will be forthcoming from the Alumni Office.

New President's Associates

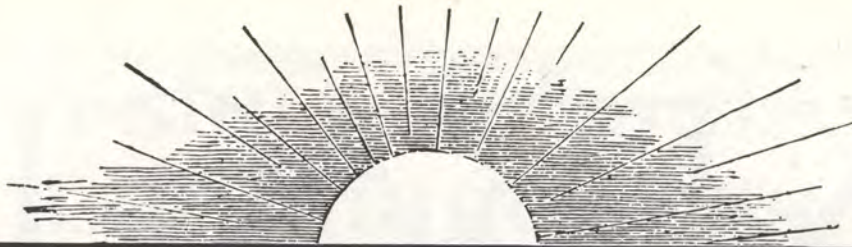
Ellis O. Mayfield, 1985-86 chairman of the University's President's Associates, cited his Executive Committee and new-member chairman, Joel E. Brown, for the largest expansion of membership in the Associates' history.

A concerted effort during 1985 resulted in a total membership of 186 members. Seventy-one of those were new members contributing over \$500,000.

In a continuation of that new-membership drive, Mr. Mayfield will encourage others to consider

joining the 1986 President's Associates, a group formed in 1969 to give recognition to individuals who give of their personal resources in support of the University's academic programs.

Membership is accorded to alumni and non-alumni friends who contribute \$500 or more during a calendar year, for academic programs. Members of the Associates also serve as liaison between the University and the El Paso community, in addition to providing private gift support.



ALUMNOTES

The Honorable **Joseph F. Friedkin**, United States Commissioner of the International Boundary and Water Commission, United States and Mexico (B.S. '32; Outstanding Ex-



1962), has announced his retirement effective February 1, or as soon thereafter as the President appoints a successor. Commissioner Friedkin joined IBWC as a career employee in 1934. He served with the U.S. Army Corps of Engineers in World War II, and in 1952 became the principal engineer for the Commission, its second highest official. Appointed Commissioner by President Kennedy in April 1962, he has been confirmed in that position by each subsequent administration. He was awarded the personal rank of ambassador by President Lyndon Johnson in 1968. His professional achievements have been recognized by many officials and organizations. Among the more recent recognitions: the Department of the Army's "Certifi-

by Sue Wimberly

cate of Appreciation for Patriotic Civilian Service" (1980), Pan American Union of Associations of Engineers' award as "Outstanding Pan American Engineer" (1980), "Meritorious Executive Award" conferred by the President of the United States (1980), and the American Society of Civil Engineers' (ASCE) President's Award (1984).

During a trip to Europe last summer, Dr. C. Sharp Cook, professor emeritus of physics, and Mrs. Cook, visited three UTEP alumni in West Germany. **Hans Wagner** (M.A. '75) is a newspaper editor in Usingen and **Jürgen Kohler** (M.A. '75) is with the Bank of America in Frankfurt. Dr. Cook recalls that they attended UTEP under Fulbright fellowships. The Cooks met them through the Council for International Visitors. Near Heidelberg they visited **Rosa Ney** (B.S. '71; M.Ed. '78), who worked on campus as a secretary while pursuing her degree in education.

the Texas Tech University Area Health Education and Health Sciences Center in El Paso, was among 12 women inducted into the Texas Women's Hall of Fame in Austin in November. She was selected for her work in education.

Gerald Rogers (B.A. '52; M.A. '55) has been promoted to executive director of the Education Service Center-Region XVII, Lubbock, where he had served as interim director for several months. In his career in education he was a teacher and basketball coach in Crane, Texas, and a coach and administrator at Monterey High in Lubbock. He is also known as the "Voice of the Red Raiders," as public address announcer for Texas Tech sports events.

Myron I. Karaffa (B.A. '54) is a teacher at Indian Trail Junior High School, Addison, Illinois, and is active in drama and music with local theater groups.

Thomas E. Cooke (B.A. '55), of San Angelo, Texas, retired in November as assistant district director of the Texas Employment Commission after 30 years' service.

Craig Peticolas (1955 etc.) has been named vice president of commercial loans for Western Bank, El Paso.

