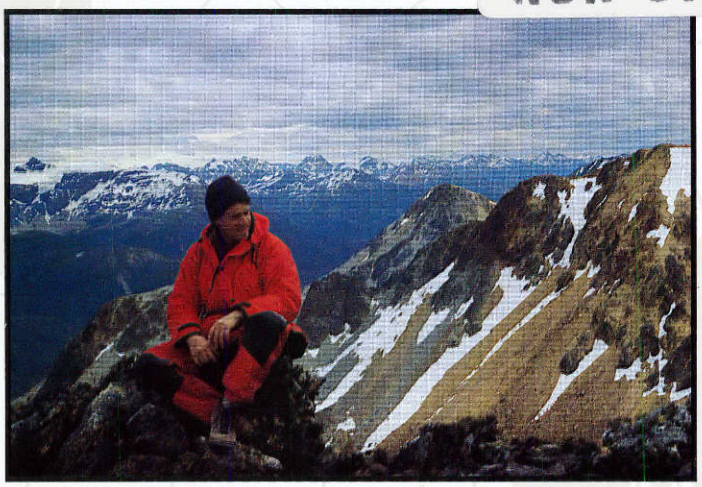
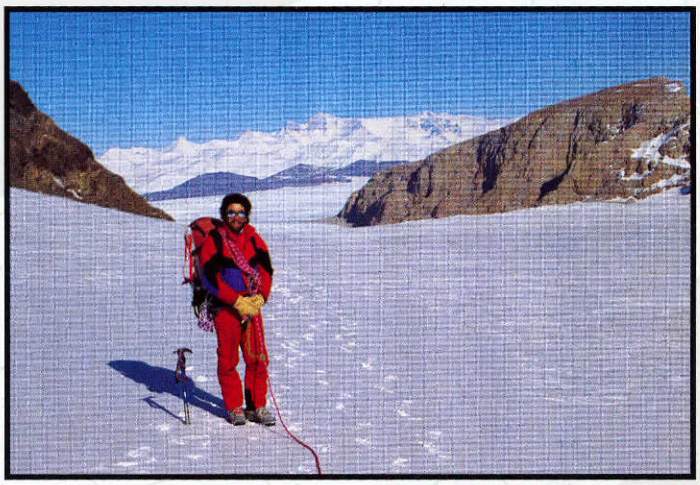
THE UNIVERSITY OF TEXAS AT AUSTIN
Department of Geological Sciences
NEWSLETTER





No. 41
September 1991
Austin, Texas

FACULTY SUPPORT

$_____ Hal P. Bybee Memorial Fund (travel, research)
$_____ Energy & Mineral Resources Fund
$_____ Faculty Endowments
$_____ Miss Effie Graves Memorial Fund
$_____ Geohydrology 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

$_____ Bloomer Fund for Motivated Students
$_____ W. F. Bowman Endowed Presidential Scholarship
$_____ Brahman Energy Scholarship
$_____ Jesse L. Brundrett Memorial Endowed Presidential Scholarship
$_____ Thomas M. Burke Student Job Program
$_____ Hal H. Bybee Memorial Scholarship
$_____ Dorothy Ogden Carsey 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. Hagemeier Jr. Memorial Endowed Presidential Scholarship
$_____ F. Earl Ingerson Grad. Research Assistance Fund
$_____ Howard R. Lowe Fund in Vertebrate Paleontology
$_____ J. Hoover Mackin 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
$_____ 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

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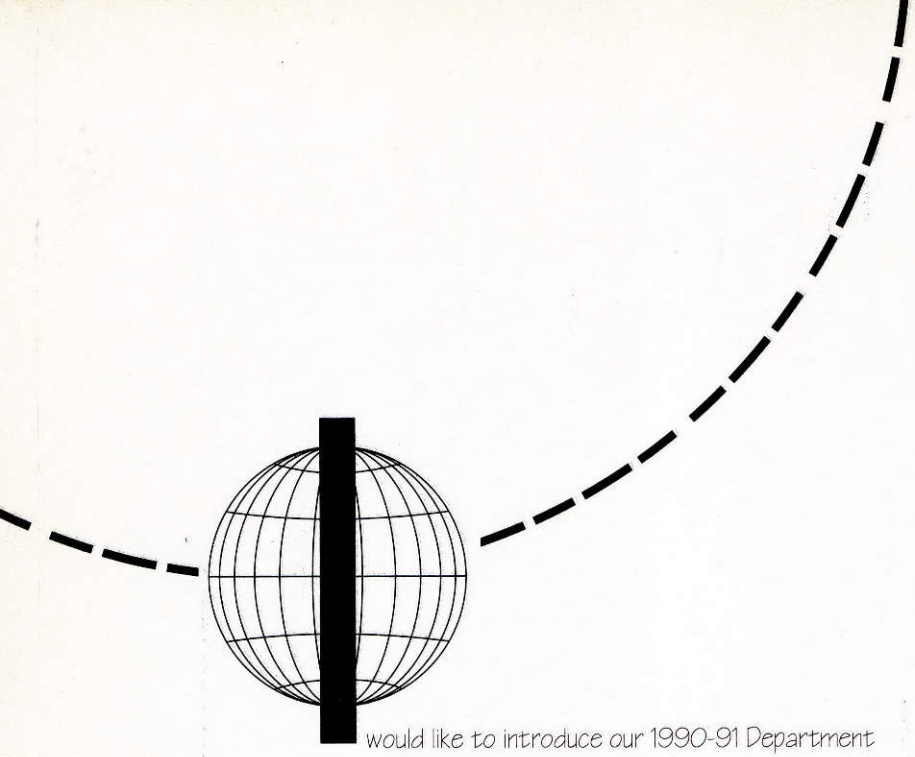
Letter from the Chairman



I would like to introduce our 1990-91 Department of Geological Sciences Newsletter by giving you a few highlights of the contents. Our "Research Report" section allows individual faculty members and research scientists to speak personally in some detail, about their research and teaching interests. The "Research Report" describes an impressive variety of studies, sponsored projects, and research facilities and serves as excellent publicity for the Department among prospective graduate students, prospective faculty, and funding agencies, in addition to serving as a report to the alumni.

The "Student Activities" section 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. We have established a separate placement office, which is co-located with the gem and mineral displays. The placement office, prominently located on the first floor, serves to put the career opportunities on display for both our own majors, and for those non-majors who enter the building to take the introductory classes taught in Room 100, our large lecture hall.

We have continued our tradition of reporting on the personal news, travels, and activities of the faculty and staff in our "Department News" section. There is also news of Professor Peter Cobbold from Rennes, France, who served as a temporary occupant of the Getty Chair, and the announcement of a new assistant professor who will join the Department in 1992. The "Geology Foundation" section reports on the Advisory Council membership, and gives 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.

To conclude my introduction, I present a list of long-term goals for the Department which was prepared during this academic year by a committee of the faculty, in consultation with the Chairman, the Director of the Geology Foundation, and the Chairman of the Advisory Council. These goals describe both the educational objectives of our program and the requirements and strategies for achieving them, and were endorsed by the Geology Foundation Advisory Council at their April meeting. These goals will serve as guidance for me in my continued service as Chairman, and should give you an indication of our future needs and directions.

Clark R. Wilson

Department of Geological Sciences
Goals for the Next Decade

Facility Goals

The Institute for Geophysics, established in Austin in 1981, is an important educational resource for the Department of Geological Sciences. A physical location in rented office space roughly 8 miles from the main campus creates an unwanted barrier between the Department and the Institute.

Goal: Bring the Institute for Geophysics to the main campus to provide a more dynamic and stimulating environment for faculty, scientists, and students.
Long-Term Requirements: About 35,000 net square feet.
Short-Term Action: Better coordination of Department and Institute programs through: establishment of various joint committees; user-"transparent" computer system link; Institute support of organized instruction via computer hardware, software, and computer work-room resources. Proceed with design for building addition, and seek Administration approval and support for the plans.

Graduate students in the Department are expected to become the professional colleagues of the faculty. This aspect of our program is beyond the organized instruction and research components, and its requirements merit special note:

Goal: Support the graduate student population with adequate office and laboratory space and a physical environment that promotes interaction between faculty and students.
Long-Term Requirements: About 10,000 net square feet .
Short-Term Action: Low-cost modifications to some existing space to create additional graduate-student office and research areas; refurbishment of student lounge areas; better uses for existing space; completion of core study laboratory; continued enrichment of microcomputer and computer facilities.

The Walter Geology Library contains one of the finest collections of geologically related books and maps in the world. However, the Library is a living organism, not simply a repository, and its continued health requires both financial resources and physical space.
Goal: Expand the library book, map, and reading room space and collections.
Long-Term Requirements: About 10,000 net square feet, and increases in library endowments.
Short-Term Action: Provide additional support from Geology Foundation unrestricted funds as emergency relief to prevent cancellation of key journals and selective acquisition of new journals and research materials; seek support from industrial users of the Library; install compact shelving to relieve crowding; perform low-cost refurbishment of the "back room" to provide additional reading-room space.

As the geological sciences have become more quantitative, the Department has built an impressive collection of analytical facilities for rock and water analysis. However, the pace of modern analytical technique and instrument development is rapid; hence, the pace of instrument obsolescence and facility decline is rapid, as well.

Goal: Maintain rock and water analytical facilities at the forefront of the science.
Long-Term Requirements: Likely needs include new X-Ray fluorescence, Ar-Ar, and CO_2 analysis facilities. Partial capital equipment and maintenance costs to be met by increasing associated endowments.
Short-Term Action: Continue to seek outside support from NSF, DOE, and other agencies, with matching funds from University, Foundation, and industrial sources. Maintain revolving funds to encourage self-support for various analytical facilities, with backup support from Foundation endowed accounts as needed for major repairs and improvements.

Teaching Goals

Introductory geological sciences classes enrich the University as a whole, and are influential in attracting new majors to the Department. All of our classes involve both lecture and discussion or laboratory sessions, and the high quality of our offerings is a reflection of both faculty and graduate teaching assistant efforts.
Goal: Maintain teaching excellence in introductory classes to attract outstanding young people to the earth sciences, as well as to contribute to the undergraduate experience for all students at the University.

Requirements: Incentives to faculty for teaching introductory classes, and recognition of excellence in teaching among faculty and graduate-student teaching assistants.

Short-Term Action: Establish a special teaching award for excellence in the instruction of introductory geological sciences courses. Continue offering a teaching award for excellence among graduate teaching assistants which was established by a contribution from Amoco in 90-91. Continue instruction on pedagogy and local geology for new graduate students.

The Department has been largely successful in attracting excellent graduate students and in maintaining a vigorous undergraduate program. However, in recent times of declining or low enrollments, continued attention to the recruitment of graduate and undergraduate majors is required.

Goal: Attract the best students and researchers to study here at the undergraduate, graduate, and post-graduate level.

Requirements: Scholarship and fellowship support for stipends, field work, and unrestricted funds to recruit prospective students and post-doctoral fellows. Increase endowed student support funds.

Short-Term Action: A Department outreach committee has been established to coordinate communication with local schools and pre-college students. A Department placement office has been established, supported in part by contributions from companies which recruit at UT, to coordinate recruiting and to advertise career opportunities in the geological sciences to Department majors, and to non-majors as well. Scholarship awardee names and photographs are now prominently displayed in cases outside the lecture hall. Recruiting of the most promising prospective graduate students now includes support for on-campus visits in the spring. Seek post-doctoral support from external sources, with Foundation supplements as needed.

Computers are now a universal tool of scientists, and development of their role in the Department deserves special attention.

Goal: Incorporate computers into teaching and research activities at all levels.

Requirements: An interactive desk-top network for graduate students and faculty, expansion of student computer labs, and the hiring of a systems-analyst staff member to oversee the system.

Short-Term Action: A Geology Building computer network is virtually complete, linking almost all faculty and student offices via AppleTalk, with connections to the campus-wide Ethernet. A Sun-based system is essentially complete and will be supported by a revolving fund, with system support handled through the Institute for Geophysics. Eight Macintosh II computers were purchased with support from the College of Natural Sciences for installation and use in introductory course labs; software acquisition and uses are under development.

The Department recognizes the importance of verbal and written communication skills as part of the development of professional earth scientists.

Goal: Improve the quality of speaking and writing skills among our students.

Requirements: Integrate writing and speaking assignments into all classes, and employ microcomputers to learn effective writing skills.

Short-Term Action: Microcomputers with word-processing software are available to students enrolled in classes, by checking out keys from the Geology Library; continue opportunities for public presentations by graduate students in Technical Sessions, Hard Rock, Soft Rock , Hydrogeology, and Sequence Stratigraphy seminars.

Research Goals

The Department maintains and is committed to a first-class program in the earth sciences.

Goal: Solidify and broaden the strengths of the Department in various research areas.

Requirements: Continued hiring of outstanding faculty who study problems such as the interplay of temperature, pressure, and time in geologic processes, basin evolution, and rock-fluid interactions. Foundation support to assist faculty recruiting through increases in endowments of chairs, professorships, and teaching fellowships.

Short-Term Action: Continue existing recruiting efforts, as permitted by the University administration.

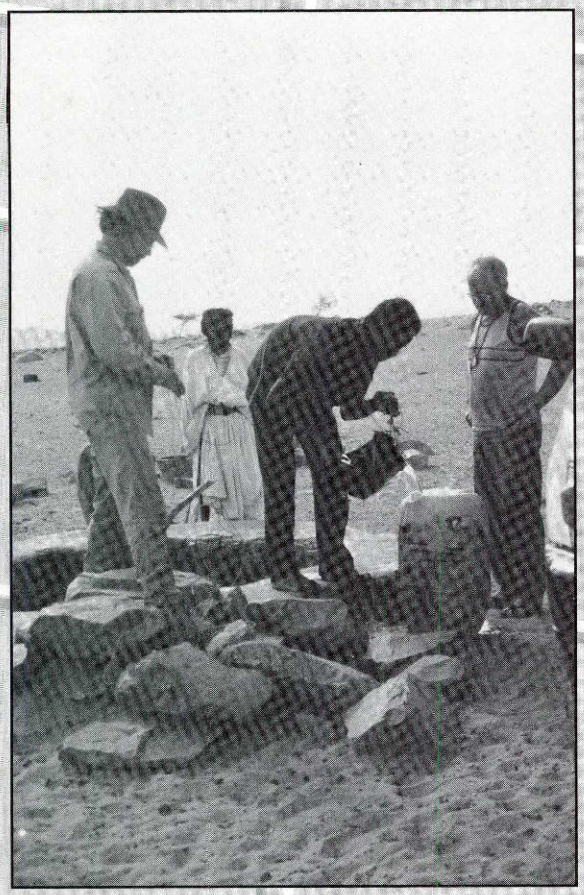
The Department maintains a broad base of funded research from federal and industrial sources, but the Geology Foundation represents an important resource for enrichment and innovation to launch new directions of research.

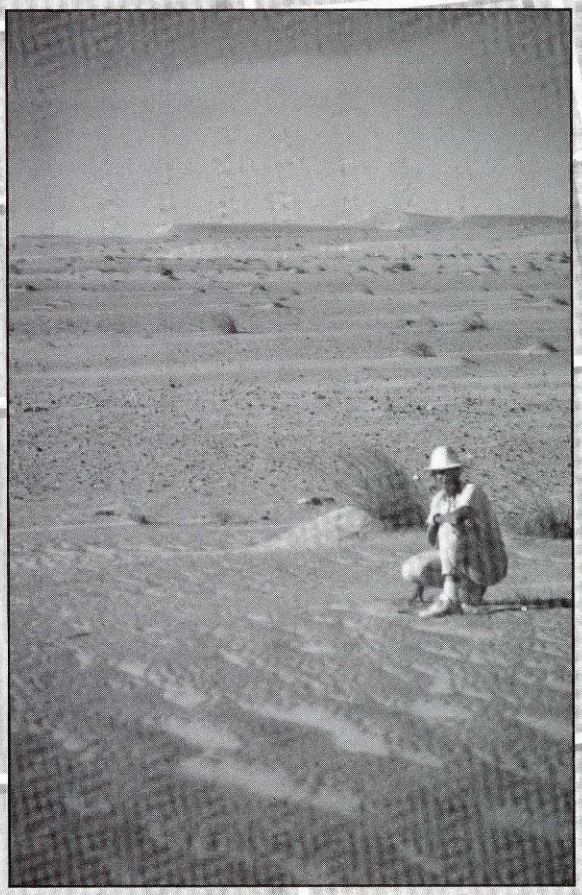
Goal: Take new research initiatives even when external funding is not immediately available.

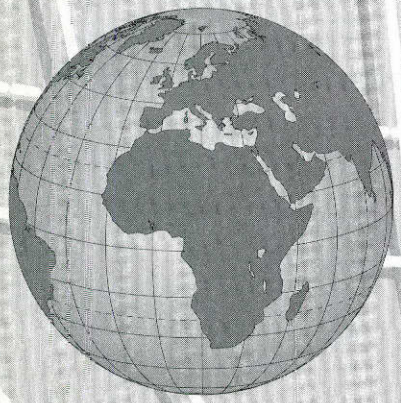
Requirements: Foundation support for seeding new ideas rapidly by increasing various curriculum enrichment fund endowments. Additional endowments to provide for Foundation administration, thereby freeing additional unrestricted funds which are currently expended for Foundation staff salaries.

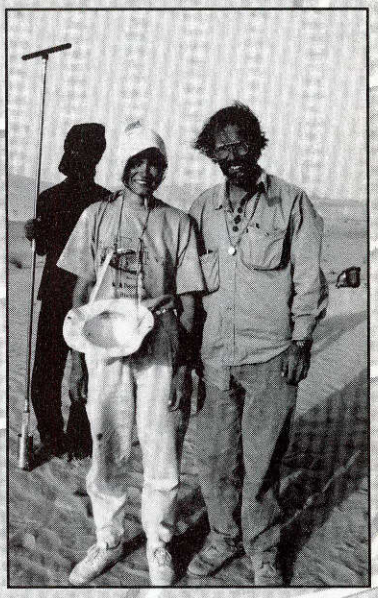
Short-Term Action: Continued support for graduate students and faculty research programs from various Foundation resources, with appropriate incentives for securing outside funding.

Research REPORT









THIN-SECTION LABORATORY
The automated, high-precision, Logitech LP30 Production Lapping and Optical Polishing Machine is used to prepare 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. Gregory Thompson, technical assistant, oversees 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 monitor are used to display and record the behavior of the inclusions in minerals. Richard Kyle, professor, oversees 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, and Sally Sutton, research associate, oversee this facility.

SCANNING-ELECTRON MICROSCOPE
A JEOL T-330A scanning-electron microscope is capable of secondary and backscattered electron imaging and cathodoluminescence imaging. Magnifications of 100,000X or more 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 to study compositional gradients and proportions in complex intergrowths. Sally Sutton, research associate, oversees this facility.

INDUCTIVELY COUPLED PLASMA SPECTROMETER
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. Up to 38 elements may be analyzed at a time. Scott Thieben, analytical chemist, supervises and operates this facility.

IMAGE PROCESSING LAB
This lab, operated by Tim Rowe, has computer imaging tools for manipulating and producing high resolution digital images on both the Macintosh and IBM platforms. The facility can digitize images directly from petrographic and stereo microscopes, and from our scanning electron microscope. It can also digitize images directly from 35mm film, X-radiographs, photographs, published images (maps, photos, diagrams), and video tapes. A wide range of software permits labeling, editing, and reprinting of images on film or hardcopy.

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. 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 THERMOCHRONOLOGY 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. The fission-track thermochronology 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. 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 is designed to prepare samples for analysis on a Nuclide gas-source mass spectrometer. Lynton Land, professor, is the director of this facility.

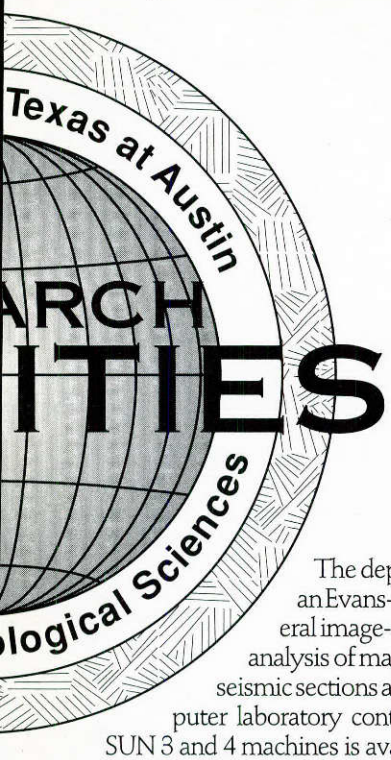


IMAGE ANALYSIS AND COMPUTER FACILITIES

The departmental computer facilities include an Evans-Sutherland graphics terminal and several image-analysis systems for color display and analysis of maps, microfossil and vertebrate shapes, seismic sections and petrographic thin sections. A computer laboratory containing Apple, IBM, MicroVAX, and SUN 3 and 4 machines is available for general use. A CRAY-YMP Supercomputer is available on campus with seismic reflection data-processing software.

PALEOMAGNETIC LABORATORY

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 instuments are housed inside a magnetically shielded room (2-stage μ-metal). Additional instruments include two susceptibility meters, a 10 Koe electromagnet, and a spinner magnetometer. Wulf Gose, research scientist, oversees this facility.

EXPERIMENTAL SEDIMENTOLOGY LABORATORY

The laboratory houses a wind tunnel and flume, both 1 m^2 x 8 m, for study of flow, grain transport, and sedimentary structures. Field equipment includes a balloon-carried tethersonde 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 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 nearly complete. William D. Carlson, professor, supervises this facility.

MICROPALEONTOLOGY 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. Martin B. Lagoe, associate 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

The lab houses much of the geophysical and geochemical field equipment, including stream-gauging equipment and earth-resistivity and seismic units, gravity meter and magnetometer 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 ions 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, and a BET Sorptometer for measuring the surface area of solids. Experimental apparatus for measuring the kinetics of mineral dissolution in water by batch, column, and fluidized bed reactor are also available. This lab is under the direction of Philip Bennett, assistant professor.

VERTEBRATE PALEONTOLOGY AND RADIOCARBON LABORATORIES

These labs are a research facility for faculty, staff, and students working with fossil vertebrates and geochronologic and geochemical problems requiring radiocarbon dates. The Vertebrate Paleontology Laboratory maintains a collection of more than 165,000 vertebrate fossils and more than 5,000 skeletons of modern vertebrates which are on an electronic data-base system. The Radiocarbon Laboratory is equipped with four liquid scintillation counters and extensive facilities for sample preparation. Sam Valastro oversees the Radiocarbon Laboratory. Both facilities are under the overall direction of Ernest Lundelius Jr., professor.

CLEAN LABORATORY FOR ISOTOPE AND TRACE-ELEMENT GEOCHEMISTRY

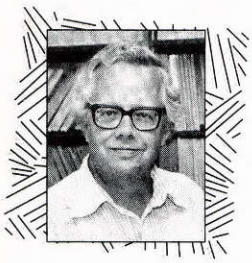
This laboratory, to be completed in the Summer of 1991, will house facilities for preparing rock, mineral, and water samples for trace-element isotope dilution analysis and isotope composition analysis, using the Department's thermal ionization mass spectrometer. The focus of research in this laboratory will be the processes of fluid-rock interaction in sedimentary and hydrologic systems. Jay Banner, assistant professor, oversees this facility.

GLOBAL POSITIONING SYSTEM RECEIVERS

The Department, the Institute for Geophysics, and the Center for Space Research jointly own two Trimble 4000 SST dual frequency receivers, one Texas Instruments 4100 receiver, and associated field equipment for high-precision geodetic studies.

LABORATORY FOR REPRODUCING MAPS AND PHOTOS

In this facility, enlargements and reductions can be done on the 8-foot-long reflecting projector table. The device is capable of enlargements up to 4.5X and reductions down to 0.22X, with less than 1% distortion at the edges. Superposition of stereophotographs and topographic maps can be done on the Stereo Zoom Scope. Scale matching in the range of 0.15X to 23X is possible. Mark Cloos, associate professor, oversees this facility.



Exploration geophysics; geophysical data processing and interpretation

Milo M. Backus

Professor and Shell Companies Foundation Distinguished Chair in 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 tool in his courses.

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 3-D 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 3-D 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.

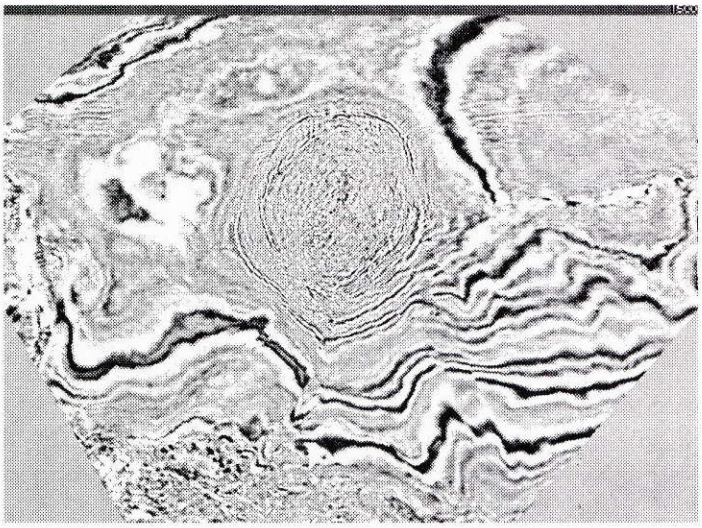


Figure 1. Time slice (1.5 sec) from Gulf of Mexico salt-dome data set.

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.

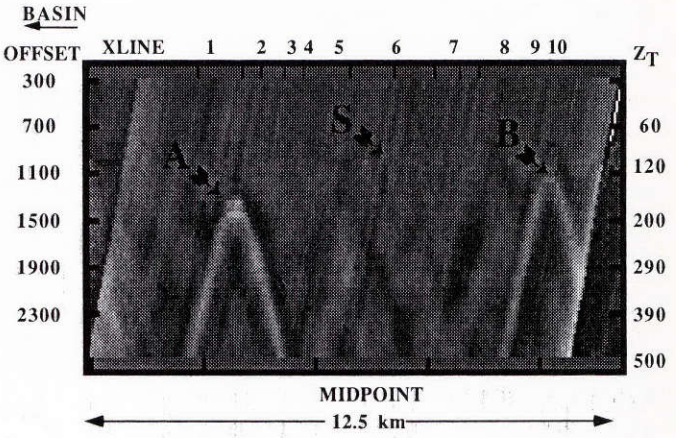


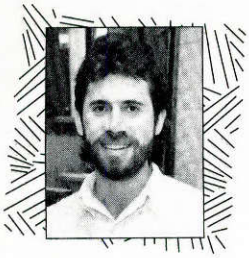
Figure 2. Offshore area 1 variable-intensity display of first arrival time residuals in midpoint-offset space. Note hyperbolic delay time residuals resulting from shallow gas at 200 meters (A) and 120 meters; (B) from "Diving wave tomography," by James Simmons and Milo M. Backus (to be published in Geophysics).

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 in Geology,
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 modeling techniques to unravel the water-rock interaction history of modern and ancient carbonate sediments and groundwaters from active flow systems. During 1990, my first year at the University, I taught graduate courses in biogenic and evaporite depositional systems and sedimentary geochemistry, and our undergraduate offering of depositional processes.

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-traveled 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.

A clean laboratory for isotope geochemistry is currently under construction in the Geology Building. This laboratory will enable the analysis of the concentration and isotopic composition of trace elements in small rock, mineral, and water samples in a low-contamination environment.

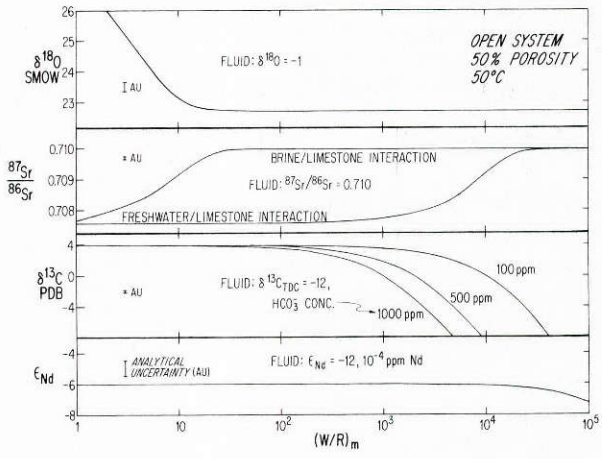
New fields of interest include: 1) the petrologic and geochemical examination of minor non-carbonate diagenetic phases in carbonate sequences as indicators of diagenetic fluid chemistry, 2) a larger scale examination of the Paleozoic aquifer system in the mid-continent as a means of further evaluating 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, West Indies.

Selected Publications:

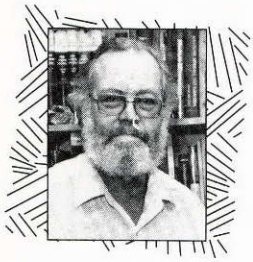
Banner, J. L., and Hanson, G. N., 1990, Calculation of simultaneous isotopic and trace-element variations during water-rock interaction with applications to carbonate diagenesis: *Geochimica et Cosmochimica Acta*, v. 54, p. 3123-3137.

Banner, J. L., Wasserburg, G. J., Chen, J. H., and Moore, C. H., 1990, ^{234}U-^{238}U-^{230}Th-^{232}Th systematics in saline groundwaters from central Missouri: *Earth and Planetary Science Letters*, v. 101, p. 296-312.

Banner, J. L., Wasserburg, C. J., Chen, J. H., and Humphrey, J. D., Uranium-series evidence on diagenesis and hydrology in Pleistocene carbonates on Barbados, W.I.: *Earth and Planetary Sciences Letters* (in press).



Simultaneous variations in the isotopic composition of O, Sr, C, and Nd during the recrystallization of a limetone 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 focuses 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 ± 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.

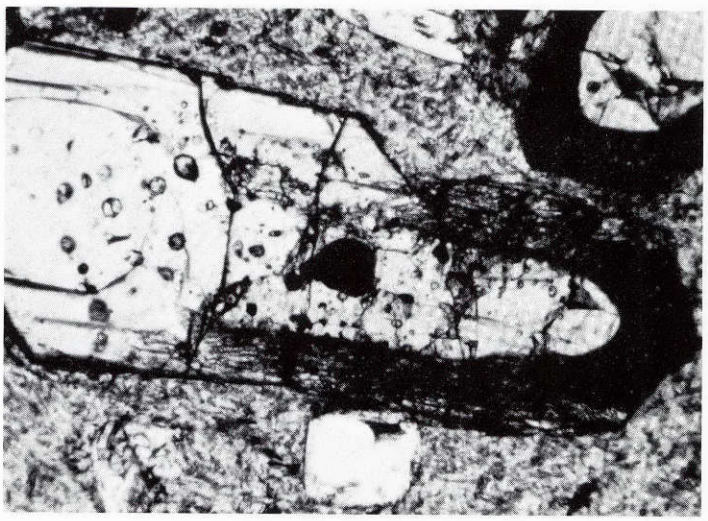
Carbonatites are my newest interest. The only active carbonatite volcano, Oldoinyo Lengai in Tanzania, erupts alkali-rich carbonatite, although all other known carbonatites are very low in alkalis. All carbonatite magma was rich in alkalis, some petrologists have concluded, but lost them to wallrocks 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:

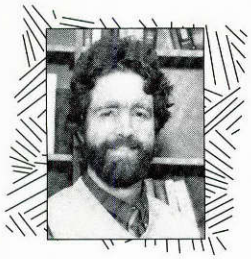
Barker, D. S., 1987, Tertiary alkaline magmatism in Trans-Pecos Texas, *in*: Fitton, J. G., and Upton, B. G. J. (eds.), Alkaline Igneous Rocks. *Geological Society, London, Special Publication* 30, p. 415-431.

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 recent research efforts have concentrated on the surface chemistry of silicates in organic-rich aqueous environments. A recent article 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.

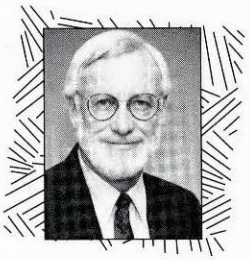
I am extending my investigations in organic-silica complexation in ground water into a more generalized study of metal-organic complexes. I am collaborating with researchers at the Los Alamos National Laboratory to develop new approaches to molecular modeling that combine the *ab initio* methods, based on quantum mechanics, with molecular-mechanics methods that can model complex molecules and surfaces. 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., 1991, Organic-acid/silica complexes and the surface chemistry of dissolving quartz: *Geochimica et Cosmochimica Acta*: v. 55, no.7, p. 1781-1797.

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., 1991, The fate of silicate minerals in a peat bog: *Geology*, v. 19, p. 328-331.



Marine geology and geophysics; sequence stratigraphy

Richard T. Buffler

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

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 in studies of: 1) regional syntheses, 2) studies focusing on the basement, crustal structure, and early tectonic evolution of the basin, 3) the Mesozoic depositional history of the basin and its relationship to the early tectonic evolution, and 4) studies of the Cenozoic depositional history of the basin and the influence of salt tectonics.

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 (mid-Jurassic surface) for the entire Gulf basin and a regional map showing the distribution of various basement terranes. We have collaborated with the University of Houston to collect detailed aeromagnetic data over the deep eastern Gulf, to understand the distribution and origin of the oceanic crust and adjacent transitional crust. We are collaborating with scientists from the U.S. Geological Survey and other institutions to collect deep-crustal reflection profiles in the northeastern Gulf to understand the formation of such a broad area of transitional crust.

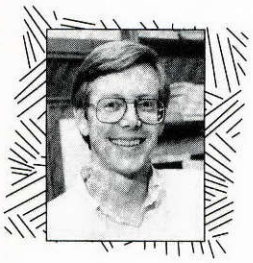
Another area of active research is the seismic stratigraphy and geologic history of the Exmouth Plateau–Argo Abyssal Plain off northwestern Australia. In late 1988 I participated on Ocean Drilling Program Leg 123 and have been responsible for helping interpret the seismic data surrounding the two sites drilled. The goal of these studies is to use the seismic data to extrapolate the drilling results regionally. In addition, I currently have one student working in southeast New Mexico and three students working in West Texas and California, who are applying sequence stratigraphic principles to outcrop studies.

Selected Publications:

Buffler, R. T., 1991, 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).

Sawyer, D. S, Buffler, R. T., and Pilger, R., 1991, Crust of the Gulf of Mexico basin, *in* Salvador, A. (ed.), The Gulf of Mexico basin, Boulder, Colorado, Geological Society of America, *The Geology of North America*, v. J (in press).

Buffler, R. T., and Thomas, W. A., in press, Crustal structure and tectonic evolution of the southeastern margin of North America and the Gulf of Mexico basin, *in* Speed, R. (ed.), Phanerozoic evolution of North American continent-ocean transition: *Geological Society of America, Centennial Transect Volume 1*.



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 continue to be 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 in order to decipher the record of geologic events that is recorded in disequilibrium features of metamorphic rocks. Of course, experimental and theoretical studies cannot 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.

Among the most exciting of my research efforts over the past year has been the development and application of new tools for quantitative textural analysis of rocks. In a project funded by the Texas Advanced Research Program, PhD student Cambria Johnson and I have succeeded in obtaining high-resolution images of textures inside metamorphic rocks by means of computerized X-ray tomography. Figure 1 is an X-ray tomographic image of an interior plane within a large handsample of garnet- and kyanite-bearing schist, in which brightness correlates with density. Contiguous sets of such "slices" through the rock can provide 3-D information on textures that is available in no other way. For example, by using a microcomputer to automate the mensuration of such images, individual porphyroblasts can be located and measured with high precision and accuracy. Such measurements, when combined with theoretical models for crystallization kinetics like those I recently applied to rocks of the Picuris Range of New Mexico, can yield unique information about the mechanisms and rates of metamorphic reactions.

Other projects include continued exploration of pyroxene phase equilibria at pressures to 10 kbar in a project funded by NSF and conducted principally at NASA's Johnson Space Center, and further work with students to decipher the metamorphic history of the Llano Uplift of central Texas. Looking ahead, a rapid-quench hydrothermal facility has just come online; it will permit examination of critical mineral solubilities and mineral-fluid equilibria at typical metamorphic temperatures and pressures.

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., 1990, Mechanisms and kinetics of apatite fission-track annealing: *American Mineralogist*, v. 75, p. 1120-1139.

Carlson, W. D., and Johnson, C. D., 1990, Coronal reaction textures in garnet amphibolites of the Llano Uplift: *American Mineralogist*, v. 76, p. 756-772.

Johnson, C. D., and Carlson, W. D., 1990, The origin of olivine-plagioclase coronas in metagabbros from the Adirondack Mountains, New York: *Journal of Metamorphic Geology*, v. 8, p. 697-717.

Carlson, W. D., 1991, Competitive diffusion-controlled growth of porphyroblasts: *Mineralogical Magazine* (in press).

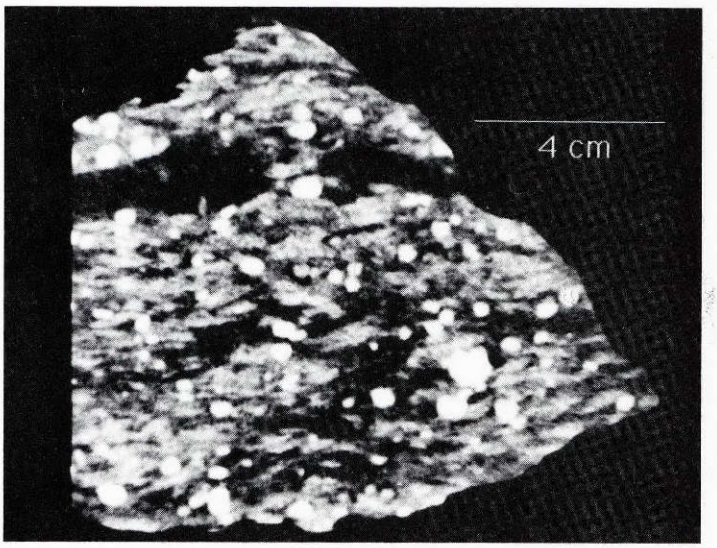


Fig. 1. X-ray tomographic image of metamorphic rock in which sections through garnet porphyroblasts appear as light-gray to white ovals; medium-gray to dark-gray regions are masses rich in fine-grained kyanite and biotite; and dark-gray to black regions are masses rich in fine-grained quartz, feldspar, and muscovite. A discontinuous quartz vein about 1 cm wide appears as a near-horizontal black band near top of specimen.

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 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 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., 1990, Blueschists, *in*: Frank N. Magill (ed.), *Magills Survey of Science*, Earth Science Series, Salem Press, Inc., p. 1561-1569.

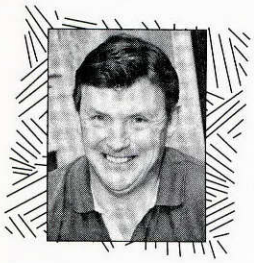
Cloos, M., 1989, Subduction zones, *in*: D. E. James (ed.), *Encyclopedia of Solid Earth Geophysics*, Van Nostrand Reinhold and Company, p. 1246-1255.

Cloos, M., 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., 1990, Nicasio Dam pillow basalts: Marine County, California: a fragment from a seamount accreted during Franciscan subduction, *in:* Bilodeau, B. J., and Davis, S. O. (eds.), Geologic Guidebook to the Point Reyes area, northern California, North Coast Geological Society Field Trip #1, *American Association of Petroleum Geologists Pacific Section Guidebook*, #66, p. 9-16.

Cloos, M., 1990, Evolution of the geological interpretation of the Franciscan Complex in the San Francisco Bay region: a comparison of cross sections, *in:* Bilodeau, B. J., and Davis, S. O. (eds.), Geologic Guidebook to the Point Reyes area, northern California, North Coast Geological Society Field Trip #1, *American Association of Petroleum Geologists Pacific Section Guidebook*, #66, p. xxii-xxxi.



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.

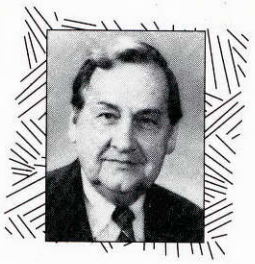
Selected Publications:

Dalziel, I.W.D., Evolution of the southernmost Andes and the Antarctandes, *in*: *Andean Tectonics and Metallogenesis*, 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:

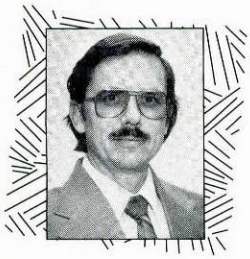
Fisher, W. L., 1989, Position papers on U.S. oil and natural gas resources, American Association of Petroleum Geologists Committee on the Resource Base: *AAPG Explorer*, v. 10, nos. 4 and 10, p. 9, 42-43.

