



# NEWSLETTER

The University of Texas at Austin  
Department of Geological Sciences

No. 40      September 1990      Austin, Texas

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**Cover Photo:**

*Algodones Dune Field, Southeastern California. UT graduate students working with faculty member Gary Kocurek set up instruments for measuring airflow patterns on the lee side of a sand dune. Travel in the dune field is by dune buggy. Aloft is an instrument-carrying balloon that profiles atmospheric conditions as it is raised or lowered. The instrument transmits data to the ground station by radio. Each anemometer and wind-vane set continuously records surface conditions at specific locations on the sand dune. The airflow patterns on the dune are linked with surface processes of sand movement; this in turn can be used to interpret the conditions under which ancient sand-dune deposits formed. This research is funded by the National Science Foundation.*

**FACULTY SUPPORT**

- \$ \_\_\_\_\_ Hal P. Bybee Memorial Fund (travel, research)
- \$ \_\_\_\_\_ Energy & Mineral Resources Fund
- \$ \_\_\_\_\_ Faculty Endowments
- \$ \_\_\_\_\_ Miss Effie Graves Memorial Fund
- \$ \_\_\_\_\_ Geochemistry and Engineering Geology Research Fund
- \$ \_\_\_\_\_ Carolyn G. & G. Moses Knebel Fund
- \$ \_\_\_\_\_ Wann & Marietta Langston Vertebrate Paleo. Fund
- \$ \_\_\_\_\_ Jack K. Larsen—Mesa Petroleum Co. Fund in Sedimentary Geology
- \$ \_\_\_\_\_ Structural Geology and Tectonics Fund

**SPECIAL NEEDS**

- \$ \_\_\_\_\_ Alumni *Newsletter*
- \$ \_\_\_\_\_ S. P. Ellison Jr. Fund (alumni activities)
- \$ \_\_\_\_\_ J. Ben Carsey Sr. Special Maintenance Fund (equipment)
- \$ \_\_\_\_\_ J. Donald Langston Special Operations Fund (equipment)
- \$ \_\_\_\_\_ Tobin International Geol. Map Collection
- \$ \_\_\_\_\_ Glenn & Martha Vargas Endowment for Gems and Gem Minerals Instruction
- \$ \_\_\_\_\_ J. C. Jr. & Elizabeth C. Walter Geology Library
- \$ \_\_\_\_\_ E. A. Wendlandt Book Fund
- \$ \_\_\_\_\_ F. L. Whitney Memorial Book Fund

**STUDENT SUPPORT**

- \$ \_\_\_\_\_ Laura T. Barrow Graduate Fellowship
- \$ \_\_\_\_\_ Bloomer Fund for Motivated Students
- \$ \_\_\_\_\_ W. F. Bowman Endowed Presidential Scholarship
- \$ \_\_\_\_\_ Brahman Energy Scholarship
- \$ \_\_\_\_\_ Jesse L. Brundrett Memorial Endowed Presidential Scholarship
- \$ \_\_\_\_\_ Hal H. Bybee Memorial Scholarship
- \$ \_\_\_\_\_ Dorothy Ogden Garsey Memorial Fund
- \$ \_\_\_\_\_ S. E. Clabaugh Fund in Hard-Rock Geology
- \$ \_\_\_\_\_ W. Kenley Clark Memorial Endowed Presidential Scholarship
- \$ \_\_\_\_\_ R. H. Cuyler Endowed Presidential Scholarship
- \$ \_\_\_\_\_ Ronald K. DeFord Field Scholarship Fund
- \$ \_\_\_\_\_ Michael Bruce Duchin Memorial Endowed Presidential Scholarship
- \$ \_\_\_\_\_ Graduate Student Executive Comm. Fund
- \$ \_\_\_\_\_ Guy E. Green Endowed Presidential Scholarship
- \$ \_\_\_\_\_ Karl F. Hagemeyer Jr. Memorial Endowed Presidential Scholarship
- \$ \_\_\_\_\_ F. Earl Ingerson Grad. Research Assistance Fund
- \$ \_\_\_\_\_ Howard R. Lowe Fund in Vertebrate Paleontology
- \$ \_\_\_\_\_ J. Hoover MacIn Memorial Fund
- \$ \_\_\_\_\_ J. H. & Lujza P. McCammon Scholarship Fund
- \$ \_\_\_\_\_ Mr. & Mrs. L. F. McCollum Scholarship Fund
- \$ \_\_\_\_\_ F. W. Michaux Scholarship Fund
- \$ \_\_\_\_\_ Wes Ogden Memorial Scholarship in Geophysics

- \$ \_\_\_\_\_ Pennzoil/Pogo/Wm. E. Gipson Scholarship Fund
- \$ \_\_\_\_\_ O. S. Petty Geophysical Fund
- \$ \_\_\_\_\_ Mr. & Mrs. L. E. Scherck Scholarship Fund
- \$ \_\_\_\_\_ F. W. Simonds Endowed Presidential Scholarship
- \$ \_\_\_\_\_ Student Job Program
- \$ \_\_\_\_\_ H. Tod Sutherland Memorial Scholarship Fund
- \$ \_\_\_\_\_ David S. Thayer Memorial Fund
- \$ \_\_\_\_\_ Udden Memorial Fund
- \$ \_\_\_\_\_ Undergraduate Science Enrichment Program - Geological Sciences
- \$ \_\_\_\_\_ Glenn & Martha Vargas Scholarship in Gemology
- \$ \_\_\_\_\_ Arno P. Wendler Professional Development Fund
- \$ \_\_\_\_\_ F. L. Whitney Endowed Presidential Scholarship
- \$ \_\_\_\_\_ Charles E. Yager Field Scholarship Fund

**\$ \_\_\_\_\_ UNRESTRICTED FOUNDATION FUND**

\$ \_\_\_\_\_ Other designation: \_\_\_\_\_

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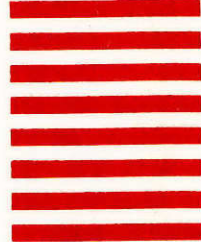
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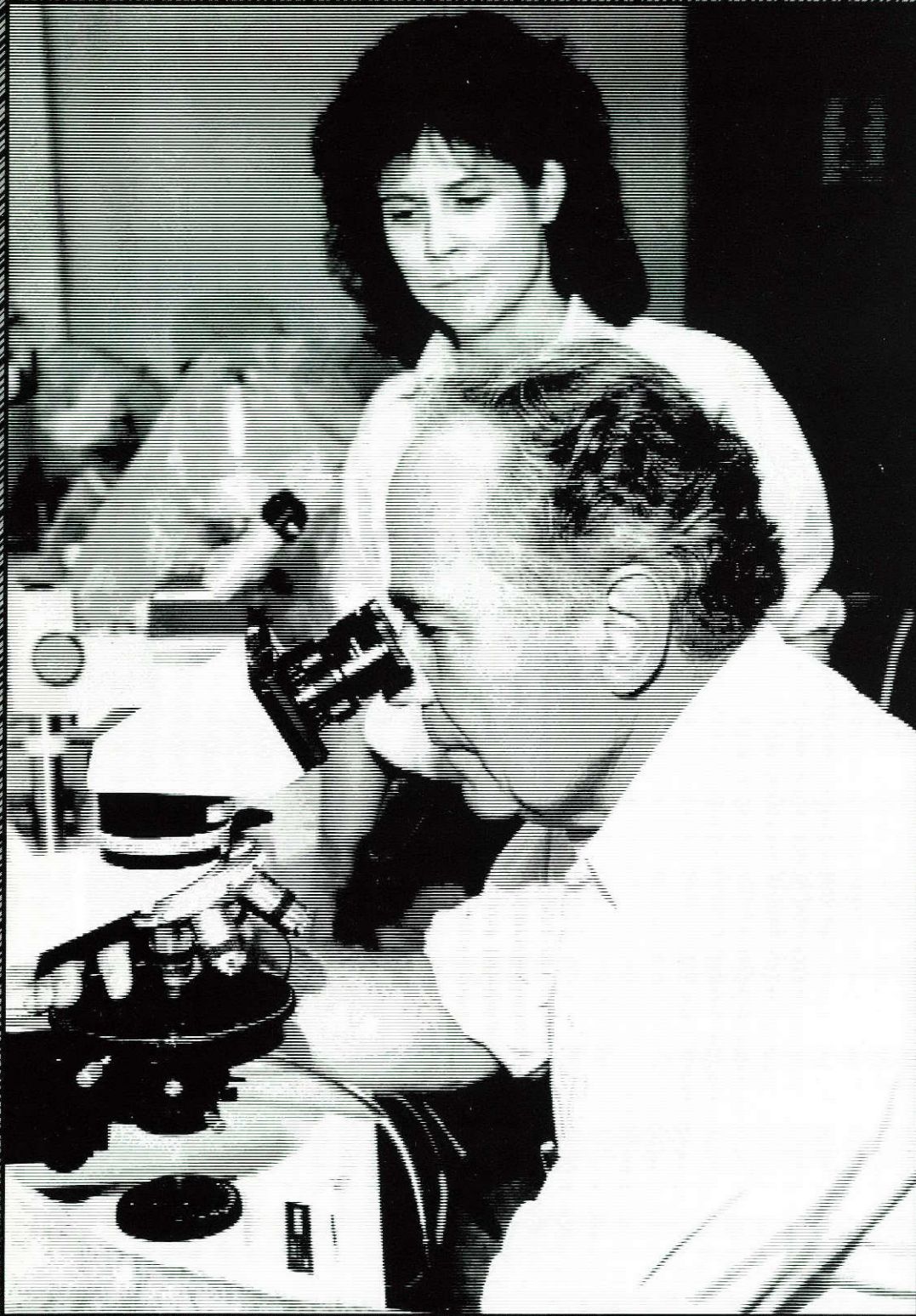
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**REPORT**  
*Research*





# RESEARCH FACILITIES. . .

## ***THIN-SECTION LABORATORY***

The automated, high-precision, Logitech LP30 Production Lapping and Optical Polishing Machine is used to prepare large numbers of polished-rock thin sections for petrographic, microprobe, and fluid-inclusion analysis. A separate, fully equipped thin-section laboratory is available for general use by students in the Department. Gregory Thompson, Technical Assistant, operates and maintains these facilities.

## ***CATHODOLUMINESCENCE MICROSCOPE***

The Technosyn Luminoscope is used to induce cathodoluminescence that enables recognition of cryptic cementation and chemical zonation patterns in many carbonate rocks, siliceous cements, and some ore deposits. Earle F. McBride, Professor, oversees this facility.

## ***FLUID-INCLUSION LABORATORY***

This laboratory contains a USGS-type gas-flow stage for rapid, high-precision measurements of the freezing and homogenization temperatures of fluid inclusions. The microscope is also equipped for fluorescence petrography. A video camera and television is used to display and record the behavior of the inclusions in minerals. This facility has been extensively used in studies of fluids in ore deposits, cements in sediments, and veins in deformed rocks. Richard Kyle, Professor, is the director of this laboratory.

## ***X-RAY DIFFRACTION LABORATORY***

The Rigaku X-ray Diffractometer is used to identify minerals in finely crystalline rocks. The machine is equipped with a 42-position sample changer and a microprocessor for automated collection of X-ray diffractograms. William D. Carlson, Professor, oversees this facility.

## ***SCANNING-ELECTRON MICROSCOPE***

The JEOL scanning electron microscope is available to photograph the microtextural and structural features of minerals and fossils or rocks. Magnifications of 15,000X are possible and a Tracor Northern Energy Dispersive Spectrometer provides qualitative analysis capability. Sally Sutton, Research Associate, oversees this facility.

## ***ELECTRON MICROPROBE***

The JEOL-733 Superprobe with Tracor Northern automation is used to make quantitative analyses of micron-sized areas of minerals that enable recognition of compositional gradients and proportions in complex intergrowths. A Macintosh SE computer is used for additional data processing. Sally Sutton, Research Associate, oversees this facility.

## ***INDUCTIVELY COUPLED PLASMASPECTROMETER***

The Jobin-Yvon 70Y Inductively Coupled Plasma Spectrometer is used for a wide range of major-element, trace-element, and rare-earth-element analysis of dissolved rocks and waters. It can analyze for up to 38 elements at a time. Scott Thieben, Analytical Chemist, supervises and operates this facility.

## ***ATOMIC ABSORPTION SPECTROMETER***

The Perkin-Elmer Atomic Absorption Spectrometer is used for chemical analysis of sedimentary and metamorphic rocks, minerals, brines, and waters. Scott Thieben, Analytical Chemist, supervises and operates this facility.

## ***MINERAL SEPARATION FACILITIES***

Two rock crushers, two pulverizers, two Rodgers tables, four Frantz magnetic separators, a mica table, and an array of heavy-liquid separatory funnels are available for the separation of minerals from rocks.

## ***ULTRACLEAN LABORATORY FOR Pb-ISOTOPIC GEOCHRONOLOGY***

The ultraclean laboratory is designed for the preparation of rock and mineral samples for geochronologic and isotopic investigations. Atmospheric contaminants are kept to extremely low levels by filtering all incoming air to remove any particle greater than 0.3 microns in diameter. Chemical processing of the samples is conducted in laminar-flow hoods. Accurate determination of the isotopic composition of 1-nanogram samples of Pb from zircon crystals is possible in this laboratory. This facility is maintained under the direction of Nick Walker, Assistant Professor.

## ***FISSION-TRACK DATING LABORATORY***

A Zeiss Axioskop microscope with specially combined reflected and transmitted optics and computer-automated stage is used for apatite thermal-history analysis of sediments and granitic basement rocks. A nuclear reactor for neutron irradiation of samples is on campus. The fission-track dating facility is under the direction of Mark Cloos, Associate Professor.

## ***SOLID-SOURCE MASS SPECTROMETER FOR ISOTOPIC STUDIES***

The Finnigan-Mat 7-collector, 13-sample solid-source mass spectrometer is designed for use in a wide range of U-Pb, Rb-Sr, Sm-Nd, and other isotopic investigations of igneous, metamorphic, and sedimentary rocks. Nick Walker, Assistant Professor, is the director of this facility.

### **MASS SPECTROMETER FOR K-AR GEOCHRONOLOGY**

Ar-isotopic analysis is done on a gas-source mass spectrometer as part of the procedure for K-Ar dating. This laboratory has been used in many investigations of the Ar-isotopic ages of igneous, metamorphic, and volcanic rocks. Fred McDowell, Research Scientist, is the director of this facility.

### **STABLE-ISOTOPE LABORATORY**

A system of extraction lines for analysis of carbon and oxygen isotopes from carbonate and silicate minerals and rocks are designed to prepare samples for analysis on a Nuclide gas-source mass spectrometer. Lynton Land, Professor, is the director of this facility.

### **COMPUTER FACILITIES**

A VAX 11-780 is used extensively for seismic data processing. The departmental computer facility also contains a 3-D graphics terminal for plate tectonic studies, image-analysis systems for color display of seismic sections and to digitize and analyze images such as maps or petrographic thin sections. A micro-computer laboratory containing Apple, IBM, and SUN 3 and 4 machines are available for general use. Access to a CRAY-XMP Supercomputer is also provided. Computer facilities in the Department are under the general supervision of Clark Wilson, Professor.

### **PALEOMAGNETIC LABORATORY**

The paleomagnetic laboratory is designed to measure the remanent magnetization of rock samples. The primary instrument is a two component cryogenic magnetometer, interfaced with a computer. Magnetic cleaning is accomplished by either alternating field or thermal demagnetization. These three instruments are housed inside a magnetically shielded room (2-stage m-metal). Additional instruments include two susceptibility meters, a 10 Koe electromagnet, and a spinner magnetometer. Wulf Gose, Professor, oversees this facility.

### **EXPERIMENTAL SEDIMENTOLOGY LABORATORY**

This facility is equipped for both laboratory and in-field studies. The laboratory houses a wind tunnel and flume, both 1 m<sup>2</sup> x 8 m, for study of flow, grain transport, and sedimentary structures. In-field equipment includes a balloon-carried tethered sonde system for atmospheric profiling, a variety of anemometers and vanes, an electronic tacheometer, coring equipment, and instrument-equipped model dunes for airflow studies. Gary Kocurek, Professor, oversees this facility.

### **EXPERIMENTAL PETROLOGY LABORATORY**

Principal features of this long-established laboratory are a cold-seal hydrothermal system, four high-temperature platinum-wound quench furnaces and four conventional-element furnaces, a gas-mixing system with oxygen sensor cell for one-atmosphere experiments at controlled oxygen fugacity, auxiliary equipment for sample preparation and analysis, and research-quality petrographic microscopes equipped with complete automated photographic equipment. A rapid-quench argon-pressure cold-seal hydrothermal system is presently under construction. William D. Carlson, Professor, supervises this facility.

### **MICROPALAEONTOLOGY LABORATORY**

This is a fully equipped processing laboratory with five washing sinks, layout tables, two ovens, large heating table, slabbing saw, and ultrasonic cleaner. The micropaleontology teaching facility is adjacent to the processing lab and contains 20 work stations with stereomicroscopes and illuminators. An extensive collection of processed residues from around the world is available for teaching and research purposes. Current strengths in the collection are in the Mesozoic and Cenozoic of the Gulf Coast, the Cenozoic of California, and the late Cenozoic of southern Alaska. Martin B. Lagoe, Professor, oversees this facility.

### **AIR-ABRASIVE MACHINE**

The S. S. White-Pennwalt air-abrasive machine is used to excavate and clean fossil specimens before study, using dolomite powder for harder matrix and sodium bicarbonate powder for softer matrix. James Sprinkle, Professor, oversees this equipment.

### **HYDROGEOLOGY LABORATORY**

One room for this facility contains reference materials and layout space for maps and experiments. It houses personal computers, both IBM-compatible and MacIntosh, plus direct lines to the University's IBM, Cray, and VAX mainframe computers (in addition to the other computer labs in Geology). The other room for this facility serves as a class laboratory and seminar room. It houses much of the geophysical and geochemical field equipment, including stream-gauging equipment and earth-resistivity and seismic units, and has counter space for preliminary chemical analyses and lab permeameters. John M. Sharp, Jr., Professor, supervises this facility.

### **AQUEOUS GEOCHEMISTRY LABORATORY**

This facility includes a Waters Ion Chromatograph for the determination of inorganic anions in water, and a Waters HPLC for precision organic analyses in liquid samples. In addition, there is a Dohrmann DC 180/183 carbon analyzer for the determination of total, dissolved, and purgeable carbon in waters and sediment. This lab is under the direction of Philip Bennett, Professor.

### **PARTICLE-IMAGE ANALYSIS LABORATORY**

This laboratory, which is under development facilitates rapid and detailed investigation of shape variation between samples composed of large number of individuals. It can be used to analyze a variety of data sets such as sand grains or microfossils. Both image acquisition and data analysis are accomplished on a stand-alone system utilizing an IBM-compatible computer (AT) and a high-resolution video camera. The complete system is capable of particle size analysis and generation of volume frequency distributions, locating particle edges, rendering Fourier shape analysis, and performing a variety of multivariate analytical techniques. Drs. Anthony Gary and Martin Lagoe supervise this facility.

**Facilities under construction include a clean lab (Dr. Jay Banner), a new microcomputer workroom (Dr. Michelle Kominz and Jeff Horowitz), and a core study laboratory.**

# Research Personnel. . .

## Faculty and Research Staff

Milo M. Backus, Dave P. Carlton Centennial Professor  
 Jay L. Banner, Assistant Professor and Dave P. Carlton Centennial Teaching Fellow  
 Daniel S. Barker, Professor and Dave P. Carlton Centennial Teaching Fellow  
 Virgil E. Barnes, Professor Emeritus  
 Philip C. Bennett, Assistant Professor and Getty Oil Company Centennial Teaching Fellow  
 Robert E. Boyer, Robert E. Boyer Centennial Professor and Dean of the College of Natural Sciences  
 Leonard F. Brown, Jr., Professor Emeritus  
 Richard T. Buffler, Professor and Senior Research Scientist, Institute for Geophysics  
 Fred M. Bullard, Professor Emeritus  
 William D. Carlson, Professor and William Stamps Farish Chair  
 Stephen E. Clabaugh, Fred M. Bullard Professor Emeritus  
 Mark P. Cloos, Associate Professor and William T. Stokes Centennial Teaching Fellow  
 Ian W. D. Dalziel, Professor and Senior Research Scientist, Institute for Geophysics  
 Ronald K. DeFord, Professor Emeritus  
 Samuel P. Ellison, Jr., Alexander Deussen Professor Emeritus  
 William L. Fisher, Leonidas T. Barrow Centennial Chair, Director of the Bureau of Economic Geology  
 Peter T. Flawn, President Emeritus and Leonidas T. Barrow Chair Emeritus  
 Robert L. Folk, Dave P. Carlton Centennial Professor Emeritus  
 William E. Galloway, John E. "Brick" Elliott Centennial Professor  
 Wulf A. Gose, Research Scientist  
 Stephen P. Grand, Assistant Professor and Shell Companies Foundation Centennial Teaching Fellow  
 Mark A. Helper, Lecturer  
 Claude W. Horton, Sr., Professor Emeritus  
 F. Earl Ingerson, Professor Emeritus  
 Edward C. Jonas, Professor Emeritus  
 Gary Kocurek, Associate Professor and Elf Aquitaine Faculty Fellow  
 Michelle A. Kominz, Assistant Professor  
 J. Richard Kyle, Professor and Getty Oil Company Centennial Teaching Fellow  
 Lynton S. Land, Professor and Edwin Allday Centennial Chair  
 Wann Langston, Jr., First Mr. and Mrs. Charles E. Yager Professor Emeritus  
 Martin B. Lagoe, Associate Professor and Dave P. Carlton Centennial Teaching Fellow

Leon E. Long, Second Mr. and Mrs. Charles E. Yager Professor  
 Ernest L. Lundelius, Jr., John A. Wilson Professor and Director of the Vertebrate Paleontology Laboratory  
 Toshimatsu Matsumoto, Professor and Research Scientist, Institute for Geophysics  
 Arthur E. Maxwell, Professor and Director of the Institute for Geophysics  
 John C. Maxwell, William Stamps Farish Chair Emeritus  
 Earle F. McBride, J. Nalle Gregory Chair  
 Fred W. McDowell, Research Scientist  
 Sharon Mosher, Professor and Getty Oil Company Centennial Teaching Fellow  
 William R. Muehlberger, Professor and Peter T. Flawn Centennial Chair  
 Yosio Nakamura, Professor and Senior Research Scientist, Institute for Geophysics  
 Timothy B. Rowe, Assistant Professor and Bill R. Payne Centennial Teaching Fellow  
 Amos Salvador, Morgan J. Davis Centennial Professor  
 John G. Sclater, Shell Companies Foundation Distinguished Chair, Senior Research Scientist, Institute for Geophysics  
 Alan J. Scott, Adjunct Professor  
 John M. Sharp, Jr., Gulf Oil Foundation Centennial Professor  
 Douglas Smith, Albert W. and Alice M. Weeks Centennial Professor  
 James Sprinkle, First Mr. and Mrs. Charles E. Yager Professor  
 Paul L. Stoffa, Wallace E. Pratt Professor and Senior Research Scientist, Institute for Geophysics  
 Sally J. Sutton, Research Associate  
 Noel Tyler, Lecturer  
 Willem C. J. van Rensburg, George H. Fancher Professor in Petroleum Engineering  
 Nicholas W. Walker, Assistant Professor and John A. and Katherine G. Jackson Centennial Teaching Fellow  
 Clark R. Wilson, Professor and Shell Companies Foundation Centennial Teaching Fellow  
 John A. Wilson, Professor Emeritus  
 Keith Young, J. Nalle Gregory Professor Emeritus

## Technical Staff

Pablo Cortez - Electronic Technician  
 Ruff Daniels - Technical Constructor and Repairman  
 Jeff Horowitz - Draftsman  
 David Stephens - Photographer  
 Scott Thieben - Analytical Chemist  
 Greg Thompson - Thin-Section Technician





## Exploration geophysics; geophysical data processing and interpretation

**Milo M. Backus**

Dave P. Carlton Centennial Professor of Geophysics,  
PhD—1956, Massachusetts Institute of Technology

I have been involved in exploration geophysics since 1956. I teach undergraduate courses in geophysical data processing and geophysical data interpretation. My recent graduate courses include geophysical data-modeling and inversion, and seismic lithology. I have been working to make friendly microcomputers a routine student tools.

My students and I continue the quest for a reasonable earth model to reproduce the observations, wherein the observations consist of modern 3D marine seismic data plus wireline log data, and the earth model consists of a 3D model of stratal geometry and rock properties. Two commercial seismic data sets collected over offshore Tertiary oil and gas fields constitute the main focus of research (Figs. 1 and 2). A UTIG 3D data set collected on offshore Costa Rica is also a subject of study.

Theoretical and synthetic studies of the sensitivity and ambiguity of offset dependent seismic reflectivity data are directed toward the appropriate comprehension of the smoothed velocity model, and the complications of transverse isotropy, in the linearized inversion of seismic reflection data. Studies on the real data sets have been directed toward the reproduction of travel time data, including the first arrivals (Fig. 2) and reflection arrival time data. Further work involving full-waveform inversion of the real data is in progress.

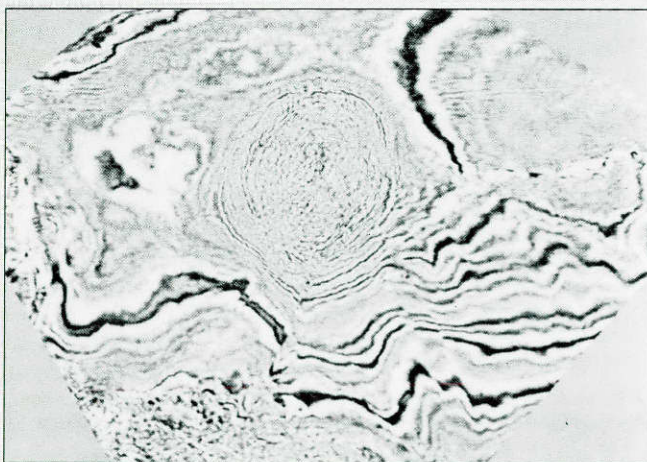


Figure 1. Time slice (1.5 sec) from Gulf of Mexico salt dome data set.

It is fairly clear that a diverse set of observational data, plus a reasonably tight (either explicitly or implicitly) specification of statistical expectations in multidimensional real and parameter space is critical for the reduction of earth model ambiguity. Future research will include attempts to improve on the use of expectations, both through data analysis, and through a more natural coupling between the interpreter and the data fitting process.

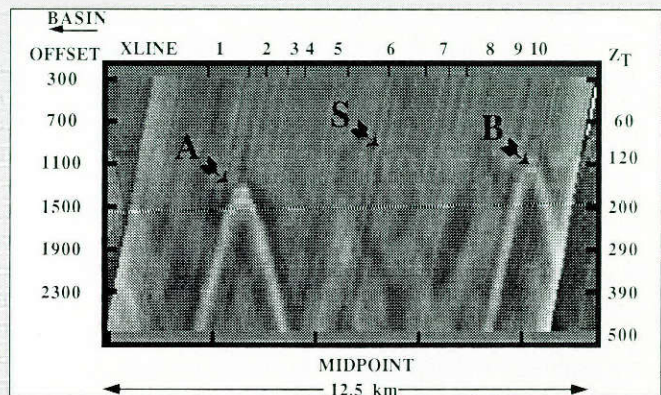


Figure 2. Offshore area 1 variable-intensity display of first arrival time residuals in midpoint-offset space. Note hyperbolic delay time residuals resulting from shallow gas at 200 meters (A) and 120 meters (B); from 'Diving wave tomography,' by James Simmons and Milo M. Backus (to be published in *Geophysics*).

### Selected Publications:

- Huston, D. C., and Backus, M. M., 1989, Offset dependent mis-tie analysis at seismic line intersections: *Geophysics*, v. 54, no. 8, p. 962-972.
- Coltrin, G., Backus, M., Shipley, T. H., and Cloos, M., 1989, Seismic reflection imaging problems resulting from a rough surface at the top of the accretionary prism at convergent margins: *Journal of Geophysical Research*, v. 94, no. B12, p. 17, 485-17, 496.
- Wang, D. Y. J., and Backus, M. M., 1989, Resolution of low-frequency velocities in linearized least-squares inversion: *Expanded Abstracts, Society of Exploration Geophysicists*, 59th annual meeting, p. 501-504.



## Carbonates; water-rock interaction; isotope geochemistry

### Jay Banner

Assistant Professor and Dave P. Carlton Centennial Teaching Fellow,  
PhD—1986, State University of New York at Stony Brook

My research and teaching interests encompass the fields of carbonate petrology, diagenesis, groundwater evolution, and isotope and trace-element geochemistry. These subjects have been addressed through the integration of field, petrographic, analytical and modelling techniques to unravel the water-rock interaction history of modern and ancient carbonate sediments and groundwaters from active flow systems. During my first semester at the University in the spring of 1990, I taught our graduate course in Biogenic and Evaporite Depositional Systems and our undergraduate offering of Depositional Processes. I shared teaching duties in these courses with Lynton Land and Earle McBride, respectively. The courses offered me an excellent introduction to Texas geology, by way of five field excursions.

A common theme of my recent research has been the development and application of quantitative models for determining the simultaneous variations in a range of isotopic and trace-element parameters that occur during water-rock interaction in a variety of systems. These geochemical parameters include H, O, C, Sr, Nd, U and Th isotopes and rare-earth elements. Through the use of calculations that simulate the dissolution-recrystallization of aquifer minerals, models for the origin and evolution of diagenetic carbonates or groundwaters can be constrained by comparison of measurements on natural samples with model calculations. The utility of the method lies in the elucidation of the different extents of water-rock interaction that are required to alter the different isotopic systems considered, as illustrated in the figure. As applied to problems of carbonate diagenesis, the calculations can be used to distinguish between models involving different diagenetic fluids and different processes such as water-rock interaction, fluid mixing, and mixing of mineral end-members.

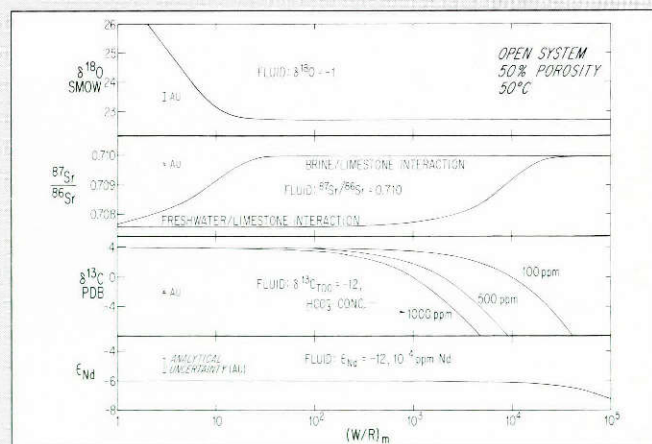
A range of isotopic and modeling techniques has also been applied to a study of saline groundwaters in Paleozoic aquifers in central Missouri. In conjunction with hydrologic models and regional geochemical data, the isotopic data are indicative of a large-scale flow system, involving far-travelled meteoric recharge, halite dissolution in the subsurface of Kansas, and interaction with predominantly silicate mineral assemblages. Final migration through Paleozoic carbonates in Missouri was accompanied by extensive mixing with dilute local recharge and limited water-rock interaction. Uranium isotopic measurements on the waters, using recently developed sampling and mass

spectrometric techniques, are used as a sensitive indicator of limited extents of elemental exchange in this water-rock system.

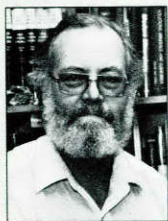
New fields of interest include: 1) the petrologic and geochemical examination of minor non-carbonate diagenetic phases in carbonate sequences as indicators of diagenetic fluid chemistry, 2) a larger scale examination of the Paleozoic aquifer system in the mid-continent as a means of further evaluating the preliminary hydrologic and geochemical models, and 3) the use of U-series disequilibria to examine the timing and nature of processes of carbonate deposition, diagenesis, and hydrology in Pleistocene coral-reef terraces on Barbados, W.I.

#### Selected Publications:

- Banner, J. L., Wasserburg, G. J., Dobson, P. F., Carpenter, A. B., and Moore, C. H., 1989, Isotopic and trace-element constraints on the origin and evolution of saline groundwaters from central Missouri: *Geochimica et Cosmochimica Acta*, v. 53, p. 383-398.
- Banner, J. L., and Hanson, G. N., Calculation of simultaneous isotopic and trace-element variations during water-rock interaction with applications to carbonate diagenesis: *Geochimica et Cosmochimica Acta* (in press).
- Banner, J. L., Wasserburg, G. J., Chen, J. H., and Moore, C. H.,  $^{234}\text{U}$ - $^{238}\text{U}$ - $^{230}\text{Th}$ - $^{232}\text{Th}$  systematics in saline groundwaters from central Missouri: *Earth and Planetary Science Letters* (in press).



Simultaneous variations in the isotopic composition of O, Sr, C, and Nd during the recrystallization of a limestone as a function of increasing molar water:rock ratio,  $(W/R)_m$ .



## *Igneous petrology; geochemistry; volcanology*

### **Daniel S. Barker**

Professor and Dave P. Carlton Centennial Teaching Fellow in Geology,  
PhD—1961, Princeton University

My research focusses on igneous rocks. The investigative tools that I use are mapping, petrography, electron-probe microanalysis of minerals and glasses, and whole-rock major and trace-element analysis. I teach undergraduate courses in mineralogy, igneous petrology, and volcanology, and graduate courses in igneous petrology and analytical techniques. In the last five years I have supervised seven graduate students doing theses and dissertations in California, Nevada, Colorado, Texas, Mexico, and Italy. Factors common to all these projects are that they were originated by the students, not assigned by me, and all involve igneous rocks that present challenging problems of magma genesis and evolution.

Cenozoic igneous rocks in Trans-Pecos Texas have been targets of my efforts since 1970. Current research there concerns a belt, 400 km long and 50 km wide, of 43 intrusive bodies of phonolite and nepheline trachyte. This belt is among the farthest-inland expressions of magmatism associated with Oligocene subduction of the Farallon plate beneath North America. Major-element compositions and isotopic ages ( $35.5 \pm 1.3$  Ma) show little variation along the entire belt, which is parallel to the presumed strike of the Oligocene plate boundary. Electron-probe, major- and trace-element, and isotopic data are being used in computer-based models of fractional crystallization and assimilation, to answer the following questions: (1) Are discrete segments in the belt distinguished by different isotopic and trace-element ratios? (2) If segmentation is recognizable, to what extents is it caused by heterogeneity in the magma source region, by local variations in magma fractionation, and by variable contamination of magma by crustal rocks? (3) If segmentation is not recognizable, how did widely separated parental magma batches independently evolve to yield similar products? (4) Was the source of parent magmas a deeply subducted oceanic slab or an overlying wedge of lithospheric mantle?

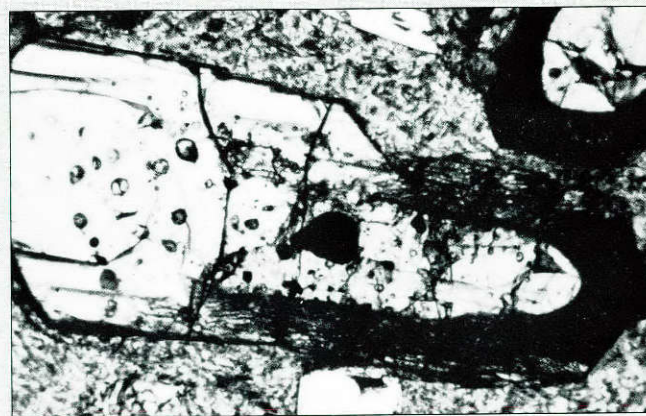
Italy has a wealth of Cenozoic volcanic rocks in complex tectonic settings. Relying on the excellent mapping and petrologic studies already available, I have examined lavas and ejected cumulate blocks on Lipari, Vulcano, and Stromboli in the Aeolian Islands north of Sicily. Some Lipari lavas contain inclusions derived from a wide range of crustal sources and depths, in a groundmass of rhyolite glass. The rhyolite liquid formed by fractional crystallization of mafic mantle-derived magma combined with assimilation of crustal rocks. None of the large crystals, "phenocrysts" at first glance, actually grew from the liquid represented by the groundmass; all are contaminants.

Carbonatites are my newest interest. The only active carbonatite volcano, Oldoinyo Lengai in Tanzania, erupts alkali-rich carbonatite, although all other known carbon-

atites are very low in alkalis. All carbonatite magma was rich in alkalis, some petrologists have concluded, but lost them to wallrocks or to meteoric water during and after crystallization. However, Peter Nixon and I have demonstrated that a Recent carbonatite lava from Uganda erupted as low-alkali liquid. A large suite of carbonatites from many localities is being studied to seek ways of distinguishing those carbonatites that are primitive (directly derived from the mantle) from those that fractionated from silicate magmas within the crust.

#### *Selected Publications:*

- Barker, D. S., 1987, Tertiary alkaline magmatism in Trans-Pecos Texas, *in*: Fitton, J. G., and Upton, B. G. J. (eds.), *Alkaline Igneous Rocks. Geological Society, London, Special Publication 30*, p. 415-431.
- Barker, D. S., 1987, Rhyolites contaminated with metapelite and gabbro, Lipari, Aeolian Islands, Italy: products of lower crustal fusion or of assimilation plus fractional crystallization? *Contributions to Mineralogy and Petrology*, v. 97, p. 460-472.
- Barker, D. S., and Nixon, P. H., 1989, High-Ca, low-alkali carbonatite volcanism at Fort Portal, Uganda: *Contributions to Mineralogy and Petrology*, v. 103, p. 166-177.



Photomicrograph, taken with plane-polarized transmitted light, of crystal-liquid reaction texture in rhyolite lava, Lipari, Italy. The 3-mm grain in the center is a composite of orthopyroxene (left) and clinopyroxene (right). Clinopyroxene is surrounded by a finely crystalline fringe of orthopyroxene. The larger orthopyroxene grain and the plagioclase crystal at bottom center show no sign of reacting with the liquid.



## *Aqueous geochemistry of rock-water interactions*

**Philip C. Bennett**

Assistant Professor and Getty Oil Company Centennial Teaching Fellow,  
PhD—1989, Syracuse University

My research and teaching focus on the chemical nature of ground water, and the movement and reactivity of organic solutes in the subsurface. My primary graduate courses are Organic Geochemistry and a new course in the Department, Chemical Hydrogeology. The chemical hydrogeology course is really a course in aquatic chemistry designed to meet the needs of the hydrogeologist, and is a broad overview of the important concepts in equilibrium aquatic chemistry applied to real problems in hydrogeology. The organic geochemistry course uses this same philosophy, and includes an intensive introduction to the basic concepts of organic chemistry that are then applied to real problems in the movement and fate of organic compounds in the subsurface. These courses reflect my general research interests in mineral surface chemistry in aqueous environments, organic-inorganic interactions, mineral dissolution kinetics, geomicrobiology, and the degradation of organic compounds in the subsurface. I also share in the teaching of the physical hydrogeology courses, and have research interests in surface-/ground-water interactions in wetlands.

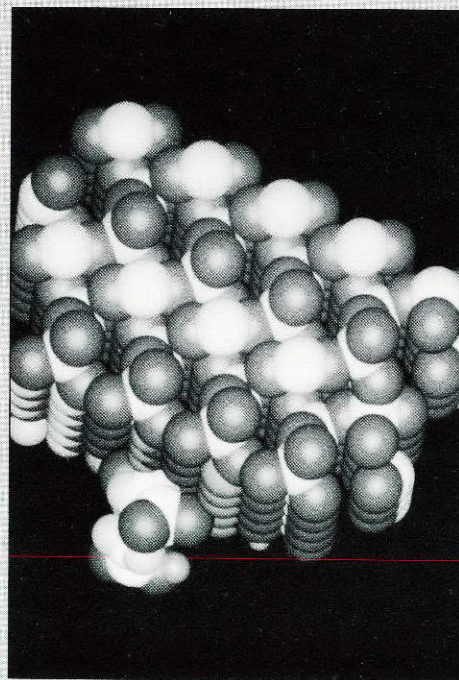
My recent research efforts have concentrated on the surface chemistry of silicates in organic-rich aqueous environments. A recently submitted manuscript details a collaborative study of the mineral chemistry of a peat bog, where we found that at low pH and in oxidizing conditions, such as those found at the top of a bog, aluminosilicate dissolution is enhanced by the presence of aluminum-organic complexes that act to increase the apparent solubility of aluminum. But we also found that the dissolution of silicates and quartz is enhanced at neutral pH due to the complexation of silica. This supports earlier findings that the solubility and kinetics of quartz dissolution is greatly enhanced in an oil-contaminated aquifer by the presence of microbially produced organic acids. I have also been investigating this interaction in the laboratory by examining the kinetics of quartz dissolution in aqueous solutions at various temperatures. From these experiments I am developing an understanding of the bulk chemical properties of silica-organic interactions.

I am extending my investigations in organic-silica complexation in ground water into a more generalized study of metal-organic complexes. I am collaborating with researchers at the Los Alamos National Laboratory to develop new approaches to molecular modeling that combine the *ab initio* methods, based on quantum mechanics, with molecular-mechanics methods that can model complex molecules and surfaces (Figure). Both of these models are available at UT, and I will continue the work here in collaboration with the Department of Chemistry. Also at Los Alamos we are developing some spectroscopic techniques that quantify the stability constants of the various complexes even at high

temperature and pressure. The goal is to use the results of the modeling and experimental efforts to better understand organic-inorganic interactions in nature.

### *Selected Publications:*

- Bennett, P. C., Organic-acid/silica complexes and the surface chemistry of dissolving quartz: *Geochimica and Cosmochimica Acta* (in press).  
 Bennett, P. C., and Siegel, D. I., 1987, Increased solubility of quartz in water due to complexation by dissolved organic compounds: *Nature*, v. 326, p. 684-687.  
 Bennett, P. C., Siegel, D. I., Hill, B., and Glaser, P., The fate of silicate minerals in a peat bog: *Geology* (submitted).



Molecular model of a quartz particle with citrate adsorbed onto the surface.



## *Marine geology and geophysics; sequence stratigraphy*

**Richard T. Buffler**

Professor and Senior Research Scientist,  
PhD—1967, University of California at Berkeley

My main research interests involve studying the geologic history of ocean basins and their adjacent margins using marine geophysical tools and methods, primarily seismic-reflection data. Principles and techniques of seismic (sequence) stratigraphy are applied to interpret the depositional and structural history of the regions. Although I work mainly with the Institute for Geophysics (UTIG), I contribute to the Department teaching program by organizing the graduate course in seismic (sequence) stratigraphy (GEO 380N) and supervising individual term research projects (GEO 394, GEO 694). I also contribute by working with students on their graduate research projects. I currently am serving on 24 graduate committees, 13 as supervisor or co-supervisor (seven PhD and six Master's). I provide research support for seven of these projects.

The main focus of my research has been a long-term study of the seismic stratigraphy and geologic history of the deep Gulf of Mexico basin and adjacent margins using both UTIG and available industry multifold seismic-reflection data. Current investigations fall into three categories: 1) regional syntheses and studies focussing on the basement, crustal structure, and early tectonic evolution of the basin (discussed below), 2) the Mesozoic depositional history of the basin and its relationship to the early tectonic evolution, and 3) the Cenozoic depositional history of the basin and the influence of salt tectonics. Most of the projects are carried out through graduate-student research projects and result in Master's or PhD theses as well as publications and presentations at national meetings. One of my jobs then is to help summarize the results. An example is several papers soon to be published in the upcoming GSADNAG volume on the Gulf basin (A. Salvador, ed.). These student projects not only contribute to the overall scientific knowledge of the Gulf basin but also provide valuable training for the students in the methods, tools, and techniques used by the petroleum industry in the search for oil and gas.

Our work on the crustal structure and basement of the Gulf basin has resulted in the first compilation of a structure map on the top of basement for the entire Gulf basin. This basic configuration along with other geologic and geophysical data has been used to define four basic crustal types (continental, thick transitional, thin transitional, and oceanic crust). We also have compiled for the first time a regional map showing the distribution of various basement terranes. In addition, we have collaborated with the University of Houston to collect a detailed aeromagnetic survey over the area of oceanic crust in the deep eastern Gulf. When processed, this survey will provide critical data for better understanding the distribution and origin of the oceanic crust and adjacent transitional crust. We also are collaborating with scientists from The University of Alabama, Rice

University, Woods Hole Oceanographic Institution, The University of Houston, and the US Geological Survey to shoot a series of deep-crustal reflection profiles in the northeastern Gulf (EDGE project) to understand better the processes involved in the formation of such a broad area of transitional crust characterized by large highs and lows. This area apparently reflects a broad transtensional transform boundary connecting Gulf and Atlantic spreading centers during the early breakup of Pangea. All of these compilations are important for understanding and putting better constraints on the various models for the early evolution of the basin.

Another area of active research in which I am involved is the seismic stratigraphy and geologic history of the Exmouth Plateau-Argo Abyssal Plain off northwestern Australia. In late 1988 I participated on Ocean Drilling Program Leg 123 and have been responsible for helping interpret the seismic data surrounding the two sites drilled. The goal of these studies is to use the seismic data to extrapolate the drilling results regionally, in order to better interpret the regional tectonic and sedimentary history. In addition, I am attempting to develop a program to apply sequence stratigraphic principles to the study of outcrops. We currently have one student finishing a project in West Texas and three students starting new projects in West Texas and California. We also hope to start a program to re-look at the Mesozoic stratigraphy in northern Mexico.

### *Selected Publications:*

Buffler, R. T., 1989, Distribution of crust, distribution of salt, and the early evolution of the Gulf of Mexico basin, *in: Gulf of Mexico salt tectonics, associated processes, and exploration potential, Gulf Coast Section of the Society of Economic Paleontologists and Mineralogists Program and Extended and Illustrated Abstracts, 10th Annual Research Conference*, Houston, Texas, p. 25-27.

Buffler, R. T., Seismic stratigraphy of the deep Gulf of Mexico basin and adjacent margins, *in: Salvador, A. (ed.), The Gulf of Mexico basin: Boulder, Colorado, Geological Society of America, The Geology of North America*, v. J. (in press).



## *Metamorphic petrology; experimental geochemistry; kinetics*

### **William Carlson**

Professor and William Stamps Farish Chair in Geological Sciences,  
PhD—1980, University of California at Los Angeles

I've always been intrigued by the challenge of extracting *quantitative* information about the geologic history of metamorphic rocks from mineral assemblages, compositions, and textures. This interest has led to experimental investigations of phase equilibria and to theoretical attempts to understand the mechanisms and kinetics of metamorphic reactions. Of course, experimental and theoretical studies can't fully replicate nature's complexity, so field and analytical work on metamorphic rocks, particularly those in the Llano Uplift of central Texas, are an important and complementary interest. I teach metamorphic petrology at both the graduate and undergraduate levels, and I collaborate with other members of the faculty to teach courses in analytical techniques, the thermodynamics of geologic processes, and occasionally field geology, optical mineralogy, and crystallography.

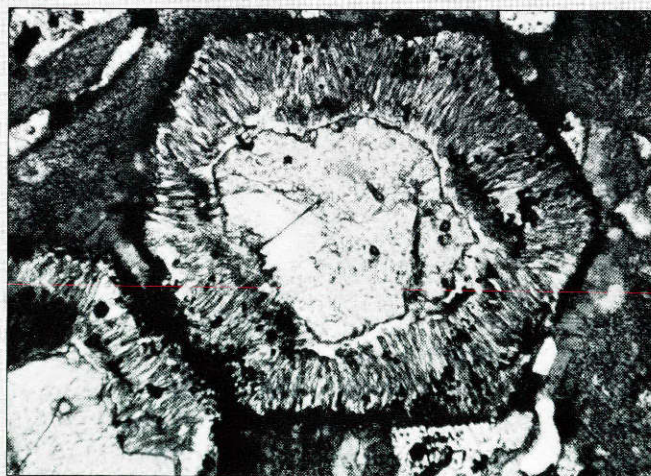
Recently, much of my research effort has been devoted to the development of descriptive models for the mechanisms and kinetics of metamorphic reactions. Parts of a rock's metamorphic history, particularly along the prograde path, are often preserved only in textural details such as the spatial disposition of crystals, their compositional profiles, and their size frequency distributions. If we could properly interpret those textural features, they could tell us much about a rock's geologic history that cannot be learned in any other way. A breakthrough came last summer when the techniques of quantitative textural analysis were applied to a suite of garnetiferous rocks from the Picuris Range of New Mexico. That study demonstrated that the kinetics of intergranular diffusion was the dominant control on the nucleation and growth mechanisms of garnet crystals in those rocks, and it indicated that similar controls probably operate in a wide variety of metamorphic environments. Work in this area continues with attempts to quantify, by analysis of natural textures, the rates and activation energies characteristic of diffusion-controlled nucleation and growth. This project, funded by the Texas Advanced Research Program, will utilize exciting new ways to look at rocks, including the use of X-ray CAT-scanning and mathematical analysis of video images acquired on a petrographic microscope.

Several other ongoing projects have borne fruit over the last year. Collaboration with Cambria Johnson (a former Master's student now enroute to the PhD) has placed novel interpretations on natural diffusion-controlled coronal textures in metamorphic rocks from the Adirondack Mountains of New York and the Llano Uplift. That work has brought to light formerly unrecognized complexities in those textures and has led to the development of new open-system diffusion models of their formation. Attempts to decipher the polymetamorphic history of Precambrian rocks

in the Llano Uplift leapt forward when another student, Elizabeth Schwarze, successfully completed an NSF-sponsored regional study that places quantitative constraints on pressure-temperature conditions, and their geographic variation, for two separate metamorphic events in the Uplift. Finally, the renewal of NSF funding for another two years has ensured that experimental studies of pyroxene phase equilibria at high pressures will continue at NASA's Johnson Space Center; that work is aimed at developing thermobarometers for mafic and ultramafic rocks that will be valid under crustal conditions.

#### *Selected Publications:*

- Carlson, W. D., 1989, The significance of intergranular diffusion to the mechanisms and kinetics of porphyroblast crystallization: *Contributions to Mineralogy and Petrology*, v. 103, p. 1-24.
- Carlson, W. D., 1989, Subsolidus phase equilibria near the enstatite-diopside join in  $\text{CaO-MgO-Al}_2\text{O}_3\text{-SiO}_2$  at atmospheric pressure: *American Mineralogist*, v. 74, p. 325-332.
- Carlson, W. D., Mechanisms and kinetics of apatite fission-track annealing: *American Mineralogist* (in press).



Partially resorbed garnet crystal from the Llano Uplift, Texas. Beautiful and exotic textures like these may hold the key to understanding how metamorphic reactions take place.



## *Structural geology and tectonics*

### **Mark Cloos**

Associate Professor and William T. Stokes Centennial Teaching Fellow,  
PhD—1981, University of California at Los Angeles

My research over the last ten years has involved a combination of field, laboratory and theoretical studies of the structure, metamorphism, geochronology, and sedimentation of subduction zones. Aspects of blueschist metamorphism and thermal history, the formation of chaotically mixed melanges, melange diapirism, dewaterings, mechanisms for subducting sediment, fluid inclusion and isotopic studies of mineralized veins in accreted sediments, and trench-slope basin evolution are under investigation in the Franciscan Complex of California.

Over the past three years, my graduate students have established a state-of-the-art lab for apatite fission-track thermal-history analysis of rocks. Fission tracks are created in apatite from the fissioning of uranium atoms. In the temperature range of 50 to 125°C and over geological time scales, fission tracks shorten by annealing. In most geologic environments, this temperature range corresponds to depths of 2 to 5 km and is of special economic importance because it is the temperature range of the "oil window." A fission-track age of cooling can be calculated from counting the number of tracks in a single crystal. The measurement of the confined track-length distribution in a sample provides information on the cooling rate of igneous or metamorphic rocks or in many cases the maximum paleotemperatures for sediments altered only by diagenesis. Apatite fission-track thermal-history analysis provides unique data bearing on geologic problems ranging from the rate of uplift and unroofing of mountains to the thermal history of subsiding basins. Research projects underway include quantifying the thermal history of the Transverse Ranges of California, a mountain belt which has been pushed up during movement along the San Andreas transform fault and measuring the thermal effects associated with water movement along growth faults in the Texas Gulf Coast basin.

My newest research interest concerns the tectonics of the island of New Guinea. The Central Range of Irian Jaya, Indonesia (western New Guinea) contains limestones, sandstones, and shales of the Paleozoic and younger passive-margin sequence deposited on the northern edge of the Australian continent. These strata became imbricated into a fold-and-thrust belt during the collision of the Australian continent with an oceanic island arc in the early Miocene. Skarn and porphyry Cu-Au deposits in the Gunung Bijih (Ertsberg) ore district are associated with Plio-Pleistocene granitic intrusions into the core of the orogenic belt. Studies on the stratigraphy and structural geology and igneous petrology are underway as part of a mapping transect centered on the Ertsberg district. Related studies concerning the petrology and genesis of the ore deposits are being supervised by Professor J. R. Kyle. This project is supported by Freeport McMoRan, Inc., of New Orleans and it is a

collaborative effort with faculty and students at the Institute for Technology at Bandung, Java, Indonesia.

#### *Selected Publications:*

- Cloos, M., and Shreve, R. L., 1988, Subduction-channel model of prism accretion, melange formation, sediment subduction, and subduction erosion at convergent plate margins: 1. Background and description: *Pure and Applied Geophysics*, v. 128, p. 455-500.
- Cloos, M., and Shreve, R. L., 1988, Subduction-channel model of prism accretion, melange formation, sediment subduction, and subduction erosion at convergent plate margins: 2. Implications and discussion: *Pure and Applied Geophysics*, v. 128, p. 501-545.
- Cloos, M., 1989, Subduction zones, *in*: D. E. James (ed.), *Encyclopedia of Solid Earth Geophysics*, Van Nostrand Reinhold and Company, p. 1246-1255.
- Cloos, M., 1990, Blueschists, *in*: Frank N. Magill (ed.), *Magill's Survey of Science*, Earth Science Series, Salem Press, Inc., p. 1561-1569.



### *Tectonics*

**Ian W. D. Dalziel**

Professor, PhD—1963,  
University of Edinburgh

My research interests are global scale tectonic processes, particularly tectonic evolution of the southern continents and ocean basins; cordilleran orogenic processes, particularly tectonic evolution of the southern Andes, Scotia Arc, and West Antarctic cordilleras.

Work continues on cordilleran orogenic processes and evolution of southern continents and ocean basins with a full schedule of cruises and field work in the interior of the Antarctic continent. There is almost year-round activity in this region now by UTIG scientists. The first deep seismic traverse sailing through the Andean cordillera has been completed with co-principal investigators, James Austin of UTIG and John Mutter of Columbia in Tierra del Fuego. Data are now being processed. Other activities include acting as Convenor of the Group of Specialists on the Structure and Evolution of the Antarctic Lithosphere of Scientific Committee on Antarctic Research and Chairman of Tectonics Panel of Ocean Drilling Program.

#### *Selected Publications:*

- Dalziel, I.W.D., Evolution of the southernmost Andes and the Antarctic Andes, in: *Andean Tectonics and Metallogensis*, Circum-Pacific Council for Energy and Mineral Resources, American Association of Petroleum Geologists Earth Science Series (in press).
- Dalziel, I.W.D., 1988, Tectonics of the Scotia Arc. Guidebook to Field Trip T180 of 28th International Geological Congress, *American Geophysical Union, Washington, D.C.*, 206 p.
- Dalziel, I.W.D., Storey, B. C., Garrett, S. W., Grunow, A. M., Herrod, L.D.B., and Pankhurst, R. J., 1987, Extensional tectonics and the fragmentation of Gondwanaland, in: Dewey, J. F., Coward, M. P., and Hancock, P. (eds.), *Continental Extensional Tectonics*, Special Publication of Geological Society of London No. 28, p. 433–441.
- Dalziel, I.W.D., Garrett, S. W., Grunow, A. M., Pankhurst, R. J., Storey, B. C., and Vennum, W. R., 1987, The Ellsworth-Whitmore crustal block: its role in the tectonic evolution of West Antarctica, in: McKenzie, G. D. (ed.), *Gondwana Six: Structure, Tectonics, and Geophysics*, Geophysical Monograph Number 40, American Geophysical Union, p. 173–182.



### *Energy and Mineral Resources*

**William L. Fisher**

Leonidas T. Barrow Chair  
in Mineral Resources,

Director, Bureau of Economic Geology,  
and Director, Geology Foundation,  
PhD—1961, University of Kansas

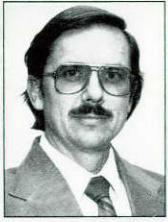
My early and continuing research interests are in various aspects of basin analysis, initially in advancing the concepts of depositional systems and currently the facies architecture of oil and gas reservoirs and the role of geology in optimal recovery.

In recent years, I have become more and more involved in national issues of resources and resource policy and particularly price and technology sensitivity in assessing recoverable oil and gas resources.

#### *Selected Publications:*

- Fisher, W. L., 1989, Position papers on U.S. oil and natural gas resources, American Association of Petroleum Geologists Committee on the Resource Base: *AAPG Explorer*, v. 10, nos. 4 and 10, p. 9, 42–43.
- Fisher, W. L. et al., 1988, Scientific drilling and hydrocarbon resources, *National Academy Press, National Academy of Sciences, Washington, D.C.*, 59 p.
- Fisher, W. L. et al., 1988, An assessment of the natural gas resource base of the United States, *Department of Energy, DOE/W/31109-H1*, 126 p.
- Fisher, W. L., 1988, Rediscovering oil and gas, *Issues in Science and Technology*, v. 4, no. 2, p. 100–104.
- Fisher, W. L., 1988, Can the U.S. oil and gas resource base support sustained production?, *Science*, v. 236, p. 1631–1636.





*Clastic depositional systems; basin analysis; sedimentary economic geology*

**William E. Galloway**

John E. "Brick" Elliott Centennial Professor,  
PhD—1971, University of Texas at Austin

My primary interests remain in the area of basin analysis, with emphasis on the development of basin-margin and slope depositional systems in the Gulf of Mexico and North Sea basins. Teaching during the past year has included Terrigenous Clastic Depositional Systems (graduate) and the senior elective course Petroleum Geology-Basin and Trend Analysis. In addition, I have supervised several MS and PhD students. I have been on a leave of absence from UT from January 1 to June 31 while serving as visiting professor in petroleum geology at the University of Bergen. In Norway I have taught segments of courses entitled Advanced Sedimentology and Stratigraphy and Reservoir Geology and Technology. As a part of the visiting professor program, I have also traveled to universities at Oslo, Trondheim, Aarhus, and Copenhagen for presentation of short courses on basin analysis and sequence stratigraphy. In addition, I delivered a lecture series at the Universities of Utrecht and Amsterdam at the invitation of those institutions.

Current research revolves around development and testing of sequence stratigraphic paradigms using data sets from the Cenozoic fills of the North Sea and Gulf Coast basins. This work, which is funded by a grant from the Texas Advanced Research Program and an industrial associates program, has tested applicability of the widely published Exxon paradigm against the Frazier paradigm for recognition and interpretation of depositional-system-based genetic stratigraphic units. Ancillary work has attempted to quantify sediment supply as a major control on sequence development and facies architecture. Results show that the Gulf of Mexico sequences are readily determined and mapped using the Frazier approach, that the resultant sequences isolate and contain the genetically related assemblages of depositional systems, and that variable sediment supply (2- to 10-fold variation in 1- to 2-million-year intervals) is a primary control on sequence development. North Sea Cenozoic sequences are commonly defined by flooding surfaces, and thus fit well into the Frazier paradigm as well. Work is currently underway to define regional sequences and map depositional systems.

Additional research has focussed on the processes of submarine-canyon excavation and filling, detailed sedimentology of tide-dominated coastal sediments of the Queen City Formation (Tyler Basin), and regional mapping as well as detailed facies architecture of fluvial braidplain deposits in the Triassic of the Sydney Basin, Australia. Papers co-authored with former students (William Dingus) and re-

search associates (Amparo Ramos, University of Madrid, and Douglas Hamilton, University of Sydney) on these topics have been accepted for publication in various international journals. Work in the Queen City documents an array of macrotidal facies in a basin setting much better known for microtidal Cenozoic coastlines. Work with Dingus and other students has shown that many large, paleosubmarine canyons were formed by subaqueous erosion during periods of continental-margin submergence.

Future research will continue in directions now established. Several additional studies in the Gulf and North Sea basins remain to be completed. The visit to Norway has established many key contacts in industry and academia that have substantially expanded sources of data and opportunities for cooperative research. Pertinence of current work is reflected in the invitations from six companies (including all major Norwegian companies) for presentation of in-depth seminars on sequence stratigraphy. Emphasis will continue to expand into approaches to quantify depositional models. The North Sea Basin, in particular, offers an opportunity to examine the various processes and styles of basin-floor deposition (fan, apron, slump lobes, etc.) in a setting with abundant well and seismic data.

*Selected Publications:*

- Galloway, W. E., 1989, Genetic stratigraphic sequences in basin analysis I: architecture and genesis of flooding-surface-bounded depositional units: *American Association of Petroleum Geologists Bulletin*, v. 73, p. 125-142.
- Galloway, W. E., 1989, Genetic stratigraphic sequences in basin analysis II: application to the northwest Gulf of Mexico Cenozoic basin: *American Association of Petroleum Geologists Bulletin*, v. 73, p. 143-154.
- Galloway, W. E., Paige, R. E., and Dingus, W., Seismic facies and recognition of Wilcox Group submarine canyons, Paleocene-Eocene, Gulf Coast, United States, in: Weimer, P., and Link, M. H. (eds.), *Seismic Facies and Sedimentary Processes of Submarine Fans and Turbidite Systems*, Springer-Verlag, New York (in press).



## *Seismology and Geophysics*

### **Stephen P. Grand**

Assistant Professor and Shell Companies Foundation Centennial Teaching Fellow, PhD—1986, California Institute of Technology

My recent research has focussed on determining the seismic-velocity structure of the earth's mantle. Measurement of how fast elastic waves propagate provide us with our most detailed information about the interior of the earth. The velocity of seismic waves depends on the temperature, pressure, mineralogy, and phase of the rocks through which they propagate. By mapping seismic velocities within the mantle, I hope to better understand such things as the convection pattern within the earth, the depth extent and structure of continents, and the chemical and mineralogic composition of the mantle. I teach two graduate courses. One is an introduction to earthquake seismology covering the physics of earthquakes as well as the structure of the earth. The other course deals with techniques to model elastic-wave propagation through realistic earth models. At the undergraduate level, I am involved in an introductory geology course and a global geophysics course.

Recently, I have worked on producing a three-dimensional map of mantle shear-wave velocity. The study examined the mantle beneath North and South America and the northern Atlantic Ocean from just below the crust to the core-mantle boundary. The approach used involved measuring the travel-times (from earthquake to seismograph) of thousands of waves including multiply reflected arrivals. A three-dimensional velocity model was found which predicts the measured times using a tomographic inversion scheme. The results show high-velocity roots beneath cratons to between 300 and 400 km in depth which I interpret to indicate the bottom of the continental plates. In the deep mantle, a sheet of higher-than-average velocity can be seen extending from middle South America to Canada. This may be, in part, the Farallon plate which has been subducting over the last 100 Ma beneath the west coast of North and South America. Another interesting feature is a slower-than-average velocity-plume-like structure off the coast of North Africa. It is located beneath several hotspots and, interestingly, is near the location of the original rifting apart of Africa from the Americas. These results are preliminary and I foresee great improvements in the future for seismic models of the interior of our planet.

With graduate student Xiao-Yang Ding, I have been working on determining the detailed velocity structure of subducted slabs. For this project, a technique to predict the travel-times of waves produced within a complicated structure is being developed. The code uses finite differences within the complicated region and is coupled to a classical ray-tracing code to extend the calculation to large distances.