Helen Houser Popovich (B.A. '55), president since 1983 of Florida Atlantic University, was principal speaker at the UTEP December commencement. She began her career in education teaching high school in El Paso, and has taught at the University of South Florida and the State University of Minnesota.

William R. Sanford II (B.A. '57) retired in November as a special agent for the F.B.I. with 20 years of experience. He will reside in San Jose, California, where he will coach high school football and continue to participate in Masters Track.

Rene Rosas, D.D.S. (B.A. '58) was inducted as a fellow of the In-

ternational College of Dentists in San Francisco last November.

1960-1969

Frank Besnette (B.B.A. '62), vice president for Administration and Finance at Northern Arizona University, was honored by NAU students at their Homecoming in October. It is a long standing tradition for NAU students to dedicate the occasion to a special staff or faculty member, honoring the recipient at a banquet and an introduction at their football game. Dr. Besnette was honored as *The Arizona Daily Sun's* 1980 Citizen of the Year and received the 1978 NAU Distinguished Faculty Award. He holds a master's degree from the University of Denver and a doctoral degree from Arizona State. His wife is the former **Linda Curton** (B.A. '61).

Malcolm E. Burdett (B.A. '63; B.A. '64), president of Stahmann Farms, Inc., has been named to the board of directors of the Bank of the Rio Grande, Las Cruces.

Joseph Gelsthorpe, LTC/U.S. Army (B.A. '65; M.A. '74), has been assigned to Ft. Hood, Texas, as a plans officer for the 13th Support Command.

Steve Tredennick (B.A. '65), El Paso attorney, headed a delegation to the USSR in December to participate in a "Young Leaders Dialogue" sponsored by the American Center for International Leadership and American Field Service International of New York, and by the Committee of Youth Organizations of the USSR. The U.S. delegation consisted of young leaders in the fields of law, politics, business, education, and trade unions. The delegation visited three Soviet cities and met with young Soviet leaders-in-training from churches, labor unions and government. Tredennick is a member of the executive committee of the Texas Lyceum Association, a fellow of the Texas Bar Foundation, and a past member of the board of directors of the El Paso Bar

1920-1949

Salvador Del Valle (B.S. '40) was selected as the 1985 Bowie High School Outstanding Ex-Student, and was honored at their Homecoming activities in October. He served in counterintelligence with the U.S. Army, retiring in 1964 with the rank of lieutenant colonel. He was director of the El Paso Area Equal Employment Opportunity and is now associated with KFNA Radio.

Vernon Greggerson (1940 etc.), El Paso's postmaster, retired January 3 after 38 years with the U.S. Postal Service.

Nancy Miller Hamilton (B.A. '45; M.A. '54) became associate director of Texas Western Press in September, after 10 years in the UTEP News and Publications Of-

fice. She will continue to serve with **Dale L. Walker**, (B.A. '62), director of both Texas Western Press and the News and Publications Office.

1950-1959

Charles W. "Lucky" Leverett (B.A. '50) was honored with the Hicks-Middagh Award for Excellence by the UTEP Communication Department at Homecoming last November. He has been associated with the El Paso Electric Company since 1968 and is currently executive assistant to the Franklin Land and Resources group, a subsidiary of El Paso Electric.

Maria Elena Flood (1951 etc.), a member of the State Board of Education and project director of

Association.

N.C. Binyon (B.B.A. '66), El Paso accountant, has been named president of Montwood National Bank, El Paso.

Larry W. Langberg (B.A. '66), of Los Angeles, a 16-year veteran of the Federal Bureau of Investigation, was recently re-elected as the Western Regional director of the FBI Agents Association.

Trini Guillen (B.A. '65) is president and chief operating officer of TG Railway Enterprises, a company which he founded eight years ago. The company repairs and converts railway cars. Guillen was a former regional administrator of the Federal Railway Administration.

Jesse Blackwelder (B.A. '66; M.Ed. '68) is professor of psychology and golf coach for New Mexico Junior College, Hobbs. His wife, **Carole Moran Blackwelder** (B.A. '64), an elementary teacher, is also a golf enthusiast.