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 geologic interests remain in the areas of clastic depositional systems and sequence stratigraphy, particularly in divergent margin basins. Currently, six graduate students are working under my supervision on projects in the Gulf of Mexico and North Sea Cenozoic basins. In addition, one student is beginning a project in the rift fill of the Reconcavo basin, Brazil.

Research on the relationships between depositional systems and sequences continues to be funded by a consortium of petroleum companies. Four students have been supported in the past year with fellowships through this program, which has led to a completed thesis and dissertation on the Carrizo/upper Wilcox and Vicksburg formations. Current research is focused on: (1) examining the evolution of various depositional systems within the context of their genetic stratigraphic sequence framework; (2) quantifying the history of sediment supply in terms of volume and textural mix; and (3) determining the various processes and patterns of sediment bypass to the slope. A paper in press with Robert Morton (Bureau of Economic Geology) contrasts the relative importance of reservoir genesis and hydrocarbon production in deep-water delta and slope systems of the young Neogene sequences with that of platform-delta and strike-fed shore-zone systems that are major components of Paleogene sequences in the Gulf basin. The dissertation of Wagner Peres documents the complex interplay of halokenesis, depositional history, and eustasy in creating the turbidite apron reservoir system housing the giant Marlim field, Brazil. Additional ongoing work includes analysis of sequence development in nonmarine basin fills, using the Triassic fluvial deposits of the Sydney basin, Australia, and the Reconcavo basin, Brazil as natural laboratories.

Future plans include beginning a thorough revision and updating of the successful reference, *Terrigenous Clastic Depositional Systems,* in cooperation with co-author Dave Hobday. Cooperative work with Cliff Frohlich, of the Institute for Geophysics, will integrate computer modeling with sequence stratigraphic study of the Miocene section to attempt to isolate variables controlling parasequence and depositional system development.

Selected Publications:

Coleman, J., and Galloway, W. E., 1990, Sequence stratigraphic analysis of the lower Oligocene Vicksburg Formation of Texas: *Gulf Coast Section of the Society of Economic Paleontologists and Mineralogists Foundation 11th Annual Research Conference Program and Abstracts,* p. 99-112.

Dingus, W. F., and Galloway, W. E., 1990, Morphology, paleogeographic setting, and origin of the middle Wilcox Yoakum canyon, Texas coastal plain: *American Association of Petroleum Geologists Bulletin,* v. 74, p. 1055-1076.

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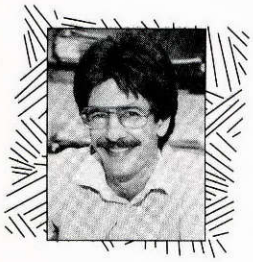
Xue, L., and Galloway, W. E., 1990, High-resolution, log-derived, genetic stratigraphic sequence profile of the Paleogene section, central Texas Gulf Coast: *Gulf Coast Section of the Society of Economic Paleontologists and Mineralogists Foundation 11th Annual Research Conference Program and Abstracts,* p. 399-408.



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 focused on determining the seismic-velocity structure of the earth's mantle. Measurements 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.

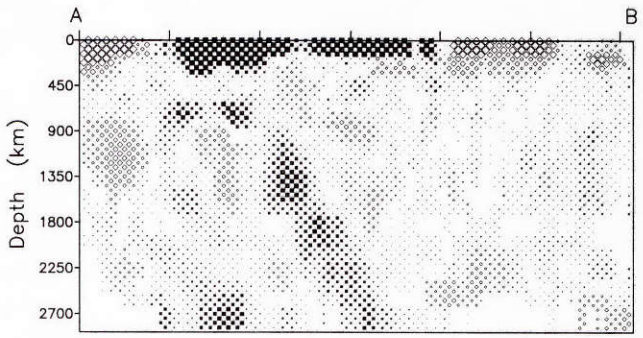
I am also a member of the Institute for Geophysics and collaborate with seismologists there. The IRIS data management center (DMC) is located at the Institute and provides ready access to new digital seismic data. With my graduate students and Institute seismologists, we have begun an investigation of 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:

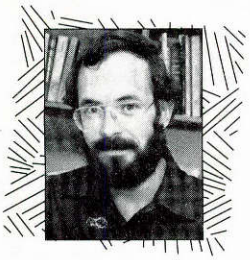
Grand, S. P., 1987, Tomographic inversion for shear velocity beneath the North American plate: *Journal of Geophysical Research*, v. 92, p. 14,065-14,090.

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).



This figure shows a cross section of mantle velocities for a profile from the coast of Oregon to the coast of northern Brazil. Filled squares are fast and open diamonds are slow. The scale of variation in velocity is from 1.5% to -1.5% in the upper 400 km and from .7% to -.7% below that depth. The very fast mantle rock to about 400 km is the continental root beneath the mid-western United States. Through the lower mantle, a zone of higher than normal velocity can be seen dipping to the east from near 600 km depth to the bottom of the mantle. This probably represents a down welling limb of a convection cell in the deep mantle and may be associated with the subduction of the Farallon plate during the last 100 Ma.



Eolian sedimentology

Gary Kocurek

Professor and Getty Company Centennial Teaching 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. (ed.), 1988, Late Paleozoic and Mesozoic Eolian Systems of the Western Interior of the United States: *Sedimentary Geology*, v. 56, 413 p.

Sweet, M. L., and Kocurek, G., 1990, An empirical model of eolian dune lee-face flow dynamics: *Sedimentology*, v. 37, p. 1023-1038.

Kocurek, G., 1991, Interpretation of ancient eolian sand dunes: *Annual Review of Earth and Planetary Science*, v. 19, p. 43-75.

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

Michelle A. Kominz

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

I have completed my second year in geological sciences at UT-Austin. My teaching load has broadened, continuing to join in teaching geophysics for geophysics majors with Clark Wilson but also joining Jack Sharp in teaching introductory geology for engineering students. In the spring semester I continued to creatively adapt the graduate curriculum, teaching a geodynamics course centered on basin modeling. It included a healthy dose of partial differential equations, proposal writing, and literature compilation and review. A new team-taught course in quantitative stratigraphy with Martin Lagoe emphasized both quantitative methods in biostratigraphy and in physical stratigraphy.

Observation of an unusual pattern of subsidence in basins throughout the North American craton and margin has led me, along with colleague Gerard Bond (Columbia University), to postulate that the initiation of formation of the Pangean supercontinent may have occurred earlier than previously thought, in the Late Devonian. Tectonic subsidence curves derived from stratigraphic sections in both the Cambro-Ordovician passive margins of the continent (Canadian Rockies, U.S. Rockies; central Appalachian Mountains), a failed aulacogen (Ouachitas), and cratonic basins (Michigan Basin, Willaston Basin, and Illinois Basin) all show an increase in subsidence in Late Devonian to earliest Mississippian time. Such synchroneity of subsidence is not predicted by classical orogenic models. New modeling of supercontinent formation and breakup as it influences and is influenced by whole-mantle convection predicts a period of maximum in-plane stress at the time of inception of supercontinent formation (Gurnis,University of Michigan). This model makes predictions that are consistent with observations of basin deformation in the Late Devonian.

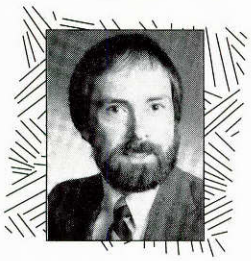
My research in the study of high-order cyclic sediments is progressing. Recognizing that different facies accumulate and compact differently, I have devised a new method of restoring time in cyclic strata and testing whether those cycles actually represent sedimentation during a constant time period. Three projects have been started to apply and test this new methodology. The first is the Triassic/Jurassic lake sediments of the Newark Basins. Here we have found that the observed deep-water shales represent about one sixth as much time as the shallow water calcisiltites. We also find that the cycles record both the precessional and eccentricity periodic components of the earth's rotation, indicating a climatic control of lake levels during non-glacial times. Work on applying the method to Pleistocene deep-sea sediments is in progress. The prime motivation of this work is a test of the procedure in cyclic sediments that are known to be periodic. Preliminary results in a north Atlantic glacial debris/carbonate ODP core (609) indicates that the new method does enhance the orbital signals. Eventually, if the method proves successful it should be possible to apply it to older cyclic deep-sea records, that extend beyond predicted orbital data. Analysis of Middle Cambrian peritidal sediments exposed in the miogeoclinal sediments of central Utah 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 cannot yet unequivocally say if frequency shifts predicted by astronomical models can be seen in these ancient strata.

Selected Publications:

Bond, G. C., and Kominz, M. A., 1991, Disentangling Middle Paleozoic sea level and tectonic events in cratonic margins and cratonic basins of North America: *Journal of Geophysical Research,* v. 96, p. 6619-6639.

Kominz, M. A., and Bond, G. C., 1990, A new method for testing periodicity in cyclic sediments: application to the Newark Supergroup: *Earth and Planetary Science Letters,* v. 98, p. 233-244.

Kominz, M. A., and Bond, G. C., 1991, Unusually large subsidence and sea-level events during middle Paleozoic time: new evidence supporting mantle convection models for supercontinent assembly: *Geology,* v. 19, p. 56-60.



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 nonmajors 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 for *Ore Geology Reviews* and an associate editor for *Economic Geology*. I recently completed a faculty research assignment at the U. S. Geological Survey national headquarters on sulfur isotope systematics of zinc-lead-silver sulfide concentrations in Gulf Coast salt-dome cap rocks. These 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 are involved in 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 Cenozoic 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 $d^{34}S$ composition of sulfide mineralization during anhydrite cap rock formation, Hockley dome, Texas, U.S.A.: *Chemical Geology*, v. 74, p. 37-55.

Sharp, J. M., and Kyle, J. R., 1988, The role of ground-water 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.

Posey, H. H., and Kyle, J. R. (eds.), 1988, Fluid-rock interactions in the salt dome environment: *Chemical Geology* (Special Issue), v. 74, No.1/2, 188 p.

Cumming, G. L., Kyle, J. R., and Sangster, D. F., 1990, Pine Point: A case history of lead isotope homogeneity in a Mississippi-Valley–type district: *Economic Geology*, v. 85, p. 133-144.

Hallager, W. S., Ulrich, M. R., Kyle, J. R., Price, P. E., and Gose, W. A., 1990, Evidence for episodic basin dewatering in salt-dome cap rocks: *Geology*, v. 18, p. 716-719.

Kyle, J. R. (ed.), 1990, Industrial mineral resources of the Delaware Basin, Texas and New Mexico: *Society of Economic Geologists, Guidebook Series*, v. 8, 203 p.

Kyle, J. R., 1990, Geology of the barite deposits of the Delaware Basin, West Texas, *in*: Kyle, J. R. (ed.), Industrial Mineral Resources of the Delaware Basin, Texas and New Mexico: *Society of Economic Geologists, Guidebook Series*, v. 8, p. 163-180.

Kyle, J. R., 1991, Evaporites, evaporative processes, and mineral resources, *in*: Melvin, J. L. (ed.), Evaporites, Petroleum, and Mineral Resources: *Developments in Sedimentology* 50, Elsevier, Amsterdam, p. 477-533.

Kyle, J. R., and Posey, H. H., 1991, Halokinesis, cap rock development, and salt dome mineral resources, *in*: Melvin, J. L. (ed.), Evaporites, Petroleum, and Mineral Resources: *Developments in Sedimentology 50*, Elsevier, Amsterdam, p. 413-474.

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 modeling, 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.

Late Cenozoic glacial and climatic history of the Yakataga Formation, Gulf of Alaska. This is a joint project with Nicholas Eyles (University of Toronto) and 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 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 focused on quantitative approaches to using benthic foraminiferal distributions to reconstruct depositional processes for glaciomarine diamictites.

High-resolution paleoenvironmental studies on the modern Gulf of Mexico slope. Anthony Gary, a post-doc in the department for the past year, has recently taken a position with Unocal science and technology division. He continues to be 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.

Paleoenvironmental analysis of active margin basins of California. This work includes developing improved paleobathymetric models for Paleogene and Neogene basins and the formulation of high-resolution biostratigraphy for sequence stratigraphic analysis. We have been using this approach to study the tectonic development of the Plio-Pleistocene and late Miocene-Pliocene rocks of the San Joaquin Basin.

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 modeling (Nestor Phillips); and the Eocene sequence stratigraphy of the North Sea (Ben Sloan, co-supervised with William Galloway). Ken Barrow is a new graduate student in the micropaleontology program.

Selected Publications:

Namson, J. S., Davis, T. L., and Lagoe, M. B., 1990, Thrust-fold deformation style of a seismically active structure near Coalinga, California: *U.S. Geological Survey, Professional Paper* 1487, p. 79-96.

Eyles, C. H., and Lagoe, M. B., 1990, Sedimentation patterns and facies geometries on a temperate, glacially influenced continental shelf: the Yakataga Formation, Middleton Island, Alaska, *in*: Dowedeswell, J. A., and Scourse, J. D. (eds.), Glaciomarine Environments: Processes and Sediments: *Geological Society of America Special Publication* No. 53, p. 363-386.

Lagoe, M. B., Tenison, J. A., and Buehring, R., 1991, Foraminifera and paleoenvironments in the Etchegoin and Lower San Joaquin Formations, west-central San Joaquin Valley, California (abs.): *American Association of Petroleum Geologists Bulletin*, v. 75, p. 370-371.

Isotope geochemistry; diagenesis; low-temperature aqueous geochemistry

Lynton 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.

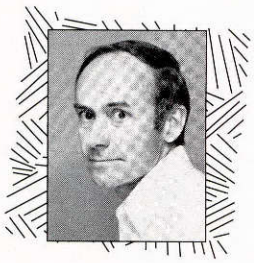
Several new areas of investigation are being pursued, some of which center around "new" technology. Acquisition of a state-of-the-art thermal-emission mass spectrometer in 1988 has permitted new isotopic systems to be applied to diagenetic problems. Precise strontium isotopic data can now be obtained 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. 195-225.

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

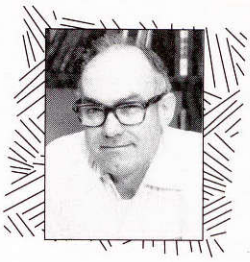
My research has been chiefly in association with my students, and it includes applications both to sedimentary and igneous rocks. Much of it has been application of the Rb-Sr method, which furnishes data about the timing and processes of diagenesis of clay minerals provided that the samples have first been put through a rather elaborate treatment. Clay particles of diagenetic origin must be separated from those of detrital origin, then purged of loosely-bound strontium that has acted as an open chemical system. With all of that said and done, the isotopic analysis helps to reveal the history of sedimentary basins. In applying this procedure to sediments in the Permian Palo Duro Basin of the Texas Panhandle, and to the Tertiary Gulf Coast Basin, my students have encountered quite diverse situations. Highly precise analyses, which are now quite routine, make possible the application of this technique to material in which the buildup of radiogenic Sr is very small, or very similar among different samples in the same suite. Complications result if not much material of diagenetic origin is present, or if it cannot be fully separated from an older inherited component. Precise Rb-Sr analyses were necessary to discern the pattern of volcanism in a string of small Tertiary eruptive centers in Big Bend National Park, where igneous activity steadily progressed from 30.4 million years at the south end, to 28.2 million years on the north. Values of initial $^{87}Sr/^{86}Sr$ are systematically higher from south to north. The Rb/Sr ratios in these rocks are so high that simply the aging of the source of magma over two million years could account for the increase of initial radiogenic ^{87}Sr.

Selected Publications:

Long, L. E., *Geology*, 5th edition: American Press, Boston (in press). A general introductory textbook.

Long, L. E., and others, 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. The other area is in the application of statistical methods to paleontology.

The study of the succession of faunas from a cave on the Nullarbor Plain in western Australia is continuing. 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. Another Australian study is based on several small collections made many years ago. Recent paleogmagnetic studies of the sediments from these localities now provide much better data on their ages and make it possible to correlate them with faunas from other areas.

A new project, in collaboration with Russell Graham of the Illinois State Museum and funded by the National Science Foundation, is the compilation of a data base of the mammalian faunas of the last 40,000 years of North America. This will make possible detailed investigations of the changing fauna of North America, such as associations of species and distribution maps of various species at various times.

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.

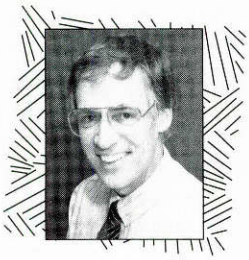
Selected Publications:

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.

Lundelius, E. L. Jr., 1989, The implications of disharmonious assemblages for Pleistocene extinctions: *Journal of Archaeological Science*, v. 16, p. 407-417.

Lundelius, E. L. Jr., 1990, Vertebrates on oceanic and continental inlands: *Accademia Nazionale dei Lincei, Atti dei Canvegni Lincei*, v. 85, p. 3-22.



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—1950, Johns Hopkins University

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. 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. We found that burial to 14 m produces little change in either packing or porosity of river sands, and 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.

My studies of calcite cement in Miocene sandstones of Texas shows detrital limestone clasts in the sandstones and fossils in interbedded shales to be the source of cement. 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 probably detrital carbonate grains in the sandstones, and oxygen isotopic values indicate that the faults were probably cemented by basinal fluids.

In the Apennines, Duke Picard (Utah) and I are studying the Contessa megaturbidite, a bed 15 m thick that was deposited in a few hours. Although the catastrophic deposit must have killed all animals 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*, even though *Chondrites* is considered one of the most dysaerobic animals known.

Selected Publications:

McBride, E. F., Diggs, T. N., and Wilson, J. C., 1991, Compaction of Wilcox and Carrizo sandstones to 4,420 m, Texas Gulf Coast: *Journal of Sedimentary Petrology*, v. 61, p. 73-85.

Sullivan, K.B., and McBride E. F., 1991, Diagenesis of sandstones at shale contacts and diagenetic heterogeneity, Frio Formation, Texas: *American Association of Petroleum Geologists Bulletin*, v. 75, p. 121-138.

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.

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.

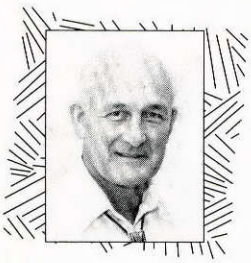
During my work on the Portoro Limestone, I have become very interested in the formation of marbles during deformation. This fine-grained, black limestone becomes a coarser-grained, white marble in high-strain shear zones. I am currently investigating the process by which these changes take place. I also 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, p. 221-232.

Bristol, D. A., and 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, U.S.: *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 in order to understand regional tectonics, most recently in 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.

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 (Gordon, MA, PhD dissertation, 1991) in the Catacamas Valley segment shows that the present motion must be right slip.

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 to be printed in fall 1991. The northern sheet will follow as fast as final compilation permits.

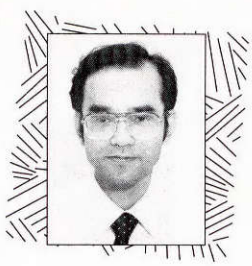
I continue to lecture on tectonics to new astronaut groups as part of their basic training. This activity includes an intensive field trip in northern New Mexico, an area I have worked in for many years. I also give a tectonic briefing to each Shuttle crew before they blast off.

Selected Publications:

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.

Hennings, P. H., and Muehlberger, W. R., 1990, Laramide fault inversion, basement buttressing, and evaporite tectonics in the Cordilleran thrust front along the Texas/Chihuahua border: *Abstracts with Programs, 1990, Geological Society of America*, v. 22, no. 7, p. A184.

Muehlberger, W. R., 1991, Folded duplex framing Dagger Flat anticlinorium, Marathon Basin, Trans-Pecos Texas: *Abstracts with Programs, 1991, Geological Society of America*, v. 23, no. 4, p. 51.



Lunar, planetary, and terrestrial seismology; solar system studies

Yosio Nakamura

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

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. Impacts of meteoroids detected by the lunar seismic network give us clues as to the nature of small interplanetary objects in orbits crossing that of the Earth-Moon system.

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 U. S. 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 latter 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 and systematics; computer imaging

Tim Rowe

Associate Professor and Bill R. Payne Centennial Teaching Fellow,
PhD—1986, University of California at Berkeley

My research revolves around the systematics and evolution of tetrapods. I am involved in several different kinds of research projects, which give me a chance to sample a wide range of the diverse fields that make up paleontology. One project focuses on vertebrate fossils of the Big Bend region of Texas, which are roughly 75 million years old (Late Cretaceous age). This work takes me into the field to collect fossils and to do some basic mapping and stratigraphy. Thanks to the excellent collections, preparation facilities, and field equipment available at the Vertebrate Paleontology Laboratory, we have been able to process several hundred specimens, including large dinosaurs and tiny microvertebrates. The latter include teeth smaller than a pin head from tiny, extinct mammals, lizards, and amphibians.

My other research involves understanding the pattern of relationship among fossil and living tetrapods, and to help understand the mechanisms that shaped that history. I am interested in all tetrapods, but have focused largely on dinosaurs and their relationship to birds, and on the early history of mammals. This research involves work with fossils and also with the developmental biology of the skeletons in living tetrapods. A related research problem involves developing computer imaging technology to help study evolutionary morphology in both living and extinct organisms.

I teach classes at both undergraduate and graduate levels. "The Age of Dinosaurs" is a freshman-level course that I teach every year to introduce geology, paleontology, and the evolutionary history of dinosaurs to non-science majors. I also teach an upper division undergraduate course on development and evolution of the vertebrate skeleton, and graduate courses on vertebrate paleontology and systematics. I plan to add a course on image processing and analysis in the near future. My graduate students are involved in research problems ranging from classic field studies of paleontological sites to systematics, developmental biology, and computer imaging.

A field party from the Vertebrate Paleontology Laboratory excavates 75 million year old bones of large dinosaurs and tiny microvertebrates from a quarry in the Aguja Formation of West Texas.

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

Selected Publications:

Gauthier, J.A., Cannatella, D., de Queiro, K., Kluge, A. G., and Rowe, T., 1989, Tetrapod phylogeny, *in:* Fernholm, B., Bremer, K., and Jornvall, H. (eds.), The Hierarchy of Life: Molecules and morphology in phylogenetic analysis: *Nobel Symposium70, Excerpta Medica,* Amsterdam, p. 337-354.

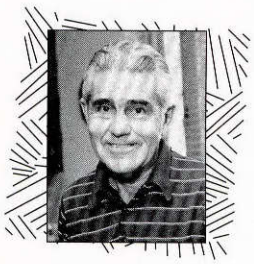
Rowe, T., and Gauthier, J., 1990, Ceratosauria, *in:* Weishampel, D., Osmolska, H. H. and Dodson, P. (eds.), *The Dinosauria*, Los Angeles, University of California Press, p. 151-168.

Rowe, T., Phylogenetic systematics and the early history of mammals, *in*: Szalay, F., Novacek, M. J., and McKenna, M. C. (eds.), *Mammalian Phylogeny*, Springer Verlag, New York (in press).

Rowe, T., and Greenwald, N., 1990, Early mammalian phylogeny and effects of incompleteness on phylogenetic resolution, *in*: Szalay, F., (ed.), *Symposium on Mammalian Phylogeny sponsored jointly by the Sloan Foundation and American Museum of Natural History, Abstracts to Meetings.*

Rowe, T., 1990, Tempo and mode in early mammalian morphogenesis, *Journal of Vertebrate Paleontology*, v. 10, supplement to no. 3, p. 40A.

Cifelli, R. L., and Rowe, T. 1990, Therian mammals from the Late Cretaceous of West Texas, *Journal of Vertebrate Paleontology,* v. 10, supplement to no. 3, p. 18A.



Geology of the Gulf of Mexico Basin and the Caribbean region

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 region by means of detailed paleogeographic/lithofacies maps of intervals of time as small as the available information allows. The paleogeographic reconstruction is being 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 region. If the assembled paleogeographic/lithofacies data do not fit the reconstruction, the evolutionary interpretation will have to be changed to fit the basic geologic evidence.

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

Much of my time during the last few years has been spent in writing and editing a volume on the geology of the Gulf of Mexico Basin, to be published by the Geological Society of America. It is expected to be available by the end of 1991.

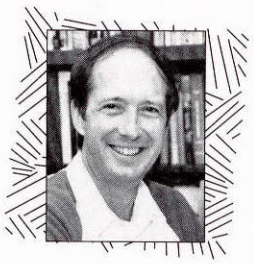
Selected Publications:

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 Subcommission 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 Subcommission on Stratigraphic Classification), 1987, Stratigraphic classification and nomenclature of igneous and metamorphic rock bodies: *Geological Society of America Bulletin*, v. 99, p. 440–442.



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

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. Of special interest is the analysis of geothermal anomalies along the Wilcox growth fault trend of South Texas. This is a combined data analysis, laboratory, and digital modeling approach. 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 new area of research involves application of nonlinear multivariate analysis to groundwater systems.

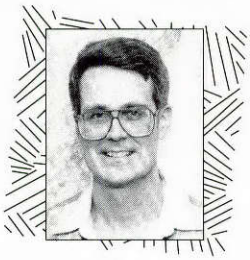
Selected Publications:

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.

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.

Germiat, S. J., and Sharp, J. M., 1990, Assessment of future coastal land loss along the upper Texas Gulf Coast: *Bulletin of the Association of Engineering Geologists*, v. 27, p. 263-280.

Sharp, J. M., Jr., 1990, Stratigraphic, geomorphic, and structural controls of the Edwards aquifer, Texas, U.S.A., *in*: Simpson, E. S., and Sharp, J. M., Jr. (eds.), *Selected Papers on Hydrogeology*, International Association of Hydrogeologists, Heise, Hannover, v. 1, p. 67-82.



Igneous and metamorphic petrology; geochemistry; mantle processes

Doug Smith

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

My research has concentrated upon processes in the lower crust and upper mantle to understand how the tectonics of the crust are related to events at depth. Samples have been analyzed from southern Africa and from the southwestern U.S., particularly from on and near the Colorado Plateau. With W. L. Griffin, in the exploration geoscience group of CSIRO in Australia, 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.

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 deep in mid-Cenozoic time. Our findings constrain hypotheses about the position of the subducted Farallon plate and about the mechanical responses of uppermost mantle and lower crust to subduction.

One graduate student, Linda Davis, is completing 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. Another, Colleen Stapleton, has studied textures and mineral compositions in xenoliths from the Transition Zone of the Colorado Plateau, in part to investigate how melts form in the mantle. A third, J. Alex Riter, is beginning an investigation of the compositional evolution of spinel peridotite xenoliths, with an emphasis on comparisons between the Basin and Range and Colorado Plateau.

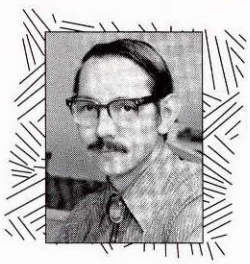
Selected Publications:

Smith, D., Griffin, W. L., Ryan, C. G., and Sie, S. H., 1991, Trace-element zonation in garnets from The Thumb: heating and melt infiltration below the Colorado Plateau: *Contributions to Mineralogy and Petrology*, v. 107, p. 60-79.

Roden, M. F., Smith, D., and Murthy, V. R., 1990, Chemical constraints on lithosphere composition and evolution beneath the Colorado Plateau: *Journal of Geophysical Research*, v. 95, p. 2811-2831.

Smith, D., and Boyd, F. R., 1989, Compositional heterogeneities in minerals of sheared lherzolite inclusions from African kimberlites: *Proceedings of the IV International Kimberlite Conference, Special Publication of the Geological Society of Australia 14*, v. 2, p. 709-724.

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.



Invertebrate paleontology; Paleozoic echinoderms; evolutionary history

James Sprinkle

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

I am now finishing the final 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 eight weeks last summer searching for echinoderms of this age in various parts of the Rockies, and made several big discoveries of new Early Ordovician echinoderms. Several of these seem ancestral to Middle Ordovician echinoderms from the Rockies and elsewhere, and two of the new faunas provide information about how and where major groups such as crinoids originated.

Several graduate students are working under my supervision on projects related to my research or teaching interests. Colin Sumrall is doing a Master's thesis on morphologic designs in Late Paleozoic edrioasteroids and has submitted another abstract on his work for the GSA annual meeting this fall. Ronald Johns is now finishing 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 has nearly finished a Master's thesis on the phylogeny and classification 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 visited on our second paleobiology field trip.

Selected Publications:

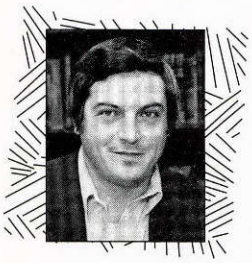
Sprinkle, J., 1989, Origin of the echinoderm class *Rhombifera* based on new Early Ordovician discoveries from the Rocky Mountains: *Geological Society of America Abstracts with Programs*, v. 21, no. 6, p. A114.

Guensburg, T. E., and Sprinkle, J., 1990, Early Ordovician crinoid-dominated echinoderm fauna from the Fillmore Formation of western Utah: *Geological Society of America Abstracts with Programs*, v. 22, no. 7, p. A220.

Sprinkle, J., 1990, New echinoderm fauna from the Ninemile Shale (Lower Ordovician) of central and southern Nevada: *Geological Society of America Abstracts with Programs*, v. 22, no. 7, p. A219.

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.

Sumrall, C. D., and Sprinkle, J., 1990, "Blisters," "stuffers," and "stalkers"—basic designs in Late Paleozoic edrioasteroids: *Geological Society of America Abstracts with Programs*, v. 22, no. 7, p. A34.



Marine seismology

Paul L. Stoffa

Dave P. Carlton
Professor in Geophysics,
PhD—1974, Columbia University

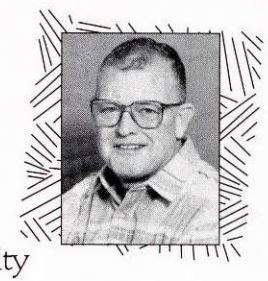
Answers to many complex geologic problems often can be obtained from seismic measurements. Understanding tectonic processes at both active and passive rifted continental margins requires knowledge of their deep geological structure. Research has been focused on developing new seismic-data acquisition 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 Y-MP8/864. 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., de Luna Freire, R., 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.



Energy and mineral economics

Willem C. J. van Rensburg

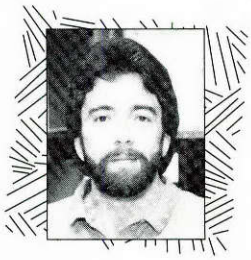
George H. Fancher Professor in Petroleum Engineering, Professor of Geological Sciences and Director of the Graduate Program in Energy and Mineral Resources, PhD—1965, University of Wisconsin at Madison

My recent research activities have been concerned with global availability and security of strategic mineral supplies, with the development of ocean energy and mineral resources, with factors affecting future global oil supply and demand, and with the development of improved methods for the economic evaluation of petroleum investment opportunities.

The administration of the graduate program in energy and mineral resources consumes a considerable percentage of my time, particularly since we are formulating a proposal for an independent PhD program in this field. In 1990, for the second time, our students took all three prizes in a national competition for best student papers in mineral economics. For the past nine years we have taken at least two of the three prizes in this competition, including eight first, six second, and six third prizes.

I visited South Africa in December to get a first-hand look at the giant new Mossgas Project, and to talk to mining industry executives. In January, I went to Indonesia to teach courses on economic evaluation of international development projects, discounted cash flow and risk analysis, and future competition in the world petroleum industry.

During the summer, I served as a consultant and expert witness for a group of electric utilities in a case which involved oil and gas reserve estimates and economics. Experience gained in this way is eventually incorporated into graduate courses as case studies.



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 understand the evolution of ancient convergent margin systems. I have concentrated such efforts on orogenic belts in northeastern Oregon, northern Washington, central Texas, and the central Transantarctic Mountains. 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 on 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 focuses on the timing, mechanics, and processes of mid-Cretceous orogenesis recorded in the crystalline core of the North Cascades range in Washington. At issue is whether the profound deformation, metamorphism via crustal thickening, and plutonism within the crystalline core are primarily the products of 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 resulted from synchronous transpressive deformation, metamorphism, and arc magmatism in a convergent margin system. Results from a recently completed NSF-supported investigation indicate that a collisional orogenic model is incompatible with the orientation, age, and kinematic significance of the metamorphic fabric. Zircon U-Pb ages indicate that plutonism in the western core, which took place between 96 and 89 Ma, was chiefly a syn-orogenic process.

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 fundamental to understanding the genesis of the entire mid-Cretaceous Coast Plutonic Complex that stretches from the North Cascades into southeast Alaska. A newly awarded NSF-grant will sustain the type of investigations described above and will test "magmatic accretion" as a cause of crustal thickening. The overall goal of my North Cascade research is to build an integrated geologic framework from which a broad understanding of orogenic mechanisms in deep-seated crystalline belts will be gained.

Co-investigators W. Carlson and S. Mosher and I completed an NSF-supported study of Proterozoic rocks in the Llano Uplift of central Texas. The project emphasized 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 Laurentia. 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.

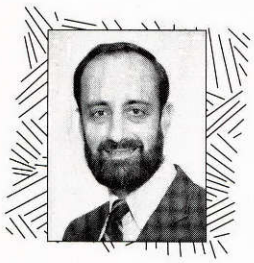
In a recently initiated project, I am collaborating with researchers at Southern Methodist University to understand the age, origin, and tectonic significance of high-grade metamorphic rocks in the central Transantarctic mountains. These rocks probably represent part of the Proterozoic cratonal margin of Gondwana.

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, p. 1246-1267.

Walker, N. W., and Brown, E. H., 1991, Is the southeast Coast Plutonic Complex the consequence of accretion of the Insular superterrane? Evidence from U-Pb zircon geochronometry in the northern Washington Cascades: *Geology*, v. 19, no. 7, p. 714-717.

Walker, N. W., Tectonic implications of U-Pb zircon ages of the Canyon Mountain Complex, Sparta Complex, and other metaplutonic rocks of the Baker Terrane, northeastern Oregon: *U.S. Geological Survey Professional Paper* No. 1439 (in press).



Geodesy and geophysics

Clark R. Wilson

Professor, Shell Companies Foundation Centennial Teaching Fellow
and Chairman, Department of Geological Sciences,
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 that are common to all geophysical investigations. In geodetic studies, I have been studying the causes of changes in the speed of rotation and movement of the rotation axis within the Earth, 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 between the Earth and its enveloping fluids, this geodetic work has progressed into broader studies of the redistribution and motion of air and water over time. 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 taught for the first time during the spring 1991 semester, 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. We found 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. We are continuing this study with an analysis of oceanographic data, including the use of satellite altimetry data from the GEOSAT mission. We found that the exchange of water between continents and oceans may 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.

I have a continuing involvement with Project SEER (Solid Earth Exploration Research), which is devoted to the problem of making quantitative estimates from seismic reflection data. As part of this work, 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. The effects of finite aperture are present in observed seismograms when working with their plane-wave representation, and our work showed how to explicity account for them to permit a proper quantitative comparison between synthetic and observed plane-wave seismograms in the process of inverting these data to determine the Earth's material properties.

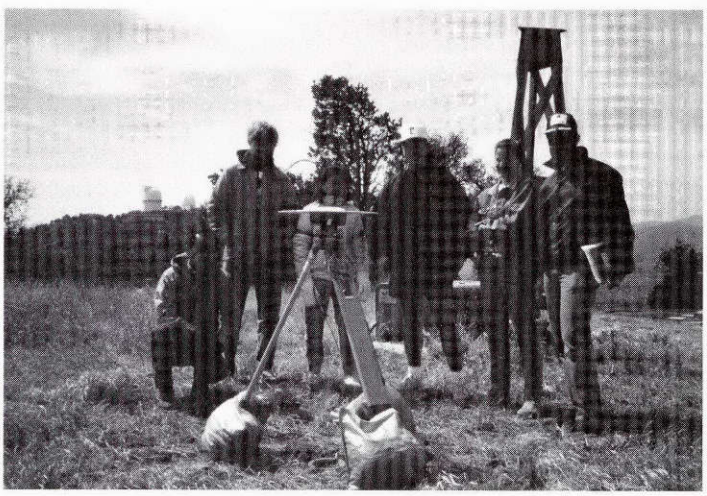
My interests in geodesy and geophysics have also been pursued through my membership in other campus research organizations outside the Department, including the Center for Space Research (CSR) and the Institute for Geophysics (UTIG). The focus of work at CSR is the use of satellites to study the Earth. Together 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. In collaboration with CSR and UTIG, we purchased two Trimble 4000 SST dual-frequency Global Positioning System (GPS) receivers, which are capable of observing tectonic motion by measuring changes in baseline lengths with a precision of 1 centimeter over distances of hundreds of kilometers. With the support of the already strong program within CSR, we are well on our way to integrating the GPS technology into tectonic and other studies in the Department of Geological Sciences.

Selected Publications:

Gutierrez, R. and Wilson, C., 1987, Seasonal air and water mass redistribution effects on LAGEOS and Starlette: *Geophysical Research Letters*, v. 14, p. 929-932.

Dobbs, S., Wilson, C., and Backus, M., 1990, Accounting for limited spatial aperture in the waveform inversion of p-tau seismograms: *Geophysics*, v. 55, p. 452-457.

Kuehne, J. and Wilson, C., 1991, Terrestrial water storage and polar motion: *Journal of Geophysical Research*, v. 96, p. 5337-4345.



The graduate geodesy class observes the operation of the Global Positioning System receivers at MacDonald Observatory, spring 1991.

Faculty EMERITUS

Virgil E. Barnes

I continue working in the office a few hours a day, answering questions about tektites for the public. I have also continued revision of Geologic Atlas of Texas out-of-print sheets.

Fred M. Bullard

I was asked by the Harvard University Press to review several chapters of a manuscript entitled *Volcanoes, Climate, and History*. It was an interesting assignment.

The Academic Press (Harcourt Brace Jovanovich, Inc., San Diego, Calif.) is working on a *Dictionary of Science* to be published in the fall of 1991. It will be the largest general science dictionary available in English, consisting of 115,000 entries and over 2,000 pages. The material has been grouped under 120 different fields, each field having a short, signed essay introducing the subject. I was pleased to accept their request to write the essay on "Volcanology."

The 50th Anniversary of the Distinguished Lectures program of the American Association of Petroleum Geologists was celebrated with a reception honoring former Distinguished Lecturers, on the evening of April 6, 1991, at Dallas, Texas, in conjunction with the convention. I was recognized as one of only three who had made three lecture tours since the program was initiated in 1941, and was presented with a special lapel pin in honor of my contribution.

Ronald K. DeFord

Marion and I drove to Dallas for the AAPG convention and enjoyed it very much. I was particularly pleased to see two of my old students that I hadn't seen in more than 25 years: Ralph Duchin and Sid Moran. A few weeks later, we flew to Midland to attend a dinner hosted by The Petroleum Museum of the Permian Basin honoring four new inductees into the Petroleum Hall of Fame. I was elected to the Hall of Fame in 1975; George Bush, Frank Phillips, Hal Bybee, and Edith Whatley McKanna joined me this year. The Petroleum Hall of Fame is dedicated to those who cherished the freedom to dare, and whose work and service helped develop the Permian Basin.

Samuel P. Ellison Jr.

The work on conodonts continues slowly and includes the conodonts of the Chappel (Mississippian) Limestone in central Texas and a re-study of the Dimple (Pennsylvanian) Limestone of the Marathon region, Texas. The study of why some conodonts are black is still in progress but requires a lot of time on the electron probe. The sulphide content of conodonts now becomes a problem. Work on an undergraduate text of "The Geology of Texas" also is progressing but not fast enough to keep up with the students.

Peter T. Flawn

I was appointed again to the Texas National Research Laboratory Commission, working with DOE on the Superconducting Super Collider Project. I have oversight for the R&D program and the science education program. I also chair the Advisory Board for the Center for Nuclear Waste Regulatory Analyses—the technical arm of the Nuclear Regulatory Commission. I serve as a director of the Southwest Research Institute and on a number of corporate boards. Membership on a Committee of the Yale University Council, reviewing the physical sciences and engineering at Yale, has given me a good look at another department of geological sciences. Two very interesting assignments this year have been the White House Fellows Panel and the Charles Stark Draper Prize Committee of NAE.