We have an excellent set of seismic data from earthquakes within the Kurile subduction zone, and the code will be used to check whether several possible models of subduction zones are compatible with the data or not. We are particularly interested in what happens to subducted plates beneath the deepest seismicity. Results to date are ambiguous, with some studies showing a flattening of the slab at shallow depth and some showing the slab penetrating to deep within the mantle.

I am also a member of the Institute for Geophysics and collaborate with seismologists there. The IRIS data management center (DMC) is located at the Institute and provides ready access to new digital seismic data. With my graduate students and Institute seismologists, we have begun an investigation of crustal structure in Asia. The data for this project were supplied by the DMC and are from IRIS seismographs which have been recently deployed in the Soviet Union and China. I expect that over the next few years we will be involved in several projects taking advantage of new IRIS seismic data. I am particularly interested in determining more detailed seismic models of the upper mantle. The broad frequency response of the new seismic instruments should improve the resolution of studies of the sharpness and size of discontinuities in the shallow mantle.

#### *Selected Publications:*

- Grand, S. P., 1987, Tomographic inversion for shear velocity beneath the North American plate: *Journal of Geophysical Research*, v. 92, p. 14,065-14,090.
- Grand, S. P., 1990, A possible station bias in travel-time measurements reported to ISC: *Geophysical Research Letters*, v. 17, p. 17-20.
- Ding, X. Y., and Grand, S. P., Mantle Q structure beneath the East Pacific Rise: *Journal of Geophysical Research* (in revision).



## *Eolian sedimentology*

### **Gary Kocurek**

Associate Professor and Elf Aquitaine Faculty Fellow,  
PhD—1980, University of Wisconsin at Madison

My research is centered in sedimentology, primarily eolian or wind-blown systems, but ranges from what most might call eolian geomorphology to basin analysis. Above all, I work with processes and think any sedimentary systems, including eolian ones, have to be understood from the grain-fluid level to the basin-global scale if they are to be understood at all. I am interested in the flow of fluids and fluid-substrate interactions. This interest, in turn, leads to trying to understand the dynamics of bedforms, and the production and recognition of sedimentary structures. I work with the arrangement of bedforms (dunes, sabkhas, alluvial and marine systems), and how these behave dynamically and come to be assembled in the rock record. From a process point-of-view, I work with stratigraphic sequences—what had to have happened to give a specific sequence. At the basin-global scale, I am interested in how climate, tectonism, sea level, and sediment supply affect sedimentary sequences and, conversely, how large-scale events can be interpreted from the rock record. My teaching includes sedimentary processes at the graduate level, and, at the undergraduate level, depositional systems, sedimentology, field camp, and the geology of the national parks.

Because of the range of my research interests, my “field areas” extend from the wind tunnel, to modern dune fields in North America and Africa, to ancient deposits on the Colorado Plateau. One project, working jointly with a French team, is an investigation of how the elements of the Akchar Erg in Mauritania came to be assembled. Starting with remote sensing, then field work, we can well establish how at least three eolian events separated by hiatuses, a lacustrine interval, a sabkha sequence, and alluvial-fan pulses are intricately controlled by the climatic and eustatic events of the past 20,000 years, and how the representative deposits came to be assembled in a complex three-dimensional package. The hiatuses we see in eolian depositional sequences are an important recent realization and significantly change how we think about thick ancient eolian units. We have been working with one such ancient deposit, the Jurassic Page Sandstone in Utah and Arizona, and can now understand that the unit does not represent simple accumulation of dune deposits, but rather shows the amalgamation of several sand seas that shifted depocenter and whether or not they were leaving accumulations as a response to sand supply and sea-level fluctuations.

Our ability to interpret ancient eolian deposits, such as the Page Sandstone, is very much dependent on understanding the dynamics of dunes. Toward this end, we have

been studying the airflow patterns over dunes. Because most of the deposits we see in the rock record formed on the lee of dunes, we have concentrated on the secondary airflow on the lee caused by the interaction of the dune with the flow. The situation is complex and a function of the incidence angle of the wind with the dune brinkline, the change in grain threshold velocity on the lee as a function of lee slope, and the nature of atmospheric structure. To date, we have been able to characterize lee slopes as showing separation, attached undeflected flow, and attached deflected flow. More importantly, each flow condition results in a distinct lee process (and hence sedimentary structure), and whether or not the lee face is depositional (making a sedimentary record) or one of bypassing or erosion (producing a surface only).

From what we are learning from modern and ancient eolian systems, I think we are close to being able to actually generate a process-response model and beginning numerical modeling. A project has begun to test the concepts on the marine-eolian transition zone of the Jurassic Entrada Sandstone in Utah, as well as to venture into Algeria with the hope of examining current desertification problems in light of climatic swings of the past 40,000 years. With the availability of a large wind tunnel, a program has begun to systematically test aspects of dune-airflow dynamics, here also with the aim of quantification.

#### *Selected Publications:*

- Kocurek, G., editor, 1988, Late Paleozoic and Mesozoic Eolian Systems of the Western Interior of the United States: *Sedimentary Geology*, v. 56, 413 p.
- Kocurek, G., Interpretation of ancient eolian sand dunes: *Annual Review of Earth and Planetary Science*, v. 19 (in press).
- Sweet, M. L., and Kocurek, G., An empirical model of eolian dune lee-face flow dynamics: *Sedimentology* (in press).



***Tectonic and stratigraphic history of sedimentary basins; periodicity of cyclic sediment packages***

**Michelle A. Kominz**

Assistant Professor and Shell Oil Companies Foundation Centennial Teaching Fellowship, PhD—1986, Columbia University

I was hired at UT-Austin as a scientist who uses mathematical methods to understand geological processes. My interests include aspects of geophysics, soft-rock and hard-rock tectonics. My first year of teaching has encompassed all three fields. In the fall semester I co-taught geodynamics with John Sclater and geophysics for geophysics majors with Clark Wilson. In the spring semester I created a basins class stressing the tectonic cause and implications of basin formation and history.

On-going research in collaboration with co-workers at Columbia University includes the observation of an unusual pattern of subsidence in basins throughout the North American craton and margin. This may indicate that the initiation of formation of the Pangean supercontinent occurred earlier than previously thought, in the Late Devonian.

Recently, I completed a model to predict the thermal history of the frontal region of forearc prisms, with support by the Department of Energy. Although forearc prisms tend to be poor sources for hydrocarbons due to low geothermal gradients, poor structural traps and low-quality source rocks, it has been suggested that the shear quantity of sediment that moves through a prism might provide a large supply of natural gas. Thermal modeling of the sediments as they are accreted into the prism allows for prediction of the depth at which kerogens would be converted into oil and gas.

I have recently begun research studying high-order cyclic sediments. I have devised a new method of restoring time in cyclic strata and testing whether those cycles actually represent sedimentation during a constant time period. Three projects have been begun to apply and test this new methodology. The first is the Triassic/Jurassic lacustrine sediments of the Newark Basins. Here results indicate that the cycles record both precessional and eccentricity periodic components of the earth's rotation, indicating a climatic control of lake levels during non-glacial times. Work has just begun on applying the method to Pleistocene deep-sea sediments, with support from the National Science Foundation. The primary motivation of this work is a test of the procedure in cyclic sediments that are known to be periodic. The method will be applied to Late Pleistocene cycles in ODP cores from the north Atlantic, the equatorial Atlantic and the equatorial Pacific. Finally, we have begun a preliminary analysis of Middle Cambrian peritidal sediments exposed in the miogeoclinal sediments of central Utah. Preliminary analysis indicates that these cycles are periodic and are most likely of precessional period. Although results to date indicate that there are periodic components in the eccentricity and obliquity range as well, we can not

yet unequivocally say whether frequency shifts predicted by astronomical models can be seen in these ancient strata.

*Selected Publications:*

- Kominz, M. A., 1984, Oceanic ridge volumes and sea-level change—an error analysis, *in*: J. Schlee (ed.), *Inter-regional Unconformities and Hydrocarbon Accumulation: American Association of Petroleum Geology Memoir*, No. 36, p. 109-127.
- Kominz, M. A., and Bond, G. C., 1986, Geophysical modeling of the thermal history of foreland basins: *Nature*, v. 320, p. 252-256.
- Bond, G. C. and Kominz, M. A., 1988, Evolution of thought on passive continental margins from the origin of geosynclinal theory (~1860) to the present: *Geological Society of America Bulletin Centennial Paper*, v. 100, p. 1909-1933.
- Bond, G. C., Lewis, S. D., Taber, J., Steckler, M. S. and Kominz, M. A., 1988, Evidence for formation of a flexural basin by compression and crustal thickening in the central Alaska Peninsula: *Geology*, v. 16, p. 1147-1150.
- Bond, G. C., Kominz, M. A., Steckler, M. S., and Grotzinger, J. P., 1989, Role of thermal subsidence, flexure and eustasy in the evolution of early Paleozoic passive-margin carbonate platforms: *Society of Economic Paleontologists and Mineralogists Special Publication No. 44*, Controls on Carbonate Platform and Basin Development, p. 39-61.



***Ore deposits geology; stable-isotope and fluid-inclusion studies; mineral exploration***

**Richard Kyle**

Professor and Getty Oil Company Centennial Teaching Fellow,  
PhD—1977, University of Western Ontario

I have developed a diverse program in ore deposits geology in the Department of Geological Sciences since my arrival from the mineral exploration industry in 1978. This program combines many aspects of geology in the investigation of the origin of mineral resources in sedimentary, igneous, and metamorphic environments. The program is broad based geologically, geographically, and topically, and involves field projects in several states and foreign countries, in addition to the Gulf Coast. Undergraduate and graduate students investigate theoretical and applied aspects of the concentration and effective utilization of mineral resources within the context of the total geologic environment. In addition to undergraduate and graduate courses in ore deposits geology, I also teach a core course in economic geology for the Energy and Mineral Resources graduate program in Petroleum Engineering, and a non-majors course on the geology and mineral resources of Texas.

I am an active member of several professional organizations and a Fellow in the Geological Society of America, the Geological Association of Canada, and the Society of Economic Geologists. I am the editor for North and South America of *Ore Geology Reviews* and a member of the editorial board of *Economic Geology*. I recently completed a faculty research assignment at the US Geological Survey national headquarters on sulfur isotope systematics of zinc-lead-silver sulfide concentrations in Gulf Coast salt-dome cap rocks. The salt-dome cap rock investigations have contributed to the understanding of several classic mineralization types in sedimentary terranes, including such aspects as relation of ore deposition to organic matter and bacterial processes, timing of mineralization, and relationship to metalliferous formation waters. They are also contributing to the understanding of general Gulf Coast geologic problems including halokinesis, depositional and diagenetic processes, and hydrodynamics.

My research colleagues, graduate students, and I have initiated a major project to investigate the tectonics and ore deposits of the Ertsberg district in Irian Jaya, Indonesia. The region consists of a spectacular Alpine terrain of folded and thrust-faulted Tertiary carbonate rocks that form the central mountain range of the island of New Guinea. The area is a complex tectonic terrane that developed within the last 30 million years in response to subduction-related processes on the northern margin of the Australian tectonic plate. The carbonate sequence has been intruded by diorite plutons with which major intrusion- and skarn-hosted

copper-gold deposits are associated. The primary goal of the project is to investigate the tectonic setting and structural geology, igneous and metamorphic petrology, and ore genesis of the district.

Other current research projects include metal sulfide and industrial mineral deposits in salt-dome cap rocks and in Jurassic carbonates of the Gulf Coast, paleomagnetic dating of mineralization, supergene mobilization of gold in tropical environments, and origin of associated sulfide and phosphate concentrations in Proterozoic carbonates of Bahia, Brazil.

*Selected Publications:*

- Kyle, J. R., and Agee, W. N., 1988, Evolution of metal ratios and  $\delta^{34}\text{S}$  composition of sulfide mineralization during anhydrite cap rock formation, Hockley dome, Texas, USA: *Chemical Geology*, v. 74, p. 37-55.
- Posey, H. H., and Kyle, J. R., editors, 1988, Fluid-rock interactions in the salt dome environment: *Chemical Geology (Special Issue)*, v. 74, No.1/2, 188 p.
- Rubin, J. N., and Kyle, J. R., 1988, Mineralogy and geochemistry of the San Martín skarn deposit, Zacatecas, Mexico: *Economic Geology*, v. 83, p. 1782-1801.
- Sharp, J. M., Jr., and Kyle, J. R., 1988, The role of groundwater processes in the formation of ore deposits: *The Geology of North America*, Geological Society of America, Boulder, v. O-2, ch. 47, p. 461-483.



## Micropaleontology

### Martin B. Lagoe

Associate Professor and Dave P. Carlton Centennial Teaching Fellow,  
PhD—1982, Stanford University

My research centers on the innovative use of micropaleontology to solve a diverse array of geological problems. Current research encompasses work in Alaska, California, Texas, and the Gulf of Mexico, with a variety of emphases: basin analysis, paleoceanography, biostratigraphy, paleoenvironmental modelling, paleoclimate reconstruction, tectonics, and petroleum exploration. In addition to my research, I teach physical geology at the undergraduate level and micropaleontology, advanced micropaleontology, paleoceanography, subsurface stratigraphy, and quantitative biostratigraphy at the graduate level.

My current research is in the following areas:

1) Late Cenozoic glacial and climatic history of the Yakataga Formation, Gulf of Alaska. This is a joint project with Dr. Nicholas Eyles (University of Toronto) and Dr. Carolyn Eyles (McMaster University). Recent field and laboratory studies are directed towards deciphering the 5-km-thick record of glaciomarine and normal marine deposition within the Yakataga Formation. These studies, partly funded by NSF, have documented periodic waxing and waning of tidewater ice sheets across the entire eastern Gulf of Alaska continental shelf, a glaciomarine record extending back to the late Miocene. Variability in glaciation on several scales seems to be a response to regional tectonics (periodic uplift of coastal mountain ranges) and fluctuating global climate. Improved glaciomarine facies models are being developed for the incredible diversity of lithologies present in the Yakataga Formation (various kinds of diamictite, mudstone, coquinas, boulder pavements, channelized gravels, to name a few). Current research is largely focussed on documenting stratigraphic relationships within glacially influenced megachannels (up to 500 meters of relief) within the Yakataga in terms of depositional processes, paleobathymetry, and paleoenvironments.

2) High-resolution paleoenvironmental studies on the modern Gulf of Mexico slope. Dr. Anthony Gary has been a post-doc in the department for the past year and has been instrumental in initiating a major research program on Gulf of Mexico benthic foraminiferal biofacies. We are conducting coring of the northwestern Gulf of Mexico slope in cooperation with the Institute for Geophysics. The early stages of this research involve relating the small-scale infaunal and epifaunal distribution of benthic foraminifera to environmental parameters (e.g., bottom-water characteristics, pore-water chemistry, substrate variability, organic geochemistry) and taphonomic processes in the active zone of bioturbation. The goal of the research is higher-resolution estimates of paleobathymetry and paleoenvironmental parameters such as oxygenation.

3) Paleobathymetry of benthic foraminiferal biofacies in Paleogene basins of California. This work attempts to

calibrate the paleobathymetric significance of benthic foraminiferal distributions in Eocene rocks of the San Joaquin basin independently of modern biofacies concepts. Recent results, utilizing sedimentologically and stratigraphically derived basin-margin "landmarks" (e.g., strandline, shelf-edge), indicate that several commonly used taxa have shallower upper-depth limits than previously thought. Current work is concerned with developing more realistic Paleogene and paleobathymetric models for this area.

Graduate students under my direction contribute greatly to the diversity and vigor of the micropaleontology program at UT-Austin. These projects include: the application of Paleozoic radiolarian biostratigraphy to the depositional and tectonic history of the Caballos Novaculite and lower Tesnus Formation (Devonian-Mississippian), Marathon Basin, Texas (Paula Noble); subsurface and seismic-stratigraphic analysis of the Yakataga Formation, Yakataga continental margin, Alaska (Sally Zellers); the depositional, geohydrologic, and paleoclimatic history of Quaternary lakes in northwest Texas, eastern New Mexico (Chris Caran); the depositional and tectonic significance of the Etchegoin and San Joaquin Formations (Late Miocene-Pliocene), western San Joaquin basin, California (Robert Buehring); analysis of the structural history of the Oakridge Fault, Ventura Basin, as based on high-resolution geohistory modelling (Nestor Phillips); and the Eocene sequence stratigraphy of the North Sea (Ben Sloan, co-supervised with Dr. William Galloway).

#### *Selected Publications:*

- Lagoe, M. B., 1990, Benthic foraminifera along a mid-Eocene basin margin, central California: insights into the relationship between early Cenozoic biofacies and bathyal depositional environments (*abs.*): *Geological Society of America Abstracts with Programs*, v. 21, no. 6, p. A125.
- Lagoe, M. B., 1990, Chronostratigraphic calibration of late Neogene, northeast Pacific planktic foraminiferal events: geological applications to the Plio-Pleistocene of the Ventura Basin, California (*abs.*): *American Association of Petroleum Geologists Bulletin*, v. 74, p. 699.
- Namson, J. S., Davis, T. L., and Lagoe, M. B., 1990, Thrust-fold deformation style of a seismically active structure near Coalinga, California: *US Geological Survey, Professional Paper* 1487, p. 79-96.



## *Isotope geochemistry; diagenesis; low-temperature aqueous geochemistry*

**Lynton S. Land**

Professor and Edwin Allday Centennial Chair in Subsurface Geology,  
PhD—1966, Lehigh University

My interests are centered on diagenesis, or the transformation of sediments into sedimentary rocks. Diagenesis is both a mechanical and hydrochemical process, and must incorporate information from such diverse subjects as sediment-facies architecture, petrography, aqueous-solution chemistry, and hydrology. I teach sedimentary petrography at the undergraduate level, and carbonate petrography and sedimentary geochemistry at the graduate level, in addition to advanced seminar courses which occasionally result in publications (see *Developments in Sedimentology* 43, 1988, p. 43-113). Students undertake theses and dissertations involving both carbonate and clastic sediments in modern environments, in outcrop, and involving subsurface information.

Recent research has emphasized two areas: dolomite and burial diagenesis. The finding that dolomite precipitates from seawater (*Journal of Sedimentary Petrology*, 1987, v. 57, p. 153-165; *Geology*, 1987, v. 15, p. 557-560) raises new questions about hydrologic models which have been proposed, and permits us to focus on the question: Just what factors favor nucleation/growth of dolomite crystals? Most ancient dolomites are apparently stabilization products of a metastable precursor, and although study of their geochemistry provides no information about how the initial sediments were dolomitized, the geochemistry of ancient dolomite does provide information about the hydrologic history of ancient aquifers. In contrast to carbonates, where surficial diagenesis often dominates, clastic sediments, both shales and sandstones, undergo most of their modification during burial. The Gulf of Mexico is a trailing-margin basin which not only permits study of the rocks as they are in the process of being altered, but samples of formation water permit water/rock interactions to be quantified, and geochemical data constrain hydrogeologic models. Many ancient "geosynclines" underwent burial diagenesis just as the Gulf of Mexico is undergoing today, and several students are now beginning to investigate ancient clastic sequences in the perspective of what we have learned about burial diagenesis of clastics, carbonates, evaporites, and formation waters in the Gulf of Mexico sedimentary basin.

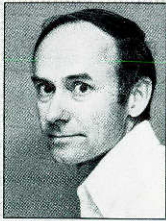
Several new areas of investigation are being pursued, some of which center around "new" technology. Acquisition of a state-of-the-art thermal-emission mass spectrometer in 1988 has permitted new isotopic systems to be applied to diagenetic problems. Precise strontium isotopic data can now be obtained easily, and in sufficient abundance to "see through" some of the geologic noise that plagues the study of sedimentary rocks where chemical disequilibrium is the rule. Rare-earth-element concentrations, and isotopic compositions in the case of Nd, provide

information not previously available. Boron isotopes can now be routinely analyzed on most kinds of samples, and considerable progress has been made in lithium isotopic analysis. Oxygen isotopes remain one of the most important systems to study, and the use of laser-induced heating for analysis of silicates and sulfates is proceeding, promising to permit considerably more rapid analysis of samples and analysis of much smaller samples than was previously possible.

There are two areas where these new techniques are being applied by me, by post-doctoral associates, and by students. One is the intensive study of Gulf Coast shale diagenesis, with emphasis on how it relates to formation-water geochemistry and sandstone diagenesis. We are doing petrography of the shales with the SEM and with high-magnification cathodoluminescence, and tracking chemical reactions with a variety of elemental and isotopic tracers. The second area is the study of diagenesis and dolomitization of the Paleozoic platform in Texas and Oklahoma, and how it was affected by the numerous unconformities which are present in the section, and by the Ouachita orogeny. Knowledge of diagenesis is now sufficiently advanced that we can begin to "see through the haze," and realistically reconstruct original conditions at the time of sedimentation, achieving our ultimate goal, the quantitative documentation of Earth history.

### *Selected Publications:*

- Land, L. S., 1985, The origin of massive dolomite: *Journal of Geological Education*, v. 33, p. 112-125.
- Land, L. S., Milliken, K. L., and McBride, E. F., 1986, Diagenetic evolution of Cenozoic sandstones, Gulf of Mexico sedimentary basin: *Sedimentary Geology*, v. 50, p. 195-22.
- Land, L. S., 1987, The major ion chemistry of saline brines in sedimentary basins, in: Banavar, J. R., Koplik, J., and Winkler, K. W. (eds.), Physics and chemistry of porous media II, Ridgefield, Conn., *American Institute of Physics Conference Proceedings*, v. 154, p. 160-179.



## *Geochronology; Rb-Sr isotope geochemistry; clay diagenesis*

### **Leon E. Long**

Second Mr. and Mrs. Charles E. Yager Professor of Geology,  
PhD—1959, Columbia University

Although the topics listed above may seem highly specialized, I consider myself to be a generalist. My fascination with the entire scope of geology has been largely satisfied through team-teaching of a generalized course over the years to approximately 16,000 students. Much of my recent research has necessarily been in the library to support a massive updating of my introductory textbook, *Geology*. Undergraduate teaching also includes field geology on beginning and advanced levels, and geochemistry. My graduate courses are isotope geology and seminar in isotope geology.

Traditionally, isotope geochronologists have studied igneous and metamorphic rocks in which high-temperature events have "reset" the parent and daughter isotope systems. For such rocks, the concept of an age is likely to be quite straightforward. I continue to work with my students and foreign colleagues doing hard-rock petrology, and Rb-Sr and a little Sm-Nd geochronology. For example, basement rocks in northern Mexico that were involved in huge Mesozoic fault motions were found to be no older than early Mesozoic (although mid-Paleozoic clasts derived from an unknown terrane are also present). In the Egyptian Eastern Desert, ages of rift-related Dokhan Volcanics are 630 million years in the south, diminishing to 590 million years in the north, and there is no evidence that Precambrian continental crust underlies this part of Egypt. Shield rocks of northeastern Brazil have been intensely reconstituted by the latest Precambrian to earliest Paleozoic Brazilian Orogeny. In the Llano Uplift of central Texas, equilibrium crystallization of water-undersaturated magma of the billion-year-old Katemcy granite occurred at a pressure exceeding 4.5 kilobars and temperature between 680 and 730°C.

My students and I are also using the Rb-Sr method to investigate sedimentary diagenesis of clay minerals. Both the promise and the hazards of this procedure are great. Diagenesis occurs in many environments ranging from surficial soil to deep burial. It is a low-temperature process, at an energy level that is "octaves" lower than that of igneous or metamorphic crystallization. Rb-Sr ages of diagenesis provide a rather novel type of information, and initial  $^{87}\text{Sr}/^{86}\text{Sr}$  ratios can give clues to the source of the fluids that effected diagenesis. But the low energies also mean that only some, not all of the material in a sediment will be of diagenetic origin. Diagenetic particles must be separated from detrital particles, then purged of loosely bound Rb and Sr that act as an open chemical system.

Experimental results are intriguing. Paleosol developed upon Packsaddle Schist in the Llano Uplift becomes systematically younger toward the east, apparently dating the progressive exposure of the basement to weathering as an overlying sedimentary escarpment retreated at about 110 meters per million years. When Mg-rich authigenic clay in late Permian evaporitic sediments of the Palo Duro Basin, Texas Panhandle, were formed shortly after deposition 260 to 270 million years ago, it incorporated Sr similar to that in contemporary sea water. Smectitic clay with a vanishingly low rubidium concentration (2 to 5 ppm) and correspondingly small radiogenic  $^{87}\text{Sr}$  can be successfully analyzed, now that we have an excellent new mass spectrometer. I shall continue to explore the potential of the Rb-Sr chronometer as applied to yet other environments of diagenesis.

#### *Selected Publications:*

- Long, L. E., *Geology*, 4th edition: American Press, Boston (a general introductory textbook) (in press).
- Long, L. E., Sial, A. N., Nekvasil, H., and Borba, G. S., 1986, Origin of granite at Cabo de Santo Agostinho, northeast Brazil: *Contributions to Mineralogy and Petrology*, v. 92, p. 341-350.
- McKee, J. W., Jones, N. W., and Long, L. E., 1990, Stratigraphy and provenance of strata along the San Marcos fault, central Coahuila, Mexico: *Geological Society of America Bulletin*, v. 102, p. 593-614.





*Vertebrate paleontology; Quaternary faunas; taphonomy; biometrics*

**Ernest L. Lundelius, Jr.**

John A. Wilson Professor of Vertebrate Paleontology,  
PhD—1954, University of Chicago

My research is concerned with two major areas. One is the study of Quaternary vertebrate faunas to reconstruct paleoenvironments and to determine how the fauna has changed. I am also interested in the application of statistical methods to paleontology. I teach a freshman course (GEO 405, Life Through Time) which gives students an introduction to the fossil evidence of the history of life and evolution; and three graduate courses: GEO 380L (Paleobiometrics), the application of statistical methods to paleontology; GEO 392K (Vertebrate Biostratigraphy), a course dealing with the use of vertebrates in biostratigraphy, environmental reconstruction, and taphonomy; and GEO 397 (Vertebrate Paleontology, Birds and Mammals), dealing with the structure, systematics and history of these groups.

Current projects include a study of succession of faunas from a cave on the Nullarbor Plain in western Australia. This sequence spans the last 35,000 years and records the changes of the fauna and environment related to the end of the Pleistocene. This now allows a comparison of the timing of climatic events and the faunal responses on two very different continents with two very different faunas. A recent discovery of a good radiocarbon dated Pleistocene fauna from one of the terraces of the Colorado River at Austin has resulted in a reinvestigation of fossils from other low-production localities from terraces in this area. Preliminary results suggest that the entire terrace sequence may be much younger than was formerly thought. Another project is the investigation of sizes of modern mammals now isolated on mountain tops of the Great Basin of western North America to see if they follow the rules found in mammals isolated on oceanic islands. Deposits from lower elevations are now being investigated that will eventually establish the times of isolation and therefore give information on the rate of evolution in the isolated populations.

Other research projects are also concerned with the Quaternary faunas and their response to environmental change. They include investigations of faunas from the Brazos River terraces and newly discovered cave deposits of the Edwards Plateau. One of the latter may prove to be much older than most of the cave deposits that we have so far studied.

I am interested in investigating the use of stable-carbon isotopes in bones as a source of environmental information. There are some studies that indicate that this has much promise. Another area that I would like to look into further is the possibility of dating some vertebrate fossil-bearing deposits that are beyond the range of carbon-14, by means of the uranium-series method on travertines. If successful, this would solve a number of problems. I would like to extend my area of detailed investigations of Quaternary

faunas into the Trans-Pecos area. Little is known of the Quaternary faunal sequence of that area of Texas. Some promising localities are known.

*Selected Publications:*

- Lundelius, E. L., Jr., 1983, Climatic implications of late Pleistocene and Holocene faunal associations in Australia: *Alcheringa*, v. 7, p. 125-149.
- Lundelius, E. L., Jr., and Graham, R. W., 1984, Coevolutionary disequilibrium and Pleistocene extinctions, in: Martin, P. S., and Klein, R. G. (eds.), *Quaternary Extinctions—a Prehistoric Revolution*, University of Arizona Press, p. 223-249.
- Lundelius, E. L., Jr., Churcher, C. S., Downs, T., Harington, C. R., Lindsay, E. H., Semken, H. A., and Webb, S. D., 1987, The North American Quaternary sequence, in: Woodburne, M. O. (ed.), *Cenozoic Mammals of North America: Geochronology and Biostratigraphy*, University of California Press, p. 211-235.



*Petrography and petrology of sandstones; sandstone diagenesis; evolution of porosity in sandstones; origin of chert*

**Earle McBride**

Professor and J. Nalle Gregory Chair in Sedimentary Geology,  
PhD—1960, Johns Hopkins University

I am interested in the origin of sedimentary rocks, and except for introductory courses and field courses, all of my teaching has been in this discipline. I have taught ten different undergraduate courses and three different graduate courses at UT-Austin; 25% of the courses I introduced either individually or with a colleague. Most undergraduate courses I teach (Introduction to Geology, Depositional Processes, Senior Field Geology) are team-taught with colleagues. Because much learning is visual, I illustrate every lecture I give with slides from my 6,000-slide collection that I have built up over the past 35 years. The senior field course is probably the most challenging (and enjoyable) course to teach, because each project is designed, accomplished, and evaluated in the field. I have designed field projects, commonly in collaboration with colleagues, in the following areas: Marathon, Texas; Carlsbad, New Mexico; Cloudcroft, New Mexico; Cuba, New Mexico; and Durango, Colorado.

Recent research involves compaction in sandstones; the packing and porosity of modern beach, river, and dune sands; factors influencing calcite cementation in sandstones; origin of gypsum sand crystals in Laguna Madre, the effect of megaturbidites on infaunal animals, the resistance of mineral grains to beach abrasion, and other topics. Wilcox sandstone samples from depths of 100 to 4,400 m show that compaction is the main cause of loss of porosity with burial, far exceeding the porosity loss by cementation (McBride *et al.*, in press). We studied changes in grain packing to document that most porosity is lost by grain rearrangement, a small amount by ductile-grain mashing and pressure solution, and none by grain fracturing. By impregnating modern sands in the field with epoxy resin, John Atkins and I have characterized differences in depositional packing and porosity among beach, dune and river sands. Most well-sorted sands have initial porosities between 47 and 50%. We found that burial to 14 m produces little change in either packing or porosity of river sands. We also found that oversize pores produced by packing defects or naturally trapped air bubbles will be lost by burial to 100 m. Thus, the oversize pores present in hydrocarbon reservoir sandstones in the subsurface must have formed by the dissolution of detrital sand grains.

To help constrain factors that control the distribution of calcite cement in sandstones, I am studying sandstones from different geological settings to look for common or distinctive causes and effects. Calcite cement in Miocene sandstones of Texas is derived from detrital limestone clasts in the sandstones and fossils in interbedded shales, whereas calcite is imported from adjacent limestone formations in fluvial sandstones of Cretaceous age in West Texas and Miocene age in New Mexico. In Pliocene marine sandstones

of northern Italy, calcite cement occurs selectively in coarse-grained laminae and also along vertical faults in a sandstone-rich unit. The source of the calcite is uncertain for these rocks. The behavior of gypsum as a cement in sand crystals dredged from Laguna Madre is different from calcite cement. The gypsum typically forms complexly twinned, bladed crystals, and the gypsum grows in the sand displacively. Thus, the cement in some sand crystals is greater than 80%.

I am collaborating with Duke Picard (Utah) on several projects, one of which is examining the effect that megaturbidites have on burrowing animals. In the Apennines we studied the Contessa megaturbidite, a bed 15 m thick that was deposited in a few hours. Although the catastrophic deposit must have killed all animals buried by it except microorganisms, the sea floor was soon repopulated by several types of burrowing animals. We found that *Trichichnus* burrowed much deeper below the top of the megaturbidite in search of food than *Chondrites*, in spite of the fact that *Chondrites* is generally considered to be one of the most dysaerobic animals known.

*Selected Publications:*

- McBride, E. F., Diggs, T. N., and Wilson, J. C., Compaction of Wilcox and Carrizo sandstones to 4,420 m, Texas Gulf Coast: *Journal of Sedimentary Petrology* (in press).
- Sullivan, K. B., and McBride E. F., Diagenesis of sandstones at shale contacts and diagenetic heterogeneity, Frio Formation, Texas: *American Association of Petroleum Geologists Bulletin* (in press).
- Atkins, J. E., and McBride, E. F., Packing and porosity of surficial and shallowly buried beach, dune and river sands: *American Association of Petroleum Geologists Bulletin* (in review).



***Structural petrology; deformation mechanisms; complexly deformed terranes***

**Sharon Mosher**

Professor and Getty Oil Company Centennial Teaching Fellow,  
PhD—1978, University of Illinois at Urbana

My primary research interests are in the evolution of complexly deformed terranes, strain analysis, deformation mechanisms, and the interaction between chemical and physical processes during deformation. For the last several years, I have been director of the field camp and have enjoyed teaching some of the best students we have had in years. The camp travels to the Guadalupe, Sacramento, San Juan, Needle, and Picuris Mountains, giving the students a broad overview of all types of geology in the field. I have also taught undergraduate structural geology the last two years. At the graduate level, I teach advanced structural geology and structural petrology. My main teaching at the graduate level, however, is one-on-one with my graduate students.

Much of my recent research has been on crustal contraction mechanisms at intermediate crustal levels. We have been studying the root zone of a fold and thrust belt in the northern Apennines. Karen Carter, one of my PhD students, and I have been investigating the initiation and propagation of stacked ductile shear zones in the Portoro Limestone as well as the strain type and history and the deformation mechanisms affecting the carbonates. Karen and Steven Dworkin have shown that fluids are channelized within shear zones during deformation and enhance grain and grain boundary migration during dynamic recrystallization. Another of my PhD students, Tom Hoak, is studying the subsequent history of these zones as the thrust wedge collapsed and rifting occurred in the adjacent Tyrrhenian Sea.

The other half of my research has been in conjunction with Bill Carlson and Nick Walker investigating the tectonic history of the Proterozoic Llano Uplift of central Texas. My graduate students, Mary Nelis, Karen Carter, and Joe Reese, and I have shown that these rocks have been multiply deformed synchronous with regional metamorphism and then overprinted by a static, low-pressure Buchan facies metamorphism. The rocks in the southeastern uplift are affected by five generations of folds and associated metamorphic foliations. We are now trying to pin down the exact timing of this deformation. Gretchen Gillis, another graduate student of mine, has shown that the Coal Creek serpentinite was emplaced early in the deformational history, was serpentinitized at least locally before the regional foliation formed, and then was deserpentinized, multiply deformed, and metamorphosed under amphibolite facies conditions with the country rock. Late in its history, it was reserpentinized.

During my work on the Portoro Limestone, I have become very interested in the formation of marbles during deformation. This fine-grained, black limestone becomes a coarser-grained, white marble in high-strain shear zones.

I am currently investigating the process by which these changes take place. I also intend to study the interaction between pressure solution and recrystallization during the syndeformational formation of marble using the Luano marble from the Apuane Alps of northern Italy. In the Llano Uplift, my future research will focus on the western uplift and the tectonic history of the string of serpentinite bodies that appear to mark a relict suture. These smaller bodies show the complex history affecting the serpentinites and may well provide the key to understanding the nature of the Grenville orogeny in Texas.

*Selected Publications:*

- Mosher, S., 1987, Strain, shape factor, and volume loss: effects of pressure solution on strain measurements for conglomerates: *Journal of Structural Geology*, v. 9, no. 2, p. 221-232.
- Bristol, D. A. Mosher, S., 1989, Structural evolution of mid-Proterozoic basement in the northwest Van Horn Mountains, Trans-Pecos, Texas: *Journal of Geology*, v. 97, p. 25-43.
- Snoke, A. W., and Mosher, S., 1989, The Alleghanian orogeny-eastern Appalachians, in: Hatcher, R. D., Viele, G. W., and Thomas, W. A. (eds.), *The Appalachian/Ouachita Regions, US: Geology of North America (DNAG) volume F-2*, Geological Society of America, p. 288-314.



## *Regional tectonics of North and Central America*

**William R. Muehlberger**

Professor and Peter T. Flawn Centennial Chair,  
PhD—1954, California Institute of Technology

I have been involved in projects and problems that are involved in understanding the tectonics of a region. Recently, an area of major effort has been Trans-Pecos Texas and adjoining regions of Mexico. The Late Paleozoic Marathon (Ouachita) thrust belt is now being reassembled via detailed field work, down-plunge projection of structures, and distinguishing between small-scale structures that are synsedimentary versus those that are tectonically related. The southern domain has yet to be analyzed. Big Bend National Park and vicinity have a wide diversity of structures and only in the past few years have we recognized that Laramide and Rio Grande Rift structures are superposed and have opposite slip senses along the prominent north-, northwest-, and west-trending major faults. The Chihuahua tectonic belt, which lies in Mexico adjacent to the Rio Grande, is a Laramide overthrust belt that is floored by evaporites and is broken by the older grain so visible in Texas. The amount of shortening is unknown because virtually the entire belt and the degree of wrench-fault tectonics are yet to be unravelled.

Chiapas, in southern Mexico, has a mix of folding (probably all evaporite-based) and strike-slip faulting with the generation of pull-apart basins whose stratigraphy records the history of movement and formation of the basins. The Ixtapa Basin is currently under study.

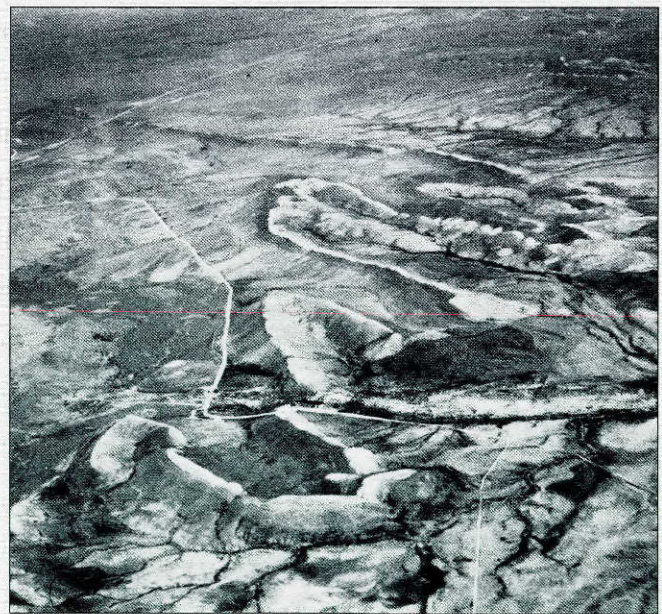
The Guayape fault strikes northeast across Honduras from the Pacific to the Caribbean. A reconnaissance study suggests major left-lateral offset based on major river alignments, but detailed work in the Catacamas Valley segment shows that the present motion must be right slip. Further detailed field studies are needed to solve this important fault that transects the entire Chortis Block of Central America.

I am also compiling a 1:5,000,000-scale Tectonic Map of North America. The southern sheet (which includes everything south of Canada as well as a strip across southern Canada) is going to press in August 1990. The northern sheet will follow as fast as final compilation permits.

I continue my lecturing on tectonics to new astronaut groups as part of their basic training to familiarize them with the earth so that they can record their observations after they launch. This activity includes an intensive field trip in northern New Mexico, an area that I have worked in for many years. In addition, I give a tectonic briefing to each Shuttle crew before it goes.

### *Selected Publications:*

- Hennings, P. H., Dyer, J. R., and Muehlberger, W. R., 1989, Laramide development of the eastern Chihuahua tectonic belt: west Texas and northeast Chihuahua, Mexico, *in*: Muehlberger, W. R., and Dickerson, P. W. (eds.), *Structure and Stratigraphy of Trans-Pecos Texas, Field Trip Guidebook T317, 28th International Geological Congress*, Washington, D.C., p. 71-84.
- Muehlberger, W. R., and Dickerson, P. W., 1989, A tectonic history of Trans-Pecos Texas, *in*: Muehlberger, W. R., and Dickerson, P. W. (eds.), *Structure and Stratigraphy of Trans-Pecos Texas, Field Trip Guidebook T317, 28th International Geological Congress*, Washington, D.C., p. 35-54.
- Muehlberger, W. R., and Tauvers, P. R., 1989, Marathon fold-thrust belt, west Texas, *in*: Hatcher, R. D., Jr., Thomas, W. A., and Viele, G. W. (eds.), *The Geology of North America, Volume F-2, The Appalachian-Ouachita Orogen in the United States*, Geological Society of America, p. 673-680.



View northeast at Fort Peña Colorada, near Marathon, Texas.  
Folded white layers are the Devonian Novaculite.



*Lunar, planetary, and terrestrial seismology; solar system studies*

**Yosio Nakamura**

Professor and Senior Research Scientist,  
PhD—1963, Pennsylvania State University

Application of physics to the study of the Earth, the terrestrial planets, and the solar system is my main research interest. In particular, my research activity is primarily on those topics where seismological methods are used in deciphering the structure and dynamics of these objects. Detailed knowledge of planetary and interplanetary objects based on solid experimental studies leads to a better understanding of the origin and evolution of the solar system. In addition to supervising graduate students, I have taught, for the last several years, an upper undergraduate course of exploration geophysics for geology majors. In this course, I emphasized quantitative treatment of geological subjects based on physical principles.

I have had a leading role in analysis of the seismic data acquired by the network of seismic stations established on the Moon during the Apollo project. Contrary to pre-Apollo expectations, we detected more than 12,000 moonquake events during the eight years of network operation. The majority of these events were very weak, deep moonquakes caused by tidal effects of the Earth and the Sun and occurring at depth about half way to the center of the Moon. However, a small number of shallow moonquakes of unexpectedly large magnitudes were also observed, indicating the tectonically active nature of the present-day lunar interior. From the propagation of seismic signals, we have derived the structure throughout the lunar interior. We have found that the moon has a crust, a mantle consisting of a nearly 1000-km-thick lithosphere and possibly partially molten asthenosphere, and a possible metallic core no greater than about 350 km in radius. Impacts of meteoroids as detected by the lunar seismic network also give us clues as to the nature of small interplanetary objects in orbits crossing that of the Earth-Moon system. Small fragments of cometary objects as well as large fragments interpreted to be of asteroidal origin have been identified. Many of these objects form streams and swarms, suggesting relatively recent break-up from their parent bodies.

More recently, I have been involved in acquisition of seismic data from the deep-sea floor using ocean-bottom seismographs (OBSs). Observations on the sea floor, some in three components of ground motion, provide deep crustal information unobtainable by conventional multichannel seismic surveys, and uncover micro-earthquakes too small and too far away to be detectable from land seismic stations. In the past several years, we have collected and analyzed large-offset seismic refraction/reflection data in the Gulf of Mexico, New Hebrides, Bonin Arc, Gulf of Alaska, and

offshore Oregon, and micro-earthquake data in New Hebrides. Some of these projects were in cooperation with other organizations including Rice University, Oregon State University, and ORSTOM of France.

I am also involved in planning of future geophysical exploration of the Moon and Mars. Current plans include a Japanese effort to deploy seismometers on the lunar surface using penetrators, and US efforts to establish a manned outpost on the Moon and to set up a geoscience network on Mars. These projects are now planned for the later part of this decade.

*Selected Publications:*

- Nakamura, Y., 1983, Seismic velocity structure of the lunar mantle: *Journal of Geophysical Research*, v. 88, no. B1, p. 677-686.
- Oberst, J., and Nakamura, Y., 1987, Distinct meteoroid families identified on the lunar seismograms: *Proceedings of the 17th Lunar and Planetary Science Conference, Journal of Geophysical Research*, v. 92, no. B4, p. E769-E773.
- Ebeniro, J. O., Nakamura, Y., Sawyer, D. S., and O'Brien, W. P., 1988, Sedimentary and crustal structure of the northwestern Gulf of Mexico: *Journal of Geophysical Research*, v. 93, no. B8, p. 9075-9092.



*Vertebrate paleontology; phylogenetic systematics; developmental biology; computer graphics*

**Timothy Rowe**

Assistant Professor, PhD—1986, University of California at Berkeley

Vertebrate paleontology is a diverse field and many of its different facets have captured my interest. I am primarily a systematist and my major research focus has been to understand, first, the pattern of relationship among vertebrates and, second, what that pattern reveals about the evolutionary processes that have shaped vertebrate history. Much of my research has explored theoretical issues in systematics by applying them to practical problems, primarily in the evolutionary history of dinosaurs and birds, the early history of mammals, and the higher-level classification of tetrapods.

I teach a freshman course, The Age of Dinosaurs, that introduces the fundamentals of paleontology and natural history using contemporary scientific and popular controversies in our understanding of dinosaurs. I also teach an advanced undergraduate course, Development and Evolution of the Vertebrate Skeleton, for students interested in vertebrate paleontology. My graduate courses are for students specializing in paleobiology and vertebrate history. They include an intensive course on paleontology of the "lower" vertebrates and a graduate seminar on systematics which explores recent developments in systematics. Both teaching and research take me into the field as well as the laboratory.

My current research focusses on evolution of the tetrapod skeleton, combining data from fossils with data from the developmental biology of living tetrapods. I am especially interested in living birds and mammals, and in the rich fossil sequences in Africa, the Soviet Union, South America, and North America that include the relatives of mammals among the extinct cynodonts, and the relatives of birds among the extinct theropod dinosaurs. By studying how the skeleton develops during growth in these living animals, we can reach a deeper understanding of how it functioned and evolved in their extinct relatives. For example, paleontologists long believed that the transition from reptilian posture, which involves support by all four limbs, to avian posture, which involves only the hindlimbs, was a very complex series of transformations. However, by studying development of the musculoskeletal system in modern birds, I was able to learn that the seemingly profound transformation involved rather simple regulation of early developmental processes, and that nearly all of the evolutionary transformations are recapitulated in avian development. Fossils offer unique insights into the organization of living animals and into the developmental processes regulating their skeletal growth. For instance, by studying the hands of avian relatives among the extinct theropod dinosaurs, we have been able to sort out most details of organization of the avian hand.

To facilitate my research on tetrapod evolution, I am also involved in research on computer visualization. We now have the capacity to "capture" images of complex biological structures with computers, to then manipulate these images for measurement and reconstruction, and to share huge quantities of visual data in digital form. I am now exploring the use of Compact Disc, or CD-ROM, for storage and manipulation of image data. This is tied to a field project in West Texas that explores Late Cretaceous vertebrate communities. The fossils collected in that project, as well as material from my other research, form the data base used to develop and test computer-imaging techniques.

*Selected Publications:*

- Gauthier, J., Kluge, A. G., and Rowe, T., 1988, Amniote phylogeny and the importance of fossils: *Cladistics*, v. 4, p. 105-209.
- Rowe, T., 1988, Definition, diagnosis, and origin of Mammalia: *Journal of Vertebrate Paleontology*, v. 8, no. 3, p. 241-264.
- Donoghue, M. J., Doyle, J., Gauthier, J. A., Kluge, A. G., and Rowe, T., 1989, Importance of fossils in phylogeny reconstruction: *Annual Review of Ecology and Systematics*, v. 20, p. 431-460.
- Rowe, T., and Gauthier, J., Ceratopsia, in: Weishampel, D., Osmolska, H. H., and Dodson, P. (eds.), *The Dinosauria*. Los Angeles, University of California Press, 60 p. (in press).



Tim Rowe (right) and Rich Cifelli (left, University of Oklahoma) collect a femur of the large hadrosaurian dinosaur *Kritosaurus* (photo by Steve Trimble).



### *Earthquake Seismology*

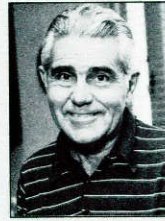
**Toshimatsu Matsumoto**

Professor,  
PhD—1961, Tokyo University

My recent research activity is centered in the study of microearthquakes observed from high-gain networks installed in Costa Rica, Guatemala, the Dominican Republic, and Ecuador. These networks were originally installed to assess the seismic risks associated with hydroelectric projects, but they are providing valuable data bases for detailed analysis of local and regional seismotectonic interpretation.

#### *Selected Publications:*

- Ohtake, M., Matsumoto, T., and Latham, G. V., 1980, Evolution of the prediction of the 1978 Oaxaca, southern Mexico, earthquakes based on the seismicity gap: *Earthquake Prediction, Maurice Ewing Series, Vol. 4, American Geophysical Union.*
- Matsumoto, T., Ohtake, M., Latham, G. V., and Uman, J., 1977, Crustal structure in southern Central America: *Seismological Society of America Bulletin*, v. 67, p. 121-133.
- Matsumoto, T., Terashima, T., Perez, M., Luciano, F., and Sanchez, J., Induced seismicity observed in the vicinity of Tavera Reservoir, Dominican Republic: *Seismological Society of America Bulletin.*
- Ohtake, M., Matsumoto, T., and Latham, G. V., 1977, Seismicity gap near Oaxaca, southern Mexico, as a probable precursor to a large earthquake: *Pageophysics*, v. 115, p. 375-385.
- Matsumoto, T., and Latham, G. V., 1976, Aftershocks of the Guatemalan earthquake of February 4, 1976: *Geophysical Research Letters*, v. 3, p. 599-602.



### *Geology of the Gulf of Mexico and Caribbean*

**Amos Salvador**

Morgan J. Davis Professor in  
Petroleum Geology,  
PhD —1950, Stanford University

A major thrust of my research is the reconstruction of the geologic evolution of the Gulf of Mexico Basin and the Caribbean area by means of detailed paleogeographic/facies maps of intervals of time as small as the available information allows. The paleogeographic reconstruction will be made in two sets of maps, one depicting present geologic position and the other following selected reconstructions of land and sea areas. The first set of maps will be used as an inventory of information—lithologic composition, thickness, environment of deposition, record of intrusive and extrusive igneous activity, evidence, nature and extent of discontinuities in the stratigraphic record, etc. The second set of maps will be used to test the proposed reconstructions of the historical evolution of the Gulf of Mexico Basin and the Caribbean area. If the assembled paleogeographic/facies data do not fit the reconstruction, the evolutionary model will have to be changed to fit the basic geological evidence.

A second field of research interest involves the development of principles and procedures of stratigraphic classification and nomenclature. As chairman of the International Subcommittee of Stratigraphic Classification of the IUGS International Commission on Stratigraphy, I am working on the revision of the International Stratigraphic Guide (1976).

#### *Selected Publications:*

- Salvador, A., 1985, Chronostratigraphic and geochronometric scales in COSUNA Stratigraphic Correlation Charts of the United States: *Bulletin of the American Association of Petroleum Geologists*, v. 69, p. 181-189.
- Salvador, A. (as Chairman of International Submission on Stratigraphic Classification), 1987, Unconformity-bounded Stratigraphic Units: *Geological Society of America Bulletin*, v. 98, p. 232-237.
- Salvador, A., 1987, Late Triassic-Jurassic paleogeography and origin of the Gulf of Mexico Basin: *Bulletin of the American Association of Petroleum Geologists*, v. 71, p. 419-451.
- Salvador, A. (as Chairman of International Subcommittee on Stratigraphic Classification), 1987, Stratigraphic classification and nomenclature of igneous and metamorphic rock bodies: *Geological Society of America Bulletin*, v. 99, p. 440-442.



### *Marine Geophysics*

**John G. Sclater**

Shell Companies

Foundation Distinguished  
Chair in Geophysics,

PhD—1962, University of Cambridge

Areas of current interest include modeling of deformation by block faulting, the neotectonics of the Gulf of California, the application of geoid anomalies to determining the tectonic history of the ocean floor, and an analysis of the relations between heat flow and age and depth and age in the Pacific and Atlantic oceans.

#### *Selected Publications:*

Renkin, M. L., and Sclater, J. G., 1988, Depth and age in the North Pacific: *Journal of Geophysical Research*, v. 93, no. B4, p. 2919–2935.

Kautz, S. A., and Sclater, J. G., 1988, Internal deformation in clay models of extension by block faulting: *Tectonics*, v. 7, no. 4, p. 823–832.



### *Marine Seismology*

**Paul L. Stoffa**

Wallace E. Pratt Professor in  
Geophysics, PhD—1974,  
Columbia University

Answers to many complex geologic problems often can be obtained from seismic measurements. Understanding tectonic processes at both active and passive rifted continental margins requires knowledge of their deep geological structure. Research has been focussed on developing new seismic-data acquisition and -processing methods that can be used to address these and other specific geologic problems; for example, mapping the transition from continental to oceanic crust requires the ability to probe beneath large accumulations of sediment to depths often in excess of 15 to 20 km. A seismic survey was conducted in the summer of 1988 using a long towed array of 6.0 km and a powerful source array of over 10,800 cu. in. The objective was to penetrate the entire sedimentary section in the Carolina Trough off the east coast of the United States. Seismic reflections from two-way times of 12 seconds and greater were recorded and imaged at a location that is coincident with the Brunswick Magnetic Anomaly. In another program offshore of Japan, two ships were employed to acquire high-resolution expanding-spread and split-spread seismic profiles using a high-frequency watergun as a seismic source. These data were transformed to the t-p domain and analyzed to provide detailed velocity-depth information for this active margin. Offshore of Costa Rica a 3-D survey and 96-channel seismic data were successfully acquired. Processing of this data has recently been completed using The University of Texas Cray X-MP/24. In support of these projects, 2-D and 3-D pre- and post-stack migration methods have been developed that account for vertical and lateral velocity variations. Also, programs for interactive velocity analysis in the t-p domain for 1-D and 2-D structures using workstation technology have been developed and are being used in the interpretation of the seismic data acquired in these programs.

#### *Selected Publications:*

Stoffa, P. L., Fokkema, J. T., Luna Freire, R. de, and Kessinger, W., 1990, Split-step Fourier migration: *Geophysics*, v. 55, no. 4, p. 410–421.

Stoffa, P. L. (ed.), 1989, *Tau-p: A Plane-Wave Approach to the Analysis of Seismic Data*: Kluwer Academic Publishers Group, Dordrecht, The Netherlands.

LASE Study Group, 1986, Deep structure of the U.S. East Coast passive margin from the Large-Aperture Seismic Experiment (LASE): *Marine and Petroleum Geology*, v. 3, p. 234–242.





*Hydrogeology; alluvial aquifers; regional studies; energy transport in porous media; basin analysis*

**John M. (Jack) Sharp, Jr.**

Gulf Oil Foundation Centennial Professor, PhD—1974, University of Illinois

I have organized and spearheaded the hydrogeology program in Geological Sciences at the University of Texas. In 1989 I was joined by Dr. Philip Bennett in the teaching of hydrogeology courses. This is an innovative program, concentrating on the regional aquifers of south-central and Trans-Pecos Texas, transport phenomena, and paleo-hydrogeology of and subsidence problems in the Texas Gulf Coast. Undergraduate and graduate geology students concerned with water-quality problems, water resources, and the applications of geology to hydrology have been drawn to this program, as well as graduate students from Civil Engineering, Petroleum Engineering, Geography, and Urban Planning. The program includes laboratory, theoretical, and field studies.

I am an active member of the American Institute of Hydrology, the International Association of Hydrogeologists, and the Hydrogeology Division of the Geological Society of America, presently holding administrative positions in all three organizations. I won the GSA O.E. Meinzer Award in 1979 for outstanding contributions to hydrogeology, and have twice been a Humboldt Fellow in West Germany. I am associate editor of the *Geological Society of America Bulletin* and of *Hydrological Science and Technology*.

Along with my graduate students, I am presently working with the Lower Colorado River Authority to evaluate the underflow criterion and its applicability to Texas water-resources management, to provide us with a computer model of regional groundwater flow, and to evaluate stream-flow depletion caused by pumping of alluvial groundwater. We are also evaluating the hydraulic properties of reclaimed lignite mines, which may have relevance to the mining of river-basin lignite sources. This research concentrates on the use of vertical electrical soundings for indirect parameter evaluation. An exciting new research initiative involves determining how weathering alters rock permeability in the outcrop and along fracture surfaces. Our findings suggest that weathering retards fracture/matrix water transfer and increases infiltration rates. This is an important factor in determining suitability of sites for waste disposal, but is basically unquantified to date.

Other ongoing studies involve heat flow in sedimentary basins, satellite-system applications (synthetic aperture radar and global positioning systems) to regional subsidence, and predicting the effects of aerosols on groundwater quality. The aerosol study uses a composite model (atmosphere/

unsaturated zone/saturated zone) to ascertain under what conditions aerosols may contaminate ground-water systems. Regional hydrogeologic studies of Trans-Pecos Texas and the Edwards aquifer are also in progress. The Trans-Pecos projects cover the Presidio Bolson, the Davis Mountains, and the Marfa/Lobo Flat areas. A preliminary investigation involves predicting the effects of global climatic changes on ground waters and coastal regions.

*Selected Publications:*

Sharp, J. M., Jr., 1988, Alluvial aquifers along major rivers: *The Geology of North America*, Geological Society of America, Boulder, Col., v. 0-2, ch. 35, p. 273-282.

Sharp, J. M., Jr., and others, 1988, Diagenetic Processes in Northwest Gulf of Mexico Sediments, in: *Diagenesis II*, Elsevier Science Publishers, p. 43-113.

McBride, E. F., and Sharp, J. M., Jr., 1989, Sedimentary petrology: a guide to paleohydrogeologic analyses, example of sandstones from the northwest Gulf of Mexico: *Journal of Hydrology*, v. 108, p. 367-386.



## *Igneous and metamorphic petrology; geochemistry; mantle processes*

### **Douglas Smith**

Albert W. and Alice M. Weeks Centennial Professor,  
PhD—1969, California Institute of Technology

I teach a variety of courses, covering a range of topics including introductory geology, igneous rocks, minerals, geochemistry, and earth dynamics. This last year I taught undergraduate courses in mineralogy and in igneous petrology plus geochemistry. In addition, Steve Grand and I cotaught a course titled Theories of the Earth, in which we discussed the internal structure and evolution of our planet; we explored topics that required integration of seismology and petrology, as well as some topics new to us both, and we hope that the students learned as much as we did. In some years, I also teach graduate courses in igneous petrology, analytical techniques in geochemistry, and thermodynamics of geologic systems. Last winter I finished a three-year period as graduate adviser, learning about the administrative labyrinth associated with a large graduate program.

My research has concentrated upon processes in the lower crust and upper mantle. One goal is to understand how the tectonics of the crust are related to events at depth. Parts of the research are based upon chemical study of melts and of xenoliths brought up in them. Samples have been analyzed from southern Africa and from the southwestern US, particularly from on and near the margins of the Colorado Plateau. The research has been enhanced by the opportunity to collaborate with W. L. Griffin, in the exploration geoscience group of CSIRO in Australia. In Griffin's lab we have made proton-microprobe (PIXE) measurements of trace-element abundances in minerals of mantle peridotite. The proton microprobe permits precise and accurate analyses of elements such as Sr, Zr, Y, Ni, and Ga at concentrations as low as a few parts per million. The roots of the continents extend down into the mantle, and these roots contain peridotite depleted by extraction of melts. The trace elements preserve remarkable records of recent enrichment processes in these mantle rocks; these elements document how the roots of the continents are affected as melts from the dynamic mantle below percolate up into the continental lithosphere.

We have been particularly interested in the evolution of continental roots below the western US, as we want to investigate why provinces such as the Basin and Range and the Colorado Plateau have contrasting tectonic histories. Collaboration with former graduate students, including J. Manchester, M. Roden, and G. N. Tyner, has been a necessary and delightful part of the work. We have found old, dense lower crust and uppermost mantle in the transition between the Colorado Plateau and Basin and Range. The Colorado Plateau itself appears to have been underlain by an old, cold root that extended to about 130 km depth in mid-Cenozoic time. Our findings constrain hypotheses

about the position of the subducted Farallon plate (never "very" shallow) and about the mechanical responses of uppermost mantle and lower crust to subduction (at least some was not displaced).

Some future research will be in directions dictated by recent findings about mantle xenoliths and melts. In order to interpret records preserved in minerals, it is critical to understand how fast minerals respond to changes in pressure and temperature and to infiltration of melt. We will investigate kinetics of minerals in peridotites and eclogites by combining compositional measurements with textural observations. As the kinetic responses of minerals are better understood, we will be able to refine our estimates of the pressures and temperatures recorded in rocks from the lower crust and underlying mantle. In addition, investigations of igneous rocks erupted in different tectonic settings allow us to test ideas about the sources of magmas. A current graduate student, L. Davis, has embarked on a study of Cenozoic intrusive rocks in southeastern Colorado, at the extreme edge of magmatism possibly related to subduction of the Farallon plate. Her study and similar efforts will be important for reconstructions of the interplay between subducted slabs, continental roots, tectonics, and magmatism.

#### *Selected Publications:*

- Smith, D., 1988, Implications of zoned garnets for the compositional evolution of sheared lherzolites: examples from northern Lesotho and the Colorado Plateau: *Journal of Geophysical Research*, v. 93, p. 4895-4905.
- Griffin, W. L., Smith, D., Boyd, F. R., Cousens, D. R., Ryan, C. G., Sie, S. H., and Suter, G. F., 1989, Trace-element zoning in garnets from sheared mantle xenoliths: *Geochimica et Cosmochimica Acta*, v. 53, p. 561-567.
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## *Invertebrate paleontology; Paleozoic echinoderms; evolutionary history*

### **James Sprinkle**

First Mr. and Mrs. Charles E. Yager Professor,  
PhD—1971, Harvard University

I am a paleontologist, interested primarily in Paleozoic invertebrates and specializing in fossil echinoderms. Most of my work involves interpreting the preserved morphology of extinct echinoderm groups such as blastoids, rhombiferans, stylophorans, and edrioasteroids, and then reconstructing their evolutionary history, paleoecology, and stratigraphic range. I teach a variety of paleontological and soft-rock geology courses, including the junior-level Paleobiology (GEO 422K) each fall and the freshman Plate Tectonics and Earth History (GEO 404C) each spring. I also teach several graduate seminars and a paleontological techniques course on a rotating basis, and usually teach two to three weeks of the Senior Field Course (GEO 660) during the summer.

I am now finishing the first year of an NSF Research Grant to study Early Ordovician echinoderms from the Rocky Mountains. Previously, the Early Ordovician had been a "gap" in our knowledge of echinoderms, with very few forms described from anywhere in North America, in contrast to Europe where Early Ordovician echinoderms are much better known. I spent five weeks last summer searching for echinoderms of this age in various parts of the Rockies, and discovered that Early Ordovician echinoderms are more widespread and common than previously suspected. I have several new and unusual echinoderms from this collecting that seem ancestral to Middle Ordovician echinoderms from the Rockies and elsewhere. For echinoderms, the "Ordovician Radiation" had already begun by the Early Ordovician, based on this new collecting.

I have several other projects in various states of completion on Cambrian, Ordovician, Mississippian, and Pennsylvanian echinoderms. I have a symposium paper in press with Plenum Publishers on the Early and Middle Cambrian radiation of echinoderms, and another project in the works describing several new Middle Cambrian eocrinoids from the Rocky Mountains. Gordon Bell, Jr., a UT vertebrate paleontology graduate student, and I have two papers planned on Late Cambrian and Middle Ordovician echinoderm faunas from northern Alabama that we collected in the early 1980s. I now have a large joint manuscript with Raymond C. Gutschick on Early Mississippian blastoids from Montana in press as a bulletin from the Museum of Comparative Zoology, Harvard University, that should be out this summer. Finally, Colin Sumrall, a new UT graduate student, and I have submitted an abstract on designs in Late Paleozoic edrioasteroids for the GSA Annual Meeting this fall.

Several other graduate students are working under my supervision on projects related to my research or teaching

interests. Ronald Johns is now working on a PhD dissertation on several Early and Middle Ordovician sponge bed and mound communities in Nevada and Utah at localities where I have described or am now studying the echinoderm faunas. John Huelsenbeck is working on a Master's thesis on the phylogeny of oysters based in part on abundant Cretaceous specimens from localities in central Texas that we visit on one of our Paleobiology field trips. Finally, Ann Molineux has just started a PhD dissertation interpreting the depositional environments and paleoecology of several Pennsylvanian plant-bearing localities in north-central Texas that we visit on our second Paleobiology field trip.