David F. Briones, M.D. (B.A. '67), associate professor and associate chairman of the psychiatry department at Texas Tech University, has been elected to full membership in the American Academy of Clinical Psychiatrists.

Homero Galicia (B.A. '67) is director of minority business development for the El Paso Chamber of Commerce.

Les Parker (B.B.A. '67; M.B.A. '77), former president of First City Bank-West, was named president and chief executive officer of Coronado Bank, El Paso.

Vinita Lynch Patrick (B.A. '67) completed her master's in social work from Our Lady of the Lake, San Antonio, and is currently the program director for Aged and Disabled Services with the Texas State Department of Human Services, El Paso.

Jeannie K. Todaro, Cdr./USN (B.A. '67), after serving for three years in London, has been transferred to Western United States Military Entrance Processing Command, San Francisco.

Patrick Wieland (B.S. '68), co-owner of Wieland Realtors, was named the 1985 El Paso Board of Realtors' Man of the Year.

Rosita Apodaca (M.A. '68), former consultant for bilingual education, English and journalism for the El Paso Independent School District, is now bilingual education director for the Dallas Independent School District. While with EPISD, she was credited with designing the district's High Intensity Language Training Program, implemented in 1982 to deal specifically with the problems of teenage immigrants with limited English profi-

ciency.

Harry Gamble (B.B.A. '69), public information officer for the Alaska Department of Education, has been elected to a three-year term as Northwest Regional Vice President of the National School Public Relations Association.

1970-1975

Stan Bass (B.A. '70) is branch coordinator and corporate personnel director for the International Business College in Texas and New Mexico, with headquarters in El Paso.

Yoram Ettinger (B.B.A. '70), consul general of Israel at Houston, was a recent UTEP seminar speaker, sponsored by the Department of Political Science.

Kenneth T. Osman II (B.A. '70) has been named State director of development for the Missouri Division of the American Cancer Society. A former federal contract educational consultant for the Terre Haute, Indiana, federal penitentiary, he has previously been executive associate of the Sonoma County United Way and a staff member of the Houston United Way. He has also served as corporate development director of Texas Christian University and at Chapman College as the director of development.

Margo Endlich Martin (B.S. '71; M.Ed. '83) is an instructor and coordinator for the secretarial science department at the Valle Verde campus of El Paso Community College.

Roberto Vargas (B.A. '71) has been named executive director of the United Cerebral Palsy Association of Dallas County.

J. Marc Dickason, M.D. (B.S. '72), a member of the El Paso Orthopedic Surgery Group, was named 1985 Outstanding Ex-Student by Coronado High School, El Paso. Dickason is a graduate of UT Medical Branch, Galveston.

Jeff Tyler, Maj./USA (B.S. '73), space activities officer at the Army Aviation Center, Ft. Rucker, Alabama, has been selected for the 1985 Outstanding Young Men of America. He received a master's degree in business administration from the University of Southern California last year.

Jose Cardenas (B.S. '74) is managing principal of Cardenas-Salcedo, El Paso. Cardenas will head the firm's engineering and construction management in El Paso.

E.W. "Terry" Green Jr. (B.B.A. '74), is a financial analyst with the El Paso Electric Company. He also serves with the U.S. Air Force Reserve as a USAF Academy liaison officer, recruit-

ing and screening students, in the El Paso area high schools who make application for appointment to the Academy. He earned his master's in business administration from the University of North Dakota.

Eugenio A. Aguilar III, M.D. (B.S. '74) has completed a residency in Otolaryngology — Head and Neck Surgery, and also has completed a fellowship under the American Academy of Facial Plastic and Reconstructive Surgery. He has accepted a position as assistant professor in the Department of Otolaryngology at UT Medical School/Houston.

Mark Klespis (B.S. '74; M.S. '77), who completed his Ph.D. in mathematics education from UT Austin in 1984, is an assistant professor of education at the University of Alabama at Birmingham.

Thomas Daniel Carter Jr. (M.Ed. '75), a lecturer in the UTEP Department of Leadership and Counseling, has been named executive director of the El Paso Opportunity Center for the Handicapped. He received a doctorate in education in 1983 from New Mexico State University.