Robert L. Folk

There are too many interesting leads to follow up and not enough "schiavi" to help. I talked about bacteria in carbonate rocks at the International Association of Sedimentologists in Nottingham, at the West Texas Geological Society meeting, and at Stony Brook, N.Y. where I also talked about quartz etching. Stimulated by Dennis Trombatore, I've looked at filaments in HF-etched cherts—yes, including the Caballos—and their tube-like morphology indicates to me that they are very likely organic. Dianne Pavlicek's thesis on the Portoro (Triassic, Italy) is now finished so I think this stuff will start coming out; I sent in one paper on the sulfate relics.

I've grown some wonderful dentritic and fibrous carbonate calcite crystals on my desk, and this has given an explanation for the huge dentrites of calcite (up to three feet long) that can form in travertines. Also, I've been black-baking modern and Pleistocene carbonates (heating at 500°C for twenty minutes or so). Organics under this treatment turn black, so that one can see in the rock where organic matter is or is not. Modern white oolites, for example, turn black while their cement does not. Portions of travertines blacken and other parts do not. At the Bureau of Economic Geology, I've been looking at Tertiary dolomite from Bonaire, marine (bacterial?) cement in modern hardgrounds, and bacteria in waste-well sludge. Besides the attack on the pyramids, I am also trying to finish up the sections on the Tel Yin'am (Israel) 13th Century B.C. iron smeltery, the pottery petrography going from Canaanite through Byzantine times, and the general geology—a volume being prepared by Harold Liebowitz.

Wann Langston Jr.

This year saw completion of a dinosaur skeleton assembled by me for the Dallas Museum of Natural History. Not as spectacular perhaps as the 80-foot-long *Diplodocus* skeleton I completed in 1975 at Houston, the Dallas specimen is important nevertheless as the first mounted dinosaur skeleton found in Texas. It also holds important scientific interest. It shares the hall with another of "my" skeletons, a 30-foot-long free-"swimming" mosasaur completed several years ago.

I presented a number of public lectures having to do with the Giant Texas Pterosaur—at the Petroleum Museum in Midland, the Dallas Museum of Natural History, and the Houston Museum of Natural Sciences. In October I lectured at the Museo Nacional de Ciencias Naturales, Madrid.

A visit to Munich added to my understanding of the flying reptiles, and at home (VP Lab) I continued work on several manuscripts dealing with fossil crocodilians and Canadian dinosaurs.

John C. Maxwell

Professional responsibilities during the past year included continuing service as a geological consultant to the Advisory Committee on Reactor Safeguards of the Nuclear Regulatory Commission, and appointment as chairman of the third Performance Evaluation Committee for the Ocean Drilling Program. Work continues on a geologic map and interpretation of a portion of the northern California Coast Ranges.

John A. Wilson

I was invited to give the opening speech at the 50th Annual Meeting of the Society of Vertebrate Paleontology held in Lawrence, Kansas, October 11, 1990. I am a charter member of the SVP and was its president in 1952. My talk was "The Society of Vertebrate Paleontology, 1940-1990."

Keith Young

I am polishing up papers presented in the summer of 1990 at Lyon, France, and continuing research in subsurface Jurassic and Cretaceous ammonites, Jurassic ammonites of Mexico, and Upper Cretaceous ammonites of the Gulf Coast and Trans-Pecos Texas. Collections by Teodoro Díaz are also being studied. The last winter has been spent with these studies and in revising other papers to suit too many editors.

Research STAFF

Guoqiu Gao

Research Associate

PhD—1990, University of Texas at Austin

My primary research interest is carbonate diagenesis, especially dolomitization of the Paleozoic carbonate platform, through integrated analyses of field geology, petrography, geochemistry, and quantitative water-rock interaction modeling. Current research is focused on the dolomitization history of the Cambro-Ordovician Arbuckle Group, Oklahoma.

Additional research interests include: 1) the origin and diagenesis of nodular chert in the Paleozoic carbonate platform, 2) secular carbon and strontium isotopic variations of pre-early Paleozoic carbonates, and 3) oxygen isotopic composition of pre-Devonian seawater.

Paleomagnetism

Wulf A. Gose

Research Scientist and Senior Lecturer,

PhD—1970, Southern Methodist University

In my research, I use paleomagnetism as a tool to tackle a variety of problems. My long-term interest has been and still is the tectonic evolution of Central America and the Caribbean Basin where paleomagnetism could, in principle, provide critical data to test various tectonic models. Recent data from Venezuela show that, since the Late Jurassic, South America has been a rigid plate and has not rotated or changed its latitude. This result suggests that absolute plate-motion models, based on hot-spot tracks, may need to be re-evaluated.

Magnetostratigraphic studies have been successful in clarifying some long-standing stratigraphic problems in Honduras, in dating the time of mineralization of Mississippi Valley-type ore deposits, and in establishing the time of salt-dome cap rock formation. John Kappelman, Department of Anthropology, uses this approach to date humanoid fossils.

In collaboration with M. Collins, Texas Archeological Research Laboratory, I have been measuring the magnetic properties of burnt clasts from paleo-Indian fire places and middens. The data not only establish whether the clasts have remained in situ since their last use, but yield significant information as to how the middens were utilized. The results also are the first data for establishing a secular variation curve for Texas which eventually can be used to date Indian artifacts and features.

Selected Publications:

Castillo, J., Gose, W. A., and Perarnau, A., 1991, Paleomagnetic results from Mesozoic strata in the Mérida Andes, Venezuela: *Journal of Geophysical Research*, v. 96, p. 6011-6022.

Collins, M. B., Ellis, B., Dodt-Ellis, C, Abbott, J. T., Blum, M. D., Gose, W., Marchbanks, M., and Valastro, S., 1990, Excavations at the Camp Pearl Wheat site (41KR243), an early Archaic campsite on Town Creek, Kerr County, Texas: *Studies in Archeology 6*, Texas Archeological Research Laboratory, The University of Texas at Austin, 149 p.

Farr, M. R., and Gose, W. A., 1991, Paleomagnetism of the Cambrian Moore Hollow Group, Texas: evidence for a primary magnetization carried by detrital magnetite: *Journal of Geophysical Research*, in press.

Gose, W. A., and Finch, R. C., 1991, Stratigraphic implications of paleomagnetic data from Honduras: *Geophysical Journal International*, v. 96, p.9895-9907.

Roberto Gutiérrez

Lecturer

PhD—1990, University of Texas at Austin

After I became a lecturer for the spring semester, I taught an undergraduate course, geology for engineers, with John Sclater and a graduate course, space geodesy and geophysics, with my erstwhile supervisor, Clark Wilson. Assistance from my more senior co-instructors plus support from other faculty members greatly eased my transition from student to instructor. Aside from classes, I was busy preparing journal manuscripts and grant proposals involving satellite geodesy, my research area of interest. In January, I was a participant in an international experiment to measure fundamental Earth orientation parameters, such as length of day and polar motion, using the Global Positioning System (GPS). I took one of our two new GPS–satellite receivers to Peru and spent a week operating the system in Arequipa. Students in our space geodesy course were instructed in the operation of these GPS receivers, which we share with the UT Center for Space Research, during a spring break field trip to the Davis Mountains.

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 is providing a basis to examine the relationship between magmatic and tectonic pat-

terns. 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., 1987, The magmatic record of western Mexico and its mismatch to tectonic models: *Geological Society of America Abstracts with Programs*, v. 19, p. 765.

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.

Wark, D. A., Kempter, K. A., and McDowell, F. W., Evolution of waning calcalkalic magmatism, northern Sierra Madre Occidental: *Geological Society of America Bulletin* (in press).

Larry Mack

Research Associate

PhD—1990, University of Texas at Austin

I am completing a two-year post-doc with Dr. Land, investigating the mobility of the rare-earth elements during burial diagenesis of sediments. My other areas of research include: Sr, Nd, and Pb isotope systematics during the burial diagenesis of sandstones and mudrocks; Rb-Sr dating of diagenetic clays; and isotope geochemistry of igneous rocks.

Petrography and geochemistry of siliciclastic rocks

Kitty Lou Milliken

Research Associate,

PhD—1985, 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 the many studies in the Gulf of Mexico to an older basin with a contrasting tectonic history.

Chemical weathering, diagenesis, low-grade metamorphism

Sally J. Sutton

Research Associate

PhD—1987, University of Cincinnati

My research interests center on volume loss and chemical mobility during low-temperature processes, particularly diagenesis, low-grade metamorphism, and weathering, and on how bulk chemical changes affect mineral chemistry and stability. I am also interested in the effects of chemical processes on the development of microstructures. Currently I am involved in several research projects, including a collaborative project with Lynton Land on the diagenetic to low-grade metamorphic evolution of the mineralogy and chemistry of the Stanley Shale in the Ouachita Mountains. The Stanley is interesting in part because it appears to have undergone large-scale volume loss and changes in bulk composition during the Ouachita orogeny. Further, fluids derived from the Stanley may have contributed to the development of Mississippi Valley-type deposits to the north of the Ouachitas.

I have also been working on paleoweathering and in particular the relationship between changes in bulk chemistry and in phyllosilicate mineral chemistry. Recently, I have also been looking at variations in REE-bearing phases within several Middle Precambrian weathering profiles from near Elliot Lake, Ontario. These profiles are of particular interest because the bulk chemistry of similar profiles has been used to constrain models of Precambrian atmospheric oxygen levels. Detailed mineralogical and textural examination of the profiles, however, shows that their bulk chemical changes should be interpreted with caution; they record a complex history of paleoweathering, diagenesis, metasomatism, low-grade metamorphism, and, in some cases, mass transport and redeposition.

Selected Publications:

Sutton, S. J., 1989, Orientation-dependent "metamorphic grade" in phyllosilicates belonging to a slaty cleavage fabric: *Journal of Geology*, v. 97, p. 197-208.

Sutton, S. J., Ritger, S. D., and Maynard, J. B., 1990, Stratigraphic control of chemistry and mineralogy in metamorphosed Witwatersrand quartzites: *Journal of Geology*, v. 98, p. 329-341.

Sutton, S. J., Development of domainal slaty cleavage fabric at Ocoee Gorge, Tennessee: *Journal of Geology* (in press).

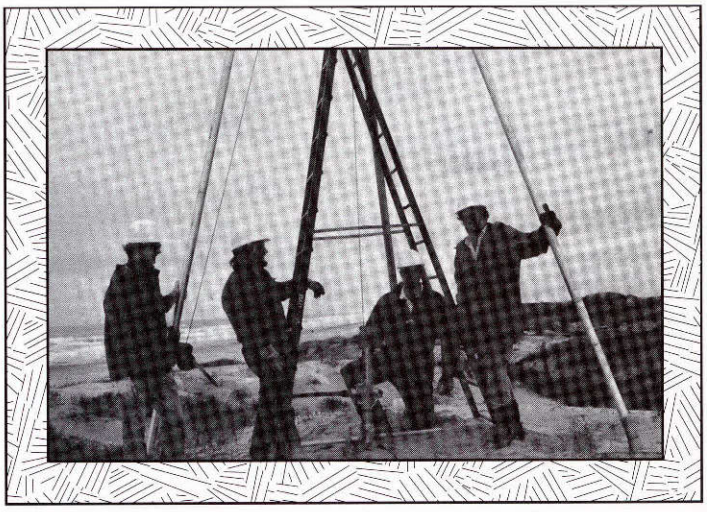
Research PERSONNEL

Faculty and Research Staff

Milo M. Backus, Professor
Shell Oil Companies Foundation Distinguished Chair
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,
Bureau of Economic Geology
Philip C. Bennett, Assistant Professor
and Getty Oil Company Centennial Teaching Fellow
Robert E. Boyer, Robert E. Boyer Centennial Chair,
J. Nalle Gregory Regents Professor
and Dean of the College of Natural Sciences
Leonard F. Brown, Jr., Professor Emeritus
and Research Scientist, Bureau of Economic Geology
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 Geology Foundation
and of the Bureau of Economic Geology
Peter T. Flawn, President Emeritus
and Leonidas T. Barrow Centennial 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
Roberto Gutierrez, Lecturer
Mark A. Helper, Lecturer
Claude W. Horton Sr., Professor Emeritus
F. Earl Ingerson, Professor Emeritus
Edward C. Jonas, Professor Emeritus
Gary Kocurek, Professor
and Getty Oil Company Centennial Teaching Fellow
Michelle A. Kominz, Assistant Professor
and Shell Companies Foundation Centennial Teaching Fellow
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
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 in Sedimentary Geology
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, Associate Professor
and Bill R. Payne Centennial Teaching Fellow
Amos Salvador, Morgan J. Davis Centennial 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, Dave P. Carlton Centennial Professor
and Senior Research Scientist, Institute for Geophysics
Sally J. Sutton, Research Associate
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
and Chairman of the Department of Geological Sciences
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
Scott Thieben - Analytical Chemist
Greg Thompson - Thin-section Technician
Dennis Trombatore - Librarian
Eddie Wheeler - Technical Machinist



Vibracoring foredune ridge on Padre Island (left to right): Chris Swezey, Tom Hickson, Jeff Crabaugh and Gary Kocurek.

Faculty, Research Staff and Graduate Student PUBLICATIONS

Boldface highlights the University of Texas affiliates (* - An **asterisk** signifies a graduate student).

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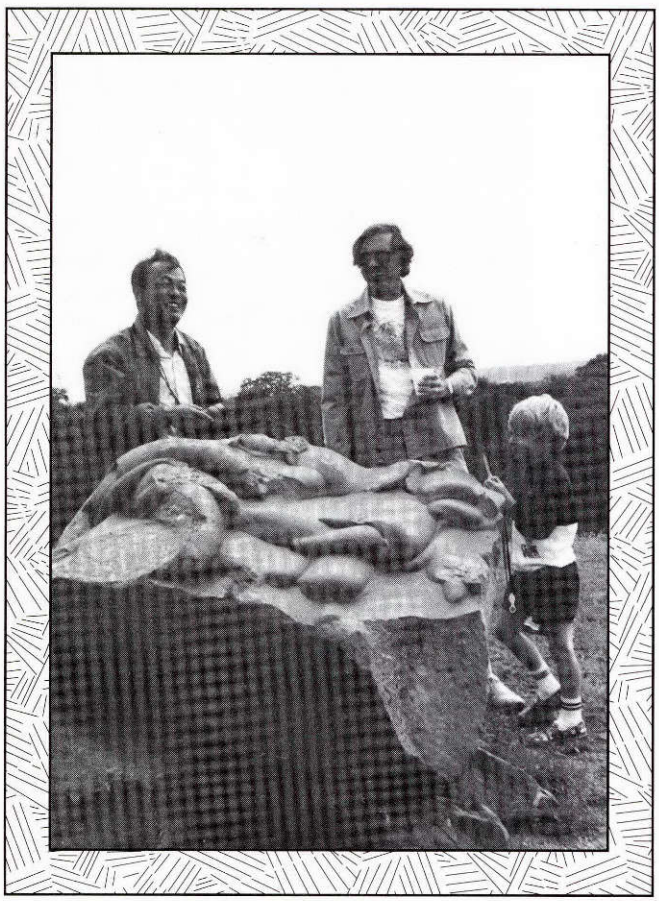
Research GRANTS

P.I.(s)	Title of Project	Funding Agency	Funding Period
Backus, M. Garmany, J. (UTIG) Stoffa, P. Wilson, C.	Solid Earth Exploration (Project SEER)	Consortium of Oil Companies (Current: Amoco Res., Arco Oil & Gas, Exxon, Mobil R&D)	2/28/83 6/30/91
Banner, J.	Origin, Evolution, and Mixing of Saline and Dilute Groundwaters in a Regional Flow System, Missouri and Kansas	NSF	1/1/91 12/31/92
Banner, J.	Geochemistry and Geochronology of Diagenetic Phases in Regionally Extensive Mississippian Platform Carbonates	ACS (Petroleum Research Fund)	1/1/90 8/31/82
Bennett, P.	The Aqueous Organic Chemistry of Silica in Geologic System	ACS	7/1/90 8/81/92
Bennett, P.	Geologic & Hydrologic Site Characterization of the Pantex Plant	Office of the Governor	9/1/90 9/30/95
Boyer, R. Cloos, M. Kyle, J. R. Walker, N.	Gunung Bijih (Ertsberg) Project	Freeport Indonesia	6/1/89 8/31/92
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	9/1/89 8/31/91
Carlson, W.	Pyroxene Phase Equilibria for Thermobarometry of Feldspathic Mafic and Ultramafic Rocks	NSF	8/1/90 7/31/91
Cloos, M.	Thermal History of Western California-Part II	ACS	9/1/90 8/31/92
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]	6/1/88 5/31/91
Galloway, W.	Study of Gulf Coast and North Sea Cenozoic Basins	Consortium of Oil Companies [Amoco, BP Exploration]	6/1/88 8/31/92
Grand, S.	Tomographic Inversion for Mantle Shear	NSF- Earth Science	1/1/90 12/31/91
Grand, S.	Array Studies of the Rocky Mountain Front	NSF	5/15/91 4/30/92
Kocurek, G.	Depositional and Diagenetic Facies of the Tates Formation in Ward County, Texas	Chevron	7/7/89 7/6/91
Kocurek, G.	Reservoir Characteristic Predictions for Eolian Systems	Texas Higher Education Coordinating Board	1/1/91 12/31/93

P.I.(s)	Title of Project	Funding Agency	Funding Period
Kocured, G.	Reservoir Geometries/Controls in the Erg/ Sabkha Transition Zone: a Preliminary Proposal	BP Exploration	1/1/89 12/31/91
Kocurek, G.	Eolian Facies Architecture Using Event Stratigraphy: Akchar Erg, Mauritania	NATO	4/16/90 4/15/92
Kominz, M.	New Method of Scaling Time at High Resolution in Deep Sea Cores	NSF - Ocean Science (Ocean Drilling Program)	1/1/90 12/31/91
Kominz, M.	Quantitative Refinements of Tests for Cyclicity... Newark Support	ACS	5/1/90 8/31/91
Lagoe,M.	Research on the Yakataga Formation	University of Toronto	10/17/89 10/16/91
Lagoe, M.	Late Quaternary Foraminifera and Palynomorphs from the NW Gulf of Mexico Slope: Biofacies and Morphometric...	ACS	7/1/90 8/31/92
Lagoe, M.	Paleoenvironmental Analysis of the Yakataga Formation, Gulf of Alaska: Towards a High-Resolution Neogene...	NSF	6/1/91 5/31/93
Land, L.	Are Gulf Coast Shales Sinks for REE and Trace Metals?	Texas Higher Education Coordinating Board - ARP	9/1/89 8/31/91
Land, L.	Gulf Coast Basinal Mudstones: Sources of Sinks for Diagenetic Components?	NSF - Earth Sciences (Surficial Processes Program)	8/1/89 7/31/90
Land, L.	Characterization of dolomite petrography, geochemistry-southeast of Llano-Wichita-Arbuckle line	ACS-PRF	9/1/90 8/31/93
Land, L. Sutton, S.	Chemical, Mineralogical, and Fabric Evolution of the Lower Stanley Shale, Ouachita Mtns.	NSF	1/15/91 12/31/92
Lundelius, E.	Texas Memorial Museum- Phase II	NSF Directorate for Biol., Behav. & Soc. Sics.	9/1/90 8/31/93
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.]	1/1/86 12/31/91
McBride, E.	Rock/Water Interactions and Provenance Determination	ACS	6/1/90 8/31/92
Rowe, T.	Geochronology, Biostratigraphy, and Vertebrate Diversity of Lake Cretaceous Non-Marine Sediments of Trans-Pecos Texas	ACS (Petroleum Research Fund)	6/1/89 8/31/91
Rowe, T.	PYI Award: Ontogeny and Phylogeny of the Tetrapod Skeleton	NSF - Biotic Syst. & Resour. (Systematic Biology)	9/1/89 8/31/91
Rowe, T.	Storage and Analysis of Biological Image Data Bases Using Compact Disc	Texas Higher Education Coodinating Board - ATP	9/1/89 8/31/91
Sharp, J.	Fluid Flow and Thermal Anomalies in the Gulf of Mexico Basin, South Texas Example	ACS (Petroleum Research Fund)	6/1/88 8/31/91
Sharp, J.	Hydrodynamic, Hydrochemical & Hydrothermal Investigation of Bank Storage	Department of the Interior	8/1/90 7/31/92

Research GRANTS

P.I.(s)	Title of Project	Funding Agency	Funding Period
Sharp, J.	Geochemical Evoluton and Hydrogeologic Characterization of a Reclaimed Lignite Mine	T. U. Electric	9/1/90 8/31/91
Sharp, J.	Instrument to Test Permeability of Fracture Skins and Weathered Surfaces	NSF	9/15/90 8/31/91
Smith, D.	Two Buttes, Colo., Mantle Evolution and Potassic Magmas	NSF - Earth Science (Geochemistry)	9/1/90 5/31/92
Sprinkle, J.	Early Ordovician Echinoderms from the Rocky Mountains	NSF - Biotic Syst. & Resour. (Systematic Biology)	7/15/89 6/30/91
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)	6/1/90 6/30/92
Walker, N.	Technician Support: Multicollector, thermal ionization mass spectrometer	ACS-PRF	1/1/91 12/31/93
Wilson, C.	Studies of Water Storage and Other Contributions to Changes in the Rotation of the Earth	NASA	1/1/91 12/31/91



Bill Galloway visits with professor Hsa Huida (chairman of the Department of Energy Resources at China University of Geosciences) during a field trip to the Llano area in April this year.

DURING 1990, THE BUREAU OF ECONOMIC GEOLOGY, which serves as the state's geological survey, continued the trend of yearly growth that started a decade ago in the number and scope of research projects, the number of funding sources, and the total amount of funding for these projects. The Bureau's operating budget expanded from $10 million (1989) to more than $12 million from line-item State appropriations and 70 outside contracts and grants. Interagency contracts with State and local governments numbered 34; 14 contracts were with the petroleum industry and private institutional foundations; and the remaining contracts and grants were with various agencies of the Federal government. Fifteen new projects were initiated in 1990. Moreover, several Bureau energy-resource projects supported by consortia of domestic and international petroleum companies attracted additional funding from new industrial sponsors.

Energy-resource investigations continued to receive primary emphasis in Bureau research during 1990-91. The Geoscience Institute, headquartered at the Bureau, is presently coordinating an effort to organize some 1,500 reservoirs throughout the U.S. in the Department of Energy's petroleum-resource data base, using a reservoir classification system developed by the Institute. The State Lands Energy Resource Optimization project began its first full year of activity in 1990. The project is managed by the Bureau and is composed of a consortium of Texas state universities to develop improved strategies for petroleum recovery from State lands. Other, long-term programs involving investigation of the regional genetic stratigraphy, structure, and energy resources of the outer shelf and deep-water slope systems of the western Gulf Coast Basin received continued industry support.

Developing the necessary geologic and engineering knowledge to efficiently produce natural gas from low-permeability sandstone reservoirs remains a prominent focus of several Bureau projects funded by the Gas Research Institute. An eight-year old program continues to investigate factors controlling porosity and permeability, fracture distribution, and state of stress in low-permeability gas reservoirs in Texas and Wyoming. This program was expanded this year. Another multi-year project addressed critical industry concerns regarding extraction methods of unrecovered natural-gas resources remaining in heterogeneous nonassociated gas reservoirs. During 1990-91, testing and implementation of emerging and traditional data-acquisition techniques in four gas fields in the Gulf Coast Basin has enabled detection of potentially compartmentalized reservoirs with vastly improved resolution. Bureau researchers also expanded their examination of the geologic and hydrologic factors that control the distribution and productive potential of coal-bed methane in coal-bearing strata of the Fruitland Formation in the San Juan Basin, Colorado and New Mexico.

The Bureau's Applied Geodynamics Laboratory (AGL) uses a variety of deformation devices, largely custom-designed by AGL researchers, to produce dynamically scaled models that replicate specific geologic structures. Two studies initiated in 1990 concentrated on the mechanical genesis of traps in regimes of salt diapirism and traps associated with roll-over anticlines. To aid explorationists in the structural interpretation of seismic images, the Macintosh-based RESTORE computer program was developed at the AGL. It provides structural restoration of cross-sections by geometrically reversing structural and sedimentation effects of sequentially removing layers and fault slips while correcting for compaction, rotation, and faulting.

In 1990 ground-water and waste-isolation studies addressed a range of resource and environmental issues of importance to Texas and the United States. These projects include (1) a study of ground-water availability in areas of the Gulf Coastal Plain currently undergoing residential and commercial development, (2) investigation of the late Cenozoic climatic history of the continental interior to improve hydrologic models used to predict water-level changes in the critically important High Plains aquifer, and (3) characterization of the extent and geologic controls on contaminant migration from mail tailings at an inactive uranium-ore processing plant in western Karnes County, Texas.

Bureau researchers garnered several prestigious awards this past year and attained high elective offices. William Fisher was given the Distinguished Service Award by the West Texas Geological Society and was named president-elect of the American Geological Institute. Charles Kerans was named one of eleven distinguished lecturers for 1990-91 by the American Association of Petroleum Geologists. Alan Dutton and Charles Kreitler were elected into the American Institute of Hydrology and certified as professional hydrologists. A poster session presented by Stephen Laubach at the Geological Society of America 1990 annual meeting received honorable mention from the coal division of GSA.

In 1990-91 the Bureau's Core Research Center (CRC) added more than 20,000 linear feet of core and drill cuttings from more than 1,500 wells to its holdings of geologic materials from more than 59,000 wells. More than 20,000 well logs were added to the Geophysical Log Facility, bringing the total number of logs to more than 70,000.

— Tucker F. Hentz

Bureau scientist F. Jerry Lucia examines a coral-rubble ridge on the island of Bonaire, Netherlands Antilles. Isolated by this ridge, lagoonal waters evaporate, become hypersaline, and precipitate dolomite. This setting is a modern analog for the dolomitization process that has affected many of the reservoir rocks in West Texas oil fields.

INSTITUTE FOR GEOPHYSICS
THE UNIVERSITY OF TEXAS AT AUSTIN

THE INSTITUTE FOR GEOPHYSICS (UTIG) is an organized research unit established to serve the basic and applied geophysical research needs of The University of Texas at Austin. The Institute, launched in 1972 by the late Maurice Ewing, conducts geophysical investigations of the history, structure, and dynamics of the earth's crust, especially the ocean basins and margins, and of earthquake phenomena. UTIG has evolved over the years into one of the leading academic research groups in geology and geophysics.

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. 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. Graduate students are offered the opportunity to work on projects related to funded research programs. Students are encouraged to author or co-author publications for refereed journals both for their own training and to produce tangible products of the funded research.

Research scientists often work as part of international and national teams in large, multi-disciplinary research programs. 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.

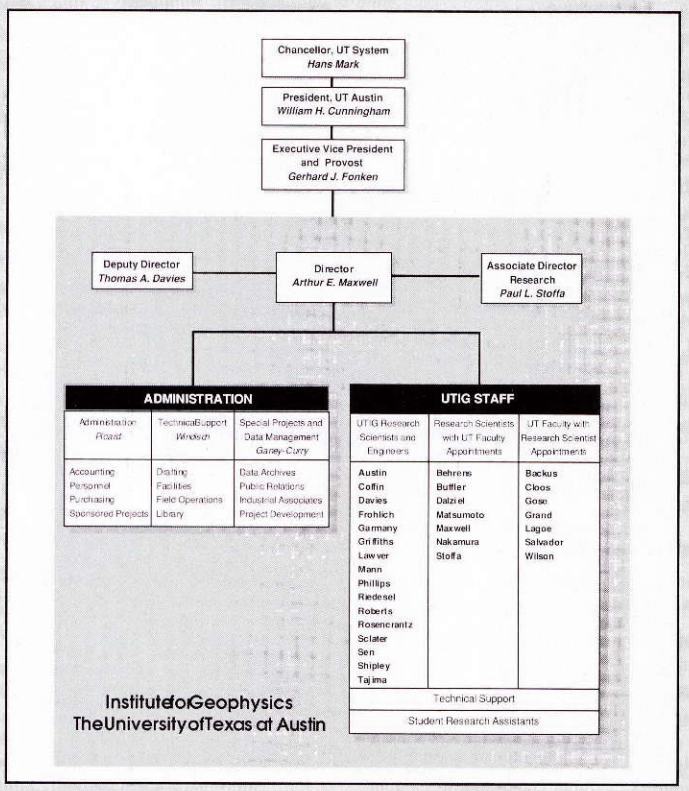
The activities of staff and students contribute strongly to UTIG's reputation as a major seagoing institution. In the past few years members of UTIG have led or participated in research programs on previously owned ships of the Institute, the *Fred H. Moore* and the *Ida Green,* various ships of the UNOLS fleet, 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. 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.

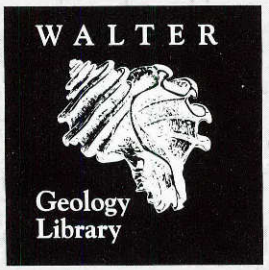
At the center of our multichannel seismic processing is the University of Texas Center for High Performance Computing (CHPC) Cray Y-MP8/864 computer. With a T-1 connection to the computer, we can process seismic reflection and refraction data quickly, easily, and more inexpensively than before. UTIG has installed the Geovecteur™ software of CGG on the Cray allowing us to process 3-D seismic data. Geoquest™ interactive software and various UTIG developed software mounted on color Sun Sparc™ hardware assists in 2-D and 3-D interpretation. UTIG currently has a network of 20 Sun™ workstations and 50 Macintosh™ computers and 5 laser printers. These are interconnected by AppleTalk™ and Ethernet™ with national and international connections to Internet and Bitnet. About 10 Gbytes of disk is attached to the more powerful Suns, with 4 Gbytes concentrated on one Sun 4/380 server. This machine provides the services of many peripherals including a 22 inch Versatec black and white plotter, a 34 inch Calcomp™ pen plotter and a 24 inch 4-color Versatec to any networked machine.

UTIG is one of ten member institutions of JOI, Inc. (Joint Oceanographic Institutions, Incorporated) which was established to facilitate the organization and operation of major national and international oceanographic programs. JOI's responsibilities include managing the international Ocean Drilling Program (ODP). This program, one of the world's largest studies of our dynamic earth, is a successful international scientific venture to explore one of Earth's last frontiers, its ocean basins. 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 seven non-U.S. partners (countries or consortia). The activities of JOIDES are coordinated by the JOIDES office. UTIG currently hosts the JOIDES Executive and Planning Committee Offices. Many UTIG scientists are actively involved in JOIDES panels and committees and have participated aboard the drill ship *JOIDES Resolution.* In addition, UTIG is the University's representative and a founding member of the Incorporated Research Institutions for Seismology (IRIS), which has over 60 member universities.

The Institute has offices in three locations. The main laboratory is in north Austin near the University's Balcones Research Center. On UT's main campus, there are offices, a computer facility, a high density tape archive, and a paleomagnetic laboratory within the Geology building. The marine activities staging facility remains in Galveston, where marine engineering staff continue to maintain workshops and a core storage facility.

– Patricia E. Ganey-Curry





FIRST THE CONTINUING SAGA OF BAD NEWS, then some better news. Significant changes are taking place in the way the Walter Library carries out its mission. Without a major commitment of new resources, these changes are likely to lead to degraded services, facilities, and collections.

Library collections of geology materials, especially in universities, are continuing to suffer around the U.S., and the Walter Library is no exception. The UT General Libraries is bracing for more journals cuts, although this year the anticipated shortfall is smaller than last year. Even more distressing is the fact that many thousands of dollars' worth of books, conference proceedings, and guidebooks are not being purchased, and buying power is shriveling rapidly.

There is small comfort in knowing that the Walter Library is not alone, but the fact that so many libraries find themselves in similar straits, particularly research collections, gives pause. Just *where* users will get materials is not yet clear, but the Walter collection is now unable to purchase earth science information to sustain a comprehensive research program. Purchasing foreign language titles is essentially out of scope in most cases, as is buying anything that is not of immediate curricular or research interest.

Without the support that is provided through the Geology Foundation, even current-interest materials would be in short supply. Consequently, several efforts have been undertaken to add to the library endowment funds. The first Geology Foundation book sale of surplus materials took place in October and, including bulk sales to dealers, earned more than $6,000 for the endowment. More than 50 copies of the index to theses have also been sold, generating several hundred dollars. These small efforts improve endowment earnings by a few hundred dollars a year, and allow the library to make the best use of the surplus-materials resources that are available.

Technological change is bringing new information formats into the market, but funding, already inadequate to purchase books and journals, does not permit the exploration of these new tools. Students are thus unable to take advantage of the opportunity to investigate some exciting self-help library research aids. One urgent need is for a public-use workstation and several thousand dollars a year to support a variety of indexes on CD-ROM. Other optical and software products of great utility to library research will also be available soon, and resources are needed to support their acquisition.

With the downturn of the last several years, earth sciences library collections in Austin have almost all been downsizing, and this has meant much extra work as well as a unique opportunity for the Walter Library staff. Since last summer, several hundred cartons of donated publications have been reviewed and much material of historical interest has been added to the collection. Also, with the help of electronic mail networks, much surplus material has been provided to other research libraries in Texas and beyond, bringing on a new era in sharing resources. This is an incredibly time-consuming exercise, however, and adds to the critical crowding problem. Heavier workloads have also been created by the state hiring freeze, which cost the Walter Library one half-time clerk position. While lower enrollment in geology has reduced service pressure on the staff slightly, new demands on time and patience have added effort and frustration for both staff and users.

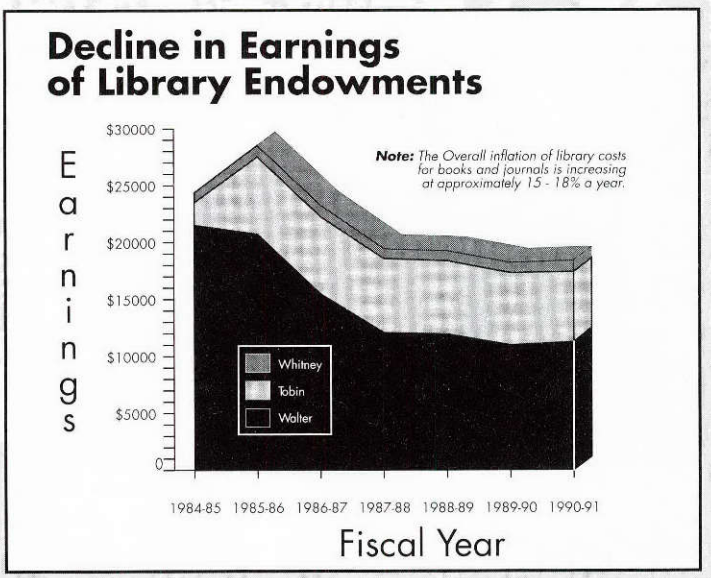
Small gains have been made, however. Resource sharing, as mentioned above, has made local resources in Austin area collections more rational and more consolidated. Two more guides to the Walter Library, on Texas soil surveys and on publications of the USGS, have been completed, and the second edition of the thesis index is in development, with improved indexing and updated entries.

In other news, a refurbished display case with fossils has joined the foyer display of minerals. The University is about to begin construction of a new warehouse facility at Balcones Research Center, which will ease the crowding problem in less than two years. Slowly, the journal collection is being reclassified to Library of Congress call numbers, improving the efficiency of the Walter Library collection.

Mary Pettengill, a volunteer, completed a pilot project to catalog U.S. state geologic maps from Alabama through Indiana, and the Walter Library is now seeking funding to complete the cataloging of about 30,000 geologic maps. A cooperative project with the map collection in the Perry Castaneda Library will eventually put all U.S. topographic maps into UTCAT, and make them available for automated circulation just like books.

In other staff news, Dennis Trombatore, Geology Librarian, published two papers in *Meridian*, a journal of the Maps and Geography Roundtable of the American Library Association, and contributed to the 1989 panel discussion The Future of Reference III, published in *College and Research Library News* in December. He also serves as a member of the Geoscience Information Society Best Paper Award Committee.

– Dennis Trombatore



VERTEBRATE PALEONTOLOGY AND RADIOCARBON LAB

The Vertebrate Paleontology program continues to be very active and productive. Wann Langston, in collaboration with a former graduate student, Glen Storrs, has just completed a paper on the plesiosaurs of Texas. This is the first comprehensive review of the remains of this group of marine reptiles from Mesozoic rocks of Texas. It will be published by the Texas Memorial Museum. Wann's project on bone histology of dinosaurs is progressing. He has recently completed the mount of the skeleton of a small dinosaur, *Tenontosaurus*, for the Dallas Museum of Natural History. Wann has given a number of lectures lately, including several on pterosaurs in Madrid, Spain.

Jack Wilson continues his work on the Tertiary vertebrates and biostratigraphy of the Big Bend region. He has recently been checking the locality data of material from this area against his field notes.

Tim Rowe's project on the late Cretaceous vertebrates from Trans-Pecos Texas continues to be productive. Detailed mapping by graduate student Ann Weil, working with Tim, has been able to tie the fossiliferous localities into the late Cretaceous section of the Aguja Formation in that region. This will facilitate the correlation of the vertebrates with similar-aged faunas in other parts of North America. The locality continues to produce a wide array of vertebrates including a dozen species of mammals, roughly a dozen lizard species, several frogs, turtles, crocodilians, pterosaurs, and several different dinosaurs.

Ernie Lundelius continues to work on Quaternary mammals from Texas and Australia. The project with Russell Graham of the Illinois State Museum, to set up an electronic data base of the Quaternary mammals of the last 40,000 years for North America, is going well. Preliminary runs on a limited data set indicate that the system will work. Ernie, in cooperation with Dr. Michael Collins of the Archaeological Research Laboratory, will be running an Earthwatch project at two caves on the Edwards Plateau during the summer of 1991. One part of the project is to extend the work of Rick Toomey at Hall's Cave. The other at a cave farther west is to determine if that cave has deposits of comparable age and completeness as those at Hall's Cave. If so, this would provide some information on the climatic zonation across this area in the past.

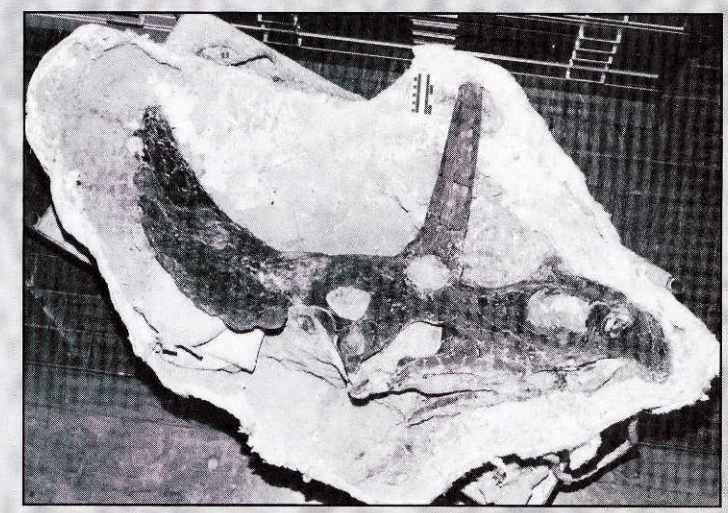
Vertebrate paleontology graduate students are working on a number of projects. Rick Toomey is finishing his PhD project on the Pleistocene–Holocene faunal sequence from a cave in Kerr County. The virtually continuous 13,000-year record has produced a detailed picture of the faunal and environmental changes that took place in that part of Texas. For the first time there is good evidence of a mid Holocene dry period in that part of the state. Gorden Bell is discovering interesting things about the mosasaurs, a group of large marine reptiles that underwent their entire evolutionary history during the late Cretaceous. He has found more evidence to support the suggestions of other scientists that these animals suffered from the "bends" as a result of deep diving. Chris Brochu is finding new things about the timing of the development of the alligator skeleton. This will aid in interpreting the skeletons of a number of fossil crocodilians. David Froehlich is still looking into horse ancestry.

New graduate students are initiating research projects. John Merck is starting a project on the reptile radiation and record of the Triassic, a critical time in the history of that group. Tim Thompson has just begun working on the role of the postcranial skeleton in the systematics of the extinct relatives of mammals, and postcranial functional morphology. Robert Barnett is working on the microfossils from the Aguja Formation. He has recovered some of the first pollen recorded from the Formation, which will help to correlate it with other Late Cretaceous deposits.

Staff from the Vertebrate Paleontology Laboratory collected the skull of the horned dinosaur *Chasmosaurus* in the Big Bend National Park in April. It was found by a group of students from the University of Chicago but, because the University of Texas has the collecting permit for the Park, the Vertebrate Paleontology Laboratory collected it. It is a very good specimen, the most complete one known from that area.