#### *Selected Publications:*

- Sprinkle, J., and Kier, P. M., 1987, Chapter 18: Echinodermata, *in*: Boardman, R. S., Cheetham, A. H., and Rowell, A. J. (eds.), *Fossil Invertebrates*, Blackwell Scientific Publishers, Palo Alto, Calif., p. 550-611.
- Sprinkle, J., 1989, Origin of the echinoderm class Rhombifera based on new Early Ordovician discoveries from the Rocky Mountains: *Geological Society of America Abstracts with Programs*, v. 21, no. 6, p. A114.
- Sprinkle, J., and Gutschick, R. C., 1990, Early Mississippian blastoids from western Montana: *Harvard University Museum of Comparative Zoology Bulletin*, v. 152, no. 3, p. 89-166 (in press).



## *Tectonics and geochronology*

### **Nicholas Walker**

Assistant Professor and John A. and Katherine G. Jackson Centennial Teaching Fellow, PhD—1986, University of California at Santa Barbara

My research integrates U-Pb geochronometric, structural, and petrologic investigations in order to decipher the evolution of ancient convergent margin systems. I have concentrated such efforts most recently on orogenic belts in northeastern Oregon, northwestern Washington state, and in central Texas.

My undergraduate course offerings have included courses in petrology, plate tectonics, mineralogy, and optical mineralogy. At the graduate level I teach a course in regional tectonics, and recently taught a course titled "Methods of Geochronology" in which participants received hands-on training in the preparation of rock and mineral samples for isotopic analysis, element separation techniques, solid-source mass spectrometry, and data reduction and interpretation.

Part of my current research focusses on the timing, mechanics, and processes of mid-Cretaceous orogenesis recorded in the crystalline core of the North Cascades. At issue is whether the profound deformation, metamorphism via crustal thickening, and plutonism within the crystalline core are primarily the products of: 1) crustal contraction and consequent stacking of west-directed thrust sheets approximately 100 - 84 Ma ago in response to collision of Wrangellia with North America or; 2) synchronous transpressive deformation, metamorphism, and arc magmatism in a NNW-oriented convergent margin system. In a recently completed NSF-supported investigation, the focus was on kinematic analysis of the metamorphic fabric and U-Pb geochronometry of plutons bearing syn- and post-kinematic intrusive relationships relative to the metamorphic fabric. In the western core, schists and gneisses which host the plutons contain abundant evidence for N-NNW-oriented syn-metamorphic dextral shear along a steeply dipping regional foliation. Zircon U-Pb ages indicate that plutonism was chiefly a syn-orogenic process and that metamorphism and fabric development commenced ~96 Ma, were locally coincident with emplacement of 96 - 90 Ma plutons, and waned by ~85 Ma. Thus a purely contractional orogenic model is incompatible with the orientation and kinematic significance of the metamorphic fabric, and the spatial and temporal coincidence of plutonism with the peak of metamorphism eliminates a thrust-related anatectic cause for pluton generation.

At this stage of inquiry into North Cascade orogenesis, the cause of crustal thickening is *the* critical problem. Solution of this problem, which is within grasp through application of current geochronometric, structural, and petrologic tools, is relevant to understanding the genesis of the entire mid-Cretaceous Coast Plutonic Complex that stretches from the North Cascades into southeast Alaska. A recently awarded NSF grant will sustain the type of inves-

tigations described above and will test 'magmatic accretion' as a cause of crustal thickening. The overall goal of this research is to build an integrated geologic framework from which a broad understanding of orogenic mechanisms in deep-seated crystalline belts will be gained.

In other current research, co-investigators Bill Carlson and Sharon Mosher and I are completing a NSF-supported study of Proterozoic rocks in the Llano Uplift of central Texas. The project emphasizes the integration of U-Pb geochronometry with structural mapping and petrological/geochemical analysis of metamorphic and igneous rocks in order to understand the Proterozoic evolution of the southern margin of North America. Our results require revision of previously accepted age and stratigraphic relationships among the metamorphic units within the Uplift and demonstrate a more complex history of deformation, metamorphism, and plutonism than was previously recognized. Our interim findings suggest the following synopsis of the Proterozoic evolution of the Uplift. Igneous rocks possessing emplacement ages from ~1305 to 1230 Ma and their metasedimentary envelopes were assembled, multiply deformed, and metamorphosed in the interval 1230-1120 Ma. This crust was perforated and reheated by post-tectonic granitic plutons ca. 1120-1090 Ma, which induced static overprinting of earlier metamorphic assemblages. Such a temporal evolution is broadly similar to patterns observed in other North American Grenville-age rocks. A major question that remains to be solved in the Llano Uplift is the nature of the contacts (tectonic?) between the principal metamorphic units.

#### *Selected Publications:*

- May, D. J., and Walker, N. W., 1989, Late Cretaceous juxtaposition of metamorphic terranes in the southeastern San Gabriel Mountains, California: *Geological Society of America Bulletin*, v. 101, no. 10, p. 1246-1267
- Walker, Nicholas W., and Brown, Edwin H., 1990, Zircon geochronometry of mid-Cretaceous plutonic rocks of the western crystalline core, North Cascades, Washington: implications for timing and nature of orogenesis: *Geological Association of Canada Abstracts with Programs*, v. 15, p. A137.
- Walker, N. W., Tectonic implications of U-Pb zircon ages of the Canyon Mountain Complex, Sparta Complex, and other meta-plutonic rocks of the Baker Terrane, northeastern Oregon: *US Geological Survey Professional Paper No. 1439* (in press).



## *Geodesy and geophysics*

**Clark R. Wilson**

Professor and Shell Companies Foundation Centennial Teaching Fellow,  
PhD—1975, Scripps Institution of Oceanography, University of  
California at San Diego

My recent research activities have been concerned with problems in geodesy (the science of measuring the shape, gravity field, and rotational variations of the Earth), with other geophysical studies such as seismology and with data-processing methods which are common to all geophysical investigations. In geodetic studies, I have been searching for the causes of changes in the speed of rotation (the length of the day), and movement of the rotation axis within the Earth (polar motion or wobble), both of which show fluctuations over time scales ranging from days to centuries. Because a principal cause of these rotational changes is the redistribution of mass and angular momentum among the Earth and its enveloping fluids, this geodetic work has progressed into broader studies including climatology and hydrology. In seismology, I have worked on problems of inferring the physical properties of the Earth from seismic data. My teaching activities include a graduate course in time-series analysis methods, another in geodesy, and undergraduate courses in exploration and global geophysics.

In recent work into the causes of polar motion, my students and I undertook a study of time variations in the distribution of water over all river basins of the world between January 1900 and December 1985. With support from the NASA Crustal Dynamics Project, we digitized the world's river basins, compiled simple physiographic data on each basin, and integrated these data with monthly average weather observations recorded at thousands of stations around the world during this century. One important result was the finding that annual polar motion could not be accounted for by the combination of terrestrial water mass and air mass redistribution, implying that other seasonal mass motion, probably in the oceans, is the cause. Another significant discovery was that the exchange of water between continents and oceans appears to be responsible for observed polar motion over time scales of decades. This means that on these time scales, the position of the rotation axis may provide a sensitive measure of global climate change.

One approach to the inference of physical properties of the Earth from seismic data is to refine an existing model until synthetic seismograms calculated from the refined model agree with the recorded wave field. This approach to inversion is widely being studied to address both applied and fundamental problems. I have collaborated with colleagues in the Department in the development of algorithms to calculate plane-wave synthetic seismograms which correctly include the effects of finite-receiver array aperture. This work has been supported by the oil and service companies which sponsor Project SEER within the Department. The effects of finite aperture are present in observed seismograms when working with their plane-wave representation. These effects can now be explicitly

accounted for so that a proper quantitative comparison between synthetic and observed plane-wave seismograms can be made in the inversion process.

My interests in geodesy and geophysics have also been pursued through my membership in other campus research organizations outside the Department, including the Center for Space Research (CSR) and the Institute for Geophysics. The focus of work at CSR is the use of satellites to study the Earth. Along with my students, I have been studying time variations in the gravity field of the Earth due to air and water mass redistribution, as determined from satellite laser ranging data. This has been a natural complement to the investigations of Earth rotational variations which are also forced by mass redistribution. Other research areas in which I have begun work include the study of satellite altimetric data to observe ocean mass redistribution, and the use of the Global Positioning System (GPS) to observe tectonic motion. I expect that, with the support of the already strong program within CSR, GPS observations will become a standard tool in tectonic and other studies in the Department of Geological Sciences over the next few years.

### *Selected Publications:*

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- Gutierrez, R. and Wilson, C., 1987, Seasonal air and water mass redistribution effects on LAGEOS and Starlette: *Geophysical Research Letters*, v. 14, no. 9, p. 929-932.
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### ***Paleomagnetism***

**Wulf A. Gose**

Research Scientist and Senior Lecturer,  
PhD—1970, Southern Methodist University

My research interests include paleomagnetism, the tectonic evolution of Middle America, the Gulf of Mexico, and the Caribbean area, magnetostratigraphy, and salt dynamics.

The tectonic evolution of the Caribbean Basin is still poorly understood. Paleomagnetic data could, in principle, provide a critical data base for evaluating tectonic models, but many of the earlier data are of insufficient quality to be useful. My current research focusses on the southern Caribbean plate boundary zone with the aim to use paleomagnetic data to detail the timing and mechanism of deformation in this shear zone.

Magnetostratigraphic studies form another major line of research and have been utilized to clarify some long-standing stratigraphic problems in Honduras, to date mammal-fossil-bearing strata as well as the time of mineralization of Mississippi Valley-type ore deposits, and to identify the Cretaceous-Tertiary boundary. Recently we succeeded in obtaining a magnetic-reversal sequence from the anhydrite cap rock of a salt dome. We were able, for the first time, to directly date the time of cap-rock accumulation and calculate growth rates.

#### *Selected Publications:*

Perarnau, A., Castillo, J. and Gose, W. A., 1988, Paleomagnetismo de unidades del Cretáceo en Los Andes y la Serranía de Perijá: implicaciones tectónicas: *Memorias, IV Congreso Venezolano de Geofísica*, p. 399-405.

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### ***Geochronology and isotope geochemistry of continental arc magmatism***

**Fred W. McDowell**

Research Scientist and Senior Lecturer;  
PhD—1966, Columbia University

For the past few years I have been using K-Ar and U-Pb dating to investigate the history of magmatism across Sonora and Chihuahua, Mexico. Between 100 and 10 Ma, a long interval of plate convergence along the western margin of North America was followed by a transition to a period of strike-slip. Continental deformation included Laramide compression followed by Basin and Range extension. In Mexico

the igneous rocks of this time interval are distributed in a regular belt that is parallel to the plate margin and that has been little affected by post-emplacement tectonism across much of its width. Geochronology for a coherent suite of rocks across this belt should provide a basis to examine the relationship between magmatic and tectonic patterns. Although many measurements remain to be made, it is already apparent that magmatism did not simply migrate smoothly across the region in response to changing rates of plate convergence, as has been suggested in the most popular models. Rather, there seem to have been brief intervals of intense magmatism separated by periods when activity was subdued. The most voluminous period occurred during the mid-Tertiary, when plate convergence was waning or possibly had already terminated. A subsequent stage of this research will involve investigation of isotopic variations within the same rock suite, so that we can begin to examine mechanisms for generation of magmatism on a regional scale in a continental margin setting.

#### *Selected Publications:*

McDowell, F.W., Mauger, R.L., and Walker, N.W., 1989, Geochronology of Cretaceous-Tertiary magmatic activity in central Chihuahua, Mexico: International Association of Volcanology and Chemistry of the Earth's Interior, 1989 General Assembly, Santa Fe, New Mexico, *New Mexico Bureau of Mines and Mineral Resources Bulletin 131*, Abstracts, p.181  
McDowell, F.W., 1987, The magmatic record of western Mexico and its mismatch to tectonic models: *Geological Society of America Abstracts with Programs*, v. 19, p. 765.

### ***Petrography and geochemistry of siliciclastic rocks***

**Kitty Lou Milliken**

Research Associate,  
PhD—1985, The University of Texas at Austin

My work on the petrography and geochemistry of siliciclastic rocks continues to be centered on the Gulf of Mexico basin. With recently acquired funding from NSF (September 1989), however, my emphasis has shifted from sandstones to mudrocks. Learning how to do petrography on fine-grained sediments has been a humbling experience. It has been necessary to turn to some very basic questions such as how to prepare thin sections that preserve textures of nearly the same size as polishing grit or how to tell detrital from authigenic features in rocks with little space for development of euhedral crystal shapes. Any difficulties in acquiring petrographic data, though, are worthwhile considering the constraints these data place on interpretations of elemental and isotopic trends observed in the bedrocks.

Beginning in June of this year, with funding from the American Chemical Society Petroleum Research Fund, I will also be working on Pennsylvanian sandstones (medium-grained!) around the Pine Mountain overthrust in southeastern Kentucky and western Virginia. This is my first opportunity to apply ideas that have come out of studies in the Gulf of Mexico to an older basin with a contrasting tectonic history.

### Samuel P. Ellison, Jr.

I have continued my work on the stratigraphic distribution of Devonian to Pennsylvanian conodonts with a paper published in 1989 entitled "Mississippian conodont zones of north-central Texas." I am presently putting conodonts on the electron probe to determine the small amounts of impurities with the hopes of solving the question of what makes conodonts sometimes black. Work on the Chappel conodonts of San Saba is progressing, with hopes of solving the statistics of natural conodont mixtures. Another paper has just been published that records the Mississippian conodonts of the Tesnus Shale of the Marathon fold belt. Finally, I have six chapters finished for an undergraduate book on the geology of Texas; this may end up with two co-authors.

### Ronald K. DeFord

My 1964 and 1974 compilations of graduate degrees formed the basis for the October 1989 publication of "Graduate Degrees Conferred in Geological Sciences at The University of Texas at Austin: 1897-1988," which index shows that I have supervised more candidates than any other faculty member in the Department. In November of '89 the Society of Vertebrate Paleontology dedicated a Field Guide to me and three other professors

### Robert L. Folk

My interests continue along a variety of routes previously trampled. I am interested in the role of bacteria in rock formation and diagenesis; field and lab work includes work on Triassic black limestone of Italy, hot-spring travertines, cements in reef limestone, and origin of dolomite. Aragonite and calcite morphologies in travertines of Viterbo, Italy, and Belen, New Mexico, are fascinating under the SEM. Etching features developed by HF on quartz remain a continuing interest. My interest in archeological geology was again piqued by a trip to Egypt to study the pyramids and temples from a geologist's standpoint. Retirement has allowed me the time to explore a great many diffuse threads of research; let's hope some may lead to a final conclusion soon. And I still love harassing students.

### John C. Maxwell

Professional responsibilities during the past year included service as Chairman of the Program Review Committee for DOSECC (Drilling, Observation, and Sampling of the Earth's Continental Crust); a continuing appointment as geological consultant to the Advisory Committee on Reactor Safeguards of the Nuclear Regulatory Commission, and as a member of the Geological Society of America Foundation. Work continues on a geologic map and interpretation of the Paskenta area, northern California Coast Ranges.

### John A. Wilson

I was field-trip coordinator for the annual meeting of the Society of Vertebrate Paleontology, October 29 to November 1, 1989, here in Austin, Texas.

### Keith Young

I have just recently finished the study of ammonites from cores of the A. J. Hodges no. 1 Pardee-Calloway borehole, Cotton Valley Field, Webster Parish, Louisiana. The results consist of tentative identifications of 28 ammonites ranging through 210 meters of mostly Smackover Limestone. Some are Oxfordian and some are Kimmeridgian (Late Jurassic). This study indicates that there are about 88 meters of Kimmeridgian at the top of the Smackover, and the remainder of the Smackover is Oxfordian. The results also tend to support the evidence for the Oxfordian-Kimmeridgian boundary based on transgressive-regressive cycles. I've also identified Middle Jurassic (Dogger) ammonites from Honduras. Two reports on this work will be given in Lyon, France, in July. Gordon Bell brought a collection of Upper Cretaceous ammonites with him from Alabama. These also will be reported on in July in Lyon. They include two or more new species and several species not previously reported from North America.

For several years now I've been working with Jurassic ammonites from northern Chihuahua and other areas of northern Mexico. This work is progressing nicely. Added to this study will be Jurassic ammonites from cores from wells in eastern Texas and northwestern Louisiana.

I have recently agreed with the Geological Survey of Alabama to monograph the Upper Cretaceous ammonites of that state. This project will start sometime during the summer of 1990, when they send me the collections.

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## ARTICLES

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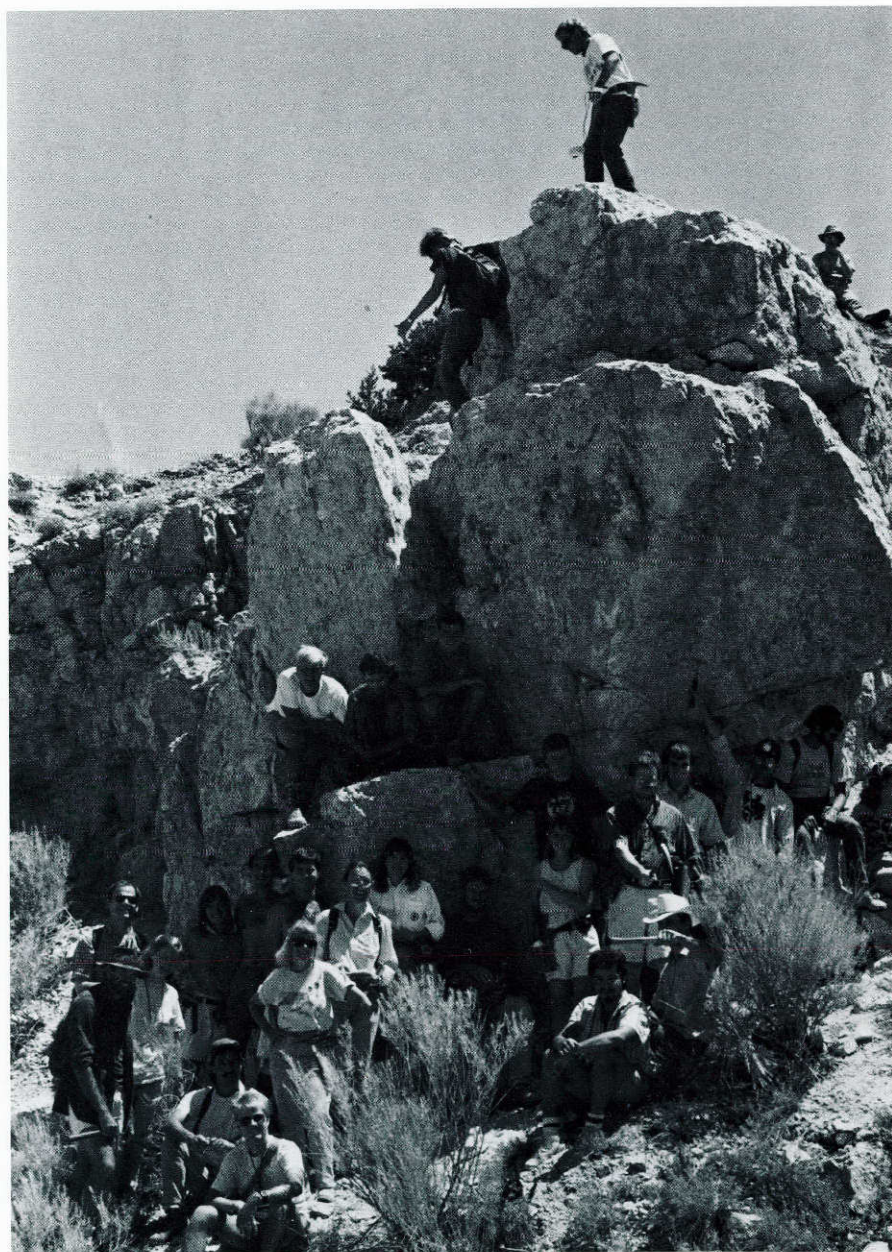
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# RESEARCH GRANTS...

P. INVESTIGATOR	TITLE OF PROJECT	FUNDING AGENCY	FUNDING PERIOD
Backus, M. Garmany, J. (UTIG) Stoffa, P. (UTIG) Wilson, C.	Solid Earth Exploration (Project SEER)	Consortium of Oil Companies (Current: Amoco Res., Arco Oil & Gas, BP Expl., Exxon P&R, Halliburton Geoph., Mobil R&D, Oryx, Unocal. Past: Aramco, Conoco, Elf Equitaine, LA Land & Expl., Shell Dev., Tenneco.)	28-Feb-83 30-Jun-90
Banner, J.	Geochemistry and Geochronology of Diagenetic Phases in Regionally Extensive Mississippian Platform Carbonates	ACS (Petroleum Research Fund)	1-Jan-90 31-Aug-92
Barker, D.	Magmatism in the Cape Verde Islands	URI-SRG	1-Sep-89 31-Aug-90
Bennett, P.	Development of Innovative Biological Techniques for the Remediation of Manufactured Gas Plant Sites: Task 600	Remediation Tech., Inc.	1-Jun-89 31-May-90
Boyer, R. Cloos, M. Kyle, J. R. Walker, N.	Gunung Bijih (Ertsberg) Project	Freeport, Indonesia	1-Jun-89 31-Aug-92
Carlson, W.	Quantitative 3-D Textural Analysis of Metamorphic Rocks Using Computer-Automated X-Ray Tomography and Petrographic Image Mensuration	Texas Higher Education Coordinating Board - ARP	1-Sep-89 31-Aug-91
Cloos, M.	Apatite Fission-Track Thermal History Analysis of the South Texas, Tertiary Gulf Coast Basin	URI-RG	3-Nov-89 31-Aug-90
Cloos, M.	Hydrocarbon Generation Histories Fore-arc Basins: Fission Track Analysis and Thermal Modeling of the Great Valley Fore-arc Basin, California	ACS (Petroleum Research Fund)	1-Sep-86 31-Aug-90
Cloos, M. White, L. A.	Apatite Fission-Track Analysis from Exxon Company, U.S.A. Wells A and B, Santa Barbara Channel, California	Exxon Company, U.S.A.	1-Nov-89 31-Aug-90
Folk, R.	Study of Basic/Fluid/Mineral Interactions as a Part of a Study of Microbial Enhanced Oil Recovery	Alpha Environmental, Inc. (Subcontract to DOE)	20-Dec-88 31-May-90



**For sponsored research grants, academic-year funding totaled \$2,066,987 as of April 1990.**

Galloway, W.	Comparative Genetic Sequence Stratigraphic Analysis of Two Cenozoic Basins, a Test of Methodologies and Concepts	Consortium of Oil Companies [Amoco Prod., Arco Oil & Gas, BP Exploration]	1-Jun-88 31-May-91
Galloway, W.	Depositional, Structural, and Sequence Stratigraphic Framework and Petroleum Endowment of Prograding Basin Margins	Texas Higher Education Coordinating Board - ARP	1-Jul-88 31-Aug-90
Galloway, W.	Study of Gulf Coast and North Sea Cenozoic Basins	Consortium of Oil Companies [Amoco, BP Exploration]	1-Jun-88 5-May-91
Grand, S.	Tomographic Inversion for Mantle Shear	NSF - Earth Sciences	1-Jan-90 12-Dec-90
Kocurek, G.	Depositional and Diagenetic Facies of the Yates Formation in Ward County, Texas	Chevron	7-Jul-89 6-Jul-90
Kocurek, G.	Reservoir Geometries/Controls in the Erg/Sabkha Transition Zone: a Preliminary Proposal	BP Exploration	1-Jan-89 31-Mar-91
Kocurek, G.	Sedimentary Program	BP Exploration	3-Feb-89 31-Dec-91
Kocurek, G.	Correlation and Significance of Super Bounding Surfaces in Eolian Sandstones: Jurassic Page Sandstone, Colorado Plateau	NSF - Earth Sciences (Stratigraphy & Paleontology Program)	1-Feb-88 31-Jul-90
Kocurek, G.	Eolian Facies Architecture Using Event Stratigraphy: Akchar Erg, Mauritania	NATO	1-Jun-90 5-May-91
Kominz, M.	New Method of Scaling Time at High Resolution in Deep Sea Cores	NSF - Ocean Sciences	1-Jan-90 31-Dec-91
Kyle, J. R.	Petrologic, Geochemical, and Isotopic Investigations of Gulf Coast Dome Cap Rocks	NSF - Earth Sciences (Petrogenesis and Mineral Resources Program)	15-Jun-87 31-May-90



*Martin Lagoe (right) works with Carolyn Eyles of McMaster University on stratigraphic section measurement and sediment sampling of the glacial-marine Yakataga Formation in the Robinson Mountains.*



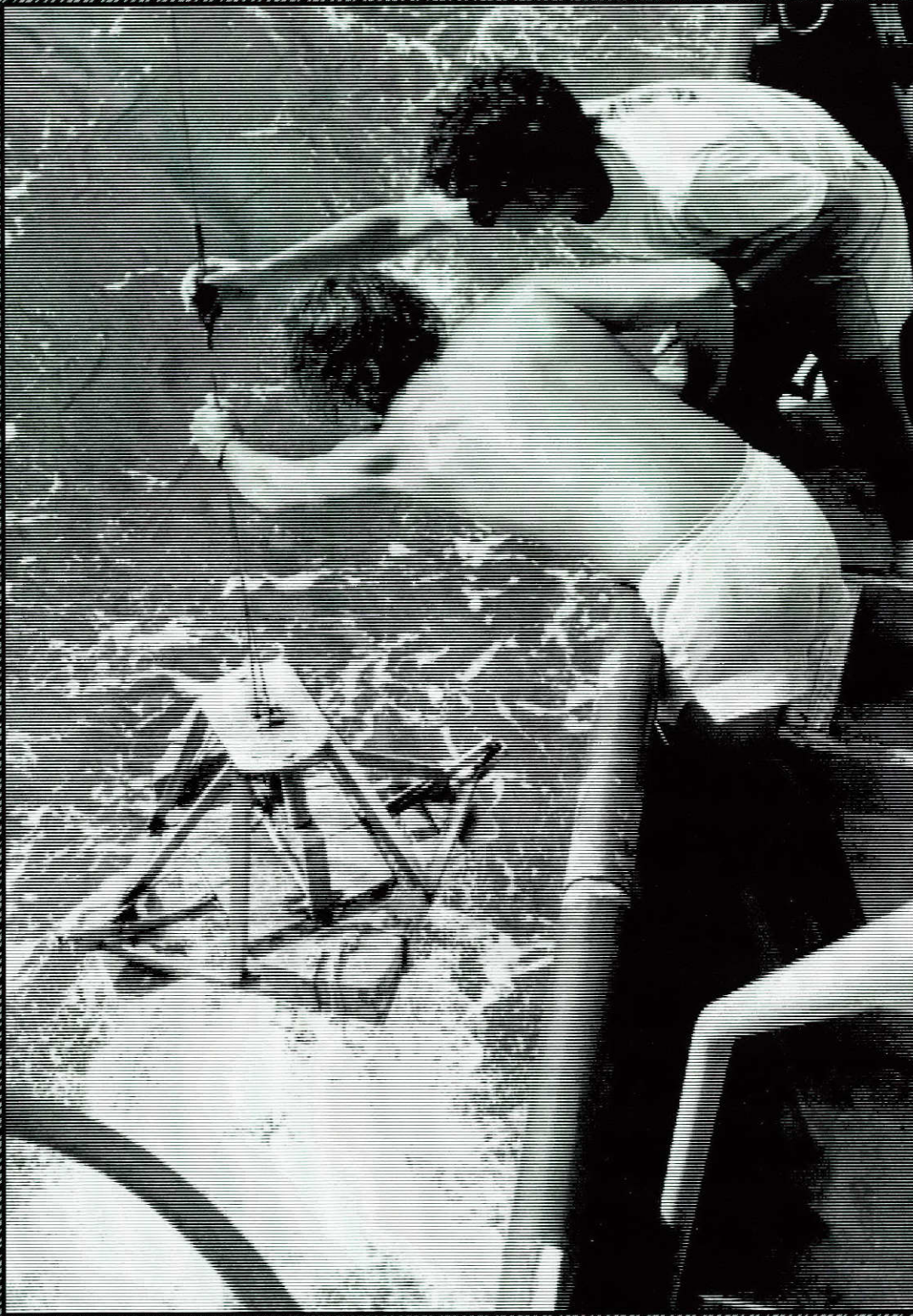


Kyle, J. R.	Regional Investigation of Sulfide Mineralization in the Jurassic Smackover Formation, Central Gulf Coast	URI-RG	3-Nov-89 31-Aug-90
Lagoe, M.	Paleoenvironmental Analysis of the Yakataga Formation, Gulf of Alaska: Towards a High-Resolution Neogene Record of Northern Hemisphere Glacial and Climate History	NSF - Earth Sciences (Stratigraphy and Paleontology Program)	15-Jan-88 30-Jun-90
Lagoe, M.	Micropaleontological Research	Unocal Foundation	9-Jan-89 1-Jun-90
Lagoe, M.	Research on the Yakataga Formation	University of Toronto	17-Oct-89 16-Oct-90
Lagoe, M.	Gulf of Mexico Paleoenvironmental Project	Mobil, Conoco	12-Dec-89 12-Dec-90
Land, L.	Are Gulf Coast Shales Sinks for REE and Trace Metals?	Texas Higher Education Coordinating Board - ARP	1-Sep-89 31-Aug-91
Land, L.	Geochemical Variability of Saline Brines in South Texas	NSF - Earth Sciences (Surficial Processes Program)	1-Sep-87 31-Aug-90
Land, L.	Gulf Coast Basinal Mudstones: Sources or Sinks for Diagenetic Components	NSF - Earth Sciences (Surficial Processes Program)	1-Aug-89 31-Jul-90
Land, L.	Modern Dolomitization of a North Jamaican Fringing Reef	ACS (Petroleum Research Fund)	1-Jul-87 31-Aug-90
McBride, E. Land, L.	Diagenesis of Sandstone and Shales, N. Gulf of Mexico Basin	Consortium of Oil Companies [Arco Oil & Gas, Exxon USA, Exxon PR, Shell Dev., Shell Oil, McMoRan Oil & Gas, Oryx, Sun E&P, Texaco, Inc.]	1-Jan-86 31-Dec-90
McDowell, F.	Geochronology of Cretaceous-Tertiary Magmatism Across Chihuahua and Sonora, Mexico, and its Significance for Plate Tectonics	NSF - Earth Sciences (Crustal Structure and Tectonics Program)	1-Feb-88 31-Jul-90
Mosher, S.	Investigations of Crustal Contraction Mechanisms in the Brittle/Ductile Transition Zone	NSF - Earth Sciences (Crustal Structure and Tectonics Program)	15-Apr-88 30-Sep-90
Muehlberger, W.	Strike-Slip Tectonics and Basin Formation at the Guayape Fault-Valle de Catcamas Intersection, Honduras	ACS (Petroleum Research Fund)	1-Mar-88 31-Aug-90
Muehlberger, W.	Revision of the Tectonic Map of N. America	AAPG	15-Jan-81 31-Aug-90
Rowe, T.	Geochronology, Biostratigraphy, and Vertebrate Diversity of Late Cretaceous Non-Marine Sediments of Trans-Pecos Texas	ACS (Petroleum Research Fund)	1-Jun-89 31-Aug-91



Rowe, T.	PYI Award: Ontogeny and Phylogeny of the Tetrapod Skeleton	NSF - Biotic Syst. & Resour. (Systematic Biology)	1-Sep-89 31-Aug-94
Rowe, T.	Storage and Analysis of Biological Image Data Bases Using Compact Disc	Texas Higher Education Coordinating Board - ATP	1-Sep-89 31-Aug-91
Sharp, J.	Evaluation of Underflow and its Applications to Texas Water Resources Management	LCRA	1-Jan-89 31-Dec-90
Sharp, J.	Fluid Flow and Thermal Anomalies in the Gulf of Mexico Basin, South Texas Example	ACS (Petroleum Research Fund)	1-Jun-88 31-Aug-90
Smith, D.	Mantle Processes, Trace Elements, and	NSF - Earth Sciences Kinetics	1-Jan-89 31-Dec-90
Smith, D.	Two Buttes, Col., Mantle Evolution and Potassic Magmas	NSF - Earth Sciences (Geochemistry)	1-Jun-90 31-May-90
Sprinkle, J.	Early Ordovician Echinoderms from the Rocky Mountains	NSF - Biotic Syst. & Resour. (Systematic Biology)	15-Jul-89 30-Jun-91
Walker, N. Brown, H. E.* (*W. Washington U.)	Analysis of Metamorphic Deformation of the Crystalline Core of the Cascades of Washington and British Columbia	NSF - Earth Sciences (Crustal Structure and Tectonics Program)	1-Jun-88 31-May-90
Walker, N. Carlson, W. Mosher, S.	Geochronologic, Structural, and Petrologic Investigation of Proterozoic Tectonism and Metamorphism in the Llano Uplift, Texas	NSF - Earth Sciences (Crustal Structure and Tectonics)	15-Jun-88 30-Nov-90
Walker, N.	Collaborative Research: Mechanism and Processes of Orogeny, North Cascades, Washington, and S.E. Coast Plutonic Complex, British Columbia	NSF - Earth Sciences (Tectonics Program)	1-Jun-90 31-May-92
Wilson, C.	Graduate Fellowship Training and Support Grant [Studies of Water Storage and Other Contributions to Changes in the Rotation of the Earth]	NASA	1-Sep-87 31-Aug-90
Wilson, C.	Studies of Water Storage and Other Contributions to Changes in the Rotation of the Earth	NASA	15-Mar-86 6-Jun-90
Young, K.	Third International Cephalopod Symposium	URI-SRG	3-Nov-89





# ACTIVITIES

*Student*



# Graduate Student Activities . . .

by Stacey A. Tyburski, GSEC President

Graduate students in the Department of Geological Sciences are vocal about their wants, needs, and concerns academically, professionally, and socially. The Graduate Student Executive Committee (GSEC), a body of seven elected students, acts as a liaison between the faculty and students of the graduate department by meeting weekly to discuss and act on the concerns of both parties. On a daily basis, through the "czar" system, GSEC administers many services which enable students to carry out their work more efficiently. The patience and diligence of czars are much appreciated, though not often recognized. Czars and Czarinas undertake such endeavors as assigning offices to incoming students, monitoring use of the darkroom, maintaining the photomicroscope, and providing pre-technical session refreshments.

The fall, spring, and summer semesters have seen much action on the part of the graduate students, with great effort being put forth by all concerned individuals. In the fall, provision for the recycling of aluminum within the department was made. A program for recycling of copier paper, printer paper, and newspaper had already been enacted and was administered by the recycling czar. The purchase of receptacles for aluminum cans for each floor of the geology

building has encouraged all students, faculty and staff to participate in this worthwhile endeavor. The spring semester began with discussion of the quality of microscopes available for graduate classes and research. The students who make use of the available scope facilities raised concerns that the facilities are not adequate and asked that they be upgraded. Several faculty members agreed with this and a resolution was put forth to slowly acquire newer and better scopes as well as to service and repair existing scopes. The needs for the graduate scope room have been met for the present, but most students feel that the facility has not reached its potential.

Spring semester also saw the generation of a group proposed by a GSEC member to "spread the message" of geological sciences to elementary, high-school and undergraduate students. The group, which is presently organizing, hopes to attend local career days, offer presentations to area schools and recruit for the department during on-campus activities. GSEC intends to offer financial support for equipment such as videos, mineral collections and slides. Several dynamic people will be working on this project and we are sure it will be successful.

Campus-wide graduate concerns, including the need for reinstatement of full health insurance benefits to graduate student employees, a possible tuition increase, and the need for greater cultural diversity, were brought to the attention

of GSEC through interaction with the Council of Graduate Students which has representatives in most University departments. GSEC encouraged graduate students in the department to discuss their concerns regarding these issues among themselves and with the faculty. Several students also took part in a "teach-in" which was held to seek greater recognition by the University administration of the indispensable function of graduate employees. Full health insurance benefits have been reinstated though no decision regarding a tuition increase has been made.

The funds with which GSEC operates are administered through the Geology Foundation and are generated in several ways. The primary means for raising money is stuffing envelopes for the department *Newsletter* (yes, this very issue was put into an envelope by a graduate student). Small grants on the order of one hundred to two hundred dollars are periodically made by corporations. Several corporations also match gifts made to GSEC by employees who obtained graduate degrees in the department. Matching gifts are highly appreciated; GSEC would like to acknowledge and offer thanks for gifts made in the past year by Bill and Mary Ann Dingus (Exxon) and Jennifer Glasford (Unocal).

GSEC funds are generally used for the purchase of small items which help to enhance graduate student life and work in the department. Drafting tape, a cutting mat and other supplies were made available this spring in the graduate student drafting room. A new microwave was purchased for the graduate student lounge.

GSEC also sponsored two social functions, a potluck picnic and a post-Final Bedlam party.

The usually quiet summer semester has often seen the demise of GSEC activities. This summer, however, the establishment of a new graduate computer lab has necessitated frequent GSEC meetings. The five GSEC members who did not leave for summer positions have been interacting frequently with the Department chairman to determine policies under which the new computer lab will operate. In the absence of a lab administrator or a systems analyst, GSEC has been formulating guidelines for the monitoring of the lab by students. Currently, several Macintosh computers, an IBM, and an IBM clone reside in the lab. The GSEC-purchased Laserwriter for the Macs and a Hewlett Packard LaserJet for the IBM are also in the lab, and printing capabilities will soon be expanded with the addition of a second Laserwriter. Before the fall semester, students were charged for laserwriting at \$.10 per page. This money was held in a separate GSEC account and was used to pay for the maintenance of the Laserwriter. With the department now covering the maintenance of the Laserwriter, the balance of the account will be applied to an as yet undetermined computer-related purchase.

Overall, many graduate students participate in the maintenance of graduate student life in the department. Many serve as czars or on GSEC and a great number simply make it easy to address their concerns by vocalizing them. The faculty and staff also make astounding efforts to address the concerns presented to them. All those who make the effort to be involved on any level deserve gratitude, and I offer them my sincere appreciation.

**Graduate Student Executive Committee Officers:**

*Fall 1989 Semester*

- President ..... Mark Longtine
- Vice President ..... Todd Council
- Secretary ..... Sevin Bilir
- Treasurer ..... Leo Lynch
- Committee Members ..... Mary Crabaugh  
Stacey Tyburski  
Peter Bittenbender

*Spring 1990 Semester*

- President ..... Stacey Tyburski
- Vice President ..... Peter Bittenbender
- Secretary ..... Nestor Phillips
- Treasurer ..... Sevin Bilir
- Committee Members ..... Nina Harun  
Roger Lee  
Malcolm Ferris

**Undergraduate Student Geological Society Officers**

*for the 1989-90 academic year*

- President ..... Doug Bowling
- Vice President ..... Ricky Boehme
- Treasurer ..... Michelle Mallien
- Secretary ..... Mike Ueber
- Faculty Sponsors ..... Mark Cloos/William Carlson

**AAPG Student Chapter Officers**

*for the 1989-90 academic year*

- President ..... Cheryl Richard
- Vice President ..... Rimas Gaizutis
- Treasurer ..... Thomas Ritchie
- Secretary ..... Rob Schulz
- Faculty Sponsor ..... Amos Salvador

*A graduate class with faculty member Gary Kocurek trenches coastal dunes in Guerro Negro, Baja California, Mexico. The dunes have migrated into a shallow lagoon, and are regularly flooded by tides. The trench should reveal the geological record left by the interactions of marine and wind processes.*



## Research Assistants

Fall 1989 through Summer 1990

### Department

Awwiller, David N.  
 Bell, Gordon L.  
 Bernitsas, Nikolaos  
 Bilir, Sevin I.  
 Boardman, Sabine K.  
 Brochu, Christopher A.  
 Cander, Harris S.  
 Carter, Karen E.  
 Crabaugh, Jeff P.  
 Crabaugh, Mary C.  
 Davis, Linda L.  
 Ding, Xiao-Yang  
 Dworkin, Stephen  
 Eustice, Rachel A.  
 Finn, Christopher J.  
 Frank, Andrew J.  
 Genuise, John J.  
 Gordon, Mark B.  
 Graebner, Mark J.  
 Havholm, Karen G.  
 Hibbs, Barry J.  
 Hiebert, Franz K.  
 Hoak, Thomas E.  
 Johns, Ronald A.  
 Johnson, Cambria D.  
 Kuehne, John W.  
 Lynch, Francis L.  
 McKenna, Thomas E.  
 McMahon, Timothy P.  
 Moore, James H.  
 Nam, Young Sun

Quarles, Andrew I.  
 Reese, Joseph P.  
 Rubin, Jeffrey N.  
 Simmons, James L.  
 Stapleton, Colleen P.  
 Turbeville, Bruce N.  
 Walters, Robert D.  
 Wang, David  
 Weil, Anne I.  
 Williams, Thomas A.  
 Xue, Liangqing  
 Zellers, Sarah D.

### Bureau of Economic Geology

Andreason, Mark W.  
 Angle, Edward  
 Avakian, Arten  
 Barton, Mark D.  
 Baumgartner, Scott D.  
 Beckman, Jeffery  
 Black, Jeffrey W.  
 Brewton, James G.  
 Brock, Laura  
 Buehring, Robert L.  
 Carter, Karen E.  
 Castro, Julian J.  
 Coel, Becky J.  
 Czebeniak, Andrew P.  
 Dickerson, Patricia  
 Erwin, Mark E.  
 Ferris, Malcolm A.

Gabalton, Gilbert  
 Ge, Hongxing  
 Kirschenmann, Kyle L.  
 Lambert, Bradley  
 Lin, Shing-Tzong  
 Lugo Lobo, Jairo M.  
 Mallien, Michelle  
 Maguregui, Jesus A.  
 Muehoeffler, Todd  
 Marton, Gyorgy L.  
 McCoy, Mark  
 McCullough, Matt L.  
 McKenna, Thomas  
 Moffett, Laura  
 Newey, Edward  
 Patel, Pradip M.  
 Phillips, Nestor D.  
 Reistroffer, James R.  
 Remington, Randy  
 Scott, Andrew  
 Single, Robert S.  
 Sparlin, Lisa  
 Tsai, Heng  
 Wickham, Matthew K.  
 Xue, Liangqing  
 Zeng, Hongliu

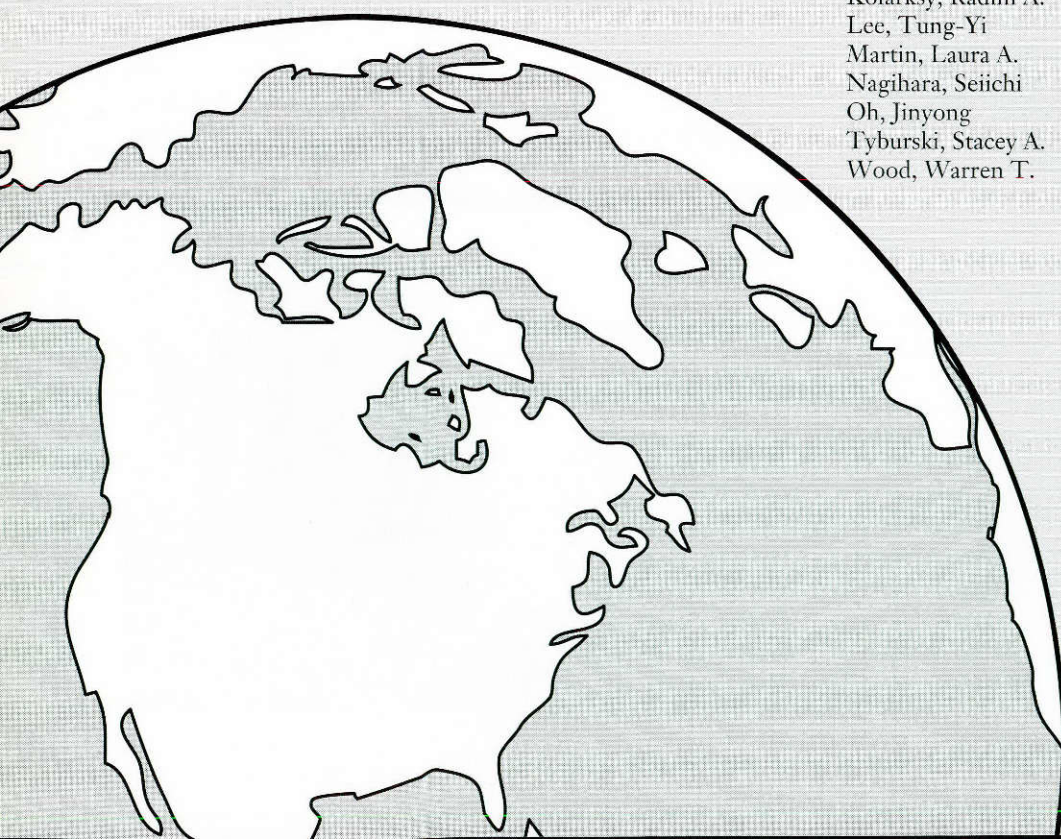
### Institute for Geophysics

Beckley, Lila M.  
 Cardimona, Steven J.  
 Denny, Walter M.  
 Feng, Jianhua  
 Kolarzsy, Radim A.  
 Lee, Tung-Yi  
 Martin, Laura A.  
 Nagihara, Seiichi  
 Oh, Jinyong  
 Tyburski, Stacey A.  
 Wood, Warren T.

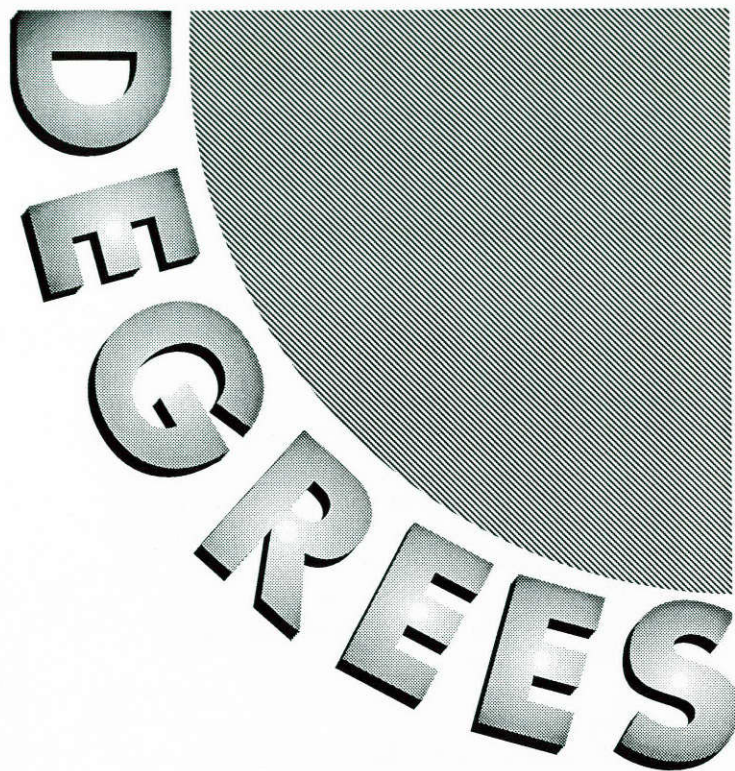
## Teaching Assistants

Fall 1989 through Summer 1990

Alexander, Kenneth B.  
 Apperson, K. Denise  
 Barts, Peter T.  
 Beckley, Lila M.  
 Bell, Gordon L.  
 Bittenbender, Peter E.  
 Borg, Lars E.  
 Brochu, Christopher A.  
 Carpenter, Paul S.  
 Carter, Karen E.  
 Colgan, R. Gene  
 Council, Todd A.  
 Cunningham, William  
 DeBalko, David A.  
 Eustice, Rachel A.  
 Ferris, Malcolm  
 Fitchen, William M.  
 Froehlich, David J.  
 Gao, Guogiu  
 Hartley, John R.  
 Harun, Nina T.  
 Hennings, Peter H.  
 Hoak, Thomas E.  
 Holzmer, Frederick J.  
 Huelsenbeck, John P.  
 Johns, Ronald A.  
 Johnson, Cambria D.  
 Kirschenmann, Kyle L.  
 Klepeis, Keith A.  
 Kuehne, John W.  
 Kugler, Khib A.  
 Lee, Tung-Yi  
 Liu, Xijin  
 Longtine, Mark W.  
 Lyons, Kevin T.  
 Meckel, Lawrence D.  
 Molineux, Margaret A.  
 Moore, James H.  
 Noble, Paula J.  
 Phillips, Nestor D.  
 Potter, Lee S.  
 Quarles, Andrew I.  
 Reese, Joseph P.  
 Roback, Robert C.  
 Rowell, Philip  
 Schwarze, Elizabeth T.  
 Stapleton, Colleen P.  
 Sumrall, Colin D.  
 Swezey, Christopher S.  
 Turbeville, Bruce N.  
 Weil, Anne I.  
 Westphal, Danny E.  
 White, Dana L.  
 White, Leslie  
 Yeh, Edna T.



# UNDERGRADUATE



*Bachelor of Arts, August 1989 (2)*

Clark, Michael J.  
Salinas, Roberto A.

*Bachelor of Science, August 1989 (9)*

Bryant, Charlotte S.  
Clift, Sigrid J.  
Fason, Sam D.  
Harris, Erik J.  
Hay, Leslie W.  
Houston, Ronald D.  
Lloyd, April E.  
Reiss, Patrick S.  
Warren, Gregory A.

*Bachelor of Arts, December 1989 (2)*

Fennell, William K.  
Joyner, Thad M.

## **Undergraduate Enrollment**

(Fall 1989)

**Total Department Majors: 125**

**Geophysics Majors: 23 (18%)**

**Male: 74 (59%)**

**Female: 51 (41%)**

**Minority: 7 males, 3 females**  
(8% of total enrollment)

### **Undergraduate majors by Class (Fall 1989)**

Seniors .....	61
Juniors .....	29
Sophomores .....	22
Freshmen .....	13

**Total BA degrees awarded - 10**

**Total BS degrees awarded - 19**

**Majors with GPA of 3.0 or better - 25**

**Majors with GPA of 3.5 or better - 9**

*Bachelor of Science, December 1989 (6)*

Boehme, Ricky S.  
Caldwell, Craig B.  
Goldsmith, Richard S.  
Guzman Ibañez, Jorge A.  
Matzel, Eric M.  
Richard, Cheryl A.

*Bachelor of Arts, May 1990 (6)*

Howard, Nancy K.  
Istvan, Monica J.  
Martin, Owen C.  
Reece, Stanley N.  
Valdez, Eloy, Jr.  
Yue, Andrew

*Bachelor of Sciences, May 1990 (4)*

Brackett, Robert A.  
Ritchie, Thomas K.  
Ueber, Michael L.  
Whittaker, Michael S.

*Master of Arts, August 1989 (8)***Atkins, John E.**

BS, Geology, 1987, Washington and Lee University  
 Porosity and Packing of Holocene River, Dune and Beach Sands.  
 Supervisor: Earle F. McBride  
 Committee Members: William Galloway, Amos Salvador

**Boerner, Sean T.**

BS, Geology, 1985, The University of Texas at Austin  
 Experimental Investigation of Packed Spheres under Extension: Application to Sand Box Experiments.  
 Supervisor: John G. Sclater  
 Committee Members: Sharon Mosher, Martin Jackson

**Gillis, Gretchen M.**

BA, Geology, 1986, Bryn Mawr College  
 Polyphase Deformation and Metamorphism of the Middle Proterozoic Coal Creek Serpentinite, Gillespie County, Texas.  
 Supervisor: Sharon Mosher  
 Committee Members: Douglas Smith, Mark Helper

**Glasford, Jennifer L.**

BS, Geological Engineering, 1985, Colorado School of Mines  
 Depositional Architecture of the Triassic Bulgo Braidplain System, Blue Mountains Region, Sydney Basin, Australia.  
 Supervisor: William E. Galloway  
 Committee Members: Gary Kocurek, Earle F. McBride

**Maler, Michael O.**

BS, Geology, 1986, The University of Texas at Austin  
 Structural Geology of the Southernmost Sierra del Caballo Muerto/Boquillas Canyon Area, Big Bend National Park, Texas.  
 Supervisor: William R. Muehlberger  
 Committee Members: Mark Cloos, Sharon Mosher

**Manchester, Janet E.**

BS, 1985, Yale University  
 Petrology and Significance of Sphene Eclogite Xenoliths from the Sullivan Buttes Latite, Yavapai County, Arizona.  
 Supervisor: Douglas Smith  
 Committee Members: William D. Carlson, Mark Cloos

**Small, Christopher**

BS, 1985, University of Wisconsin-Madison  
 Geoid Anomalies on the Global Mid Ocean Ridge System  
 Supervisor: Clark R. Wilson  
 Committee Members: Stephen P. Grand, David T. Sandwell

**Wood, Warren T.**

BS, Geology, 1984, University of Michigan-Ann Arbor  
 A One- and Two-Dimensional Velocity Inversion in the Domain of Intercept Time and Ray Parameter: An Example in the Nakai Trough.  
 Supervisor: Paul L. Stoffa  
 Committee Members: Clark R. Wilson, Thomas Shipley

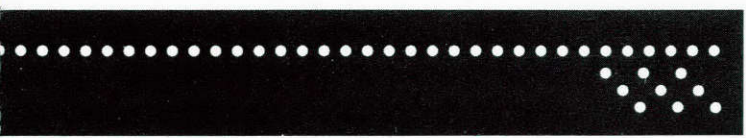
*Doctor of Philosophy, August 1989 (2)***Macpherson, Gwendolyn L.**

BS, Geology, 1971, Syracuse University  
 MA, Geology, 1982, The University of Texas at Austin  
 Lithium, Boron, and Barium in Formation Waters and Sediments, Northwestern Gulf of Mexico Sedimentary Basin.  
 Supervisor: Lynton S. Land  
 Committee Members: John M. Sharp, Charles W. Kreidler, Robert Schechter, Yousif Kharaka

**Sweet, Michael L.**

BS, Geology, 1980, University of Wisconsin-Madison  
 MS, Geology, 1983, University of Illinois  
 Eolian Dune Airflow Dynamics: Implications for Dune Migration, Deposits, and Spacing.  
 Supervisor: Gary Kocurek  
 Committee Members: Robert L. Folk, William E. Galloway, Norman K. Wagner, Nick Lancaster





# GRADUATE



## *Master of Arts, December 1989 (4)*

### **Avakian, Arten J.**

BA, Geology, 1980, California State University-Fresno

Structural Geology of the Hermit Creek Area of the Northern Last Chance Range, East-Central California: Cenozoic Normal Fault Interpretation for Part of the Mesozoic Last Chance Thrust.

Supervisor: Mark Cloos

Committee Members: J. Richard Kyle, Sharon Mosher

### **Borg, Lars E.**

BA, Geology, 1985, University of California-Berkeley

Petrogenesis of Magee Volcano, Northern California.

Supervisor: Daniel S. Barker

Committee Members: Fred W. McDowell, Nicholas Walker

### **Brown, Theresa J.**

BS, Geology, 1981, Adams State College

Modeling the Effects of Aerosols on Groundwater.

Supervisor: John M. Sharp

Committee Members: Philip C. Bennett, Dale Klein

### **Miller, Steven K.**

BS, Geology, 1985, University of Texas at Austin

Genetic Stratigraphic Sequences Analysis of the Upper Wilcox, Gulf Basin, Texas.

Supervisor: William E. Galloway

Committee Members: Martin B. Lagoe, Earle F. McBride

## *Doctor of Philosophy, December 1989 (1)*

### **Davis, Scott D.**

BS, Physics, 1982, University of Michigan-Ann Arbor

MA, Geology, 1985, University of Texas at Austin  
Investigations Concerning the Nature of Earthquake Aftershocks and Earthquakes Induced by Fluid Injection.

Supervisor: Mark Cloos and Clifford A. Froehlich

Committee Members: John G. Sclater, Yosio Nakamura, Robert Wesson

## *Master of Arts, May 1990 (8)*

### **Agee, William N.**

BS, Geology, 1983, University of Texas at Austin

Relation of Metal Sulfide Mineralization to Anhydrite Cap Rock Formation at Hockley Salt Dome, Harris County, Texas.

Supervisor: J. Richard Kyle

Committee Members: Lynton S. Land, Harry H. Posey

### **Andreason, Mark W.**

BS, Geology, 1985, University of Texas at Austin

Coastal Evaporative Environments of the Permian Yates Inner Shelf and the Effects of Penecontemporaneous Sulfate Dissolution, Central Basin Platform, Ward County, Texas.

Supervisor: Gary Kocurek

Committee Members: Earle F. McBride, Charles Kerans

### **Binig, Cecilia M.**

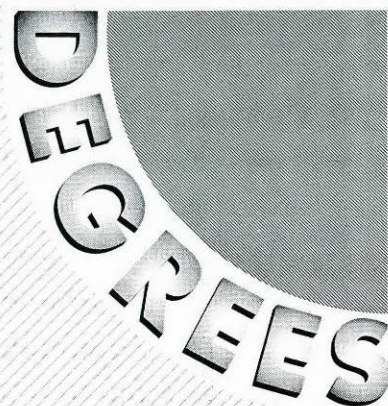
BS, Geology, 1980, University of Texas at Austin

Seismic Stratigraphy in the Gulf of Honduras

Supervisor: Amos Salvador

Committee Members: Leonard F. Brown, Eric Rosencrantz

## GRADUATE



CONT'D.

**Coel, Rebecca J.**

BS, Geology, 1986, University of Wisconsin at Oshkosh  
Biogeochemical Cycling of Gold in a Placer Deposit.  
Supervisor: J. Richard Kyle  
Committee Members: Philip C. Bennett, Robert L. Folk, Lynton S. Land

**Cook, Susan L.**

BS, Geology, 1981, University of Washington  
The Geology and Geochronology of the Palomas Area, Chihuahua, Mexico.  
Supervisor: Fred W. McDowell  
Committee Members: Leon E. Long, Christopher Henry

**McCullough, Matt L.**

BS, Geology, 1983, West Texas State University  
Diagenetic History and Dynamic Hydrology of a Jamaican Fringing Reef.  
Supervisor: Lynton S. Land  
Committee Members: Robert L. Folk, John M. Sharp, Jr.

**Riherd, Paul S.**

BS, Geology, 1970, Texas A & M University  
The Seismic Investigation of Two Proposed Nuclear Waste Repositories.  
Supervisor: Paul L. Stoffa  
Committee Members: Stephen P. Grand, Joseph D. Phillips

**Schwartz, Elizabeth T.**

BS, Geology, 1987, Duke University  
Polymetamorphism in the Llano Uplift: Evidence from Geothermobarometry and

Compositional Zoning in Garnet.

Supervisor: William D. Carlson  
Committee Members: Daniel S. Barker, Nick Walker

**Doctor of Philosophy, May 1990 (2)****Blodgett, Robert H.**

BS, Geology, 1972, University of Wisconsin-Madison  
MS, Geology, 1974, University of Nebraska-Lincoln  
Nonmarine Depositional Environments and Paleosol Development, Upper Triassic Dolores Formation, Southwestern Colorado.  
Supervisor: Earle F. McBride  
Committee Members: Robert L. Folk, Lynton S. Land, Lawrence Wilding, Karl W. Butzer

**Hovorka, Susan D.**

BA, Geology, 1974, Earlham College  
MA, Geology, 1981, University of Texas at Austin  
Sedimentary Processes Controlling Halite Deposition, Permian Basin, Texas.  
Supervisor: Lynton S. Land  
Committee Members: Jay L. Banner, Gary A. Kocurek, L. P. Knauth, Stephen C. Ruppel

**Petrography  
Contest**

The winners of the annual Petrography Contest for 1990 were Lee Potter for the graduate contest and Carlotta Chernoff for the undergraduate contest. The Petrography Contest is given every spring, and the students compete for a cash prize by identifying and interpreting hand samples and thin sections. Samples commonly include some of the most unusual rocks in the faculty collections. The contest was started many years ago at the request of an anonymous donor to encourage the study of petrology. A \$1,000 prize is awarded for winning the graduate contest and a \$250 prize for the undergraduate contest. The size of the prize has often encouraged graduate students to take graduate petrology courses outside their area of specialization or to volunteer to be a teaching assistant for time-consuming petrology courses. Competition is fierce, and this year, as usual, the winner of the graduate contest was determined by a single point.

**Edwin Allday Chair in Subsurface Geology Grant**

Guoqui Gao Fall 1989

**American Federation of Mineralogical Societies Scholarship**

Jonathan Blount Fall 1989

**Amoco Foundation, Inc.**

Sevin Bilir 1989-90  
 Richard Ketcham 1989-90  
 John Kuehne 1989-90  
 Warren Wood 1989-90

**Arco Designated Scholarship**

William Fitchen Spring 1990

**Arco Scholarship in Geology**

Gene Colgan 1989-90

**Arco Scholarship in Geophysics**

Michael Jervis 1989-90

**L. T. Barrow Chair in Mineral Resources Grant**

Steven Hodgkins Fall 1989

**Wayne F. Bowman Endowed Presidential Scholarship**

Lars E. Borg 1989-90  
 Mark W. Longtine 1989-90

**Jesse L. Brundrett Endowed Presidential Scholarship**

Mark B. Gordon 1989-90

**Dave P. Carlton Teaching Fellowship in Geology Grant**

Gerardo Aguirre-Diaz Spring 1990  
 Bruce Turbeville Fall 1989

**Chevron Fellowship**

Linda L. Davis 1989-90

**Ronald K. DeFord Field Scholarship Fund**

Gerardo Aguirre-Diaz 1989-90  
 Sevin Bilir Summer 1990  
 Jeffrey Black Summer 1990  
 Robert Buehring Fall 1989  
 Harris Cander Summer 1990  
 Dickson Cunningham Fall 1989  
 Linda Davis Summer 1990  
 Gilbert Gabaldon Spring 1990  
 John Genuise Fall 1989  
 Thomas Hoak Summer 1990  
 John Huelsenbeck Fall 1989  
 Ronald Johns Summer 1990  
 Richard Ketcham Summer 1990  
 Keith Klepeis Fall 1989  
 Carla Matherne Spring 1990  
 Seiichi Nagihara Summer 1990  
 Paula Noble Summer 1990  
 Lee S. Potter Summer 1990  
 Richard Raymond Spring 1990  
 Colleen Stapleton Spring 1990  
 Colin Sumrall Summer 1990  
 Stacey Tyburski Fall 1989  
 Dana White Summer 1990  
 Leslie White Spring 1990

**Michael Bruce Duchin Memorial Endowed Presidential Scholarship**

Paul S. Carpenter 1989-90

**John E. "Brick" Elliott Academic Activities Fund**

John Garber Fall 1989  
 Stephen W. Hodgkins Fall 1989  
 Xijin Liu Fall 1989  
 Steven Miller Fall 1989  
 Ben Sloan Fall 1989  
 Thomas Williams Fall 1989

**Exxon Education Foundation Grant**

Denise Apperson Spring 1990  
 David Awwiller Fall 1989  
 Harris Cander Summer 1990  
 Janet Coleman Summer 1990  
 Gene Colgan Spring 1990  
 Scott Davis Fall 1989  
 Steve Dworkin Summer 1990  
 Karen Havholm Summer 1990  
 Tung-Yi Lee Summer 1990  
 Carla Matherne Summer 1990  
 Seiichi Nagihara Fall 1989  
 Jeffrey Paine Summer 1990  
 Philip Rowell Spring 1990  
 Stacey Tyburski Fall 1989  
 Liangqing Xue Summer 1990

**Getty Oil Company Centennial Chair Grant**

Karen Carter Fall 1989  
 Tom Hoak Spring 1990

**John A. and Katherine G. Jackson Centennial Teaching Fellowship Grant**

Peter Bittenbender Spring 1990  
 Paul Carpenter Spring 1990  
 Mark Longtine Spring 1990  
 Robert Roback Spring 1990

**Howard R. Lowe Fund in Vertebrate Paleontology**

Richard Toomey Fall 1989

**Mobil Designated Scholarship Fund**

Tom Cogswell 1989-90

**Owen-Coates Fund Grant**

Karen Carter Spring 1990  
 Jeff Corrigan Spring 1990  
 Steve Dworkin Spring 1990

**Bill R. Payne Centennial Teaching Fellowship Grant**

Amy Sheldon Fall 1989

**Pennzoil & Pogo Producing Company/William E. Gipson Scholarship**

Michael Starcher 1989-90

**Petrography Award**

Lee Potter  
 Spring 1990

**Graduate  
 Scholarships  
 and Fellowships  
 1989-90**

Some new faces and places were seen and visited this summer for field camp, Geo 660. Lynton Land joined Earle McBride for the first ten days to teach the carbonate portion of the field camp in the Guadalupe, Franklin, and Sacramento Mountains of Texas and New Mexico. McBride continued on to the Durango, Colorado, area to look at the clastic sediments of the San Juan Basin. The camp stayed at the Purgatory ski area north of Durango for over two weeks this year and learned to map drape folds and faults with Mark Helper and Sharon Mosher, and were exposed to caldera formation and associated mineralization near Silverton by Nick Walker. Gary Kocurek then joined Mosher at Ghost Ranch, New Mexico, to look at a knife-sharp, planar contact between the Entrada Sandstone and an overlying algal limestone. The students thoroughly enjoyed puzzling over the formation of this contact and an odd evaporite deposit for several days. For this part of the trip, the group camped in a unbearably hot, mosquito-infested, dust bowl. But spirits were high, and shooting stars in clear skies over blazing campfires made up for the rest. After a quick tour of the Valles caldera with Nick Walker, the camp moved on to the Picuris Mountains where Mosher and Helper taught the students to map and analyze multiply deformed, metamorphic rocks. A tour of the Taos Plateau and the Harding Pegmatite Mine concluded the course. Seventeen students took field camp this summer, an ideal number for teaching in the field. The students were an incredibly nice group of people to teach, and it was very enjoyable to have new projects and teaching staff this year.