Michael E. McKenzie (B.A. '75) is director of Christian Education at the Second Presbyterian Church in Fort Lauderdale, Florida.

Lorraine Terrill (B.S. '75; M.Ed. '85) was recently promoted to community and school coordinator and executive director of the Partnerships in Education Program, a joint venture of the El Paso and Ysleta Independent School Districts and the El Paso Chamber of Commerce.

David L. Watson (B.A. '75) and his wife, **Janis Watson** (1979 etc.), are missionaries with the Southern Baptist Foreign Mission. They will work in Malaysia.

1976-1979

Conrado W. Montes (B.B.A. '76) and **Brian Graves** (B.B.A. '81) have joined Computerland in El Paso as sales representatives.

Edna Gundersen (B.A. '76), El Paso Times news feature writer, was honored in the annual "Best of Gannett" competition for a special report on the Tarahumara Indians of Mexico, for which she won third place in the national investigative/in-depth reporting category. In addition to the reporting category award, she was a finalist in "individual achievement." She recently returned from temporary assignment with USA Today in Washington, D.C.

Antonio Ronquillo, Capt./USA (B.A. '76), a public affairs officer, is on duty with the Atlant-

ic Command, Norfolk, Virginia. His previous assignment was in Italy.

Dorothy D. Saccaro (B.A. '76) is an interior design consultant. She and her husband make their home in Pensacola, Florida.

Nate "Tiny" Archibald (B.S. '77) is assistant basketball coach at the University of Georgia. Archibald, who played 14 NBA seasons, retired from professional basketball in 1984. He was a member of five pro teams — the Cincinnati Royals, New Jersey Nets, Buffalo Braves, Boston Celtics and Milwaukee Bucks.

Philip Booth (B.A. '77) is a video producer/director at the University of Houston's Audio-visual Services. He is completing a second term as president of the Houston chapter of the International Television Association. A licensed commercial hot air balloon pilot, he has competed at the U.S. National Championships.

Jan Clark (B.B.A. '77), a certified public accountant with Fruithandler, Nussbaum, Schwartz, Clark and Torres of El Paso, has been named to Leadership Texas, a program designed to prepare women for leadership roles in government, business and community service.

Ana Maria Briones-Masoodi (B.B.A. '77), former director of sales for the El Paso Mid City-Holiday Inn, has been named sales manager of the Sheraton-El Paso Hotel.

Gilbert Torres (B.S. '77) has been appointed marketing director at Tigua General Hospital in El Paso.

Wade Blacketor (M.B.A. '78) has joined Schenkein/Associates, Inglewood, Colorado, as controller. A certified public accountant, Blacketor served as controller of two Denver-based oil and gas firms and was also an auditor for KMG Hurdman in both its Denver and El Paso branch offices.

Mark Barnes (B.B.A. '78), who joined the Adolph Coors Company in 1979 as an area sales manager in Nevada, has been named sales manager for the Great Lakes Division of the company. He will be responsible for sales operations in Illinois and Michigan.

Richard Contreras (B.S. '78), El Paso attorney, was honored as 1985 Outstanding Ex-Student by Riverside High School. He has been in private law practice since 1982, having earned his law degree from The University of Texas at Austin.

Barbara Dent (B.A. '78) has been elected president of the El Paso County Society Medical Auxiliary for 1985-86.

Ernest Terry, Capt./USA (B.S. '78) is currently the commander of HHD, 30th Medical Group in Germany. He will be taking command of the 42nd Medical Company in Nuremberg in March 1986.

Nick Gagliano Jr., Capt./USA (B.A. '79) has been awarded a master's degree in management from Webster University; he is presently the chief, Administrative Services Division at Ft. Bliss.

Michael J. Hutson (B.B.A. '79; B.A. '80), who received his law degree from UT Austin in 1983, is an attorney with Grambling & Mounce in El Paso. He is married to the former **Lorenia M. Calderon** (B.S. '80), a graduate of UT College of Pharmacy.