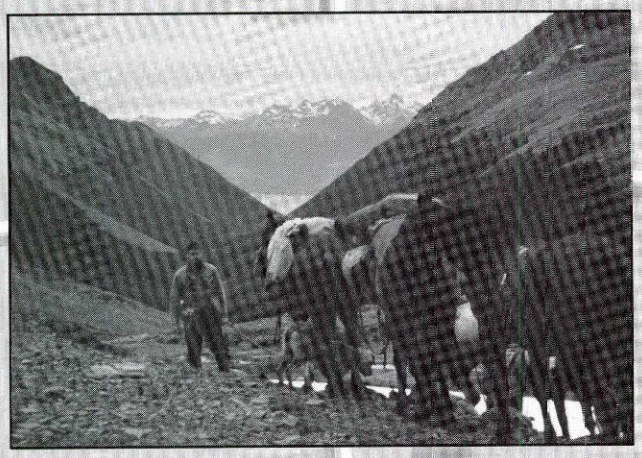
The Radiocarbon Laboratory has been busy producing dates for a wide variety of projects. One is work on dating sediments from fluvial deposits along streams in central Texas. An important result of this work is the demonstration that deposition and erosion along these streams has proceeded much faster than previously thought and that many of the terraces are much younger than we thought.

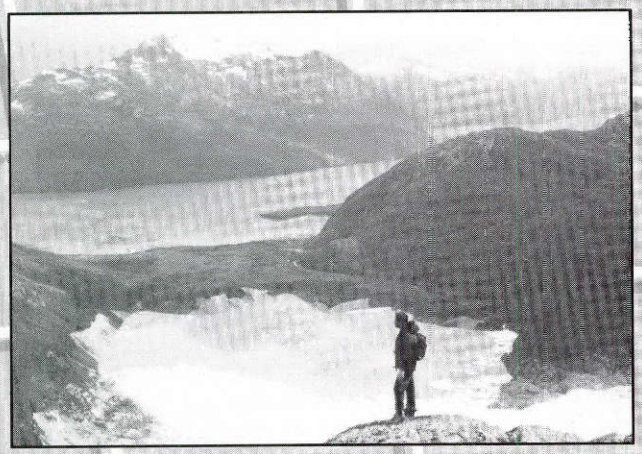
- by Ernest Lundelius Jr., Director

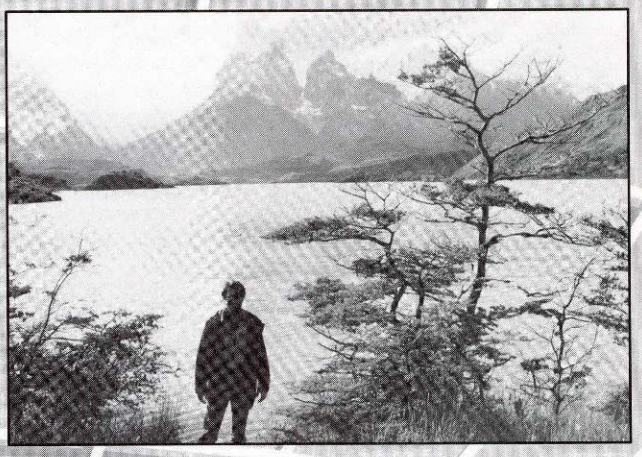


This skull, now being prepared at the Vertebrate Paleontology Laboratory, is the first complete skull of the dinosaur Chasmosaurus mariscalensis. This species was first described and named by UT geology alumnus Thomas Lehman.

STUDENT ACTIVITIES







STUDENT ACTIVITIES

OFFICERS

Undergraduate Student
Geological Society Officers
for the 1990-91 academic year
President ..... Jennifer Winkler
Vice President ..... Mitchell McDonald
Secretary ..... Laura Brock
Treasurer ..... Philip Teas
Faculty Sponsors William Carlson/Mark Cloos

AAPG Student Chapter Officers
for the 1990-91 academic year
President ..... Aura Guevara
Vice President ..... Patricia Bauer
Secretary ..... Annette Peloquin
Treasurer ..... Timothy Crump
Faculty Sponsor ..... Martin Lagoe

Graduate Student
Executive Committee Officers:

Fall 1990 Semester
President ..... Roger Lee
Vice President ..... Rich Weiland
Secretary ..... Tim Thompson
Treasurer ..... Sevin Bilir
Committee Members ..... Jeff Crabaugh
Andrew Quarles
Joe Reese

Spring 1991 Semester
President ..... Rich Weiland
Vice President ..... Tim Thompson
Secretary ..... Heidi Mertig
Treasurer ..... Alex Riter
Committee Members ..... Jeff Crabaugh
Mary Lynn Musgrove
Andrew Quarles

This year student activities within the Department included a variety of social events such as the new student party at Eastwoods Park, the spring picnic (postponed as usual due to rain), and the traditional Final Bedlam variety show. Once again Chris Swezey organized this year's Final Bedlam show which included *new* renditions of *"Old Man River"* by the Lee Potter Trio and *"The Battle Hymn of the Department"* performed by Bill (Woods) and the Geodes. A slide documentary titled *"Elvis is Everywhere"* confirmed recent sightings of the "King" in our very own Department of Geological Sciences. All this and much more was recorded on video tape and should soon be archived with last year's program.

Although class and laboratory work are the fundamentals of education, an old fashioned field trip is still the preferred method of study for most geology students. The advanced structure class was bravely led by Mark Cloos across Oklahoma's Ouachita Mountains during the weekend of the UT-OU football game, we won!? The structural and metamorphic petrology classes taught by Sharon Mosher and Bill Carlson respectively, pooled their resources for the ever popular Llano uplift field trip. The Permian Basin was over run by Bill Galloway's basin analysis class, Jay Banner and Lynton Land's carbonate depositional systems class, and Dick Buffler's seismic stratigraphy class simultaneously. Organized by the undergraduate class and aided by the Geology Foundation, Big Bend National Park was visited by a group of geology students during spring break. Bill Muehlberger volunteered to give informal lectures about the geology of the Big Bend area before and during the field trip, making it an even more valuable experience. The success of the Big Bend trip has inspired the department to propose a yearly spring break field trip to various places of geologic interest, open to any student, faculty, or staff.

ORGANIZATIONS

Day-to-day management and planning of student activities within the Department of Geological Sciences is accomplished by a number of individual volunteer and student-run organizations. Linda Davis and Chris Brochu served their fellow students as graduate student representative to department faculty meetings and the geological sciences graduate student representative to the university Council of Graduate Students (COGS) respectively. Through the Department's outreach program, former GSEC chairperson Roger Lee and other graduate student volunteers offer free presentations promoting the geological sciences at the local junior and senior high schools. In addition, thirty-five volunteer "czars" provide many student services such as maintaining student microscopes, projectors, advertising Technical Session speakers, and having donuts brought to the graduate student lounge on Monday mornings.

The American Association of Petroleum Geologists (AAPG) Student Chapter and Undergraduate Student Geological Society (USGS) continued to be active forces within the department by organizing student volunteers to work at the national AAPG meeting in Dallas this last fall, by organizing an occasional student-faculty-staff beer bust and the spring break field trip to Big Bend National Park.

The Graduate Student Executive Committee (GSEC) represents the geology graduate students to the department faculty, UT administration, and the Austin community. GSEC also takes an active role in recruiting new graduate students by scheduling interviews with professors, giving tours of departmental facilities, and by providing housing for potential new students

visiting campus. Within the department, GSEC tries to promote unity between the faculty, staff, graduate students, and undergraduate students by sponsoring new student parties, picnics, gatherings for students unable to go home for short holidays, and the Final Bedlam party.

As a result of this past year's efforts GSEC is now an officially recognized student organization at UT, although already well established within the department. Secondly, GSEC has planned, for the first time, a budget corresponding to a yearly schedule of departmental events. GSEC is working with Clark Wilson on plans to upgrade the fourth floor conference room, student lounge, student office space, computer and microscope facilities. GSEC believes these changes will enable us to operate more efficiently, to better provide for some of the graduate student needs, and to better represent the Department.

RESEARCH

Current student research in geological sciences at UT spans the earth from the Strait of Magellan to the equatorial glaciers of New Guinea and many places in between while offering a wide range of opportunities and experiences! At Tierra del Fuego, Chile, Keith Klepeis and Dickson Cunningham are mapping the structure within the southern Andean cordillera. For Keith, this meant acquiring a taste for "wild horse" on more than one occasion. While conducting structural studies in the New Guinea highlands PhD students Andrew Quarles and Tim McMahon converse with one of the most primitive cultures known.

In the geophysics group, John Garber is investigating Oligocene and Miocene genetic sequence stratigraphy in the North Sea. MS graduate Lila Beckley has modeled sedimentation and salt tectonics in the Gulf of Mexico. Stacey Tyburski used SEAMARC II data to investigate deformational mechanisms along strike-slip faults at the North American-Caribbean plate boundary. As participant of this spring's geophysical survey in the Drake Passage aboard the R/V *Maurice Ewing*, Stacey Tyburski and Sevin Bilir were inducted into the Realm of the Antarctic Circle (Club) and topped off the trip with a trek through Patagonia.

With environmental concerns abounding, UT is experiencing a new boom in hydrogeology. Dana White and Sevin Bilir are completing Master's theses on the Bemidji Toxic Waste Research Site, northern Minnesota. Gilbert Gabaldon has finished his Master's research characterizing the hydrogeology of the Presidio Bolson, Trans-Pecos Texas. New PhD candidate Katherine Romanak is investigating vapor-phase transport of organic contaminants through the unsaturated zone around the PANTEX nuclear facility near Amarillo, Texas.

Three PhD research projects are currently ongoing in aeolian processes. Karen Havholm is completing her study of the Page Sandstone in northwestern Arizona, while Mary Crabaugh is well into her research on the Navaho Sandstone in northwestern Utah. Although he spends much of his time "WOWing" (Waiting On Wind) while conducting field work in Southern California, PhD student Andy Frank is modeling aeolian dune evolution using field data in conjunction with wind tunnel experiments.

Graduating PhD candidate Steve Dworkin and spouse Karen Carter (PhD from UT, 1990) have accepted an assistant professorship and a lecturer position respectively at Baylor University, starting in fall 1991. Steve's and Karen's accomplishments are only two of the many success stories that stand behind the pride of graduate student research at UT. Unfortunately there is not enough space to cite all of the current student research in the Department but the few examples given above show the diversity of interests and vitality at the Department of Geological Sciences.

This past year has been busy for all of us going to class, writing proposals, and conducting field work. Time has passed quickly but is filled with memories from the new student party to Final Bedlam. Soon again it will be time to welcome a new group of students. I hope some of the student activities mentioned above sound familiar and spark fond memories of student life at UT!

— Richard J. Weiland, GSEC Chairperson

UNDERGRADUATE STUDENT ACTIVITIES

The USGS/AAPG is a combined organization which represents all undergraduate students enrolled in Geological Sciences.

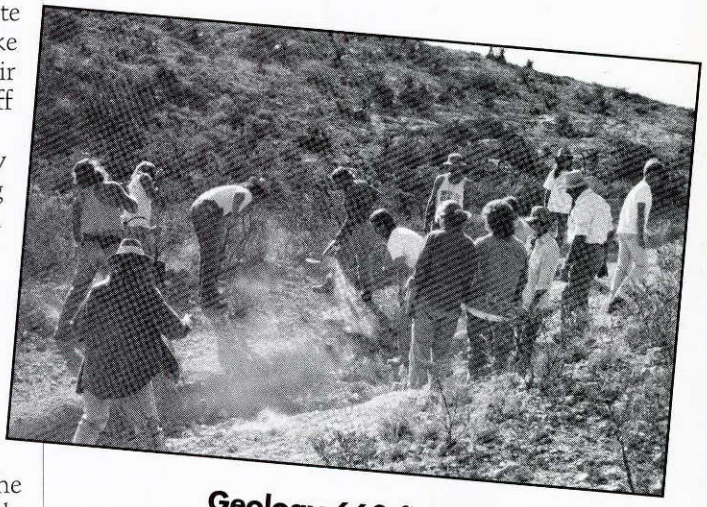
Our main goal in the organization is to promote better relations between faculty, staff and students, which includes undergraduates as well as graduates.

We sponsor fall and spring field trips to further education in the field. The USGS/AAPG has sponsored field trips over spring break; two of the most recent include Mexico-1990 and Big Bend National Park-1991.

The USGS/AAPG offers free tutoring to all undergraduates enrolled in geological science classes, which is made possible by the Geology Foundation.

The organization interacts with local and national geologic organizations (ie, AAPG and AGMS) through volunteer work, which helps to promote student-professional relations.

Weekly meetings are held, and once a month the USGS/AAPG provides guest speakers from the department to lecture on current research topics.



Geology 660 field camp students receive impromptu lessons in civil engineering as they build a road to their field site.

ENROLLMENT

Graduate enrollment in the Department is at 172 students, including 44 foreign students, two U.S. minority students. Undergraduate enrollment in the Department was at 117 students in the spring semester, with 26 in the BA program, 66 in the BS general geology, and 25 in the BS geophysics and hydrogeology curriculum. In terms of student body, UT Geological Sciences appears to be the second largest in the country in graduate student enrollment (next to MIT) and the largest in undergraduate enrollment.

RESEARCH ASSISTANTS

Summer 1990 through Spring 1991

Department

Awwiller, David N.
Bell, Gordon L.
Bilir, Sevin I.
Boardman, Sabine K.
Brochu, Christopher A.
Buehring, Robert L.
Cardimona, Steven J.
Crabaugh, Jeff P.
Crabaugh, Mary C.
Davis, Linda L.
Ding, Xiao-Yang
Dworkin, Stephen
Fu, Li
Frank, Andrew J.
Genuise, John J.
Graebner, Mark J.
Hibbs, Barry J.
Hiebert, Franz K.
Johnson, Cambria D.
Kirschenmann, Kyle L.
Kuehne, John W.
Lee, Tung-Yi
Lynch, F. Leo
McKenna, Thomas E.
McMahon, Timothy P.
Moore, James H.
Musgrove, MaryLynn
Nam, Young Sun
Oh, Jinyong
Quarles, Andrew I.
Reese, Joseph P.
Romanak, Katherine D.
Rubin, Jeffrey N.
Sapiie, Benyamin
Simmons, James L.
Squires, Livia J.
Stapleton, Colleen P.
Starcher, Michael A.
Turbeville, Bruce N.
Walters, Robert D.
Wang, David
Weil, Anne I.
Weiland, Richard J.
Williams, Thomas A.
Xue, Liangqing
Yang, Wan

Bureau of Economic Geology

Ahamad, Areef
Baghai, Nina
Barton, Mark D.
Baumgartner, Scott D.
Beike, Peter
Black, Jeffrey W.
Bluem, Martina
Bodwadkar, Suhas V.
Brewton, James G.
Buehring, Robert L.
Carter, Karen
Castro, Julian
Chang, Yao-Chang
Czebieniak, Andrew
Darling, Bruce
Dickerson, Patricia W.
Ferris, Malcolm
Fitchen, William M.
Gabaldon, Gilbert
Ge, Hongxing
Grote, David
Guo, Sy-Jye
Hawkins, Garth
Henry, Allison
Hickson, Thomas
Hill, Randall
Hsieh, Ting-Ya
Hsu, Fung-Chi
Kirschenmann, Kyle L.
Klimchuk, Glenn A.
Kopf, Jennifer
Koran, David
Lin, Shing-Tzong
Lugo Lobo, Jairo
Marin, Barbara A.
McKenna, Thomas
McMurry, Ronald
Medlock, Patrick L.
Mishra, Anil
Moffett, Laura L.
Newby, Edward
Oetting, Gregg C.
Page, Richard
Rainey, Steven
Reistroffer, James R.
Seng, Chia-Ray
Single, Robert S.
Starcher, Michael
Sterrenberg, Beate
Stricklin, Claude
Tremblay, Thomas
Tsai, Heng
Waitt, Dumon
Walter, Timothy
Waner, Gregory
Wickham, Matthew K.
Xue, Liangqing
Ye, Quicheng
Yu, Chih-Peng
Zeng, Hongliu
Zhou, Naijiang

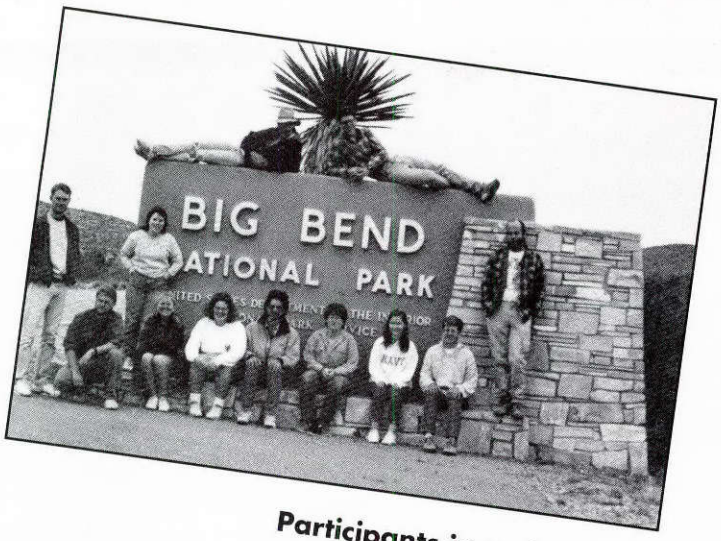
Institute for Geophysics

Beckley, Lila M.
Bilir, Sevin
Cardimona, Steven
Cunningham, William
Denny, Walter M.
Feng, Jian-Jua
Fiduk, Carl
Goszewski, Cynthia
Hoar, Timothy
Jervais, Michael
Kessinger, Walter P.
Klepeis, Keith A.
Lee, Tung-Yi
Marton, Gyorgy
Mueller, Ralph
Nagihara, Seiichi
Oh, Jinyong
Starcher, Michael
Tanis, Mehmet
Tyburski, Stacey A.
Wood, Warren T.

TEACHING ASSISTANTS

Summer 1990 through Spring 1991

Barnett, Robert C.
Baumgartner, Scott D.
Beam, Eric C.
Black, Jeffrey W.
Boettcher, Stefan S.
Borg, Lars E.
Buehring, Robert L.
Cunningham, William
Ding, Xiao-Yang
Ferris, Malcolm
Gabaldon, Gilbert
Hua, Hsiao-Peng
Ketcham, Richard A.
Klimchuk, Glenn A.
Longtine, Mark W.
Lynch, F. Leo
Marin, Barbara A.
Mertig, Heidi
Molineux, Margaret A.
Musgrove, MaryLynn
Nam, Young Sun
Oh, Jinyong
Olson, Daniel R.
Paetzold, Stephan U.
Parsons, Tina P.
Pitcher, Jacob L.
Pittman, Jeffrey G.
Potter, Lee S.
Quarles, Andrew I.
Rasbury, Emma T.
Reed, Robert M.
Reese, Joseph P.
Riter, Alex C.
Roback, Robert C.
Rougvie, James R.
Starcher, Michael A.
Sumrall, Colin D.
Swezey, Christopher S.
Thompson, Timothy E.
Toomey, Richard S.
Turbeville, Bruce N.
Van Broekhoven, Norman
White, Leslie
Yang, Wan
Zellers, Sarah D.



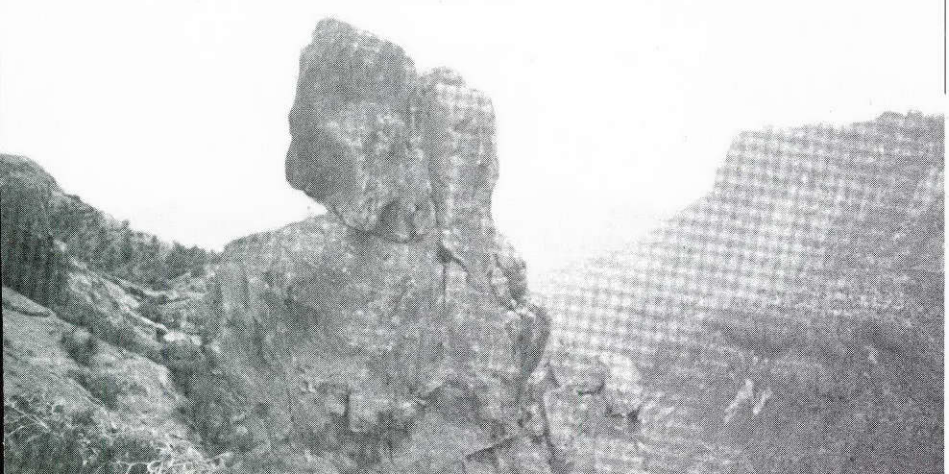
Participants in spring break field trip pose outside Big Bend National Park.

GEOLOGY... BIG BEND STYLE

The USGS/AAPG sponsored a field trip to Big Bend National Park over spring break 1991. This was an opportunity to promote interaction between undergraduates, graduates and faculty. This field trip was very educational and entertaining.

The USGS/AAPG would like to thank the Geology Foundation for a grant which covered gas and vehicle costs, and the Department of Geological Sciences for the use of department vehicles and camping equipment.

A very special thanks to Dr. Muehlberger and Dr. Sharp for meeting us in Big Bend National Park to show us the local geology.



UNDERGRADUATE DEGREES

Bachelor of Arts
August 1990 (1)

Hamilton, Teri L.

Bachelor of Sciences
August 1990 (6)

Fisher, Peter B.
Flores, Jose, Jr.
Gonzalez, Daniel M.
Schulz, Robert P.
Wilcox, John A.
Wild, April L.

Bachelor of Arts
December 1990 (1)

Blubaugh, Paul E.

Bachelor of Sciences
December 1990 (7)

Barnard, William Jr.
Bowling, Dewey Jr.
Debus, Michelle M.
Edelen, Ron S.
Estrada, Carlos A.
Henderson, Steven K.
Hudson, John S.

Bachelor of Arts
May 1991 (2)

Dealing, Diana S.
Russell, Carolyn A.

Bachelor of Science
May 1991 (6)

Baag, Namho
Browning, Lauren B.
Crump, Timothy E.
Gaizutis, Rimas J.
Ryder, Dan M.
Wilson, Matthew G.

GRADUATE DEGREES

Master of Arts

December 1990 (8)

Alexander, Kenneth B.
BS, Geology, 1988, Virginia Polytechnic Institute and State University
Correlation of Structural Lineaments and Fracture Traces to Water-Well Yields in the Edwards Aquifer.
Supervisor: Philip C. Bennett
Committee Members: John M. Sharp, Raymond M. Slade

Carpenter, Paul S.
BS, Geological Sciences, 1986, The University of Texas at Austin
Petrology, Structure, and Tectonic Significance of the Aldrich Mountains Serpentinite-Matrix Melange, Northeastern Oregon.
Supervisor: Nicholas Walker
Committee Members: Mark Cloos, Sharon Mosher

Eustice, Rachel A.
BS, Geology, 1986, Ohio State University
Petrography and Geochemistry of the Jurassic Louann and Haynesville Formations, Clarke County, Southwestern Alabama.
Supervisor: Lynton S. Land
Committee Members: Jay L. Banner, John M. Sharp

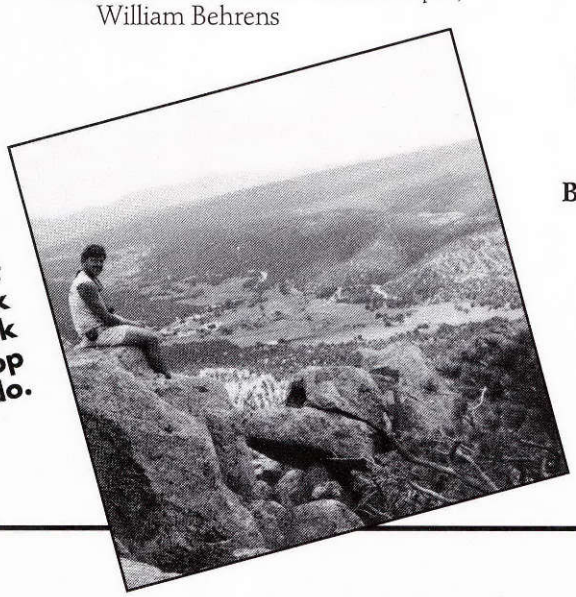
Fuqua, David A.
BS, Geological Sciences, 1987, The University of Texas at Austin
Seismic Structural Analysis of the Perdido Fold Belt, Alaminos Canyon Area, Northwestern Gulf of Mexico.
Supervisor: Clark R. Wilson
Committee Members: Mark Helper, William Behrens

Lamar, Michael E.
BS, Geology, 1987, Texas A&M University
Geology of Pliocene Evaporitic Rocks, Enriquillo Valley, Dominican Republic.
Supervisor: Earle F. McBride
Committee Members: Paul Mann, William E. Galloway

Maguregui, Jesus A.
Geologist, Geology, 1982, Universidad Central de Venezuela
Evolution and Reservoir Rock Properties of Middle Eocene Tide-Dominated Deltaic Sandstones in Eastern Lagunillas Field, Maracaibo Basin, Venezuela.
Supervisor: William L. Fisher, Noel Tyler
Committee Members: William E. Galloway

Matherne, Carla M.
BS, Geological Sciences, 1986, The University of Texas at Austin
Fracture and Permeability Patterns of the Santana Tuff, Trans-Pecos Texas.
Supervisor: John M. Sharp
Committee Members: Dale Klein, Larry Lake

Pavlicek, Dianne J.
BS, Geological Sciences, 1986, The University of Texas at Austin
Petrography and Geochemistry of the Upper Triassic Portero Limestone, Liguria Italy.
Supervisor: Robert L. Folk, Lynton S. Land
Committee Members: John M. Sharp, Philip Bennett



Geology 660 field camp teaching assistant Bob Roback takes a break at a scenic outcrop in Colorado.

Doctor of Philosophy

December 1990 (11)

Bernitsas, Nicholaos
BS, Geology, 1982, University of Athens, Greece
MS, Geology, 1985, Ohio University
Traveltime Inversion, Modeling, and Interpretation of Fault Surface Reflections.
Supervisor: Milo M. Backus
Committee Members: Paul Stoffa, Clark R. Wilson, Earl W. Behrens, Jan D. Garmany

Carter, Karen E.
B.A., Geology, 1982, Albion College
MA, Geological Sciences, 1985,
The University of Texas at Austin
Construction and Collapse of an Orogen: Tectonic, Strain and Fluid History of the Tuscan Nappe, Northern Apennines, Italy.
Supervisor: Sharon Mosher
Committee Members: Robert L. Folk, Ian W.D. Dalziel, Martin P. Jackson, Roy Kligfield

Coleman, Janet M
BS, Geology, 1973,
Louisiana State University
MS, Geology, 1978, University of Houston
Depositional Systems and Tectonic/ Eustatic History of the Lower Oligocene Vicksburg Episode of the Northern Gulf Coast.
Supervisor: William E. Galloway
Committee Members: Leonard F. Brown Jr., Richard T. Buffler, Robert A. Morton, Peter R. Thompson

Corrigan, Jeffrey D.
BS, Geology, 1984,
The University of Notre Dame
MA, Geological Sciences, 1986,
The University of Texas at Austin
On Apatite Fission-Track Analysis and Heat Transfer Processes in the Upper Crust.
Supervisor: Mark Cloos
Committee Members: David D. Blackwell, Earle F. McBride, John M. Sharp, Clark R. Wilson, Kevin D. Crowley

Finn, Christopher J.
BS, Geology, 1983, University of Miami
MA, Geological Sciences, 1986,
The University of Texas at Austin
Seismic Traveltime Inversion in Three-Dimensional Heterogeneous Media.
Supervisor: Milo M. Backus
Committee Members: Paul L. Stoffa, Clark R. Wilson, Jan Garmany, Keith Wrolstad

Gordon, Mark B.
B.A., Geology, 1984, Carleton College
Strike-Slip Faulting and Basin Formation at the Guayape Fault-Valle de Catacamas Intersection, Honduras, Central America.
Supervisor: William R. Muehlberger
Committee Members: Mark Cloos, Nicholas Walker, Wulf Gose, Richard C. Finch, William P. Mann

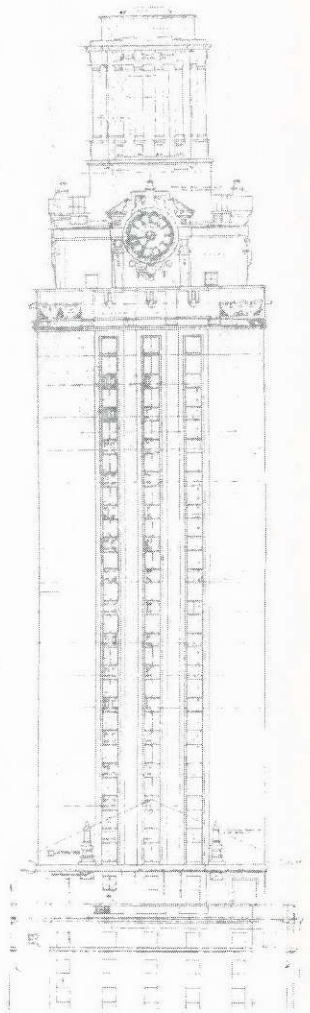
Gutierrez, Roberto
BS, Geological Sciences, 1981,
The University of Texas at Austin
Seasonal Air and Water Mass Redistribution and Its Effect on Satellite and Polar Motion.
Supervisor: Clark R. Wilson
Committee Members: Mark Cloos, Douglas Smith, Bob E. Schutz, David T. Sandwell

Mack, Lawrence E.
BS, Geology, 1977,
University of California-Santa Cruz
MA, Geological Sciences, 1984,
The University of Texas at Austin
Sr as a Tracer of Diagenesis in Cenozoic Sediments of the Northern Gulf of Mexico Sedimentary Basin.
Supervisor: Lynton S. Land, Leon E. Long
Committee Members: Earle F. McBride, Shirley P. Dutton, James R. Boles

Peres, Wagner E.
BS, Geology, 1977,
Universidade de Brasilia, Brazil
Seismic-Stratigraphic Study of the Oligocene-Miocene Shelf-Fed Turbidite Systems of the Campos Basin, Brazil.
Supervisor: William E. Galloway
Committee Members: William L. Fisher, Richard T. Buffler, Luis A.P. Gamboa, Leonard F. Brown, Jr., Earle F. McBride

Turbeville, Bruce N.
BS, Geology, 1981,
The University of Texas at Arlington
MS, Geology, 1986,
The University of Texas at Arlington
The Evolution of a Continental Alkaline Magmatic System: The Latera Caldera, Lazlo, Central Italy.
Supervisor: Daniel S. Barker
Committee Members: Leon E. Long, Douglas Smith, John A. Wolff, Johan C. Varekamp

Wang, David Y.
BS, Geology, 1978,
National Taiwan University
MS, Geology, 1983,
National Taiwan University
Analysis of Factors Controlling the Resolution of P-Wave Veolocity and Density in Linearized Least-Squares Inversion.
Supervisor: Milo M. Backus
Committee Members: Stephen P. Grand, Clark R. Wilson, Jan D. Garmany, Charles A. Rendleman



GRADUATE DEGREES

Master of Arts

May 1991 (9)

Azpiritxaga, Izaskun
BS, Geology, 1979,
Universidad Central de Venezuela
Carbonate Depositional Styles Controlled by Siliciclastic Influx and Relative Sea-Level Changes, Lower Cretaceous, Central Lake Maracaibo, Venezuela.
Supervisor: Amos Salvador
Committee Members: Lynton S. Land, Don G. Bebout

Bittenbender, Peter E.
BS, Geology, 1986,
University of Wyoming
Mid-Cretaceous Orogenesis in the Huckleberry Mountain Area, North Cascades, Washington.
Supervisor: Nicholas Walker
Committee Members: William D. Carlson, Sharon Mosher

Genuise, John J.
BS, Geology, 1988,
Michigan State University
Petrography and Geochemistry of Authigenic Chlorite from Cretaceous and Oligocene Sandstones of the Texas/Louisiana Gulf Coast.
Supervisor: Lynton S. Land and Earle F. McBride
Committee Members: Sally Sutton

Kessinger, Walter P.
BS, Geology, 1986,
Louisiana State University
Three-Dimensional Seismic Imaging of the Costa Rica Accretionary Margin.
Supervisor: Paul L. Stoffa
Committee Members: Stephen P. Grand, Thomas H. Shipley

Longtine, Mark W.
BS, Geology, 1986,
University of Wisconsin-Madison
Mid-To Late Cretaceous Structural, Metamorphic, and Magmatic Evolution of the Sloan Peak Area, North Cascades, Washington.
Supervisor: Nicholas Walker
Committee Members: William D. Carlson, Sharon Mosher

Pinto, Jonny G.
B.A., Geology, 1984,
University of Colorado-Boulder
Sequence Stratigraphic Interpretation of Upper Paleocene–Middle Eocene Rocks: Bloque III, Lake Maracaibo, Venezuela.
Supervisor: Richard T. Buffler
Committee Members: William E. Galloway, Noel Tyler

Reistroffer, James R.
BS, Geology, 1982,
The University of Texas at Austin
Depositional Environments and Delineation of Intrareservoir Compartments within the Frio Zone 21-B Reservoir, Tijerina-Canales-Blucher Field, South Texas.
Supervisor: William E. Galloway and Noel Tyler
Committee Members: John M. Sharp

Swezey, Christopher S.
BS, Geology, 1987, Duke University
Description and Interpretation of the Jurassic J-2 Unconformity of the Western Interior (U.S.A.).
Supervisor: Gary Kocurek
Committee Members: Earle F. McBride, William R. Muehlberger

White, Dana L.
BS, Ch.E., 1986, Texas A&M University
Point Dilution Method Determination of Groundwater Velocities at the Bemidji Research Site.
Supervisor: Philip C. Bennett
Committee Members: John M. Sharp, Randall J. Charbeneau

Doctor of Philosophy

May 1991 (9)

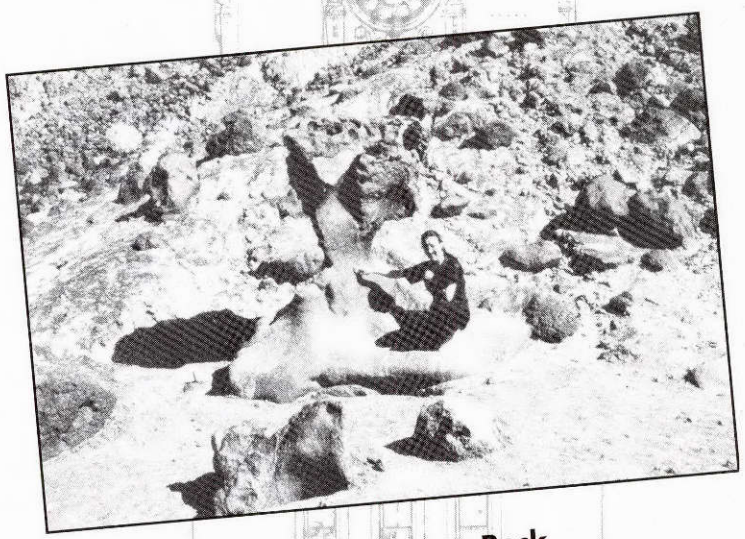
Graebner, Mark J.
BS, Physics/Mathematics, 1977,
Southern Methodist University
MS, Geophysics, 1982,
Colorado School of Mines
Model Parameter Estimation in a Transversely Isotropic Solid.
Supervisor: Milo B. Backus
Committee Members: Clark R. Wilson, Paul L. Stoffa, Jand D. Garmany, Arthur B. Weglein

Hennings, Peter H.
BS, Geology, 1983, TexasA&M University,
MS, Geology, 1986, Texas A&M University
Structural Studies of the
Chihuahua Tectonic Belt.
Supervisor: William R. Muehlberger
Committee Members: Mark P. Cloos,
Amos Salvador, David V. Wiltschko,
Walter T. Haenggi

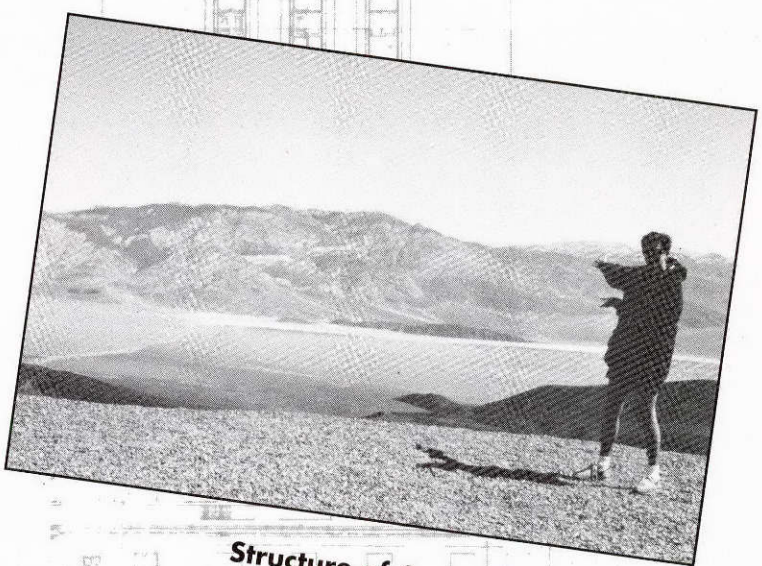
Paine, Jeffrey G.
BS, Geology, 1980,
The University of Texas at Austin
MS, Geology, 1982,
University of Washington
Late Quaternary Depositional Units,
Sea Level, and Vertical Movement
along the Central Texas Coast.
Supervisor: Clark R. Wilson
and Robert A. Morton
Committee Members: Leon E. Long,
John M. Sharp, Jr., Leonard F. Brown, Jr.

Sams, Richard H.
B.A., Geology, 1957, Emory University
MA, Geology, 1964,
University of California/Los Angeles
Stratigraphy of Marine Transgressive
Boundaries, with the Gulf Coast
Eocene Carrizo-Reklaw as an Example.
Supervisor: William L. Fisher
Committee Members: William E. Galloway,
Amos Salvador, Stewart Chuber,
Edward C. Roy, Martin B. Lagoe

Seni, Steven J.
BS, Geology, 1974,
The University of Texas at Austin
MA, Geology, 1978,
The University of Texas at Austin
Evolution of Stocks and Massifs
from Burial of Salt Sheets on the
Continental Slope, Northern
Gulf of Mexico.
Supervisor: William E. Galloway
Committee Members: Richard T. Buffler,
William R. Muehlberger,
Martin P. Jackson, Albert W. Bally



Linda Davis studies Mushroom Rock (a basalt column carved by wind-blown sand) in Death Valley, California.



Structure of Argus Range looking across Panamint Valley, California, Denise Apperson in foreground.

FIELD CAMP 1991

RAIN, SLEET, SNOW, LIGHTNING, BLAZING HEAT, biting gnats, and thorny "vegetables" were all part of Field Camp (Geo 660) this year. The group started in West Texas with a brief tour of the Marathon Basin, followed by a mapping project in equivalent rocks within the Solitario Uplift. Students learned to build roads, avoid lechuguilla, and survive desert heat as well as to map novaculite and turbidites in a fold and thrust belt. The group stayed at the new Big Bend Ranch which proved to be an excellent place for a field camp. The group then went to the Guadalupe and Sacramento Mountains to study reefs, bioherms, and clastic sediments.

The next two weeks were spent in the mountains between Durango and Gunnison, Colorado, and the group enjoyed camping the second week in the mountains at Molas Lake and then south of Gunnison. Students mapped Paleozoic sediments and structures associated with the formation of the ancestral rocks in the San Juan Mountains and investigated the timing of granite intrusion relative to tectonism near Gunnison. The group also visited the Black Canyon of the Gunnison. Heavy rains, sleet, snow, and spectacular lightning storms made this part of the trip memorable.

The last part of the camp started with a tour of the Valles caldera, the Rio Grande rift along the Taos Plateau, and the Harding pegmatite mine. Then, the students learned to map and interpret multiply deformed, metamorphic rocks in the Picuris Mountains. For the first time in the history of Geo 660, the canyons were muddy and had standing water in places. Fortunately the weather was sunny, and afternoon breezes made the gnats and heat bearable.

Twenty-one students, including four graduate students, went on the trip this year. This small number once again proved to be ideal for teaching in the field. Staff members included Lynton Land, Mark Helper, Earle McBride, Sharon Mosher, Bill Muehlberger, Jim Sprinkle, and Nick Walker. Most of the staff came for one to two weeks to run short projects in their area of expertise, but a couple stayed longer to provide consistency. The group was enthusiastic, very pleasant, and always looking out for each other, all of which made the trip very enjoyable for all.