<b>Phillips Petroleum Fellowship</b> Livia Squires	1989-90	Paula Noble Nestor Phillips	Spring 1990 Spring 1990
<b>Shell Oil Foundation Centennial Chair in Geophysics Grant</b> Jeff Corrigan	Fall 1989	<b>Texas Oil &amp; Gas Corp. Leadership Award</b> John Garber	Fall 1989
<b>Shell Oil Foundation Distinguished Chair in Geophysics Grant</b> Seiichi Nagihara	Spring 1990	<b>Texas Utilities Designated Scholarship</b> Charles Hewitt	1989-90
<b>Stokes Centennial Teaching Fellowship Grant</b> Jeff Corrigan	Fall 1989	<b>Union Oil Designated Scholarship</b> Mary Crabaugh William Fitchen	Fall 1989 Spring 1990
<b>Technical Sessions Best Speaker Award</b> Elizabeth Schwarze Karen Carter	Fall 1989 Spring 1990	<b>Arno P. (Dutch) Wendler Professional Development Fund Grant</b> Denise Apperson 1989-90 David Awwiler Peter Bittenbender Lars Borg Theresa Brown Steve Cardimona Paul Carpenter Rebecca Coel Janet Coleman Jeff Corrigan David DeBalko Laura Dobson Mark Erwin Carl Fiduk William Fitchen Kathy B. Gryta Cambria D. Johnson Mark Longtine Larry Mack Robert Roback	Fall 1989 Spring 1990 Fall 1989 Fall 1989 Fall 1989 Spring 1990 Spring 1990 Fall 1989 Fall 1989 Spring 1990 Spring 1990 Fall 1989 Spring 1990 Spring 1990 Fall 1989 Fall 1989 Spring 1990 Fall 1989 Spring 1990
<b>Texaco Scholarship Fund</b> Jeffrey D. Corrigan Guogiu Gao	Spring 1990 Spring 1990		

**Graduate  
Scholarships  
and Fellowships  
1989-90** cont'd.

*Rick Toomey received the Houston Geological Society's Outstanding Student Award*

# Undergraduate Scholarships and Fellowships 1989-90

**Bloomer Fund for Motivated Students**

David Abel	Fall 1989
Doug Bowling	Fall 1989
Teri Hamilton-Brewer	1989-90

**John F. Bookout Jr. and Carolyn Bookout Scholarship**

Beth Friday	1989-90
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**W. F. Bowman Endowed Presidential Scholarship**

Jeffery R. Davis	1989-90
Philip A. Teas	1989-90

**W. F. Bowman Scholarship**

Jeffery Davis	Summer 1990
Steven Henderson	Summer 1990
Dan Ryder	Summer 1990
April Wild	Summer 1990
Matthew Wilson	Summer 1990

**W. K. Clark Memorial Endowed Presidential Scholarship**

Deborah Armbruster	1989-90
Cathy P. Chauvin	1989-90
Stuart G. Johnson	1989-90

**R. H. Cuyler Endowed Presidential Scholarship**

Dan M. Ryder	1989-90
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**Enserch Scholarship**

Steven Henderson	Spring 1990
Thomas Ritchie	Spring 1990

**Exxon Scholarship**

Mark Calderon	Fall 1989
Jose Flores	Fall 1989
Owen Martin	Fall 1989
Eloy Valdez	Fall 1989

**Guy E. Green Endowed Presidential Scholarship**

Matthew G. Wilson	1989-90
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**John H. and Lujza P. McCammon Endowed Scholarship**

Edward Angle	Spring 1990
Cheryl Richard	Fall 1989
Rakan Zahawi	Spring 1990

**Mr. and Mrs. L. F. McCollum Endowed Scholarship**

Edward Angle	Spring 1990
Stefan Schuster	Fall 1989

**Carroll C. Miller Endowed Presidential Scholarship**

Scott W. Rubin	1989-90
Karen K. Bergeron	1989-90

**Mobil Scholarship**

Jose Flores	Spring 1989
Owen Martin	Spring 1989
Michael Perales	Spring 1989
Robert Salinas	Spring 1989

**Oryx Energy Company Scholarship**

Patricia Bauer	Spring 1990
Michelle Mallien	Summer 1990
Hillary Tulley	Spring 1990
April Wild	Summer 1990

**Pennzoil Company Scholarship**

Karen Kennedy	Fall 1989
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**Petrography Award**

Carlotta Chernoff	Spring 1990
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**O. S. Petty****Geophysical Fund Scholarship**

Stefan Schuster	Spring 1990
Cheri Teisberg	Spring 1990

**Phillips Petroleum Company Scholarship**

Gaby Hargita	Spring 1990
Nancy Howard	Spring 1990
Robin Lyday	1989-90
Michelle Mallien	1989-90
Lisa Sparlin	Spring 1990
Hillary Tulley	Fall 1989

**Louis and Elizabeth Scherk Geology Scholarship**

Timothy Crump	Spring 1990
Carlos Estrada	Fall 1989
Jubal Grubb	Spring 1990
Jorge Guzman	Fall 1989
John Hudson	Spring 1990
John Wilcox	Spring 1990
Rakan Zahawi	Spring 1990

**F. W. Simonds Endowed Presidential Scholarship**

Scott Miron	1989-90
Hillary Tulley	1989-90

**Udden Memorial Scholarship Fund**

Rakan Zahawi	Fall 1989
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**Union Pacific Foundation Scholarship**

Richard Goldsmith	Fall 1989
Scott Hudson	Fall 1989
Eric Matzel	Fall 1989

**Unrestricted Scholarship**

Krishna Bhujang	Spring 1990
Jose Flores	Spring 1990
Dan Gonzalez	Spring 1990
Owen Martin	Spring 1990
Nicholas Rios	Spring 1990

**Glenn and Martha Vargas Gemological Scholarship**

Monica Istvan	1989-90
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**F. L. Whitney Endowed Presidential Scholarship**

William N. Barnard, Jr.	1989-90
Lauren Browning	1989-90

**Charles E. Yager Undergraduate Field Scholarship**

Paul Blubaugh	Summer 1990
Timothy Crump	Summer 1990
Carlos Estrada	Summer 1990
Scott Hudson	Summer 1990
Michelle Mallien	Summer 1990
Mitchell McDonald	Summer 1990
Beth Friday	Summer 1990
Wayne Ritcheson	Summer 1990
John Wilcox	Summer 1990

# STUDENT SPEAKERS

**September 11, 1989  
to May 6, 1990**

**Mark W. Andreason**

"Evolution of the Permian Yates Shelf on the Central Basin Platform western margin"

**K. Denise Apperson**

"Extension of volcanic arcs"

**Nikolaos Bernitsas**

"Fault surface reflections: isolation, imaging, and interpretation"

**Peter E. Bittenbender**

"Structural and metamorphic evolution of the Huckleberry Mountain area, North Cascades, Washington" and "Mid-Cretaceous orogenesis in the Huckleberry Mountain area, North Cascades, Washington"

**Sabine C. Boardman**

"Sulfide mineralization during late diagenesis, Smackover Formation, central Gulf Coast"

**Lars E. Borg**

"Volcanism in the Southern Cascades" and "Petrogenesis of Magee composite Volcano, northern California"

**Theresa J. Brown**

"Modelling the effects of aerosols of groundwater systems"

**Paul S. Carpenter**

"Petrology, structure, and tectonic significance of serpentinite-matrix melange"

**Karen E. Carter**

"Construction and collapse of an orogen: Tuscan Nappe, northern Apennines, Italy"

**Thomas L. Cogswell**

"Depositional and diagenetic controls on gas production from Frio (Oligocene) sands at Monte Christo Field, Hidalgo County, Texas"

**Jeffrey D. Corrigan**

"Deriving thermal history information from apatite fission track data: theory and applications"

**Todd A. Council**

"The origin of tufa, Mono Lake, California"

**Scott D. Davis**

"In search of the earthquake aftershock"

**Stephen Dworkin**

"A glimpse of provenance through the diagenetic haze"

**Mark E. Erwin**

"Rb-Sr ages of diagenesis of Mg-rich clays, Permian Evaporite Sequence, Palo Duro Basin, Texas Panhandle"

**Rachel A. Eustice**

"The geochemistry of the Upper Jurassic Haynesville and Louann salt units, Mobile Graben, Clarke Co., Alabama"

**Malcolm A. Ferris**

"Permeability distribution patterns in the San Andres outcrop, Otero County, New Mexico"

**William N. Fitchen**

"Sequence stratigraphy of San Andres Formation outcrops, Brokeoff Mountains, New Mexico"

**D. Alan Fuqua**

"Seismic structural analysis of the Perdido fold belt, northwestern Gulf of Mexico"

**Mark B. Gordon**

"Northern Central America shakes and bakes" and "Strike-slip faulting and basin formation at the Guayape Fault-Valle de Catacamas intersection, Honduras, Central America"

**Mark J. Graebner**

"Model parameter estimation in a transversely isotropic solid"



*Roberto Gutierrez (right) measures the elevation of the horizon at the location of a National Geodetic Survey benchmark (near Terlingua, Texas) being inspected by fellow graduate student Young Sun Nam (center) while faculty member Yosio Nakamura looks on. This location was examined as a possible site for a Global Positioning System survey point to measure tectonic motion in West Texas.*

- Kathryn B. Gryta**  
"Pathway of crystallization of the Katemcy Granite, northwest Llano Uplift, Texas"
- Roberto Gutierrez**  
"Gravity variations due to seasonal atmosphere-ocean mass redistribution"
- Charles D. Hewitt**  
"Hydraulic properties of the saturated zone of a reclaimed lignite surface mine, East Texas"
- Thomas E. Hoak**  
"Structural geology of the Cinque Tere region of the northern Apennines: a progress report"
- Cambria D. Johnson**  
"Origin of coronas from the Adirondack Mountains, New York, and the Llano Uplift, Texas"
- Radim A. Kolarsky**  
"A three-dimensional analysis of forearc structures, Costa Rica and Panama"
- Michael E. Lamar**  
"Controls on Plio-Pleistocene deposition: southern Enriquillo Valley, western Dominican Republic"
- Mark W. Longtine**  
"Structural and metamorphic evolution of the Sloan Peak area, North Cascades, Washington"
- Jesus A. Maguregui**  
"Evolution of Middle Eocene tide-dominated deltas in Lagunillas Field, East Lake Maracaibo Basin, Venezuela"
- Carla M. Matherne**  
"Fracture and permeability patterns in the Santana Tuff, Trans-Pecos Texas: implications for high-level hazardous waste disposal"
- Matt L. McCullough**  
"Diagenesis and dynamic flow of seawater in a submerged Pleistocene reef, Discovery Bay, Jamaica" and "Hydraulic questions about near-offshore carbonate rocks, Jamaica"
- Timothy P. McMahon**  
"Geologist in the mist (tourist traps in southeast Asia)"
- Steven K. Miller**  
"Genetic stratigraphic sequence analysis of the Upper Wilcox: Gulf Basin, Texas"
- Paula J. Noble**  
"Radiolarian ecology, distribution, and application to the fossil record"
- Dick Raymond**  
"Predicting the occurrence of earth fissures and land subsidence, Central Arizona Project, Arizona—a multi-disciplinary team approach"
- Robert C. Roback**  
"Late Paleozoic to middle Mesozoic tectonic evolution of the Kootenay Arc, southeastern British Columbia and northeastern Washington"

- Richard H. Sams**  
"Sequence stratigraphy of the Reklaw Formation, Texas Gulf Coast: a marine transgressive systems tract of Eocene age"
- Elizabeth T. Schwarze**  
"Garnet zoning in the Llano Uplift, Texas"
- Steven J. Seni**  
"Salt tectonics on the continental slope, Green Canyon area, northern Gulf of Mexico" and "Salt tectonics on the continental slope, northeast Green Canyon area, northern Gulf of Mexico: evolution of stocks and massifs from reactivation of salt sheets"



*Glenn and Martha Vargas work with Geo 347K students to teach lapidary skills.*

- Mary A. Sheldon**  
"Ontogeny of mosasaurs"
- Christopher S. Swezey**  
"Description and interpretation of the Jurassic J-2 unconformity of the Western Interior"
- Bruce N. Turbeville**  
"A melding of subdisciplines in the analysis of a continental alkaline volcano: sedimentology, eruption dynamics, and petrology of the Latera Caldera, Lazio, central Italy"
- Stacey A. Tyburski**  
"Structural analysis of Sea Marc II side-scan images along the North American-Caribbean strike-slip plate boundary"
- Edna T. Yeh**  
"Bedform nucleation and dune field evolution on North Padre Island, Texas"
- Sally G. Zinke**  
"Geophysical applications for definition of reservoir heterogeneity"

*"Technical Sessions Best Speaker" awards went to Elizabeth Schwarze (Fall 1989) and Karen Carter (Spring 1990)*

# Job Placement Review. . .

The Department of Geological Sciences had another successful year in its recruitment/placement efforts. 71 graduate and undergraduate students participated in a total of 419 interviews for geology and geophysics majors. There were 48 offers made, and of those, over half accepted permanent and summer employment. Companies who interviewed with the Department include: Amoco, Arco Alaska, Arco Oil and Gas, Arco Research, Baker Hughes, BP Exploration, Chevron (Exploration and Production Services), Chevron USA, Conoco, Enserch Exploration, Exxon Company USA, Exxon Production & Research, Halliburton Geophysical, Leighton & Associates, Marathon, Maxus Energy Corporation, Mobil Production & Research, Mobil Research & Development, Oryx, Phillips Petroleum, Radian Corporation, Shell Development, Shell Oil Company, Texas Oil and Gas, Union Pacific Resources, Unocal Oil and Gas (Domestic and International), and Western Geophysical. Based on the responses of the students who completed the year-end survey, average monthly salaries are listed below. These survey results are compiled for the chairman's review.

— Judy Lipscomb

## PLACEMENT SURVEY 1989-90

### SUMMARY

Students participating in recruitment:	71	
Students responding to survey:	45	(63 % of the participants)
Students who did not respond to survey:	26	(37 % of the participants)

	Total	Geology	Geophysics	Energy & Mineral Resources
(Working toward)				
Bachelor's Degree	10	7	3	—
Master's Degree	39	32	6	1
Ph.D.	22	15	7	—

The 71 students participated in 419 interviews. 48 offers were made and 26 were accepted.

	Average Monthly Salary			
	Summer		Permanent	
(Working toward)	Geology	Geophysics	Geology	Geophysics
Bachelor's Degree	\$2300*	\$2431	—	—
Master's Degree	\$2563	\$2365	\$3026	\$2500+
Ph.D.	\$2802	—	\$3825	—

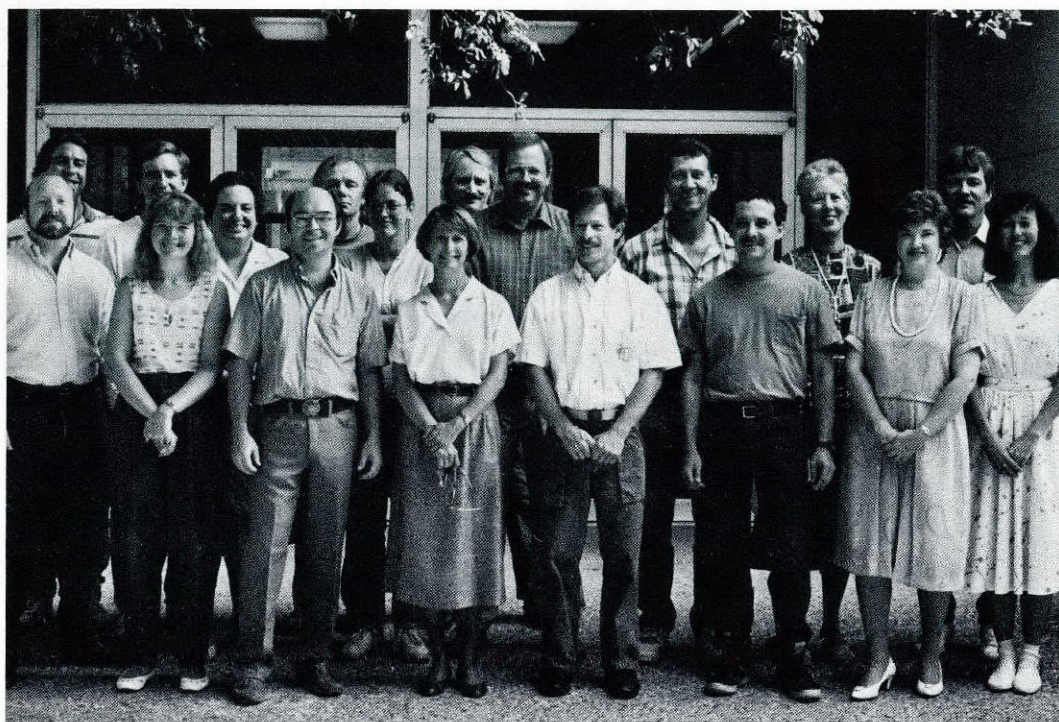
\* only 1 job offer for Summer Geology Bachelor's Degree  
+ only 1 job offer for Permanent Masters Geophysics





# NEWS *Department*





*Department Staff: Front row, l-r, Scott Schroeder, Andrea Black, Greg Thompson, Ann Page, Jeff Horowitz, Pablo Cortez, Joyce Best, Judy Lipscomb; Back row, l-r, Paul Desha, Tim McDowell, Betty Kurtz, Ruff Daniels, Rosemary Brant, David Stephens, Scott Thieben, Eddie Wheeler, Donna Precht, and Bill Woods*

## Administrative Staff

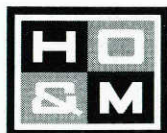
Joyce Best - Administrative Associate  
 Andrea Black - Accounting Clerk III  
 Rosemary Brant - Senior Technical Secretary  
 Paul Desha - Senior Procurement Officer  
 Betty Kurtz - Administrative Assistant

Judy Lipscomb - Administrative Assistant  
 Ann Page - Administrative Assistant  
 Donna Precht - Student Development Specialist II  
 Scott Schroeder - Accounting Clerk III  
 Bill Woods - Executive Assistant

*Staff Recognition Awards were given to Betty Kurtz for 20 years, David Stephens for 15 years, Ruff Daniels for 10 years and Jeff Horowitz for 10 years of employment with The University of Texas at Austin.*

*Rosemary Brant presented a paper in New Orleans at the annual meeting of the American Association of Teachers of French.*

# DEPARTMENT AWARDS



Dr. Leon Long won the Houston Oil & Minerals Corp. Faculty Excellence Award.

**KNEBEL  
TEACHING  
AWARD**

Dr. Doug Smith won the Knebel Teaching Award.

Dr. Tim Rowe won an award for Knebel Teaching Support.



**DISTINGUISHED  
SERVICE AWARD**

Betty Kurtz received a Distinguished Service Award for dedicated and long-standing contributions to the professional needs of faculty and staff in the Department.

Donna Precht received a Distinguished Service Award for outstanding service in student advising and dedication to undergraduate education in the Department.

# On A Personal NOTE...

*Milo Backus was selected to receive the Maurice Ewing Medal from the Society of Exploration Geophysicists in September 1990.*

*Jay Banner is a member of the SEPM Research Committee. He was an invited speaker to the Gordon Research Conference in Andover, New Hampshire.*

Dick Buffler still enjoys his joint position with the Department and the Institute for Geophysics, especially teaching the seismic stratigraphy course and working with lots of graduate students. He and Pat continue to commute between Houston and Austin; not ideal but it works.

*Bill Carlson is the Associate Editor of American Mineralogists and sits on the Editorial Review Board of the Journal of Metamorphic Geology. He is also a Fellow of the Geological Society of America.*

Bill Carlson began the academic year at a delightful symposium held by Harvard University in honor of James B. Thompson, Jr. As one of ten invited lecturers, Bill was able to rub elbows and argue science with many of the leading lights in metamorphic petrology. The symposium was capped by a spectacular four-day field trip through the metamorphic rocks of New England. Other talks during the year were on apatite fission-track annealing at the annual GSA meeting and at Exxon Production Research. Summer provided unusual opportunities for travel, first as an invited lecturer at the quadrennial meeting of the International Mineralogical Association in Beijing, China, then as a keynote speaker at a meeting on mineral textures held by the Mineralogical Society of Great Britain in Manchester, England.

Bill was pleased to see milestones passed by three students this year: Charlotte Bryant graduated from the Bachelor's program with honors after completing a geochemical study of metabasaltic rocks in the Llano Uplift for her honors thesis; Elizabeth Schwarze finished up a topnotch Master's thesis on polymetamorphism in the Llano Uplift; and Cambria Johnson carried her thesis work on diffusion in coronal textures in Adirondack metagabbros through to publication in the *Journal of Metamorphic Geology*, then launched into a Ph.D. program. The Department family grew larger by one last May, when Cambria gave birth to Calder

Wells, whom Carlson claims as his first "grandstudent." It has not yet been determined whether Calder will be expected to present progress reports at the weekly student meetings.

The big news for Mark and Rhonda Cloos was the birth of Michael Ethan Cloos on November 2, 1989. They call him "the little guy" but he's growing fast and determined to walk. The next biggest event of the year happened four days after Michael was born. Mark was presented with the Donath Medal and Young Scientist Award at the National Meeting of the Geological Society of America in St. Louis. He says that the award reflects the support the entire University has given him over the years.

Last June, Mark did his usual stint of field work in the Franciscan of northern California, working on the coherent blueschist terrane in the eastern belt with his long-time mapping cohort Steve Lipshie. Graduate student Jeff Corrigan joined him in measuring a few thousand foliation and fold axis attitudes. He hopes that only one more summer of work is needed to finish this project.

In July, Mark joined Bob and Betty Boyer for several days of meetings in Indonesia with members of the faculty at the Institute for Technology at Bandung (ITB) on the island of Java. The meetings were to initiate collaborative research and

student programs between the ITB and UT. Following the meetings in Bandung, Mark went to the Ertsberg to prepare the way for the arrival of the first team of graduate students who will do their graduate research in Irian Jaya. Tim McMahon began studies focussing on the petrology and structural geology of the igneous rocks in the Ertsberg area. His work overlaps with Jeff Rubin's focussing on the origin of the Cu-rich skarn deposits. They will be joined by Andrew Quarles during this summer's field work. This megaproject is off and running. The first results should be ready for presentation at meetings next year.

On the fission track thermochronology research front, Leslie White, Jeff Corrigan, and Richard Ketcham now have the computer automated stage, digitizing board, and other peripherals fully operational. New rock crushing, pulverizing and dust collecting equipment was installed so mineral separation no longer requires a trip across town to the Bureau of Economic Geology. Richard wrote the "user friendly" Macintosh computer programs that automate track counting and measuring. Leslie is using the lab to work on rocks from the Transverse Ranges of California. The thermal history of the convergent turned transform margin is proving to be quite complicated. Jeff is looking for quantitative evidence for heat advection near growth faults in the Texas Gulf Coast basin following studies on deep-sea courses from the central Indian Ocean. These projects are demonstrating the power of fission-track techniques to provide dated paleotemperatures in a wide range of tectonic settings.

In the fall semester, Mark taught a graduate course titled Tectonic Problems for graduate students. In

the spring semester he again co-taught the Geology of the National Parks with Gary Kocurek. The "Parks" course had more than 320 students enrolled. He is the vice-chair of the Structural Geology and Tectonics Division of the GSA, and signed up for another three-year term as an Associate Editor of *Geology*.

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The past year has seen some enjoyable excursions for **Ronald** and **Marion DeFord**, such as a trip on the "Dinner Train" from San Antonio to Hondo and return, and two overnight visits to Festival Hill in Round Top, Texas, to hear wonderful classical music. Although he still attends the Austin Symphony and Opera performances, Ronald has really enjoyed the chamber music groups. In February, two evenings of chamber music were held at the DeFords' home with 65 music lovers attending each night.

Ronald and Marion were acknowledged for their editorial assistance in an article by F. W. Schwink, "A re-examination of the Mycenaean medio-finite ending," which appeared in the Spring/Summer 1989 issue of the *Journal of Indo-European Studies*.

In November of '89 the Society of Vertebrate Paleontology dedicated a field guide to Ronald and three other professors; Ronald was very pleased. The AAPG convention in San Francisco was just too far away for an 88-year-old gentleman, so Ronald missed seeing everyone. The convention is to be held in Dallas next year; the DeFords plan to be there!

The deer and other critters that live with Marion and Ronald are all in fine fettle; the weather's been a mess, though, what with golf-ball-

sized hail a month ago and now it's 100° in the shade!

Ronald is a geologist to the core! In order to attend the graduate students' production of *Final Bedlam*, he chose not to attend the elegant party and festivities hosted by the LBJ Library marking the 25th anniversary of Lyndon Johnson's election to the Presidency of the United States. Now that's true dedication to Geological Sciences!

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**Sam** and **Dottie Ellison** attended a week of school with the Elderhostel in Bicknell, Utah, under the sponsorship of Snow College of Ephraim, Utah. They covered the spectacular scenery of the Capital Reef National Park, including the canyons, natural bridges, and spectacular Cretaceous fossil beds. The formal classroom time was occupied by two days on how to improve snapshot photographs, two days on geology, and one day on the Mormon history of the region. Afterwards they visited Bryce Canyon and Zion Canyon National Parks.

In October the Ellisons visited their oldest son and his family in Marietta, Georgia. They also saw the stage version of "Driving Miss Daisy." In October Sam gave a paper on Mississippian conodont zonation of north-central Texas before the symposium by the Fort Worth Geological Society. In attendance was a classmate of Sam's from the University of Missouri, whom Sam had not seen since 1939. The classmate was blinded several years ago in a drilling rig accident in North Texas.

In December Dottie and Sam drove to Atlanta to visit their children. After returning to Austin on December 29, Sam was hospitalized for encephalitis, which took a recovery

period of about a month. In March the Ellisons attended the GSA meeting in Stillwater, Oklahoma, which included a large number of papers from the international conodont group, the Pander Society. After the Stillwater meeting Sam learned that the Senckenberg Museum in Frankfurt, Germany, published his paper on Mississippian conodonts of the Tesnus Shale of the Marathon Basin, Texas.

Dottie and Sam celebrated their 50th wedding anniversary in June with all of their children and families.

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**Bill Fisher** completed a six-year term as Department chairman. He plans to stay active in the Department, although next year he will be on special faculty assignment, the first such leave in 30 years. Bill will continue as director of the Geology Foundation and as director of the Bureau of Economic Geology. During the year, Bill was honored as Dedicattee of the Annual Transactions of the Gulf Coast Association of Geological Societies, and doubly so with Don Boyd, Honorary Life Member of the Geology Foundation Advisory Council, as the



Citationist. Bill was named Honorary Member of the American Association of Petroleum Geologists and was installed as president-elect of the American Geological Institute. He also received the Distinguished Service Award from the West Texas Geological Society. Bill remains active in national affairs, continuing to serve as co-chair of the National Research Council's Board of Earth Sciences and Resources, being reappointed to the National Petroleum Council, and being appointed by Admiral Watkins to the Secretary of Energy Advisory Board.

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***Bob Folk won the Neil Miner Award for teaching geology from the National Association of Geology Teachers at the Geological Society of America meeting in November 1989. He was also selected to receive the Sorby Medal from the International Association of Sedimentologists in Nottingham, England in August 1990.***

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In May 1989 **Bob** and **Marge Folk** left for Italy, where Mary Crabaugh (and later her husband, Jeff) assisted in field work, and Steve and Martha Cather joined them for a couple of weeks to experience the tedium of intensive field work. They left Portovenere after a week of coastal bad weather and storms, and headed for Siena where they examined travertines in the field with an Italian "geologess." Their main work was around Viterbo at the travertine-depositing hot springs.

*Bob Folk pauses during a visit to the Portoro limestone quarry.*

Then they went on to Venezia and took a taxi ride across the Dolomite Road among towering peaks and ice fields. They closed out by looking at the Ammonitico Rosso (Jurassic) around Verona. Then Bob and Marge left for two weeks' vacation in Ireland, the scenic West and South coast, Dublin, and one day in Belfast to see the "tommies." Ireland was beautiful, calm, and placidly pleasant as opposed to much more dramatic Italy.

In November at GSA (St. Louis), Bob received the Neil Miner Award from NAGT for "disruptive" geology teaching. "Amico" Earle McBride did the "fustigation."

In January Bob went to Egypt with Don Campbell (MA '62) to study the pyramids and temples. A French chemist has published several books claiming that the pyramid blocks are made of a type of concrete, poured into molds. Bob and Don determined that they are really limestone, but the battle continues (as of May) and Bob has learned a lot of fascinating things about Egyptology.

Bob's work continues on the black Triassic limestone and the travertines of Italy; bacteria, aragonite, and calcite in modern and ancient rocks; and etching features in quartz. All these take a great amount of SEM time and film. Pyramidology has been a seductive sideline.

This summer Bob plans to work in Italy in the Viterbo area with Steve and Martha Cather, on recent and Pleistocene travertines; in Plitvice, Yugoslavia, with Hank Chafetz on modern fresh-water travertines; and then meet Marge in England to receive the Sorby Medal from I.A.S.

The major event for **Bill Galloway** this past year was the six-month relocation to Bergen, Norway. The visit not only introduced Bill and Rosemary to one of the most beautiful and wettest cities in the world, but was a springboard for the "Galloway global tour of SAS destinations" including Denmark, the Netherlands, and, as a side trip, Indonesia. Returning to Austin for the Fourth of July should provide just about enough time for reading through his mail before the new semester begins.

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*Rich Kyle will serve as the Editor for North and South America for Ore Geology Reviews, an international journal in the field of ore deposits geology, and as a member of the Editorial Board for Economic Geology, the journal of the Society of Economic Geologists.*

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**Rich Kyle** reports a busy year of new and old. His dedication to establishing a broad-based ore deposits geology teaching and research program was recognized by his promotion to Professor. In addition to teaching the usual offering of undergraduate and graduate courses in ore deposits geology, he taught the non-majors course on the geology and mineral resources of Texas for the first time. Teaching without a suitable text was the main challenge. Sam Ellison and Rich are writing a book on the topic that they hope to have available by the next course offering. Rich continues as the Undergraduate Advisor and reports that the undergraduate population remains stable at about 125 geological sciences majors.

Research continues on a wide variety of projects, including metal sulfide and industrial mineral deposits in salt-dome cap rocks and in Jurassic carbonates of the Gulf Coast, tectonics and copper-gold mineralization in the Ertsberg district in Irian Jaya, supergene mobilization of gold in tropical environments, and associated sulfide and phosphate concentrations in Proterozoic carbonates of Brazil.

The summer plans include field work in Australia, Indonesia, Tennessee, and Wyoming. Rich also is editing a guidebook for a Society of Economic Geologists field trip to examine industrial rock and mineral deposits of the Delaware Basin to be held in conjunction with the Geological Society of America meeting in Dallas in October.

Brock and Brett advance as happy Montessori students who are active in tennis and swimming, while Linda continues as an editor for the *Journal of Chemical Education* and a writer. She also was a 100-hour, 1990 Recording for the Blind team member. The Kyle family was saddened by the death of Linda's father in August 1989, but he will live in the memories of those who knew him.

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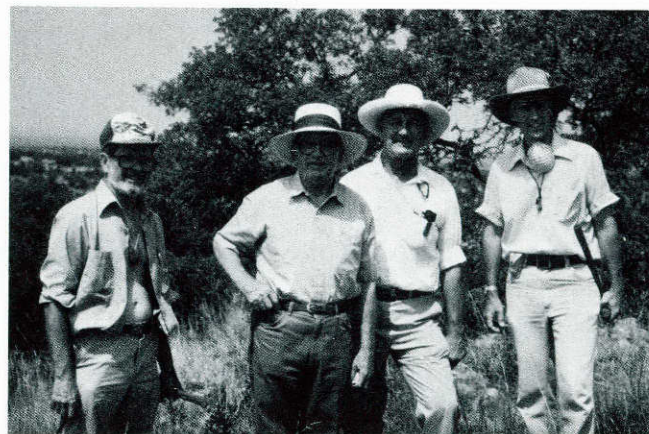
The past year was a busy and significant one for **Martin Lagoe**. He was granted tenure and promoted to associate professor, effective September 1990, news that arrived just before last Christmas. He was also voted President-Elect of the North American Micropaleontological Section of the Society of Economic Paleontologists and Mineralogists, a post he assumed at the American Association of Petroleum Geologists meeting in San Francisco in June. Field work during the year included stints in California, West Texas, and Denmark. Papers were given on various aspects of his research at the Geological Society of America meeting in St. Louis and the American Association of Petroleum Geologists meeting in San Francisco. A major event of the past year was the graduation of Martin's twin boys, Michael and Andrew, from high school in New York State. Even better, Andrew will be attending UT this fall. Unfortunately, he will be majoring in business and not geology.

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**Ernie Lundelius** spent the 1989-90 academic year teaching GEO 405 (Life Through Time), GEO 397 (Vertebrate Paleontology: Birds and Mammals), and GEO 322L (Introduction to Paleontology). He finished a couple of papers dealing

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*Bob Folk, Bill Muehlberger, Edd Turner, and Earle McBride on student field trip*



with Quaternary faunas and started work on a collection of fossil bones from an important early-man site in north Texas. The discovery and collection of a fairly complete plesiosaur skeleton from the top of the Eagle Ford on Shoal Creek in Austin kept everyone at the Vertebrate Paleontology Laboratory busy for several weeks.

Ernie and one of his former students, Russell Graham of the Illinois State Museum, have received a three-year grant from the National Science Foundation to electronically record and analyze changes in late Quaternary mammal communities in the United States.

His son, Rolf, just got his PhD in mathematics from Stanford. His daughter, Jennifer, is still teaching computer science at the University of North Carolina. Wife Judy is working with Gary Freeman in Zoology, and they are studying the development of snails and other invertebrates.

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***Earle McBride is now an Honorary Member of the Society of Economic Paleontologists and Mineralogists and in the Permian Basin Section, SEPM. He is also Associate Editor of Sedimentary Geology.***

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***John Maxwell received an Honorary Doctor of Science degree from Depauw University. He also a Fellow of the Geological Society of America and the American Geophysical Union.***

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*Sharon Mosher will receive the 1990 Outstanding Educator Award given by the Association for Women Geoscientists Foundation. The award honors college and university teachers who have demonstrated support for women students both inside and outside the classroom. Nominations were solicited nationally, and Sharon was selected on the basis of nominations from former and current students and colleagues. This year will be the second time the award has been given. The award will be presented at the annual Geological Society of America meeting in Dallas this fall.*

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***Bill Muehlberger is a member of the AGU History of Geophysics Committee, member of AAPG Research Committee and past chairman of AAPG Astrogeology Committee.***

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**Doug Smith** reports that the year flew past. He ended a stint as Graduate Adviser in the winter, with a feeling of relief, but also with pleasant memories of events like the field trip study of outcrops in Barton Springs. Two thriving teenage boys kept family life eventful. Turning 50 was cushioned by receipt of the Knebel Distinguished Teaching Award and of another dose of research support from the National Science Foundation. With the Austin summer in full swing, he is seeking research ideas to carry out at higher elevations.

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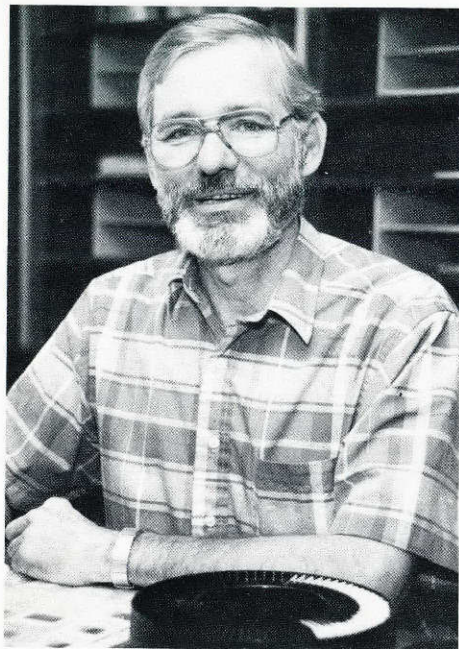
***Nick Walker is currently a member of the editorial board for Geology.***

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**Clark Wilson** became associate chairman of the Department in the fall semester, and still found time to teach the graduate linear systems course, and part of the undergraduate exploration geophysics course. Fall travel included a trip to Dallas for the SEG meeting, and another to Maryland for the NASA Crustal Dynamics meeting. Spring travel included a trip to the Crustal Dynamics meeting in California, and the AGU meeting in Baltimore. The whole family went along for the AAPG meeting in San Francisco, with a side trip to Yosemite Valley. Summer of 1990 is being spent in preparation for becoming chairman in the fall, with one field trip to West Texas planned in mid-July. There still seems to be enough time to ride the bicycle to the University, but the ride home on hot summer afternoons seems less tolerable than it used to be.



# VISITING LECTURERS PROGRAM



*Richard L. Hay*

**Jim Brooks**

*AAPG Distinguished Lecturer*

"New role of petroleum geochemistry in quantitative prospect evaluation assessment"

**Richard L. Hay**, University of Illinois at Urbana

*Judd H. and Cynthia S. Oualline Lecturer in Geological Sciences*

"Silicate diagenesis on the craton" and "Search for early man in Africa - a geologist's view" and "Silicate diagenesis in saline, alkaline lakes" and "Variations on the caliche theme"

**Heinrich D. Holland**, Harvard University

*Edwin Allday Lecturer in Geological Sciences*

"Evidence for a major increase in the O<sub>2</sub> content of the atmosphere 2.0 billion years ago" and "The greenhouse effect: are there implications for energy policy?" and "The composition of seawater today, during the Permian, and during the late Precambrian"

**Tom Jordan**, Massachusetts Institute of Technology

*Edwin Allday Lecturer in Geological Sciences*

"A search for slow earthquakes..." and "Searching for slow precursors to fast seismic ruptures" and "The role of chemical boundary layers in mantle dynamics" and "Imaging mantle reflectors using ScS reverberations" and "Reflection seismology of the whole mantle: layering of the earth from the crust to the core" and "Quantitative morphology of the deep seafloor"

**Leslie Magoon**

*AAPG Distinguished Lecturer*

"Arctic National Wildlife Refuge - petroleum potentials in one of the last Alaskan frontiers"

**John Ostrom**, Peabody Museum of Natural History

*Clara Jones Langston Centennial Lecturer in Vertebrate Paleontology*

"Anatomy and biology of Deinonychus" and "The fossil evidence on the origin of birds" and "A reassessment of avian flight origins"

**Judith Parrish**, University of Arizona

*Don R. and Patricia Kidd Boyd Lecturer in Petroleum Exploration*

"The geologic record of upwelling" and "The paleogeography of anoxia" and "Vegetation and climate near the Cretaceous North Pole" and "The Paleoclimate of Pangea"

**S. Ross Taylor**, Australian National University and Lunar and Planetary Institute, Houston

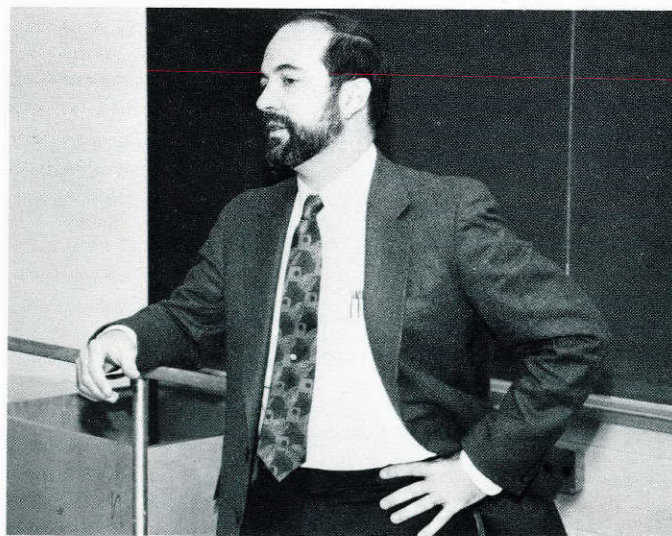
*Jane and Roland Blumberg Centennial Professorship in Planetary Sciences*

"The composition and evolution of the continental crust of the earth" and "Geochemical consequences of the giant impact model for lunar origin" and "The origin of the moon"

**David Veblen**, Johns Hopkins University

*Judd H. and Cynthia S. Oualline Lecturer in Geological Sciences*

"Transmission electron microscopy of clay minerals, weathering and diagenesis" and "A microscopic view of reactions in rock-forming minerals" and "Transmission electron microscopy of phase transitions in minerals" and "Transmission electron microscopy of metamorphic processes in chain and sheet silicates"



*Tom Jordan*



# Visiting Speakers ...

Carlos Aiken, U.T.-Dallas "Gravity studies of Mexico and the Gulf region"

John Anderson, Rice U. "Rapid episodic Holocene sea-level change and its influence on the Texas shelf and coastal zone"

Cathy Busby-Spera, U. California - Santa Barbara "Tectonic model for Early Mesozoic arcs of the southwest Cordillera" and "Mesozoic convergent margin basins in Baja California, Mexico"

Chuck W. Calavan, Exxon Co. "Geology of fractured and karsted Silurian carbonates, Fullerton Field, West Texas"

David Dineley, U. of Bristol (England) "Fishing in Paleozoic seas"

Steven Dorobek, Texas A&M Univ. "Foreland response to episodic convergence, Devonian and Mississippian sedimentary rocks of Montana and Idaho"

Robert Ehrlich, U. South Carolina "Pore types and reservoir physics"

Shaun Frape, U. of Waterloo "Groundwater in the crystalline rocks of the Canadian and Fennoscandian shields" and "The relationship of structural and basement features to formation-water chemistry, Michigan and Appalachian basins"

Robert L. Freed, Trinity University "Smectite to illite transition and diagenesis in Gulf Coast pelitic rocks"

Martin Frey (Mineralogisch-Petrographisches Institut) University of Basel, Switzerland "Very low-grade metamorphism of clastic sedimentary rocks"

Joe Gettrust, Naval Ocean Research Development Authority, NSTL Station, Mississippi "Sediment structure determined from deep towed arrays"

Allen Glazner, U. North Carolina at Chapel Hill "Crustal extension, crustal density, and the evolution of Cenozoic magmatism in the western United States" and "Experimental studies of magma mixing"

Robert Goldhammer, Exxon Co. "Depositional cycles, composite sea-level changes, cycle stacking patterns, and the hierarchy of stratigraphic forcing: examples from Alpine Triassic platform carbonates"

Jeremy Greene, Arco Exploration "A seismic reflection case study from the Gulf of Mexico"

Steve Haggerty, U. of Massachusetts "Diamond genesis ..." and "Upper mantle metasomatism and oxidation states"

Vicki Hansen, Southern Methodist University "Proterozoic convergent margin on Gondwana? Evidence from Antarctica" and "Margin-parallel shear zones: an example from the Mesozoic of the Northern Cordillera"

Ray Holifield, Ray Holifield & Associates "Recompletions of existing oil and gas wells by horizontal drilling"

James Holik, Texas A & M University "Effects of Canary hot-spot volcanism on ocean crust off Morocco"

David W. Houseknecht, U. of Missouri at Columbia "Tectonic and sedimentary evolution of the Arkoma Foreland Basin" and "Thermal maturation and sandstone reservoir diagenesis in the Arkoma Basin" and "Compaction of sand and sandstones"

Gene Humphreys, U. Oregon "Tectonics in the western United States: the role of the mantle" and "Subduction dynamics - what caused the Laramide?"

Andrew Hurst (Statoil, Norway) "Geological aspects of permeability characterization in sandstones"

R. E. (Dick) Jackson, INTERA Technologies, Inc., Austin "Pesticides in groundwater"

John Kappelman, U.T.-Austin, Anthropology "The fossil apes of South Asia: geology and paleontology of the Siwalik Hills"

Brenda L. Kirkland, Louisiana State U. "Permian Reef revisited: an agnostic view"

Junji Koyama, Tohoku U. (Japan) "Seismic excitation and directivity of short-period body waves from a stochastic faulting model"

Morris Leighton, Illinois State Geological Survey "Interior cratonic sag basins"

Judith Lentin, consulting palynologist, Calgary, Alberta "The astrobleme and the geologic record" and "Computerization of paleontological data"

Alan Levander, Rice U. "EDGE experiment in central California"

Kenneth Mahrer, Teledyne Geotech "Using the man-made microseismicity from a hydraulic fracture treatment as a diagnostic tool"

Alex McNair & Doug Wilson, ARCO Oil & Gas Co. "Gulf Coast Tertiary prospecting: recent examples using seismic sequence analysis and depositional modelling"

Dan Miller, University of Wyoming "Documents on Texas mineral resources in the Anaconda Collection"

Bruce Nelson, U. of Washington "Fluid metasomatism in subduction zones: isotopic evidence from the Franciscan Complex, California" and "Proterozoic anorogenic volcanism in the mid-continent"

John Oldow, Rice U. "Transpression during the Mesozoic and early Tertiary: tectonic evolution of the North American Cordillera" and "Structural evolution of the Central Brooks Range"

Simon Peacock, Arizona State U. "Fluid processes in subduction zones" and "Early Paleozoic tectonics in northern California"

Wayne Pennington, Marathon Oil "Introduction to full-waveform acoustic logging"

Francisco Perez - U.T.-Austin, Geography "Talus fabric and geomorphic processes"

Fred Peterson, U.S. Geological Survey "Architectural studies in the Lower Jurassic eolian Nugget Sandstone"

J. Fred Read, Virginia Polytechnic Institute and State University "Field and modeling studies of cyclic carbonates: a predictive tool for petroleum exploration"



*1988 fall field trip for new graduate students. Faculty and graduate students at Blount Mountain in the Llano Uplift of Central Texas, where late-stage, calc-silicate metamorphic mineral assemblages overprint multiple generations of Grenville-age folds.*

Fritz Rummel, Ruhr U. (W. Germany) "Site selection" "Preliminary results" and "Geophysical field laboratory"

W. C. Shanks, U.S.G.S., Reston "Geochemical reaction modelling of fluid mixing, water-rock interaction, and stable-isotope evolution in submarine hydrothermal systems" and "Geology and geochemistry of hydrothermal vent fluids, sediment alteration, and massive sulfide deposits in the Escanaha Trough, Gorda Ridge, northeast Pacific"

Paul Silver, Carnegie Institute "Shear wave splitting and mantle deformation"

Roger M. Slatt, Arco Oil and Gas Company "Scales of geological heterogeneity of a deep-water sand giant oil field"

R. Chris Tacker, Rice U. "Crystal chemistry of apatites: implications for fission tracks and magma chemistry"

Christopher J. Talbot, Hans Ramberg Tectonic Laboratory, U. of Uppsala (Sweden) "Active and post-glacial faults in the Baltic Shield"

Manik Talwani, Rice University "EDGE and other activities at the Houston Area Research Center"

William Thomas, U. of Alabama "Regional tectonics of the northern Gulf rim"

Art Thompson, Exxon Production Research "Microporosity and permeability of rocks" and "Fractal analysis of sedimentary rocks"

David Tralli, Calif. Institute of Technology "Geodetic measurements across the Gulf of California"

Joel Watkins, Texas A&M Univ. "A new perspective of the crustal architecture of the northern Gulf of Mexico margin"

Mike Watkins, U.T.-Austin, Center for Space Research "Crustal motions derived from laser ranging to the LAGEOS satellite"

Steven Wesnousky, U. Nevada "Neotectonics, earthquake potential, and the mechanics of faulting"

Douglas Wiens, Washington U. at St. Louis "The deep-attenuation structure of a backarc spreading center"

Ray Willemann, Air Force Geophysics Lab., Boston "Deep focal mechanisms--indicators of stress, or strain rate?"

Jerry Winterer, Scripps Institution of Oceanography "Drowned atolls and plate tectonics"

Dan Worrall, Shell Research and Development "Tectonics of the Bering Sea region: evolution of strike-slip basins" and "Salt, growth faults, and the deep structure of the Gulf of Mexico"



Calendar year 1989 marked the Bureau of Economic Geology's 80th year as a geoscience research institution and by all measures was one of the most dynamic years in the Bureau's history. The Bureau staff includes 71 PhD's and 69 support personnel. Thirty-six graduate students are supported by the Bureau. Funded research projects for 1989-90, as of May 1990, total \$10,740,510. From June 1989 to June 1990, the Bureau published 44 new research documents, including nine Reports of Investigations, three Geological Circulars, six Special Publications, one Mineral Resource Circular, and 25 contract reports. The Core Research Center holdings increased to approximately 1,050,000 linear feet of core from more than 58,800 wells. Likewise, the Geophysical Log Facility expanded its holdings to about 55,000 well logs.

The Office of the Governor awarded research funds to a consortium of State universities to establish a State Lands Energy Resource Optimization (SLERO) Center, of which the Bureau has been assigned overall managerial control. This research program involves the development of improved petroleum-recovery strategies to enhance production from reservoirs on State Lands.

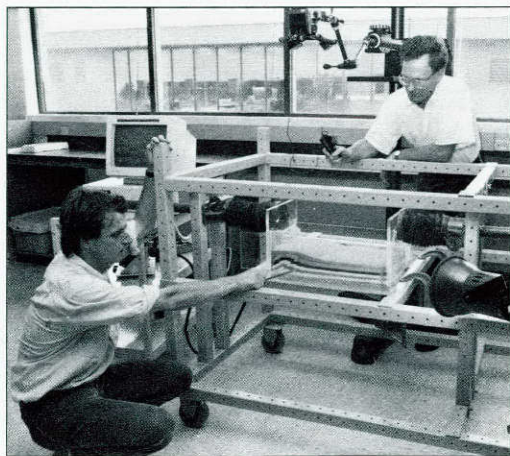
The Gas Research Institute has provided funding to the Bureau to collect and organize data on major gas reservoirs of the central and eastern Gulf Coast and midcontinent regions

and to publish the results in the same format as that of the Bureau's popular *Atlas of Major Texas Gas Reservoirs*. The major reservoirs (cumulative production >10 Bcf) will be assembled geologically into plays using age, formation, lithology, reservoir genesis, and geographic location as organizational criteria.

A group of four reservoir characterization projects involves the study of outcrop and modern-environment, reservoir-scale facies assemblages and their petrophysical properties. These projects include: (1) an extensive coring program in modern ooid grainstone bars in Joulter's Cays, Bahamas, (2) an outcrop study of the superbly exposed Ferron Delta System in east-central Utah, (3) a detailed examination of exposed San Andres and Grayburg facies of the southern Algerita Escarpment in the Guadalupe Mountains of Texas and New Mexico, and (4) a comparative field and subsurface study of the well-exposed Frontier Formation of the Green River Basin, Wyoming, which is composed of low-permeability ("tight") shoreface sandstones.

Several members of the research staff received special recognition for outstanding scientific achievement. William Fisher has been appointed to the newly created U.S. Secretary of Energy Advisory Board, a 28-member panel that will offer guidance to Energy Secretary James D. Watkins. Fisher has also been awarded honorary membership in AAPG, and the 1989 Transactions of the Gulf Coast Association of Geological Societies was dedicated to him, an honor bestowed each year by the GCAGS upon a prominent geoscientist. Martin Jackson and Bruno Vendeville earned the best paper award at the 1990 annual meeting of AAPG. Jackson and Charlie Kreidler were elected Fellows of the GSA in 1989 in recognition

*Computer-controlled deformation rig used at the Bureau's Applied Geodynamics Laboratory to deform tectonic models made of layered sand and silicone polymers under a normal-gravity field. Pictured are Bruno Vendeville (left) who designed and constructed the rig, and Martin Jackson (right), the laboratory's director.*



of their research in salt tectonics and hydrogeology, respectively.

Eight geologists joined the research staff during 1989-90. Kenneth Barrow, until recently a staff geologist with Chevron in Denver and Midland, joined the Bureau as a research associate and will engage in reservoir characterization for the SLERO project. Jeff Grigsby recently earned a PhD from the University of Cincinnati and is now working on the diagenesis of Tertiary Gulf Coast sands. A native of Australia, Doug Hamilton joined the Bureau as a post-doctoral research fellow to work on terrigenous clastic reservoirs for the SLERO project. Eric James earned his PhD from the University of California, Santa Barbara, and studies the geochemistry of igneous rocks and associated ore deposits of West Texas. Ulises Ricoy, a native of Mexico, is a post-doctoral research fellow working on the SLERO project. Dan Schultz-Ela joined the Bureau's Applied Geodynamics Laboratory as a research associate to develop numerical models of physical tectonic models. Roger Tyler joined the Bureau from his native South Africa to conduct research for the Coalbed Methane project. Rudy Weijermars, a native of The Netherlands, earned his PhD in geodynamics at Uppsala University, Sweden, and will work for the Applied Geodynamics Laboratory, developing scaling theory for models involving brittle overburden and viscous substrates.

Other personnel changes involved the retirement of two Bureau veterans and the resignation of one of our head administrators. Frank Brown and Mary McBride retired from the Bureau after 28 and 12 years of service, respectively. Brown earned an international reputation in the study of depositional systems, basin analysis, and seismic/sequence stratigraphy, and now is an international geologic consultant. McBride was the Bureau's Public Information Geologist, a position that requires handling some 2,000 requests for geologic information from the general public each year. Ed Bingler, formerly Deputy Director of the Bureau, resigned this year to become permanent Executive Director of the Texas National Research Laboratory Commission, the institution that was instrumental in bringing the Superconducting Super Collider project to Texas.

- by Tucker Hentz

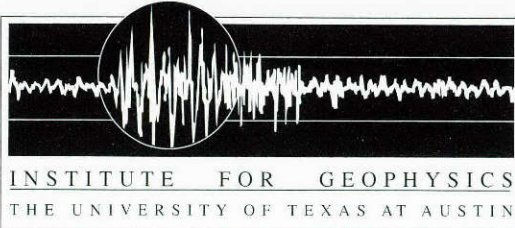
*Bureau of Economic Geology*

**REPORT**



# REPORT

## Institute For Geophysics



UTIG conducts geophysical and geological investigations of the history, structure, and dynamics of the earth's crust and mantle, especially the ocean basins and margins. Disciplinary areas of research interests include seismic reflection and refraction, earthquake seismology, geothermal studies, gravity, geomagnetism, geodesy, and theoretical geophysics. Major topics of current research include ocean margin and plate boundary processes, seismic stratigraphy, global plate reconstructions, contemporary seismicity, earthquake prediction, basin analysis, seismic data processing, paleomagnetism, lunar and planetary seismology, and deep earth processes. Institute capabilities in these types of research extend from problem definition to data acquisition, data processing and, finally, interpretation of results. Development of new methodology and instrumentation for these studies is an integral part of the Institute's activities. Geographical interests range widely from the continents to continental margins, and offshore to the deep oceanic areas. Both passive and active margins are under investigation. We have ongoing programs in the Pacific, Indian, and Atlantic oceans, with a major effort toward understanding the Caribbean region and the Gulf of Mexico. The Institute has become one of the major centers in the world in studies of the Antarctic region, both on land and at sea. The studies undertaken here address problems of the Antarctic continent and plate as part of Earth's geodynamic and paleoclimatic systems. Institute scientists are also using the region as a natural laboratory to study geotectonic processes that are particularly well represented there, such as the origin and destruction of marginal basins and their role in the evolution of cordilleran orogens and core complexes.

The activities of staff and students contribute strongly to UTIG's reputation as a major seagoing institution. In the past few years members of UTIG have

led or participated in research programs on previously owned ships of the Institute, the *Fred H. Moore* and the *Ida Green*, various ships of the UNOLS fleet, the *Polar Duke*, numerous foreign vessels, and several contract geophysical ships. This mix of ships has allowed us to utilize facilities closely tailored to our needs. To support our seagoing activities, UTIG maintains an engineering staff and staging facility in Galveston, operated in close cooperation with the marine activities of Texas A&M University. Examples of the type of equipment we are able to field include low-fold multichannel systems, an array of active or passive ocean bottom seismometers, and geothermal probes. Further, a formal agreement among The University of Texas at Austin, Texas A&M University, and the University of Miami facilitates the sharing of marine facilities and technical capabilities in a more efficient manner. The group has formed SECOR, the SouthEast Consortium for Ocean Research. In the long run, we anticipate that SECOR will develop into one of the leading marine research organizations in the country.

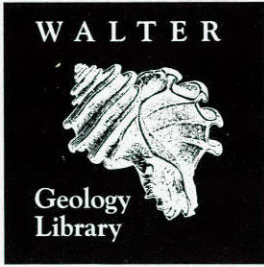
Because of the volume of the data acquired and our 3D processing requirements, we have moved our multichannel seismic processing to the University of Texas Center for High Performance Computing (CHPC) Cray X-MP/24 computer. With a T-1 connection to the computer, we can process seismic reflection and refraction data quickly, easily, and more inexpensively than before. UTIG has installed the Geovecteur™ software of CGG on the Cray allowing us to process 3-D seismic data. Geoquest™ interactive software mounted on color Sun Sparc™ hardware assists in 2-D and 3-D interpretation. There are about 18 Sun™ workstations at the Institute, plus numerous Macintosh™

computers and laser printers. These are interconnected by AppleTalk™ and Ethernet™ with national and international connections to Internet and Bitnet.

UTIG is the University's representative and a founding member of the Incorporated Research Institutions for Seismology (IRIS), which now has over 60 member universities. In addition to being one of the eight regional centers receiving event tapes from the Global Digital Seismographic Network, UTIG hosts the IRIS Data Management Center. This Center archives all data from the worldwide digital seismic network. Similarly, UTIG is one of ten member institutions of JOI, Inc. (Joint Oceanographic Institutions, Incorporated). JOI's responsibilities include managing the international Ocean Drilling Program (ODP). Scientific input to ODP is provided by JOIDES (Joint Oceanographic Institutions for Deep Earth Sampling), an advisory structure which includes representatives of the JOI member institutions and six non-U.S. partners (countries or consortia). Beginning in October 1990, UTIG will host the JOIDES Executive and Planning Committee Offices.

While all of the work of the Institute is directed toward research, graduate student training is an important component of these activities. The Institute itself does not award degrees or offer formal classes for academic credit; rather the Institute maintains close relationships with the Department of Geological Sciences and the Marine Science Department. These academic departments conduct teaching activities and award advanced degrees. The Institute maintains its affiliation with these departments through cooperative programs and joint faculty appointments. Approximately one third of the research staff hold joint appointments in the Institute and the Department of Geological Sciences or the Marine Science Department. Many geophysics graduate students at UT and other universities take advantage of the opportunity to work with the staff and facilities of the Institute for Geophysics.

- by Patricia E. Ganey-Curry



The Walter Library staff is cutting more subscriptions. Since the last rollback in 1986, journal costs have continued to climb rapidly, and have again outstripped static budgets. Cancellations totaling \$200,000 are under way throughout the General Libraries, a journals cut of nearly 10%. Rapid price increases show every sign of continuing, for books as well as journals.

Endowment funds are relied upon more each year to provide the Walter Library with needed research materials, and both Walter and Whitney funds are strained and in great need of donations. We are constantly seeking better ways to provide faculty and students with information quickly and at low cost, but more resources are needed.

Meanwhile, the UTCAT online library catalog continues to improve, and the Walter Library is beginning to experiment with CD-ROM technology, a PC-based optical storage and retrieval system that promises greatly improved access to research literature by means of both bibliographic indices and direct access to data and images. The Walter Library has one CD station on the staff PC, and hopes to have a multi-use public work station soon.

Mary Pettengill has joined the staff as a volunteer one day a week. Ms. Pettengill has her Master's degree in Library Science from San Jose State University, and is beginning to catalog the Tobin Map Collection. All 40,000 maps will someday have full cataloguing in the UTCAT system, and will be available for automated circulation by means of bar codes on the maps. The benefits are that all UTCAT users will be able to search for maps, and users of the national OCLC

database will be able to tell whether the Walter Library owns a map or map series. We are very pleased that Ms. Pettengill is willing to make this great contribution to improving access for our researchers.

Dennis Trombatore spoke at a UT General Libraries symposium on the Future of Reference in March. Papers from the meeting will be submitted for publication.

Sales of *Graduate Degrees Conferred in Geological Sciences at the University of Texas at Austin* have been steady, confirming the need for this useful subject index. To purchase the volume, send your request with \$15.00 to the Geology Foundation. Proceeds will benefit Walter Library endowment accounts.

Collection guides available from the Walter Library include *Austin: the Lay of the Land* (2 p.); *The Edwards Aquifer, Central Texas* (6 p.); *Guide to Publications of the Texas Bureau of Economic Geology* (6 p.); *The Llano Uplift, Central Texas* (6 p.); *Geology: General Reference Works* (10

p.); and *Geology of Big Bend Region, Texas* (4 p.). These guides are useful working bibliographies, and are available from the library upon request.



Volunteer cataloguer Mary Pettengill and Carol Russell, map room library assistant, at work station in the Walter Library

## BIG SALE

Surplus materials: Books, Journals, Maps, Fieldguides & more. . .

Friday, Oct. 19, 10a.m. - 4 p.m.  
Saturday, Oct. 20, 10 a.m. - 1 p.m.

The University of Texas Geology Building  
Sponsored by the Geology Foundation

Proceeds to benefit the  
Walter Geology Library

- by Dennis Trombatore, Geology Librarian

Walter Geology Library





The Vertebrate Paleontology program has had a very active and productive year. The Radiocarbon Laboratory was merged with the Vertebrate Paleontology Laboratory last year and two new counters have been acquired to facilitate an increasing demand for radiocarbon dates. The combined labs now have four faculty researchers (including two emeriti) and six graduate students. In addition there are five full-time technicians. A number of research projects are being pursued.

Wann Langston, in collaboration with Dr. William Sarjeant of the University of Saskatchewan, has just completed a comprehensive study of a series of tracks of birds and mammals of late Eocene age from Trans-Pecos Texas. He has also started a study of bone histology to explore the question of what kind of material dinosaurs had covering the bony horn cores.

Jack Wilson has just finished several papers with former graduate students Tony Runkel, Anne Walton, and Jim Westgate on the Eocene and Oligocene rodents from the Big Bend region. Some of these fossils raise important questions concerning the early exchange of some of these animals between North and South America. These papers are the latest in a long series dealing with the biostratigraphy and evolution of the Paleogene faunas of that region.