1980-1985

Daniel E. Andis (B.S. '80), of Dallas, has been named to Outstanding Young Men of America for 1985. He is an employee of Vaught Engineering and resides in Arlington with his wife, the former **Kathi Juvrud**. They are

parents of two children.

Tim Crenshaw (B.B.A. '80) has been named assistant vice president of commercial lending for the American Bank of Commerce Downtown, El Paso.

Christa Beauchat Howard (B.B.A. '80) is an accounting manager for a cosmetic firm in Idaho Falls, Idaho.

Rafael F. Munoz (B.S. '80; M.S. '82) is staff engineer in the El Paso office of Raba-Kista Consultants, Inc., a geotechnical engineering firm.

John E. Ryan, Maj./USMC (B.A. '72) is currently head, Anti-Air Warfare Branch, Firepower Division, Marine Corps Development Center in Quantico, Virginia. His wife, **Angela Argeanas Ryan** (B.S.N. '82) has completed the neonatal nurse practitioner's program at Georgetown University and is employed at Children's Hospital, Washington, D.C.

At Coronado Bank in El Paso, **John Abbott** (B.B.A. '82) has been named commercial banking officer; **Joseph Mullings** (B.B.A. '84) has been named credit officer.

Heidi J. Ingram, AFC/USAF (B.A. '82), an aircraft maintenance specialist at Fairchild Air

Force Base, Washington, was named outstanding airman of the month for the 92nd Organizational Maintenance Squadron.

Pedro Marquez Jr., AFC/Air National Guard (B.A. '82) has graduated from the Air Force administrative specialist course at Keesler Air Force Base, Mississippi.

Mark Chapa (B.A. '83) is an agent with Bankers Life Company in El Paso. His wife, **Jennifer Chapa** (B.A. '83) is associated with El Paso Terminal Warehouse.

David R. Dickens (B.S.N. '83) is director of nursing at Charter Hospital in Santa Teresa, New Mexico.

Jose A. Hernandez (B.B.A. '83) graduated from the U.S. Border Patrol Academy in Glynn, Georgia, in October and has been assigned to the El Centro, California, Border Patrol Sector.

Michael Robalin (B.B.A. '83) is commercial lending officer for InterFirst Bank, El Paso.

John M. Shannon, 1st Lt./USAF (B.S. '83) is an electronic switching systems engineer at Scott Air Force Base, Illinois.

H. Douglas Madden (M.S. '84) is a cartographer for the Defense

Mapping Agency Aerospace Center in St. Louis, Missouri.

Natalie G. Lee, 2nd Lt./USA (B.A. '84), an intelligence officer previously assigned to Ft. Huachuca, Arizona, has arrived for duty with the 108th Air Defense Artillery Brigade, West Germany.

Eva K. Musgray (B.S. '84) has enrolled in the cooperative legal education program at Northeastern University School of Law, Boston.

Jeffrey L. Vandine, 2nd Lt./USAF (B.A. '84), who completed a 12-week basic signals intelligence course at Goodfellow Air Force Base, Texas, has been assigned to West Berlin.

Hilda Contreras (B.S. '85) is a supervisor of computer operations for Southwestern Bell in Dallas.

Suzanne E. McGivney (M.S. '85), an engineer with the El Paso firm of Parkhill, Smith & Cooper, Inc., presented a technical paper at the September meeting of the American Society of Civil Engineers (ASCE).

Sally Lowther (B.B.A. '85) is a staff accountant in the audit practice of Arthur Andersen & Co., Houston.

DEATHS

Joseph H. James, associate professor emeritus of English, who taught at the University from 1938 until his retirement in 1974, September 6, 1985, in Greensboro, Alabama, after a long illness. He is survived by a sister.

Rafael Rangel (B.S. 1928), June 3, 1985, in Parral, Chihuahua, Mexico. His wife, **Josefina L. de Rangel**, survives.

Robert E. Fortenberry (B.S. 1982), September 21, 1985. Survivors are his wife, **Mary K. Fortenberry**, a son and two daughters.