— Sharon Mosher

Survivors of Geology 660 field camp, 1991.

UNDERGRADUATE SCHOLARSHIPS & FELLOWSHIPS

1990 - 91

American Ground Water Trust Designated Scholarship
- Karen Bergeron 1990-91

Amoco Foundation, Inc.
- Trinidad Botello 1990-91

Bloomer Fund for Motivated Students
- Edward Angle Fall 1990
- Doug Bowling Fall 1990
- Michelle Mallien Fall 1990
- Ray Newby Spring 1991
- Annette Peloquin Spring 1991
- Wayne Ritchieson Spring 1991
- Lisa Sparlin Spring 1991
- Cheri Teisberg Fall 1990
- Doris Tischler Spring 1991
- Kirby Wynn Spring 1991

John F. Bookout Jr. and Carolyn Bookout Scholarship
- Mitchell E. McDonald Jr. 1990-91

W. Kenley Clark Memorial Endowed Presidential Scholarship
- Carlotta Chernoff 1990-91

R. H. Cuyler Endowed Presidential Scholarship
- Jeff Davis 1990-91
- Jim Gharib 1990-91
- Scott Rubin 1990-91

Exxon Scholarship
- Louisa Eclarinal Fall 1990

Guy E. Green Endowed Presidential Scholarship
- Sneha Dholakia 1990-91
- Stuart Johnson 1990-91
- Matthew Wilson 1990-91

Karl F. Hagemeier Jr. Endowed Presidential Scholarship
- Karen Bergeron

Marathon Scholarship
- Bradley Lambert Summer 1991
- Philip Teas Summer 1991

John H. and Lujza P. McCammon Scholarship
- Stephen Leslie Spring 1991
- Annette Peloquin Fall 1990

Mr. and Mrs. L. F. McCollum Scholarship
- Ted Angle Spring 1991
- Kevin Reid Fall 1990

Frank W. Michaux Scholarship
- Diana Dealing Spring 1991
- Stefan Schuster Fall 1990
- Lisa Sparlin Fall 1990
- Rakan Zahawi Fall 1990

Carroll C. Miller Endowed Presidential Scholarship
- Jennifer Bishop 1990-91
- Philip Teas 1990-91

Mobil Scholarship
- Krishna Bhujang Fall 1990
- Jesus Chavez Spring 1991
- Louisa Eclarinal Fall 1990

Pennzoil Company Scholarship
- Michael Harren Spring 1991
- Karen Kennedy Fall 1990
- Stephen Leslie Spring 1991

Petrography Award
- Todd J. Muelhoefer Spring 1991

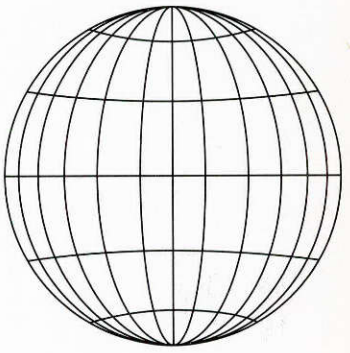
Phillips Petroleum Company Scholarship
- Laura Brock Spring 1991
- Carlotta Chernoff Spring 1991
- Karen Kennedy Spring 1991
- Jennifer Winkler Spring 1991

Louis and Elizabeth Scherk Geology Scholarship
- Timothy Crump Fall 1990
- Keith Ging Spring 1991
- Scott Hudson Fall 1990
- Cynthia Mauk Spring 1991
- Thomas Marquardt Spring 1991
- Kevin Reid Spring 1991
- Randy Remington Spring 1991

F. W. Simonds Endowed Presidential Scholarship
- Dan Ryder 1990-91

Udden Memorial Scholarship Fund
- Stefan Schuster Summer 1991
- William Witbeck Summer 1991

Union Oil Company of California
- Will Barnard Fall 1990
- Darcy Brooks Spring 1991
- Sonya Jones Spring 1991
- Temple McKinnon Summer 1991
- Ray Newby Summer 1991



Unrestricted Fund

Daniel M. Gonzalez	Fall 1990
Gavyn Thomas	1990-91

Glenn and Martha Vargas Gemological Scholarship

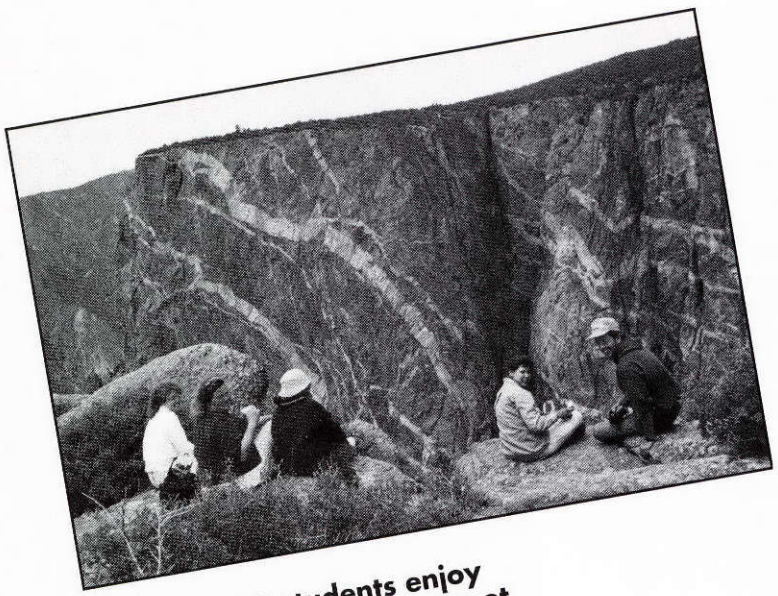
Doug Bowling	Fall 1990
Diana Dealing	Spring 1991

F. L. Whitney Endowed Presidential Scholarship

Patty Bauer	1990-91
Hillary Tulley	1990-91

Charles E. Yager Undergraduate Field Scholarship

Donald Bowen	Summer 1991
Cynthia Lee	Summer 1991
Annette Peloquin	Summer 1991
Todd Muelhoefer	Summer 1991



Geology 660 students enjoy a lunch break at a scenic spot in Colorado.

GRADUATE SCHOLARSHIPS & FELLOWSHIPS

1990 - 91

Amoco Foundation, Inc.

Leslie A. White	1990-91
Steve Cardimona	1990-91

Amoco Teaching Assistant Award

Rickard Toomey	Spring 1991
Sarah Zellers	Spring 1991

ARCO Scholarship in Geology

Karen Havholm	Fall 1990

Laura Thomson Barrow Graduate Fellowship

Sevin Belir	Fall 1990

Leonidas T. Barrow Centennial Chair Grant

Dick Sams	Fall 1990

Wayne F. Bowman Endowed Presidential Scholarship

Robert Buehring	1990-91
Gilbert Gabaldon	1990-91
John Huelsenbeck	1990-91

Dave P. Carlton Teaching Fellowship in Geology Grant

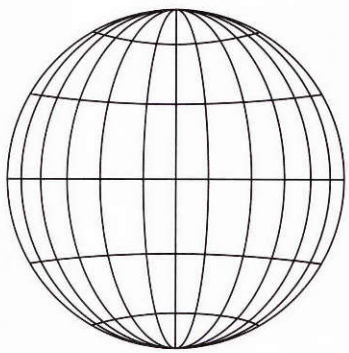
Gerardo Aguirre-Diaz	Fall 1990
Lee Potter	Fall 1990
Bruce Turbeville	Fall 1990

Chevron Fellowship

Linda L. Davis	Spring 1991

Ronald K. DeFord Field Scholarship Fund

Eric Beam	Summer 1991
Stefan Boettcher	Summer 1991
Chris Brochu	Summer 1991
Gilbert Gabaldon	Spring 1991
Glenn Klimchuk	Summer 1991
Khib Kugler	Summer 1991
Barbara Marin	Summer 1991
Gabriela Mora	Fall 1990
Mary Lynn Musgrove	Summer 1991
Troy Rasbury	Summer 1991
Joe Reese	Summer 1991
Alex Riter	Summer 1991
Colin Sumrall	Summer 1991



Michael Bruce Duchin Memorial Endowed Presidential Scholarship

Colleen Stapleton	1990-91

John E. "Brick" Elliott Academic Activities Fund

John Garber	Fall 1990
Mark Gordon	Fall 1990
Peter Hennings	Fall 1990
Xijin Liu	Summer 1991
Wagner Peres	Fall 1990
Ben Sloan	Summer 1991
Liangqing Xue	Summer 1991
Qiucheng Ye	Fall 1990

Hogg-Cullinan Scholarship

Nestor Phillips	Spring 1991

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

Robert Roback	Fall 1990

Howard R. Lowe Fund in Vertebrate Paleontology

Rickard Toomey	Spring 1991
Ann Weil	Fall 1990

J. Hoover Mackin Memorial Scholarship

Barbara Mahler	1990-91

Mobil Oil Scholarship

Daniel Lizarralde	1990-91

Owen-Coates Fund Grant

Barry Hibbs	Summer 1991

Bill R. Payne Centennial Teaching Fellowship Grant

Rafael de Sa	Fall 1990
Gordon Bell	Fall 1990

Pennzoil & Pogo Producing Companies/ William E. Gipson Scholarship

James Moore	1990-91

Petrography Award

James R. Rougvie	Spring 1991

Phillips Petroleum Fellowship

Cynthia P. Goszewski	1990-91

Shell Oil Company Fund

Kenneth B. Alexander	Fall 1990
Eric Beam	Fall 1990
Gordon Bell	Fall 1990
Chris Caran	Spring 1991
Janet Cushing	Spring 1991
Walter Denny	Fall 1990
David Dukat	Spring 1991
Steve Dworkin	Fall 1990
Carl Fiduk	Spring 1991
Franz Hiebert	Fall 1990
Tom Hoak	Fall 1990
John Huelsenbeck	Spring 1991
Mary Johns	Fall 1990
Ronald Johns	Fall 1990
Brent Johnson	Spring 1991
Paul J. Noble	Fall 1990
Paul Nyffenegger	Spring 1991
Jeff Paine	Fall 1990
Lee Potter	Fall 1990
Philip Rowell	Fall 1990
Colin Sumrall	Fall 1990
Tim Thompson	Fall 1990
Rickard Toomey	Fall 1990
Stacey Tyburski	Fall 1990
Wan Yang	Fall 1990

H. Tod Sutherland Memorial Scholarship

Sevin Bilir	Summer 1991
Gilbert Gabaldon	Summer 1991

Technical Sessions Best Speaker Award

Jeffrey Paine	Fall 1990
Harris Cander	Spring 1991

Texaco Scholarship Fund

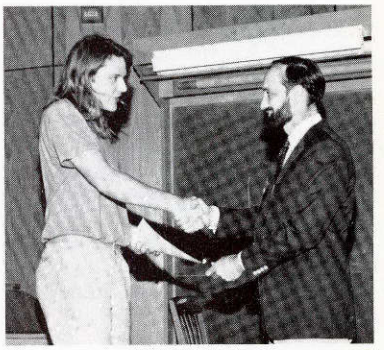
Tom Hoak	1990-91

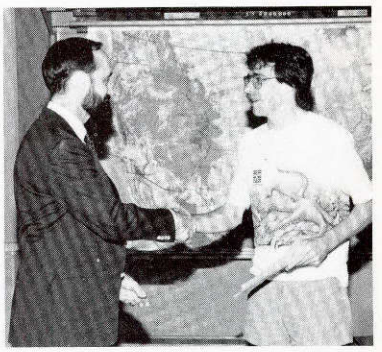
Udden Memorial Scholarship Fund

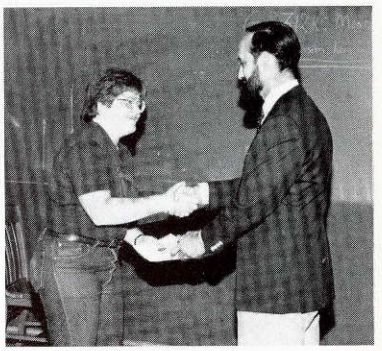
Tim Thompson	Summer 1991

Arno P. (Dutch) Wendler Professional Development Fund Grant

Gerardo Aguirre-Diaz	Spring 1991
Guillaume Cambois	Fall 1990
Steve Cardimona	Fall 1990
Dickson Cunningham	Fall 1990
Bruce Darling	Summer 1991
Linda Davis	Summer 1991
Stephen Dworkin	Summer 1991
Gilbert Gabaldon	Fall 1990
John Genuise	Fall 1990
Karen Havholm	Spring 1991
Barry Hibbs	Fall 1990
Paula Noble	Spring 1991
Lee Potter	Spring 1991
Joe Reese	Spring 1991
Lin Shing-Tzong	Spring 1991
Stacey Tiburski	Fall 1990
Rickard Toomey	Spring 1991
Liangquing Xue	Fall 1990



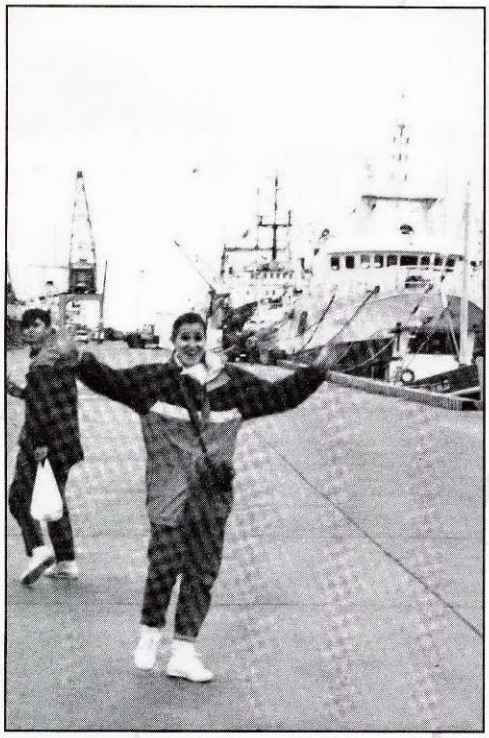


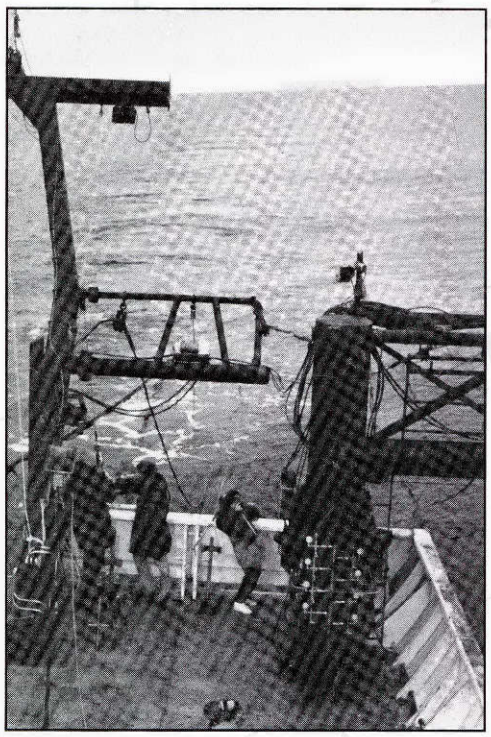


Photos to right:

Clark Wilson congratulates (from top to bottom) 1) James Rougvie, Petrography Award winner and 2) Rick Toomey and 3)Sally Zellers, Amoco Teaching Assistant Award winners.

FROM THE LOG BOOKS OF GEOLOGICAL SCIENCES DEPARTMENT GRADUATE STUDENTS ON BOARD THE R/V EWING



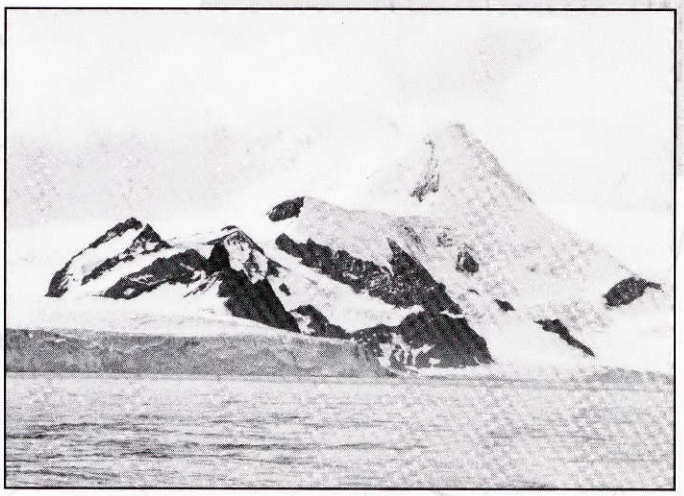


Some thoughts

After a few days of bad weather off the coast of South America and in the Drake Passage we became aware of how quickly the weather can change the seas from a shimmering flat sea under dead calm conditions to a wild and powerful sea with swells higher than the ship we sail on. Our home is but a small speck in this vast and wild seascape. The Antarctic is full of energy, one can feel it flow into one's body and lift the spirit. The albatrosses continuously soar around the ship and dip down to the seas to catch a wave. The petrels are always flitting about in groups and flying so close to the water surface that they scrape the surface every now and then, following the contours of the everchanging waves, never to be fooled by the turbulent waters. With every beat of the ocean on the hull of the Ewing, we are reminded of the sheer power which the seas have over us and as time goes by, it becomes a comforting feeling which is welcomed at sleep time. On the occasional clear night the stars are out in full force shining their brightest and providing great star gazing as long as one can stand the bitter cold.

As we near the shores we start to see lone seals far from land, groups of penguins darting through the water past the ship, and the ever-amazing icebergs. We are reminded of the wildness of the area with every vision of the stark and extreme landscapes seen here in the Shetland Island Arc. This Antarctic experience has certainly strengthened my beliefs of the importance to enforce the Antarctic Treaty and to protect the wildlife here. The Antarctic is truly the last wilderness and frontier; one can feel it with every glance off the ship.

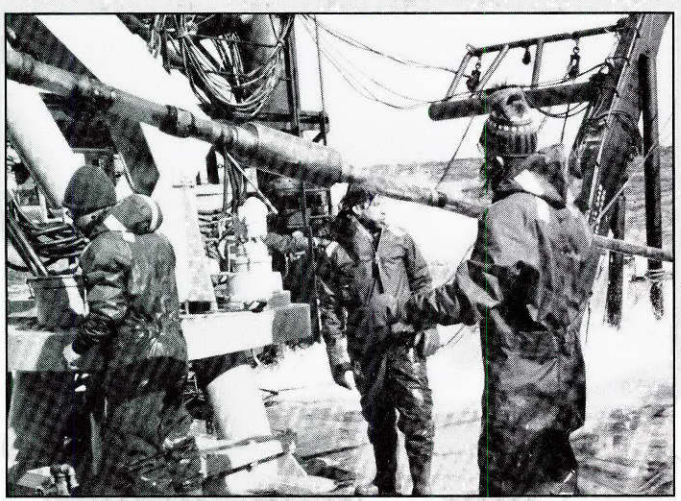
Sevin Bilir

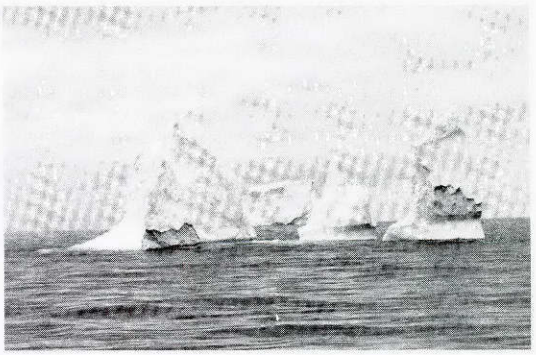


21 February 1991 noon watch
61 24.64 South
61 18.53 West

Survey is coming along very well now, we are already at the halfpoint. The other day we passed a huge iceberg with a small colony of penguins aboard which was quite impressive because we also had a beautiful sunset off the bow. Last night, however, there was an even more immense iceberg. I was headed for the workout room and took a quick look around the passage on B deck. One of the Islands lay to starboard, a low, inconspicuous feature, particularly in the shrouding cloud and mist. Directly at the end of the island stood what looked like a peaked ice castle. It was far more enormous than the previous berg, extremely majestic and imposing. The berg traveled sedately through the water, always seeming to be in motion. It would slide out of the mist, toward the ship, threatening us with the possibility of having to turn off course. Then its course would change, and it would slip along the island's edge. Meanwhile off the port bow were three immense fishing vessels, two or three miles distant. Attempts to raise them on the radio brought forth a response in an oriental language that was not understood. It was dusk, about 8:00 so it was very difficult to see the black diamond "day-shapes" displayed on the bridge mast which indicate that we have objects in tow. It was not yet dark enough to see the lights on the bridge mast (red on white on red) which serve to indicate the same thing at night. The skies were so heavy and desolate, with snow or rain showers in the distance falling from dark blue-grey clouds. A bit of sun fell behind and on the island creating an eerily illuminated scene. A black bird with white spots aligned on each wing circled the bow dipping and gliding and climbing and soaring. With the iceberg, the fishing vessels that eventually turned out of the way of our course, the bird, and the drama of the encroaching night, The day settled into the evening in far greater a bustle than it had on the trip so far.

Stacey Tyburski





THE UNIVERSITY OF TEXAS INSTITUTE FOR GEOPHYSICS (UTIG) and Columbia University's Lamont-Doherty Geological Observatory (LDGO) were jointly awarded over $2,100,000 by the National Science Foundation to study mountain building processes in West Antarctica. Dr. Ian W. Dalziel, Senior Research Scientist at the Institute and Professor in the Department of Geological Sciences is the principal investigator for the project along with senior research scientist James A. Austin Jr., who was chief scientist of the expedition, and investigators Thomas H. Shipley and Lawrence A. Lawver (UTIG), and Dennis Hayes and John Mutter (LDGO). Graduate students and technicians from both institutions formed the rest of the scientific crew.

The group conducted a continuous 49-day scientific cruise aboard the research ship *Maurice Ewing* off the Antarctic Peninsula. To maximize chances for success, efforts were concentrated on the northernmost and most readily accessible segment of the Pacific margin of West Antarctica. A film crew from the UT Department of Radio-Television-Film documented the cruise, assisted by a $2,000 grant from the Geology Foundation to partially defray filming costs.

The group collected a 5200 kilometer echosounding or seismic reflection profile survey, in conjunction with sonobuoy reflection/refraction measurements, gravity, magnetics, and multi-beam bathymetry. Using a sound receiving system three kilometers long and a sound source consisting of 20 airguns, each of which discharges compressed air into the water at regular intervals, "sound pictures" or reflection profiles were recorded on tape. The processed data will be used to study several globally important crust-forming processes that have been active during the complex tectonic history of the Antarctic Peninsula. The goal is to integrate these new marine data with the more well-known geology of the Antarctic Peninsula and its offshore islands to contribute to our understanding of the geologic evolution of Antarctica and its long-term relationships with continental drift and climate dynamics.

Student presentations listed here were given

GRADUATE STUDENT SPEAKERS

during Technical Sessions or at one of the weekly Soft Rock, Hard Rock, Hydrology or Sequence Stratigraphy lunch-time seminars

Gabriela Mora-Alvarez
"History of magmatism of the volcanic rocks of Sierra Santa Ursula, Sonora, Mexico"

Kenneth Alexander
"Correlation of structural lineaments and fracture traces with water well yields in the Edwards aquifer, central Texas"

Denise Apperson
"Denise encounters the Land of the Rising Sun"

Izaskun Azpiritxaga
"Carbonate depositional styles controlled by siliciclastic influx and relative sea-level changes, Lower Cretaceous, central Lake Maracaibo, Venezuela"

Eric Beam
"Rotation of elongate porphyroblasts in a shear zone"

Lila Beckley
"Sedimentation and salt tectonics on the Continental Slope, NW Gulf of Mexico"

Sevin Bilir
"A hydrogeologic characterization of a site contaminated by crude oil near Bemidji, Minnesota"

Stefan Boettcher
"Mesozoic tectonic history of the central Mojave"

Greg Brewton
"Assessment of reservoir heterogeneity and reserve growth potential of Upper Wilcox oil sands at Lake Creek Field through integrated geologic and seismic characterization of depositional facies"

Robert Buehring
"Micropaleontological and subsurface stratigraphic analysis of sedimentary sequences and paleoenvironments in the Pliocene Etchegoin and San Joaquin Formations, southwest San Joaquin Basin, California"

Cesar Cainelli
"Canyons and submarine fans in the Piacabucu Formation, Sergipe/Alagoas Basin, Brazil"

Guillaume Cambois
"Surface-consistent deconvolution of the Log/Fourier domain"

Harris Cander
"Dolomitization and water/rock interaction in the Avon Park Formation, Floridan aquifer"

Christopher Caran
"Travertine, exotic hydrochemistry, and 'fuzzy dumbbells' —Hierve del Anga, Oaxaca, Mexico"

Bruce Darling
"Geostatistic analysis of water chemistry data"

Howard Davenport
"The influence of eolian stratification types on diagenesis"

Linda Davis
"Potassic, mafic rocks at Two Buttes, Colorado (with update on the status of our XRF and INAA capabilities)" and "Geochemistry of minettes at Two Buttes, southeast Colorado: implications for lithospheric evolution"

David DeBalko
"Seismic stratigraphy and geologic history of the Middle Jurassic–Lower Cretaceous rocks, Vernon area, deep eastern Gulf of Mexico"

Walter Denny
"Seismic stratigraphy and geologic history of Upper Cretaceous and Cenozoic rocks in the Straits of Florida"

Walter Denny
"Sequence stratigraphy and structure of the southern straits of Florida an interaction of tectonics and deep-sea currents"

Stephen I. Dworkin
"Petrography and geochemistry of anhydrite cements in Smackover sandstones, Gulf of Mexico" and "Dissimilar diagenetic histories of Jurassic sandstones in the interior salt basins of the Gulf of Mexico"

Carl Fiduk
"Sequence analysis of the Upper Continental Slope, northwestern Gulf of Mexico" and "Gulf Coast slope basin formation and sedimentation"

Gilbert Gabaldon
"Hydrogeologic characterization of the Presidio Bolson, Presidio County, Trans-Pecos, Texas"

John Garber and **Ben Sloan**
"Sequence stratigraphy, North Sea basin"

John Garber
"Genetic sequence stratigraphy of the Oligocene and Miocene: North Sea Basin"

John Genuise
"Petrography and geochemistry of authigenic chlorite from Oligocene and Cretaceous sandstones of the Texas/Louisiana Gulf coast"

Shinho Habuki
"Diagenesis of shallowly buried Oakville (Miocene) sandstones, South Texas"

Margaret Hart
"Aquifer characteristics of the Davis Mountains Trans-Pecos, Texas"

Karen Havholm
"Eolian event stratigraphy: theory and application"

Peter Hennings
"Laramide deformation of the Chihuahua Tectonic Belt"

John Huelsenbeck
"Oyster phylogeny and the importance of fossils"

Timothy J. Jackson
"Geochemical model for the origin of $NaHCO_3$, NaCl, and $CaCO_3$ waters, Texas coast basin"

Shing-Tzong Lin
"Salt tectonics modeling"

Jairo Lugo
"Tectonic controls on depositional systems, Maracaibo Basin, Venezuela: evidence from detailed seismic data"

Barbara Mahler
"Hydrogeology of Hamilton Pool, central Texas" and "Paradise found: using hydrology and geochemistry to explain the origin of Hamilton Pool, Travis County, Texas"

Paula Noble
"Radiolarian biostratigraphy and application to understanding tectonics and sedimentation in Marathon Basin"

Wagner E. Perez
"Seismic-stratigraphic study of the Oligocene-Miocene shelf-fed turbidite system of the Campos Basin, Brazil"

Nestor Phillips
"Paleobathymetric and backstripping analysis as a means of constraining Late Cenozoic fault movement Ventura Basin, California"

Johnny Pinto
"Sequence stratigraphy in the Bloque III area, Lake Maracaibo, Venezuela"

Andrew Quarles
"Remote sensing geology and kotekas of Irian Jaya"

Troy Rasbury
"Recent rifting in the Rio Ameca Valley: its relationship to the Tepic-Zacoalco rift of western Mexico"

Jim Reistroffer
"Depositional environments and delineations of intrareservoir compartments within Frio zone 21-B, T-C-B Field, South Texas"

Robert Roback
"Single-zircon U/Pb geochronological constraints on Permian tectonic reconstructions, northeast Washington"

Robert Single
"Seismic interpretation of the Mississippian–Pennsylvanian unconformity, Gray County, Kansas"

Colleen Stapleton
"Igneous textured upper-mantle xenoliths from central Arizona"

Colin Sumrall
"The good, the bad, and the ugly: edrioasteroids and you"

Rick Toomey
"Latest Quaternary environmental changes at Hall's Cave, Kerr Co., Texas"

Heng Tsai
"Rb-Sr isotope systematics of the Burro Mesa Rhyolite, Big Bend National Park, Trans-Pecos, Texas"

Stacey Tyburski
"Deformational mechanisms along active strike-slip faults: Seamarc II data from the North American–Caribbean plate"

Robert Walters
"Growth history of a salt dome and sediments from 3-D seismic reflection data, northern Gulf of Mexico"

David Wang
"Analysis of factors controlling the resolution of P-wave velocity and density in linearized least-square inversion"

Dana White
"Point dilution method determination of groundwater velocities"

Leslie White
"Thermal and unroofing history of the Western Transverse Ranges, California, based on fission-track analysis"

Matthew Wickham
"Hydrogeology of an alluvial aquifer, Ellis County, Texas"

Tom Williams
"Stratify: a computer simulation of clastic stratigraphic sequence development"

PLACEMENT

The following is a list of companies that participated in the 1990-91 recruitment season:

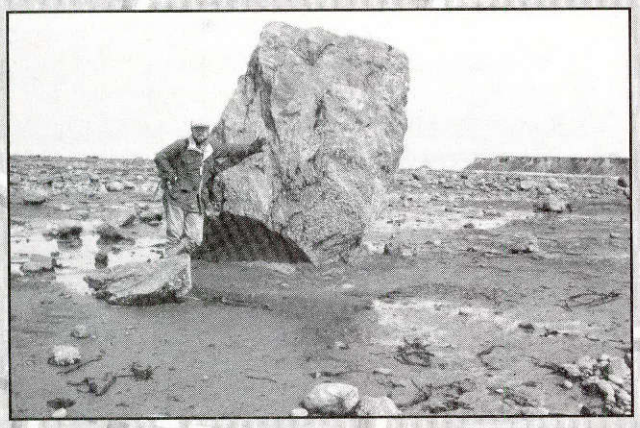
Amoco Production Company
Arco Oil and Gas
Arco Research
BP Exploration
British Gas
Chevron Exploration & Production Services
Chevron USA
Conoco Inc.
Enserch Exploration
ERM-Southwest Inc.
Exxon Company USA
Exxon Production & Research
Halliburton Geophysical
Hart-Crowser
Marathon Oil
Mobil Exploration & Producing US Inc.
Mobil Research & Development Corporation
Oryx Energy and Production Company
Phillips Petroleum
Radian Corporation
Shell Development
Shell Oil Company
Tenneco Oil
Texaco Inc.
Union Pacific Resources
Unocal Oil and Gas
Unocal Oil and Gas International
Unocal Corporation Research
Western Geophysical
Westinghouse Environmental Services
Woodward-Clyde Consultants

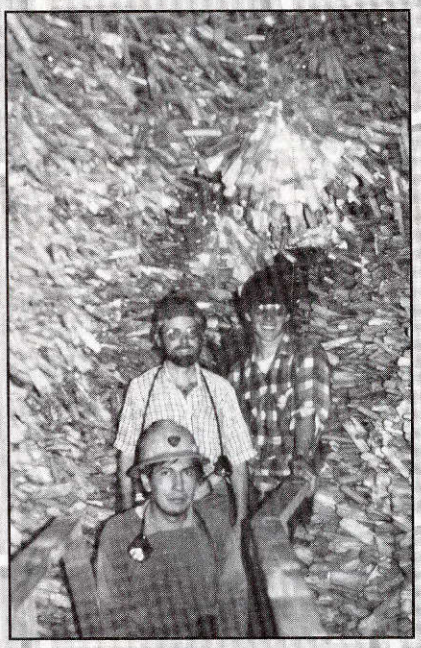
THE 1990-91 RECRUITMENT SEASON in the Department of Geological Sciences was a busy and successful one! Sixty-three students (21 undergraduates, 17 Master's candidates and 25 PhD candidates) who participated in company interviews for both summer and permanent positions. A total of 425 interviews were scheduled beginning early in the semester on September 24 and continuing through the month of October and the first part of November. Beginning in the fall, placement activities were conducted in the "new" placement office in Geology 123. Students use the placement office to sign up for interviews, to read through company literature and even some informal interviews are conducted with visiting recruiters. This room is also the Geological Sciences display room which houses a portion of both the Barron and Vargas Collections. There have been financial contributions to the placement office by the following companies: Amoco Production Company, Arco Oil and Gas, Mobil Oil, and Phillips Petroleum; their contributions are recognized by a plaque in a display case located in the placement office. Funds for the placement office will be used to prepare a fall 1991 resume book and defray operating costs.

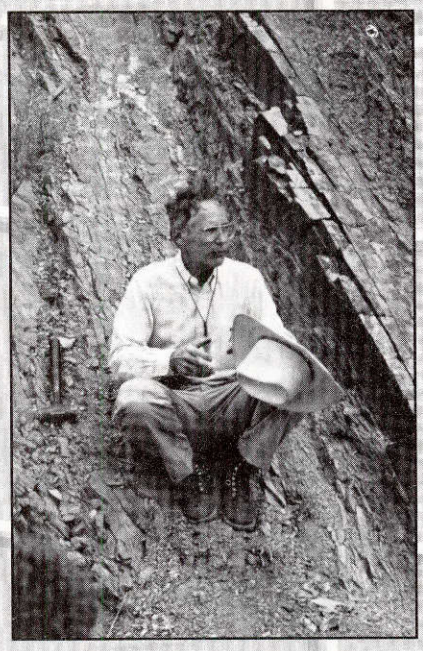
Karen Havholm (left) and Mary Crabaugh dressed for fun in the sun in Mauritania at the end of the field season.

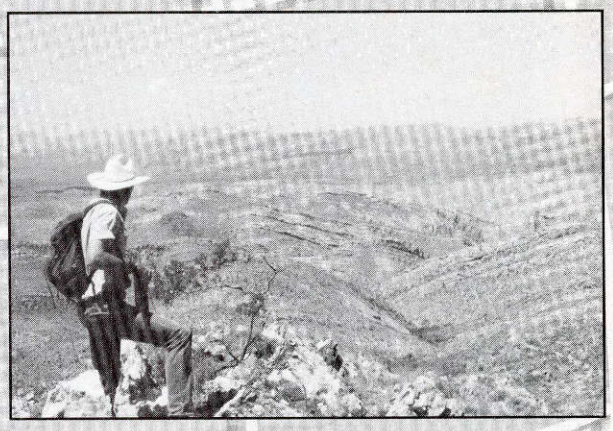
Department

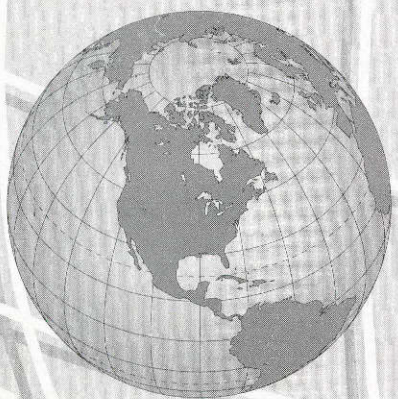
NEWS











Personal NOTES from the faculty

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

John Ready
Office Assistant

Scott Schroeder
Accounting Clerk III

Bill Woods
Executive Assistant

Jay Banner reports that aside from beginning a new job, teaching new courses, building a lab, buying a house, and starting a family, the past year hasn't been too busy.

Dick Buffler still very much enjoys his joint position with the Department and the Institute for Geophysics, especially teaching the sequence stratigraphy course each spring and working with many wonderful graduate students. Pat and he continue to commute between Houston and Austin; it is not ideal but it works.

Fred Bullard was very pleased with his 1991 award in recognition of his contribution to the distinguished lecturers program of the American Association of Petroleum Geologists. The reception, which was well attended by former Distinguished Lecturers, spouses, and friends, was arranged by Robbie Gries (MA, '70, Geology, UT), chairman of the distinguished lecturers committee; she "did her homework" and the event was a most delightful affair. Fred has made three lecture tours since the program's inception, first in 1943-44, then in 1944-45 and 1954-55.

Progress is being made on putting Fred's movie film of Parícutin Volcano on video tape. Parícutin is the volcano born in a cornfield in Mexico in 1943. He suspects that many of the students in the late '40's, '50's, and '60's will remember the film, since it was shown in many of the geology classes during that period. He reports that he was fortunate to meet Dr. Karl Miller, audiovisual librarian at the Fine Arts Library, a branch of the general libraries of UT-Austin. Dr. Miller expressed an interest in having the film preserved, and through his efforts and expertise, the original film, which was in poor shape from hundreds of screenings, was reconditioned and a copy of it made. The film has now been put on videotape and work is underway to add narration and a soundtrack. How the video tape will be made available is being determined.

Steve Clabaugh and his wife Pat travelled more last year than usual, making three major trips to very different parts of the world. In June they visited children and grandchildren in western Canada and Oregon, and drove down the rugged Oregon coast to the northern California

redwood forests. In August they flew to Istanbul, Turkey, and after a few days of sightseeing there sailed with an alumni group down the Turkish coast to Rhodes, Crete, Santorini, Athens, Lesbos, and back to Istanbul. Steve says that Istanbul exceeds Rome and Athens in fascinating history and treasures (but unfortunately also in urban crowding, smog, pollution, and water shortage). He says that he was surprised and delighted to find out how much the geology and mineralogy increased his enjoyment of the region. In October Pat and Steve flew to Tahiti to sail to the Marquesas Islands. Pat enjoyed the rugged peaks and tropical coasts from shipboard, while Steve joined those who went ashore to explore by hiking and riding 4-wheel-drive vehicles over primitive roads. The Marquesas islands are the most unspoiled of the Polynesian islands, and the volcanic rocks are fascinating, but Steve could collect only a few samples for Dan Barker.

The Clabaughs will spend more of 1991 at home on the Pedernales, while family members (including a new *great* grandson) visit them. Maybe the old house and yard will get some much needed attention also.

▶ The academic highlight for **Bill Carlson** this year was to appear as a keynote speaker at a meeting on mineral textures held in September 1990 by the Mineralogical Society of Great Britain in Manchester, England. Bill reports that the marvelous variety of presentations there made the trip a particularly special one. While teaching undergraduate and graduate metamorphic petrology and a thermodynamics course (for which the mildest and most printable of the students' descriptions was "memorable"), he continued to serve as the Department's graduate advisor, as an associate editor for *American Mineralogist*, on the editorial review board of the *Journal of Metamorphic Geology*, and as a faculty advisor and seminar instructor for the Dean's scholars honors program in the College of Natural Sciences. A major achievement for Bill this year was the acquisition of some skill at assessing the relative value of baseball trading cards, to avoid being repeatedly hoodwinked by his two sons, now ages eight and ten.

▶ The big event for Marion and **Ronald DeFord** this year was the construction of a library building adjacent to their home in Austin. When no more bookcases could be put in their house and books were stacked everywhere, Marion insisted that it was either dispose of a lot of books or build a library! It has shelf space for about 4,200 books, and part of it is three floors tall with a circular staircase, and there's a balcony with a marvelous view of Austin. Construction was finished in February, and when most of the books are in their new home they'll be catalogued on computer.

This past year, instead of losing weight, Ron finally started gaining! He's put on about 20 pounds, and his face is beginning to fill out.

The arts are still high on their agenda. Besides attending symphony orchestra concerts, they enjoy the musicals, operas, and chamber music that abound in Austin and Round Top.

▶ The biggest event of the year for **Sam** and Dottie **Ellison** was participation for 23 days in the Geological Society of America's first foreign field trip in New Zealand. Both Dottie and he kept up with all of the hikes and climbs. New Zealand is quite different from Texas because it includes geysers, fumeroles, hot springs, calderas, extinct volcanoes, dikes, lava flows, alpine glaciers, and glowworm caves. The New Zealand geologists were marvelous hosts. The topography is mountainous and steep, the faulting fantastic and very, very youthful. Sheep, deer, and elk herds (the last two for meat) are behind fences and overgrazing is outlawed. Some Tertiary and Quaternary calcareous sediments are loaded with foraminifera, but other fossils were generally scarce.