A new project on the late Cretaceous vertebrates from Trans-Pecos Texas has been initiated by Tim Rowe. He is studying a deposit in the Aguja Formation that is very rich in small bones and which promises to greatly increase the known vertebrate diversity of the Late Cretaceous of West Texas. With the help of Dr. Rich Cifelli of the University of Oklahoma, several graduate students, and an enthusiastic group of volunteers, the locality has already produced a

dozen species of mammals, roughly a dozen lizard species, several frogs, turtles, crocodylians, pterosaurs, and several different dinosaurs. Tim will use some of the fossils collected from West Texas to help with another project that is aimed at developing the compact disc (CD-ROM) as a medium for scientific publication. One goal of the project is to publish a catalog with hundreds of digital images of the fossils from West Texas.

Ernie Lundelius continues to work on Quaternary mammals from Texas and Australia. A study of the fossil vertebrate material from the excavation at Third Street and Congress Avenue in 1985 has added to our understanding of the late Pleistocene fauna of Central Texas and, because radiocarbon dates were obtained from the bone-bearing sediments, added to our knowledge of the terraces of the Colorado River at Austin. He and a former student, Russell Graham of the Illinois State Museum, have just been awarded a three year grant from the National Science Foundation to set up an electronic data base of the mammal faunas of the last 40,000 years. This will make it possible to investigate many questions concerning faunal and environmental changes on both a geographic and temporal basis.

Vertebrate paleontology graduate students have been active in several projects. Rick Toomey, who won the Best Student Award of the Houston Geological Society, is making good progress on his study of a late Pleistocene/Holocene faunal sequence

from a cave in Kerr County. This is the most continuous record yet known for the last 13,000 years and will produce excellent data on the faunal and climatic history of that area. Gordon Bell is working on mosasaurs, a group of marine reptiles that underwent their entire evolutionary history in the late Cretaceous. He is finding that many of our ideas about them have to be revised. Dave Froehlich is starting work on the early history of horses, Anne Weil is beginning research on the mammals from Rowe's Aguja site, and Chris Brochu has begun work on growth in crocodiles.

In March of this year a virtually complete skeleton of a plesiosaur, another Cretaceous marine reptile, was found in the channel of Shoal Creek in Austin. The collection of this 18-foot-long skeleton occupied the Vertebrate Paleontology Laboratory for the better part of two months. One of the blocks with the major part of the skeleton was estimated to weigh 3,000 pounds and presented some problems in moving it out of the bed of the creek to the lab. It is one of the best skeletons known of this particular type of plesiosaur and is of considerable scientific importance.



*Workers carefully excavate the plesiosaur found in Shoal Creek. From left to right, Bob Rainey, Bob McDonald, Gail Thalmann (student at Austin Community College), Gordon Bell, and Mike Graham. — photo by Tina Mathes*

- by Ernest Lundelius Jr., Director



# NEAAS *Foundation*



# F O U N D A T I O N

## *Activities*

*“ . . . to foster and to promote the growth, progress and development of geological education, research and graduate study at The University of Texas. . . ”*

The University of Texas  
Board of Regents  
October 24, 1953

The Geology Foundation Advisory Council at its fall meeting in October asked the faculty to review the goals of Foundation endowments, and to make recommendations for the level of endowments needed for the Department's growth in the near future and also in terms of long-range goals. At the spring meeting on April 27, Dr. Fisher presented the results of a study made by the Geology Foundation Faculty Review Committee based on input provided by the entire faculty.

Three major areas of need were identified as future fund-raising targets: new equipment and equipment maintenance; the Walter Geology Library; and unrestricted funds for administrative support of the Geology Foundation, which overlap the uses of the Samuel P. Ellison Jr. Fund.

A proposed goal of \$1 million total for the J. Ben Carsey Sr. Special Maintenance Fund and the J. Donald Langston Special Operations Fund was suggested, which would require additional funds of \$795,000.

The Walter Geology Library goal was increased to \$500,000, requiring an additional sum of \$330,000. Dennis Trombatore, Geology Librarian, cited these challenges facing the Walter Library in the next decade:

- Maintaining the serials collection, which each year grows in cost from 15% to 20%.
- Supplying enough copies of heavily used advanced texts to meet

demand.

- Finding funds to improve the depth of the collection in growing areas like geochemistry and hydrology.

- Acquiring significant upgrades in equipment, especially computers and peripherals.

Mr. Trombatore stated that last year the Walter Library had to pass up about 20% of the relevant new research materials. This year the library will miss close to 50% unless additional funds are made available.

The goal of unrestricted funds for administration of the Geology Foundation and emergency needs, was raised to \$500,000, requiring additional funds of \$329,000. The Samuel P. Ellison Jr. Fund for alumni-related activities has a suggested goal of \$400,000, requiring an increase of \$336,000.

A goal for student support was set at \$1,841,000, needing funds of \$533,000. With the funds for students made available by the recent Elizabeth Teagle Bequest, this goal is near to becoming a reality.

Maximum suggested goals for endowed faculty positions were set at \$1,000,000 for chairs and \$250,000 for professorships.

The total increase needed to reach the proposed funding levels for Geology Foundation endowments is about \$3.7 million. Future meetings of the Advisory Council will focus on steps needed to achieve these ambitious goals.



# Officers:

**Chairman:**

Dr. Rodger E. Denison  
Mobil Research  
and Development Corp.  
Dallas, Texas  
(appointed 1970)



# Advisory Council 1990-91

**Vice Chairman:**

Mr. David S. "Scotty" Holland  
Pennzoil Exploration and  
Production Co.  
Houston, Texas  
(appointed 1986)



# Honorary Life Members:



Dr. Thomas D. Barrow  
Consultant  
Houston, Texas  
(appointed 1978)



Mr. O. Scott Petty  
San Antonio, Texas  
(appointed 1971)



Mr. Don R. Boyd  
Independent  
Corpus Christi  
(appointed 1976)



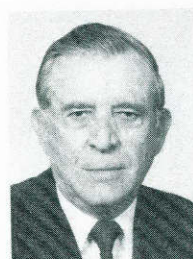
Mr. Edd R. Turner  
Kerrville, Texas  
(appointed 1971)



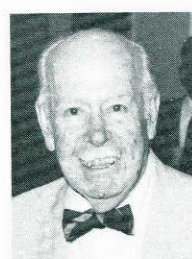
Dr. Samuel P. Ellison Jr.  
Austin, Texas  
(appointed 1981)



Mr. Joseph C. Walter Jr.  
Walter Oil & Gas Corp.  
Houston, Texas  
(appointed 1975)



Mr. John L. Loftis Jr.  
Houston, Texas  
(appointed 1970)



Mr. Charles E. Yager  
Fort Worth, Texas  
(appointed 1955)

*The Geology Foundation was established in 1953 by the University of Texas Board of Regents to assist the Department in achieving its goals. The Foundation is guided by the Advisory Council, a group of alumni and other friends of the Department who meet twice yearly to review the activities of the Department and the status of the Foundation. The Advisory Council acts as a liaison with friends of the Department, alumni, industry, and the earth sciences community, to promote activities beneficial to the Department and to provide counsel on the educational requirements for careers in the earth sciences.*

# Advisory Council 1990-91

## Council

### Active Members:



Mr. Charles W. Alcorn Jr.  
Alcorn Companies  
Victoria, Texas  
(appointed 1976)



Mr. Eugene L. Ames Jr.  
Venus Oil Co.  
San Antonio, Texas  
(appointed 1977)



Mr. Larry M. Asbury  
Arco International  
Oil and Gas Co.  
Plano, Texas  
(appointed 1988)



Dr. David S. Birsa  
Chevron U.K. Limited  
London, England  
(appointed 1986)



Dr. Richard R. Bloomer  
Bloomer & Associates, Inc.  
Abilene, Texas  
(appointed 1982)



Mr. Jerry W. Box  
Oryx Energy Co.  
Dallas, Texas  
(appointed 1989)



Mr. Thomas M. Burke  
Houston, Texas  
(appointed 1985)



Mr. Weyman W. Crawford  
Houston, Texas  
(appointed 1985)



Mr. L. Decker Dawson  
Dawson Geophysical Co.  
Midland, Texas  
(appointed 1977)



Mr. George A. Donnelly Jr.  
The Eastland Oil Co.  
Midland, Texas  
(appointed 1976)



Mr. Thomas E. Fanning  
Marathon Oil Company  
Houston, Texas  
(appointed 1988)



Dr. Peter T. Flawn  
Austin, Texas  
(appointed 1987)



Mr. James H. Frasher  
Houston, Texas  
(appointed 1975)



Mr. William E. Gipson  
Pogo Producing Co.  
Houston, Texas  
(appointed 1969)



Mr. Joseph N. Gittelman  
Shell Western E & P, Inc.  
Houston, Texas  
(appointed 1985)



Mr. George M. Harwell  
Houston, Texas  
(appointed 1982)



Mr. Larry R. Hensarling  
Tee Oil, Inc.  
Lafayette, Louisiana  
(appointed 1985)



Mr. Charles J. Hooper  
Houston, Texas  
(appointed 1983)

*Active Council members typically serve a three-year term at which time they may be re-elected.*

*Officers are elected for a two-year term.*



Mr. John A. Jackson  
Katie Petroleum Co.  
Dallas, Texas  
(appointed 1975)



Mr. Judd H. Oualline  
Houston, Texas  
(appointed 1980)



Mr. Phillip E. Wyche  
Austin, Texas  
(appointed 1977)



Mr. J. Donald Langston  
Kailua-Kona, Hawaii  
(appointed 1979)



Mr. James C. Patterson  
Conoco, Inc.  
Houston, Texas  
(appointed 1989)



Mr. Vance M. Lynch  
Unocal Corp.  
Brea, California  
(appointed 1988)



Mr. W. F. Reynolds  
J. C. & W. F.  
Reynolds Oil Producers  
Wichita Falls, Texas  
(appointed 1976)



Mr. Ken G. Martin  
Martin Energy Co.  
Covington, Louisiana  
(appointed 1977)



Mr. George W. Schneider Jr.  
Austin, Texas  
(appointed 1979)



Mr. David F. Martineau  
Pitts Oil Company  
Dallas, Texas  
(appointed 1990)



Mr. Don B. Sheffield  
Halliburton Geophysical  
Services Inc.  
Houston, Texas  
(appointed 1980)



Mr. Harry A. Miller Jr.  
Midland, Texas  
(appointed 1979)



Mr. William T. Stokes  
Dallas, Texas  
(appointed 1978)



Mr. Michael B. Morris  
Houston, Texas  
(appointed 1981)



Mr. Charles Weiner  
Texas Crude Inc.  
Houston, Texas  
(appointed 1990)



Mr. Robert D. Ottmann  
Houston, Texas  
(appointed 1989)



Mr. Eddie A. Williamson  
Amoco Production Co.  
Houston, Texas  
(appointed 1988)

*New Members . . .*

At its June meeting, the Board of Regents approved the nominations of two new members of the Geology Foundation Advisory Council. David F. Martineau of Dallas and Charles G. Weiner of Houston will join the Advisory Council on September 1.

David Martineau has been exploration manager of Pitts Oil Company since 1972. He received a BS degree in geology from UT in 1960. After graduation he joined Core Laboratories as a logging engineer. From 1961 to 1969 he was administrative assistant to the vice-president of exploration for Coastal States Corporation, formerly Coastal States Gas Producing Company. In 1969 he joined Prudential Drilling Fund as vice-president of operations, then in 1972 assumed his current position with Pitts Oil Company. A long-time supporter of the Department and the Geology Foundation, David is also a member of the UT Ex-Students' Association. His professional memberships include the Dallas Geological Society, Corpus Christi Geological Society, American Association of Petroleum Geologists, Independent Petroleum Association of America, and the Texas Independent Producers and Royalty Owners Association. He is a certified petroleum geologist.

David and his wife, Sara, have two children, Maria and David.

Charles Weiner is Chairman of the Board and founder of Texas Crude Inc. He was a founding partner of the original Texas Crude Oil Company in 1941 and assumed chief operating responsibility in 1962. A certified petroleum geologist, he received his Bachelor's degree from UT in 1948. He holds memberships in the Houston Geological Society and the American Association of Petroleum Geologists, among other professional associations.

Charles and his wife, Anita, have five children.

## Geology Foundation Funds and Programs 1989-90

**The Geology Foundation** maintains over 180 funds to support the activities of the Department, each fund bearing a name designated by a principal donor, or reflecting the primary use. Combined assets of all funds exceeded a market value of 15 million dollars as of August 1989. The majority of these funds is in the form of permanent endowments held as shares in the Common Trust Fund managed by the UT Board of Regents. The earnings from these shares provide the expendable income used to enrich the programs of the Department of Geological Sciences. Endowed and other funds are categorized according to their principal use. The following list describes the general categories and some typical uses that are made of the resources. Special fund-raising efforts or expenses are noted within each category.

### Curriculum Enrichment Funds

Curriculum enrichment funds, held in ten separate accounts, are used to support and develop specific study areas within the Department, such as geophysics, sedimentary geology, and vertebrate paleontology. Two funds have recently been established to support the areas of structural geology/tectonics, and the study of hydrogeology. Faculty members within various sub-disciplines recommend the uses for these funds to support teaching and research. Expenditures from this category totaled over \$50,000 during 1988-89.

Alternative Energy Research & Development Fund  
Dorothy Ogden Carsey Memorial Fund  
S. E. Clabaugh Fund in Hard-Rock Geology  
Energy & Mineral Resources Fund  
Geohydrology & Engineering Geology Research Fund  
Wann & Marietta Langston Research Fund in Vertebrate Paleontology  
Jack K. Larsen - Mesa Petroleum Company Fund  
in Sedimentary Geology  
O. Scott Petty Geophysical Fund  
Structural Geology & Tectonics Fund  
Vargas Endowment for Gems and Gem Mineral Instruction

### Departmental Awards

Five funds are available to provide awards for excellence among the Departmental faculty and staff, distinction in teaching by the faculty, and student excellence in technical presentations, and in the field of petrography. 1988-89 expenditures totaled over \$5,000.

Best Speaker Award  
Houston Oil & Minerals Corporation Faculty Excellence Awards  
Carolyn G. & G. Moses Knebel Distinguished Teaching Fund  
Department Service Awards  
Petrography Awards

### Equipment and Maintenance

This category of funds is for the purchase and support of research equipment that is used by the Department as a whole. These accounts were established recently in recognition of the importance, and great expense, of maintaining modern laboratory facilities for research and teaching. There are two accounts in this category, with 1988-89 expenditure totals exceeding \$7,000.

J. Ben Carsey Sr. Special Maintenance Fund  
J. Donald Langston Special Operations Fund

### Faculty Endowments

Individual faculty members may be appointed to named chairs, professorships, or teaching fellowships which provide funds for research and travel expenses, and may also be used to supplement the faculty holder's salary. There are 28 accounts in this category, and 1988-89 expenditures totaled about \$370,000.

#### Faculty Endowed Chairs

Edwin Allday Centennial Chair in Subsurface Geology  
L. T. Barrow Chair in Mineral Resources  
William Stamps Farish Chair  
Peter T. Flawn Centennial Chair  
Getty Oil Co. Centennial Chair in Geological Sciences  
Shell Companies Foundation Centennial Chair in Geophysics  
Shell Companies Foundation Distinguished Chair in Geophysics

#### Faculty Endowed Professorships

Leslie Bowling Professorship  
Robert E. Boyer Professorship  
Fred M. Bullard Professorship  
Dave P. Carlton Professorship in Geology  
Dave P. Carlton Professorship in Geophysics  
Morgan J. Davis Professorship in Petroleum Geology  
Alexander Deussen Professorship in Energy Resources  
J. E. (Brick) Elliott Centennial Professorship  
J. Nalle Gregory Professorship in Sedimentary Geology  
Gulf Oil Foundation Centennial Professorship in Geology  
Wallace E. Pratt Professorship in Geophysics  
Wilton E. Scott Centennial Professorship  
Albert W. & Alice M. Weeks Professorship  
John A. Wilson Professorship in Vertebrate Paleontology  
The Mr. & Mrs. Charles F. Yager Professorships (I, II, III)

#### Faculty Endowed Teaching Fellowships

Elf Aquitaine Petroleum Faculty Fellowship in Geological Sciences  
Geology Foundation Advisory Council Centennial  
Teaching Fellowship in Geological Sciences  
John A. & Katherine G. Jackson Centennial  
Teaching Fellowship in Geological Sciences  
Bill R. Payne Centennial Teaching Fellowship in Geological Sciences  
Joyce Bowman Payne Centennial Teaching Fellowship  
in Geological Sciences  
William T. Stokes Centennial Teaching Fellowship

## Foundation Administration

These accounts support the Foundation administration, including the *Newsletter*, and activities for Department alumni.

Advisory Council Special Fund  
S. P. Ellison, Jr. Endowment Fund  
*Newsletter* Fund  
Geology Foundation Staff Salaries

## General Research and Travel for Faculty

This category includes four accounts used to support research and travel for the faculty. 1988-89 expenditures totaled almost \$25,000.

Hal P. Bybee Fund  
Continuing Education Fund  
Miss Effie Graves Fund  
Sun Co. Spec. Contrib. to Education

## Permanent Collections

Five of the six accounts in this category are used to support the Geology Library, with the remaining account devoted to the support of the Barron Gem and Mineral Collection. 1988-89 expenditures totaled over \$32,000.

E. M. Barron Trust  
Geology Library Fund  
Tobin International Geological Map Collection  
Joseph C. Walter, Jr. & Elizabeth C. Walter Geology Library Fund  
E. A. Wendlandt Fund  
F. L. Whitney Book Fund

## Publication Support

The Ed Owen-George Coates Fund is used to support the publication of Departmental research by faculty and students. 1988-89 expenditures totaled over \$7,000.

Ed Owen-George Coates

## Student Loans

Two accounts in this category provide loans for field work and emergency loans to Department undergraduate and graduate students. Over \$21,000 was lent to students during 1988-89.

Field Work Loan Fund  
Student Loan Fund

## Student Support Funds

These funds aid students by providing scholarships, fellowships, and research support directly to the students. Twelve accounts are dedicated to undergraduate support, 17 to graduate support, and 24 to either graduate or undergraduate students. A newly created account is the Student Job Fund, which is designed to enrich the experience of Department undergraduate majors through employment as research assistants to faculty. Expenditures from these accounts totaled over \$190,000 for academic year 1988-89.

### Graduate and Undergraduate Support

Amoco Foundation Scholarship  
Arco Scholarship  
M. B. Arick Memorial Fund in Petroleum Geology  
Bloomer Fund for Motivated Students  
Wayne Franklin Bowman Endowed Presidential Scholarship  
Hal H. Bybee Fund  
Chevron Scholarship  
Continental Oil Co. Scholarship  
Robert H. Cuyler Endowed Presidential Scholarship  
Guy E. Green Endowed Presidential Scholarship  
Karl F. Hagemeyer, Jr. Memorial Endowed Presidential Scholarship  
Marathon Oil Co. Scholarship (geology, geophysics)  
Mr. & Mrs. L. F. McCollum Scholarship  
Frank W. Michaux Scholarship

Phillips Petroleum Minority Scholarship  
Louis & Elizabeth Scherck Geology Scholarship  
Scholarships/Various Donors Fund  
F. W. Simonds Endowed Presidential Scholarship  
Student Job Program  
Udden Memorial Scholarship  
Union Pacific Scholarship Fund

### Graduate Student Support

Laura Thomson Barrow Graduate Fellowship  
BP Exploration Inc. Graduate Fellowship  
Jesse L. Brundrett Memorial Endowed Presidential Scholarship  
Ronald K. DeFord Field Scholarship  
Michael B. Duchin Centennial Endowed Presidential Scholarship  
Elliott Academic Activities Fund  
Geology Foundation Graduate Student Executive Committee Fund  
Hogg-Cullinan Scholarship  
Hogg-Sharp Scholarship  
Earl Ingerson Graduate Research Fund in Geochemistry  
Howard R. Lowe Vertebrate Paleontology Fund  
J. Hoover Mackin Scholarship  
Pennzoil & Pogo Producing Companies -  
Wm. E. Gipson Scholarships  
Phillips Petroleum Co. Fellowships  
H. Tod Sutherland Memorial Scholarship  
Texaco Scholarship Fund  
Arno P. (Dutch) Wendler Professional Development Fund

### Undergraduate Student Support

John F. Bookout, Jr. and Carolyn Bookout Scholarship  
in Geological Sciences  
Brahman Energy Scholarship  
W. Kenley Clark Memorial Endowed Presidential Scholarship  
Exxon Minority Scholarship  
J. H. & Lujza P. McCammon Scholarship  
Carroll C. Miller Endowed Presidential Scholarship  
Oryx Energy Company Fund  
David S. Thayer Scholarship  
Undergraduate Science Enrichment Fund - Geological Sciences  
Glenn & Martha Vargas Gemological Scholarship in Geological Sciences  
F. L. Whitney Endowed Presidential Scholarship  
Charles E. Yager Field Scholarship

## Unrestricted Use Funds

Unrestricted funds, held in seven separate accounts, are used to support and enrich a variety of activities of the Department. They support the operation of the Foundation office, and provide a source of funds for special needs such as purchase of major equipment for research, and improvement of support facilities for research. Expenditures from these funds totaled over \$150,000 during 1988-89.

BP Exploration Inc. Fund  
L. W. Callender  
Exxon Fund  
George S. Heyer Fund  
Judd H. Oualline Endowment Fund  
Shell Oil Co. Fund  
Various Donors (General)

## Visiting Speakers, Lectureships, and Faculty Recruitment

The seven accounts in this category are used to bring distinguished scientists from other academic institutions and from industry to the Department for single lectures and for longer periods to conduct a series of lectures or short courses. 1988-89 expenditures totaled over \$12,000.

Edwin Allday Lectureship in Geological Sciences  
Don R. & Patricia Kidd Boyd Lectureship in Petroleum Exploration  
Clara Jones Langston Centennial Lectureship in Vertebrate Paleontology  
Fred L. & Frances J. Oliver Lectureship  
in Texas Hydrology & Water Resources  
Judd H. & Cynthia S. Oualline Lectureship in Geological Sciences  
Judd H. & Cynthia S. Oualline Lectureship in Petroleum Geology  
Phillips Petroleum Company Professional Development Fund

# Gifts...

June 1, 1989 thru May 31, 1990

## Individual Donors

Patrick L. Abbott  
Mr. & Mrs. C. W. Alcorn Jr.  
Estuardo Alvarez-Calderon  
Eugene J. Amaral  
Nancy J. Anderson  
D. R. Andress  
David M. Angstadt  
Anonymous  
John E. Atkins  
Byron A. Bachschmid  
Bruce P. Baganz  
Donna F. Balin  
David B. Bannan  
Mrs. L. T. Barrow  
Thomas D. Barrow  
Jerald H. Bartley  
Robert W. Baumgardner Jr.  
Mr. & Mrs. Fred H. Becker  
Ellis S. Belfer  
David S. Birsá  
William D. Blankenship  
Richard R. Bloomer  
G. Pat Bolden  
John F. Bookout III  
Douglas L. Bostwick  
Richard G. Bozanic  
David O. Bozeman  
Philip Braithwaite  
Charlotte M. Brand  
Herbert L. Brewer  
Thomas E. Bridge  
David A. Bristol  
Wallace E. Brunson  
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Frank K. Cahoon  
Bruce Calder Jr.  
Rodney J. Camp  
Donald H. Campbell  
Joe Cannon  
Jose D. Carballo Jr.  
Mr. & Mrs. Alfred T. Carleton  
Mr. & Mrs. Robert D. Carter  
Mr. & Mrs. Dwight Cassell  
Mr. & Mrs. Steven M. Cather  
Edward C. Cazier III

Walter Chatham  
Pei-Yuan Chen  
Carlo C. Christina  
Michael J. Clifford  
Mr. & Mrs. Mark Cloos  
D. B. Clutterbuck  
George B. Coffin  
H. Grady Collier Jr.  
Mr. & Mrs. Scott Cook  
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Mr. & Mrs. Duncan Corbett  
Weyman W. Crawford  
Thomas M. Culbertson  
R. W. Cumley  
T. Davis & Jane E. Ogden  
Veta M. Davis  
L. Decker Dawson  
Charles J. DeLancey  
Henry C. Dean  
Rodger E. Denison  
Lane Denson III  
Mr. & Mrs. Ronald K. DeFord  
Mr. & Mrs. Gilbert J. DePaul  
George A. Donnelly Jr.  
William E. Dougherty  
Mr. & Mrs. Ralph C. Duchin  
W. Kent Duran  
Mrs. Byron F. Dyer Jr.  
Mr. & Mrs. David E. Eby  
G. K. Eifler  
Ruth P. Elliott  
Mr. & Mrs. Peter A. Emmet  
Mr. & Mrs. A. Gordon Everett  
Rizer Everett  
Robert H. Fakundiny  
Thomas E. Fanning  
Irma M. Feibelman  
Lawrence J. Finklea  
J. D. Finley  
Mr. & Mrs. William L. Fisher  
Ted E. Flanigan  
Mr. & Mrs. Peter T. Flawn  
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Hewitt B. Fox  
Nancy E. Frank  
James H. Frasher  
W. D. Frazell  
Annabelle Friddle  
Joseph A. Fryou  
Warren P. Fuller  
Robert B. Gaines  
C. E. George  
Steve J. Germinat

Fred M. Gibson  
Joseph N. Gittelman  
Jennifer L. Glasford  
Lawrence Gordon  
Richard Grant  
C. DeVearle Gray  
Willard R. Green  
Redge L. Greenberg  
J. Nalle Gregory  
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Bryan M. Hale  
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John W. Hampton Jr.  
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Richard E. Hart  
Mr. & Mrs. G. M. Harwell Jr.  
Peggy J. Harwood  
Richard J. Heil  
Kristopher K. Hefton  
S. B. Hixon  
Katherine S. Holcomb  
Bill D. Holland  
J. Charles Holliman  
James W. Hood  
G. Karl Hoops  
Richard A. Hoover  
Richard T. Houser  
Jack M. Howard  
Don F. Hugus Jr.  
Janie A. Hurley  
Carl B. Irwin  
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J. R. Jackson Jr.  
Jim Bob Jackson  
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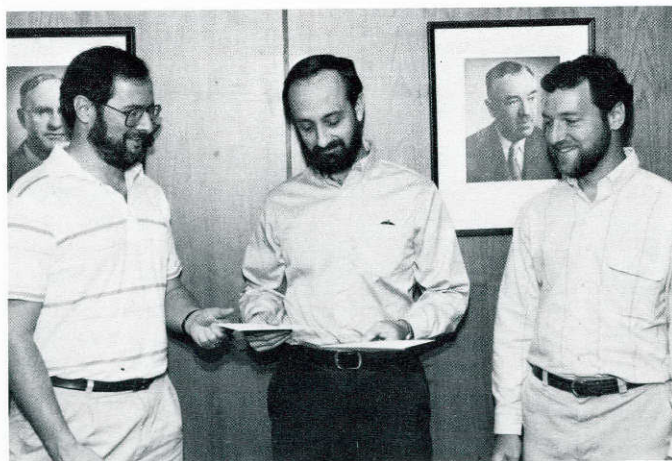
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*Mike Follis (left) and Tom Burch (right) present Dr. Clark Wilson (center) with a check from the AMOCO Foundation Inc.*

*... to all donors, we express our deepest appreciation for their support*

# Geology Foundation's Endowed Accounts

(June 1, 1989-May 31, 1990)

<i>Fund</i>	<i>Goal</i>	<i>Endowment</i>	<i>Fund</i>	<i>Goal</i>	<i>Endowment</i>
Edwin Allday Centennial Chair in Subsurface Geology Income supplements salary of recipient	Unspec.	\$595,000	Jesse L. Brundrett Memorial Endowed Presidential Scholarship Graduate student scholarships	Unspec.	\$ 25,455
Edwin Allday Lectureship in Geological Sciences To provide for guest lecturers in geological sciences	\$203,716	\$ 76,063 *	Fred M. Bullard Professorship Excellence in teaching, income supplements salary of recipient	Unspec.	\$ 57,542 ++
Alternative Energy Research and Development Fund For study of energy sources other than petroleum	\$187,250	\$187,250	Hal H. Bybee Memorial Fund Student field support, or support of students researching geologic issues related to public policy	Unspec.	\$ 30,536
E. M. Barron Trust For support of the Barron Mineral Collection	Unspec.	\$100,605	Hal P. Bybee Memorial Fund Faculty use—research, travel, study, etc.	Unspec.	\$402,496
Leonidas T. Barrow Centennial, Chair in Mineral Resources Development of program of excellence in mineral resources; income supplements salary of recipient	Unspec.	\$855,426	L. W. Callender Memorial Fund Departmental use, unrestricted	Unspec.	\$ 50,599
Bloomer Fund for Motivated Students Financial aid for students not qualified for scholarships	Unspec.	\$ 51,098	Dave P. Carlton Centennial Professorship in Geology Income supplements salary of recipient	Unspec.	\$444,402
Leslie Bowling Professorship To attract persons from industry and government for short-term appointments on the faculty	Unspec.	\$ 83,306 +	Dave P. Carlton Centennial Professorship in Geophysics Income supplements salary of recipient	Unspec.	\$464,194
Wayne F. Bowman Endowed Presidential Scholarship Unrestricted geology scholarships, any level	Unspec.	\$ 92,213	Dorothy Ogden Carsey Memorial Scholarship Fund Geology scholarships, any level; special consideration to micropaleontology students	Unspec.	\$ 81,489
Don R. and Patricia Kidd Boyd Lectureship in Petroleum Exploration To provide for guest lecturers in petroleum exploration	Unspec.	\$ 42,297	J. Ben Carsey Sr. Special Maintenance Fund Maintain teaching and research equipment	\$250,000	\$ 80,615
Robert E. Boyer Centennial Professorship in Geology Income supplements salary of recipient	Unspec.	\$284,064	S. E. Clabaugh Fund in Hard-Rock Geology To support research in hard-rock geology	Unspec.	\$ 24,496
Brahman Energy Scholarship Senior field course scholarships	Unspec.	\$ 15,494	W. Kenley Clark Memorial Endowed Presidential Scholarship Geology scholarships, any level	Unspec.	\$ 43,011
			Robert H. Cuyler Endowed Presidential Scholarship Undergraduate (upper-division) and graduate scholarships	Unspec.	\$ 46,262
			Morgan J. Davis Centennial Professorship in Petroleum Geology Income supplements salary of recipient	Unspec.	\$582,535
			Ronald K. DeFord Field Scholarship Fund Field studies for graduate students	Unspec.	\$149,699
			Alexander Deussen Professor- ship in Energy Resources Development of program of excellence in energy resources; income supplements salary of recipient	Unspec.	\$122,255
			Michael Bruce Duchin Centennial Memorial Endowed Presidential Scholarship	Unspec.	\$ 32,929

\*128,097 in addition pledged from Allday Estate.

+Does not include \$41,069 held in unitrust.

++Does not include \$45,261 held in unitrust.



<u>Fund</u>	<u>Goal</u>	<u>Endowment</u>	<u>Fund</u>	<u>Goal</u>	<u>Endowment</u>
Scholarship for Master's candidate with preference toward general geology			<b>George S. Heyer Memorial Fund</b>	Unspec.	\$ 85,278
<b>Elf Aquitaine Petroleum Faculty Fellowship in Geological Sciences</b>	Unspec.	\$113,000	Any purpose of the Foundation		
Income supplements salary of junior faculty member			<b>William C. Hogg Memorial Scholarship Fund</b>		
<b>John E. "Brick" Elliott Centennial Professorship in Geological Sciences</b>	Unspec.	\$252,541	General information:		
Income supplements salary of recipient			The total Hogg endowment in the sum of \$237,024 for all of the scholarships (a total of six) is carried in one Common Trust Fund account. The income is credited to one expendable account and distributed from there at the end of the fiscal year to each of the six scholarship accounts. Geology holds two of the six accounts.		
<b>Samuel P. Ellison Jr. Endowment Fund</b>	\$100,000	\$ 64,551	<b>Hogg-Cullinan</b>	Unspec.	\$ 39,504
For Department <i>Newsletter</i> and support of faculty-alumni functions			Scholarship in petroleum or field geology in honor of Joseph S. Cullinan		
<b>Energy and Mineral Resources Fund</b>	\$100,000	\$ 24,341	<b>Hogg-Sharp</b>	Unspec.	\$ 39,504
Support of programs and students in energy and mineral resources			Scholarship in petroleum or field geology in honor of Walter Benona Sharp		
<b>William Stamps Farish Chair in Geology</b>	Unspec.	\$341,500	<b>Houston Oil &amp; Minerals Corporation Faculty Excellence Awards</b>	\$ 40,000	\$ 40,000
Income supplements salary of recipient			In recognition of outstanding service and special contributions to the teaching and research programs		
<b>Peter T. Flawn Centennial Chair in Geology</b>	Unspec.	\$645,220	<b>F. Earl Ingerson Graduate Research Assistance Fund in Geochemistry</b>	Unspec.	\$ 13,486
Income supplements salary of recipient			Research assistance to graduate students in geochemistry		
<b>Geology Foundation Advisory Council Centennial Teaching Fellowship in Geological Sciences</b>	Unspec.	\$ 56,000	<b>John A. and Katherine G. Jackson Centennial Teaching Fellowship in Geological Sciences</b>	Unspec.	\$111,000
Income supplements salary of junior faculty member			Income supplements salary of junior faculty member		
<b>Getty Oil Company Centennial Chair in Geological Sciences</b>	Unspec.	\$765,987	<b>Carolyn G. and G. Moses Knebel Teaching Awards</b>	Unspec.	\$ 71,970
Income supplements salary of recipient			Annual Distinguished Teacher Award, Innovative Improvement and New Course Development		
<b>Miss Effie Graves Memorial Fund</b>	Unspec.	\$ 23,239	<b>Clara Jones Langston Centennial Lectureship in Vertebrate Paleontology</b>	Unspec.	\$ 20,146
Department needs (faculty support, student aid, special equipment, etc.)			To provide for guest lecturers in vertebrate paleontology		
<b>Guy E. Green Endowed Presidential Scholarship</b>	Unspec.	\$ 28,716	<b>J. Donald Langston Special Operations Fund</b>	\$250,000	\$128,573
Geology scholarships, any level			Purchase teaching and research equipment		
<b>J. Nalle Gregory Professorship in Sedimentary Geology</b>	Unspec.	\$116,786 *	<b>Wann and Marietta Langston Research Fund in Vertebrate Paleontology</b>	Unspec.	\$ 88,105
Development of program of excellence in sedimentary geology; income supplements salary of recipient			Faculty research in vertebrate paleontology		
<b>Gulf Oil Foundation Centennial Professorship in Geology</b>	Unspec.	\$240,000	<b>Jack K. Larsen-Mesa Petroleum Co. Fund in Sedimentary Geology</b>	Unspec.	\$112,837
Income supplements salary of recipient			Support of the Department's program in sedimentary geology		
<b>Karl F. Hagemeyer Jr. Memorial Endowed Presidential Scholarship</b>	Unspec.	\$ 39,238	<b>Howard R. Lowe Vertebrate Paleontology Endowment</b>	Unspec.	\$ 26,664
General geology scholarships, any level, with preference to students from Brazoria or Kerr counties			Support of student field work in vertebrate paleontology		
			<b>J. Hoover Mackin Memorial Scholarship Fund</b>	Unspec.	\$ 20,791

\*Does not include \$500,000 held in trust.

<u>Fund</u>	<u>Goal</u>	<u>Endowment</u>
Graduate geology scholarships <b>John H. and Lujza P. McCammon Endowed Scholarships</b> Upper-division undergraduate scholarships	Unspec.	\$ 10,640
<b>Mr. and Mrs. L. F. McCollum Endowed Scholarships</b> Geology scholarships, any level	Unspec.	\$ 17,870
<b>Frank W. Michaux Scholarship Fund</b> Geology scholarships, any level	Unspec.	\$ 10,445
<b>Carroll C. Miller Endowed Presidential Scholarship</b> Geology scholarships to students pursuing careers in energy industries; preference to students from south Texas	Unspec.	\$ 29,901
<b>Fred L. and Frances J. Oliver Lectureship in Texas Hydrology and Water Resources</b> To provide for guest lecturers in water resources	Unspec.	\$ 50,680
<b>Judd H. Oualline Endowment Fund</b> For special needs of the Department	Unspec.	\$ 19,292
<b>Judd H. and Cynthia S. Oualline Centennial Lectureship in Geological Sciences</b> To provide for guest lecturers in geo- logical sciences	Unspec.	\$ 26,164
<b>Judd H. and Cynthia S. Oualline Centennial Lectureship in Petroleum Geology</b> To provide for guest lecturers in petroleum geology	Unspec.	\$ 26,853
<b>Ed Owen-George Coates Fund</b> Publication of geological research related to Texas by faculty and graduate students	Unspec.	\$104,505
<b>Bill R. Payne Centennial Teaching Fellowship in Geological Sciences</b> Income supplements salary of junior faculty member	Unspec.	\$ 60,400
<b>Joyce Bowman Payne Centennial Teaching Fellowship in Geological Sciences</b> Income supplements salary of junior faculty member	Unspec.	\$ 53,900
<b>Pennzoil and Pogo Producing Companies—William E. Gipson Scholarships</b> Scholarships for UT graduates seeking Masters degrees at UT	Unspec.	\$ 104,528
<b>O. Scott Petty Geophysical Fund</b> Development of program of excellence in geophysics	Unspec.	\$125,724

\*Does not include additional pledge of \$53,250



Stacey Tyburski (right) discusses student activities and needs with Peter Flawn (left) and Tom Barrow (center).

<u>Fund</u>	<u>Goal</u>	<u>Endowment</u>
<b>Wallace E. Pratt Professorship in Geophysics</b> Development of program of excellence in geophysics; income supplements salary of recipient	Unspec.	\$147,479
<b>Louis and Elizabeth Scherck Geology Scholarship</b> Undergraduate (upper division) and graduate scholarships	Unspec.	\$101,214
<b>Wilton E. Scott Centennial Professorship</b> Income supplements salary of recipient	Unspec.	\$213,700
<b>The Shell Companies Foundation Centennial Chair in Geophysics</b> Income supplements salary of recipient	Unspec.	\$880,000
<b>The Shell Companies Foundation Distinguished Chair in Geophysics</b> Income supplements salary of recipient	Unspec.	\$835,000
<b>Frederick W. Simonds Endowed Presidential Scholarship</b> Scholarships to undergraduate (upper division) and graduate students	Unspec.	\$ 26,029
<b>William T. Stokes Centennial Teaching Fellowship in Geological Sciences</b> Income supplements salary of junior faculty member	Unspec.	\$120,000
<b>Structural Geology and Tectonics Fund</b> For support of faculty and student research and structure and tectonics	Unspec.	\$ 66,392 *
<b>H. Tod Sutherland Memorial Scholarship Fund</b> For summer research support for	Unspec.	\$ 33,137

<i>Fund</i>	<i>Goal</i>	<i>Endowment</i>	<i>Fund</i>	<i>Goal</i>	<i>Endowment</i>
graduate students					
<b>David S. Thayer Memorial Scholarship Fund</b>	Unspec.	\$ 26,565	<b>Charles E. Yager Undergraduate Field Scholarship Fund</b>	Unspec.	\$43,458
Senior field course scholarships			Support of students taking Geology 660		
<b>Tobin International Geological Map Collection</b>	\$100,000	\$ 70,432	<b>Mr. and Mrs. Charles E. Yager Professorships</b>	Unspec.	\$361,300
For purchase of maps and photos, storage and viewing facilities for these items			Three professorships in any discipline for faculty who participate in field instruction		
<b>Udden Memorial Scholarship Fund</b>	Unspec.	\$ 10,722			
Geology scholarships at any level					
<b>Glenn and Martha Vargas Gemological Scholarship in Geological Sciences</b>	Unspec.	\$ 15,196			
Scholarship for students interested in gemology or mineralogy					
<b>Vargas Endowment for Gems and Gem Mineral Instruction</b>	Unspec.	\$ 20,904			
For course-related materials and instruction on gems and gem minerals					
<b>Various Donors (General)</b>	Unspec.	\$ 17,730			
Unrestricted funds for furtherance of basic geological education, research, graduate study, field work, travel, Foundation operation, salaries, etc.					
<b>Joseph C. Walter, Jr. and Elizabeth C. Walter Geology Library Fund</b>	Unspec.	\$171,330			
Acquisition of books, maps and other library materials					
<b>Albert W. and Alice M. Weeks Centennial Professorship in Geological Sciences</b>	Unspec.	\$146,489			
Income supplements salary of recipient					
<b>E. A. Wendlandt Fund</b>	Unspec.	\$ 6,834			
Purchase of books and journals in German or English translations					
<b>Arno P. (Dutch) Wendler Professional Development Fund</b>	Unspec.	\$ 100,009			
Support of graduate student presentations at professional meetings					
<b>Francis L. Whitney Endowed Presidential Scholarship</b>	Unspec.	\$ 41,334			
Geology scholarships, any level, paleontology and stratigraphy preferred					
<b>Francis L. Whitney Memorial Book Fund</b>	Unspec.	\$ 12,701			
Purchase of paleontological books for library					
<b>John A. Wilson Professorship in Vertebrate Paleontology</b>	Unspec.	\$106,107			
Development of program of excellence in vertebrate paleontology; income supplements salary of recipient					

### *New Endowments in the Geology Foundation . . .*

In 1989 Mrs. J. Nalle Gregory of San Angelo established a trust with the University of Texas at Austin providing for the establishment of the J. Nalle Gregory Chair in Sedimentary Geology upon her death. Early in 1990 Mrs. Gregory decided she would like to see the Chair established now. At the June 1990 Board of Regents meeting the Regents approved the termination of the trust, which provided \$400,000 toward the Chair. Mrs. Gregory contributed an additional \$100,000, which brought her total gift to \$500,000. Those funds, combined with the \$118,000 in the existing J. Nalle Gregory Professorship in Sedimentary Geology, provide the Chair endowment of \$618,000. The University has agreed to match half of Mrs. Gregory's gift, with the matching \$250,000 to establish the J. Nalle Gregory Professorship in Sedimentary Geology.

A bequest from the estate of Mrs. Elizabeth M. Teagle, who died in June 1989, was received in June 1990 to establish a scholarship fund for worthy students majoring in petroleum geology. The total amount of the endowment is yet undetermined, but will likely exceed \$400,000. Mrs. Teagle was the widow of John Teagle, who died in 1982. Mr. Teagle received his Master's degree in geology from UT in 1933 and began his career with Humble Oil & Refining Company in Houston. From 1947 until the time of his death he was a consulting geologist in San Antonio.

## *Addresses of the Geology Foundation Advisory Council*

*effective September, 1990*

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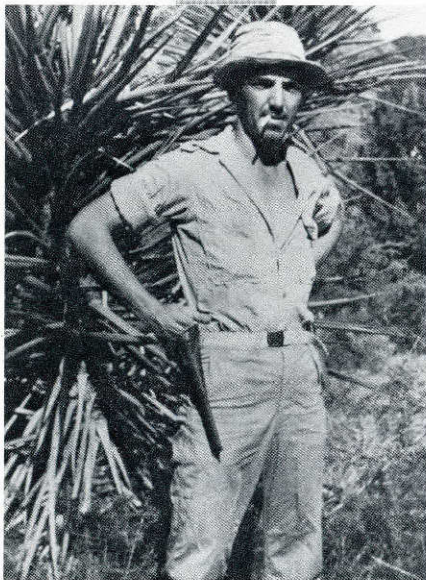
*Dr. William Fisher receives a plaque in recognition of his service to the Department as Chairman from Dr. Rodger Denison, Advisory Council Chairman.*



# NEWS *Alumni*



# IN MEMORIAM



**Photo of Arthur Carroll taken in summer 1948 while on a combined geology and zoology field camp near Big Bend.**

## **W**illiam H. Cardwell

(BA '38) passed away at his home on July 6, 1990, at the age of 74. A native of Lockhart, Texas, he received a BA in geology from UT in 1938. After graduation he worked initially in Corpus Christi for Seaboard Oil, then in Dallas for G. H. Vaughn Interests, and later as an independent in Houston. During World War II he served as a Lieutenant in the United States Naval Air Corps.

Mr. Cardwell was a member of the American Association of Petroleum Geologists, the Society of Independent Professional Earth Scientists, the Houston Geological Society, the Dallas Geological Society and the Pioneer Oil Producers Society. From 1976 through 1981 Mr. Cardwell served on the University of Texas Geology Foundation Advisory Council.

He is survived by his wife, Margaret Wynne Cardwell; two sisters, and several nieces and nephews.

## **A**rthur Lee Carroll (BS

'49) was born on June 19, 1925, in Terrell, Kaufman County, Texas. After attending Terrell High School, he entered the U.S. Army Air Corps in 1943. While in the Army Air Corps, he qualified as both a bombardier and navigator on several types of bombers. He was

awarded the World War II Victory Medal and the American Theater Ribbon, and attained the rank of Second Lieutenant. After his military service, he attended the University of Texas at Austin, and graduated in 1949 with a BS in geology. His first job out of school was as a party chief shooting seismic in South Louisiana. After that job ended he moved to West Texas where he worked as a mudlogger for a short time. In 1951, he went to work for a San Angelo, Texas, area driller as a field geologist. He married Margaret Ramona Wilkinson in 1952 in Menard, Texas. After moving to Abilene, Texas, he went to work for one of his ex-geology instructors at UT and a lifelong friend, Kent Waddell, as a consulting geologist. His next position, as a geologist with Miami Petroleum, saw him working in almost every state in the mid-continent from Texas and New Mexico to Montana. In 1960 he went to work for Claytonville Gas Producers in Abilene and Sweetwater, Texas. When Claytonville was bought out by Coastal States in 1968, he and his family moved to Corpus Christi where he worked as administrative assistant to the vice-president of exploration for Coastal States Oil and Gas Producing Corporation. He stayed with Coastal in Corpus Christi and Houston until the Valero Energy Corporation was formed by court order from a part of the Coastal Corporation in 1980. He went to San Antonio with Valero where he worked until his retirement in 1986. After retirement, he worked as a rancher on the family ranch near Menard.

Art Carroll was always active outside of the business world. From 1958 to 1971 he worked in several capacities with the Boy Scouts of America and was awarded the Order of the Arrow. He coached and managed Little League baseball from 1959 to 1964. He

was very active in the Presbyterian Church his entire life where he served as an Elder, a Deacon, and a Sunday School Superintendent. After retirement, he volunteered his time to help feed the homeless in San Antonio, to take elementary school children from the barrio in San Antonio on field trips, and to work at both "Night in Old San Antonio" and "Fiesta." In addition, Art and Margaret traveled extensively after Art's retirement. These travels took them from North Africa to Nordkapp, Norway. In all, they visited eleven countries in Europe and Africa, in addition to their travels in Mexico and the United States. Art's last trip was to Canada with his two sons to go fishing. This last trip was shortly after he had finished massive radiation therapy for a brain tumor. Art loved hunting, fishing, and just being in the outdoors. He also loved to cook and make preserves. During the fall of 1989, while on chemotherapy for both a brain tumor and lung cancer, he won 1st place for his orange marmalade, 3rd place for his jalapeno jelly, and a 3rd place for his bread and butter pickles in the Comal County Fair. After a long and valiant fight against cancer, Art Carroll died at home on April 8, 1990, and was buried in Menard. He will be missed by everyone whose life he touched. He is survived by his wife, a UT graduate and teacher; Lee Carroll, a UT graduate and lawyer; Richard Carroll, a UT geology graduate and working geologist; Nancy Carroll Bean, a UT graduate; and her two children, Lauren Elizabeth Bean and Craig Randall Bean.

—by Richard F. Carroll

**H**enry J. LaGrone Jr. died on March 5, 1990, as the result of a heart attack. He received a BS degree in geology from UT in

1957. At the time of his death he was a supervisor for child welfare and attendance for the Caddo Parish School Board in Shreveport, Louisiana. He is survived by his wife, Beth W. LaGrone.

**E**dward Joseph **Matulich** died on January 5, 1990. Mr. Matulich received a BS degree in geology from UT in 1947. He was a geologist for Oryx Oil Company in Dallas at the time of his death. He had been employed by Oryx (formerly Sun Oil Company) for many years, working in San Antonio, Corpus Christi, and Dallas.

**G**aston H. Parrish (BA '20) passed away on May 9, 1989, at the age of 90. He was a veteran of World War I.

During his senior year at UT he became a charter member of the Zeta chapter of Sigma Gamma Epsilon honorary geological fraternity. After his graduation with a BA degree in 1920, he worked as a geologist in Mexico for eight years, then returned to the United States and found employment as geologist, geophysicist and oil scout for Humble Oil and Refining Company. After remaining with that company for almost 35 years, he retired on September 1, 1963. He later provided natural gas consultation, and developed an active interest in the New York Stock Exchange.

Mr. Parrish was a charter member of the Corpus Christi Geological Society, and had been an active member of the American Association of Petroleum Geologists since 1925. He named five oil fields in South Texas.

Survivors include his wife, Mrs. Clara Bell Parrish of Corpus Christi; his brother, Harry C. Parrish of Houston; three nephews and four nieces.



**Gaston H. Parrish**



Surce J. Taylor

**V**irgil H. Roan died on November 29, 1989. He graduated from the University of Texas with a BS degree in geology in 1949. For many years he was manager of Roan Royalty Company Inc. in Ardmore, Oklahoma. He was a member of the American Association of Petroleum Geologists, AIPG, and Ardmore, Dallas and Oklahoma City Geological Societies.

**S**urce J. Taylor (BS '36) died in a Plano, Texas, hospital on August 10, 1988. He was born in Van Alstyne, Grayson County, Texas on March 1, 1913. After graduating from Van Alstyne High School in 1930, he entered the University of Texas. Surce discovered geology after beginning with another major subject, and in geology found a discipline which appealed both to his love of the outdoors and keen powers of analytical observation. Surce was an instructor under Dr. Bullard and Dr. Cuyler on the geology field trip to Brady in 1936, and was president of Sigma Gamma Epsilon in 1937. During 1937 he began employment with University Lands as geologist in Midland, Texas, where he and Ruby Snodgrass were married in April 1938.

In 1941, Surce left University Lands to become district geologist for Seaboard Oil Company in Midland. During the war years he was transferred successively to Corpus Christi, Dallas, and back to Midland before being promoted to assistant chief geologist in Dallas. Surce was later made Seaboard's chief geologist for the eastern region of the U.S. Upon Seaboard's merger with Texaco in 1958, Surce became division geologist for Texaco in Dallas. After the closing of the Dallas division in 1965, he went to the Midland division as senior geologist, from which post he retired in 1969. After retirement, Surce and Ruby lived in Garland, Texas, where Ruby died in 1976. In 1978 Surce married

Betty Bolton, and in 1984 they moved to Van Alstyne.

Surce is survived by his wife, Betty Taylor, sisters Nelda Pattie, Ruth-Lee Cason, and Marjorie Creed DeFord, brother Leslie Armour Taylor, son Bob Taylor, stepdaughters Jean Lee, Sandra Gifford and Brenda Lawless, and seven grandchildren.

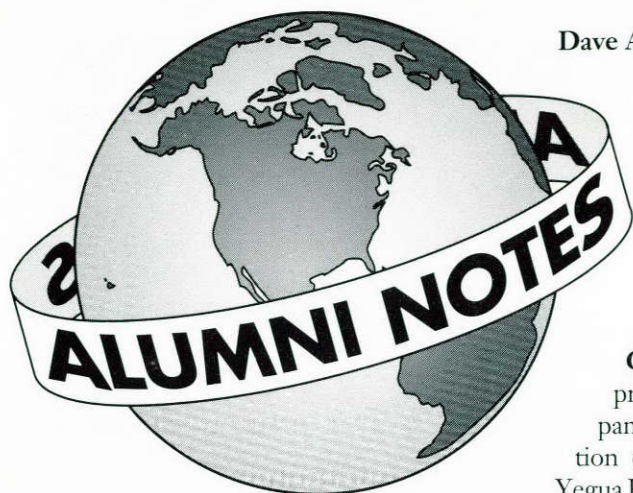
—by Bob Taylor and  
John Henderson (BA '37)

**A**lbert W. Weeks died June 23, 1990, in Pennsylvania. He was born in 1901 on a farm near Tilton, Wisconsin. He took his first geology course in high school, apparently from a fine teacher who could inspire his students. Albert was one of four brothers, three of whom became geologists. He received a BA degree in 1923 and a Master's degree in 1924, both from the University of Wisconsin. After graduation Albert worked for Shell Oil Company in petroleum exploration. He left Shell to attend the University of Texas, where he received his PhD in 1941. He worked for Sun Oil Company from 1941 until his retirement in 1966. He became an independent consultant and worked on various research projects. He lectured at Temple University in Philadelphia, where his wife, Alice, was chairman of the department. Alice retired from Temple University in 1976. In 1979 Albert and Alice established the Albert W. and Alice M. Weeks Fund in Geology at UT, which was redesignated the Albert W. and Alice M. Weeks Centennial Professorship in Geological Sciences in 1983.

Preceded in death by his wife in 1988, Albert is survived by a niece and nephew.







**Edwin V. Acker Jr.** (BS '56), an independent geologist and rancher in Tilden, Texas, comments that the last four years of drought caused him to sell his cows. "We are enjoying the slowing down."

**Samuel C. Adair Jr.** (BS '56), retired from Exxon, is still enjoying living at Walden on Lake Conroe, Texas. He traveled to Israel and Budapest, Hungary, in May.

**G. Baxter Adams Jr.** (BS '51, MA '53) writes, "Still growing lots of apples and putting in new orchards. Once or twice a year I'll drill a well, and buy a few leases. We're enjoying the Hill Country and grandchildren."

**Bill Akersten** (BS '64, MA '67) reports that he, Sue and Holly enjoyed the Society of Vertebrate Paleontology meetings in Austin last fall and seeing some of Bill's former profs. He invites geofolks going to the Yellowstone area to drop by the Idaho Museum of Natural History in Pocatello for a chat. Bill is curator of vertebrate paleontology for the museum.

**Elise Donnell Akin** (BA '47) is president of Metro Photo camera stores in Wichita Falls. "Still working hard with three stores and enjoying it."

**Khalifa M. Al-Hinai** (MA '77) will be working with Shell Expro in London for two years, in economics and planning. He would enjoy hearing from friends passing through London (telephone 0-1-257-5101 or 257-4013).

**R. Allen** (MA '57) is an independent in Denver.

**Dave Alt** (PhD '61), a professor of geology at the University of Montana in Missoula, writes, "Having now created the Deccan and Columbia flood basalt plateaus through asteroid impacts, am looking for new targets."

**Gene Ames Jr.** (BS '55) is president of Venus Oil Company in San Antonio, "Exploration continues in the expanded Yegua Play with some success—due solely to an orange-blooded team of UT/Bureau-trained explorationists. Thanks, Bill Fisher et al."

**James H. Anderson** (PhD '85) writes, "Moved again! After eight months in Midland we were transferred back to Houston to work for Exxon Company International Europe, Middle East, North Africa Group with Scott Gorham. Diana (8) will miss Midland where she took up horseback riding and snow skiing. Deb is doing great and will stay home another year with Jackie (4)."

**Nancy Jenschold Anderson** (BA '50) is owner/manager of Urban Environment Associates in Dallas. "Consulting business is active, but as I near retirement am doing more travel for pleasure: Norway, Denmark, Germany, Austria, England in 1989; so far in 1990 southeast USA and Boston. Can't get enough of beautiful mountains, forests and historical sites. When at home base, I serve as Cedar Hill Park Board president."

**Paul D. Anderson** (BS '47), a geologist in Midland, says "All is well here. Peggy, my wife, has MS but is doing OK. Ken is in Black Hills, South Dakota, running cattle. Karen is in San Marcos, back to school. I'm working, but not very hard, with W. D. Anderson & Sons."

**Payton V. Anderson** (BS '45) is a partner with W. D. Anderson & Sons in Midland. "Same wife, Evelyn. Still active in oil and gas exploration in Midcontinent-Rockies-southeastern states and Permian Basin. Leisure time spent in travel and golf.

We have three daughters and nine grandchildren."

**Rick Anderson** (MA '83) finished his PhD at UT Dallas in 1989. He presented a paper at the '89 SEG convention, and has had his third paper accepted for publication in *Geophysical Prospecting*. Rick is a senior geophysicist for Sierra Geophysics, in Kirkland, Washington.

**Arla Jo Payne Anderton** (MA '71) is a teacher in Lubbock, Texas. "Current plans are to play carillon recitals in the Netherlands and Denmark in July 1990. Norman and I are raising three sons."

**D. R. (Russ) Address** (BS '80) writes, "I'm approaching my fifth year in Dallas, where I continue to be employed as a geophysicist by the newly renamed ORYX Energy Company. I'm currently exploring for hydrocarbons in the offshore Gulf of Mexico."

**David Angstadt** (MA '83) is an advanced geophysicist for Texaco International, frontier exploration, in Bellaire, Texas. "I've survived the '86 price collapse and the '87 Pennzoil lawsuit and technical bankruptcy at Texaco (with much sweating of blood). I've enjoyed working Australia and the Far East (mostly Malaysia) the last couple of years with two other Longhorns."

**Edgar P. Armstrong** (BS '51) is engineering manager of southern Texas, Arizona and Utah for the Internal Revenue Service in Houston.

**Tom F. Armstrong** (BA '75) is president of Armstrong Oil & Gas in Dallas. "Still trying to figure out the Hardeman Basin."

**Jimmie H. Ashley** (BS '60) is an independent in Houston.

**John E. Atkins** (MA '89) lives in Oklahoma City, where he is an associate geophysicist for Conoco Inc.

**Gene M. Austin** (BS '52) is a consulting petroleum geologist in Houston.

**Arten J. Avakian** (MA '89) writes, "Guess who finally finished his Master's? I went into double-digit semester overtime, used up most of a 2500-sheet box of paper, all nine lives, and most people's patience—

but I survived. I am actually working, too, at the Bureau of Economic Geology in Austin, and enjoying a wide range of distractions. It feels good to be an ex—it's the 8 to 5 routine that takes some getting used to."

**Byron Bachschmid** (BS '83) is a senior geologist for Siete Oil and Gas in Roswell, New Mexico. He is working Delaware Basin subsurface, southeast New Mexico.

**Nancy Null Bainbridge** (BS '79) is an independent geologist in Houston.

**A. C. Baker** (BS '51) is enjoying life in Wichita Falls, where he is an independent geologist.

**Carol Swenumson Baker** (BS '84) writes, "Rodney and I had a baby boy, Grant Michael Baker, on March 31, 1990. I am still a geophysicist for Exxon in Houston."

**Ernest T. Baker Jr.** (BS '55) lives in Austin, where he continues as senior staff geologist for the USGS. "Lu and I have been married now for 29 years. Ken (28) pursues a career in communications, and Laura (24) is a computer programmer, both living in Austin."

**Linda Rebecca Balcom** (BS '87) comments, "I have been with Jones and Neuse, Inc. for almost two years. I am managing the underground storage tank program for the State Department of Highways and Public Transportation. Also am keeping very busy with Sharp's hydrogeology class and having fun in my spare time. Hi, Durbo!" Linda lives in Austin.

**Bennie Balke** (MA '58) and his wife planned to relocate to Niwot, Colorado, in July. "I am winding up a 37-year association with Shell Oil (with time out for the U.S. Army and graduate school) with an assignment at the central offices of the Royal Dutch Shell Group in The Hague, Holland."

**William W. Ballard** (PhD '61) is president of the Rocky Mountain Oil & Gas Association. He continues with Balcron Oil Company in Billings, Montana.

**Chris Barker** (BS '79) is "plugging away on my PhD at the University of South Carolina, Columbia; working a sum-

mer job this year at a nearby gold mine, field mapping in the Piedmont (with time out for a trip to India in July). Remarried in February, 1989. Things are going great."

**William B. Barnhill** (MA '50) is semi-retired, spending winters in Mesa, Arizona, and summers in Alto, New Mexico.

**C. Tucker Barrie** (MA '84) writes, "I finished my PhD at the University of Toronto and I start work with BP Resources Canada Ltd., based out of Vancouver, working on porphyry Cu-Au deposits initially."

**Ben Barrow** (BS '51) is retired and continues to live in Utopia, Texas. "My wife and I drove to Alaska for a two-month vacation in 1989 to break my routine of building fences and cutting brush. Other diversions are being a Republican precinct chairman and member of Bandera County assessor board."

**Robert Bartels** (BS '85) lives in San Marcos, Texas. "Working as a geologist/hydrogeologist for a very fast-growing company, Jones and Neuse, Inc. We have an incredible amount of work in the environmental field."

**Jerald H. (Jerry) Bartley** (BS '37) says,

"After 25 years I finally moved the office. The move came as the result of a fire which cleaned out my saved string and files. Family in fairly good shape. Most of my work spent on satellite imagery, USA and worldwide." Jerry lives in Midland.

**Charles S. (Sandy) Beach** (BS '87) is a geologist for Beach Exploration, Inc. in Midland.

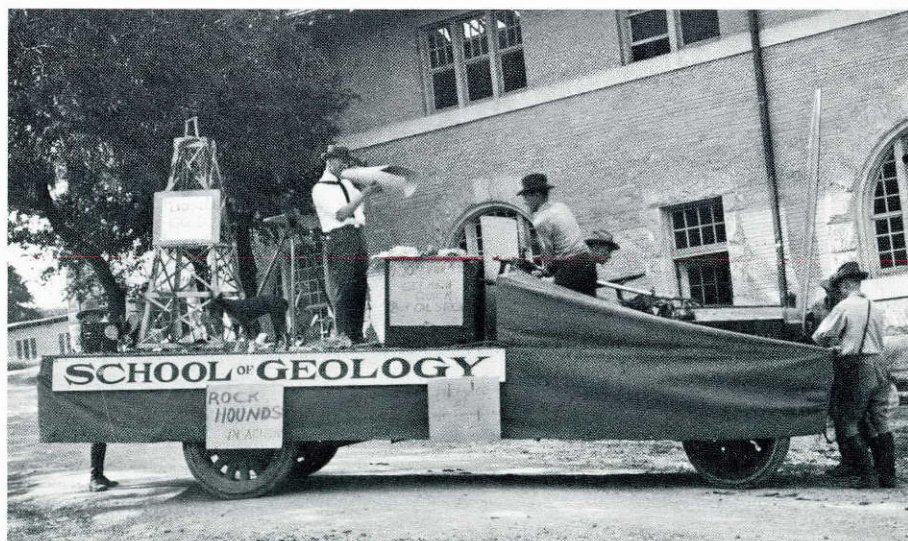
**Joe Beard** (BS '42) is an independent petroleum geologist in Wichita Falls.

**Robert E. Beatty Jr.** (BA '51, BS '53) is a geological consultant in San Antonio.

**Gray E. Bebout** (BS '81, MA '84) is continuing postdoctoral research at the Geophysical Laboratory of Carnegie Institution in Washington, D.C.

**Roy Beckelhymer** (BS '52), a geophysical consultant in Houston, is "doing some work, doing some traveling, doing OK."

**Fred H. and Teresa Harkrader Becker** (BS '83; BS '82) are enjoying their daughter, Lauren, born in July 1989. Fred and Teresa live in Slidell, Louisiana, where Fred is a senior geophysicist for Shell Offshore Inc. and Teresa is a senior geophysicist



*This truck was the Department of Geology's first "auto"—a second-hand truck acquired when the School of Auto Mechanics was closed out after World War I. It was the sole transportation used for the 1919 Mason County Summer Camp. Here the vehicle is shown as a float for a University parade in 1921. At the wheel is L. T. Barrow, Lester A. Luecke with megaphone, R. L. Cannon standing to right of Luecke. Photo identified by L. T. Barrow in 1969.*



for Amoco's offshore business unit.