Jesse Gavaldon, Col./USA, ret. (B.S. 1947), September 28, 1985. A resident of Citrus Heights, California, he retired in 1979 as head of the metallurgical department at McClellan Air Force Base, Sacramento, where he was employed for 26 years. His wife, **Hester Vinson Gavaldon**, and two daughters survive him.

Frederick P. Battle (B.S. 1959), an engineer with Union

Carbide Corp., October 5, 1985, in Buffalo, New York. His wife, **Joanna Battle**, and several children survive.

Grace Cordelia McPherson (B.S. 1955), retired El Paso teacher, in October, 1985. Survivors include several sisters and brothers.

Margaret G. Hargis (M.Ed. 1956), retired teacher and librarian, in El Paso, October 19, 1985. She is survived by her daughter.

Betty Ann Stallings Kirby (B.A. 1961), of El Paso, October 25, 1985. Her husband, **James W. Kirby**, and several children survive.

Clarence Gordon Hackett, chief psychologist at the El Paso Guidance Center for more than 30 years, and UTEP instructor in psychology in the 1960s, October 29, 1985. Survivors are his wife, **Helen S. Hackett**, and several children including Professor **David A. Hackett** of the UTEP

History Department.

Docia Lackey (M.Ed. 1951), a retired teacher, in Hico, Texas, November 9, 1985.

Robert E. Mitchell, SFC/USA, ret. (B.M. 1979), a band instructor in the Fabens and Ysleta school districts for the past six years, November 11, 1985. He is survived by his wife, **Florence Mitchell**, of UTEP's Graduate School staff, and a son.

Catherine A. Morford, a lecturer in the College of Education, November 12, 1985, in El Paso. Survivors include her parents and a sister.

Rosa Maria Perales (B.S. 1970), a retired teacher, November 24, 1985. Family survivors are her father and several brothers.

Pilar F. Trujillo (M.Ed. 1976), a teacher for 29 years in the Clint, Ysleta and El Paso schools, November 26, 1985. Her husband, **Adolfo**, and several children survive her.

Frederick Homer Bailey, professor of mathematics at UTEP from 1963 to 1976, in El Paso, December 4, 1985. He is survived by his wife, **Mary Louise Bailey**, and four children.

Rex W. Stickland, professor

emeritus of history and former chairman of his department, December 11, 1985. Dr. Strickland began teaching at UTEP in 1936 and retired in 1967. He was the first research professor at Texas Western College in 1961-62 and was the author of several books on Southwest history and numerous articles for historical journals. He is survived by his wife, **Mary Lee Strickland**. Friends and faculty colleagues of Dr. Strickland have established a memorial fund in his name to be used to purchase books for the UTEP Library in his teaching field, history. Gifts may be sent to the Development Office, UTEP.

Bobby Lawrence Thies (B.S. 1964), a mechanical engineer with DuPont and a resident of Clear Lake City, Texas, December 18, 1985. His wife, **J'Ann**, and his parents survive him.

Helen O'Shea Keleher, friend of the University, December 17, 1985. Mrs. Keleher endowed a UTEP scholarship and established a library fund; she was a member of the Matrix Society and of the Chancellor's Council of the University of Texas System.

Ysleta Schools...

(from page 12)

grades 7-8 who are at least 15 years old and who lack 2.5 or more credits for promotion. The Ysleta ISD found that students qualifying for the summer program traditionally have been disproportionately male, Hispanic, and from low income families, indicating that the regular school program has not been meeting their particular needs.

These students also shared a common characteristic of a negative self-concept and tended to be passive learners, reluctant to ask questions, to volunteer, to assert themselves.

The Summer School Alternative Program uses a middle school structure with block scheduling, counseling, advisory periods, interdisciplinary teams, rotating schedules and alternative teaching strategies. Under block scheduling, for example, a student stays with his own group through the day instead of having to interact with great numbers of other students. Counselors try to help the students feel better about themselves and about school. Field trips, computer-assisted instruction and the use of non-traditional instructional materials are built into the program in order to stir the students' interest.

The daily classes emphasize reading, writing, mathematics, science and social studies, with focus on skills students will need in order to succeed in high school. The teamwork of teachers and counselors is important in helping the students improve not only in classroom skills, but in attitudes toward their work and their own abilities.