A three-day visit to the American Association of Petroleum Geologists' Dallas Jubilee Convention, April 7-9, 1991, was the greatest ever because they greeted many, many former students, even some who graduated 30 years ago.

▶ In late July 1990, **Bob Folk** took off for Italy with Steve and Martha Cast Cather, both now working in Socorro, New Mexico. After a brief stop to see travertines at Roma and Tivoli, they went to Pompeii where Steve was excited by the volcanic-sedimentary sequence and the corpses of the victims. They then used Ovieto as a center from which to study modern hot springs and ancient travertine outcrops; Martha found fossil acorns. In Verona they saw the opera "Tosca" (obnoxiating to Grateful Dead fans, but a real spectacle nonetheless), put on in the ancient Roman theater. A short trip through the dolomite Alps by bus ended up in Venice with its art-glass works and several painting exhibitions. But the art of cuisine underwent an almost total collapse on passing from Verona and Venezia to Ljubljana and Zagreb—Yugoslavia seems to have never heard of pasta or mastered drinkable espresso, and their only answer to "how do you cook meat?" is to attack it with naked flames. Bob and the Cathers met Hank Chafetz and spent a week with him at the beautiful and magnificent travertine dams and lakes of Plitvice, Croatia. They then flew to London where Bob met Marge, and proceeded to the triennial meeting of the International Association of Sedimentologists. Bob probably delivered the only medal acceptance speech that "paeans" the Broken Spoke, Ernest Tubb, Alvin Crow, and chicken-fried steak. Afterwards, Marge and Bob went on a field trip to see Ballantrae ophiolites in southwest Scotland, then

HONORS

Milo Backus *was awarded the Maurice Ewing Gold Medal from the Society of Exploration Geophysicists in recognition of his pioneering work in the development of digital and three-dimensional seismic imaging techniques. The presentation was made at the fall annual meeting of the SEG in San Francisco.*

Dan Barker *won the Outstanding Teaching Award for the College of Natural Sciences in 1990-91. The award was presented at the College Honors Brunch held in April and was based on selection by a College-wide student committee. Barker has been three-time recipient of the Knebel teaching award in the Department, and has now received College-wide recognition of teaching excellence.*

Joyce Best, ***Ann Page***, *and* ***Fred McDowell*** *received recognition of longevity of service from the University. McDowell was recognized for 15 years of service as a research scientist; Best, who oversees the Geology Foundation office, was commended for 25 years of service; and Page, who oversees the graduate office, was recognized for ten years of service.*

HONORS

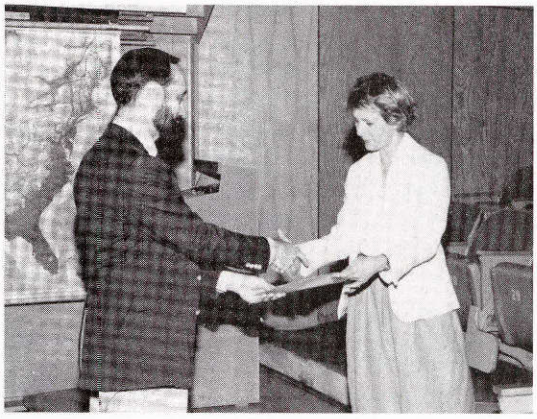
Robert Boyer *is the 1990 recipient of the William B. Heroy Jr., Award for distinguished Service to AGI. The award recognizes exceptional and beneficial long-term service to the American Geological Institute. He has served AGI in many capacities, including a term as vice-president (1982) and president (1983).*

Fred Bullard, *Professor Emeritus, won recognition for his special three-tour contribution to the Distinguished Lectures program of the American Association of Petroleum Geologists. The AAPG celebrated the 50th anniversary of the program, begun in 1941.*

Bill Carlson *won the departmental Knebel Teaching Award this year. The award, based upon a vote of both undergraduate and graduate majors, represents the fourth time that he has been honored in this way.*

Clark Wilson presents Knebel Teaching Award to Bill Carlson

Clark Wilson presents a 25 year longevity award to Joyce Best



Clark Wilson presents a ten year longevity award to Ann Page

Clark Wilson presents the Staff Excellence Award to Eddie Wheeler

hit Edinburgh and York on the way back home. But England was vapid compared to Italy.

Bob continues to be fascinated with the pyramids of Egypt, gave a talk on them at the GSA meeting in Dallas, and even convinced Bill Ward that they are made of real limestone blocks. He also gave a pyramid talk to the annual Egyptological Meeting in Boston, and the science crew of NOVA TV was there. Both talks gave rise to a firestorm of favorable comments, something that has never happened to him, Bob says, in any geological talk he's ever given before—probably because archeologists think he's right for once.

▶ The year has been a relatively stay-at-home one for **Bill Galloway**, with trips only to Indonesia and Nova Scotia interrupting the more mundane expeditions to Houston, Dallas, New Orleans, and similar nearby cities. In compensation, he has had three PhD students graduate—his first. Major projects for 1990-91 included trips to Great Britain and Norway in the fall and to Australia later in January, and building and moving into a new house. In between, getting started on the rewrite of "Clastic Depositional Systems" and maintaining his status as a sequence stratigraphy curmudgeon continued to fill in the odd moments.

Several talks, invited lectures, and short courses have also punctuated the past year. Bill presented an invited talk on the Cenozoic framework of the Gulf basin in a special session entitled Geological Overviews at the GSA meeting in Dallas. Additional papers were presented at the AAPG/SEPM national convention and at the Gulf Coast Section SEPM research conference, Sequence Stratigraphy as an Exploration Tool. He served on the program committee for the latter meeting. Additional papers coauthored with students were also presented at these meetings. Bill also traveled to Dalhousie, in Nova Scotia, for a lecture series in March, and to Jakarta, Indonesia, to present a week-long course for the Indonesian Petroleum Association. In-house presentations and workshops were presented to several companies, including Exxon, BP North America, Amoco, Oryx, CNG Exploration, and Kerr McGee.

▶ **Rich Kyle** reports a busy year of teaching and research in economic geology. In addition to teaching the usual offering of undergraduate and graduate courses in ore deposits geology, Rich taught Geology 335, the nonmajors course on the geology and mineral resources of Texas, in the spring and summer semesters. The summer offering was an attempt to attract current teachers in Texas secondary schools who want to increase their background in the earth sciences of this region. Rich continues as the undergraduate advisor for the sixth year and reports that the undergraduate population remains stable at about 120 geological sciences majors.

Departmental Outreach Activities:

As part of its educational mission, the Department recruits prospective majors from throughout the state of Texas, and conducts various activities with local schools and other organizations to promote interest in the geological sciences. This outreach program involves the activity of the Department faculty, staff, and graduate students, and is coordinated by a department outreach committee, consisting of Leon Long as Chairman and faculty representative, Donna Precht representing the staff, and Roger Lee, representing the graduate students. The major outreach activities for the 1990-91 academic year are summarized as follows:

Recruiting of Prospective Majors

All National Merit Scholar semi-finalists in Texas were sent information concerning the geological sciences as a career and educational and scholarship opportunities at the University of Texas. This involved over 300 individual letters. We also mailed Department brochures to all public high schools in Texas, and provided brochures to the University Outreach Program Centers which are located in San Antonio, Dallas, Houston, and McAllen. In order to inform prospective transfer students of opportunities at UT, we sent brochures describing the undergraduate program to over 85 Texas community and junior colleges that offer courses in general science, earth science and geology. We also sent brochures to all undetermined majors in the College of Natural Sciences. Departmental brochures and newsletters were on display at the Society of Exploration Geophysicists Midwest Meeting in Tulsa in March, as part of a program for high-school science teachers to review the opportunities in the earth sciences. Finally, this year, we began to send copies of the Department *Newsletter* to the head of every college geology department in Texas as a way of introducing them to the breadth of programs underway at The University of Texas at Austin.

On-Campus Activities

Graduate student Denise Apperson guided groups of school-age children through the Geology Building, including the honors geology class from Lake Travis Middle School in January, and a Girl Scout troop in April. Executive assistant Bill Woods guided the visit of about 80 fifth grade students from Williams Elementary School in April, and also coordinated the College of Natural Sciences Spring Fling for Science Teachers in March. The Geological Sciences Department contribution to Spring Fling involved tours of the Geology Building displays by Woods and lecturer Glenn Vargas, and a lecture on dinosaurs held at the Texas Memorial Museum by graduate student Anne Weil.

Off-Campus Activities

Graduate students Denise Apperson and Lee Potter were leaders on a Saturday field trip for all the eighth-graders at Lake Travis Middle School. Three bus loads of students, parents, and teachers enjoyed the expert discussions by Apperson and Potter at a variety of Hill Country roadside stops. Other off-campus lectures at grade-school classes were presented by students during the school year, and the traveling rock collection, a suitcase full of various rock and mineral specimens, made several trips off campus to local schools.

HONORS

***Peter Cobbold**, of the Centre National de Recherches Scientifiques (C.N.R.S.) at the Université de Rennes in France, was a visiting professor in the fall of 1990. Cobbold gave a course on structural geology, presented lectures, and worked with scientists at the Bureau of Economic Geology during his visit.*

***Brenda Kirkland George** will join the Department of Geological Sciences in January 1992 as a new faculty member. She will instruct and conduct research in sedimentary geology with an emphasis on carbonates. She has a Bachelor's degree in geological sciences and a Bachelor's degree in German, both from UT Austin, a Master's in geology from Texas A&M, and is completing her PhD at Lousiana State University.*

***Gary Kocurek** will be promoted to Professor, and **Tim Rowe** will be promoted to Associate Professor, both effective September 1, 1991.*

HONORS

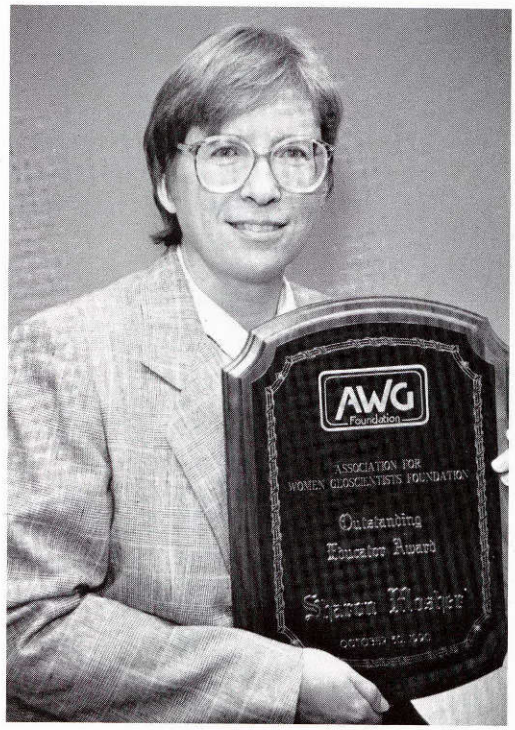
Sharon Mosher *received the Houston Oil and Minerals Faculty Excellence Award in recognition of her service in the revision of the undergraduate curriculum.*

Glenn and Martha Vargas *travelled from their home in California for both fall and spring semesters this year to assist Mark Helper with the instruction of the Gem and Gem Minerals Course GEO 347K. This course has proven to be popular with non-majors, and will probably continue to be offered each semester with the Vargas' assistance in the gem faceting portion of the course.*

Eddie Wheeler, *scientific instrument maker, won the departmental Staff Excellence Award for oustanding performance this year. Wheeler has been responsible for the development of our shop facilities over the past several years, and has set a high standard for the quality of machine work and construction in support of Departmental research. This year, a single $750 award, supported by Geology Foundation resources, was given based upon nominations from the faculty, staff, and students.*

Rich serves as the editor for North and South America for *Ore Geology Reviews*, an international journal in the field of ore deposits geology, and as an associate editor for *Economic Geology*, the journal of the Society of Economic Geologists. He edited and prepared camera-ready copy of the guidebook for a Society of Economic Geologists field trip on industrial mineral resources of the Delaware Basin. Rich and Ken Clark of UT-El Paso led this trip in October in conjunction with the Geological Society of America annual meeting in Dallas. 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, copper-gold mineralization in the Ertsberg district in Irian Jaya, and associated sulfide and phosphate concentrations in Proterozoic carbonates of Brazil. Late summer plans include field work in Tennessee and Indonesia.

Brock and Brett advance as happy Montessori students who are active in Little League baseball, as well as tennis and swimming. Linda continues as an editor for the *Journal of Chemical Education* and as a writer. In addition, she serves on the board of directors of Prevent Blindness and also has worked 200 hours at Recording for the Blind. The Kyle family was saddened by the death of Linda's mother in January.



Sharon Mosher won the outstanding faculty award of the Association of Women Geoscientists. The presentation was made at the fall 1990 meeting of the Geological Society of America in Dallas.

▶ **Leon Long** presented a paper at the meeting of isotope geologists in Canberra, and is spending a week on the extensive field excursions to various remote corners of the Australian Outback in Western Australia, as well as visiting the famous localities that contain the oldest remnants of the earth's crust. The rocks are as old as 3.8 billion years, but crystals of detrital zircon in metasediments go back to 4.2 billion years, nearly as ancient as the earth itself.

▶ **John** and Marian **Maxwell** made an extended trip of eastern Australia and both islands of New Zealand in the spring, ending with a week's stay in a Wellington motel that straddles the great transform fault between the Macquarie and Tonga trenches, fortunately not active.

▶ **Clark Wilson** became chairman in the fall semester, and still found time to teach the graduate linear systems course and part of the undergraduate exploration geophysics course. Spring teaching activities included the undergraduate global geophysics class and the new graduate geodesy course. The geodesy course included a field trip to West Texas during spring break to visit the Laser Ranging and other geodetic observatories near MacDonald Observatory, and practical training in global positioning system observations at various NASA benchmarks in the area. Fall travel included a trip to San Francisco to present a paper at the American Geophysical Union meeting, and another to Maryland for the NASA crustal dynamics meeting. Spring travel included a trip to the crustal dynamics meeting in Pasadena, California, and an AGU Chapman Conference in Washington, D.C., in April. At home, daughter Kirsten has just completed kindergarten, and has also made the swim team for the 1991 summer season, while three-year-old daughter Sissel continues to solidify her position of power in the family.

▶ **Jack** and Marge **Wilson** left the SVP meeting in Lawrence a day early to get back to Austin to help put on the Third Reunion of the Geology Class of 1947. The first was held in Vail, Colorado, the second in Colorado Springs, and the third at Lakeway in Austin. The "Class of 1947" is interpreted loosely, but its hard-core members are "the Brady Bunch": GEO 660, Field Geology; summer 1947. Dr. Bullard was the senior faculty member assisted by Dr. Gus Eifler, Dick Bloomer, and Kent Waddell. All of the above were present at the reunion. Jack was not a member of the "Class of '47" nor was he at the field camp at Brady. But as a faculty member at that time he was "volunteered" to help.

▶ Ann and **Keith Young** are limiting their travels this year to visiting grandchildren in Texas and visiting friends and relatives in Wisconsin and Wyoming.

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VISITING LECTURERS

EACH YEAR THE DEPARTMENT *invites several speakers who present lectures sponsored by endowed lectureships. The endowed lectureships provide an opportunity for more in-depth studies of the areas represented. Special thanks go to these individuals for their lectures during the 1990-91 academic year.*

Bill Back,
U.S.Geological Survey, Reston, Viriginia
Fred L. and Francis J. Oliver Lecturer in Texas Hydrology and Water Resources
"Time and scale in hydrogeology: a potpourri."

Timothy L. Grove,
Massachusetts Institute of Technology
Edwin Allday Lecturer in Geological Sciences
"Two-feldspar geothermometry," "Andesitic volcanism at continental convergent margins: an example from Medicine Lake Volcano, northern California," and "What are high-alumina basalts and how do they form?"

Paul Hoffman,
U.S. Geological Survey, Canada
Judd H. and Cynthia S. Oualline Lecturer in Geological Sciences
"Early earth paradoxes," "United plates of America: creation of a continent," and "Assembly of Gondwana and its relation to Euramerica."

Kirk Nordstrom,
U.S. Geological Survey, Menlo Park, California
Oliver Lecturer in Texas Hydrology and Water Resources
"A new dimension in mine waste contamination: a geochemistry of ultra-acid mine waters."

Elwyn Simons,
Duke University
Clara Jones Langston Centennial Lecturer in Vertebrate Paleontology
"New fossil whales from the Fayum of Egypt," "Cranial anatomy of the oldest higher primates," and "Lifestyle of early human ancestors."

Ronald Surdam,
University of Wyoming
Don R. and Patricia Kidd Boyd Lecturer in Petroleum Exploration
"The case for significant deep dissolution events: the Norphlet Formation," "Hydrocarbon reservoirs, mass transfer, and pressure compartments in the Powder River Basin, Wyoming" and "Predictive diagenetic maturation models for clastic systems:

Visiting Speakers

THE VISITING SPEAKERS PROGRAM *draws upon the resources of the Geology Foundation, the Institute for Geophysics and the College of Natural Sciences, to bring a great variety of visitors to campus. Some visitors are brought in with the support of endowed lectureships, for visits lasting several days or longer. Usually, the endowed lecturers present a series of lectures in organized courses, and at one or more of the Departmental seminars. Seminar series include twice-weekly Technical Sessions, and weekly hard rock, soft rock, sequence stratigraphy, Institute for Geophysics, and hydrogeology seminars.*

Thomas Algeo,
Exxon, Midland, Texas,
"Middle Pennsylvanian Gobbler Formation: isotopic constraints on temperature water/rock ratio and timing of burial diagenesis."

Jamie Allen,
Texas A&M,
"Pliocene–Recent rifting in southwestern Mexico: a tectonic terrane in the making"

Nathan Bangs,
Lamont-Doherty Geology Observatory,
Palisades, New York,
"Subduction, accretion, and erosion along the southern Chile margin: effects on Chile spreading ridge collision"

Calvin G. Barnes,
Texas Tech University,
"Origin of trondhjemite in the Klamath Mountains and its relation to the Nevadan Orogeny"

Larry Barrows,
LaCoste & Romberg Gravity Meters, Austin, Texas,
"Gravitational potential as a source of earthquake energetics"

Peter Baumgartner,
University of Lausanne, Switzerland,
"Mesozoic and Tertiary arc seamounts, and accretionary tectonics of Costa Rica (Central America)"

Christopher Beaumont,
Dalhousie University,
"Erosional control of active compressional orogens" and "Tectonics and sedimentation in foreland basins"

Steve Bergman,
ARCO, Plano, Texas,
"Apatite and zircon fission-track thermochronology, Jameson Land Basin, east Greenland—importance of the Iceland Hot Spot"

Donald Blankenship,
Ohio State University,
"Fast flow in ice sheets: seismic and radar studies of the West Antarctic Ice Stream"

Mike Blum,
Geography, UT-Austin,
"Geomorphology and Quaternary stratigraphy of the Colorado River, Edwards Plateau, and Gulf Coastal Plain of Texas"

Steve Cande,
Lamont-Doherty Geology Observatory,
Palisades, New York,
"A revised geomagnetic polarity time scale for the Late Cretaceous and Cenozoic"

Katharine Cashman,
Princeton University,
"Textural constraints on the kinetics of crystallization in igneous systems" and "Partitioning of tephra in submarine eruption columns"

John R. Castaño,
consultant,
"Geology and geochemistry of the Siljan Ring Complex, Sweden."

Randy Charbeneau,
Civil Engineering, UT-Austin,
"Performance assessment for the Texas low-level radioactive waste disposal facility"

Gary Donnan,
ERM-Southwest, Inc., Houston,
"Evaluation of a low-permeability formation as a barrier to contaminant migration"

Mike Downer,
Physics, UT-Austin,
"Probing deep earth structures with femtosecond lasers"

Mark Doyle
AAPG Distinguished Lecturer,
Assen, Netherlands
"Stratigraphic modeling of sedimentary basins.'

Olav Eldholm,
University of Oslo, Norway,
"The eastern margin of the Norwegian–Greenland Sea: an earth science laboratory"

William G. Ellis,
petroleum geologist in San Antonio,
"Horizontal drilling—where it's heading"

Brenda Kirkland George,
Louisiana State University,
"Aragonitic Pennsylvanian phylloid algae from the Sacramento Mountains: the missing link"

Philip D. Gingerich,
University of Michigan,
"Fossils and evolution" and "Evolution of whales"

Katherine A. Goebel,
University of Arizona,
"Understanding changes in depositional facies distribution associated with the transition from passive to collisional margin regimes of the Antler Orogenic Belt in Nevada and Utah"

Bob Grimm,
Southern Methodist University, Dallas,
"Hot-spot tectonics of Venus and initial Magellan results"

Tom Heaton,
U.S Geological Survey, California Institute of Technology,
"Physics of earthquake source ruptures"

Steven Holbrook,
Woods Hole Oceanographic Institution,
"Deep crustal structure of the east coast passive margin from combined reflection and ocean-bottom seismic data"

Kenneth Hudnut,
California Institute of Technology,
"Active tectonics of the Salton Trough"

John M. Hurst,
British Petroleum,
"Sequence development and architecture in an active rift: Miocene, Gulf of Suez, Egypt"

Randy Keller,
University Texas at El Paso,
"Comparative study of the East African and Rio Grande Rifts"

Kathleen M. Kent,
Association of Women Geoscientists;
Distinguished Lecturer with Philips-Marathon Oil,
"Prospecting for fluvial channels using 3-D seismic data"

Randy Larkin,
International Technologies Inc., Austin,
"Results of a soil vapor extraction pilot test in low-permeability terrace deposits at Kelly Air Force Base, San Antonio"

Shawn Larsen,
California Institute of Technology,
"Geodetic measurement of deformation in California"

David Latin,
Cambridge University,
"Magmatism and extension in the North Sea"

Jason Lillegraven,
University of Wyoming,
"Global geological implications of a fresh look at Late Cretaceous evolution of the North American Western Interior Seaway" and "Cranio-mandibular anatomy of Holdanodon exspectatus (Docodonta; Mammalia) from the Late Jurassic of Portugal, and its implications to the evolution of mammalian characters"

Jere Lipps,
University California at Berkeley,
"Consequence of plate tectonics and paleoceanography"

Clive R. B. Lister,
University of Washington,
"A geophysicist looks at the Oman Ophiolite"

Tim Lowenstein,
SUNY at Binghamton,
"Modern nonmarine evaporites from the Quidam Basin, Western China: parent waters, the potash evaporite problems, and paleoclimates"

D. B. Macurda,
The Energists, Houston,
"Seismic stratigraphy of deltaic systems"

David Maidment,
Civil Engineering, UT-Austin,
"Geographic Information Systems"

Jerry McNeish,
Intera Technologies Inc., Austin,
"Quantitative environmental liability risk assessment"

Marcia McNutt,
Massachusettes Institute of Technology,
"Cretaceous sea-level rise in the north Pacific: why the Darwin Rise rose" and "Extensional processes in the Basin and Range viewed from a geophysical perspective"

Lawrence D. Meinert,
Washington State University,
"Exploration calibration of a skarn system" and "Understanding skarn deposits"

Mark Miller,
Petroleum Engineering, UT-Austin,
"Overview of thermally enhanced oil recovery"

Speakers

Bernard Minster,
University California at San Diego,
"Nonlinear attenuation in the near-field of underground nuclear explosions"

Bonnie Murchey,
U.S.Geological Survey, Austin,
"Age and paleogeography of pelagic rocks in the Franciscan Complex of California: tectonic implications" and "Comparison of Late Paleozoic siliceous basins of northern Alaska and central Nevada"

Charles Palmer,
TNRIS, Austin,
"Present and future capabilities of the Texas Natural Resources Information System"

Randall Parish,
Geological Survey of Canada,
"The source of Precambrian sands: stratigraphic and tectonic inferences from U/Pb ages of detrital mineral grains" and "Crustal structure and evolution of the Southern Omineca Crystalline Belt, British Columbia geology, reflection seismic data and geochronology"

David L. Rudolph,
University of Waterloo, Ontario,
"Dependence on groundwater resources in the Mexico City area: a case of overexploitation and high contamination risk" and "Characterization of flow and transport in unsaturated sand and gravel: Cape Cod field tests"

Joaquin Ruíz,
University of Arizona at Tucson,
"Phanerozoic and Proterozoic basement terranes of Mexico based on Nd, Sr, and Pb isotope studies" and "Petrochemistry of the lower crust"

Donald Siegel,
Syracuse University,
"The hydrogeology of peatlands: Paradigm lost"

John Southard,
Massachusetts Institute of Technology,
"Transport of mixed-size sediments" and "Experiments on combined flow: implications of interpreting shallow marine sandstones"

Philip Stark,
University California at Berkeley,
"Sparsity constrained deconvolution: is reflection seismology possible?" and "Optimization and inference with applications to geophysical problems"

Lee Suttner,
Indiana University at Bloomington,
"Tectonic significance of lower Cretaceous conglomerates in the Western Interior Foreland—more questions than answers"

Ken Verosub,
University of California at Davis,
"A new view of the earth's magnetic field"

Chi-Yuen Wang,
University California at Berkeley,
"Thermal and hydrogeological processes in fold and thrust belts and accretionary prisms"

Arthur Weglein,
Atlantic Richfield Co.,
Plano, Texas,
"A new practical nonlinear inversion scheme"

Brad Werner,
California Institute of Technology,
"Process geomorphology on the right side of the brain"

Brian Wernicke,
Harvard University,
"Fluid crustal layer and implications for continental dynamics"

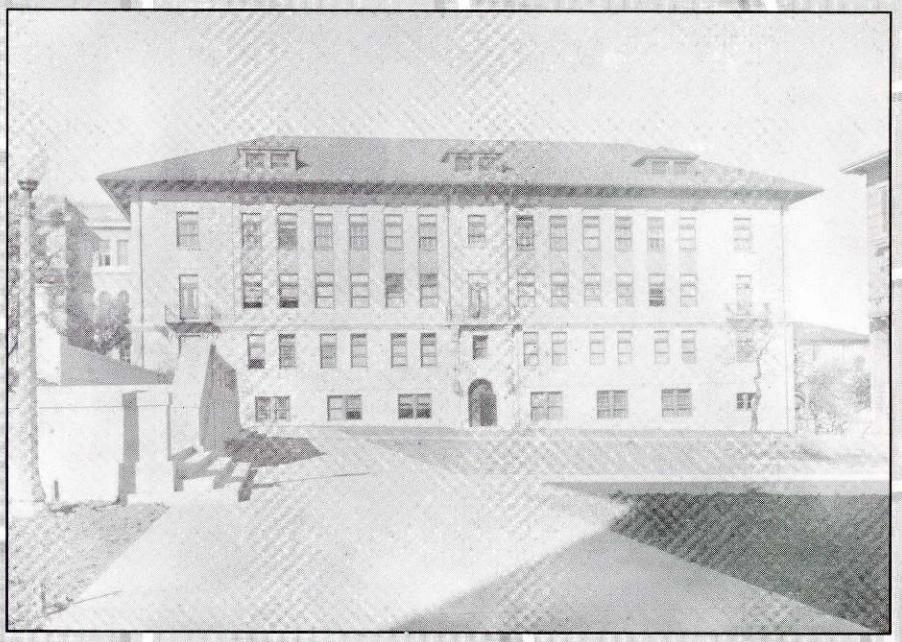
James L. Wilson,
independent consultant,
"Control of basement tectonics on Late Jurassic and Cretaceous carbonate platforms, northeastern Mexico"

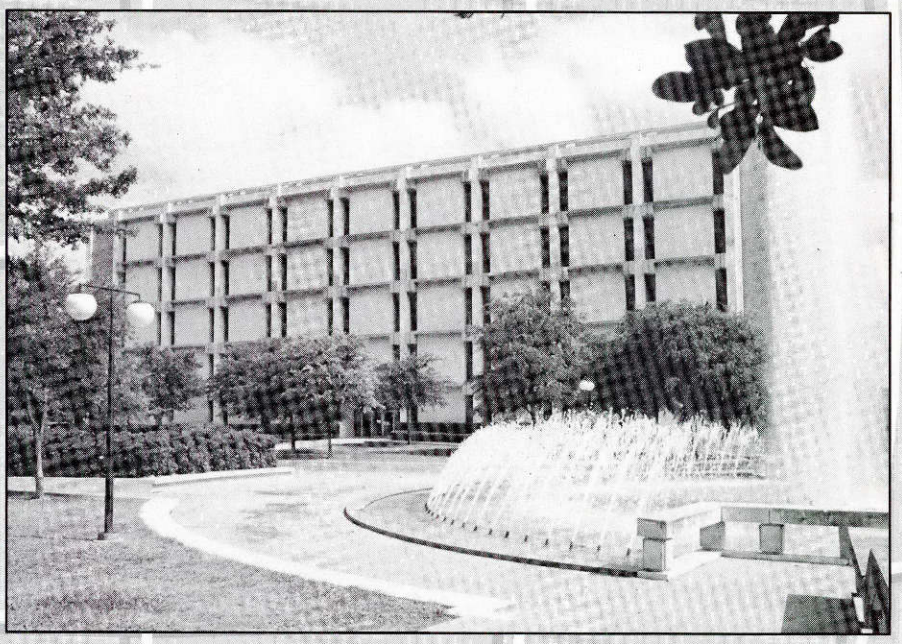
David Wiltschko,
Texas A & M,
"Structural and geochemical controls on syntectonic fluid flow in the Idaho–Wyoming–Utah Fold-and-Thrust Belt"

Keith Wheeler,
Hall-Southwest Corporation, Austin,
"Use of the Swift model for mine dewatering calculations"

Lorraine Wolf,
Geophysics Laboratory, Hanscom
Air Force Base, Massachusett,
"How do seismic refraction/wide-angle reflection data constrain crustal models for south-central Alaska?"

FOUNDATION NEWS





GEOLOGY FOUNDATION NEWS

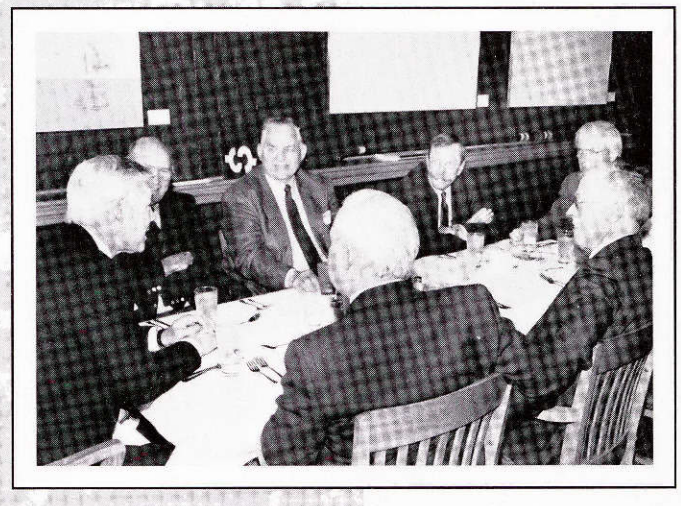
A HIGHLIGHT OF THE YEAR for the Geology Foundation Advisory Council was the naming of three of its members to honorary life membership. Peter T. Flawn, William E. Gipson and Judd H. Oualline were so named at the spring meeting of the Council on April 5. They join eight other gentlemen in this distinguished group. Honorary life membership is conferred on a person who has rendered unique or outstanding service to the Council or to the Geology Foundation. Pete Flawn, president emeritus of The University, was appointed to the Council in 1987. Since that time, he has provided insight into many aspects of geological education and has helped the Department remain competitive in attracting the best students. Bill Gipson has served on the Council since 1969 and served as Council chairman from 1987-1989. He established the Pennzoil and Pogo Producing Companies/William E. Gipson Scholarship for UT Austin graduates who wish to pursue an advanced degree in geology at UT. Judd Oualline's tenure on the Council began in 1980. He served a two-year term as chairman of the Council from 1985-1987. He and his wife established the Judd H. and Cynthia S. Oualline Lectureships in Geological Sciences and Petroleum Geology, as well as the Judd H. Oualline Endowment Fund.

Rodger E. (Tim) Denison was recognized with a plaque for his completion of two years as Council chairman, from 1989-1991. He is succeeded by David S. (Scotty) Holland in leading Advisory Council activities for the next two years. A major accomplishment of Mr. Denison's term as chairman involved the establishment of fund-raising goals for the next few years. (These are printed elsewhere in this *Newsletter.*)

Two Foundation accounts received enough gifts during the year to reach the $10,000 minimum necessary to establish an endowment. The Wes Ogden Memorial Scholarship in Geophysics was approved by the Board of Regents in February 1991. The fund was established in 1989 by William W. Ogden in memory of his father. Wes Ogden received a BS in math from UT in 1937 and was employed for 40 years as a geophysicist by Shell Oil Company. Earnings from the endowment will provide scholarships for students with strong academic performance and financial need at either the undergraduate or graduate level. Preference will be given to students expressing a desire to apply their geophysical training in practical applications within the oil and gas industry.

In April the Board of Regents approved establishment of the Thomas M. Burke Student Job Program in the Geology Foundation. This program was begun in 1987 with initial funding from Thomas M. Burke. The program's goal is to provide undergraduate students the opportunity to obtain geoscience work experience by working in research projects of faculty and research scientists as laboratory and field assistants.

Advisory Council members relax at Shoreline Grill while waiting for lunch after the fall Council meeting. Clockwise from left: Scotty Holland, Jim Frasher, Bill Reynolds, Tim Denison, Decker Dawson, Judd Oualline and Tom Burke.



GEOLOGY ALUMNI NAMED TO **NEW** HALL OF HONOR

THE 1990-91 ACADEMIC YEAR marked the 20th anniversary of the University of Texas College of Natural Sciences. As a part of the College's 20th anniversary celebration, the Hall of Honor of the College was established to recognize donors of endowments to the College as well as recipients of the Hall of Honor Award. Plaques for each endowment along with plaques for award recipients are on view on the second floor of the newly-renovated Will C. Hogg Building.

The Department of Geological Sciences is honored to have two distinguished graduates, Dr. Thomas D. Barrow and Mr. John F. Bookout Jr., included among the first five recipients of the Hall of Honor Awards. These awards will be granted annually to "individuals who have distinguished themselves professionally and through demonstrated interest in the College of Natural Sciences. Candidates must be alumni, ex-students, current or former faculty members, or outstanding supporters of natural sciences at The University. They also must be persons who recognize and reflect the importance of their association with the College, who demonstrate pride in the College and UT Austin, and whose interest and loyalty are extraordinary." Other recipients of the first Hall of Honor Awards are Dr. Jean Andrews of Austin, Dr. Denton A. Cooley of Houston, and Dr. Norman Hackerman of Austin. All five recipients were inducted into the Hall of Honor on April 5, 1991.

Dr. Thomas D. Barrow received a BS in petroleum engineering in 1945 and a MA in geology in 1948 from the University of Texas. He received a PhD in geology from Stanford University in 1953. Dr. Barrow's career as a geologist began in 1951 with Humble Oil & Refining Company; he became president of Humble in 1970. In 1972 he became senior vice president and a member of the board of directors of Exxon. He joined Kennecott Corporation in 1978 as chairman and chief executive, and in 1981 became vice chairman and director of the Standard Oil Company of Ohio, retiring from that position in 1985.

Dean Robert E. Boyer presents award to Thomas D. Barrow

Dr. Barrow was a member of the Geology Foundation Advisory Council from 1965 to 1972, including four years as chairman of the Council (1966-70). In 1978 he rejoined the Council, and in 1985 became both an Honorary Life Member of the Council and a Distinguished Graduate of the Department. Other University honors include being named a Distinguished Graduate in Engineering in 1970, and a Distinguished Alumnus of the University in 1982. Dr. Barrow was instrumental in establishing several endowments in the Geology Foundation, including the Leonidas T. Barrow Chair in Mineral Resources, and the Laura Thomson Barrow Graduate Fellowship.

Mr. John Bookout received his BS degree in geology from UT in 1949, and his MA in 1950. After graduating, he joined Shell Oil Company and progressed through a number of positions in several locations for Shell, finally serving as president and chief executive officer from May 1976 to June 1988.

In 1981 Mr. Bookout became a distinguished alumnus of the University of Texas at Austin, and was elected a distinguished graduate of the Department of Geological Sciences in 1985. He also holds an honorary doctorate of law from Centenary College and an honorary doctor of science degree from Tulane University. In 1990 he received the gold medal for distinguished achievement from the American Petroleum Institute.

The contributions these gentlemen have made as scientists as well as their unstinting efforts in the area of education make them deserving of this high honor. Their selection will set a high standard of performance for future recipients of the College of Natural Sciences Hall of Honor.

Dean Robert E. Boyer presents award to John F. Bookout Jr.

GEOLOGY FOUNDATION CONFERS **DISTINGUISHED** GRADUATE HONOR

At the fall meeting of the Geology Foundation Advisory Council in October, 1990, Don Boyd and Bill Gipson were selected to receive the Distinguished Graduate Award, the Council's highest honor. This award is in recognition of a former graduate of the Department who by his outstanding career and exemplary public life has been a credit to The Department and to The University. The awards were presented at a luncheon held at the Houston Petroleum Club on January 14, 1991. Citationists Bill Fisher and Scotty Holland paid tribute to the many accomplishments of these individuals; their comments are printed here.

Don R. Boyd
Distinguished Graduate
Department of Geological Sciences
The University of Texas at Austin

The University of Texas at Austin and its Department of Geological Sciences are proud and distinguished institutions. Much contributes to that status, but surely chief in contribution are the Department's graduates who have taken their training and talents and have distinguished themselves in their careers. No finer, no clearer example exists than Don R. Boyd, 1990 Distinguished Graduate.

Don R. Boyd was born in Tyler, Texas, on October 15, 1934, where he grew up and went through school. His parents were people of strong religious and moral convictions. They passed that fiber on to Don, and it has stood him well.

Don Boyd's ties to UT Austin date back 35 years, to the fall of 1955 when he enrolled as an undergraduate student. He had previously spent two years at Texas A&M University and Tyler Junior College, but the fact that Patricia Kidd, his high school sweetheart from Tyler, had come to UT was an irresistible pull. A&M's loss was truly to be Texas' gain. Two years and a semester later, Don had graduated from UT and, just before, he and Patricia were married.

A job offer from Stanolind faded as the company merged with Pan American. At the last minute, Don applied for graduate admission at LSU. He was admitted and, in true Boyd fashion, completed his MS degree under Grover Murray in a bare three semesters, with half again more classroom hours than were required; he gained an NSF Fellowship at LSU and worked in Mexico on the Difunta Group for his thesis.

Don began his career in Corpus Christi with Pan American. His time and friends in Mexico served him well, for with leads from Ted Diaz and others, he learned that Pemex had a well blowout in the Zuloaga Formation. Don and another company man, Charlie Brown, went to Monterey, studied the outcrops, and ran samples on the blowout well. With their work, they were able to tie the Zuloaga and the East Texas Smackover together and to launch Pan American's South Texas Deep Smackover Play.

At the peak of the Edwards reef exploration, while still with Pan American, Don, again at Pemex's invitation, went to the Tampico area of Mexico and studied both outcrops and well samples and coauthored a company report on the El Abra Formation, the producing formation of the famous Golden Lane oil fields. He presented the concept that the Golden Lane was an atoll, making it different from the South Texas Edwards. Don later published a paper on this work and took some heat on the atoll concept until subsequent extension drilling proved him right.

From 1962 through 1966, Don worked for Texas Eastern Transmission Corporation in their Corpus Christi exploration office. It was during this period that I first met Don, when he and Byron Dyer were putting together the classic Boyd and Dyer paper on the Frio, in which they documented that the South Texas Frio constituted a major barrier bar depositional system. It won a Best Paper Award at the Gulf Coast Association of Geological Societies meeting in Corpus Christi in 1964. That paper was an inspiration to scores of us, at UT and elsewhere, as we worked to extend the critical concept of depositional systems. As with the Golden Lane Atoll and the South Texas Deep Smackover, Don Boyd, the scientist, was again ahead of his time.

In 1966, Don became an independent geologist on retainer to Edwin Allday. (Years later, Don was a principal working with the Allday Estate to establish the Allday Centennial Chair in Subsurface Geology and the Allday Lectureship in the Geological Sciences; these Geology Foundation endowments are committed to value in excess of $800,000.) When Mr. Allday scaled back his operation after a major discovery of the Angelina Field, Don went with one of Allday's investors, W. L. (Lee) Sinclair. The Boyd-Sinclair relationship was a very successful one and lasted until Sinclair's death in 1978.