**Lynn S. Beeler** (BS '62) is currently working as a programmer for corporate taxes for CLR Inc. in Carrollton, Texas. He develops tax programs for personal computers.

**Richard W. Behal** (BS '88) is a navigation QC for Western Geophysical in Houston. "The boat hasn't sunk and the helicopter hasn't fallen from the sky. Looking for a land job and dreams that don't roll with me in my bunk."

**Ellis S. Belfer** (BS '87) is an electrical officer on the USS Indianapolis and is stationed in Aiea, Hawaii.

**Walter E. Belt Jr.** (BS '43) is retired in Flatonia, Texas, and reports that "things are going great."

**James I. (Jay) Bennett** (BS '52) writes from Houston, "Henrietta and I are both retired now and enjoying our grandchildren (6). I retired from Texaco in 1980 after 28 1/2 years and Henrietta from teaching. We have been traveling—Europe, Hawaii and Mexico. Next will be England and Scotland, or maybe Alaska. We are reasonably healthy and happy."

**Robert L. (Bob) Bentley** (BS '54) is operations manager for Harvard Energy in Calgary, Canada. He has been married to his wife, Jeanne, since 1960, and has lived in Calgary since 1971. "Daughter Pam is living in Ottawa. Would enjoy hearing from any friends coming to Calgary. Planning retirement this fall."

**Allen Bertagne** (MA '80) is senior staff geologist for CGG American Services. "After eight years in Denver I finally joined the rest of the oil crowd in Houston. After 32 years of being single I finally joined the rest of the married crowd. Am enjoying both. By the way, did everyone know the Wildman is back in Houston?"

**Patricia Bettis** (BA '75) comments, "Bonjour' from deepest, darkest Africa! Presently I am the chef de division exploration for Amoco Congo here in Pointe-Noire. The French I took at UT has become a substantial advantage over here; if anything speaking only English is a liability with the French. Speaking of which, my Franophilic husband (John Pigott,

BS '74, MA '77) continues to be moan his limited four month/year vacation as a professor at OU. A bientôt, mes amis."

**Don G. Bilbrey** (BS '53, MA '57) is retired from Chevron. "Still living in New Orleans and playing a lot of golf. Daughter Karen has one year of high school left, then it's off to college. UT is high on her list."

**Scott Birmingham** (MA '87), geologist for Boulder Scientific Company in Mead, Colorado, says, "I continue to work in the small but interesting scandium industry. In this business it's 'publish and you will certainly perish,' so I have submitted two patent applications, both on scandium and rare-earth extraction. I plan to publish my thesis results late this year."

**David S. Birsa** (PhD '77) is general manager of exploration for Chevron UK in London. He is enjoying living in England and is having fun looking for oil in the North Sea. He is a member of the UT Geology Foundation Advisory Council.

**Gale Bishop** (PhD '71) continues as a professor in the department of geology and geography at Georgia Southern University in Statesboro. "This year has been a real pleasure—freshman geology in the fall quarter, an honors course and research in the winter quarter, and research in the spring quarter. Currently studying ghost shrimp and heavy mineral distribution on St. Catherine's Island, Georgia. Georgia Southern is booming now at 11,200 with about 10% growth/year. Kim now a junior and Eric a freshman in high school."

**Keith Bjork** (BS '84) graduated from Texas Tech Medical School in 1989. He is in training at UT San Antonio in orthopedic surgery. "School never seems to end."

**Fredrik S. Blackmar** (BS '55), owner of C-A Enterprises in Corpus Christi, says, "All's well in the golf business."

**Harvey Blatt** (MA '58), professor of geology at University of Oklahoma in Norman, notes, "*Principles of Stratigraphic Analysis* appears in June

1990; second edition of *Sedimentary Petrology* sent to publisher in May 1990; second grandchild born in October 1989; second wind yet to arrive."

**Robert H. Blodgett** (PhD '90) writes from Austin, "Defended my dissertation and graduated in the spring of 1990. In June I began a full-time research position with the Bureau of Economic Geology. I will be working on the sedimentology and stratigraphy of the PANTEX weapons plant in Amarillo. This will include an investigation of playa and eolian facies, as well as paleosols in the Ogallala and Blackwater Draw formations."

**Patricia Bobeck** (MA '85) operates Geotechnical Translations, a multi-language translation service for geology and related sciences, in Austin.

**Dan Bodner** (MA '85) comments, "I am now the operations manager for a 60-person consulting firm in the San Francisco Bay area. As such, I oversee recruiting and we are always looking for bright, motivated geologists and engineers." Dan works for Weiss Associates in Emeryville, California.

**Clint Booth** (MA '56) says "Things are looking a little better in the oil patch. Always enjoy visiting with UT grads." Clint is president of Booth Energy Co. in Dallas.

**Silverio Bosch** (BS '74, MA '75) is an exploration geologist for Royal Oil & Gas in Corpus Christi. "So many prospects, but so little time and money available to bring them to fruition. Optimistically thinking we're past survival stage and back to a slow but sustained growth. Between enjoying family, work and athletics there's little time for else. Lisa riding herd on me, Matthew (2) and Eric (newborn)."

**Southern W. Bower** (BS '50) is retired and lives in Luling, Texas. "Ann and I are enjoying the quiet and peaceful life in the country. This time last year we were building the carport. Everything is finished now. At the end of July, we will have lived in the



house of our own design for three years. This August is our 45th anniversary. I hope we have many years to enjoy the serenity of country living."

**Felicia M. Boyd** (MA '82) works in Tampa, Florida, for Geraghty & Miller Environmental Consultants.

**Walter A. Boyd, Jr.** (BS '53), chief reservoir geologist for Columbia Gas Transmission Corp. in Houston, reports he is "over the mountain but not down the hill." He will continue working a few more months before retirement. "Sure enjoy reading the *Newsletter*."

**Walt V. Boyle** (BS '54, MA '55) continues conducting exploration efforts in the Permian Basin in the continental exploration division of SWEPI in Houston.

**Philip Braithwaite** (MA '58) is stratigraphic manager for Mobil Oil in Dallas. "My group has expanded from bio- and lithostratigraphy to include seismic stratigraphy—a great field into which the other data can be integrated. No changes on the home front and we still enjoy sailing when we can get the time."

**Robert F. Brandt** (BS '57) writes from Houston, "Am presently employed full-time for first time since March 1986. Teaching high school 9th grade physical science. Quite a challenge but an interesting mid-life career change necessitated by 'oil bust' and loss of geophysicist job."

**Ginger Ann Braswell** (BS '87) is a flight attendant for American Airlines, based at DFW Airport. "I am enjoying flying across the country, taking advantage of my job, visiting the mountains and beaches whenever possible. The Grand Canyon is spectacular by air."

**Herbert L. Brewer** (BS '47) is chairman of Triton Europe. "Continue to enjoy living in Paris with business trips to London and Amsterdam. Visiting with our son, his wife and three grandchildren in Summit, New Jersey, from time to time makes life enjoyable."

**L. W. (Dan) Bridges** (MA '58, PhD '62) writes from Aurora, Colorado, where he continues to be an independent petroleum geologist, "It will probably be posthumously, but concentric lines

will triumph over astroblemes; and late subsurface solution by heated waters will triumph over karst."

**Anne Low Brigham** (BS '84) graduated from SMU Law School in May 1990, and will begin work as an attorney for Thompson & Knight in Dallas in the fall. She plans to specialize in oil and gas and environmental law.

**Ben M. (Bud) Brigham** (BS '83) is a geophysicist for Rosewood Resources in Dallas. "Caroline Hunt has put Rosewood up for sale, and I am looking forward to becoming an oil and gas independent."

**David B. Brock** (BS '65) is an independent petroleum geologist in Corpus Christi.

**M. H. (Buddy) Brock** (BS '56) is self-employed, and lives in Edna, Texas.

**Ken Brook** (BS '67) reports "another year spent at the mercy of wildly fluctuating gold prices has brought the company a little closer to achieving some production—maybe next year." Ken is president of Desert Ventures Inc. in Reno, Nevada.

**Gerald R. Brooks** (BS '58) is vice president of Marlin Exploration Inc. in Shreveport, Louisiana.

**Douglas Brown** (BS '84) lives in Dallas, where he is a geologist for Petro-Hunt Corporation.

**Gib Brown** (BS '76) is a consulting geologist in Amarillo.

**Theresa Brown** (BS '82, MA '89) is project coordinator, Stevens Point Well Head Protection Project in Stevens Point, Wisconsin.

**Leslie Christensen Brown** (BA '86) and her husband, Kenneth W. Brown, attorneys in San Antonio, report the birth of a daughter, Caroline Elizabeth, on January 14, 1990.

**Wallace E. Brunson** (BS '42, MA '54), an independent geologist in Houston, says "Although I've been retired from Amoco for ten years, it's been enjoyable staying active in the geological field."

**J. E. (Woody) Bryant** (BS '43, MA '48), a semi-retired consultant in Fredericksburg, Texas, comments, "Still enjoy our move to the Hill Country. Plenty of work to do but very few paydays. Slightly active in oil

and gas prospects but not involved in horizontal drilling yet."

**Leonard C. Bryant** (BS '57) is an independent geologist in Helotes, Texas.

**Julius A. Buchanan** (BS '41) is "still kicking and am looking forward to my 50-year reunion of graduates of 1941 geology class of UT." Julius is retired in Tyler, Texas.

**T. J. (Jeff) Burnett Jr.** (BS '49), owner of T. J. Burnett & Son in Houston, says, "The now 3rd generation insurance agency has just celebrated its 48th year. Looking for 1/2 century. My son is associated with us."

**Robert W. Bybee** (BA '41) comments, "Had my 70th birthday party in Dallas October 12, 1989, including a family golf tournament with grandsons Scott and Robert Verplank as captains of the two competing teams. Both teams won. Two cheerleaders with pompoms rooted for me and my team. You don't get too old to have fun!" Bob is a petroleum exploration consultant in Houston.

**Frank Kell Cahoon** (BS '57) writes from Midland, where he is an independent oil operator: "I am spending a lot of time as a board member of Texas Higher Education Coordinating Board. I have enjoyed working with Peter Flawn and Bill Fisher in work related to the Coordinating Board. Paula and I have three wonderful grandchildren now."

**Jorge Camargo** (MA '82) lives in Natal, Brazil. "Still working at Petrobras as exploration manager of the Potiguar Basin, living in Natal with Laura and our three children."

**Donald H. Campbell** (MA '62) continues as principal petrographer for Construction Technology Laboratories of Portland Cement Association in Skokie, Illinois. "Folk and I had the privilege to examine some of the pyramids in Egypt—I from a construction viewpoint and Folk from a geologic viewpoint—for the purpose of evaluating a recently-published theory of cast-in-place, concrete origin instead of carved rock in the pyramids. The Egyptian quarrymen were masters of their



profession.”

**Donald M. Campbell** (BA '54) says, “After 30 years of work—five years mudlogging and doodlebugging and the rest doing gravity and magnetics with the USGS and the Inter-American Geodetic Survey—my wife Carol and I have spent the two years of retirement between Kansas City and Damascus, Maryland, helping elderly/ill relatives. I miss my work and especially the travel. Early on I traveled to many islands in the Pacific and countries in the Orient. My last seven years I traveled to every country in Latin America where I met at least one UT alumnus in each country. If anyone gets this way look me up; we may be here (in Damascus).”

**Richard A. Campbell** (MA '59) lives in

oil spill plus the San Francisco earthquake. The oil spill off the L.A. coast followed. They are now predicting a major tremor along the California coast. Geologists throughout the USA should join the environmentalists to be sure that the offshore oil and gas installations are safe.” Alvin is semi-retired in Galveston.

**J. D. Carballo** (MA '85) is an exploration geologist working for Marathon Oil Company in Houston.

**A. T. (Toby) Carleton** (BS '51, MA '52) is a consulting geologist in Midland. “Still on contract to Energy Exploration Management Company—looking for the ‘big one’ in the Mid-Continent region and beyond.”

**Marvin T. Carlsen** (BS '52) is retired in Midland. “Wife still works in church

Gas Ltd. in Houston, reports “Nothing really new has happened in the work place or in my personal life except for the death of my father (A. L. Carroll, BS '49). I'll hopefully have more and better news for next year's *Newsletter*.”

**Ralph V. Carson Jr.** (BS '55) is “still working for DuPont in Wilmington, Delaware, and living with my wife and seven dogs in Pennsylvania. I think about retiring ever so often, but then decide I better keep working so I can feed all these dogs. Haven't seen Austin in 26 years—people tell me it has changed a little bit. Looking forward to the *Newsletter*.”

**Bob Carter** (BS '48, MA '48) is retired in Austin. “Enjoying Lakeway friends and amenities, and some travel.”

**Wilson Carter** (BA '49) is president of RCA Energy in Kansas City, Missouri.

**Jack C. Cartwright** (BS '51, MA '55) writes from Midland, “Our family is still working together managing our oil and gas business and other investments. The nine grandchildren are growing up unbelievably fast. They tell me that I hit the big '60' this year. Time does move on.”

**David G. Casey Jr.** (BS '60) is a self-employed geologist/petroleum engineer in Lafayette, Louisiana. “Still hanging on, doing some foreign work. Sold my home and am planning to move to Mandeville, Louisiana, in late summer. Spending all my spare time sailing on Lake Pontchartrain, or charter sailing in as exotic locations as possible. Barcoating out of Athens, Greece, in July. Our best to all and hope to see some of my classmates somewhere.”

**J. M. (Mick) Casey** (PhD '80) is a senior sedimentologist for BP Exploration in Houston.

**Dwight E. Cassell** (BS '54, MA '57) comments, “After 32 years as an employee-type finally broke away to become a consultant. So far so good with plenty of work related to horizontal drilling. Making real progress on building new home out near Dripping Springs. Hope to be there by mid '91. Lost eldest daughter,



*Robert W. Bybee (far right) in 1921 while with his family at the summer field camp in Mason County, Texas. From left is Halbert Bybee, Jeff, the camp cook, and Saphroni, the fawn. Photo identified by L. T. Barrow in 1969.*

Lafayette, Louisiana. “There have been many crises and changes in the oil business during my career but it looks like we may have survived that last bad slump, and are very busy in exploration and development. Carla and the boys and the wives and the grandchildren (5+) are doing fine and still enjoying Cajun Country.”

**Alvin Candela** (BS '41) says, “About this time last year we had the Alaska

nursery several times a week, and we take care of our 3 1/2-year-old granddaughter week days while her mom works. Have lots of rocks and minerals and fossils from throughout Texas and elsewhere I'd like to give away to anyone interested. Call (915) 694-3597 or come by. Regards to all at UT Geological Sciences Department.”

**Richard F. Carroll** (BS '80), an exploration geologist for Ultramar Oil &

B

Ellen, to auto accident in December. Sally is doing great in San Francisco. Linda's work as an Exxon paralegal keeps her busy including a lot of traveling." Dwight's consulting business is in Houston.

**Donald E. Caussey** (BS '51) is vice president, onshore exploration, for Pennzoil in Houston.

**Ralph S. Chamness** (BS '57) says he is "still working at the phosphate mine; involved with mining, planning and groundwater. Some involvement in some very interesting reclamation research projects—application of phosphate to acid mine drainage generated from coal mine wastes." Ralph is chief geologist for Texasgulf Inc. in Aurora, North Carolina.

**Walter Chatham Jr.** (BA '48, MA '50) sends greetings to everyone. He is retired in Mineral Wells, Texas.

**Pei-Yuan Chen** (PhD '68) is teaching part-time at National Taiwan Normal University in Taipei, is acting as a member and director of the committee of the curriculum for middle school earth sciences, and is editor-in-chief of *Earth Sciences Encyclopedia for Youth*.

**Daryl Scott Chicken** (BS '88) works for Halliburton Geodata MWD in Oxnard, California, as engineer in charge of the California Division.

**Prescott Christian** (BS '83) is a geologist in Austin.

**Joe Christie** (BS '58) lives in Austin, where he is president of Christie Gas Corporation.

**Steve and Pat Clabaugh** (BS '40, MA '41; MA '62) took a short cruise last fall in the southern Caribbean and up the Orinoco River with a flight to Angel Falls in geologically fascinating country. "In June we will travel to Oregon and British Columbia to visit children and grandchildren and see more of the geology and scenery there." Steve and Pat continue to enjoy retirement in Spicewood, Texas.

**Michael Clifford** (BS '64) has moved his office, Hyquest Energy, from Houston to Corpus Christi. "Don't miss the traffic one bit. Business and family are doing fine. Residence is on the shore of Lake Mathis. Should have

done this years ago."

**Kelton Cloud** (BS '73), a geologist for Dantex Oil & Gas in Dallas, is still working Gulf Coast. "I am also doing considerable work on horizontal plays both in the Gulf Coast and the Rockies. We are drilling our third horizontal Austin Chalk well."

**D. B. Clutterbuck** (MA '58) reports that it has been a good year. "Successful drilling and a profitable acquisition have made the year the best yet." Don is president of AFG Energy Inc. in Houston.

**George B. Coffin** (BS '59) lives in Houston, and is employed as a senior technical service engineer.

**Joel Coffman** (BS '83) works for Western Geologic Resources as senior staff geologist in San Rafael, California. "Out of the oil and car businesses, single again and enjoying my position in environmental geology in the Bay area. A refreshing, positive outlook after the oil and gas rollercoaster ride of the 80's. Would like to hear from fellow '83 grads."

**Tom and Julie Mahler Cogswell** (MA '90; MA '88) married in January '90. Tom works for Mitchell Energy in The Woodlands, and Julie continues working at Exxon in Houston.

**H. Grady Collier Jr.** (BS '49), a consulting and independent geologist in New Orleans, comments: "This year I was honored in being selected as recipient of the GCAGS Distinguished Service Award and in being elected as a NOGS delegate to AAPG and being chosen as a member of the advisory board of DPA (of AAPG)."

**Billy C. Collins** (BS '76) is employed as a geophysicist for Hanson Minerals in Corpus Christi.

**Sean Conlon** (MA '87) is employed by Security Pacific Bank in Los Angeles. "Although off the geology circuit, I'm spending more time analyzing mine development plans, oil field development proposals and gas pipeline projects than most geologists. If financing proposals are a barometer, business in natural resources is strong."

**Herschel Taliaferro Cooper** (BA '49) is an independent geologist in San

Antonio.

**John D. Cooper** (MA '84, PhD '70) writes, "Just completed my 20th year at Cal-State Fullerton. I still enjoy teaching historical geology, paleontology, sedimentology, and field geology and poking around in the Cambrian rocks of the East Mojave and southern Great Basin. Saw many Texas friends in San Francisco and will be attending the IAS Congress in Nottingham, England, in August. Sorry Cal-State Fullerton had to eliminate the Longhorns from the NCAA baseball tournament—but there's always next year."

**Frank G. Cornish** (MA '75) continues working as a senior geologist for TXO in Corpus Christi. "Currently sweating potential sale of TXO by USX and how it will affect the future. Working expanded Frio in Brazoria-Matagorda counties. Studying Quaternary history of Nueces River Valley and Goliad sedimentology and vertebrates with Jon Baskin, Texas A&I. Boys 11 and 9, 5th and 3rd grades, playing ball and swimming. Judi sailing in own 21' swing keel 'Azure Fantasy.' Selling magazine articles—watch *Texas Highways*."

**Henry C. Cortes Jr.** (BA '40) lives in Wellfleet, Massachusetts. He has been retired since 1972.

**Bill C. Cotner** (BS '53) is owner of Meadco Properties in Midland, "still active in West Texas and New Mexico."

**Jerry Covington** (BS '43) sends best regards to all his former classmates. As president of COV Inc. in Midland, he is "still pursuing those elusive oil and gas deposits."

**Raymond N. Cozby III** (BA '83) is an attorney in Austin.

**R. Wilson Cozby Jr.** (BS '60), a pediatric dentist in Tyler, reports: "Gleith, a junior, is the last of the Cozby's still at UT. I enjoy seeing her at baseball games and visiting with old UT geology classmates Gerald Baum and Ron DeFord, grandson of Rocky."

**Troy T. Crain** (BS '84) lives in Boulder City, Nevada, where he is a geologist for Broadbent and Associates. "Since graduation I have married and my



wife and I are proud parents of four children. I am presently doing groundwater exploration and environmental work for a small consulting firm and enjoying my work very much."

**Arthur S. Cramer Jr.** (BS '57) retired from Texaco in January after 33 years. "Currently consulting for Fairfield Industries a few days a week. Three grandchildren now—Kristine and Jennifer Reeves and Rachel Cramer." Arthur lives in New Orleans.

**Frederick E. Crawford** (BS '83) writes, "I am now employed with the Lower Colorado River Authority as a registered professional surveyor and still live in Buda, Texas."

**Weyman W. Crawford** (BS '50) retired as executive vice-president of Elf Aquitaine Petroleum and is a petroleum consultant in Houston.

**John C. Crowell** (BS '39) is professor emeritus at University of California—Santa Barbara. "Continue to enjoy research on tectonics and sedimentation in California, and on the record and causes of continental glaciation throughout geologic time. Emeritus status allows geological pondering and reflection without numerous interruptions."

**Hugh W. Curfman** (BS '48) is an independent geologist and president of Curfoil Inc. in Lafayette, Louisiana. "Still working with younger geologists trying to place 'good' gas prospects. Hope to see friends at our GCAGS convention in October in Lafayette—also SIPES convention in Lafayette in 1991."

**Thomas B. Curlee** (BS '50) is an independent petroleum consultant in Norman, Oklahoma. "For the first time in years we had a Texas Independence Day celebration (March 2) in Edmond. UT exes Ward Hall, John Eidt and I heard the comments of the current UT band director. The event for Texas Exes was arranged by Donald Easter."

**Steve Daniel** (BS '82) has spent the last three years at Zycor in Austin developing new mapping and surface modeling software. "My wife and I are expecting our first baby in May. We

spent six weeks beginning in February of this year in all the interesting places we could find in the eastern half of Australia."

**Harris P. (Koop) Darcy** (BS '51) is an independent in Houston. "I recommend that anyone interested in the origin and history of the earth write for the audiocassette tape series 'Creation and the Flood.' Write to Floyd N. Jones, 8222 Glencliffe, Houston, TX 77070."

**Michael J. Darr** (BS '82) is "married and happy solving groundwater contamination problems in the Southwest." Mike is a hydrogeologist for the Arizona Department of Environmental Quality in Phoenix.



**Franklin W. Daugherty** (MA '59, PhD '62) is retired in Alpine, Texas. "All quiet on the western front. Dorothy and I are enjoying life on the family ranch and visiting grandchildren in Amarillo and Virginia. Still do a little prospecting, but more time spent as member of Brewster County Historical Commission and member of advisory board for Big Bend Natural History Association and Center for Big Bend Studies."

**Renee Daulong** (BS '89) is at UT Austin as a graduate student in community and regional planning with emphasis on environmental planning.

**Rick J. Dausat** (BS '80) writes from Houston, "I am currently supervising the eastern Frio/Vicksburg project for Exxon. We are working primarily in south Louisiana. We have enjoyed success recently with a large discovery in the Miogyp. There are still

large fields to be found in the mature Gulf Coast. It is an exciting change from Exxon Co. International."

**George A. Davis** (BS '59) is president of Geoscience Consulting Services International in Houston.

**Joe Davis** (PhD '81) began work as senior technical advisor for Maxus Energy in Dallas in May 1990. He is working with their frontier group, primarily international.

**Jonathan O. Davis** (BA '69) is a research professor for the Desert Research Institute in Reno, Nevada. "Have added a research interest in Levantine prehistory to the stock-in-trade of Great Basin Quaternary. Got a great deal on a tandem bicycle the other day."

**Mary Q. Davis** (BS '48) comments, "I continue to live in Tyler and I'm doing organic farming in Chapel Hill near Tyler."

**William E. (Ted) Davis Jr.** (MA '61) is currently chairman of the Division of Science and Mathematics, College of Basic Studies, Boston University. He will be on sabbatical leave this fall in New Guinea, Australia and New Zealand, where he will work on the breeding biology of birds of paradise, and the effects of forest fragmentation on birds.

**William H. Davis** (BS '41) is retired in San Antonio.

**Douglas J. Day** (BS '77) lives in Fort Worth, where he is a design draftsman for General Dynamics. "I've been in Fort Worth the last 8 1/2 years. Early retirement from 'till death do you part' vows last year, and I haven't sung 'the rock hammer blues' since the fun-filled summer of '77."

**Lewis R. Decker** (BA '29) sends regards from his home in Groesbeck, Texas.

**Leslie A. Dedeke Jr.** (BS '55) is a geophysicist for Unocal Corporation in Houston.

**Frederik E. Dekker** (MA '66) is "still looking for new exploration projects in the Asia Pacific region and traveling a lot to places such as China, India, Pakistan, etc. Enjoying the business travel because Jan comes along sometimes." Fred is exploration manager for Asia-Pacific region



for Unocal Corp. in Los Angeles.

**Charles J. DeLancey** (BS '40, MA '42), retired in Houston, says he "had a wonderful five weeks in India and Nepal, including participating in a Hindu wedding in Lucknow."

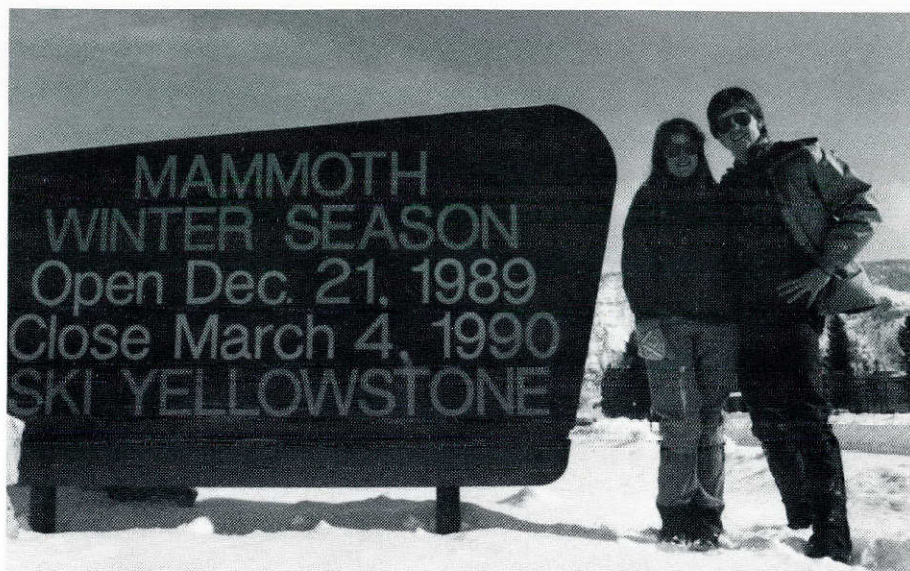
**John Lane Denson III** (BA '49, MA '50) retired from full-time ministry in the Episcopal church in 1988, and began full-time as a spiritual director/counsellor in chemical dependency treatment. "Began private practice in substance abuse counselling and assessment, getting curious about the geology of southwestern Cumberland Plateau (Franklin County/Sewanee, Tennessee) where I own a dozen acres or so, plus a log cabin and no mules." He lives in Nashville.

**William H. (Bill) Devine** (BS '48) is retired in Houston.

**Rudi DeZoeten** (MA '88) is a geologist for Unocal International Oil & Gas in Los Angeles. "Married June 17th, 1989, to Mary Gerlach. Fixing up the shack we were able to afford on the outskirts of Los Angeles. I will be sitting a well in the jungles of Ecuador this fall (1990)."

**Bill and Mary Anne Duncan Dingus** (MA '87; MA '87) were married in February 1990. Ex-students at the wedding included Jim and Patty Durrett, Dan and Debbie Travis Neuberger, Rick and Sarah Paige, James Miller and Kitty Coley. Bill relates, "After getting hitched, Mary Anne and I, like the good earth scientists we are, headed off to Yellowstone National Park to do a little cross-country skiing. Conditions were excellent and we had a great time. At present we live in Midland where I work for Exxon and Mary Anne works for GeoDyne Resources Inc. We are very thankful for each other and for our home here in the 'Tall City.' And we are especially grateful to UT for introducing us."

**George A. Donnelly Jr.** (BS '40) is still enjoying working with the Department of Geological Sciences through the Geology Foundation Advisory Council. George continues as president of Eastland Oil in Midland.



*Bill and Mary Anne Dingus pose while cross-country skiing at Yellowstone National Park last winter.*

**Gene C. Doty** (BS '54) is retired in Las Vegas. "Same wife and kids; losing a daughter-in-law in a couple of months and, hopefully, gaining a new grandchild in about three months. New dog, a Yorkie pup called Poco Loco who should have been named Mucho Loco. Watching Yucca Mountain Waste Repository fight with detached interest—ain't idiot politicians wonderful."

**Robert E. Doyle** (BS '55, MA '57) writes from Houston, "Owner of American Energy since 1980 and have been at same address most of that time. We are now buying gas wells and sell the production to utility companies in New York and Pennsylvania."

**Jack Drodgy** (PhD '78), research associate for Milpark Drilling Fluids, is "starting my fourth year at Milpark's Houston lab still doing core and formation damage studies."

**Thomas V. Dubois** (BS '77) is a geologist for Beach Exploration in Corpus Christi. "Still drilling Frio and Wilcox prospects in South Texas—not involved in the Chalk yet. Fishing whenever possible."

**Ralph C. Duchin** (MA '55), independent geologist in Houston, is still associated with Zinn Petroleum Company. "New home in Tucson will be completed this summer."

**William E. Dunaway** (MA '62) lives in Kingwood, Texas, where he is an independent geologist.

**Rob Dunbar** (BS '75) writes from Houston, "I'm still at Rice University specializing in stable isotope geochemistry, active margin sedimentology and paleoclimatology. I married Robyn Wright in 1988. Robyn has recently joined the geology faculty at Rice; we are also Masters of Baker College." Rob is an associate professor.

**Marie Durbin** (BS '87) is an associate geologist for Hunt Oil in Dallas. "Still trying to keep up with all the industry software out there. Currently helping with the DGS (Dallas Geological Society) revision/update of the 1965 book of the geology of Dallas County for the AAPG convention in Dallas in 1991. My task is to photograph the remaining outcrop stations of the some 200+ referenced in the book. Dallas has grown so much since 1965 that most of the outcrop locations are now hotels, highways or lakes. (Guess this is what they call urban geology.) This endeavor, however, has caused me to venture out to discover creeks and hilly suburbs that I had no idea existed in the city/county I grew up in! (Any of you Dallas exes that want to





help, please let me know.)”

**Connie Mayes Dyer** (BA '58) comments, “Our 11-year-old continues to keep us on the run, but he makes life a lot of fun. Our big news is that in February, our daughter, Kelly Gabrisch, and her husband, Mark, gave us a beautiful granddaughter, Blaine. Still enjoy seeing old friends when I attend AAPG conventions with Byron.” Connie lives in Houston.

**Fred A. Ealand** (BA '45, BS '48) is retired and is a “full-time grandpa” to 8 1/2 grandchildren. He lives in Houston.

**John L. Ebach** (BS '82) works for Amerada Hess Corp. as a senior information center specialist. “Janet and I have transferred to the company’s Houston offices. We are enjoying being back in Texas. At least the kids are talking about attending UT and not OU.”

**Joseph O. Ebeniro** (MA '81, PhD '86) writes from Port Harcourt, Nigeria: “I have been involved in coordinating the new geophysical graduate programme of the department of physics of University of Port Harcourt. I am also a member of the National Technical Committee on Earthquake Phenomena (NTCEP). Beginning May 15, 1990, I will be spending one year at ARCO Research Laboratory in Dallas, involved with the characterization of near surface properties using surface waves and conventional shear and p-wave data.”

**Mary Barnum Eberhardt** (BS '78) says, “For the past 12 years, I’ve been working for the Unocal Corporation in Los Angeles, both in seismic interpretation and seismic processing. While in the international division, I traveled to Southeast Asia, Northern Europe, and worked in Norway for one year. I’m married to a Unocal geologist and we have two daughters, Stephanie (2 1/2) and Stacey (8 months old). I have been on leave since Stephanie’s birth, finding it hard to leave the little ones at home.”

**Richard D. Edson Jr.** (BS '83) is a computer programmer for the Bureau of Economic Geology in Austin.

**Richard and Lynda Coons Ehlers** (BS '78; BS '80) live in Richardson, Texas,

where Richard is a senior exploration geophysicist for Placid Oil. Lynda is at home with their three-year-old son Jonathan. “We are expecting baby number two around August 1st.”

**Gus K. Eifler Jr.** (BA '29, MA '30) welcomes all visitors to his consulting office in MBank Tower in Austin.

**Ab R. Ellis Jr.** (BS '50) says business as a consulting geologist in Midland is currently slow, but the future is rosy.

**Patricia Mench Ellis** (PhD '85) comments, “I started work for the Delaware department of natural resources and environmental control (underground storage tank branch) in May 1990. My job involves the investigation of suspected cases of groundwater contamination resulting from leaks or spills from underground storage tank facilities. I help direct remedial actions at problem sites to insure compliance with state regulations. In short, I am a ‘L.U.S.T. buster.’ Husband Dave and I operate Brandywine Minerals. We do six or eight shows a year. It’s a lot of fun and gives us an excuse to go to the Tucson and Denver shows each year to stock up. Kids Katie (5) and John (2 1/2) are doing great but are a handful. Gardening and quilting are my ‘free-time’ interests.” Pat lives in Newark, Delaware.

**Ralph I. Ellsworth** (MA '49) is semi-retired in Austin.

**James L. Eppler** (BA '43) is mostly retired, but does some consulting in Dallas. “Nothing much to report, which at my age is good news. Still traveling a lot and playing golf at every opportunity.”

**Richard J. Erdlac Jr.** (PhD '88), research scientist at UT Permian Basin Center for Energy & Economic Diversion, says, “This position gives access to UT facilities and allows me to write grant proposals. One proposal has been sent to NSF for the purpose of field-checking Fletcher and Pollard’s anticrack theory of pressure solution. Second proposal in the works with Tom Lehman of Texas Tech. Third proposal in the

thought stage for rock mechanics investigation of formations in the Trans-Pecos area of Texas.” Richard lives in Midland.

**Rizer Everett** (BA '37) writes from Austin, “As the years go by I am becoming more fully retired from geological consulting work, but Hildegard and I had a good year with more than the usual amount of travel. In April we attended the annual AAPG convention in San Antonio. Our son, John, had a poster session presenting his company’s appraisal of the natural resource prospects for Burma. The papers at the convention were good and we enjoyed the visits with friends at the social functions. The people in San Antonio really know how to make attendees at their conventions welcome. On the 27th of April our grandson presented a poster session of his geology research project at the third national conference on undergraduate research (EUREKA—Excellence in Undergraduate Research—Experience, Knowledge and Achievement) as a senior at the University of Maryland. Mark was one of 200 students selected to make presentations at Trinity University in San Antonio. On May 13 we departed for a delightful trip to Indonesia. We took two of our granddaughters with us. We started the trip at Medan in North Sumatra and traveled by bus to Lake Toba, Bukittinggi and Padang. From there we flew to Palembang where Hildegard and I had lived for ten years from 1954 to 1964. We were impressed with the new buildings, paved roads and other improvements that have been made since we lived there. From Palembang we flew to Djakarta and visited the points of interest in West and Central Java. The final part of our trip was spent in Bali. In July I attended the International Geological Congress in Washington, D.C., and later that month we visited our daughter and son-in-law and helped celebrate their 25th wedding anniversary in Albuquerque. In October we made a lei-



surely trip through Arkansas, Tennessee, and Virginia to visit our son and daughter-in-law in Silver Spring, Maryland. The leaves were colorful and we really enjoyed the side trips along the way. On our return trip to Austin we visited friends in Black Mountain, North Carolina and Stone Mountain, Georgia. In January we flew to Washington, D.C. to attend the wedding of our oldest granddaughter. All six of our grandchildren were at the wedding, and the bride looked lovely in the wedding gown that her great aunt wore at her wedding many years ago."

**Norman Ewbank** (BS '43) notes, "Everyone should own a computer. Mine answers my mail, pays my bills, figures my income tax and plays games with me. And now my wife is teaching it to bake bread." Norman is retired in Midland.

**Robert H. Fakundiny** (MA '67, PhD '70) continues as state geologist and chief of the New York State Geological Survey in Albany. "Still have the same job, same wife, same cat, same car and truck, same habits, same dreams, do the same vacations, same chores—why am I having so much fun?"

**George H. Falk** (BS '57), an independent in Seguin, Texas, is "getting involved in the horizontal drilling play in the Austin Chalk. Glad to see the oil business picking up."

**Thomas E. Fanning** (BS '56) is vice president of domestic exploration for Marathon Oil Company in Houston. "Still contend that I am working too hard for the results obtained. Anne and I have two new grandsons this year: each already has a Longhorn T-shirt."

**Dorman N. Farmer** (BS '50) is geologist/owner of Fargo Exploration Company in Abilene. "Bring on the 90's. The petroleum industry has to improve—may even have another 'mini-boom.'"

**Michael J. Faust** (MA '84) is supervising a team of geologists and geophysicists prospecting in producing fields in South Louisiana. Susan is teaching high school earth science

and awaiting the arrival of their second child in late August. "Daughter Hailey turned one in April and already has an affinity for rocks. Come see us in New Orleans for Mardi Gras." Mike is senior supervisory geologist for Exxon's eastern production division.

**Irma Morgan Feibelman** (BS '59) continues to work for Ford Aerospace in the shadows of the Johnson Space Center. She and her husband, James, live in Seabrook, Texas.

**William M. (Bill) Felknor Jr.** (BS '58) works as quality assurance manager for Ryder International Corp., an automotive and medical products company in Arab, Alabama. "Gratia and I are enjoying living in northern Alabama."

**W. Grant Ferguson** (BS '78) moved to Houston and started a new company in April, Vulcan Exploration, initially exploring Texas and Louisiana Gulf Coast.

**Walter M. (Dub) Fitzgerald Jr.** (BS '53) retired from Temple-Inland Inc. of Diboll, Texas, on August 1, 1989, as senior geologist. "I have been doing a lot of stretching and scratching, enjoying retirement golfing with Lufkin CC Geritol Nooners on Monday, Wednesday, Thursday and Friday. Super group. My wife says, 'He can mess around and do nothing quicker than anyone I know.'"

**G. E. Flack** (BS '51) retired in 1985 after 34 years with Gulf Oil Corp. He says he is playing a lot of tennis and square dancing in New Orleans.

**Ted Flanigan** (MA '80) writes from Reno, "Donna and I are starting our third year as independent petroleum geologists (Flanigan & Flanigan Inc.), and business has been better than expected. I'm currently serving as president of the Nevada Petroleum Society."

**Jay and Cathy Kantenberger Flynn** (BS '84; BS '84) comment, "After five years with Geosource/Halliburton, Jay hired on with ARCO in September 1989 and loves it. He's working development in offshore Louisiana and will be drilling a well this summer. Cathy is working Gabon (West Africa)

and Ireland for Conoco and will spud an Irish well in June. We'll be celebrating our fifth anniversary at Lake Louise and various other beautiful locales in the Canadian Rockies this summer. Cathy's also been busy singing and volunteering at the Houston Area Women's Center. Jay's mentoring an elementary school student." The Flynn's live in Houston.

**Thomas (Tommy) F. Foster** (BS '84) is a formation evaluation engineer for Teleco Oilfield Services in Broussard, Louisiana.

**Hewitt B. Fox** (BA '47, BS '48, MA '48) is president of Hewitt B. Fox Inc. in Corpus Christi. "I have observed several drilling and completion technology improvements in tight reservoirs such as the Austin Chalk, the San Miguel and the Navarro in South Texas for over 30 years which stimulated drilling and workovers, but I was not prepared for the horizontal drilling boom in the Austin Chalk during the past year. I suspect that most of the investors will take a beating again."

**Paul Fredericks** (MA '80) writes from Missoula, Montana: "Doing well with my business, Mineral Logic, which involves the compilation of mine and prospect data in the northwest States. I'm also moonlighting as senior geologist for West Gold in Missoula. Whatever free time I have is spent with Susan, Steven (3) and Cheryl (1)."

**Todd Freeman** (BS '78) left the oil industry in 1986 and entered San Francisco Theological Seminary in 1989 to begin training to become a Presbyterian pastor. "I will graduate in 1993. If you're in the San Francisco area, give me a call."

**Kevin L. Frenzel** (BS '87) is a geologist for Hall Southwest Water Consultants in Austin.

**Darrell L. Frey** (BA '70) lives in Lakewood, Colorado, where he is a photogrammetry pilot. "Unable to compete as a geologist, but years of working with maps helped in competing as a pilot."

**Annabelle Bannahan Friddle** (BA '45,



MA '50) continues to live in Aztec, New Mexico. "I'm still a volunteer tutor in the Project Read Program with San Juan College teaching a boy from Mexico to speak, read and write English. It is fun, and I also enjoy skiing and painting oils and watercolors. I surely do enjoy the *Newsletter*. Thanks."

**Tatiana Frierson** (BS '85) says, "I've been a financial analyst for the past two years with two companies—a victim of mergers, acquisitions, restructuring and consolidations! I must say I have not changed jobs but the names have changed—I am now working as a gas buyer for American Oil & Gas Corp.'s South Texas system. Just want to say 'hi' to all 1985 Geodogs!" Tatiana lives in Houston.

**Frank F. Fulk** (BA '27) is retired in San Antonio. "I am still interested in the Permian Basin oil and gas news since I own ranch interests in Pecos and Culberson Counties."

**Warren P. Fuller** (BS '40, MA '48) lives in San Jose, California.

**James B. Furrh Jr.** (BS '50) is an independent oil and gas producer in Jackson, Mississippi. "Active in Mississippi, Alabama, East Texas and other areas of the Southeast. My son, J. B. Furrh III, is one of my landmen. We are considering a concession in Spain."

**Robert B. Gaines** (BS '49, MA '51), a consultant in Midland, reports "I have been working on prospects in Concho and Menard Counties, Texas, since I retired from Enron (Northern Natural Gas) in 1985. Two years ago I had my right leg rebuilt so that I scarcely limp anymore. Betty is still teaching at Midland College."

**Jay L. Gallia** (BA '73) is a senior staff attorney for The Coastal Corporation in Houston.

**J. Neal Garland** (BS '59) lives in Longview, Texas, where he is ex-

ecutive vice-president of Goldston Oil Corporation and president of Garland Minerals Corp.

**Abato John (A. J.) Garza** (BS '78) is a staff exploration geologist for Mobil Oil in Houston. "Keeping us busy are our children Jared (3 1/2) and Kate (1 1/2). Will Cindy and I ever have peace again? I have recently been transferred into exploration and am enjoying geology once again. We hope everyone is doing well."

**Leroy Gatlin** (BS '48, MA '50) writes, "All doing well. Son entering Southwestern University in Georgetown in September. Applying surface geochemistry to drilling prospects and reducing risk—also getting better wells." Leroy, an independent petroleum geologist in Oklahoma City, was honored last spring as a recipient of the Society of Independent Professional Earth Scientists Outstanding Service Award.

**Jan Boland Gaudaen** (BA '86) writes,



*Geology 60 field camp at Brady, July 1948. Instructors: Gus Eifler, Clarence Durham, and Harwood Fisher. Photo provided by Charles Renaud.*

"My husband and I had a baby boy on January 27th, 1990, Steven Joseph. We took him back to Texas in March to have him christened and to visit family and friends. It made us realize how much we missed Austin." Jan is a systems engineer for Martin Marietta and lives in Bowie, Maryland.

**P. O. Geddie** (BS '38), co-owner of Geddie Oil in Austin, is "watching the horizontal drilling program in Frio County."

**Thurman Geddie** (BS '45) is division manager of L. B. Petroleum Inc. and partner in Geddie Oil Co. in Austin. "Still doing geology in Austin, we plan to drill some horizontal wells in Frio and Wilson Counties."

**Steven J. Germiot** (MA '88) lives in Seattle, Washington, where he is a hydrogeologist for Hart Crowser Inc.

**Fred M. Gibson** (BA '51) continues to live in Austin.

**Leslie W. Giddens Jr.** (BS '54, MA '57) says he "spent a very exciting year working with horizontal drain hole wells for the Austin Chalk Formation. These wells are fun and profitable, but the most time-consuming projects I have yet to encounter."

**Ronald M. Gieger** (BS '63, MA '65) reports "Jen and I are still healthy and happy in Shreveport. We have hopes of a brighter outlook in the foreseeable future. (Geologists are always optimists.) We, like the other oil folk, promise not to 'screw up' in the next/last(?) boom. Best wishes to all." Ron is an independent in Shreveport.

**Gretchen M. Gillis** (MA '89) writes from Dallas, "I have enjoyed working in Maxus Energy Corporation's Permian Basin exploration group and am now exploring in the San Joaquin Basin of California—quite a change from Precambrian serpentinite and the relative calm of UT-DOGS! Speaking of which, I now have two dogs. Best wishes to friends in and out of the Department."

**Jerry R. Gips** (BS '70) is president of Tourmaline Exploration Co. in Houston.

**William E. Gipson** (BA '48, MA '49), managing director of exploration for Pogo Producing Co. in Houston, is

"increasingly busy with personal projects and still involved partially with Pogo." Bill is also still involved as a member of the UT Geology Foundation Advisory Council.

**Paul Giraudin Jr.** (BS '48) is retired in Corpus Christi.

**Stephen L. Glahn** (BS '80) is operator of Glahn Resources Inc. in Arlington, Texas. "Still active around Abilene though I sometimes wonder why. Heather is five and keeps me up on turtles and dinosaurs."

**Jennifer L. Glasford** (MA '89) writes, "I've been back to Austin twice since moving to Los Angeles last June and both trips coincided with the graduate student picnic. That's been great for seeing all my old friends and meeting some of the new students. As for L.A., it's not Austin, but the weather's great and the geology is interesting—as are earthquakes." Jennifer is a geologist for Unocal International.

**Arthur W. (Bill) Glover** (BS '56) notes, "Left my company, then left Colorado. Back home in Midland and glad to be here. Things are slow, but we have hopes that we are on the verge of better times again. Hope so—we need it in West Texas." Bill is a consulting geologist.

**Georgette Covo Goble** (BA '44) notes "In June my husband and I enjoyed a trip to Charleston, South Carolina, and the major attractions between there and St. Augustine, Florida. I continue to do volunteer service in the Waco community but always have time for the six grandchildren."

**Charles Goebel** (BS '80), a senior geologist with ARCO International Oil & Gas in Plano, Texas, says "Plano's pretty quiet, but the office is plenty busy. Currently looking after Syria, Jordan and Dubai."

**Michael H. Golden** (BS '78) is a geophysicist for Marathon Oil Co. in Houston, "working South Texas Wilcox and having fun."

**W. Leonard Goode** (BS '53), an independent geologist in Midland, says "All is well in West Texas. Drop in if you get a chance."

**Conley R. Goodrum** (BS '57) is a con-

sulting geologist in Richardson, Texas. "It was great seeing those old photos. They brought back pleasant memories."

**Phil Patrick Goodson** (BA '84) is a project geologist for Southwestern Laboratories in Austin.

**James E. (Jim) Gordon** (MA '51) is an independent in Corpus Christi.

**Peggy Stanley Gormley** (BA '46) is a geologist/office manager for George B. Rice in Dallas. "Just started a new job working for an independent geologist. Enjoyed seeing the Tower orange when George Bush spoke at our son's graduation from law school."

**Edwin R. (Win) Goter** (MA '77) is "now settled in Houston after returning from Sarawak, Malaysia, last year. Bought a house after a careful search (had the experience of selling one in Houston in '86) and now practicing archaeology by unpacking boxes from four years in storage. Wife and daughter (age 5) are fine. Continuing to work the domestic onshore U.S., mostly Paleozoics, a tough fight." Win is manager of geology, continental division, for Shell Western E&P.

**Ronald L. Graner** (BS '58) lives in Nashville where he is an engineering geologist for the Soil Conservation Service. "Still working on flood control and conservation projects in Tennessee."

**Richard E. Grant** (PhD '58) says, "Just returned from Alpine—two weeks field work in Glass Mountains and Guadalupes, ninth annual lectures at Sul Ross. Attended the Second International Congress on Brachiopods in Dunedin, New Zealand, in February (their mid-summer). I'm to help with the new Treatise on Brachiopods, 1995." Dick is a senior geologist-paleobiologist for the Museum of Natural History in Washington, D.C.

**C. DeVearle Gray** (BS '57) is senior vice-president of exploration for CXY Energy Inc. in Dallas. "Outlook up from grim to better than last report. Busy as you can get with modest budgets. Some discoveries



have helped. Look forward to *Newsletter* as usual—one of the few publications I read cover to cover. Thanks.”

**Charles J. Green** (BS '75), a geologist for the Texas Water Commission in Austin, writes “I went down to GCAGS in Corpus and listened to Clayton Williams at a luncheon. I decided to just relax and try to enjoy it. Working on groundwater contamination investigations with the Texas Water Commission. Made it down to San Antonio for most of the Spurs games.”

**Will Green** (MA '55) continues as an independent in Midland. “I am active in prospect generation and sales and consulting in the Permian.”

July 16 began his duties as executive director of the American Geological Institute in Washington, D.C.

**Guy Groomer** (BS '83) writes from Austin, “Even though I no longer make a living from geology, it is a great hobby. I just went to Durango (Purgatory) in March skiing and shades of GEO 660 were everywhere.” Guy is a safety engineer with ARDEX Inc.

**Roy H. Guess** (BA '39, MA '40) is a consulting geologist and expert witness in Casper, Wyoming. “As predicted in the last *Newsletter*, the ‘gas business’ is picking up. I hope there soon will be an accompanying gas price increase. I have been working



*Students on a Saturday field trip for a course taught by Dr. Henryk Stenzel in about 1947. Photo provided by Mary Q. Davis.*

**Redge L. Greenberg** (MA '73) is owner of Osiris Petroleum Inc. in Austin.

**Charles R. Grice** (BS '46) is retired in Midland. “Ann and I continue to enjoy our children and grandchildren.”

**Robbie Gries** (MA '70), independent petroleum geologist in Denver, reports: “Getting a few wells drilled each year feels good. Lynn will take geology her sophomore year at U of Colorado this fall. Have lots of interesting work on the board—not enough time. See you in San Francisco or at Denver’s AAPG section meeting in September.”

**Charles G. (Chip) Groat** (PhD '70) on

with several senators and congressmen in Washington on an idea that would rejuvenate the entire oil and gas industry. If Congress would vote an *investment* tax credit of 30% for all *future* exploration and development costs, keeping all present taxes on income from past activity, it would be a good incentive without any loss to the U.S. treasury. Can you help?”

**Susan Williams Haas** (BS '86) lives in Charlotte, North Carolina, where she is a free-lance professional harpist and part-time flight attendant (three months each year).

**Curry Hall** (BS '54) writes from Hous-

ton, “Wintershall is participating in six or seven wildcats in South Louisiana onshore this year looking for large reserves. Next year (according to plans) will join in offshore program. Things seem to have turned around.” Curry is senior geologist.

**C. Clyde Hamblin** (BS '50) is a quasi-retired petroleum landman and independent producer in Midland. “Raising our 8-year-old granddaughter keeps Martha and me close to the house. Everyone says, ‘It will keep you young.’ My response is that it makes you older quicker. Flip-flop oil and gas prices make you older quicker too.”

**Henry R. Hamman** (BS '59, MA '63), an independent in Houston, says “We are still drilling close-in deals in Louisiana and Texas and making some acquisitions.”

**Weldon W. Hammond** (BA '60, MA '69, PhD '84) is director of the Center for Ground-Water Research and Technology at UT San Antonio. “Busier than ever in the wonderful world of ground water. The science/engineering aspect is most interesting, but the political end is really rough, especially in Texas.”

**John W. Hampton Jr.** (BS '53), owner of John W. Hampton & Son in Wichita Falls, reports that his third grandson was born on April 4, 1990.

**Marc Harder** (BS '83) lives in Greenville, South Carolina, and is a hydrogeologist for Sitrine Environmental Consultants.

**J. V. Hardwick** (BS '40) writes, “Our daughter Sarah received a degree in chemical engineering last spring and is now working for ARCO in Midland. I spent five pleasant years with Atlantic after World War II. My principal activity is keeping up with seven grandchildren (not physically). Enjoyed reunion of class of '40 in Austin recently.” He is retired in Midland.

**Paul A. Hardwick** (BS '83) is “still out in Midland looking for some oil. Looking forward to a busy 1990-91. Hook 'em Horns.” Paul is division geologist for Texas Crude Exploration Inc.

**Robert W. Hare** (BS '79) is geologist for the Albert W. Adkisson Estate in Fort Worth.

**Louis H. Haring Jr.** (BS '38), president of Haring Energy Company in San Antonio, is "participating in a few drilling deals. Traveling around the United States and the world as much as possible."

**Jess L. Harkness** (BS '60) is manager for Eppler, Guerin and Turner in Corpus Christi, but is retiring to become a full-time rancher in January '91. "Have been closely following horizontal drilling techniques, particularly in Cretaceous formations in South Texas, also AVO brightspot geophysical technology."

**Wiley B. Harle** (BS '50) is enjoying retirement in Houston.

**David H. Harrington** (BS '51, MA '53) lives in Houston where he works as a consultant.

**Erik Jefferson Harris** (BS '89) is employed as a geologist/laboratory petrographer for Environmental Monitoring Service Inc. in Austin.

**Holly Lanan Harrison** (MA '81) works as a petroleum geologist for Phillips Petroleum Company in Houston.

**Hubert J. Harrison** (BS '52, MA '57) is an independent in Austin.

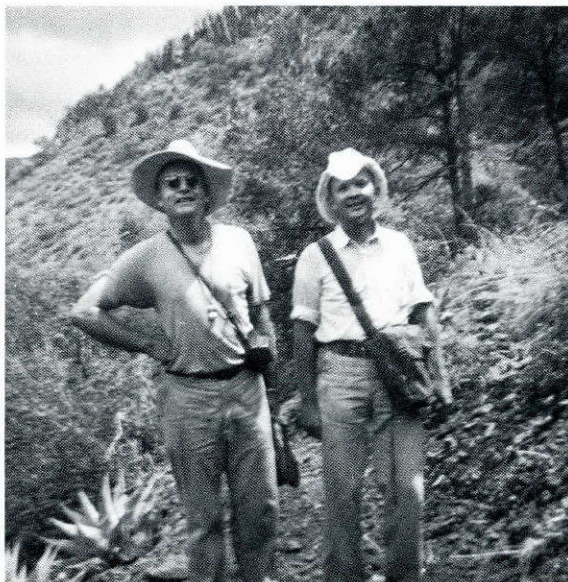
**Richard E. (Rick) Hart** (BS '74) is manager of geology with Ladd Petroleum Corp. in Houston. "Continuing to struggle with depressed prices and limited exploration budget. Ladd Petroleum has continued to explore in the expanded Yegua trend but will be shifting our emphasis to South Louisiana. We have a new addition to our family, Derek Anthony, and Jeanne has become a wonderful mother."

**H. Lee Harvard** (BA '55) reports that business is good in Roswell, New Mexico, where he is president of Harvard Petroleum Corp. "Sons Jeff (UT '84) and Alan (SMU '86) are in company with me and we are looking for deals. Joanne (UT '56), despite continuing pain from accident five years ago, has started another business. Harvard Designs does landscaping, floral designs, etc."

**Glenn D. Hatcher** (BS '73) is senior

geologist for Total Minatome in Houston. "Just hanging on and waiting for times to get better. Life is treating us well. Mary and I now have two sons and it is fun to watch them grow. In my 'spare' time I went to school and have received an associate of applied science in heating and air conditioning. I hope I don't have to use it!"

**Alana Lynn Haveman** (BS '89) says, "I've been working for a year now in Houston as a geological technical assistant for Williamson Petroleum Consultants. I've learned a lot and



*Sam Ellison and John Hampton at Geology 660 field camp, first term, 1952, in Big Bend. Photo provided by John Hampton.*

I've applied to graduate school, so someday maybe I will hold that illustrious title of geologist."

**Laurence H. Hawes** (BS '51) is retired from ARCO Oil and Gas Co. in Midland. "Finding retirement more acceptable each day. Joyce and I enjoy having our grandson Cory living nearby these days. We plan to do some fossil hunting this summer. We have been enjoying domestic travel with Alaska being next on our agenda."

**Lisa Hawkins-Paton** (BS '85) is "teaching kindergarten and having a blast! I 'retired' from an independent in Encinal, Texas, in September '89 and started working on my teaching certificate. Husband Kurt is still with Conoco in Laredo; lots of gas production down here."

**Edward F. Haye** (BS '51) is president of Benchmark Exploration Inc. in Houston.

**James F. Hayes** (BA '49, MA '51) comments, "I am still doing exploration work in South Louisiana; however, I spend about 50% of my time on Lake Travis." He is an independent in Houston.

**J. Don Haynes** (BS '56), an independent petroleum geologist in Wimberley, writes, "I have been busier in geology this past year since I moved to Woodcreek from Corpus Christi than I have the last several years. I am

affiliated with the Alamo Log Library in San Antonio."

**Hugh Hay-Roe** (MA '52, PhD '58) is now completing ten years as a consultant in Kingwood, Texas. "One son still at UT working on PhD (in philosophy); other son and his wife have just presented us with our second grandchild (first boy). Am still enjoying the opportunity to do a monthly column for Texas Section of AIPG and a bimonthly column for *Geotimes*."

**Grant Heiken** (MA '66) continues work as a volcanologist for Los Alamos National Laboratory in New Mexico. "It's been a great year—working on a geothermal project and teaching exploration techniques in Guatemala, archeological-geological studies in southern Greece, and finishing the



editing of *Lunar Sourcebook* for Cambridge University Press. What's more important is that everyone in the family is healthy."

**Charles G. Heil** (BS '51) is enjoying his retirement from Conoco, although he does miss his recruiting trips to UT. "Hope your student graduates are finding adequate employment." Charles lives in Houston.

**James H. Helland** (BS '43) is president of Inland Ocean Inc. in San Antonio. "Now that horizontal drilling is perfected where the independent can afford it, I expect to see widespread use of the new technology. It's possible that the industry is on the threshold of incredible new growth."

**William Brent Hemphkins** (BS '58, MA '62) notes, "Reorganize/merge/acquire/reorganize—that seems to be what's going on today. Last year I was in engineering technology; now I'm in research, still doing the same thing—applying statistics to geological problems. At 54 years old, I'm looking forward to an early retirement package. Also got my first patents this year!" Brent is a senior geological statistician for Chevron Corp. CRTC in Richmond, California.

**Cornelia Henderson** (BS '81) is a briefing attorney in the 13th Court of Appeals in Corpus Christi. "I recently applied my geological education to quartz crystal mining in Arkansas; I constantly use my education to correct my little sister. I also use my geology background when I tell my sweetheart, the potter, what he's working with. If my mouth isn't taped shut by the time you get this, I'm lucky."

**John D. Henderson** (BS '37) is still living in Dallas after retiring from oil company employment in July, 1968. "Keeping real busy with West Texas ranch, small Dallas real estate properties and other financial investments."

**Virginia Henderson** (BS '85) is a geologist in Corpus Christi.

**Larry Hensarling** (BS '56), president of Tee Oil Inc. in Lafayette, is "presently concentrating on buying producing properties in the Gulf of Mexico, offshore South Louisiana. The onshore exploration business in

South Louisiana is still very weak with drilling activity very low. I have also enjoyed being on the Geology Foundation Advisory Council."

**Charles W. Henslee** (BS '51) writes from Houston, "Since retiring February 1, 1989, we have been traveling some and I play a lot of golf (tough duty but someone has to do it). Wife Ruth survived a stroke in 1985 and we are active in 'Stroke Groups of Texas,' a group therapy organization for stroke survivors and their families or caretakers. If interested, contact me. We have added one grandchild for a total of seven."

**Harold T. Henslee** (BS '50) is an independent geologist in Amarillo. "I had my 65th birthday and Medicare kicked in along with a lot of other things. This oil and gas business isn't too good yet but it is going to get better eventually."

**Christoph Heubeck** (MA '88), a graduate student at Stanford, is busy working on his PhD degree which involves a lot of field work in South Africa.

**Charlie Hewitt** (BS '88, MA '90) is working in Houston with Shell Mining Company as an environmental specialist. "Will transfer to Gillette, Wyoming in fall, 1990. Also, I am engaged to Suzanne Mechler (BS '89) and we are planning a June 1991 wedding."

**Charles H. Hightower Jr.** (BS '56) is president of Hightower Oil Corp. in Lafayette.

**Janice Lorraine Hill** (BS '79) is a homemaker in Tulsa. "Tulsa is a nice place to raise a family. I finally hung the pictures in our new home. However, there are two big boxes of rocks in the dining room that may never be unpacked. John enjoys the 10-minute commute and the casual attire at the Amoco Research Center. We just celebrated Russell's first birthday. As the older sister, Caitlin (3) showed him how to blow out the candle and open presents."

**Russell E. (Rusty) Hinote** (MA '78) enjoys golf and plays cornet in the Missouri City Community Band. He has three sons who keep him very

busy. He is regional exploration coordinator for Amoco Production Company in Houston.

**Nolan Hirsch** (BS '44), an independent geologist in Midland, is continuing to fight the odds in the oil patch. "The stick seems to get smaller each year."

**Dave Hixon** (MA '59) is a software engineer for UniSys in Houston. "Unable to stay in a geo-related field, but was extremely lucky to be with this main-frame systems maintenance group; besides they didn't foreclose on the house we live in."

**Carroll Ann Hodges** (BA '58), a geologist in mineral resources for the USGS in Menlo Park, California, writes, "Survived the 'great quake' of '89 miraculously unscathed; needless to say, the Survey sent out its 'heavy artillery' in force. We're all newly sensitized to the dynamic state of our plate. IGC in Washington last summer, GSA in St. Louis and AAAS in New Orleans provided respite from the office, as did travel in Ireland that included a week of horseback riding. Taking off this summer for four weeks of bicycling and riding (two each) in France—determined to fend off the ravages of time!"

**F. A. (Fred) Hoeninghaus Jr.** (BS '49) lives in Houston where he has been retired from Exxon for five years. "Taking life easy and enjoying eight grandchildren. Keep up the good work with the excellent *Newsletter*."

**Ray Holasek** (BS '51, MA '52) writes from West, Texas: "Help! Help! Retirement is for the birds."

**Bill D. Holland** (BS '54) is president of Holland Exploration and senior vice-president of Adobe Resources in Houston. "I have re-signed a contract with Adobe Resources so will spend at least two more years trying to find oil and gas in the Gulf of Mexico. Both my 'UT children' (son, Bill and daughter, Krista) are doing the same thing. Bill is at Hall-Houston, Krista works for Kerr-McGee."

**Dan E. Holland** (BS '40, MA '40) says he is "doing better than the consulting business—I am still breathing. Seriously, all of us are hoping for improvements in the price of oil and



increased drilling." Dan lives in Midland.

**William C. Holland** (BS '81) writes from Houston, "After Chevron bought Tenneco in Lafayette in 1988, I took a new job with Hall-Houston Oil Company. The opportunity is great. Have remarried, I'm happy and doing great. Feel extremely fortunate to be a working geologist. Hookum Horns—don't ever let down."

**Clifford K. Holloway** (BS '50), an independent geologist in Amarillo, says "I am still 'romancing the stone' but with less fervor. We have children with families here in Amarillo, El Paso and Oregon. Good for home and interesting for visiting."

**Charles Lee Roy Holt** (BS '49, MA '50) is retired in Port Aransas, but does some part-time consulting. "My sculptures of earth forms, georhythms (cross-sections), and structure in the form of ceramic mosaics are being shown (and sold) in Dallas, San Antonio, Corpus Christi and Madison."

**James W. Hood** (BS '48) lives in Salt Lake City, where he does some part-time consulting. "Little change from last year. Still enjoying travel and family history research."

**Ben Hooper** (BS '80) is a senior exploration geologist for Chevron USA in Houston. "Helping Debbie raise our two daughters, Mary (2) and Kelly (1). Looking for Frio prospects for Chevron."