The program has as a goal keeping as many of the students in school as possible and trying every alternative available to help the students learn appropriate behavior at school.

"The success of our program depends heavily on the teachers and counselors," says Linda Endlich, who administers it. "Many of our best people have come from UTEP."

The NCTE developed the Centers of Excellence program in response to critics of elementary and secondary education. The organization hopes the centers will be used as models for other schools that are seeking ways to strengthen their language arts programs. □

Alzheimer's Project

(from page 7)

Even his mother and father contribute.

The attention on UTEP's research into Alzheimer's Disease has influenced the establishment of the Gerontological Research Center on campus which serves as the home for The University of Texas at El Paso Alzheimer's Disease Research Project.

Special Worms

(from page 11)

stein has found on the worm chromosomes diminish over time, suggesting why older women are more likely to bear children with Down's — if indeed the same disjunction regulator regions are found in humans.

"Down's syndrome we now know comes by both chance and regulation," the professor states.

The subjects he has used for his research are microscopic, common, "free living" worms, as opposed to parasites, which are often studied.

"The worms I study are found in our bodies and in our water supply," Goldstein explains. "They are of absolutely no harm and weren't discovered until the 1950s. These are very special worms."

What makes them special is their unusual life cycle, he continues. Basically, Goldstein's research is in the aging process and the worms, known as *Caenorhabditis elegans*, are perfect to study because they come to full maturity within 3½ days and have a life expectancy of but 15 to 20 days.

In this brief time they go through the same aging processes as humans will over 75 or 80 years, he says.

The worms are also hermaphroditic — capable of producing both sperm and eggs — making work easier for the geneticist.

"They are capable of reproducing themselves," Goldstein says, "and all their offspring are virtually identical. They're ideal for this kind of work. I can stick one worm in a culture dish and a week later I'll have 100,000 of them, all identical. It's as close to natural cloning as you can get." □

E. Patrick McQuaid is a reporter for the El Paso Herald-Post and this story, which has been slightly revised, appeared in the Herald-Post on June 22, 1985.

Alzheimer's Disease Research Project.

You'll be hearing more about it. □

Gary Scharrer is a reporter for the El Paso Times who has written extensively on the UTEP Alzheimer's Disease project.

Das Dynamics

(from page 10)

Southwest Section, American Society for Engineering Education. UTEP has honored him with three awards for teaching, one from the Amoco Foundation, one from the vice president for academic affairs, and the Distinguished Achievement Award for teaching excellence.

Das left India in 1966 as a college student, having completed two degrees there. He earned his M.S. at the University of Iowa and Ph.D. at the University of Wisconsin. Lacking money to return home before starting his Ph.D., he worked for the Illinois Highway Department and met his wife, Janice, who was attending Southern Illinois University. They postponed marriage until he was sure he could complete his doctorate.

With that degree in hand in 1972, he was a green card holder, an alien permitted to work, but jobless. He became a consultant in Honolulu and obtained his U.S. citizenship in 1973. His teaching career began in South Dakota. He has been at UTEP since 1978.

Das points out that the support of his wife, Janice, has been invaluable in his success as a textbook author. She types manuscripts and helps in many other ways. She also has close ties with UTEP through the University Women's Club of which she is past president.

For a prolific writer of textbooks such as Das, there must come a time to slow down. His time has not yet come, though. Currently he is co-authoring a basic engineering textbook on "Statics and Strength of Materials" to be released by PWS Publishers (a division of Wordsworth) in March 1987. He also is working on a book on "Lateral Earth Pressure and Retaining Structures" which will update most of the developments of the last 15 years in that field.

Maybe they will end up in Chinese translations, too. □



James F. Bettie (Electrical Engineering '60) in Antarctica in 1962 where he headed the Schellenger Research Labs expedition which conducted upper-atmospheric rocket probe experiments to study polar weather. Bettie was appointed scientific leader of the McMurdo Station and later was notified that a prominent land feature in McMurdo Sound had been named Bettie Peak by the U.S. Board of Geographic Names. Today, Bettie lives in Wilmington, Delaware.

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