Of Don Boyd's many exploration successes, East Seven Sisters must be near the top. The discovery of the deep Wilcox production at East Seven Sisters Field in Duval County by ARCO was made on leases that Boyd and Sinclair had farmed out to ARCO. This deep production is the only significant gas production (or oil) found below 15,000 feet in South Texas.

Discovered in 1980 during that period of time when deep, deregulated gas was commanding high prices, it had individual wells that produced at rates from 20,000 to 30,000 Mcf per day over sustained periods. The highest gas price received was $9.42/Mcf! Don had realized for years that a deep structure was present on their HBP leases (originally drilled and completed in Wilcox sands at 9,500 to 10,000 feet), and he personally negotiated the farmout with ARCO, wherein he, Sinclair, and their partners retained a 50-percent back-in after the initial well paid out. Six deep wells were drilled on their leases—the discovery well had 446 feet of net gas pay in 16 separate reservoirs from 11,500 to 15,300 feet. The main field pay had more than 108 feet of net gas pay (230 feet of gross pay sand) in a massive sand at 15,060 to 15,290 feet. Don represented not only his working interest position but certain other interests as well. It is a great story, one that makes the heart beat fast. I have related it before, but I believe the best geological talk I ever heard was an extemporaneous one by Don on the East Seven Sisters given to the Corpus Christi Geological Society.

After Lee Sinclair's death, Don spent a couple of years as manager of exploration for Edwin L. and Berry R. Cox in their Corpus Christi offices. But always the explorer looking for big challenges, Don linked up with Ken Martin during the peak of the deep Tuscaloosa Play in South Louisiana; he maintained his offices and residence in Corpus Christi and commuted to New Orleans. But the lure of South Texas never fades, and by 1981, Don was back full time in Corpus Christi as president and chief operating officer of a number of oil and gas interests owned by B. K. Johnson of San Antonio. Since 1985, Don has been an independent

geologist and businessman involved in various oil and gas related business activities; he still drills wildcats but has recently concentrated his efforts, along with his engineering associate, Lou Powers, on oil and gas production sales. A company of his, Texan Drilling Company, is structured to buy and sell drilling rigs and associated equipment.

Don Boyd is a natural leader, a truly outfront guy. His successes and his distinctions are the product of intelligence, energy, timing, and courage, along with a genuine sensitivity to his friends, colleagues, and associates. These qualities have always brought him to the top quickly. He was elected vice president of both his junior and senior high school classes, and he was president of his sophomore class at Tyler Junior College. At UT Austin he was treasurer and house manager of his fraternity, Sigma Alpha Epsilon. (He later served many years on the SAE Alumni House Corporation.) He has served as president of both the Corpus Christi Geological Society and the Gulf Coast Association of Geological Societies. The standing of both these fine organizations reflects Don Boyd's skillful leadership and contributions. He served as secretary of AAPG and on many of the Association's committees; he is now an AAPG Foundation Trustee Associate. AAPG has also honored him as a candidate for president-elect.

Don supports the institutions about him with time, counsel, and resources. And nowhere is this support more evident than in his contributions to the universities that trained him. He was a charter member of LSU's Geology Endowment Advisory Council. At UT Austin, Don has been a very active member of the Geology Foundation Advisory Council since 1976. He served two terms as elected chairman of the Council from 1981 to 1983. For thirty years, from 1950 to 1980, the Foundation endowment had grown to $2.4 million. Under Don's chairmanship, the endowment more than doubled, growing to $5.8 million. In 1985, his colleagues on the Council named him the youngest Honorary Life Member in the Council's history. In addition to being a principal in the creation of the Allday endowments, Don has been active in developing resources for several other endowments, including the Flawn Chair. He and Patricia have generously established the Don R. and Patricia Kidd Boyd Lectureship in Petroleum Geology at UT Austin. Don is on the Chancellor's Council of The University of Texas System and is a lifetime member of the President's Associates at UT Austin. One detects an ample amount of burnt orange in him, and we are all better for it.

Perhaps Don Boyd's most remarkable success is as a family man. That high school sweetheart, Patricia Kidd, has been his wife and companion for 33 years. They have one daughter, Melissa, and twin sons, David and Michael, all mature and accomplished and all graduates of The University of Texas at Austin. Marilee and I have had the pleasure of being with Don and his family. And to see the genuine fondness and respect his family has for him is to see Don Boyd's real mark.

A lot of thoroughly merited recognitions have come his way. In addition to being elected Honorary Life Member of our Advisory Council, Don is an Honorary Member of the Corpus Christi Geological Society (one of three living people so recognized), an Honorary Member of the Gulf Coast Association of Geological Societies, and an Honorary Member of the American Association of Petroleum Geologists, which also gave him its Distinguished Service Award.

And so as we elect him to that special, select group of Distinguished Graduates, it really seems logical and natural that we do so.

Not everything in Don Boyd's life has been as he would have liked. Along with his many successes, he has also had disappointments and substantial challenges. But he has a stout heart, a dauntless spirit, and the needed courage.

Don Boyd is a person fully committed to the concept that each of us as geologists is personally obligated to work with our profession to make it better for those who follow—that it is our duty to return something for what we have taken out. In that commitment, Don distinguishes himself and all of those about him. In naming him Distinguished Graduate, we also honor ourselves and do credit to the fine professional product of the Department and the University.

—William L. Fisher
Austin, Texas

Response:

One cannot imagine my surprise when I learned of the Advisory Council's action that named me a Distinguished Graduate and positioned me as part of such an illustrious and super-eminent group. I must confess to you that quite honestly I do not feel worthy of such a high tribute. I am deeply honored by this action of my esteemed friends and associates on the Advisory Council and thank them for the warmth of their friendship, and I certainly shall do my best to overlook the shortcomings inherent in my selection.

I have spent a considerable amount of time since being named a Distinguished Graduate in reflecting on my career and what special factors could have been involved in my selection. I certainly was never considered the student with the brightest mind. I have achieved modest success in the search for oil and gas—I have drilled a lot of dry holes as well. Any success I have had must be credited to a commitment to hard work and a diligence in pursuing goals and dreams rather than accepting and being satisfied with mediocrity.

I feel the honor accorded me today is primarily based on my professional involvement, and what a labor of love that has been! Bill's citation generously speaks of this involvement, but let me tell you why I consciously chose to spend my time and sometimes resources in such a manner. My parents, especially my mother, instilled in me at an early age the need to contribute one's time and resources to God and His Church and to society. My days at LSU were spent working directly for Grover Murray, another great influence in my life. Grover was the best role model a young geologist could have, and during my period at LSU we developed a great friendship that still exists. Grover's work ethics and commitment to geological excellence as well as his strong dedication to the science and profession of geology had a profound influence on me. I came to Corpus Christi from LSU eager to become involved in both my work and service. The many years have not dulled this urge to work for what I perceive to be in the best interests of my profession—a profession that has provided me with a good life and with each day bringing new and exciting opportunities in which to work. How lucky I have been to have chosen geology as my life's work, to have attended the University of Texas and studied under its great faculty for my foundation in geology, and lastly to have a wife who has understood and supported me wholeheartedly in my career.

Instant replay is not applicable in the game of life, but in reflecting on mine I can easily conclude that the correct calls were made. All of my professional life I have been surrounded by a host of highly capable and dedicated geologists. I have worked with geologists I greatly respect and admire to create an even better university and a better professional climate for those who will follow us. Deep and abiding friendships have resulted, for which I will forever be grateful.

In summary, the probability exists that an average geologist who has immensely enjoyed his many years of professional service and has along the way developed a host of distinguished friends is being honored today. As that honoree, I am most appreciative, and I thank each of you for being here today and for being an integral part of my life and of this happy occasion.

—Don R. Boyd
Corpus Christi, Texas

William E. Gipson
Distinguished Graduate
Department of Geological Sciences
The University of Texas at Austin

Teamwork, talent, hard work, and that special competitive edge that comes from inspired effort—characteristics of a champion, on and off the field. It's no accident that the same factors that made a young man a star athlete became the signature of a truly remarkable life that has enriched the geology profession and countless numbers of its practitioners.

William Earl (Bill) Gipson was born in Winters, Texas, on September 6, 1924, the only child of William Francis and Marguerite Edwards Gipson. His friends, and they are legion, know he feels strongly about geology, work ethics, family, maps, the University of Texas, and sports (especially football).

If you think Bill is an ardent football fan, you should have known his dad. The elder Gipson, known lovingly as "Pop," got so excited at a 1923 Thanksgiving football game in Abilene, Texas, that he asked his date to marry him. She said yes, and they left the game for the church, or so goes the story.

Bill's family moved to the East Texas town of Gilmer during the Depression. At Gilmer High School, he was an honor student and a football star, played in the band, and was sports editor of the school paper.

In 1941, football scholarship in hand, he entered Kilgore Junior College. At Kilgore, he lettered for two years in football and got his first taste of geology through an introductory course. Strangely enough, his first teacher in geology was Marion Whitney, daughter of Dr. Francis L. Whitney, who later became his graduate advisor at the University of Texas.

During his first semester of college, World War II broke out and he later volunteered for the Naval Reserve. He was sent to Southern Methodist University in the fall of 1943 in the Navy's V-12 program, where he continued toward a degree in geology and lettered in football. By the fall of 1944, he had completed the V-12 and OCS programs and was assigned to the South Pacific Theatre aboard an amphibious gunship, where he remained until his honorable discharge in 1946.

Bill entered the University of Texas at Austin in the fall of 1946, married, received a BA degree in geology and was elected to Sigma Gamma Epsilon honorary fraternity in 1948, and completed an MA in geology in 1949. His thesis, under Dr. Whitney, was "The Geology of the Kimbro Area, Travis and Bastrop Counties, Texas."

Bill Gipson off the football field was like Bill Gipson on it—a team player and a natural leader, bright and aggressive, with an entrepreneurial flair. Those talents proved their worth in his professional career, which began in Midland, Texas, in 1949, when he went to work as an exploration geologist for the Ohio Oil Company, known today as Marathon Oil. Bill was assigned to work with another UT graduate, Harry Miller, who took the fledgling geologist under his wing. To this day, Harry claims to have taught Bill everything he knows about exploration.

These were exciting times for geologists. Bill's first assignment was the Eastern Shelf of the Permian Basin, where the renowned Scurry Reef had just been discovered. William Earl tells this story.

"In those days, we not only mapped an area but were responsible for reporting what everyone else was doing. To do so, I had to know the drillers and roughnecks pretty well. One day while visiting a rig in Kent County, Texas, I asked to look at the drill cutting since they were in a drilling break and no geologist was on location. Sure enough, the cuttings were limestone and they were loaded with oil shows. I suggested to the driller that he should test the well. Later that night at a motel in Spur, Texas, I received a call from a Mr. H. L. Hunt asking what I thought about the cuttings. I told him. The next day when I drove out to the well, it was fenced off and they were testing. That turned out to be the discovery well for the Salt Creek Field."

Bill enjoyed his years with Marathon Oil, but increasingly an independent streak and his talent for leadership were making him yearn to be out on his own. One night when he and an old UT geologist friend, Joe Keyser, were having one (or, discussing the future), they decided the time had come to scratch that itch. They formed a consulting partnership and, with the aid of free office space supplied by Woodly Petroleum, set up shop and hung out their shingle in 1953.

Bread and butter money came from well site duties until their first prospect, a farmout on a 160-acre tract, resulted in an oil discovery that eventually boasted

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three wells. With their newfound success lending credibility, he and Joe added two brothers, Bill and Hugh Liedtke, to their list of clients in 1954. The association proved a happy one on both sides; by 1956 the partnership was spending about half its time and effort on Liedtke Limited business. Eventually, the original Gipson & Keyser partnership was dissolved and Bill became a partner in Liedtke Ltd. investments.

When a number of the limited partnerships were consolidated into Stetco Petroleum in 1962, Bill became a vice president. The following year when Stetco and South Penn Oil Company were merged and renamed Pennzoil Company, Bill became vice president-exploration for the western division. In 1967, he moved to Houston, Texas, as vice-president-exploration for Pennzoil Company.

These were years of expansion for Pennzoil, giving Bill plenty of opportunity to exercise his expertise for spotting talent in others and teaching and mentoring them into developing their abilities to the fullest. He says his greatest satisfaction during those years was being able to assemble an exploration team that helped build a company such as Pennzoil.

Those skills served Pennzoil well as it moved aggressively into offshore exploration, forming new companies called Pennzoil Offshore Gas Operators, Inc. (POGO), and Pennzoil Louisiana and Texas Offshore, Inc. (PLATO), in 1970 and 1973, respectively. Bill became executive vice president and director for both companies.

In 1977, Pogo was spun off as a public company named Pogo Producing Company. Thirteen people left Pennzoil to go with Pogo, Bill Gipson among them. He felt it was a chance to build something else, to staff up and develop another strong team, take a small company and help it grow. Bill became the new company's president during its hectic growth years, serving also as a director. When he elected retirement in 1989, Pogo retained him as managing director-exploration and director.

Bill showed his commitment to professionalism throughout his career, working actively with industry and academic and community groups. In addition to his interest in the University of Texas Geology Foundation, he demonstrated his pride in the University by establishing an endowment fund to be used by graduate students in earning advanced degrees in geology. A presidential scholarship at Southern Methodist University and agricultural and athletic scholarships at Kilgore Junior College are just a few of the other ways he has given his support to education.

He became active in the American Association of Petroleum Geologists (AAPG) in 1949, serving on many committees, both as member and chairman, and a director of the National Ocean Industry Association. He was president of the Domestic Petroleum Council, served on the Geology Advisory Council of Rice University and on countless other civic and community groups.

His retirement years should be as full and enjoyable as ever with eight grandchildren; a son, Bill, Jr.; and three daughters, Carolyn, Judy, and Annie; and a delightful and gracious wife, Leta. Other activities that will occupy his time will be his interest in geology, his business acumen in starting new ventures and varied occupations and hobbies such as breeding Santa Gertrudis cattle, fly fishing, and serving as an investor and director for a Texas winery, the Cox Family Vineyards.

A colleague once said that "a friend of Bill Gipson's is a friend for life. He's a man with no enemies." In a distinguished professional career, he has been both an independent spirit and the consummate team player, able to motivate, inspire, and mentor others. In the process, Bill Gipson has left an enduring legacy of service and achievement for all who come after him. This award will be one of his greatest treasures.

—David S. Holland
Houston, Texas

Response:

I am very honored to be named a distinguished graduate of the Department of Geological Sciences at the University of Texas

In the summer of 1946 shortly after getting out of the Navy, I began making plans to go back to school for the fall semester and continue my studies in geology at the university I had previously attended. As the summer wore on, however, the thought kept going through my mind that I had three years of the GI Bill for education to use and why not use its assistance to go to the very best school for petroleum geology. I had heard more about the Geology Department at the University of Texas than any other, so in midsummer I made a trip to Austin. I was impressed with what I found and returned in September to enroll. This was one of the wisest decisions that I've ever made.

It has been over forty-four years now since that summer and I still feel that the University of Texas at Austin is the premier school for petroleum geology in the country. My career involvement in the petroleum industry has served to reinforce that opinion and I have a tremendous amount of pride in having gone to school there.

It also has been a rewarding experience for me to have been associated with the Geology Foundation Advisory Council for a number of years. This has afforded an opportunity, with spring and fall meetings, to maintain a closeness to the school and faculty as well as providing meaningful associations with fellow members.

I am most appreciative and very grateful for this honor which is extremely meaningful to me. There are many UT geology graduates that have had distinguished careers who may not have been formally recognized, and I accept this award as one of the representatives of the geology school alumni group.

—William E. Gipson
Houston, Texas

THE LITTLEFIELD SOCIETY RECOGNIZES DONORS

IN FEBRUARY 1991 THE UNIVERSITY recognized charter members of The Littlefield Society, a group of donors named in honor of George Washington Littlefield (1842-1920). Major Littlefield serves as an example of the many persons whose contributions have enabled The University to reach the level of excellence it now enjoys. Major Littlefield was a member of the Board of Regents who gave generously of his time and financial means. It is in recognition of his spirit of philanthropy that The Littlefield Society has been named to acknowledge the efforts of dedicated alumni and friends of The University.

More than 60 individuals and a number of companies or groups associated with the Department of Geological Sciences were recognized along with many other contributors as charter members of the organization. Membership in The Littlefield Society is extended to:

* Individuals and couples with cumulative outright gifts of $25,000, a pledge of $25,000 to be fulfilled within a five-year period, or $50,000 in planned gifts such as bequests or trusts.
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Jack Sharp
A. Richard Smith
Doug Smith
Mrs. Sam M. Udden
Glenn Vargas
Ray Woods
Keith Young

June 1, 1990 thru May 31, 1991

GEOLOGY FOUNDATION **ENDOWED** ACCOUNTS

Fund	*Goal*	*Endowment*
Edwin Allday Centennial Chair in Subsurface Geology Income supplements salary and supports research of recipient	Unspec.	$ 590,309
Edwin Allday Lectureship in Geological Sciences To provide for guest lecturers in geological sciences	$ 203,716 *	$ 82,372
Alternative Energy Research and Development Fund For study of energy sources other than petroleum	$ 187,250	$ 187,250
E. M. Barron Trust For support of the Barron Mineral Collection	Unspec.	$ 101,355
Leonidas T. Barrow Centennial Chair in Mineral Resources Development of program of excellence in mineral resources; income supplements salary and supports research of recipient	Unspec.	$ 862,161
Laura Thomson Barrow Graduate Fellowship To support graduate students specializing in natural resources; special consideration for female students and students concentrating in field-oriented studies	Unspec.	$ 191,740
Bloomer Fund for Motivated Students Financial aid for students not qualified for scholarships	Unspec.	$ 53,158
Leslie Bowling Professorship To attract persons from industry and government for short-term appointments on the faculty	Unspec.	$ 83,933 +
Wayne F. Bowman Endowed Presidential Scholarship Unrestricted geology scholarships	Unspec.	$ 92,967
Don R. and Patricia Kidd Boyd Lectureship in Petroleum Exploration To provide for guest lecturers in petroleum exploration	Unspec.	$ 42,594
Brahman Energy Scholarship Senior field course scholarships	Unspec.	$ 15,919
Jesse L. Brundrett Memorial Endowed Presidential Scholarship Graduate student scholarships	Unspec.	$ 25,736
Fred M. Bullard Professorship Excellence in teaching, income supplements salary and supports research of recipient	Unspec.	$ 58,987 ++
Thomas M. Burke Student Job Program Jobs for students in geologic work related to faculty research	Unspec.	$ 10,284
Hal H. Bybee Memorial Fund Student field support, or support of students researching geologic issues related to public policy	Unspec.	$ 36,271
Hal P. Bybee Memorial Fund Faculty use—research, travel, study, etc.	Unspec.	$ 411,556
L. W. Callender Memorial Fund Departmental use, unrestricted	Unspec.	$ 50,999
Dave P. Carlton Centennial Professorship in Geology Income supplements salary and supports research of recipient	Unspec.	$ 448,191
Dave P. Carlton Centennial Professorship in Geophysics Income supplements salary and supports research of recipient	Unspec.	$ 467,732
Dorothy Ogden Carsey Memorial Scholarship Fund Geology scholarships, any level; special consideration to micropaleontology students	Unspec.	$ 82,123
J. Ben Carsey Sr. Special Maintenance Fund To maintain teaching and research equipment	$ 250,000	$ 81,339
S. E. Clabaugh Fund in Hard-Rock Geology To support research in hard-rock geology	Unspec.	$ 25,227
W. Kenley Clark Memorial Endowed Presidential Scholarship Geology scholarships, any level	Unspec.	$ 43,323
Robert H. Cuyler Endowed Presidential Scholarship Undergraduate (upper-division) and graduate scholarships	Unspec.	$ 47,572
Morgan J. Davis Centennial Professorship in Petroleum Geology Income supplements salary and supports research of recipient	Unspec.	$ 602,289
Ronald K. DeFord Field Scholarship Fund Field studies for graduate students	Unspec.	$ 153,152
Alexander Deussen Professorship Energy Resources Development of program of excellence in energy resources; income supplements salary and supports research of recipient	Unspec.	$ 123,126

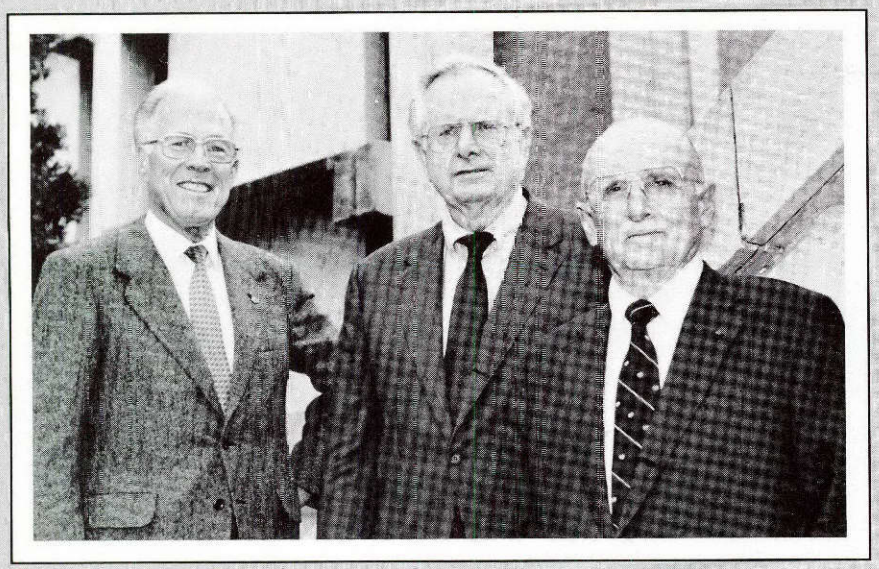
** $122,267 in addition pledged from Allday Estate.* *+ Does not include $41,069 held in unitrust.* *++Does not include $45,261 held in unitrust.*

Fund	*Goal*	*Endowment*
Michael Bruce Duchin Centennial Memorial Endowed Presidential Scholarship Scholarship for Master's candidate with preference toward general geology	Unspec.	$ 34,217
Elf Aquitaine Petroleum Faculty Fellowship in Geological Sciences Income supplements salary and supports research of junior faculty member	Unspec.	$ 113,749
John E. "Brick" Elliott Centennial Professorship in Geological Sciences Income supplements salary and supports research of recipient	Unspec.	$ 254,608
Samuel P. Ellison Jr. Endowment Fund For Department *Newsletter* and support of faculty-alumni functions	$ 100,000	$ 65,687
Energy and Mineral Resources Fund Support of programs and students in energy and mineral resources	$ 100,000	$ 25,048
William Stamps Farish Chair in Geology Income supplements salary and supports research of recipient	Unspec.	$ 344,170
Peter T. Flawn Centennial Chair in Geology Income supplements salary and supports research of recipient	Unspec.	$ 650,058
Geology Foundation Advisory Council Centennial Teaching Fellowship in Geological Sciences Income supplements salary and supports research of junior faculty member	Unspec.	$ 56,412
Getty Oil Company Centennial Chair in Geological Sciences Income supplements salary and supports research of recipient	Unspec.	$ 771,770

Fund	*Goal*	*Endowment*
Miss Effie Graves Memorial Fund Department needs (faculty support, student aid, special equipment, etc.)	Unspec.	$ 23,239
Guy E. Green Endowed Presidential Scholarship Geology scholarships, any level	Unspec.	$ 28,937
J. Nalle Gregory Chair in Sedimentary Geology Development of program of excellence in sedimentary geology; Income supplements salary and supports research of recipient	Unspec.	$ 643,152
J. Nalle Gregory Regents Professorship in Geological Sciences Income supplements salary and supports research of recipient	Unspec.	$ 250,000
Gulf Oil Foundation Centennial Professorship in Geology Income supplements salary and supports research of recipient	Unspec.	$ 241,683
Karl F. Hagemeier Jr. Memorial Endowed Presidential Scholarship General geology scholarships, any level, with preference to students from Brazoria or Kerr counties	Unspec.	$ 39,793
George S. Heyer Memorial Fund Any purpose of the Foundation	Unspec.	$ 85,990
William C. Hogg Memorial Scholarship Fund General information: 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.		
Hogg-Cullinan Scholarship in petroleum or field geology in honor of Joseph S. Cullinan	Unspec.	$ 39,504
Hogg-Sharp Scholarship in petroleum or field geology in honor of Walter Benona Sharp	Unspec.	$ 39,504

New Advisory Council Chairman Scotty Holland presents plaque to Tim Denison in appreciation for chairing the Council for the past two years, as Geology Foundation Director Bill Fisher looks on.

Fund	Goal	Endowment
Houston Oil & Minerals Corporation Faculty Excellence Awards In recognition of outstanding service and special contributions to the teaching and research programs	Unspec.	$ 42,677
F. Earl Ingerson Graduate Research Assistance Fund in Geochemistry Research assistance to graduate students in geochemistry	Unspec.	$ 13,700
John A. and Katherine G. Jackson Centennial Teaching Fellowship in Geological Sciences Income supplements salary and research of junior faculty member	Unspec.	$ 112,791
Carolyn G. and G. Moses Knebel Teaching Awards Annual Distinguished Teacher Award, Innovative Improvement and New Course Development	Unspec.	$ 72,594
Clara Jones Langston Centennial Lectureship in Vertebrate Paleontology To provide for guest lecturers in vertebrate paleontology	Unspec.	$ 20,392
J. Donald Langston Special Operations Fund Purchase teaching and research equipment	$ 250,000	$ 130,072
Wann and Marietta Langston Research Fund in Vertebrate Paleontology Faculty research in vertebrate paleontology	Unspec.	$ 89,587
Jack K. Larsen-Mesa Petroleum Co. Fund in Sedimentary Geology Support of the Department's program in sedimentary geology	Unspec.	$ 113,907
Howard R. Lowe Vertebrate Paleontology Endowment Support of student field work in vertebrate paleontology	Unspec.	$ 27,274
J. Hoover Mackin Memorial Scholarship Fund Graduate geology scholarships	Unspec.	$ 21,251
John H. and Lujza P. McCammon Endowed Scholarships Upper-division undergraduate scholarships	Unspec.	$ 10,725
Mr. and Mrs. L. F. McCollum Endowed Scholarships Geology scholarships, any level	Unspec.	$ 18,017
Frank W. Michaux Scholarship Fund Geology scholarships, any level	Unspec.	$ 10,524
Carroll C. Miller Endowed Presidential Scholarship Geology scholarships to students pursuing careers in energy industries; preference to students from South Texas	Unspec.	$ 30,130
Wes Ogden Memorial Scholarship in Geophysics Geophysics scholarships to students who express interest in applying geophysical training in practical applications within the oil and gas industry	Unspec.	$ 10,765
Fred L. and Frances J. Oliver Lectureship in Texas Hydrology and Water Resources To provide for guest lecturers in water resources	Unspec.	$ 50,920
Judd H. Oualline Endowment Fund For special needs of the Department	Unspec.	$ 19,424
Judd H. and Cynthia S. Oualline Centennial Lectureship in Geological Sciences To provide for guest lecturers in geological sciences	Unspec.	$ 42,917
Judd H. and Cynthia S. Oualline Centennial Lectureship in Petroleum Geology To provide for guest lecturers in petroleum geology	Unspec.	$ 27,050
Ed Owen-George Coates Fund Publication of geological research by faculty andgraduate students	Unspec.	$ 104,583
Bill R. Payne Centennial Teaching Fellowship in Geological Sciences Income supplements salary and research of junior faculty member	Unspec.	$ 60,870
Joyce Bowman Payne Centennial Teaching Fellowship in Geological Sciences Income supplements salary and research of junior faculty member	Unspec.	$ 54,294
Pennzoil and Pogo Producing Companies—William E. Gipson Scholarships Scholarships for UT graduates seeking Masters degrees at UT	Unspec.	$ 113,832
O. Scott Petty Geophysical Fund Development of program of excellence in geophysics	Unspec.	$ 128,054
Wallace E. Pratt Professorship in Geophysics Development of program of excellence in geophysics; income supplements salary and research of recipient	Unspec.	$ 148,603
Louis and Elizabeth Scherck Geology Scholarship Undergraduate (upper division) and graduate scholarships	Unspec.	$ 101,831
Wilton E. Scott Centennial Professorship Income supplements salary and supports research of recipient	Unspec.	$ 215,395
The Shell Companies Foundation Centennial Chair in Geophysics Income supplements salary and supports research of recipient	Unspec.	$ 886,536
The Shell Companies Foundation Distinguished Chair in Geophysics Income supplements salary and supports research of recipient	Unspec.	$ 840,726



New Honorary Life Members of the Geology Foundation Advisory Council elected in April 1991 are (left to right): Judd H. Oualline, William E. Gipson, and Peter T. Flawn.

Fund	*Goal*	*Endowment*
Frederick W. Simonds Endowed Presidential Scholarship Scholarships to undergraduate (upper division) and graduate students	Unspec.	$ 26,350
William T. Stokes Centennial Teaching Fellowship in Geological Sciences Income supplements salary and research of junior faculty member	Unspec.	$ 120,877
Structural Geology and Tectonics Fund For support of faculty and student research in structure and tectonics	Unspec.	$ 67,115 *
H. Tod Sutherland Memorial Scholarship Fund For summer research support for graduate students	Unspec.	$ 33,718
Estate of Elizabeth M. Teagle For scholarships to students with interest in petroleum geology	Unspec.	$ 350,000
David S. Thayer Memorial Scholarship Fund Senior field course scholarships	Unspec.	$ 26,771
Tobin International Geological Map Collection For purchase of maps and photos, storage and viewing facilities for these items	$ 100,000	$ 71,860
Udden Memorial Scholarship Fund Geology scholarships at any level	Unspec.	$ 10,798
Glenn and Martha Vargas Gemological Scholarship Scholarships for students interested in gemology or mineralogy	Unspec.	$ 15,317
Vargas Endowment for Gems and Gem Mineral Instruction For course-related materials and instruction on gems and gem minerals	Unspec.	$ 22,598
Various Donors (General) Unrestricted funds for any purpose of the Foundation	Unspec.	$ 28,410

**$35,250 in addition pledged from anonymous donor.*

Fund	*Goal*	*Endowment*
Joseph C. Walter Jr. and Elizabeth C. Walter Geology Library Fund Acquisition of books, maps and other library materials	Unspec.	$ 175,991
Albert W. and Alice M. Weeks Centennial Professorship in Geological Sciences Income supplements salary and supports research of recipient	Unspec.	$ 147,554
E. A. Wendlandt Fund Purchase of books and journals in German or English translations	Unspec.	$ 7,421
Arno P. (Dutch) Wendler Professional Development Fund Support of graduate student presentations at professional meetings	Unspec.	$ 100,725
Francis L. Whitney Endowed Presidential Scholarship Geology scholarships, any level, paleontology and stratigraphy preferred	Unspec.	$ 41,782
Francis L. Whitney Memorial Book Fund Purchase of paleontological books for library	Unspec.	$ 16,065
John A. Wilson Professorship in Vertebrate Paleontology Development of program of excellence in vertebrate paleontology; income supplements salary and supports research of recipient	Unspec.	$ 106,639
Charles E. Yager Undergraduate Field Scholarship Fund Support of students taking Geology 660	Unspec.	$ 44,519
Mr. and Mrs. Charles E. Yager Professorships Three professorships in any discipline for faculty who participate in field instruction	Unspec.	$ 363,087

GEOLOGY FOUNDATION ADVISORY COUNCIL

Effective September, 1991

Chairman

Mr. David S. "Scotty" Holland, 3 River Way, Suite 1300, Houston, TX 77056

Vice Chairman

Mr. Phillip E. Wyche, 126 Firebird, Austin, TX 78734

Members

Mr. Charles W. Alcorn Jr., President, Alcorn Companies, P. O. Box 2879, Victoria, TX 77902

Mr. Eugene L. Ames Jr., President, Venus Oil Company, 2100 NBC Building, San Antonio, TX 78205

Dr. David S. Birsa, General Manager of Exploration, Chevron U.K. Limited, 2 Portman Street, London W1H, OAN, England

Dr. Richard R. Bloomer, Route 2, Box 317E, Leander, TX 78645

Mr. Jerry W. Box, Vice President for Exploration, Oryx Energy Company, P. O. Box 2880, Dallas, TX 75221-2880

Mr. Thomas M. Burke, Consultant, 8519 Manhattan Drive, Houston, TX 77096

Mr. Weyman W. Crawford, 10026 Sugar Hill, Houston, TX 77042

Mr. L. Decker Dawson, President, Dawson Geophysical Company, 208 S. Marienfeld, Midland, TX 79701

Dr. Rodger E. Denison, Mobil Research and Development Corporation, Box 819047, Dallas, TX 75381

Mr. George A. Donnelly Jr., President, The Eastland Oil Company, P. O. Box 3488, Midland, TX 79702

Mr. Thomas E. Fanning, Vice President, Domestic Exploration, Marathon Oil Company, P. O. Box 3128, Houston, TX 77253

Mr. James H. Frasher, Consultant, 14751 Quail Grove, Houston, TX 77079

Mr. Joseph N. Gittelman, General Manager, Geophysics, Shell Western E&P Inc., P. O. Box 576, Houston, TX 77001

Mr. George M. Harwell, Consultant, 14918 River Forest, Houston, TX 77079

Mr. Larry R. Hensarling, President, Tee Oil, Inc., P. O. Box 52843, Suite 800, Lafayette, LA 70505

Mr. Charles J. Hooper, 2111 Pine Valley, Houston, TX 77019

Mr. John A. Jackson, 10325 Gaywood Road, Dallas, TX 75229

Mr. J. Donald Langston, 78-6880 Kuhinanui Street, Kailua-Kona, HI 96740

Mr. Vance M. Lynch, 13 Laurel Hill, Austin, TX 78737

Mr. Ken G. Martin, 127 Highway 22E, #512, Madisonville, LA 70447

Mr. David F. Martineau, Exploration Manager, Pitts Oil Company, 4600 Greenville Avenue, Dallas, TX 75206-5038

Mr. Harry A. Miller Jr., 600 First National Bank Building, 303 West Wall, Midland, TX 79701

Mr. Michael B. Morris, 3108 Reba Drive, Houston, TX 77019

Mr. Robert D. Ottmann, 1014 Suwanee Lane, Houston, TX 77090

Mr. James C. Patterson, Vice President, North American Exploration, Conoco Inc., P. O. Box 2197, Houston, TX 77252

Mr. W. F. Reynolds, J. C. & W. F. Reynolds Oil Producers, 700 MBank Building, Wichita Falls, TX 76301

Mr. George W. Schneider Jr., Consultant, #10 Cicero, Austin, TX 78746

Mr. Don B. Sheffield, President and CEO, Halliburton Geophysical Services, Inc., P. O. Box 36306, Houston, TX 77036-6306

Mr. William T. Stokes, Consultant, 7703 Southwestern Boulevard, Dallas, TX 75225

Mr. Charles Weiner, Chairman of the Board, Texas Crude Inc., 2100 Texas Crude Building, 801 Travis, Houston, TX 77002-5764

Mr. Eddie A. Williamson, Division Exploration Manager, Amoco Production Company, P. O. Box 3092, Houston, TX 77253

Bill Stokes (left), Bill Gipson and Bill Muehlberger visit at the fall Advisory Council luncheon.

Honorary Life Members

Dr. Thomas D. Barrow, Consultant, 4605 Post Oak Place, Suite 207, Houston, TX 77027

Mr. Don R. Boyd, 250 Cape May, Corpus Christi, TX 78412

Dr. Samuel P. Ellison Jr., 5948 Highland Hills Drive, Austin, TX 78731

Dr. Peter T. Flawn, 3718 Bridle Path, Austin, TX 78703

Mr. William E. Gipson, Managing Director of Exploration, Pogo Producing Company, P. O. Box 61289, Houston, TX 77208

Mr. John L. Loftis Jr., 11919 Broken Bough, Houston, TX 77024

Mr. Judd H. Oualline, Consultant, 217 Mayerling, Houston, TX 77024

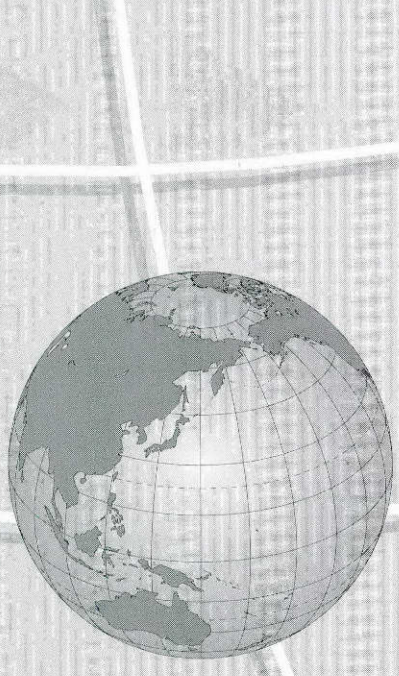
Mr. O. Scott Petty, 711 Navarro Street, Suite 235, San Antonio, TX 78205

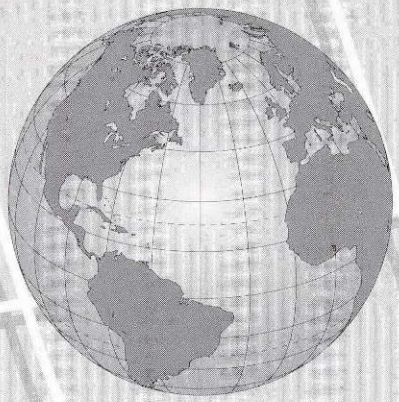
Mr. Edd R. Turner, 900 West Main Street, Kerrville, TX 78028

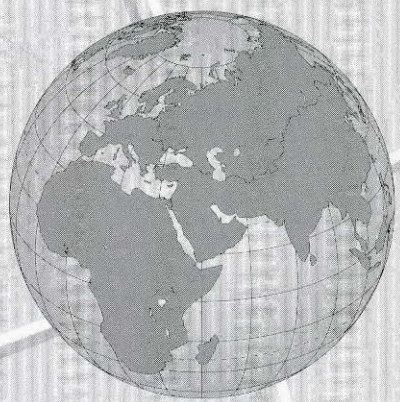
Mr. Joseph C. Walter Jr., Walter Oil & Gas Corporation, Suite 204, The Main Building, 1212 Main Street, Houston, TX 77002

Mr. Charles E. Yager, 3801 Potomac, Fort Worth, TX 76107

Alumni NEWS







In Memoriam

Irwin J. Anderson

E. J. (Ed) Dickerson

Prentice O. Geddie

Angel Dexter Leshikar

George W. Marshall

Robert F. Mathews

Francis Herbert McGowan

John F. McKnight

Charles S. Percy

James Stuart Pittman Jr.

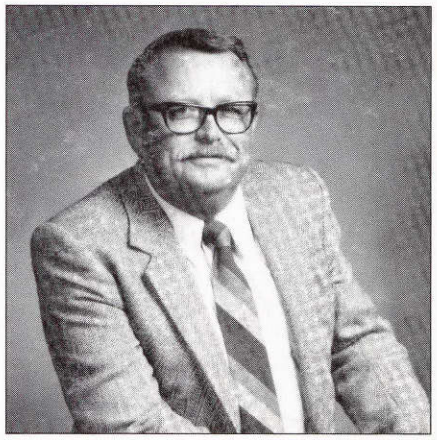
Rafik Salem

E. J. (Ed) Dickerson (BS '57, MA '66) passed away of natural causes on August 9, 1990, at home in rural Midland County, Texas. He was born March 25, 1934, in Lexington, Missouri, the only son of Ebbie and Robert M. Dickerson. Ed is survived by his mother, Ebbie, and his wife, Pat (BA '70).

Ed's parents worked for AT&T long lines division and frequently moved to new locations as the long distance telephone lines were constructed and improved. As a result, Ed attended more than 35 different grade and high schools in numerous states. He finally received his diploma from Greenville, Texas High School, in 1952. He entered Texas A & M in the fall of 1952 and transferred to UT in January, 1954, to begin work on a BS in Geology.

Ed and I met in 1955 in the old engineering drawing class that all BS Geology majors were forced to take. We were partners in topographic surveying class in spring 1956. Those were the hottest of the drought years and the afternoon field surveying caused a mighty thirst to develop. Ed and I would retire to Tony's Bar after class. Ed, being old enough, would have a beer. I would have a coke and lots of envy. We became fast friends and shared many memorable experiences.