**Charles J. Hooper** (BS '50) is retired in Houston, but continues to be active on the UT Geology Foundation Advisory Council.

**Brian Christian Hoover** (BS '84) is marketing director for Colwick Travel Corp. in Dallas.

**Jim Hossley** (BS '82) separated from the Air Force in April 1990. "I'm now back in geology assessing geologic hazards for building sites on islands in the Puget Sound, Washington." Jim lives in Coupeville, Washington.

**G. B. (Bill) Howard IV** (BS '82) is president of Flare Resources Inc. in Houston. "I have just formed a new

company with a partner in Lafayette. We are generating and screening ideas on the Gulf Coast Texas and South Louisiana to be assembled and sold to industry. Claire and I are expecting our first child in June."

**William P. C. (Bill) Hudson** (BS '75) sends greetings from Vancouver, where he is vice-president of UNP Industries, a holding company making investments in Poland.

**Raul Huerta** (MA '80) just celebrated ten years with Exxon last March. "I have spent the last two years in Midland working Permian Basin and Rockies production geology."

**Ed W. Hughston** (MA '50) continues as an independent geologist in Taos, New Mexico.

**Steven D. Hulke** (MA '78) is a senior geologist for Hunt Oil Company in Dallas.

**Emmett A. Humble** (BA '49, MA '51) writes from Houston, "Since retiring from Esso Exploration Inc. have formed international consulting firm and have stayed active in that area. Still have time to build a new home and spend some time with three grandsons and a new granddaughter." He is president of Petroleum Associates International in Houston.

**Elvin M. Hurlbut Jr.** (BS '43) is retired in Tyler, Texas. "Both Virginia and I are still in good health except for arthritis and my first bout with sciatica. Winter allergies ineffective. Last fall had a nice trip to Eureka Springs, Arkansas, and all that Paleozoic geology. Another cat tried to join our two, but three are too many and we are now back to two."

**Robert M. (Hutch) Hutchinson** (PhD '53) is professor emeritus/adjunct professor of geology at Colorado School of Mines in Golden. "I was named by CSM's staff as the Outstanding Educator in the geology-geological engineering department for 1988-89. I am also continuing running my two consulting companies in mineral exploration and petrographic analysis. Continuing to plan and run field trips for GSA and Society of Economic Geologists." Hutch continues to teach optical mineral-

ogy each spring and geology field camp each summer.

**Jim Immitt** (MA '81) writes, "I worked for Chevron exploring for base and precious metals from '81 till '87 in the U.S. and in Chile. Married Pam, whom I met at UT, in 1984. Excessive travel led to the decision to get an MBA, for which I returned to UT from '87 to '89. Couldn't find an oil or mining job, so started with Hewlett Packard in '89. We bought a house in Colorado Springs, Colorado, and we just had our first child, Alicia, in May 1990." Jim is a financial analyst.

**Logan Irvin** (BS '79) is a geologist with Clayton W. Williams in San Antonio. "Our third child, a boy, was born June 15. We are enjoying San Antonio. Give us a call when you are in town."

**Carl B. Irwin** (BS '39) writes from San Antonio, "I particularly liked and enjoyed the last geology *Newsletter* with news of numerous classmates and near-classmates. I have had the distinct pleasure of being with John and Evelyn Tuohy in nearby Canyon Lake. I would like to see or hear of Joe Champion, Dick Teel and others. In February '90 I spent three days in Big Bend National Park, all of which strongly reminded me of summer of 1938 at Brady with its many tours to Big Bend, Marathon, Ft. Davis, Arbuckles, etc." Carl is retired from the U.S. Navy.

**Larry and Suzanne Champeny Isgur** (BS '88; BA '88) relate that after graduation, Larry worked for a short time for Western Geophysical, and then took a job doing asbestos testing and monitoring. Suzee worked for Sangree Exploration in Houston where she learned about sequence stratigraphy working with John Sangree and Bob Mitchum. Larry and Suzee married in May 1989, and shortly thereafter moved back to Austin and started their own environmental testing lab, Cuesta Environmental Inc.

**Paula Ivey** (BA '84) is president of Access Australia Inc. in Austin. She returned to Australia for the sum-





mer. In the fall she plans to begin work on a master's degree in international business at the American Graduate School of International Business.

**J. R. Jackson Jr.** (MA '40) continues to live in Houston, where he is president of Norjac Enterprises Inc. "Enjoying working for Petroleum Information as consultant. Golf, travel and grandkids take up rest of time. Always enjoy seeing longtime friends at various functions."

**Jim Bob Jackson** (MA '69) is president of Trace Oil & Gas in Houston. "Trace has survived the crunch and can see a new era emerging in the energy field."

**Joe L. Jackson** (BS '56) writes, "Still an Okie and still doing engineering geology for the Bureau of Reclamation in southwest and central U.S." Joe lives in Choctaw, near Oklahoma City.

**Russell W. Jackson** (BS '76) lives in Tyler, where he is "still chugging along in the oil business. Starting a new company this summer to drill and operate exploratory prospects plus buy production."

**Eric H. Jager** (MA '41) is a consultant in Wichita, Kansas.

**Otis L. James Jr.** (MA '52), petroleum geologist and oil producer in Gainesville, Texas, is "still hunting but ain't finding. Staying afloat on food stamps, welfare and social security—times will get better!"

**Beth Ann Janssen-Mitchell** (BS '84) sends special greetings to her fellow 1983 660'ers. "Believe it or not, some field camp romances do last—Todd Mitchell (MA '87) and I are married and living in Houston. I'm working as a business analyst for a German company (Metallgesellschaft) that does oil trading. My spare time is spent enjoying Todd and pursuing my latest interest—flying."

**Jim Janssen** (BS '79), a manager for Oryx Energy in Dallas, reports, "It has been a busy year. Linda and I have a new boy (Grant) and I moved over to management at Oryx. Haven't decided yet which change was the more stressful. Both have ended up being a lot of fun."



*Rapid transit system used for geology field trips in the early 1900's.*

**Kenneth L. Jarratt** (BS '57) is president of Maurco Corp. in Ganado, Texas. "Still selling Texaco and Phillips 66 products. Now have three grandkids. Had a plugged and abandoned well drilled on me this year—maybe next time. Hope the Longhorns shape up, tired of them looking so crummy. 'Hi' to my old college buddies."

**Borden Jenkins** (BS '77) is an independent geologist in Corpus Christi.

**Eric Jerome** (BS '86) is a lab analyst for Environmental Monitoring Service in Austin.

**Charles B. John** (BS '51) retired in January 1989 from the USGS and is living with his wife, Norma, in Tulsa. "Visited with UT alumnus Lee I. Meador (BA '57) in Anacortes, Washington. Lee is retired and is a realtor in Anacortes."

**Ann C. Johnson** (BA '86) is a resident instructor at GIA in Santa Monica, California.

**Charles G. Johnson** (BS '83) is an independent geologist, "on my own for 18 months in Tyler. Business is great, plus my second baby came last year (one girl, one boy)."

**Joni G. Johnson** (BS '79) is a project coordinator/geologist for Chevron USA in Houston.

**Malcolm R. Johnson** (BA '77) lives in Lake Charles, Louisiana.

**Charles E. Jones** (BS '51) is retired in Houston and plays golf every day.

**Gene Funkhouser (Keyser) Jones** (BA '48) is self-employed with oil and gas interests in Midland. "In spite of the prolonged industry slump, Midland is still here, we are eating regularly, have more than our share of blessings, good health, both of our mothers are well, lots of grandchildren. We seem to have taken up the slack brought on by the lack of exploration for oil and gas by reaching out to family and friends. Phil does a lot of work with and for senior citizens in Midland, and I share a lot with families caught up in the disease of alcoholism and drug abuse—trying to give back a little of what we have received."

**Luther G. Jones** (BS '59) is employed at Kelly Air Force Base in San Antonio. "Best wishes. The *Newsletter* is great. My thanks to all of you who compile and publish it. Glad to read in the last issue about a UT geologist working the Carlin deposits, of which I'm a fan also."

**Richard D. Jons** (BS '56) is an independent/consulting geologist in Midland.

**James Douglas Kallina** (BS '53) is president and owner of JDK Inc. in Stafford, Texas. "JDK is a seismic data services company. JDK brokers

seismic data and conducts non-exclusive seismic surveys. Austin Chalk play of Texas is hot as a pistol once again."

**Mark C. Kasmarek** (BS '82) works for the USGS as a geohydrologist in Houston. "Author of a groundwater project in Orange County, Texas. Doing seismic work for groundwater recharge project in Houston area. Making discharge measurements at selected locations along the Trinity River from above Crockett to Liberty, Texas."

**Edwin N. Kasper Jr.** (BS '51) writes from Houston, "Grandchildren now total four. Rachel Lea Murray arrived September 29, 1989, and Edwin Casin Kasper arrived March 7, 1990. All are

**Milo Kearney** (BS '62) says "I'm happy to be a UT dad now, with my daughter Kathleen a freshman at UT-Austin, majoring in music. It's also gratifying to be teaching as part of the UT System, with the merger of Pan American University (Brownsville) into it." Milo is a professor of history.

**Peter C. Keller** (MA '74, PhD '77) continues as associate director of the Natural History Museum in Los Angeles. "My work at the Natural History Museum continues to be exciting. I just published my first book, *Gemstones and Their Origins*. Steve Clabaugh's influence never stops."

**Christopher G. St. C. Kendall** (postdoctoral '66-'68) comments that

Scott ('36), Louise and Duncan Corbett ('35-'37), and our widows Merle White (Dan), Katherine Holcomb (Wayne), Margaret Cardwell (Henry), and Marybelle Clark (Kenley)."

**Edward R. Kennedy Jr.** (BS '48, MA '49) is a consulting geologist in Midland.

**Leon A. Kent** (BA '41, MA '50) is still enjoying retirement, travel and golf in Houston.

**Robert T. Kent** (BS '72) writes, "In 1990, Suzie and I packed our bags and after 24 good years in Austin moved to sunny California. I am still involved with environmental and groundwater issues. Suzie is looking for a new job after 20 years with the State of Texas." Bob is a geologist for IT Corporation in Irvine.

**George L. Keprta** (BS '52) lives in Houston where he is a senior exploration geologist with Rutherford Oil Corporation. "During the past year I did exploration work in the Miocene, Yegua and Wilcox Trends of Texas and Louisiana. I plan to retire in August of this year."

**Don Kerr Jr.** (BS '60) is president of Kerr Construction Services in Houston.

**Ralph S. Kerr** (MA '76) comments, "Donna and I celebrated our fourth year in New Orleans with the birth of our second child—a baby boy (Michael)." Ralph is chief geologist for Shell Offshore Inc.

**Howard W. Kiatta** (BS '58), an independent geologist in Houston, is still doing exploration along the Texas Gulf Coast.

**Robert J. Killian** (BS '77) reports the birth of Sarah Elizabeth on June 23, 1989. "Working on major remodeling project on a 'new home' (built in 1911) we bought. Hope to move in by this summer." He is a geologist with The Gulf Tide Oil Company in Houston.

**David L. Kirchner** (BS '73) is enjoying life in the hot desert around Phoenix, Arizona. He is serving as the president of a consulting firm called Basin & Range Hydrogeologists Inc. The firm provides hydrogeological, geo-



Geo. 660 field camp, June 1984. Picuris Peak, Taos, New Mexico. Photo provided by John Murphy.

doing well and a pleasure to the family. Houston's diving club's *Sea Space '90* on schedule for June. Funds raised go to support scholarships for students in marine-related studies. I have been working on the scholarship committee."

**Steven G. Katz** (PhD '75) is a consultant in Granville, Ohio. "Connie and I just returned from eight days in Hawaii—four days on the big island and four days on Oahu. What a fabulous place! The volcanoes gave us a whole new respect for earth forces. Every geologist should visit there sometime. Best regards to the gang at UT."

he "spent summer of '89 at Texaco Research working with Emily Stout (att. '66) and Susan Longacre (BS '64, PhD '68). Concentrating research on 1) simulating basin fill by sediments, 2) expert systems in exploration, 3) Recent of Bahamas and the Arabian Gulf. Despite great shortage of money my research moves forward." Chris is a professor of geology and marine science at the University of South Carolina in Columbia.

**Elizabeth Merritt Kenley** (BA '39) is a homemaker in Houston. "We keep in touch with other exes: Michie and Jay Frost ('38-'39), Loradean and Wilton



chemical, water resources management, expert testimony and forensic environmental consulting services. David is still producing his comic strip 'Dusty Dawg.'

**Tom Kirkpatrick** (BS '84) works for Exxon Co. International in Houston. "Just bought a house 'inside the loop.' Ready to ride the next economic wave in Houston."

**Don L. Kirksey** (BS '60) is owner of Recycling Consultants in Oklahoma City. "After a full and very satisfying career in oil exploration with Tenneco Oil Co. which included living in Europe and Alaska, I have changed careers as a result of Tenneco Inc. selling the oil company. I am now owner of a company that develops office paper recycling programs for large businesses. It is nice to be a part of a growing industry and one that has so many benefits for both business and community."

**R. G. Knabe** (MA '54) is retired in Houston.

**Earl B. Knott** (BS '47) writes, "After 24 years with Tenneco, last 11 in Italy, Nigeria, Trinidad, and Tobago; remainder Texas-Louisiana Gulf Coast, my wife (former Ruth Hight, UT '43) and I settled in the old homeplace. Active in civic organizations and programs. Belong to AAPG and South Texas Geological Society." Earl lives in Seguin, Texas.

**Jan Houston Knox** (BA '70) and her husband recently took their dream vacation, hiking in the Himalayan mountains of Nepal. They joined hikers from California, Texas and Canada to traverse the Annapurna range and climb Thorang La, an 18,000-foot peak. The circuit took 24 days and they covered 300 miles, all on foot. "Not every day was continuous walking. We stopped at several Buddhist monasteries, shopped in some of the villages, and attended a harvest festival. . . . No visit to Nepal would be complete without seeing Mt. Everest. After we finished our mountain trek, we returned to the capital city of Kathmandu, where we took an hour flight to see Mt. Everest. Then, before returning to Texas, we

stopped over in Bangkok, Thailand, for a few days of shopping." Jan continues working as a geologist for the Texas Water Development Board in Austin.

**Roger W. Kolvoord** (PhD '74) is manager of Boeing Computer Services in Bellevue, Washington.

**Leo W. Konz** (BA '31, MA '32) is retired in Austin, but is available for seismic interpretation.

**Paul D. Koons** (BS '51), an earth science teacher in Houston, completed his last year of teaching high school. "We plan to spend more time on the road, visiting our four kids in three different states."

**Erwin K. Krause** (BS '49, MA '54) is retired in Houston. "During 1989-90 we added *Royal Princess* (Trans-Canal), *Royal Viking Sky* (Aegean-Black Sea), *Stella Solaris* (Caribbean-Atlantic-Amazon), *Crown Odyssey* (Baltic-North Sea), and *Sky Princess* (Caribbean) to our cruise collection. Enjoy season subscriptions to Houston grand opera and the Dallas opera."

**J. David Krause** (BS '53) continues as owner of Dave Krause Pontiac-Toyota-Dodge in Denton, Texas. "Bessie and I enjoy watching the grandkids grow. I wish business was a little easier. 'How 'bout those roundball Horns?' Go, Tom, Go!!"

**Edward J. Krish** (BS '71) writes from Sparks, Nevada, where he is an exploration geologist for Kerr McGee Corporation: "Everything going well in the gold fields of western Nevada. Continuing to map, sample and drill my prospects and other various submittals in the Walker Lane. It seems that the number of submittals increases as the price of gold decreases. Son Robert, now 20, is working for Conoco in Farmington, New Mexico, this summer as an 'apprentice' chemical engineer. I wish we were paid as well when we were trying to finance an education 20 years ago. Best regards to all. Good hunting."

**George Laguros** (MA '87) is an associate geophysicist for Marathon Oil Company in Houston. "Virginia and I are expecting our first child in October."

**Charles F. Lamb** (BS '49) is a consultant in Littleton, Colorado.

**James L. Lamb Jr.** (BS '56) is an oil and gas producer in Midland.

**Leon M. Lampert** (BA '51, MA '53), a geologist in Corpus Christi, is still looking for the "big" one in South Texas and Southeastern New Mexico. "Our oldest daughter, Gail, has two daughters in Minot, North Dakota. Wayne is an attorney in Oakland, California, and Ellen is a landman in Denver. Although oil prices may rise in the future, I fear that there is no 'gas bubble.' We sure need some help from our Republican 'friends.'"

**Richard K. Lanfear** (BS '81) lives in Houston and is a consultant for TR&C Resources.

**Kent D. Lantz** (BS '84) is in Austin, back at UT working toward an MBA degree.

**Barry Wayne Lassiter** (BS '86) is a product development chemist in Irving, Texas.

**Patrick Rowan Laughlin** (BA '88) is a pilot for ERA Aviation in Anchorage, Alaska.

**Thomas H. Lawrence** (BA '32) retired in 1964 and lives in Springfield, Tennessee. "Travel to some extent, primarily fish and visit friends. At age 81 not as active as at one time. Would enjoy hearing from friends in college or known in business."

**Jeff Lawton** (MA '81) works as a staff geophysicist for Conoco Inc. "Karen and I have been in Houston now for three years. We have two horses and find these a fine replacement for kids. Not much excitement these days—just work and play. I work international, Karen works Gulf Coast. We try to get away for skiing in winter and scuba in summer.

**Bill Layton** (BS '81) writes from San Antonio, "My wife Vicki and children Joe (10), Jessica (6), and Jordan (2) are keeping me in line. Should complete my Master's degree in 1991 from UTSA. Aggressively exploring along the Wilcox Trend in Texas and hope to drill at least five wildcats in 1990. Enjoying membership in the STGS. Hi to John Clinch, Mike Darr, Jeff Ambrose, John Ligon, Richard

Lanfear, Bill Holland, and other 1980 field camp pals for 10-year anniversary." Bill is an exploration geologist for Sandia Oil & Gas Corp.

**David A. Leary** (MA '84) says, "I have a wonderful family up and running, with Austin (3) and Madeline (1). My wife Barbara also works for the Tiger in Alaska exploration. My work activities range from teaching and 'applications' work to research into carbonate diagenesis in a sequence stratigraphic framework. Applications vary from basin-to-reservoir-scale." Dave is a research geologist for Exxon Production Research Company in Houston.

**H. Louis Lee** (BS V54, MA '58), a consulting geologist, is enjoying being back in Austin. "Oil business is still slow but we're still hanging in there."

**Joseph W. Lee** (BS '49) is retired in Richardson, Texas.

**Ann Hoadley Leist** (BS '79) lives in Austin. "Currently bookkeeping part-time while the kids (5 and 8 years old) are in school. Opened a restaurant/bar, The Great Texas Music Hall, last year, was great fun while it lasted. Closed it this year due to tornado damage. Taking a summer vacation up around the 660 stomping ground. Hope I can remember some of my geology. 'Hello' to the old folks!"

**David Lemke** (BS '82) reports "eight years of continuous employment—knock on wood!" He is a senior geophysicist for Amerada Hess in Houston.

**Ray Leonard** (MA '77) is director of new ventures, USSR, China and Northern Europe, for Amoco. He lives in Houston with wife Margaret, sons Ben (12), Daniel (1) and daughter Anya (6).

**Warren Leve** (MA '52) is president of GWL Inc. Environmental in Jacksonville, Florida. "Still finding petroleum—underneath gas stations with leaky underground tanks."

**David M. Levin** (BA '77) writes from San Antonio, "DML Exploration Inc. continues to be active drilling and producing wells in South Texas. Wife Betsy and baby Blair keeping me busy otherwise. Look us up on your next

visit to San Antonio."

**Charles V. Liebscher** (BS '46), a retired USAF officer living in San Diego, writes: "At the age of 75, the sparkle has gone from my eyes and the bounce has gone from my legs. My tee shots no longer go very far, and my putting is worse than the Longhorn football team. On the positive side, I have a wonderful wife (Ingrid), good dog, strong heart, and the house is paid for. Also, I can still travel and dream. During the past year, Ingrid and I visited Germany (we lived there for 20 years), Austria and Italy. Another trip was made to Guadalajara, Mexico. In May 1990, we will visit Dallas, Austin and West Columbia, Texas, to attend the 57th reunion of my high school class. In the fall of 1990, we will again visit Germany and Austria. At times, I dream about returning to Texas to live. However, when I think about the hot Texas summers versus the mild/cool summer weather in San Diego, my heart says stay in San Diego. Life has been good to me. I would like to live another 75 years. However, if I am not around for next year's report, God bless."

**Walter S. Light Jr.** (BS '77), exploration geologist in Houston, is working on several horizontal Austin Chalk prospects in the Pearsall Trend. "This play woke South Texas up."

**Sandy Lindquist** (MA '76) writes, "I'm back doing sedimentary petrology and hope to be able to keep both a job and a residence in Colorado." Sandy is a geological associate for Amoco in Denver.

**A. L. Linehan** (BS '51) lives in Hilltop Lakes, Texas. "Linco Petroleum Consultants was my company; now it is Linco 'diversified' and I handle my real estate and investments, because consulting is very slow."

**Eugene Lipstate** (BS '49) is president of Eugene J. Lipstate Inc. and vice president of Northwest Oil Company in Lafayette. "Still looking for one more good discovery before full retirement. Hope to see friends and old classmates in Lafayette for the GCAGS convention this fall."

**Nancy Elizabeth Green Lister** (BA '55)

is a housewife in Houston. "We've had an eventful year. Our son Chip was on his motorcycle last August and was hit by a Suburban. Much time and effort has been spent on his rehabilitation from many serious injuries. We are very thankful he was not killed or paralyzed. Gregg and David are busy with college. Ray is very involved with business responsibilities. I am occupied with family and women's activities. 'Hi' to everyone."

**Larry D. Littlefield** (BS '57) says, "We have now been in Buenos Aires for two years and really enjoy it. Have exploration going in three areas." Larry is president of Chevron International (Argentina) Ltd.

**Erwin R. Lochte Jr.** (BS '56) is an independent petroleum geologist in San Antonio. "Am cautiously optimistic about the increased interest in the oil and gas exploration business. Still drilling a few Frio 'trend' wells and am still enjoying our hill country ranch and our Hereford cattle."

**Allen C. Locklin** (BS '54) writes from Tyler, "We are abundantly blessed. Our Lee Ann and husband Scott Shaver have given us three beautiful granddaughters and live in Tyler. Our son Chris and UT grad wife Lisa have given us a fourth beautiful granddaughter. Our business is good, health good and future looks good. I'm still thinking and contouring, always looking for a place to put another geological monument (some call them dry holes). Love the *Newsletter*. Keep up the good work." Allen is president of Locklin Oil Company.

**John L. Loftis Jr.** (BS '40) is an independent geologist in Houston.

**John M. Long** (MA '78) lives in San Antonio and is a consulting petroleum geologist.

**Laddie Long** (BS '52) says he "retired four years ago for health reasons—sick of working. Enjoying traveling and renewing old acquaintances across the country. Learning to appreciate the high country during July and August." He lives in Midland.

**Susan Burton Longacre** (BS '64, PhD '68) continues as a senior scientist for Texaco E&P Technology Division



in Houston. "Last July 1 saw the start of my career/life as the elected editor for all AAPG technical publications. Both the pattern of my life and my glasses have had to change. Seriously, I'm enjoying the challenge of keeping many hoops in the air at once, having the opportunity to see such a wide spectrum of papers, and I enjoy the support and technical input from many friends and colleagues as reviewers and associate editors. Carbonate reservoirs and teaching/leading seminars take most of my days. Ken continues to thrive at teaching and writing real estate law. Melissa married this past January, and Christina will graduate from high school and be at Southwest Texas in San Marcos by the time this is printed."

**E. William Longmire** (BS '50) is "retired and still loving it. Playing in a lot of senior golf tournaments in North Texas. Spent February in New Zealand/Australia, tarpon fishing in Florida Keys in May, England and Scotland in August, Maui in December. It sure beats working." Bill lives in Dallas.

**R. Michael Looney** (BS '71, MA '77) comments, "It has been a very busy year exploring in the Bol Mex and Marg Tex Trends in Southwest Louisiana and the Yegua, Wilcox and Vicksburg in Texas. Kay and Tracy are looking forward to trips to the Grand Canyon and Disneyland this year."

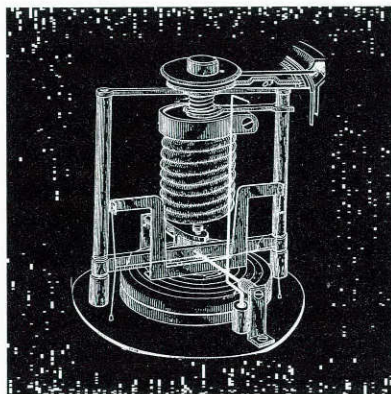
**Howard R. Lowe** (BS '48) is retired in Coupeville, Washington. "Decided to hang up my cleats. Oil patch looks pretty dismal for the 'old timers.' Spending time in real estate investments here in the Northwest. Looking at bald eagles fly by behind me, killer whales sounding offshore, and once in a while a deer steals an apple off a tree. Tough life."

**Carol MacDonald Lucas** (BS '74) was hired by ARCO last fall as a senior geologist in Houston. "Doing a lot of seismic stratigraphy and lease sale work. Met up with exes Nettie Strange (MA '74), Bob Loucks (PhD '76), and Clair Ossian (PhD '74). Chuck and the children are doing fine."

**Pamela Luttrell** (BA '73, MA '76) is an exploration supervisor for Mobil Exploration Norway Inc. "We're living in Stavanger, Norway, now and enjoying life, work and exploration in the North Sea. If there are any 'exes' in Stavanger, give me a call."

**Vance Lynch** (BS '51), vice-president for Unocal Corp. in Brea, California, writes: "Planning on retirement December 1, 1990. Will move to Dripping Springs, Texas." Vance continues as a member of the UT Geology Foundation Advisory Council.

**G. L. (Wendy) Macpherson** (MA '82, PhD '89) is an assistant professor of geology at the University of Kansas in Lawrence. "I haven't found Ozyet, but I have found a nice place to live."



We have a big house—visitors are welcome! Cooper is fast approaching two years, and is a lot of fun. Yes, there are trees in Kansas, now."

**Millard H. Major** (MA '42) writes from Corpus Christi, "My oldest grandson, David Cleaves, is valedictorian of Corpus Christi's W. B. Ray High School, and is a Plan II freshman at UT this fall. We are using him as role model for our other three grandchildren." Millard is an independent.

**Michael O. Maler** (BS '86, MA '89) is employed as a geologist for Shell Offshore Inc. in New Orleans.

**Vaughn C. Maley** (BA '26) comments, "After a long and eventful career as geologist with Exxon, beginning in West Texas and leading to exploration manager/advisor world wide in New York, I retired and now live in Midland."

**Steven D. Mann** (MA '82) is a geologist for the Alabama Geological Survey in Tuscaloosa. "Our fourth child, first son, is due in June. This will also be our last child (whew!). Work at the Alabama Geological Survey is going well—lots to do (thank goodness)."

**Robert D. Manson** (BS '76) notes, "I'm having a wonderful time in my new career. Things are changing so fast no one can keep up. Currently I am managing a project for the Air Force at Langley AFB and one for the Coast Guard in Miami. 'Hi' to Peter Megaw and Kitty Coley." Bob is project manager for LAW Environmental Inc. in Kennesaw, Georgia.

**Edward Marks** (MA '50) lives in Whittier, California, where he is president of Marks and Associates. "Now consulting in paleontology and geology. The oil patch is in a bad depression. I work in the fields of fossil mitigation, fault and facies investigations and oil and gas studies. Studies include foraminifera, radiolaria, diatoms, palynology and molluscs."

**George W. Marshall Jr.** (BA '48) is retired from Conoco in Houston. "Still enjoying retirement. Greatest thing since sliced bread! Our regards to all, and thanks for the *Newsletter*."

**Lester Marshall** (BS '37) reports, "My wife and I are still hanging in there. Our four children, ten grandchildren and two great-grandchildren are all doing likewise. I guess you could say we did our part for the population explosion." Lester is retired and lives in San Antonio.

**Sabin W. Marshall** (BS '52) continues as manager of geology for Texas Gas Transmission in Houston.

**David Martens** (BS '84) is beginning his sixth year as a geologist with UNOCAL in Houston. "Still enjoying the challenge of finding oil and gas in the Gulf Coast. My wife, Autumn, and I had our first child, a daughter, Jesslyn Kelsey, in August, 1989."

**Jeffrey G. Martin** (BS '84) is prospecting in South Louisiana as a petroleum geologist for Martin Resources Inc. in Covington, Louisiana.

**Mark A. Martin** (BS '79) says, "Finally settled down and got married this past July. Incorporated geology into our honeymoon and went to Alaska. Took a helicopter ride over and onto the Taku Glacier; beautiful scenery. Still generating prospects in Panola County, Texas."

**Mark W. Martin** (BS '84) writes from the University of Kansas in Lawrence, "All is well, PhD almost complete. 'Hello' to Mike Stinson. Boulderling lives on at KU!"

**David F. Martineau** (BS '60) continues as exploration manager for Pitts Oil Company in Dallas. He joins the UT Geology Foundation Advisory Council in September.

**Curtis C. Mason** (BS '55, MA '57) is a staff attorney for the Texas Department of Corrections inmate legal services in Huntsville. "The U.S. Supreme Court reversed the conviction of the retarded inmate I represented and ordered a new trial where the jury must be told if they do not believe a retarded person should be executed they are to vote no on a special issue."

**Todd A. Mason** (BA '87) says, "By the time this reaches you The Horne Co. will have merged with Cushman and Wakefield of Texas Inc., which is where I will be working as a real estate broker in corporate services." Todd works in Houston.

**Dallam Masterson** (MA '81) reports the birth of his second son, Joseph Douglas, in 1989. "New Arco job in exploration encompasses all of Alaska except for the North Slope and Cook Inlet." He is an area explorationist for Arco Alaska Inc. in Anchorage.

**Paul R. Mayo** (BS '50), an independent in Abilene, is "attempting to keep current on OPEC, Feds, horizontal drilling, former schoolmates and grandkids. Any correspondence welcome."

**Robert McBroom Sr.** (BA '51) is a petroleum geologist in Wichita Falls. "Had a wonderful AAPG section meeting (Southwest) here in Wichita Falls in March. Saw a lot of good friends from UT days."

**William E. McBroom** (BS '40) is re-

tired in Vernon, Texas, although he is still looking at a few drilling deals and enjoying his leisure time to enhance his mineral collection.

**Jim McCalpin** (BA '72) is an associate professor at Utah State University in Logan. "I continue research in Quaternary faulting in the Intermountain Seismic Belt. Spent three weeks helping the Soviets trench faults in the Baikal Rift Zone, also visited the Dead Sea Rift, Israel. 'Do Svidaniya.'"

**Ben A. McCarthy** (BS '80) works as an exploration geologist for Hanson Minerals Company in Houston.

**Willard A. McCracken** (BS '58) writes from Macomb, Illinois, "Still teaching at Western Illinois University—sedimentology, intro geology, geology of national parks, and a new course in hydrogeology. I spend the summer working on my home in Houston and traveling. Visitors are welcome."

**C. Carew McFall** (BS '50, MA '52), a consulting geologist in Los Altos Hills, California, is "working on gold projects, lately a 40-m.y.-old placer deposit near Grass Valley."

**Edward McFarlan Jr.** (MA '48) is a geological consultant in Houston. "Recent advances in our geological and geophysical sciences keep me going back to 'school' to learn how to apply new concepts and methods. My efforts continue to be aimed at helping Petroleum Information Co. succeed with application work using their vast 'Tenroc' data bank and computer systems."

**John A. McGinley** (BS '48) writes from Oklahoma City, "Retired from Kerr McGee since 1982, Gloria (Trant) and I spend about half our time at our other home, seven miles north of Milam on highway 87, Sabine County, Texas. Three grown children and seven grandchildren, who are all obnoxious OU fans. Would welcome all old friends to come visit us in Toledo Bend Lake country."

**Bill J. McGrew** (BS '54, MA '55) is a cattle rancher in Mena, Arkansas.

**Wayne E. McIntosh** (BS '56) lives in Rockwall, Texas, where he is an engineering geology consultant. "Doing enough consulting work to stay busy."

Building up Advantage miles commuting between Dallas and Washington, D.C. Still have youngest son Scott at UT doing graduate work. Rest of kids scattered but doing fine. Hazel and I are enjoying our five grandchildren."

**Robert G. McKinney** (MA '57) is vice president of AcuTest Corp. in Houston. "Now in the business of testing petroleum product storage tanks (above and below ground) for leaks. Exploration is easier at these depths."

**W. N. (Mac) McKinney Jr.** (BS '60, MA '63) continues as a senior staff geologist for Sonat Exploration in Houston. "After many years working offshore, I'm back doing real geology onshore. I'm currently looking for acquisitions in Oklahoma and the Texas panhandle."

**Michael McLeod** (BS '86) writes from Davis, California, "I hope to finish my MS by June. I have been part-timing for an environmental firm since the summer and plan to start full-time after graduation. There's lots of work for people with Bachelor's degrees out here in the environmental geology field."

**David A. McMahan Jr.** (BA '74, MA '77) says he "returned to school to avoid the worst of the oil slump (I hope). I received my PhD in geology from Texas A&M in August 1989, and have now returned to the oil patch." Dave is an independent/consultant in Midland.

**Peter B. McMahan** (MA '84) completed his PhD in geology in May, 1990 and is beginning his seventh year as a hydrologist at the USGS in Columbia, South Carolina.

**Jude McMurry** (MA '82) says, "Roland and I are proud to report the birth of our daughter, Dante Elizabeth Huff, in July of 1989. (She was born on Bastille Day...but clearly, the barricades had been stormed considerably earlier.)" Jude lives in Winnipeg, Manitoba, Canada.

**Jerry A. McNeish** (MA '87) is a hydrogeologist and project manager for Intera, Inc. in Austin. "Recently returned from two years in Switzerland where I was working with the



Swiss Nuclear Waste Disposal Agency. Currently doing hydro-geologic site characterizations, deep well injection permitting, and environmental liability assessments.

**Jereld E. McQueen** (BS '61, MA '63) is vice-president of Medallion Oil Company in Houston.

**A. D. McRae** (BS '42) is retired from Mobil Oil and enjoys life in Horse-shoe Bay near Austin.

**Joe N. Meadows** (BA '62) is an attorney in Waco, Texas.

**Charles E. Mear** (BA '51, MA '53) writes from Fort Worth, "Edited *Petroleum Geology of Mississippian Carbonates, North Central Texas* in 1989. UT archaeologists printed my 1952 geology thesis and are using it in their summer field school near Utopia, Texas. Youngest son graduates from UT in May, the seventh child to do so. Fourth son is professor at UT in engineering mechanics." Charles is vice-president of exploration for Cross Timbers Oil.

**Robert D. Mebane** (BS '36) lives in San Antonio. "I am semi-retired from the oil business, and spend most of my time with stock market, collectible antiques, and grandchildren."

**Suzanne Mechler** (BS '89) is currently a graduate student at Texas A&M in the oceanography department. "Yes, I have defected, but I will always be a T-sip! My thesis area is Alan Canyon, Gulf of Mexico. So I will be busy this year mapping deep water basins and planning a June 1991 wedding to Charlie Hewitt (BS '88, MA '90).

**Joseph A. Medina** (BS '74) is a geologist in Houston. "My little girls sure are growing up fast—Jennifer's 9 1/2 and Kay's 3 1/2. They are really a lot of fun. Anne and I are doing well and in good health—she's as beautiful as ever. Joined Samedan Oil Corp.'s international division in January and am working for a Gulf of Mexico friend of mine. Hello to Randy Ray, Keith Haun, Al Scott, Randy Garnett and Jose Ulysses Ricoy."

**William J. Meek** (BS '55) is president of W. J. Meek Insurance Agency Inc. in Arlington, Texas. "Insurance business keeps me hopping—business climate seems to be on the upswing! As

area coordinator (North Texas) for the U.S. Naval Academy information program, prospective midshipmen counseling takes up the rest of my time. Son William Bradley in fourth year at UT, hopefully will graduate in another year or so. Regards to all."

**Peter Megaw** (BA '76, MA '79) lives in Tucson, Arizona, where he is president of IMDEX Inc. "Finally finished my PhD studies and returned to the 'real' world. Continuing the search for gold and silver in Mexico (and occasionally finding some). Give me a shout if/when you roll through Tucson."

**Doug J. Melius** (MA '82) is still working domestic oil and gas exploration for Chevron. "They closed the Denver office 10/88 and moved us to Hous-

**Anne Smith Miller** (BA '83) is a geologist with the Texas Water Commission in Austin. "I'm finding more hydrocarbons in the environmental business than I did in the oil patch and they're already refined! In the summer of 1989 I married a dreamboat and honeymooned amidst the live lava flows and pristine black and green sand beaches of Hawaii. We are now the proud parents of 'Pistol,' a golden retriever pup. Smiles across the miles to Judy, Barbara and Paula."

**Daniel N. Miller Jr.** (PhD '55) has moved from Boise, Idaho, to Laramie, Wyoming, where he is director of the Anaconda Collection and curator of petroleum and geology collections for the American Heritage Center at the University of Wyoming.



1922 UT summer field trip to Petrified Forest, Arizona. Guy E. Green on left, James C. Orr on right. Photo identified by L. T. Barrow in 1969.

ton. After seven years in Denver, we're still trying to adjust. The boys are seven and five now. They flourish. Wait a second—here comes another reorganization...."

**Mario L. Messina** (BS '59, MA '62), CEO and president of Messina Int. in Dallas says, "Messina Int.'s joint venture with the ministry of oil in the Soviet Union and Hungary has been finalized. The new company, 21st Century Chemical Int. (or '21CCI'), has a great future."

**R. Dick Miller** (BS '51) writes, "Pat and I enjoy living in the country northwest of Georgetown, Texas, and it is hard to find time to do everything we want to do. This is really a nice retirement area and also near enough to make some of the UT basketball games."

**Steven K. Miller** (BS '85, MA '89) is currently working as an exploration geologist for Exxon Co. USA's eastern exploration division in Houston.

**Wayne D. Miller** (MA '57), an inde-



*Geology field camp headquarters in Denison, Texas, 1926.*

pendent consulting geologist, says "The last year has been fairly uneventful here in Midland—especially for the oil business. At least we are all still able to stay in our geology profession and continue to work at things we enjoy. Enjoyed seeing old UT associates last year at AAPG national convention in San Antonio."

**Richard A. Mills** (BS '50) lives in Houston, where he is enjoying retirement from Felmont Oil Corp., and working as a consultant. "Working largely on Honduras where I worked 25 years ago. We are also enjoying our two grandchildren."

**James R. Moffett** (BS '61) is chairman and CEO of Freeport-McMoRan Inc. in New Orleans. "Freeport-McMoRan and UT are having a ball unraveling the geology of Irian Jaya, Indonesia. It's exciting to see the cross-fertilization of research and economic geology. Each group is learning from the other. I hope many others will take advantage of both human resources and physical research equipment available for the asking at UT."

**Laura Lee Hill Moffett** (BA '84) is expecting her first child in July 1990. "Currently completing an MA in energy and mineral resources program at UT. Husband Matthew is an account executive at Hart Graphics." Laura is a graduate research assistant at the Bureau of Economic Geology in Austin.

**Charley Montero** (BA '83, BS '84) is a senior hydrogeologist for Rosen-garten, Smith & Associates Inc. in

Austin. "Doing great in the fields of environmental and hydrogeologic consulting. Howdy to the guys and gals from summer 1984 field camp in Oberbalmberg, Switzerland. Give me a call when you're in town."

**Evelyn Wilie Moody** (BA '38, MA '40) recovered quickly and completely from a heart attack she suffered in June 1988. "Went skiing in March, 1989. Daughter Jennifer, PhD in archaeology in 1987, married Wick Dossett from Waco in January 1989 and in July won the coveted McArthur Fellowship Award, a prize of \$239,000 for creative excellence in archaeology, botany and geology. Daughter Melissa and family moved to Houston in 1987 and is active in Pi Phi, Junior League and Memorial School District. Son John and his family are in Houston, where John has been with Exxon for ten years and is active in property acquisitions. I'm a happy mom! Still have my consulting office in the Main Building in Houston and am interested in getting into horizontal drilling. Come to see me."

**Terry Don Moody** (BS '86) is a project geologist for IT Corporation in Austin. "I certainly miss the University of Texas and the good times and good friends I enjoyed while there. I am currently employed as an environmental geologist and you would not believe how complex environmental regulations can be. Needless to say, the job is challenging, but all the other Texas Exes employed here help me survive in the sea of sharks!"

**Wayland P. Moody** (BS '54) retired from Oryx Energy about a year ago. "All 'honey do' stuff here done after Annette and my recent move to Fort Worth. Probably will rejoin the work force in the near future as my spouse keeps telling me to get out of 'her' kitchen. Funny, it was 'our' kitchen when there was painting to be done...."

**Laurel E. Jacobs Moore** (BS '84) married on May 5, 1990. She is a geologist at Wainoco Oil & Gas company in Houston.

**Michael and Julie Schiebl Moore** (BS '80; BA '81) are living in Corpus Christi, looking for opportunities in South Texas and Mississippi. Mike is a geologist for Esenjay Petroleum, and Julie is a geologist for Lundburg Operations Company. Mike says, "Still surfing, Julie still riding, and we want to say hi to all GDS members—you know who you are. Call me for a reunion (883-7464) and as the dust settles scum will rise to the top." Julie writes, "Finally made the independent scene and have truly found my niche. We buy prospects and production too. Areas of interest are South and West Texas. Call me if you have quality deals in the Frio, Yegua or Wilcox Trends."

**R. McKay Moore** (BS '52) lives in Shreveport, Louisiana.

**Terry L. Moore** (BS '80) says, "I jumped ship with Oxy USA and am now back in Texas with Phillips. Seafood is much fresher in Houston than in Oklahoma City. I was still in OKC when Texas beat OU. I attended Dr. McBride's Marathon Uplift field trip sponsored by the WTGS and, with the samples I collected, I should be paying property taxes in Brewster County."

**Duane E. Moredock** (BS '58) is having a slow year as a consulting geologist in Denver.

**Francis W. Morgan** (BA '39) continues as a consulting geologist in El Dorado, Kansas. "I am putting a few deals together, ranching in east Kansas and looking after the grandchildren."

**Marian Morris** (BS '81), a staff geophysicist for Mobil Exploration Norway Inc. in Stavanger, comments: "I've been back in Norway for a year now,







and I'm enjoying it very much, especially being closer to my boyfriend Nils and my family in Oslo. I do miss Texas and Austin in particular. I'm working in exploration for Mobil in the Barents Sea Group. The area I'm 'working' right now is just south of Bear Island. It's very interesting and great fun."

**Michael B. Morris** (BS '47) is a petroleum consultant and investor in Houston, and continues to serve on the UT Geology Foundation Advisory Council.

**Michael S. Morris** (BS '75) is an independent geologist in Fort Worth.

**Robert Morris** (BS '86) notes, "Cathy and I have just bought a house in Houston. I am working for Electronic Data Systems as a systems engineer on the Enron account."

**Susan J. Conger Morris** (BS '70), a geological technician, operates Morris Geological Enterprises in Houston, and currently has a contract with Exxon Co. International. "Morris Geological Enterprises is learning all the ins and outs of AutoCad drafting. My oldest will soon be 15 and my youngest just made it through first grade. Economy of Houston is improving so I'm expecting better things this coming year."

**Kevin H. Morrison** (BS '80) is a mine geologist for Atascosa Mining Company in Jourdanton, Texas. "I'm still working with the same company, only at the mine site rather than the engineering office. Denise and the children Nicole (5) and Patrick (6 months) are doing well."

**John Murphy** (BS '85) is "doing environmental work for a company in Austin. My wife, Rhonda, and I had our first baby in January, 1990. Like her mother, the baby is beautiful and charming."

**Pat J. Murphy** (BA '53) lives in Point Comfort, Texas, where he is exploration manager for Neumin Production Company. "Still trying to find oil and gas on the Texas Gulf Coast and time to fish."

**William David Murphy** (BS '84) writes from Corpus Christi, "My wife, Monica, and I will soon celebrate our

fifth anniversary. At Mueller Engineering Corp., I am continuing to work as an exploration and production geologist in South Texas, and have undertaken frontier basin studies in Central Texas and Papua, New Guinea. Hope to someday bring the exploration business back home to Austin."

**Robert Murray** (MA '85) is a geologist for Science Applications International Corp. in Las Vegas. "I'm working in project integration with SAIOC on the Yucca Mountain Project here in Las Vegas and am engaged to Donna Nemeth with a September 1 wedding planned."

**R. Matthew (Matt) Myers** (BS '83) is a senior geologist for Fina Oil and Chemical Company in Tyler, Texas. "Prospecting in the Arklatex for the last six years. Has anyone heard from Dave Becker or Pat Hester (both BS '83)?"

**Richard A. Neeley** (BS '86) writes, "I am working as a geologist for Petro-Hunt in Dallas, and plan to finish my Master's thesis at UT Arlington this summer."

**Mary K. Nelis** (MA '84) reports, "Our biggest news is that our son John was born August 26, 1989, is crawling like a pro now at 7 1/2 months of age, and is making his parents happy and proud. I am also working part-time as a home-based consulting petrographer in Houston. Husband Bill DeMis (MA '83) is with Marathon Oil in Houston."

**G. Allan Nelson** (BS '47) is "looking forward to the third reunion of the great class of '47, first time in Texas, in Austin in the fall. I hear Austin has changed a little bit since my last visit there 38 years ago." Al is a consultant in Denver.

**Paul E. Neumann** (BS '87) has been working for Halliburton Logging Services Inc. in Victoria, Texas, for 2 1/2 years. "I've been logging wells for major and independent companies in the Gulf Coast region both on and offshore. Performing log analysis and interpretation, working on becoming master field engineer."

**Richard Alan Nicholas** (BS '68) returned to UT for a PhD in educa-

tional administration. He graduated in May 1990.

**David C. Noe** (MA '84) writes from Boulder, "This hasn't been the best of years, but things are looking up. I entered my first photo contest in April...and won! This summer I've spent several weeks in Alaska studying the oil spill for NOAA. In September I will be starting into a hydrogeology program at Colorado School of Mines."

**Ronald W. Nordquist** (MA '72) comments, "Since the demise of Tenneco last year, I have taken a job in exploration with Marathon in Houston, working the Rocky Mountain foreland as before. We had 17 good years in Denver, but we are glad to be back in Texas."

**Isaac W. Norman** (BS '48) retired from Bishop Petroleum Inc. on September 1, 1989. He lives in Taylor, Texas.

**Carol Doran Northern** (BS '84) is a project geologist for Law International in Kennesaw, Georgia.

**Jürgen Oberst** (PhD '89) is a research scientist in Fürstfeldbruck, West Germany.

**Bob R. O'Brien** (BS '52, MA '56) continues as a professor of geography at San Diego State University. "This summer I'm backpacking in the Grand Canyon, Sierras and Cascades; in January I'm off to teach for a semester in London."

**George H. Odom** (BS '77) is chief geotechnical engineer, bridge division, for the State Department of Highways and Public Transportation in Austin. "Last year my wife got tired of door-to-door sales and quit to work at home producing yard art. Sales of the three-dimensional Holstein cows and of course burnt orange Longhorns have been brisk. I continue to enjoy a pleasant blend of engineering and geology at the highway department when I'm not helping Linda with her cows."

**John F. O'Donohoe** (BS '50) is president and CEO of Coastline Exploration Inc. in Houston. "Work by UT geology grads for Coastline with help from A&M, TCU and Wisconsin grads and others resulted in the de-

velopment of the company's 'North Brandt' and 'Cemetery Ridge' prospects in Goliad County, Texas, and subsequent drilling success during 1989 and 1990."

**A. M. (Red) Olander** (BS '48) writes from Houston, "I'm still enjoying retirement although I seem to be busier than ever. I'm in the cattle business now with another Texas ex. Our cattle breed is Blonde d'Aquitaine and our company is named Chaparral Blondes."

**Greg E. Onstott** (MA '84) says, "I have formed a company, Signal Software, which engages in geophysical software development for Unix-based workstations and supercomputing systems, and offers consulting services." Greg lives in Austin.

**Freeman L. Orman** (BS '41) is a consultant in Fort Worth. "It is interesting to see interest in development of more sophisticated EOR techniques, and an increase in in-fill drilling. More domestic production must be established to offset increasing imports."

**John S. Orr** (BS '59) is an independent in Billings, Montana, who spends a lot of time fishing the Bighorn River.

**Bob Ottmann** (BS '51), exploration geologic coordinator for Exxon Co. USA in Houston, says he has enjoyed his continued association with the Geological Sciences Department. "Looking forward to retirement which should occur before the 1990 *Newsletter* is published. Plan to stay right where I currently live."

**Bill Overesch** (BS '79) recently joined Dames & Moore in Austin as senior environmental permitting specialist after having worked for the Texas Water Commission for the past ten years. "Continue to live in Austin with wife Debra and junior paleontologists Brett (5) and Drew (3)."

**Philip M. Oviatt** (BA '78) joined Arkla Exploration Company in Houston in April, 1990 as a senior geophysicist.

**Philip Oxley** (former Advisory Council member) retired from Tenneco Inc. last August, and is back to geology and teaching. He is director of the Minerals and Energy Research Center at the University of Colorado in

Boulder.

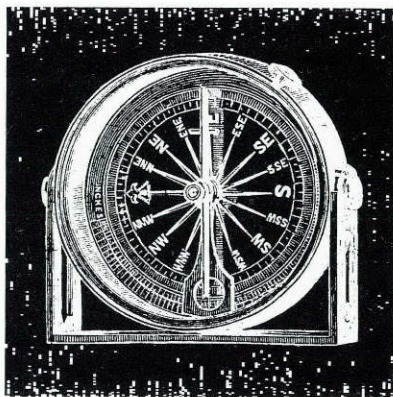
**Richard (Rick) Paige** (MA '88) writes, "Sarah and I have moved from Houston to Corpus Christi where I have started a new job with Enron Oil & Gas. Although we miss all our friends in Houston, we love it here in Corpus, and are looking forward to frequent visits from those we left behind. At Enron, I am working the South Texas region."

**David Palmer** (MA '81) is a development geologist for Marathon Oil Company in Lafayette.

**Jack M. Park** (BS '50) is a geologist in Dallas.

**Howard W. Parker** (BS '49) is retired in Austin and enjoys playing golf and traveling after 35 years in Midland.

**Tim Parks** (BS '88) is a graduate student



in geology at Texas Tech University in Lubbock.

**Matthew J. Parsley** (MA '88) lives in Midland, and is a development geologist for Marathon Oil Company.

**Dorothy Slator Paterson** (BS '77, MA '80) writes, "Hard to believe I've been gone from UT for ten years. Just moved back to American soil after serving a tour of duty with Chevron in London working the North Sea for 3 1/2 years. Malcolm and I became parents over there—a girl, Audrey (4) and a boy, Andrew (2). Now working Gulf of Mexico again—I've come full circle." Dorothy is a senior geologist, exploration, for Chevron USA Inc. in Houston.

**J. F. Patterson Jr.** (BS '52) is a consultant in Bellaire.

**Jacob L. Patton** (BA '32, MA '32) says,

"I am a consultant with the Saner Estate in Dallas and outside of that I tend to my business." Jake lives in Tyler.

**Bill R. Payne** (BA '40, MA '41) is retired in Houston. "My three children, their mother, and their spouses all received degrees from UT Austin. My first grandchild has just finished high school and has been accepted at Harvard and has also received an appointment to the U.S. Naval Academy. It appears at this writing that he will be attending one of these institutions this fall. Where did I go wrong? But at least, it is not A&M! On the brighter side, my wife and I are going to eastern Europe (East Germany, Czechoslovakia, Hungary) as well as Austria and ending up at Oberammergau to see the Passion Play the latter part of May and early June."

**John B. and Janie H. Payne** (MA '82; MA '82) are "back in Austin after eight years in the oil business, including 28 dog-years in Midland. So what have we been doing, besides working the North Slope (Janie) and Gulf Coast and Permian Basin debris flows (John)? Mostly birthing—sons Beck (4 1/2) and Eli (1 1/2), and most recently our new business, Clean & Lean (3 months). It's Austin's first and only laundromat/gym (see *Texas Monthly*, June '90, p. 90). We're close to UT at 4225 Guadalupe, so come in for a chat and a look. We still speak geology. (Bring this *Newsletter* in for a free wash and workout!)"

**Kim P. Peterson** (BS '75) is a geologist with Eaton Operating Co. Inc. in Houston.

**Jack L. Penick** (BS '42) is president of Penick Exploration in Houston. "Can't seem to retire. Plan to get one more well drilled this year. We have been traveling quite a bit lately with more planned for next year."

**Stephen G. Petmecky** (BS '85) lives in Austin where he is owner of Capital City Remodeling. "Had a great year with the remodeling business in 1989 and even better so far in '90. Wife Karen is still teaching junior high Spanish. Children Carl (3) and Sarah (1 1/2) growing like weeds and con-



tinue to be the joy and inspiration of my life."

**Benjamin J. Petrussek** (BA '42) is retired and continues to reside in Metairie, Louisiana. "Spending more time with family. In June 1989 vacationed in Alaska touring the grand natural scenery of that state."

**Harry S. Phillips** (BS '42) has formed a new oil and gas company called Blackgum Corporation in Tyler.

**Jack L. Phillips** (BS '49), an independent in Gladewater, Texas, writes, "I refuse to retire—have moved to new offices and am working harder than ever."

**James Nolan Piper** (BA '88) is a research scientist associate for UT's Applied Research Laboratories in Austin. "Conducting marine geologic and oceanographic support for our lab's environmental sciences group. Hope to have received my commission as an oceanographic officer in the U.S. Navy Reserves by July. I'm traveling much for both the Navy and the lab and loving every minute of it."

**Gene Pisasale** (MA '80) is an account executive for Paine Webber in San Diego. "Enjoying sunny southern California in a new business, but keeping abreast of geological developments and marketing oil and gas limited partnerships."

**Gerald S. (Jerry) Pitts** (BS '54), president of Pitts Energy Co. in Midland, says his company "continues to drill development wells at the Barstow and Welch field areas. We have drilled three wells, with four more scheduled during 1990. Our first venture on University Land was completed this year (block 16, Univ. Lands, Ward County, Texas). Preliminary tests indicate a very successful well. We have two wildcats to drill this year. One is an Abo Reef play and the second is a San Andres prospect. This is an ambitious drilling program for a small operating company, but my three sons want to do more. Let's hope for stable oil prices."

**Phil Pitzer** (BS '54) is an independent oil operator and president of Caddo Creek Corp. in Breckenridge, Texas. "Three fine sons, two beautiful daughters-in-law, six grandchildren

(four handsome boys, two lovely girls). Can't afford to retire."

**Michael P. Plamondon** (MA '75) is a manufacturer's representative for groundwater remediation equipment at Ted Miller Associates Inc. in Denver. "I am currently trying to adjust to a brand new career. I really love the people interaction and variety associated with sales work, but I sure miss the income I enjoyed in the oil business."

**William A. Poe** (BS '48) reports from Houston, "How great it is to be able to enjoy retirement and doing things which include golf and painting. Everyone is reasonably healthy. Our granddaughter is finishing her first year at Austin College in Sherman where son Bill is minister of the First Presbyterian Church. Oldest grandson is a freshman at the Univ. of Idaho. Son Richard is still councillor for several school districts west of Austin, and son Marshall is still in the Air Force."

**Nick B. Pollard** (BS '84) is a geologist for NGPL in Houston. "Nanci gave birth to our first child, Clay Austin, on March 30th."

**Keith S. Pollman** (MA '83) says, "Midway through 1989 I became a project manager/group leader for a small (but growing) environmental consulting firm (Eneco Tech) in Denver. Spent much of last fall in East Texas and often found myself at outcrops I'd sampled in '79 for NURE. Still racing my bike, playing softball, and taking care of John Curchin (MA '85)."

**Morris E. Pollock** (BA '62) writes from Phoenix, "One of the greatest events of our lives happened since the last *Newsletter*. We have two grandsons, Elliott Patrick Pollock and Austin Taylor Pollock, hopefully two future Longhorns." Morris is president of Marrock Petroleum Exploration.

**John M. Pope** (BS '86) sends greetings from Houston, where he is assistant account manager, environmental claims, for The Travelers Companies. "Nothing truly outstanding to report, just living and working in the big city. Good luck to all the recent

graduates. Hook 'em Horns."

**Robert B. (Bob) Porter** (MA '51) is a semi-retired independent geologist in Midland. "Enjoying the relaxed, retired life. Traveling some, following grandson Turk McDonald (Longhorn football). In Austin for all home games this fall, and look forward to seeing old friends there. Still doing some geology and turning a deal every now and then. Oh yeah, got a promotion last year—son Rob moved me into a larger office (with a window!). Never lose the faith."

**J. T. Portwood** (BS '82) and his wife Carol announce the birth of their first child, Colton J., this past spring in Oklahoma City. "I am working with Alpha Environmental (headquarters in Austin) in the areas of enhanced oil recovery, oil spill cleanup, well stimulation and paraffin control. We use hydrocarbon-degrading microorganisms for all of the above applications."

**Edward Doerk Pressler** (BA '26) is retired from Exxon in Houston.

**Ron R. Pressler** (BS '76), a division geologist, Gulf of Mexico exploitation and development, for Amerada Hess Corp. in Houston reports: "After working so long up and down the onshore Texas Gulf Coast, it is really an exciting change to be getting my feet wet in the Texas/Louisiana offshore Gulf of Mexico."

**John William Preston** (BS '70) is a partner in Tourmaline Exploration Company in Houston. "If prices will just hold somewhat steady, perhaps we can bury the 80's roller coaster ride. Jerry Gips (BS '70) and I are in our second year together trying to squeeze a few more drops of oil out of these Gulf Coast sands."

**John L. Proctor** (BA '50) is retired in Richardson, Texas. "My oldest daughter graduated from UT in May 1990. My youngest daughter is a junior at UT."

**A. Leo Pugh Jr.** (BS '52) reports in from Houston, "the oil capital of the world. Family doing great, will be a grandfather in the fall. Hope the oil industry picks up a little faster. Plan to see my old friends this fall at the conventions



and ball games." Leo is in marketing and sales for Gulf Coast Geo Data.

**Vicki Pursell** (MA '85) married David Katz, a senior corrosion engineer with Exxon, on November 4, 1989. Vicki is a senior petroleum geologist with Exxon in New Orleans.

**Philip Pyle** (MA '80) lives in Houston, where he is district manager, Mexico/Caribbean exploration, for BHP-Utah International Inc. "Working on mineral exploration from the petroleum-dominated world of Houston. Trying to find gold in Mexico and the Caribbean."

**Stan Pyndus** (BS '50) is president of Spot Market Corp. in Houston, working in gas marketing and pipelines.

**Jack H. Ragsdale** (BS '51) is making a small play in Colorado, Wyoming and Arizona gold mining as president of Forge Energy Corp. in Horseshoe Bay, Texas.

**Rick Railsback** (BA '74) is a district geologist for DeKalb Energy in Corpus Christi.

**Walter K. Rainbolt Jr.** (BA '57) lives in Lafayette, where he is president of Dynamic Exploration Inc.

**Hamilton Duncan Rangel** (PhD '84) writes, "After spending 2 1/2 years as exploration division chief in Espirito Santo and Muuri basins, I came back to Petrobras headquarters in Rio de Janeiro in February 1989 and have been working in deep water exploration and Cabo Frio area in Campos basin. Extra-class activities (piano, violin, flute, ballet, tap, soccer and swimming) keep children busy, including Texas-born Daniel."

**Jaime (Jim) Rangel** (BS '84) is working in Fort Worth with Union Pacific Resources. "My wife Alivia and I have a wonderful 1 1/2 year-old son."

**Clyde M. Rascoe** (BS '49), president of Merit Oil Company in San Angelo, Texas is "still working a half-day each day; sometimes it's the first 12 hours and sometimes the last 12 hours. I enjoy the *Newsletter*."

**Chris H. Reed** (BS '74) is "still actively in pursuit of the elusive hydrocarbon molecule in commercial quantities

with the East Texas Basin. Have two boys, ages 4 and 8, who think the greatest invention is a ball of any kind. Waiting for the big turnaround in the industry to hit the 'Piney Woods' again. Think Smackover." Chris is a geologist for Tortuga Exploration in Tyler, Texas.

**W. Chad Reed** (BA '86) writes, "I have graduated from SMU law school and am currently employed as in-house counsel for Dresser Industries based in Dallas."

**Scott C. Reeve** (BS '70) is senior staff geologist for Shell Offshore in New Orleans.

**Jeffrey C. Reid** (MA '73) lives in Raleigh, North Carolina, where he is chief geologist for the North Carolina Geological Survey. "NCGS' 100K geological mapping program underway. NCGS retains central and pivotal role in regulation/review of low-level radioactive and hazardous waste disposal. Core repository to double in size this year with construction of building addition. Finally sold Texas house after 2 1/2 years. Family finally together again. Mary, Sarah and Eric moved to Raleigh in September 1989. Mary continues her pharmacy practice. Sarah will start 6th grade and Eric 1st grade next year."

**Charles B. Renaud** (BS '49, MA '50) is an independent geologist "enjoying the idle life in Midland by watching my grandchildren grow up."

**Todd Reynolds** (BS '85) is vice-president of exploration for United Oil & Minerals in Austin. "Have worked for United since graduating in '85. United continued to drill Austin Chalk wells during the lean years '86-'88 and now it seems everyone wants to drill in the Chalk again, thanks to the horizontal technology. I reside in Austin with my wife, Pat."

**James V. (Jim) Richards** (BS '56) is a consultant for Weeks Exploration in Houston. "Very busy developing a new Texas offshore oil and gas field this year and drilling in onshore Louisiana. Made an outstanding trip to Jordan following Lawrence of Arabia's footsteps through the an-

cient 'Rose Red' city of Petra, the magnificent Wadi-Rum, and Aqaba, where we snorkeled along the Red Sea Reef. We have our first granddaughter living in sight of the UT Tower. Having a great year."

**James W. (Jim) Richards** (BS '58), independent oil and gas operator in Midland, is "trying to divide my time between our vineyard operation in the Napa Valley and developing oil and gas prospects in West Texas."

**Reu Cory Richards** (BS '85) lives in Midland, where he is working as the principal geologist for Joe McShane Inc. He is married and has a 5-month-old daughter, Audrey Camille.

**Bernd C. Richter** (MA '83) is employed as a research scientist associate for the Bureau of Economic Geology in Austin.

**Brian E. Richter** (BS '78) operates Church Richter Exploration in Denver. "We're feeling abandoned in Denver with everyone moving back to Texas. It's still a great place to vacation and make money or raise a family. (There are five of us.) Please call us if you're in the area: (303) 791-2148 or (303) 5995-9995."

**Gary Richter** (BS '79) resides in Houston.

**Wade C. Ridley** (BS '53, MA '55) continues as president of Ridley Oil Corporation in Tyler. "Still doing business at the same old stand. Son, Tom, handles land department. Other son, Clark, U.S. Navy physician, will head for Adak, Aleutian Islands, Alaska, in July. Wife Mary busy with American Cancer Society 'Reach to Recovery' program."

**Jess P. Roach** (BA '41) continues to enjoy living in Austin and the many cultural and entertainment advantages it and UT offer. He is retired, but consults occasionally.

**Mary Sue Marsh Roach** (BA '48) comments, "After taking a year off following my retirement from teaching I am now working part-time for my brother-in-law, who is an architect. It still leaves me time for travel, and I am planning a trip to Australia in the fall." She is an office assistant and secretary in Oklahoma City.



**Clem H. Roberts** (BS '49) is now retired in Midland. "After 40-plus years in the oil patch, the company for which I worked was sold in October 1988, primarily for their West Texas properties. I was responsible for discovering and developing said properties, but the purchaser no longer needed a West Texas geologist. Come see me."

**Susan Roberts** (BS '85) notes, "Five years after leaving UT, life finds me happily married and working in environmental geology. After receiving my MS at USC, I spent the next two years busily working in hazardous waste consulting—a stressful job for the stressful city of Los Angeles. We plan to relocate to a greener place by 9/90, after cycling in the British Isles for two months in the summer. 'Hello' to the study buddies of '82-'85." Susan is presently a hydrogeologist for GeoResearch in Long Beach, California.

**Roland S. (Rock) Robertson** (BS '55, MA '56) is an independent geologist in Corpus Christi.

**Edwin C. Robinson** (BS '50) is enjoying retirement more each day in Carlsbad, California. "My six children (five boys and one girl) now have seven children with more on the way."

**Ron S. Robinson** (BS '58) is beginning his 17th year in real estate and sixth year in cattle farming in El Dorado, Arkansas. He is a partner in Robinson-Buchanan Realty. "Son in the Navy, daughter in Chicago as minister of

education and 'baby' girl is now an engineering instructor at LSU. Time has flown, but I still have same wife."

**Michael Roden** (MA '77) is associate professor of geology at the University of Georgia in Athens.

**Margaret Anne Christie Rogers** (BA '64, MA '69), president of MARA Inc. in Los Alamos, New Mexico, says "My business is continuing to expand and I am enjoying the challenges involved. My principal activities are in the areas of environmental studies, waste management, quality assurance, geology and hydrology."

**Peter R. Rose** (BS '57, MA '59, PhD '68) comments, "I've relocated my practice and home to Austin. Staying more than busy prospecting, consulting and teaching oil and gas risk-analysis."

**Michael Robert Rosen** (PhD '89) writes, "I am winding up a post-doc working the Hartman Abrolhos Reefs off the west coast of Australia. Although the people I have met have been fantastic, it is time to move on to other places. I should know in the next month where that will be."

**Lucy Owings Ross** (BS '50) is president of Deltex Royalty Company Inc. in Colorado Springs, Colorado.

**Robert Brooks Ross** (BS '50) lives in Houston, where he is manager of exploration for Partners Oil Company.

**Rollins M. Roth** (BS '58) is production superintendent for Delta Oil and Gas

in Breckenridge, Texas.

**Peter D. Rowley** (PhD '68) writes from Denver, "I am continuing quadrangle mapping in the Caliente caldera complex, southeast Nevada. Good wife Mary is blasting along on her PhD at University of Colorado. We became grandparents with a daughter of my son Scott and his wife, living in Maine. And daughter Jill successfully completed her first year of college." Pete is a geologist for the U.S. Geological Survey.

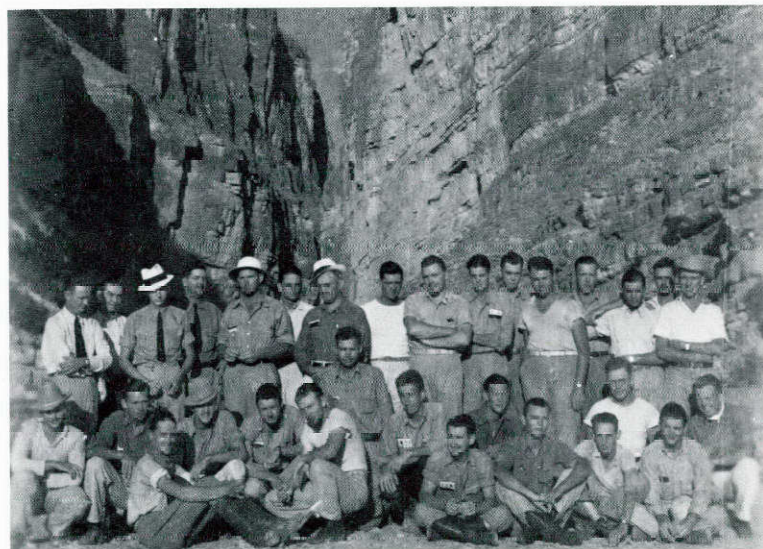
**Jimmie Norton Russell** (BS '52, MA '54) is a geologist with the Texas Water Commission in Austin, where he is in ground-water protection and conservation.

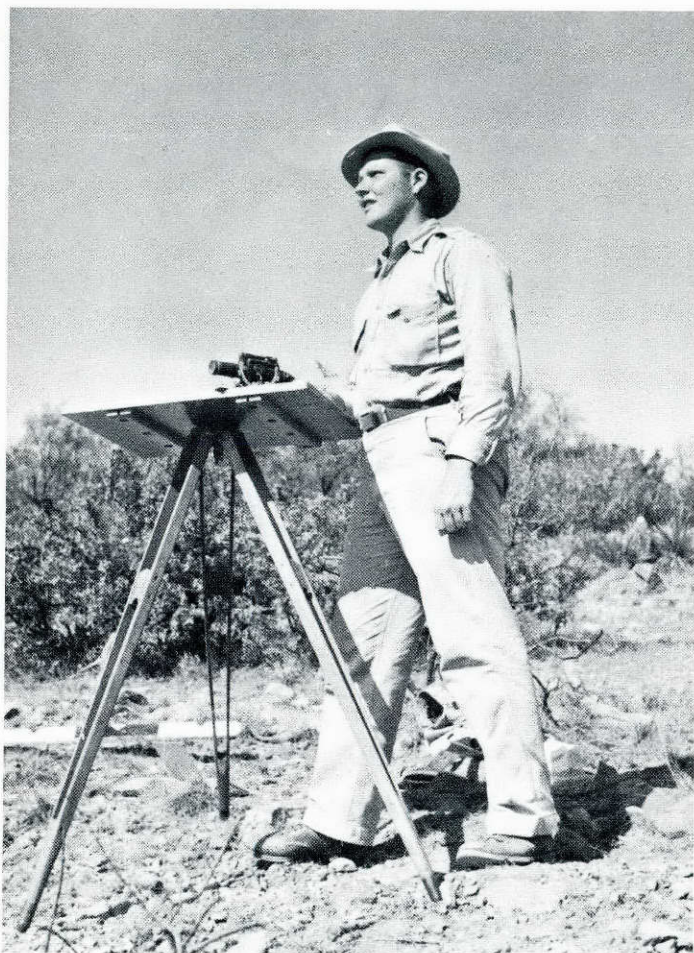
**Jim Sadd** (MA '80) is an assistant professor of geology at Occidental College in Los Angeles. "I am enjoying teaching geology and doing research in the liberal arts college setting. Despite reports to the contrary, Los Angeles is a great place to live and work. I'm also enjoying time to do some consulting carbonate work for a consulting firm in the Middle East, and am working on a PBS television series in geology. I would love to hear from some of my classmates."

**Paul F. Sagasta** (MA '84) is now doing geophysical interpretation in Unocal's Asia-Pacific district in Los Angeles. "Seismic field quality-control work has gotten me overseas a few times this past year, mainly to Latin America. Just completed three years on the

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*Santa Helena Canyon, 1936. Front row, left to right: McKinlay, Dodson, Gardner, Sheldon, Moore, Stall, Redfield, Mayfield, White, Hakes, Marshall, Holcomb, Everett, Rabensburg, Williams. Back row, left to right: McNutt, Hunter, Taylor, Bullard, Word, Hanson, Morse, Samford, Anderson, Clarkson, Ikins, Cole, McCarver, Murray, Launey, Goerner. Photo provided by Elizabeth Merritt Goerner Kenley (BA '39).*





*Charles Renaud at Dutton Ranch near Brady, July 1948.*

Pacific Coast Section-SEG board (vice-president, president, past president)."

**Jack S. Sanders** (BS '57) is a geologist in the Dallas field office of EIA/DOE. "Spent an interesting two weeks in the Soviet Union, early 1990, regarding joint oil/gas research."

**D.F. (Sandy) Sandifer** (BS '35, MA '35) is retired in San Antonio. "I still maintain an office in the Milam Building, but offices hours are limited. I am also finding it very hard to turn a good drilling deal these days. 'Where there is sufficient potential, drillers must still take a chance!' But they do not readily respond."

**James W. Sansom Jr.** (BS '63) continues to live in Austin. "Last September I retired from the State of Texas after having worked as a geologist for four different agencies for 33 years. I am an independent engineering ge-

ologist (Sansom Geological Services). Since retirement I have worked for a geotechnical firm on the super-conductor-supercollider project (SSC) in the Waxahachie area. Also, I have been associated with Geo/Consul, Boyd Dreyer principal, and we have worked on several projects that required engineering geology expertise."

**Frank X. Schloeder** (BS '78) writes from Tulsa, "I have once more changed hats, having sold my interest in Roadrunner to my partners. I am now working half-time as a geological

consultant and working the other half for myself generating drilling deals. I am happily employed by myself and doing well. Pam finished her MBA at OSU this year. Hurray!"

**George W. Schneider** (BS '57) is an independent geologist in Austin. "Have been associated with Taurus Petroleum Corp. of Denver the past year. Serving on their board and running their Denver office by 'commute.'" George still serves as a member of the UT Geology Foundation Advisory Council.

**Tom Schneider** (BS '50, MA '51) is an independent geologist in Midland, spending most of his time in the oil business.

**Paul Schnurr** (MA '55) is a consultant in Concord, California.

**Milt Scholl** (BS '47, MA '48) is enjoying his first year of retirement and looking forward to lots more in Chula

Vista, California. "We have had wonderful trips to New England, Oregon, British Columbia, and Gold Rush Country. Five grandchildren help keep us active along with a multitude of projects to catch up on. Hope to be in Austin for reunion in October."

**Clarence Schroeder** (BA '40) is enjoying retirement and being involved with the San Antonio geology club field trips and meetings.

**John T. (Ted) Schulenberg** (MA '58) writes, "Janet and I moved to Seoul last winter. I'm working for PEDCO, Korea's national oil company, as technical advisor. Enjoy the work very much. Particularly as PEDCO and other Korean companies are quite active in international exploration. That makes it fun. People here are also good to work with and we enjoy the experience and Korean countryside."

**Rubin A. Schultz Jr.** (BS '61), maintenance construction superintendent for the State Department of Highways and Public Transportation in Corpus Christi, says "The news from here is almost a repeat of last year—same job, same house and we (Nancy and I) enjoyed a week on Maui again last summer. The coming year should be more eventful—our son is expecting a baby in June and daughter is planning a July wedding. Somewhere in there, Nancy and I are going to run off to Maui for a week."

**Frederick E. Schultz** (BS '47) is retired in Ojai, California.

**Evan F. Schulz** (BS '78) is president of Legacy Exploration Inc. in Corpus Christi.

**John T. Schulz Jr.** (BS '57) is an independent in Corpus Christi.

**Christy M. Schweikhardt** (BS '83) lives in Houston, where she is employed as a geologist for American International Energy Corp.

**Eugene P. Scott** (BS '56) is a consulting petroleum geologist in Corpus Christi, "still deeply involved in the fair share settlement of the 'force' pooling hearing proceeding matters before the Texas Railroad Commission/Oil and Gas Division in Austin concerning Exxon-Lichtenberger mineral fee



797.9-acre section and adjoining tracts thereto, Seven Sisters, East Field, Duval County Texas (Upper Wx expansionist depositional zones or intervals)."

**Sandra J. Scott** (BS '85) is a tax associate at Price Waterhouse in Dallas. "I switched career plans and deal with tax forms rather than rock formations."

**John E. Seale** (BS '41) is retired in Houston, but does some consulting.

**Louie Sebring Jr.** (BS '41, MA '47), independent consulting geologist in Corpus Christi, reports "No business news. Did catch a career fish on a fly in Tierra del Fuego this spring, a 19" 14-pound sea-run brown trout. Betty did not accompany me on this trip to Argentina and Chile. She thought she might have to ride a horse (she wouldn't have). Transportation was provided by walking, ox cart, light airplane, car and jet boat. My son, Earl Michael, a UT geology graduate who works for Wagner and Brown, accompanied me. A sobering lesson in realism: I can't keep up any more."

**Kenneth O. Seewald** (PhD student, 1961-'64), owner of Seewald Energy Company in San Antonio, says he "enjoyed seeing old friends at the AAPG convention in San Francisco and realized that not all states are in a recession. Son Wayne and I are busy developing prospects for horizontal drilling in the Austin Chalk. Mary and daughter-in-law Christina are busy chasing our 8-month-old grandson Christopher, who is taking swimming lessons and banging on his piano. We're enjoying the 'Oma and Opa' stage and Brent is enjoying the 'uncle' role."

**Robert T. Sellars Jr.** (BS '57), a consultant in Denver, "took advantage of an early retirement offer and left Louisiana Land. After 23 years of corporate life I am enjoying the relative freedom of being a consultant. Fortunate enough to be able to keep busy."

**Holmes A. Semken Jr.** (BA '58, BS '60) is a professor of geology at the University of Iowa in Iowa City. He was re-elected to a second three-year term

as department chairman, a job that has generated more ups and downs than any previous endeavor. He has expended his interests in zoo-archaeology to include historic sites (Ft. Randall, South Dakota). Since Holmes and Elaine are now empty nesters, Elaine travels with Holmes; together they have visited France, Pakistan, China and the USSR.

**George B. Sewell** (BS '54) reports that his work as a consultant petroleum geologist in Denver is quite demanding now, and that 1989 was a good year. "Am developing horizontal drilling prospects in various areas of the Rockies, so give me a call if you would like information about this or would like to buy some drillable acreage. Am still sailing a lot too and just got back from a sailing vacation in Spain."

**John S. Shambaugh** (BS '49, MA '51) comments, "We have sold our house in The Woodlands, near Houston, and will be moving back to Corpus Christi in July." John is retired.

**William W. (Bill) Sharp** (BS '50, MA '51), a consultant geologist/investor in Dallas, says, "The best of life is now. Time to finish lots of interesting projects. Family doing great. Listed in *Who's Who in Finance and Industry* and *Who's Who in the World*."

**Stephen L. Shaw** (BS '71, MA '74) is a geological advisor for Meridian Oil in Midland. "Meridian Oil continues to be a very busy and rewarding place to work. Nancy and I are staying busy with two teenagers—Katie (16) and Will (14)."

**Don B. Sheffield** (BS '58) is president and CEO of Halliburton Geophysical in Houston, and also is a member of the UT Geology Foundation Advisory Council. "This geophysical world of exploration and reservoir monitoring is looking better. With or without colored glasses."

**William T. (Bill) Sherman** (BS '51) is on contract with Quintana Petroleum Services in Houston and "getting ready for the great resurgence in the patch."

**George H. Sherrill** (BS '50), an independent in San Angelo, Texas, is

"busier than usual. Keeping up regional maps and detail studies along Eastern Shelf of Permian Basin. Enjoying traveling and four beautiful grandchildren."

**Robert Lee Sherrill** (BS '80) continues as project manager/senior geologist for Jones & Neuse Inc. in Austin. "In June 1989 Jan and I had our second son. It's been a very busy year with the environmental/hydrogeology market growing by leaps and bounds. Jan, Charlie, Michael and I send our best to all ex-DOGS."

**J. David Shetler II** (BS '84) lives in Dallas, where he is employed as an exploration geologist with Oryx Energy Company.

**Elgean C. Shield** (BS '53) is president of Shield Development Corporation in Houston. "Exploration for oil and gas on the Gulf Coast has slowed down, but the doors are still open. Family is expanding faster than investments. Four grown children, four grandchildren and two more on the way."

**E. R. Sims** (BS '38) is retired in Austin with his wife, Ola. One daughter, Nene Glenn, and her husband, Keith, are in an oil-related business in Houston. The other daughter, Paige Arnold, lives in Hereford, Texas, with her husband.

**Samuel J. Sims** (MA '57) lives in Bethlehem, Pennsylvania, where he continues to be busy doing consulting work in southeastern Pennsylvania, mainly for the stone industry.

**Margaret Sipple-Srinivasan** (BS '82) lives in Los Angeles, where she is a geophysicist, southern Africa and Latin America, for Unocal Corp. international division. "In between business trips to The Netherlands, France, Trinidad and Texas, I was married in November and am enjoying immensely both married life and work."

**Matt Sjoberg** (BA '86) is a law student in San Antonio. "Starting as an associate in litigation/oil and gas in August with McGinnis, Lochridge and Kilgore in Austin."

**David K. Skidmore** (BS '76) is president of Skidmore Exploration Inc. in Nocona, Texas. "The oil patch has

been good to me. Still manage to drill two to four wells a year and recently expanded my operations to North Texas, South Central Texas, and Texas Gulf Coast. Connie and I have been married nearly 14 years, have a six-year-old son and #2 on the way. We enjoy the country and would like to see any of our old classmates if you're ever through Nocona."

**Chris Small** (MA '89) is a PhD student at Scripps Institution of Oceanography in La Jolla, California.

**Clint Simmons** (BA '82), a geologist with Minahan Oil Company in Corpus Christi comments, "Substitute rocks and minerals with diapers and Tee-ball, hammer and hand-lens with pen and calculator, GDS with PTA, Posse East and Barton Springs with wife, two boys, and a dog. That just about sums it up and I'm enjoying every minute of it."

**Marriott Wieckhoff Smart** (BS '57) is director of the library and information center for Cyprus Minerals Company in Englewood, Colorado.

**Tommy T. Smiley** (BS '51) is "enjoying retirement in good ole San Antonio. I do income taxes during the season and goof off the rest of the year."

**A. Richard (Dick) Smith** (BS '64) comments, "The real news is that I've given up the unlimited (but unfinanced) vacations of my consulting business for two weeks of paid vacation as a fully-employed geologist. It's nice to be back in environmental activities, too, as well as great to be in Austin again." Dick is a geologist for the State Health Department.

**Bruce Dixie Smith** (BS '58) writes, "I am still practicing admiralty law in Houston. My wife, Marja, and I have developed an interest in ancient history and archaeology. So we travel as much as possible to the Mediterranean. We just spent two weeks in Egypt in January 1990."

**Brian A. Smith** (PhD '86) is a geologist with Bechtel Environmental. "Continuing with environmental studies of karst in Puerto Rico. I'm still living in Puerto Rico, but travel frequently to our office in Oak Ridge, Tennessee."

**C. David Smith** (BS '82) is a geophysicist

with Oryx Energy Company in Dallas.

**Charles E. Smith** (BS '54) lives in Dallas where he is owner of Smith International Ltd. "For the past twenty years I have been leasing and selling shopping centers throughout the State of Texas. We have had quite a downturn these past few years but 1990 on looks very promising."

**Daniel L. Smith** (BS '58) is serving this year as chairman of the Houston chapter of the Society of Independent Professional Earth Scientists (SIPEs). Next year, 1991, he will be tri-chairman of the GCAGS convention in Houston. Dan is executive vice-president and exploration manager for Texoil Company in Houston.

**Edwin L. Smith** (BS '51) is an independent geologist in Wichita Falls.

**Harry L. Smith** (BS '51, MA '56), an oil operator in Boerne, Texas, is "still trying to eke out a living in what has become a harsh climate the oil business seems to be existing in now."

**J. T. Smith** (BS '50, MA '56) is still enjoying retirement in the Texas hill country in Fredericksburg.

**Jimmy L. Smith** (BS '57) writes from Houston, "Have worked more than 31 years for Exxon Co. USA. Am beginning to yearn for retirement." Jimmy is an exploration geophysicist.

**Virginia Lang Smith** (BA '82) is an earth science teacher at Kirkpatrick Middle School in Fort Worth. She plans to return to UT for more course work for the fall semester, 1990.

**Brian Smyth** (BS '76) is a partner in Northwind Exploration in Houston. "My company is pursuing wildcat and development opportunities in the Gulf Coast onshore and shallow water offshore."

**Frederick C. Smyth** (BS '47) is retired in Dallas.

**Edmund D. Sneed** (MA '55) is exploration manager, Gulf Coast and offshore region, for Marathon Oil Company in Houston.

**Scott P. Snell** (BA '87) is an editor in the science department for Holt, Rinehart and Winston in Austin. "After a lot of knocking around and a couple of false starts, I'm finally doing something

interesting that lets me at least occasionally use the stuff we learned in school. Still haven't used strat yet, though."

**John L. Snider** (MA '54) is retired in Pineville, Louisiana. "Enjoy activities with the Central Louisiana Gem and Mineral Club, senior citizen's bowling league, and National Association of Retired Federal Employees. Enjoy the UT Geological Sciences Department alumni *Newsletter*."

**John C. Soderman Jr.** (BS '85) is in natural gas sales for Texaco Inc. in Houston.

**Memrie Soderman** (BS '85) is a personal computer coordinator in Houston.

**Jairo M. Souza** (MA '82) writes from Rio de Janeiro, "Since July 1989 I have been involved with the Brazilian Continental Shelf Delimitation Program (LEPLAC), a joint program carried out by Petrobras, the Brazilian Navy, universities and other Brazilian institutions. The first reports are scheduled for the end of 1990."

**Howard Speer** (BS '56) is first vice-president of Dean Witter Reynolds in Dallas. "New granddaughter, Kathy Amis, arrived November 1, 1989. Michael graduated from the University of Colorado in December 1989, so all post-graduate duties accomplished."

**Stephen W. Speer** (MA '83) is Rocky Mountain division geologist for Yates Petroleum Corporation in Artesia, New Mexico. "Life is going well for us. The three kids are all getting too big too quick and the dog makes me crazy, but Therese and I are going to make it anyhow. Work is fun, interesting and also quite frustrating at times, but we keep cranking in spite of the obstacles and manage to find some gems along the way. Finally, I blew my knee out this spring skiing at Taos but it *will* be recuperated by the September elk bowhunt. 'Hello' to everyone from Xenon."

**Scott Dunbar Spradlin** (BS '75, MA '80) is senior supervisory geologist for Exxon in Houston. "Thanks to the Newsletter, I found John Herwig. He is alive and well in San Diego. Work





with Exxon is ever challenging. Enjoyed getting together with the Houston Texas Exes—Jerry Jeff Party. Someone even remembered me as their 416M TA—WOW! Being elected to the school board has been interesting and demands my time. Working on technology committee planning for the year 2000 and growth in teaching science, math and computers. Get involved!" Scott lives in Kingwood.

**Allan Standen** (MA '87) is employed by the Bureau of Economic Geology Core Research Center in Austin. "I have been curator at the CRC for three years now and with all the research activity my days are very hec-

Previously, the Dallas Geological Society had honored me with a life membership."

**Theodore E. Stanzel** (BS '56) reports from Houston, "After 3 1/2 years of retirement, I'm doing contract work for Chevron in Houston. I enjoy working and retirement as well. We are all hopeful that demand for the geologist's expertise will gradually improve."

**Walter W. Stein** (BA '52, MA '52) is an independent oil producer "still hunting oil along the prolific Muenster Arch in North Texas." He lives in Dallas.

**Burgess H. Stengl** (BS '85) writes, "My family and I are happy to be staying in

I'm enjoying my work as a hydrogeologist in the environmental cleanup division—a very impressive and sharp group of folks. Hook 'em Horns!"

**Sarah Landtiser Stinger** (BS '82) recently joined the staff of Radian Corporation in Herndon, Virginia, to work on private sector industrial/hazardous waste project. "Previously worked for Camp Dresser & McKee for five years on Superfund contracts for USEPA. Married for two years to Steven Stinger. Moving out to the country to escape Washington, D.C. rat race."

**Mike Stinson** (BS '83) says he is "working on the team appraising Shell Oil. I hope to go to Africa next year. Cindy and I are enjoying raising our two kids, Nick (5) and Kate (16 months)."

**Bill St. John** (BS '58, MA '60, PhD '65) writes, "Nancy and I moved to Addis Ababa in January. I'm technical advisor to the Petroleum Exploration Promotion Project which is under the Ethiopian Institute of Geological Surveys, which in turn is a branch of the Ministry of Mines and Energy. Main responsibilities are to convince oil companies to come to Ethiopia, and to train the young Ethiopian geologists. We find the job rewarding, the people very nice, Ethiopia rewarding, and the war ever closer."

**Preston Austin Stofer** (BA '56) is self-employed in Port O'Connor, Texas. "We have a few choice waterfront lots here in beautiful Port O'Connor left for my friends of the Orange and White faith."

**William T. Stokes** (BS '50) is a consultant geologist, "still in Dallas after retiring from King Ranch Oil and Gas Inc. Our son Brad is marrying in Corpus Christi this June. After that Fifi and I are going to Ireland for golfing. I enjoy very much serving on the Advisory Council for the Geology Foundation."

**Glenn Storrs** (MA '81) writes from New Haven, Connecticut: "Will spend the summer leading a joint Yale/National Geographic expedition to the Wyoming/Montana Cretaceous Meeteetse Formation in search of Late Creta-



*A field trip to Barton Creek.*

tic. I am fortunate that with all the diversity in projects and frequent traveling, my days are never boring. My gemstone business is doing very well also."

**Ann M. Stanley** (BA '44) says, "I am still a geologist for Miles Production Company, looking for the elusive hydrocarbons in North and West Central Texas. I received the 1990 Distinguished Alumna Award of my high school, Ursuline Academy of Dallas. It is bestowed annually on graduates of the 116-year-old Catholic all-girl college preparatory school.

Austin. After 2 1/2 years of working part-time at the Bureau of Economic Geology, I was able to land a full-time position at the Texas Water Commission. I started February 5th and I am enjoying the job very much. I can't believe it's been five years since field camp and graduation—how time flies."

**Sheree L. Stewart** (BA '84) is employed by the Oregon Department of Environmental Quality in Portland. "Happy to report the new beginning of a career direction in a place that I'd call paradise for the outdoor person.

ceous vertebrate faunas, particularly dinosaurs."

**Ted Stout** (BS '85), a park ranger in Golden Gate National Recreation Area, San Francisco, writes: "I escaped to Alcatraz from Philadelphia. I still have not achieved my goal of working in a natural park but at least I'm in a place called 'The Rock' (sandstone). I am getting married in August to another park ranger I met in Philly. She is a Californian and we are having a wonderful time exploring this beautiful state together."

**Michael Stowbridge** (BS '82) comments, "I'm working as a mudlogger for Geosite Consultants out of San Angelo, Texas. During the last year, I've traveled to far West Texas and south to Dilley, Texas, and the horizontal drilling boom there."

**Robert E. Stowers** (BS '61) lives in Houston. "When Tenneco sold the oil company I decided to take early retirement and try my hand at consulting. Would like to help 'independents' become more involved in international exploration."

**Michael W. Strickler** (BS '78) is vice-president of exploration for Hardy Oil and Gas USA Inc. in Houston.

**John L. Stripling** (BA '40) says, "Marjorie and I continue to observe the fauna and flora surrounding our retirement home in de Cordoba Bend Estates near Lake Grandberry—near Grandberry, Texas. We recently visited the UT campus and can't believe how it has grown. The tower and the library building still look new to us both." John is retired from the U.S. Army.

**Carroll Stroman** (BS '58) is a social worker in Sweetwater, Texas. "Still own and operate private residential treatment center for developmentally disabled adults."

**Martin Stupel** (BS '86) is a quality control field geophysicist for Western Geophysical in Houston.

**Paul D. Suddath** (BS '76) is an independent geologist in Abilene.

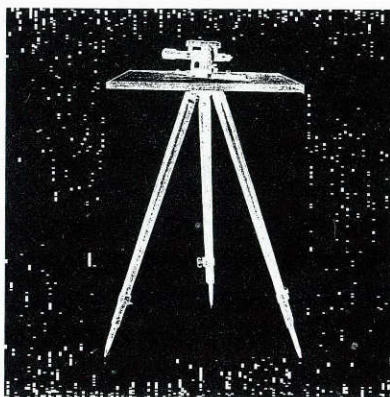
**Leonard J. Svajda** (BS '40) is semi-retired in dentistry and is also involved part-time in real estate and land development in Aransas and San Patricio

counties, Texas. "We are grandparents to three children now, and two more are on the way. Have now lost six classmates in dental class of 1950 (UT Houston) of 49 graduating dentists. I assume that attrition in the geology class of 1940 (UT) may be just as bad."

**James B. Tartt** (BS '48) is enjoying retirement in Houston.

**Rusty Tarver** (BA '88) is a graduate student at the University of Mississippi in University. "Thesis project is 'A heavy mineral analysis of a marine placer, offshore Nome, Alaska.' Working summers in Alaska and hoping to finish Master's in December. Things I miss most from UT: The Posse and all those lies everyone told."

**Peter R. Tauvers** (PhD '88) writes from Houston, where he is an associate



research geologist for Shell Development Company. "Thanks to the good graces of Shell, I'm now studying Russian in my spare time; consequently I have no spare time. Still playing hockey with Gary Donnan and Joe Greenberg down in Sharpstown. See y'all in Dallas, I hope."

**George W. Taylor** (BA '49) is retired in Georgetown, Texas. "Still enjoying retirement. Ranching, flying, CAF-airshows, etc. I'm so busy, I don't know how I ever found time to earn a livelihood. Retirement is really fine. My geology is limited to picking up rocks in my pasture."

**Dick Teel** (BS '39) comments, "Still working for Petroleum Information

as a geological consultant, after 40 years with Amoco in all phases of exploration. Will go back to Africa to hunt in September. Will be my seventh safari to Africa."

**C. B. (Tim) Thames Jr.** (BS '53, MA '57) is an operator, petroleum consultant, and attorney in Hearne, Texas. "Moving across the country into semi-retirement takes about ten times as long as one plans. We are well-settled here in Hearne and look forward to some visits to the Department. Good to be home."

**Laurie Thomas** (BA '85) is an interior coordinator in Irving, Texas.

**Ray S. Thompson** (BS '83) is a natural gas sales representative for Phillips Petroleum Company in Houston. He received his MBA from SMU in 1989.

**T. J. Thompson** (BS '57) is owner of Toro Exploration Co. in Dallas. "It looks like a new term should be coined to replace the 'gas bubble,' the beat goes on. We need to practice some horizontal drilling between the ears of numerous national and state policy makers."

**Jennifer Thompson-Hare** (BS '86) writes, "John and I are still living in Plano. We have another son now, Christopher, born last October. I'm still working at TI doing data analysis and writing algorithms for magnetometers to find submarines. Love doing the science, but wish it were for a different end. Hi to '85-'86 geophysics grads and '86 field campers. (P.S. Zena Dalby, if you're still living on earth, Laurie and I would love to hear from you.)"

**Guy L. Tidmore** (BS '82) is technical section chief for the U.S. EPA in Dallas. "I'm still in the environmental sector and doing well. Dallas isn't the Hill Country, but it'll do fine for right now."

**Vance Tillman** (BS '85) is a financial analyst and cash manager for Gulf States Toyota Inc. in Houston. "I received my MBA from UT in '88 and worked for the Houston office of a consulting firm before joining Toyota."

**Bert C. Timm** (MA '41) continues as a professor at Collin County Commu-



nity College in Plano, Texas. "Still enjoy teaching geology and am taking 40 in a caravan looking for ammonites in lower K this weekend."

**Marshall W. Titus** (BS '79) comments, "I married a super nice person in March 1989—Susan. We have two sons, Steve (14) and Charlie (12). I hope to be back in Texas before they hit college in four (Ahhggg!) years. After five years of working the North Slope of Alaska, I've come to the deep, deep water (>6,000 ft.) of the Gulf of Mexico—very exciting. Susan and I enjoyed seeing all my UT buddies at our wedding. Hi Janice, Rick, Jim, Patti, Gregg, and Jay."

**C. Payson Todd** (MA '86) is a senior petroleum geophysicist for Exxon USA in Houston, working onshore, Texas, Oklahoma and Louisiana.

**David N. Tolces** (BS '85) is an attorney with Haben & Culpepper in Tallahassee, Florida. "I am practicing environmental and land-use law. Life in North Florida is great, although I miss the great Tex-Mex in Austin. If you need any environmental or oil and gas problems solved through the legal system in Florida, send them my way. 'Howdy,' summer '85 Geodogs."

**C. Brian Trask** (MA '72) lives in Champaign, Illinois. He writes, "Having recently completed a siting study for a synchrotron at Argonne National Laboratory and for a landfill in Champaign County, I am working on geology for planning in Kane County and environmental assessments for IDOT rights of way." Brian is associate geologist for environmental studies and assessment at the Illinois State Geological Survey.

**Traci Trauba** (BS '85) is assistant account manager at The Travelers in Houston.

**Everette J. Travis** (MA '51), a retired geologist in Buchanan Dam, Texas, says, "First great-grandson makes me wonder if I'm really not getting old."

**Lloyd R. Travis** (BA '48) continues as an independent consultant in Houston. "I am still exploring for oil and gas prospects as a consultant for several oil and gas companies. As usual I want to commend the Geological Sciences

Department for publishing the *Newsletter* for all us alumni."

**Raymond R. Trollinger Jr.** (BS '60) owns Raymond R. Trollinger Jr. Investments in Dallas.

**Steven R. Trudeau** (BS '70) writes from Garland, Texas: "The 90's were expected to bring changes and they have. I have left Oryx (formerly Sun). I am now actively consulting and specializing in the area of increasing value in reserve acquisitions with the use of geological risk enhancement techniques. I am also increasing my knowledge and experience in the environmental industry to broaden my work exposure."

**Arthur J. (Art) Tschoepe** (BS '51) marks his 30th year as an independent geologist in 1990. He lives in Corpus Christi.

**Del R. Tucker** (MA '62) continues to teach at Glendale College and lives in La Canada, California. "Fran and I are doing fine. We've been traveling a bit—bike trips in Switzerland, France and Maine, and snorkeling on Grand Cayman. Still teaching and piddling around at developing prospects in South Louisiana. Best wishes from us."

**L. Jan Turk** (faculty, 1968-87) is managing engineer in the corporate headquarters of Failure Analysis Associates in Menlo Park, California. "FaAA is heavily into working on the effects of the October earthquake and a variety of other projects. The firm has a top-notch technical staff similar to a major university faculty. The group accomplishes a lot of experimental and theoretical research as an outgrowth of many applied projects. I'll be developing a new area for the company—groundwater and hazardous waste investigations."

**Michael J. Turk** (BS '83) is continuing work as a geophysicist for Unocal International, stationed in Bangkok, Thailand.

**Edd R. Turner** (BA '43) says he is retired "more or less" in Kerrville, Texas. "During the last four years I have served as city councilman, mayor pro tem, and mayor of Kerrville. In May my elective term will end and I

will then devote more time to my AAPG assignment (history)."

**Neil Turner** (PhD '70) is a staff geologist, international, for Amoco in Houston. "Continue to work on carbonate plays worldwide. Last year I worked in Trinidad, New Zealand, Norway and China developing plays in Carboniferous to Pliocene carbonates."

**Ellen Naiman Tye** (MA '82) has moved from Austin to Richardson, Texas.

**Charles B. Upton** (BS '57) teaches high school science in Colorado City, Texas. "Just an old nature boy—still interested in preserving and cleaning up the earth's environment."

**Don Urbanec** (BS '60, MA '63) writes from San Antonio, "One down and one to go. Daughter number one graduated from UT Austin this spring. Daughter number two is a junior, also at UT. I keep very busy operating oil and gas properties in South Texas under the name of Mina Energy and putting together a prospect here and there."

**Mark J. Valencia** (MA '69) is a research associate for Resource Systems Institute in Honolulu, Hawaii. "I long ago left 'pure' geology for marine resource management and international relations. However, I still use some of my hard-earned knowledge trying to keep up with the latest developments in science. My recent work is focused on East Asian marine policy problems. I organized a meeting in Vladivostok bringing the Soviets, North Koreans, South Koreans, Japanese and international organizations together to discuss Sea of Japan issues. My publications have been in the same vein, e.g. *Southeast Asian Seas: Oil Under Troubled Waters* (Oxford University Press, 1985), *Atlas for Marine Policy in Southeast Asian Seas* (U. Cal. Berkeley Press, 1983) and *Atlas for Marine Policy in East Asia* (U. Cal. Berkeley Press, forthcoming). 'Hello' to Zan Ritchie, Dave Sipperly, Bob Fakundiny, and other friends from long ago."

**Robert D. Valerius** (BS '59) is an independent geologist in Corpus Christi.

**Bruce R. Van Allen** (MA '78) lives in

S

Littleton, Colorado, and is employed as an analyst for Tenneco Minerals Company in Lakewood.

**James B. (Jim) Vanderhill** and **Amy Wharton Vanderhill** (PhD '86; BS '83) are both employed as production geologists for Mobil E&P U.S. Inc. in Midland. "We have both survived reorganization and 'human resources redeployment.' We are staying busy with work and trying to keep up with Ceili, who had her first birthday in March."

**David C. Vaughn** (BA '80) is vice-president of Vaughn Petroleum in Dallas.

**Joe Vaughn** (BA '54) writes from Dallas, "We need some big-number, high-risk prospects anywhere." Joe is president of Energy Production Corporation.

**Van N. Veenstra** (BS '74) comments, "My wife Cheryl, two boys (Adam, age 7 and Eric, age 4) and I moved to Houston this past January. Transfer to Houston was compliments of Exxon, to take a new job supervising drilling and production activities in Arkansas, Oklahoma, and East Texas. Staying quite busy, with Exxon's high activity in Arkoma Basin, along with both boys playing baseball. We're enjoying Houston, hope to stay here for a while."

**David W. Vernon** (BS '79) is a law student at Texas Tech University in Lubbock. "Currently seeking a law degree to go with my oil and gas experience. I highly recommend the diversity to those pursuing only an earth science-related degree."

**Joseph Winfield Versfelt** (BA '84) notes, "After graduation from UT, I started at Duke University in the fall of 1984 in Project PROBE—the East African rift project. I spent six months in East Africa on the *RV Nyanja*, and completed my Master's thesis. I started at Texaco Latin America/West Africa in April 1988, working on Brazil, North Africa and West Africa. Have published in *Nature* in 1989, and have a paper in at AAPG presently."

**Charles Vertrees Jr.** (BS '51) retired from Oryx Energy "to pursue other interests such as gold, travel, tennis and yard duties. Both daughters finished

college and are living in Dallas. Nancy and I are getting along fine living in Dallas."

**Harry A. Vest** (MA '59) is retired and does some part-time consulting in Houston. "Steven graduated in December 1989, now working for Shell here in Houston and living at home—how do you get these kids out of the nest? Other two boys at UT Austin, so only a few more years to go (unless there's grad school). Cheers!"

**R. B. (Bob) Vickers Jr.** (BS '47) comments, "Nothing especially new from Abilene, where the oil and gas doldrums continue. We had a family outing at Red River and Santa Fe for Christmas; now planning a trip to New England in September. We reached the level of the 50-year high school reunion this year, just finished at New Braunfels. Not old, just older."

**Kenneth D. Vogel** (MA '85), a senior petroleum geologist for Exxon Co. USA in Houston, says, "Our third son, Dustin Michael, was born in December. Ryan and Eric think he's the greatest. Exploration in the Gulf of Mexico continues to offer exciting challenges. It's hard to believe that I've now been with Exxon for five years—UT doesn't seem that long ago. Best wishes to all."

**William Vrana** (BA '39) comments that "It has been some 50 years since I finished my term at the University and what an interesting 50 years it has been. Chronologically stated as follows: 1 yr., 4 mo., International Boundary Commission, El Paso; 3 years, U.S. Army Corps of Engineers, Houston; 2 yrs., 4 mo., U.S. Army Signal Corps., Tenneco Inc. and related companies; 14 years in Houston and Corpus Christi. Self-employed consulting geologist last 30 years. On September 29, 1942, I married Joyce Raasch. We have two sons, Larry and Randy. Both graduated from UT."

**William R. Waddell** (BS '38) is an independent geologist in Houston. "At 77 I still think this is a great line of work. It's exciting to see that log on a new well. I'm drilling one or two a year."

**Andrew H. Wadman** (BS '84) married Georgia Pelias (UT '84) on March

17, 1990, in Austin. He is a project leader for Digicon Geophysical in Houston.

**A. H. Wadsworth Jr.** (BS '41, MA '41) is owner of Wadsworth Oil Company in Houston. "Have not and will not retire—what for? Enjoying geology and now learning geochemistry. Was elected vice-president of the Association of Petroleum Geochemical Explorationists (APGE) after retiring from the same job with SIPES. Got to stay young!"

**T. J. (Tommy) Waggoner III** (BA '57) is president and founder of United Trans-Western Inc. in Dallas. "Still running a small publicly-held oil company whose primary activity for the past two years has been acquiring producing properties. Not nearly as much fun as exploring by drilling for reserves. Remain optimistic of better days ahead for the oil industry."

**Scott Wade Wagner** (BS '85) is self-employed in Houston. "Working for Wagner Equipment Inc., gas compression sales, rentals and service in the Gulf Coast states. Married Melanie in March of 1990."

**J. Dudgeon Walker Jr.** (BS '51, MA '54) is retired from Aminoil USA and is a part-time independent in Houston. He encourages everyone to keep their addresses current through the *Newsletter* so that everyone can keep in touch.

**Mark C. Walker** (BA '81) is an attorney for Grambling & Mounce in El Paso.

**David A. Wallace** (BS '86) lives in Austin, where he is a hydrogeologist/enforcement coordinator for the Texas Water Commission. "Recently moved into the hazardous waste enforcement unit at the TWC. Enjoying working with the regulations although I don't get a chance to get in the field as often, which I miss. Hazardous waste work has proved to be very exciting and challenging. 'Hello' to all those summer '86 field campers. If ever in Austin, stop by room 219 at the TWC."

**Fred B. Wallis** (BS '41), a geophysical consultant in Austin, is "searching for Red Fork gas in western Oklahoma. Daughter, Kathy, is a geophysicist for



Texaco in Houston. Eldest son, John, is a Methodist minister in Jacksonville, Florida. Younger son is a building contractor in Metairie, Louisiana. Proud of the job UT is doing."

**Steve Wang** (BS '87) is working as a quality control geophysicist with Western Geophysical in Houston. He sends greetings to all of the 1987 GEO 660 refugees.

**Bernie Ward** (BA '55) writes, "Texas-Ex daughter Alice and Monty Stanley (UT '88) married last August. He is with Satterwhite Log Homes in Longview. Business here in Tyler is looking up again." Bernie is an independent geologist.

**Bill and Kathy Agnew Ward** (BS '55, MA '57; BA '57) are spending the summer on Mallorca, where Tom is working on Upper Miocene limestones. "Will go to Nottingham in August for IAS meeting at which son Bruce will have poster session on Northwest Australian limestones." Bill is a professor of geology at the University of New Orleans, and Kathy teaches high school science.

**Daniel L. Ward** (BA '49, MA '50) is enjoying retirement in Grand Junction, Colorado.

**Dave Wark** (MA '83, PhD '89) is a research scientist in the department of geology at Rensselaer Polytechnic Institute in Troy, New York.

**Ralph H. Warner** (MA '61) is a consultant in Kingwood, Texas. "Still looking for the upswing in the petroleum industry and still adapting to the empty nest syndrome as all three children are now married and living in other parts of Texas. The constant in life is change!"

**Greg Warren** (BS '89) is a graduate student in geology at Utah State University in Logan.

**Leslie Leland Warren** (BS '85), a staff geologist with UMC Petroleum in Houston, says, "After several years, the Houston rollercoaster seems to be stabilizing with the petroleum industry finally seeing some sunshine. Scott and I just celebrated our fourth anniversary and are doing great. Hope all the '85 field camp Geodogs are having great success.

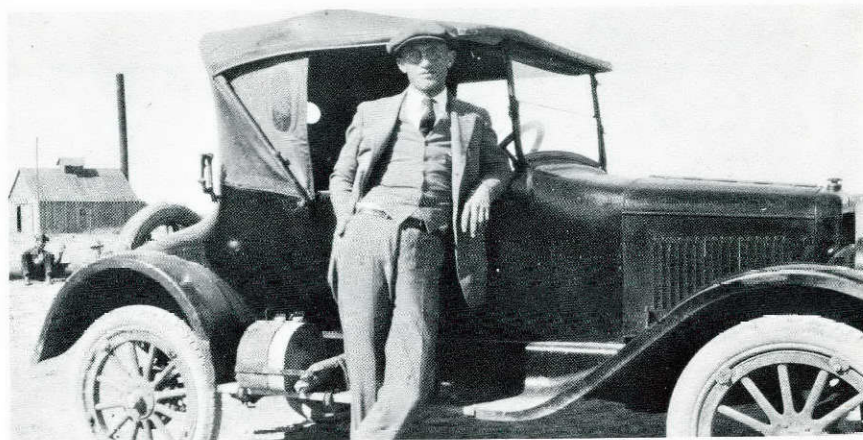
**Joel S. Watkins** (PhD '61) is head of the geophysics department at Texas A&M University in College Station. "Dick Buffler and I are collaborating on a regional Gulf of Mexico project. About half the northern Gulf is now mapped. I am also involved in a joint TAMU-UT-UH enhanced oil recovery project. I am looking at enhancing 3-D reservoir characterization. The Aggies continue to treat me well."

**Bill D. Watson** (BS '58) writes from Sugar Land, Texas, where he is "still not sorry for taking early retirement. I play golf every day."

**John Allen Watson** (BS '56) is a hydrologist with the Texas Water

adequate hypothesis to explain this scenario. The eminent geologist Edward Suess in his work, *The Face of the Earth* speaks of the Noahic flood as a different cataclysmic hypothesis which passed from the sacred books of antiquity into the science of geology—birthing such terms as 'diluvial deposits.' This hypothesis of cataclysm of the science of geology best explains our discoveries and guides our pursuit of many more."

**John E. Watson** (BA '72) writes, "Both Watsons are well and still in Evergreen, Colorado. Linda is finishing a belated Master's this year. Horizon Gold turned ten years old in January and we plan our third mine develop-



*Drue D. Christner, about 1918.*

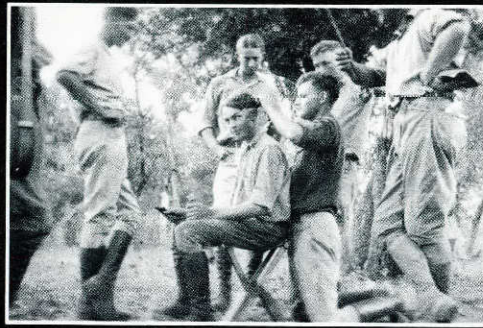
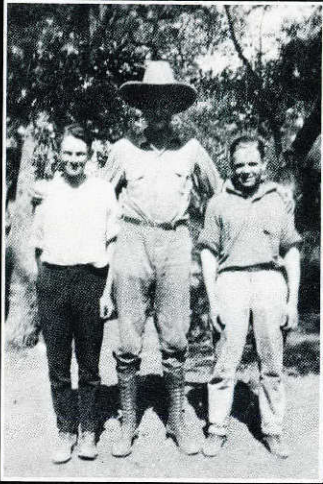
Commission in Austin. "I continue with Creation Evidences Museum—our discoveries construct a scenario of violence preserved in stone of the Glen Rose, Texas area; 54 tracks of humans (one handprint) and 184 of dinosaurs, all intermingled; two twisted, compressed dinosaur skeletons; an uprooted, truncated, coalified *Lepidodendron* tree; a fractured human (by nine confirming tests) child's tooth; and now a truncated human finger of adult size and shape: fingernail and cuticle quite distinct; the face of a sawed section clearly displaying the identifying anatomy of epidermis, flesh/pad, bone, and marrow, with distinct color variations from one to another, such preservation requiring catastrophic deep burial. The Noahic flood with its enormous worldwide violence is the

ment in Nevada by year's end, always plenty to do."

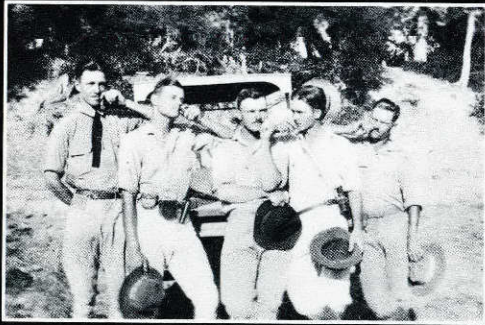
**Joseph D. (Joe) Watzlavick** (BS '41) says, "Continuing to consult in geophysics and geology and generating. Have a backlog to unload before 'doomsday.' The Great Western association has been terminated, after eight years. Best regards to all, but don't retire, you've now got too much to offer. God bless."

**Bonnie R. Weise** (BS '74, MA '79) continues as a geologist for Venus Oil Company in San Antonio.

**Frank Welder** (BS '49) lives in Meeker, Colorado, where he is a semi-retired hydrogeologist. "Spent a year drilling exploratory holes, conducting aquifer tests and developing a municipal ground-water supply for the Sultanate for Oman. On the way home, my wife and I sailed the Nile, visited



## Scenes from 1921 Summer Field Camp, Mason County



*Top row, left: Findley Weaver, Ross Priddy (from SMU), and Denver Biggers; top row, center: Baker H. Hoskins Jr. cutting Findley Weaver's hair; top row, right: Clarence E. Elwell (of Baylor) with haircut by Baker Hoskins; bottom left: Slim Barrow, Baker Hoskins, Carroll Cook, Lyman Reed, and Charlie Vertrees; bottom right: A. E. Getzendaner, Charles D. Vertrees, Baker Hoskins, Denver Biggers, and Carroll Cook dressed up to go to a July 4 barbecue at Pontotoc, in northern Mason County.*

archaeological sites in Crete, trekked in Nepal, dodged traffic in India and rode the train across Australia. Glad to be back in our rancharo in north-west Colorado."

**Lloyd C. Wells** (BS '54) reports "another quality year. Fishing has been excellent and a lot of time spent on North Carolina beaches." Lloyd is retired in Arlington, Virginia.

**James W. Westgate** (PhD '88) is an assistant professor at Lamar University in Beaumont, Texas.

**Barry Wethington** (BS '85) works for BP Exploration in Anchorage. "The family, Kerri, Natalie (3), Nathan (1) and I are having a ball in Alaska. Skiing, hiking and fishing are a few of the activities. I am currently working exploitation on the Kuparuk field, soon to be on Endicott or Prudhoe."

**Rob Weyman** (BA '82) is a geologist for Ray Holifield & Associates in Irving, Texas.

**Richard O. Whitaker** (BS '50) is retired in Houston.

**Hugh G. White III** (BS '52) is retired from the U.S. Air Force and consults in Midland. "Survived quadruple bypass in August 1989; now branching out into technical writing."

**Jane Brite Dunkle White** (BA '46), a cattle rancher in Marfa, Texas, writes, "Involved with Davis Mountains Trans-Pecos Heritage Association in an effort to preserve the backbone of the American economy—our farms and ranches—from a takeover by the environmentalists. Bruce Pearson has been effective speaking and writing from the viewpoint of a geologist."

**Leslie P. White** (BS '56) is a geologic

advisor for Exxon Company International in Houston. "Looking forward to 'retirement' from Exxon in early '92. Wonder which direction the rollercoaster will be headed by then? Thanks again for a great *Newsletter* that keeps old friends in touch."

**Rex H. White Jr.** (BS '56, MA '60) comments, "Family is doing great. The boys are doing the college bit, etc. Brenda, my lovely wife, continues to take super care of all of us and is the light of my life. I am enjoying working on horizontal drilling issues and unitization problems. Still trying a lawsuit now and then, and having fun at it." He is president of White and Grove in Austin.

**Steven L. White** (BS '78) lives in Tyler, where he is an independent geologist.

**Ben T. Whitefield** (BS '60) lives in Kingsport, Tennessee, where he is president of Equitable Energy.

**Charles D. Whiteman Jr.** (BS '58) retired on June 1, 1990, from his position as hydrologist with the U.S.



Geological Survey in Baton Rouge, Louisiana.

**F. L. Whitney** (BS '43) sends greetings from Kerrville, Texas to all old and new friends. "Keep up the good work."

**Fred Wiegand Jr.** (BS '69) is president of Ram Z Energy Inc. and Ruston Resources Inc. in Lockhart, Texas. "Enjoyed working in Venezuela last year. Am promoting some horizontal drilling projects in the Austin Chalk trend. Family doing fine. My wife Charlotte works part-time for the CEO of SRI. Best regards to all."

**Mary Elizabeth Sheldon Wier** (BA '43) lives in San Antonio, and is proud of her nine grandchildren, ages 5-19.

**Michael A. Wiley** (BS '57, MA '63, PhD '70) lives in Farmers Branch, Texas, "still consulting in computer applications to earth sciences. Looking into waste management and remediation. Business is slow—send work (or money!). Good to see all friends at San Antonio AAPG. We are planning a super AAPG for Dallas in '91."

**A. B. (Bo) Williams** (BS '53) is retired in Sequim, Washington.

**Dan W. Williams** (BS '56) is president of Marinex Petroleum in Houston. "Very busy working in Belize and adjacent parts of Central America, also East Texas (new projects). Still participating in exploration programs in Montana, Louisiana, Spain, and British North Sea."

**James Richard Williams** (BS '50) is retired in Bullard, Texas, although he still does some consulting.

**Mark Williams** (BS '50) is a consultant in Wichita Falls, Texas, concerned with the petroleum geology of the Hardeman Basin, Texas and Oklahoma.

**James C. Willrodt** (BS '77) is "still in the international drilling scene, my most recent work area is Australia's Buss Strait. Karen and I send best wishes to everyone." He is senior operations supervisor for Exxon Company International in Houston.

**Clayton H. Wilson** (BS '83, MA '85) writes, "Our third child, Emily Christine, was born November 22, making for quite an active environment at the Wilson home. I'm still

working lease sales in the GOM for Exxon and trying not to 'spill' anything around here." Clayton is a senior petroleum geologist for Exxon in Houston.

**Douglas H. Wilson** (BS '80) says, "Rebecca and I are sailing in Vermillion Bay every weekend that we can. I am currently exploring the Dwindip Yegua Trend in Southeast Texas." Doug is a senior geologist for ARCO in Lafayette, Louisiana.

**Homer C. Wilson** (BS '42) comments, "After seven years of 'off-the-job' experience I am convinced retirement is the best job I ever had. Volunteer docent at the Dallas Museum of Natural History is my favorite hobby." Homer lives in Dallas.

**Marc DeVaughn Wink** (BS '85) is a geologist for McKenzie Methane Corporation in Birmingham, Alabama.

**C. Robert Winkler Jr.** (BS '50) writes, "Dissolved partnership, amicably, with James W. Richards (BS '58) and formed RW Operating Corp. to assume operations of former Richards & Winkler properties. Still actively pursuing high reserve drilling prospects." He lives in Midland.

**Kurt J. Wiseman** (BS '76) is self-employed in Houston. "Betty, Heather, Lisa and I are busy planning our new house at our ranch. I am currently supporting several geologists, and am providing backing to put together prospects. Bring your ideas to me and we can work out something mutually acceptable."

**Kristina Witt-LaRue** (BS '83) writes from Austin, "I'm now working in the enforcement section at the Texas Water Commission and am expecting a baby (first one) on September 3rd. Life's a'changin'!"

**Jim F. Womack** (BS '54) is a partner in Tower Exploration Company in Houston.

**Robert L. Wood Jr.** (BA '56) says there is no change in his life. "Still trading crude and products all over the world and pulling for crude prices to stay up." He is president of Occidental Crude Sales Inc. and executive vice-president of Occidental Oil and Gas

Corporation in Houston.

**Arnold Woods** (MA '81) lives in Casper, Wyoming. "Still have management fooled—was recently promoted from senior to staff geologist. Two papers in press, one more struggling to get out. AAPG development geology manual should be done by year's end (co-editing with Diana Morton-Thompson, a UT alum). Working on Rocky Mountain reservoirs for EOR potential—finding some, too. Only drawback to living in Wyoming seems to be an acute shortage of non-matrimonially inclined women."

**Mary Caroline McGonagill Woods** (BA '42) writes, "I retired on April 30, 1990, after working for the California Division of Mines and Geology the past 16 years, as editor in chief of *California Geology Magazine* (since 1976). I am enjoying time to relax, travel, visit with family and friends."

**William W. Woolfolk** (BS '50) is retired in Houston, where he is still trying to reduce his golf score.

**Thomas J. Worthington** (BS '51) has been retired since 1983 and enjoys every minute of it. "32 years in the oil patch is enough so now the wife and I do a lot of square dancing and traveling. We are off to Canada in June and hope to visit New England in the fall. After all these years, the *Newsletter* is still one of my favorite reading materials." Tom lives in Jacksonville, Texas.

**Charles J. Worrel** (BS '51) is owner of Worrel Exploration Inc. in San Antonio. "Looking forward to reunion of 1947 geology class in Austin. Still active in South Texas exploration. Made some nice shallow wells in Victoria County. Would like to visit with any classmates coming my way."

**John B. Wright** (MA '56), a consultant in New Orleans, says he is "still hanging out in the Banana Republic."

**Michael Wright** (BS '85) an environmental geologist for Hygienetics Inc. in Emeryville, California, is currently working on his Master's degree in environmental engineering at the University of San Francisco.

**Phillip E. Wyche** (BS '51) is retired from Gulf Oil Corp. and lives in Austin, where he continues to be active as a



member of the UT Geology Foundation Advisory Council.

**Bob Wynne** (BA '57) is "still hanging on in Fort Worth" as an independent oil producer. He has three beautiful grandchildren.

**Harvey E. Yates** (BS '35, MA '36), chairman of the board of Harvey E. Yates Company in Roswell, New Mexico, won the "Wildcatter of the Year" award for 1990 presented by the Independent Petroleum Association of Rocky Mountain States.

**John C. Yeager** (MA '60) is a senior geologist for ARCO in Lafayette, Louisiana.

**William C. Young III** (BS '61) is vice-president of production for Challenger Minerals Inc. in Houston.

**Michael L. Zientek** (BS '76) is a research geologist for the U.S.G.S. in Spokane, Washington.



# Final Notes. . .

## Section Divider Photo Captions. . .

Research Report — Sally Sutton discusses research with Heinrich Holland, Allday Lecturer in Geological Sciences.

Student Activities — Geology 348K Training Cruise course lowering a box coring device over the side of the UT Research Vessel "Longhorn."

Department News — Gary Kocurek takes a break from driving to the Sahara Desert from Dakar, Senegal to visit with children at a village en route.

Foundation News — Council members (from left to right) David S. "Scotty" Holland, Rodger E. Denison sit at head table with Bill Fisher and Clark Wilson during the spring 1990 Foundation meeting

Alumni News — F. L. Whitney (in longjohns) and others digging out a fossil elephant at an unidentified location.

## Photo Credits. . .

All photos should be credited to David M. Stephens except where noted.

## Newsletter Design. . .

Cover design by Scott K. Schroeder

All titles and graphics used in this publication were designed and created by Scott K. Schroeder using an Apple Macintosh® computer system with *Aldus Pagemaker 4.0*®, *Aldus FreeHand*® and *Adobe Illustrator 88*™.

All original copy was created in *Microsoft Word*®; layout was done in *Aldus PageMaker 4.0*®.

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## Letter from the Chairman

I am happy to report that the Department of Geological Sciences continues into its second century with enormous diversity among its programs, an academically strong faculty and student body, and healthy support through sponsored research and the generous contributions of alumni and friends. This Newsletter summarizes the activities of the past academic year and should assure you that the Department is vigorous and exciting as a place to study, teach, and do research.



As an overview of this 1989-1990 Newsletter, in the first section, entitled "Research Report," individual faculty members and research scientists speak personally, and in some detail, about their research and teaching interests. You will be impressed by the variety of topics discussed, by the range of sponsored projects which are under way, and by the breadth of the research facilities described in this section. The section entitled "Student Activities" reviews the teaching, field camp, research activities, and awards of undergraduate and graduate students. In addition, you will find a report on the activities in our placement program, which attracted over 20 companies to the Department to interview our students for both summer and career employment. It appears that the recruiting efforts will increase further during the coming year, which is a sign of sound career opportunities for our graduates. We have continued our tradition of reporting on the personal news, travels, and activities of the faculty and staff in our "Department News" section. The "Foundation News" section reports on the membership of the Geology Foundation Advisory Council, provides a photo gallery of the members, and a summary of the programs of this unique resource for the Department. Finally, the "Alumni News" section allows you to catch up on the activities of your friends.

Over the past two years, enrollment at the undergraduate levels has remained near 125 and at the graduate level near 160. These numbers are signs of a sound program, but we are always interested in attracting new undergraduate and graduate students to the study of the Earth sciences. Therefore, I hope that any prospective students, with whom you are acquainted, have a chance to read both the "Research" and "Student Activities" sections of the Newsletter to learn of the quality and scope of the program in the Department. If you would like to obtain additional copies to give to prospective students, you may write or telephone your request to the Department.

This will be my final report as chairman of the Geological Sciences Department. I am turning that job over to Clark Wilson effective September 1, 1990. I will continue to serve the Department as a faculty member, and as director of the Geology Foundation. I will also be continuing my service to the University as director of the Bureau of Economic Geology. I have served as chairman for 6 years, during which time we have hired seven excellent new faculty, greatly improved our research facilities and productivity, and increased the level of endowments in the Geology Foundation by nearly 100%, bringing us into the decade of the 1990's in an outstanding condition. Few earth sciences departments in the country have done as well within this period.

William L. Fisher

## *We Need Your Help. . .*

The faculty and students appreciate your continued interest in the Department and Geology Foundation. We are pleased with the enthusiastic response to our request for information to be included in the Alumni News section.

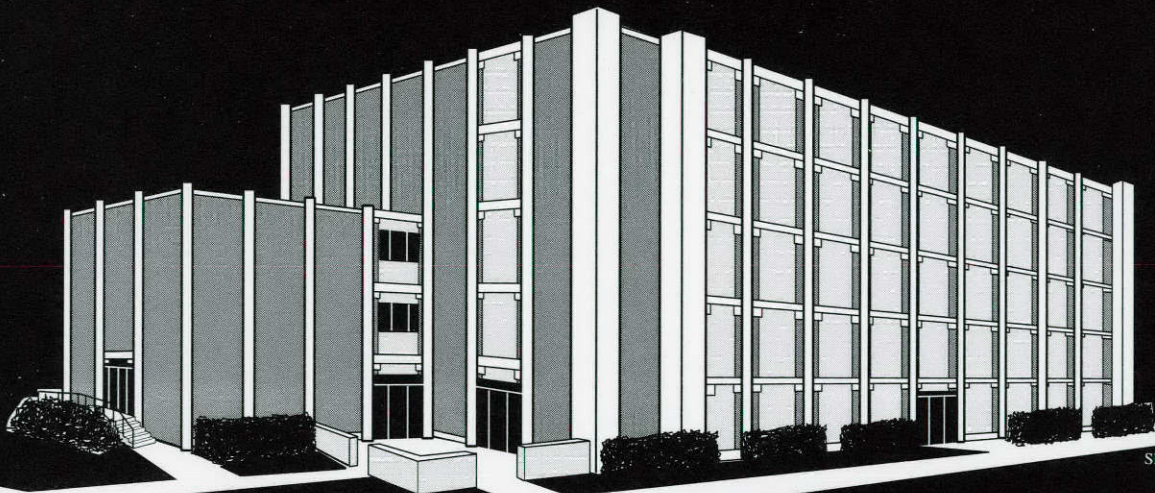
We are anxious to keep your current address on our mailing list and solicit your cooperation in advising us if you move. Also, if you know of other alumni who do not receive our letters, please send their names and addresses; we would like to add them to our files.

We need your financial assistance in many areas--scholarships for worthy undergraduate and graduate students, teaching and research equipment, cost of publication of the *Newsletter*--and others.

Contributions to the Geology Foundation may be made in the form of cash, stocks and bonds, life insurance and gift annuities, and tangible property such as real estate. Information on various forms of contributions is available from the Geology Foundation Office.

Many major corporations will provide matching funds at a rate of 100% or greater for those contributions made by employees and their spouses. A list of these corporations and their matching policies is available from the Geology Foundation office. The Foundation staff can assist in the arrangement of the match. In addition, in some cases it may be possible to obtain matching contributions from the University of Texas Board of Regents.

For further information, write to the Geology Foundation, P. O. Box 7909, Austin, TX 78713-7909 or call area code 512, 471-6048, or FAX 512, 471-9425.



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