After receiving his BS, Ed worked for Geophysical Services, Inc. in Louisiana, Oklahoma, and New Mexico. He later worked for several smaller seismic companies and consultants. In a brief excursion from earth science, Ed received a Certificate in Electronics Technology from Texas Institute of Technology in 1961. Using these newly acquired skills and his geology, he was hired by Teledyne GeoTech to work on the then super-



secret Vela Uniform Project to detect atomic bomb testing by Russia.

In Fall 1963, Ed returned to UT to begin work on an MA degree. His supervisor was J. Hoover Mackin and Ed's thesis on the Hot Springs area near Presidio, Texas, stands as an outstanding geomorphic work. He then worked as a seismic interpreter for Amoco (Pan American) in Midland and for various consultants in Fort Worth.

Like many geology grads, Ed and I were on separate paths and in odd places most of the time. We often saw each other only once a year at the Clabaugh's traditional fall party for incoming graduate students. At one of these parties Ed and Pat met, eventually became serious, and then rushed into marriage after eight years of friendship to courtship. They married in fall, 1971 and lived briefly in Houston, where Pat was with Exxon Production Research Co. and Ed was a full time consultant.

They moved to Dallas in 1971 and Ed was involved in North Sea geophysical interpretation for Mobil; that assignment included a memorable 3-month stint in London. Following a year with the two of them at the Bureau of Economic Geology in

Austin, they returned to Houston in 1974 where Ed continued consulting with Bell & Murphy & Associates and Pat worked for Gulf Research & Development Co. Some of Ed's consulting took him to Trinidad and Canada, as well as to Alaska and much of the rest of the US.

Finally, in 1984, Ed and Pat moved to Midland and purchased "Los Arboles," their home in rural Midland County. Ed continued consulting there; he and I began working on a large "oil-patch" software services contract and continued on that for several years. In the meantime he was perfecting shallow seismic techniques for both energy and environmental studies. His nonexplosive seismic source "Brutus" was well regarded in the shallow-target geophysical industry. He also used "Brutus" in teaching seismic data-acquisition methods for the University of Arkansas geophysical field course in Montana—an involvement he particularly enjoyed. The apparatus has returned to academic duty and will see further use by students in the University of Texas at El Paso land geophysical program.

Ed possessed many talents and had a natural ear for music. He played mandolin and sometimes guitar at the late 50's and early 60's "hollers" put on by UT geology graduate students.

He especially enjoyed most water sports, including water skiing and sailing. During one hot Dallas summer when we both happened to be working in the same place, Ed and I decided to teach each other to slalom water ski. As neither of us had the slightest idea how, this was an interesting exercise. After one afternoon of towing each other around Lake Lavon without much success in actually riding the ski, Ed announced, "There can't be any fish in this lake. I've trolled you around all afternoon without a single strike!"

Ed was a craftsman, too—whether in wood or metal, he turned out some beautiful pieces. Ed and Pat's wedding rings were cast by Ed in his shop, and he hand-made the tie tacs and pins given to the wedding party as well. He could fix anything, from a balky lawnmower to a computer.

An always even temper and an effervescent sense of humor were two of Ed's trademarks. He could brighten your day — even a bad one — with a single comment.

Ed and Pat were preparing to move back to Austin so that Pat could work on her PhD and he could continue his work in environmental geophysics. Ed was looking forward to the change of scene and to getting close to water again. His untimely death brought out scores of friends from Midland and across the country to pay respects and to help. To me, how your friends and associates respond to your passing is a true measure of success in life. Ed succeeded completely. He is and will be sorely missed by all whose life he touched.

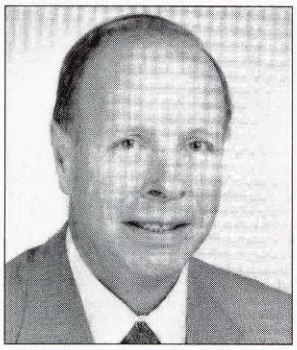
— by Michael A. Wiley
Dallas, Texas

Angel Dexter Leshikar, 73, of Austin died on July 5, 1991. Angel was a geology student at UT from 1936-1939. In 1951 she began work for an Austin firm, Western Publications, which published two national magazines, *True West* and *Frontier Times*. She was associate publisher of that firm when she resigned in 1960 to begin working in the Zoology Department at UT. In 1965, she began working as editor half-time for the Chemistry Department and half-time for the Geology Department. From 1965 to 1970 she was editor of the Department's alumni *Newsletter*, and handled administrative duties for the Geology Foundation. She later was Director of Operations of the LBJ School of Public Affairs at UT, and retired from that position in 1979.

Angel was preceded in death by her husband of 44 years, T'Odon C. Leshikar. She is survived by two sons, T'Odon C. Leshikar Jr. and Ivan Leshikar, both of Austin; two daughters, Terri Caldwell of Austin and Nancy Hebert of Dallas; seven grandchildren and numerous relatives and friends.

Francis Herbert McGowan died March 2, 1991 in Houston, Texas at the age of 84. He was born in Sherman, Texas. After finishing high school in Smithville, he attended the University of Texas School of Mines, El Paso. He graduated from the University of Texas in Austin with a BA in geology in 1928, and an MA in 1930. While at the University, he was a member of Sigma Gamma Epsilon. He was employed by Humble Oil and Refining Company for 33 years, and retired on March 1, 1966.

Mr. McGowan is survived by his wife Daphne Sellards McGowan (UT '34, anthropology); two daughters, Sara Sullivan of Clear Lake, Texas, and Margaret Fowler of Willis, Texas; five grandchildren and two great-grandchildren.



John F. McKnight (MA '63, PhD '68) passed away suddenly on October 14, 1990 in New Orleans at the age of 52. Those who knew John found this news difficult to accept, because life to him was filled with a rare measure of optimism, curiosity, and exuberance for life. John was very devoted to his family, wife Joan, and children, James, Forrest, Marylee, and Carolyn, who learned from him and shared all aspects of his life.

John, whose roots were strongly embedded in geology and mineralogy, pursued a successful career in minerals exploration and oil and gas production with AMAX and Exxon, spending 22 years with the latter. The Pinos Altos copper mine in Silver City, New Mexico, stands as a tribute to his minerals exploration talents. The geological profession will miss those talents, and we all will miss the warmth and wit of his personality.

— by Bill Lindemann

Charles S. Percy (BS '43) of Austin died Sunday, July 14, 1991. He had worked as a geologist for many years. Before moving to Austin, he had resided in Houston, San Antonio and Corpus Christi. He was preceded in death by his son, Charles Joseph Percy; his parents; and two brothers. Mr. Percy is survived by his sister, Evelyn Percy; brother, William M. Percy, both of Austin; and many cousins.

James Stuart Pittman Jr., known as "Susie" to his friends, was born in Vicksburg, Mississippi, July 23, 1926, and attended high school in Lake Providence, just across the river in Louisiana. His home in Lake Providence had been Gen. Ulysses S. Grant's headquarters during the winter of 1862-63. He was briefly in the Naval Academy (Annapolis) where he served for a time as an MP. From 1946 to 1952 he earned BS and MS degrees in geology from LSU, where he married Harriet Maloney in 1951. For one year he served as a geologist with the Louisiana Geological Survey, and the next year he taught petrology at Mississippi State College.

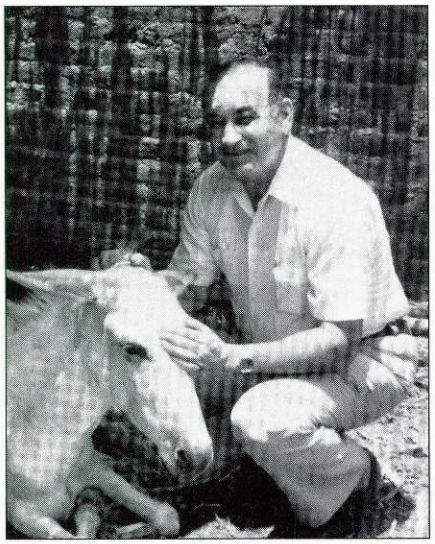
Arriving at UT in the fall of 1953, he brought with him membership in honor societies and a burning interest in sedimentary petrology, as well as a lightening-fast sense of humor and a classic southern drawl. He was an unforgettable character, yet made almost straight A's. Friends recall with awe his prodigious memory, his immense repertoire of funny stories, and his ability to come up with an appropriate witticism under any circumstances. He began PhD research under Folk on the petrology of the Edwards limestone, and made significant contributions to the petrology of cherts. Susie made the key discovery of length-slow chalcedony in the Edwards, and developed the idea that it was tied to replacement of evaporites.

In 1957 he left Texas to go to work for Phillips Petroleum; in 1963 he became a consultant in Bartlesville, then in 1964-65 spent another year at UT. Susie was a lifelong conservative Republican; in fact, he claimed to have been the only registered Republican in Lake Providence Parish. In Bartlesville, he successfully ran for election and spent a couple of years tangled up in the post of County Commissioner. Hattie died in 1966, a blow from which Susie never really recovered. In 1968 he re-entered UT to try to finish the dissertation, but only stayed two years before economic necessity forced him to take a job teaching at San Antonio College in 1970. Susie enjoyed teaching there and had many admiring students.

In these years Susie was plagued with a series of illnesses which diminished his energy and scientific productivity, but not his sense of humor. Severe bouts of almost daily migraine were brought under control with biofeedback techniques; but a broken neck resulting from a fall out of his office chair, and steadily worsening diabetes resulting in the loss of visual acuity and the amputation of one foot ("bitten" by one of the teeth in his own bridgework that had fallen on the floor, unnoticed—a story he relished telling astonished friends), sapped him of energy and prevented him from completing his dissertation while he had teaching duties.

In 1980 he retired from SAC but remained in San Antonio. Despite his great physical discomfort and enforced inactivity, he maintained a steadfastly cheerful attitude. To the end Susie was a never-ending source of Aggie jokes and trenchant observations on politics. He lost his battle with diabetes on October 10, 1990, and was buried at Lake Providence, Louisiana. He is survived by his two sons, Jay in San Antonio and Doug in Austin.

—by R. L. Folk, A. P. Noyes Jr., and H. Hay-Roe



Rafik Salem was felled by an unexpected heart attack at his home in Fort Worth on April 27, 1991, a deep shock to his many friends. Rafik was born of a Turkish mother and Egyptian father in Cairo, July 26, 1937; he was very proud of his Egyptian roots, and delighted in showing the wonders of his country to visitors. He got his BS degree at Cairo University in geology and chemistry, and his MS there in hydrogeology (1963). After several years working on Egyptian oil reservoirs, he moved to Amarillo for Phillips, where he met Martha Davis and they married in 1968. In the summer of that year, he began studies at the University of Texas at Austin, receiving his PhD in May 1973. He also worked on several projects for the Bureau of Economic Geology during this period. His dissertation, supervised by Folk, was on the petrology of carbonate sediments of the Western Desert of Egypt, from which he authored two publications. In 1971, Rafik received the Outstanding Student Award of the Houston Geological Society.

In 1973 he joined Mobil Field Research Lab in Dallas, then in 1974 moved to Ponca City, Oklahoma, for Conoco. In 1976 he decided to go independent and became a consultant in petroleum geology, and worked in that capacity out of Forth Worth until his untimely death. He worked up prospects, mainly in carbonate rocks, for areas in the Arabian Peninsula, North Africa, Texas, and the central U.S.A. For several years he worked for the Turkish Petroleum Corporation evaluating prospects in Southeast Turkey and training Turkish geologists in carbonate petrology. He also taught several sessions of a field course on modern carbonates of the Red Sea coast of Egypt. Rafik's business was hurt by the oil industry decline in the mid 1980's, but he hung on with his Middle Eastern contacts. At the time of his death, he was beginning a project for the Egyptian Geological Survey to evaluate Red Sea Coast oil prospects.

Rafik was a true "man of the world," fluent in Arabic, Italian, and French. He had many warm friends in Texas, Egypt, and Turkey, people from all walks of life. Rafik held to the highest ethical and moral standards, and turned down many a deal that he thought was a bit shady. He was a loyal friend of the University of Texas, which he visited frequently, and brought Folk and Land to Egypt to help in his carbonate short courses. Rafik was a devout Moslem and helped found and construct the first traditional mosque in the Dallas–Fort Worth area in 1981. Rafik is survived by Martha, a registered nurse, and his three daughters, Jihan, Laila, and Aliya.

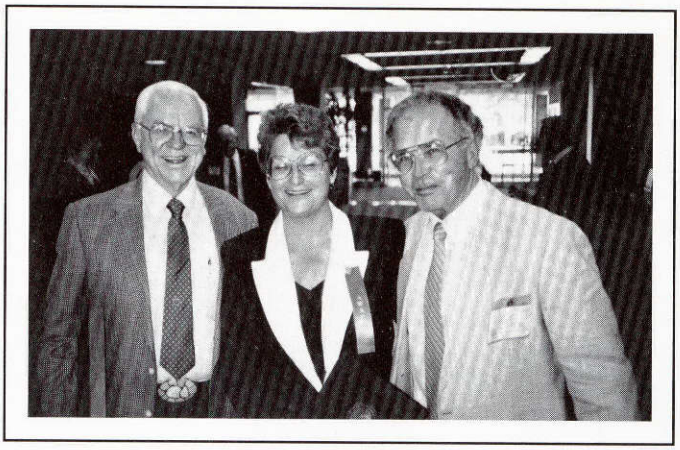
—by R. L. Folk

Marjorie K. Wilson, wife of Professor Emeritus John A. Wilson, died in Austin on August 2, 1991, after a brief illness. She graduated in 1936 with a BA with honors in math from the University of Michigan and taught school in Michigan until she married Jack Wilson in 1938. Jack's first job was at the University of Idaho School of Mines at Moscow, and the Wilsons lived there for several years. In 1946 the Wilson family moved to Austin when Jack became an assistant professor at the University. Marge was active in the University Ladies Club and was a sponsor for the Geology Wives Club. She also taught in the Austin public schools for eight years. She loved bowling, dancing and playing bridge. After Jack's retirement, the Wilsons traveled extensively. During their marriage, they visited all 50 states plus 52 foreign countries.

In addition to Jack, Marge is survived by three sons, Ken and his wife Verena of Los Altos, California; Steve and his wife Carole of Charleston, South Carolina; Chris and his wife Carol of Austin; and seven grandchildren.

We have received word of the recent deaths of the following alumni, but have no additional information:

Irwin J. Anderson (MA '46), died February 5, 1991.
Prentice O. Geddie (BS '38), died March 3, 1991.
George W. Marshall (BS '48), died January 13, 1991.
Robert F. Mathews (BA '48), died April 29, 1991.



Award recipients Robbie Gries (center) and Hugh Balkwill (right) with Dave Love from the U.S. Geological Survey in Wyoming.

Alumni Take Awards at AAPG

UT-Austin was again well represented at the 1991 American Association of Petroleum Geologists meeting in Dallas last April. Four UT-Austin alumni received awards from the AAPG.

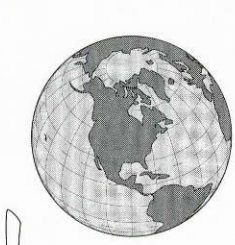
William E. Gipson (BA '48, MA '49) and George B. Pichel (BS '51) received honorary life membership in the AAPG. Bill Gipson became a member of the AAPG in 1949 and has participated on many committees within the organization. He was also president of the Domestic Petroleum Council, a member of the OCS Advisory Board to the Secretary of the Interior, and on the executive advisory committee to the National Petroleum Council.

George Pichel (BS '51) joined the AAPG in 1953 and has presented numerous papers at meetings and served on many committees. In 1974 he promoted a program sponsored by the AAPG industry liaison committee to visit universities in the United States to encourage students to enter the petroleum industry. He was named chairman of the visiting petroleum geologist committee and in that role he traveled extensively to promote his profession. George received the AAPG Distinguished Service Award in 1983, and was a candidate for president of the organization in 1986.

Robbie Rice Gries (MA '70) received the Distinguished Service Award for her tireless work for the profession and the AAPG. Robbie has served for almost ten years in the house of delegates, and has also served on the credentials committee, the membership committee, the publication committee, and chaired the distinguished lecture committee. She received the Leverson Award in 1985 and the RMAG Best Luncheon Paper in 1980 and 1985. She has written numerous geological articles. Robbie has been an independent consulting geologist since 1980.

Hugh R. Balkwill (PhD '69) shared honors with his co-author, Anthony J. Tankard, as a recipient of the Robert H. Dott Sr. Memorial Award for the best special publication of the AAPG during 1989. The publication "Extensional Tectonics and Stratigraphy of the North Atlantic Margins" appeared in AAPG Memoir 46. Hugh has been a geologist with Petro-Canada Resources in Calgary since 1981.

Although not an alumnus, **Martin P. A. Jackson**, director of the Applied Geodynamics Laboratory for UT's Bureau of Economic Geology, deserves recognition for receiving the George Matson Award for best paper presented during an AAPG oral technical session. Martin's paper "The rise and fall of diapirs during thin-skinned extension," was co-authored with Bruno Vendeville, and was presented at the 1990 annual convention in San Francisco.



Alumni NOTES

Patrick L. Abbott (MA '66, PhD '73) is a professor of geology at San Diego State University. "Growth in geology continues at San Diego State University; we've just added our 20th tenure-track faculty member. This is a GSA year what with serving as chairman of the Cordilleran Section and helping stage the annual meeting in San Diego during 21-24 October 1991. Hope to see you at the meeting and on the field trips. Cheers."

Jim W. Adams (BS '51) writes from Midland, "Enjoyed dinner at AAPG Diamond Jubilee Convention in Dallas with three of my professors: Sam Ellison, Ronald K. DeFord, and Fred Bullard. Fred said, 'You realize, Jim, that I have been a member of AAPG for 71 years.'" Jim is enjoying serving in AAPG house of delegates and as president of West Texas Geological Society.

Elise Donnell Akin (BA '47) is president of Metro Photo Camera Stores in Wichita Falls, Texas. "My husband, Ned, died last year, and I'm now running our three camera stores by myself. My oldest granddaughter is ready for college; time sure flies by!"

Charles W. Alcorn Jr. (BS '52) is chairman of Alcorn International Inc. in Victoria, Texas. "Still exploring for oil and gas overseas and in the U.S. with some success. Recently found what may turn out to be a large oil field in deep water offshore Philippines. Stay tuned. Still reside in Victoria; wife Dorothy and I became grandparents for the third time recently. Continue to serve on the Geology Foundation Advisory Council with pleasure."

Elaine Marie Allan (BS '83) is an attorney in Oak Park, Illinois. "My daughter, Erika Marie Allan, was six in April. I will be practicing environmental law in Chicago for a firm of nearly three hundred lawyers (Hopkins and Sutter), which also has offices in Dallas and Washington, D.C. "

Henry J. Alvarez (BS '59) reports, "Continuing ground water investigations throughout Texas particularly in connection with critical area studies and water plan update." Henry is a geologist for the Texas Water Development Board in Austin.

Gene Ames (BS '55) is president of Venus Oil Company in San Antonio. "We're still playing the expanded Yegua and having fun, if we can stand the AFE shock!! Ya'll come to San Antonio and see what you have been missing." Gene continues on the Geology Foundation Advisory Council.

David L. Amsbury (PhD '57) comments, "Busy training astronauts in earth observation, publishing the results, lobbying for better windows in the space station, and teaching geology at University of Houston at Clear Lake City. We go birding whenever the weather permits." David lives in Seabrook, Texas, and is a geologist for NASA—Johnson Space Center.

Paul D. Anderson (BS '47) is a partner in W. D. Anderson and Sons in Midland. "Peg and I are fine. Not working as hard as I used to. Son Ken on ranch in South Dakota, has a wife and three daughters. Daughter Karen in Wimberley, and has two sons."

Nancy Jenswold Anderson (BA '50) is owner and manager for Urban Environment Associates in Cedar Hill, Texas. "My consulting firm is still involved in planning projects for new development—a proposed airport in Northwest Arkansas, as well as environmental impact studies of highways, military facilities, transit systems, etc. Retired husband and I are always planning our next trip. Am active in local park board and chamber of commerce. Working on ordinance to protect escarpment zone in city from development."

Payton V. Anderson (BS '45) writes from Midland where he is a partner for W. D. Anderson and Sons. "Still active in oil and gas exploration in most parts of the United States. Leisure time spent in travel and golf. Same wife (Evelyn), three daughters, nine grandchildren."

Carl E. Andrews (BA '58) is self employed in Dallas. He is involved in oil and gas and real estate investments.

Larry M. Asbury (BS '59, MA '61) reports, "Yes, Jackie and I are back living in Jakarta for the second and third time respectively. This time I'm managing ARCO's offshore drilling, production, and construction activities. We are seeing a lot of new things and having a great time!" Larry is senior vice president for operations.

John E. Atkins (MA '89) is associate geophysicist for Conoco Inc. in Oklahoma City.

Edward R. Atwill IV (MA '60) is owner of Neskowin Market Place in Neskowin, Oregon. "Still married to my same lovely wife Helen, no children married yet, in our eighth year of business on the Oregon coast, which is still growing. No recession here! Had a nice visit from two Texas exes, Will Green and Walt Boyle and spouses. Hello to old friends with an invitation to come see us. Hope the geological ranks are rebuilding."

Sara S. Avant-Stanley (BS '78) is a consultant in New Orleans.

— B —

Herbert A. Babione (BS '40) writes from Tulsa where he is retired from Exxon Company, USA. "Must be getting older as last year was 50th anniversary of graduation from UT and this year was our 50th wedding anniversary. Norma and I now have two great-grandchildren and this could be another sign that the years are slipping by."

Olufemi O. (Femi) Babalola (MA '84) is a consulting geophysicist for Afram-Tech International Geosciences in Houston. "Completed

PhD degree and graduated December 1990 from the University of South Carolina. Advisor Dr. Mack Gipson Jr. provided valuable insight from his eleven years industry and fifteen years academic background. Currently consulting in West Africa exploration and interactive workstation evaluation."

Janet Bader (BS '83) is working on her PhD in geology at UT El Paso.

T. Dale Bagwell (BS '79) is a senior gas supply representative in Sprint, Texas. "Hanging in there, gas marketing is a lot closer to the business than a lot have managed, but I sure miss the 'hands-on' days when I was actively involved in geology instead of $ology!"

Jonas W. Bailey (MA '83) is living in Houston. "After several years working offshore Gulf of Mexico in Amoco's New Orleans office, I've returned to Texas with a transfer to Amoco's international business unit. I brought the wife (Mary) and two kids along."

A. C. Baker (BS '51) is an independent geologist in Wichita Falls. "New grandson is the best news of the year."

Carol Swenumson Baker (BS '84) lives in Houston. "My son Grant, who turned one in March, keeps me hopping. I am also continuing to work as a geophysicist at Exxon."

Ernest T. Baker Jr. (BS '55) is a senior staff geologist for the USGS in Austin. "Completed thirty-five years of service with the USGS geologic and water resources divisions in Texas. Know Texas surface and subsurface pretty well top to bottom now."

Linda R. Balcom (BS '87) has "opened the Dallas branch for Jones and Neuse in February 1991. The environmental business is expanding rapidly and continues to be an excellent opportunity for all geologists. Greetings to all those 1987, 660 Geo-Nubs—Hi guys! And you, too, Durbo!"

Benjamin (Ben) Barrow (BS '51) writes from Utopia, Texas, "I am getting involved in too many civic endeavors such as tax assessor's board, local Republican party, starting historic museum and having less time to improve old ranch. I visited the University two times in 1990 for tax and Republican seminars and could hardly believe how it has grown. Most of the places where I lived have been torn down."

Laura Thomson Barrow (BA '23) lives in Houston.

Thomas D. Barrow (MA '48) is "busily engaged in a geophysical software company, a geophysical and petroleum information company and satellite surveying company." Tom is chairman of Geoquest Technology Corp. in Houston.

Robert Bartels (BS '85) reports, "I am now married and have bought a house in far South Austin. Staying very busy as a geologist in the environmental field with over five years of experience. Hydrogeology seems to be the job of the future." He works for Jones and Neuse Inc.

Jerald H. (Jerry) Bartley (BS '37) writes from Midland, "Still enjoy my work as a geologist. During past nine years my exploration for oil and gas has included satellite imagery analysis (310 images—principally USA Basin) along with using my own radiometric equipment (principally West Texas and Great Basin of eastern Nevada) as used during past five years. Satellite imagery and radiometrics are two great tools for use in exploration for oil and gas (principally land use)."

Bill and **Jackie Smith Bath** (MA '80; BS '80) comment, "Bill continues to be busy working for Martin Marietta's environmental department in Denver. Jackie gets some occasional consulting work with Gustavson Associates in Boulder, but otherwise is full-time mom for Andrew (4) and Nicholas (2). Hello to all our friends in Houston, Midland, and Dallas."

Thomas A. Bay Jr. (BS '49, MA '54) writes from Houston, "Retired from Shell Oil Company in 1982. Have continued to enjoy a successful career and to stay busy as a consultant."

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

Robert E. Beatty Jr. (BA '51, BS '53) is a consulting geologist in San Antonio. He says, "Life is just a bowl of cherries!!"

Gray E. Bebout (BS '81, MA '84) lives in Washington, D.C., "Completing postdoctoral work at the Geophysical Lab, and start teaching position at Lehigh University in January 1992."

Bryan D. Beck Jr. (BS '39) writes, "Catherine and I were married 50 years on May 13, 1991. Our sons, Bryan, Ray and Roy, their wives, and six grandchildren gave us a trip to Disney World, Florida. All of us had a great time. Would like to hear from any of you classmates in our era at UT, especially those in summer geology camp at Brady, Texas, 1938. Brady Creek overflowed and we did rescue work."

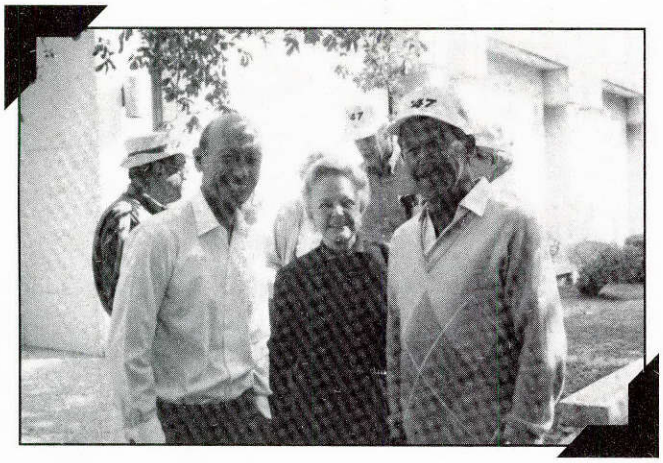
Fred H. and **Teresa Harkrader Becker** (BS '83; BS '82) report, "We are enjoying our two girls: Lauren (2), and Lindsay (3 months). We are both interpreting 3D data from offshore Louisiana on seismic workstations." Fred works for Shell and Teresa for Amoco. They live in Slidell, Louisiana.

Richard W. Behal (BS '88) is working as a navigator/QC for Western Geophysical in Houston. "Lately I've had the opportunity to be a part of Western's high resolution seismic crew conducting the increasingly important geohazard/cultural surveys in depths up to 1000M. And now I am involved in navigation on one of our overseas crews. See ya in the South Seas!!"

Walter E. Belt Jr. (BS '43) lives in Flatonia, Texas and is retired. "Health, attitude and outlook are great."

Richard B. Bender II (BA '67) is president of Thermacor Process Inc. in Ft. Worth.

James B. and **Kathryn G. Bennett** (BS '61; BA '61) comment, "Continuing with an active exploration program in North Louisiana and South Arkansas and serving as secretary this year for the Houston Chapter of the Society of Independent Professional Earth Scientists (SIPES). Kathryn is serving as president of the Houston Geological Auxiliary this year and is keeping very busy. We were able to visit daughter Kathryne and son-in-law Jeff in London this winter and spring. Can you believe paying to go over in January and then winning two round-trip tickets from British Airways in April? Well, we did enjoy both visits and Kathryne is expecting her first child in July. I guess we are going to have a Brit in the family. Son, Wiley, has just



Participants in the Class of 1947 reunion visit outside the Geology Building in October, 1990. From left, O. D. Weaver, Anita Weaver, and Dick Bloomer.

completed his freshman year at Texas where he has gained new respect for academics at UT. Congratulations to the *Newsletter*. It is a superb piece of work."

Mark J. Berlinger (BA '82) is an environmental manager for BP Oil's Marcus Hook Refinery in Marcus Hook, Delaware.

Timothy B. S. Berge (MA '81) is a senior geophysicist for Exxon Company International in Houston. "We moved from Bogota, Colombia, in November 1989. I am now working in the USSR task force, which has led to some interesting cultural and travel opportunities. All Texas geology exes are welcome anytime. Hey Al! I'm back, let's do lunch sometime!"

Allen Bertagne (MA '80) is a senior staff geologist for CGG American Services in Houston.

Don G. Bilbrey (BS '53, MA '57) writes, "Daughter Karen was graduated from high school in May, 1990, sixth in her class; was married to her longtime boyfriend in June; and started college at Loyola University here in New Orleans in August. I play golf!" Don is retired in New Orleans.

Russell C. Bingley (BS '62) reports, "I came out of retirement last year to work for the State of California. I am currently working on a project in southern California to determine liquefaction potential for a hydroelectric plant enlargement." Russell works for the Department of Water Resources as an engineering geologist, and lives in Chico, California.

David S. Birsa (PhD '77) is general manager for Chevron in London. "Still looking for oil in the North Sea and enjoying it. Life in England is great, except for most of the year the weather is really rotten. It makes you wonder why the Druids settled here in the first place." David continues as a member of the Geology Foundation Advisory Council.

William T. Biskamp (BS '54) lives in Dallas. "Retired from Placid Oil Company in early 1988. Selling real estate with Mona. Have two grandchildren and another on the way. Waiting for the Dallas economy to recover like the newspapers say it has!"

Keith D. Bjork (BS '84) lives in San Antonio, where he is an orthopedic surgeon at the UT Health Science Center. "Hello to all of my fellow Swiss travelers from days past. Keep in touch."

Thomas K. Bjorklund (MA '62) reports, "After two years in Port of Spain, Trinidad, W.I., with Amoco Trinidad, I was appointed chief geologist, Amoco Orient Petroleum Company, Shekou, People's Republic of China. I am learning Mandarin and am involved with exploratory drilling operations in the South China Sea. I hope to return to Caltech for the 1991 Centennial."

Curt W. Black (BS '81, MA '88) is a senior associate hydrogeologist for ICF Kaiser Technology Inc. in Redmond, Washington. "Good projects and good rain gear, couldn't be better."

Fredrik S. Blackmar (BS '55) is a golf professional and clubmaker in Corpus Christi. "At this writing I am the proud owner of a new hip. Prognosis is for full recovery by August. Geologically I can only say, train hydrogeologists who can get the message on water through to the politicians. South Texas is drying up!"

Harvey Blatt (MA '58) is a professor of geology at the University of Oklahoma. "Latest book, *Principles of Stratigraphic Analysis*, appeared in October 1990. Second edition of *Sedimentary Petrology* due out in October 1991. Current research centered in Ouachita Mountains flysch. Am approaching age 60 with a wonderful personal and professional life, the latter part due in no small measure to my years with Bob Folk in Austin."

Robert H. Blodgett (PhD '90) reports, "Began work as a geologist with the division of water hygiene, Texas Department of Health in September 1990. The work is diverse and interesting: radionuclides in ground water, contamination from leaking landfills, locating and plotting water supply wells, and evaluating pesticide migration." Bob lives in Austin.

Jeffrey A. Blohm (BS '76) is in the Air Force at Kelly Air Force Base in San Antonio.

Richard R. and **Anne Bloomer** (PhD '49; BA '48) write, "It was like returning home for us to move recently from Abilene to the Austin area on Lake Travis."

Patricia Bobeck (MA '85) is president of Geotechnical Translations, a foreign language translation company that specializes in the geosciences. She also teaches geology at Austin Community College. As part of her ACC teaching, she has been active as a volunteer team leader with the City of Austin Environmental and Conservation Department's Town Lake Citizen Monitoring Program, teaching geology students to conduct water quality tests and leading field trips in the Austin area to gather water quality samples. Last fall, Pat was elected President of the Austin Area Translators and Interpreters Association; she was the driving force in organizing a highly successful first-ever regional conference of translators and interpreters from the southwestern U.S., which was held in Austin in late May. In addition, as a member of the board of directors of the Knitters and Crocheters Guild of Austin, she has organized a program to provide hand-knit hats and booties to Baby Booty, a March of Dimes program designed to encourage teen-age mothers to complete prenatal

medical care. Her husband, Bob Kinney, is director of publications at the Episcopal Seminary of the Southwest. Son Dennis, age 4, is healthy and happy and can do almost everything "all by myself."

Neil and **Linda Merritt Bockoven** (PhD '80; MA '80) live in Mandeville, Louisiana. "Neil transferred to New Orleans in April 1991. Linda is at home with Allison, Eric and Scott (born 8/8/90)." Neil is in operations analysis for Exxon.

Dan Bodner (MA '85) reports, "Nothing much has changed since last year. Weiss Associates is 30% bigger, I'm working hard and enjoying living in Berkeley, California."

G. Pat Bolden (BS '51) comments, "Married Charlene J. Hutchison in November 1989. Still writing and accepting invitations to speak at geological societies on wrench faulting in the Permian Basin. Consulting and selling prospects slow but steady. Welcome to drop in." Pat lives in Midland and works as a consultant geologist.

Clint Booth (MA '56) is president of Booth Energy Company in Dallas. "Working some on coal bed methane in Black Warrior and San Juan Basins. Whole new ball game. Still looking for production deals."

Silverio Bosch (BS '74, MA '75) writes from Corpus Christi, "Still enthusiastic about petroleum exploration in spite of negative psychological and economic feelings in the industry. 'Wilcox-ing' it in South Texas still my favorite trend. Lisa and I are kept busy by Matthew (3) and Eric (1)."

Walter A. Boyd Jr. (BS '53) continues as chief reservoir geologist for Columbia Gas Transmission Corporation, "but 'down the hill nearing completion.' Continued warm weather and weak prices have brought the battered gas industry to its knees. Always look forward to the *Newsletter.*" Walt lives in Houston.

Walt V. Boyle (BS '54, MA '55) works in continental division exploration for Shell Western E&P Inc. in Houston. "Conducting exploration efforts in the Permian Basin."

David O. Bozeman (BS '51) lives in Stafford, Texas. "Retirement is still happiness continued. I enjoyed my work but now can enjoy other interests too. Presently drilling a series of evenly spaced core holes around the periphery of my wife's Blanco County Ranch. After carefully measuring the total depth and describing the samples, I plug them with cedar posts."

Robert L. Breedlove (MA '35) writes from Greenwood, Louisiana. "Generate oil and gas deals and participate mainly in Texas, Louisiana, Arkansas, and Oklahoma."

Jeanne Brennan (BS '83) is a geophysicist for Marathon Oil in Houston.

Mark M. Briggs (BS '85) is vice president of KEI Consultants, Inc. in San Antonio. "Currently on the board of KEI Consultants, Inc. Everyday role is now president of Tesoro's PES technical support group for bioremediation products. But my wife Susan has the hardest job."

Ben (Bud) M. Brigham (BS '83) is an independent in Dallas.

David B. Brock (BS '65) writes from Tyler where he is an independent petroleum geologist. "We have moved and are now living in the East Texas wilderness."

M. H. (Buddy) Brock (BS '56) is "presently chasing three grandkids around and causing me to realize my age! Glad to see oil prices coming back for the benefit of oil field friends." Buddy lives in Edna, Texas where he works at farming and investments.

Richmond L. Bronaugh (MA '50) writes, "July 1, 1991, we will be moving to town (Nelson, British Columbia). Fourteen years of maintaining 3/4 mile of private mountain road, our own water and sewer systems, and cutting firewood for heating and cooking is proving too strenuous for us great-grandparents. I greatly enjoy the *Newsletter*—keep up the good work. Our best wishes to any who may remember us—and others, too!"

Gerald R. Brooks (BS '58) is vice president of Marlin Exploration Inc. in Bossier City, Louisiana.

Ken Brook (BS '67) is president of Desert Ventures Inc. in Reno. "1991 promises to bring even more governmental regulation to the mining industry. The times they are indeed 'a-changing.' There are some bright spots. Family is fine and Desert Ventures may have a piece of an operating gold mine within a year or two."

C. Douglas Brown (BS '84) is actively engaged in the exploration for oil and gas in the Gulf Coast of Texas, Louisiana, and Mississippi. He is a geologist with Petro-Hunt Corporation in Dallas.

Wallace E. Brunson (BS '42, MA '54)

Students on 1985 Geology 660 field camp prepare to examine the inner workings of the Bachelor-Syracuse Silver Mine in Ouray, Colorado. Photo submitted by Burgess Stengl.

writes, "Except for trips to Hawaii (AAPG), Puerto Rico, Colorado (twice), and oh yes, the '91 SW Section AAPG meeting in Abilene, things have been quiet." Wallace is an independent geologist in Houston.

Leonard C. Bryant (BS '57) is an independent geologist in Helotes, Texas.

Julius A. Buchanan (BS '41) is "still retired. May 9, 1991 I will have been a graduate of the University of Texas for 50 years. The old BS in geology saved my life once and carried me through many hard times. I hope to see other 50-year geology grads at the reunion." Julius continues to live in Tyler.

Lee Buehrer (BS '57) is president of Rosewood Resources France in Paris. "Approaching my third year as manager of Rosewood's interests in France, Holland and the U.K. Always enjoy keeping up with Texas exes through your excellent *Newsletter*."

Art Busbey and **Janet Busbey-Nilsson** (BS '75, MA '77; BS '77) write, "Art and Janet say 'howdy' from Ft. Worth. Art received tenure at TCU and keeps busy with computers, fossil crocodiles, and a Permian cave fill in southern Oklahoma. Janet stays very busy and is on the career ladder teaching earth science in the FWISD. She also sponsors several clubs and organizations. Art can hardly believe it was 20 years ago when he started to UT as a freshman (the same year Jim Sprinkle started teaching at the University as an assistant professor)."

Robert W. Bybee (BA '41) reports, "The Bybee clan had a 'mini' family reunion in Midland on April 25, 1991, at the induction of Dr. Hal P. Bybee (1888-1957) into the Petroleum Hall of Fame sponsored by The Permian Basin Petroleum Museum. A gala affair and a great honor to dad!" Bob is a semi-retired petroleum exploration consultant in Houston.

Leon G. Byerley Jr. (BS '52) lives in Midland and works as an independent. "There has been no change in my position to report for many years and I hope this will continue right here in the Permian Basin for a few more years. Maybe even long enough to experience just one more boom."

—C—

W. J. (Jack) Cage Jr. and **Susan Kiefner Cage** (BS '50; BA '50) write, "Still living in the Boerne area and enjoying the busy life of a retiree. We have greeted many Texas exes and welcome more."

Frank Kell Cahoon (BS '57) is an independent oil operator in Midland. "I'm presently serving as chairman of the research committee of the Texas Higher Education Coordinating Board. Paula and I have three wonderful grandchildren. Grandchildren are God's reward for not killing your children."

Dean L. Callender (BS '56, MA '58) is senior vice president for Dean Witter in Houston. "We became grandparents for first time—twins. Undoubtedly future Longhorns."

Donald H. Campbell (MA '62) reports, "As of this writing at least four papers on the geologic origin of the Egyptian pyramid stones (instead of concrete) have been prepared by Folk and me. We had to do it." Donald works as a principal petrographer for Construction Technology Labs in Skokie, Illinois.

Donald M. Campbell (BS '54) is a retired geophysicist/geologist in Damascus, Maryland. "Retired three years and still traveling between Kansas and Maryland. Helping care for older relatives on both sides of the family. If any one comes this way to Maryland look me up (AC 301/253-3048). I miss traveling to Latin America which I did during the last seven years of my career. Would still like some part-time or temporary work if I could fit it in my schedule."

Alvin Candela (BS '41) is semi-retired and living in Galveston. "August 1991 will be 50 years since graduation. Operation Desert Storm was the result of major oil companies searching for cheap oil in the '50's. Domestic oil sold for $3.25-$3.50 per barrel and gasoline sold for less than twenty cents per gallon. This crisis should teach America that we need an energy program and not depend upon foreign oil."

A. T. (Toby) Carleton (BS '51, MA '52) continues on contract with EEMC/Canadian Hunter looking for 'big ones.' "Also becoming more involved in the ranching business and finding out that it is more demanding than I had thought." Toby lives in Midland and works for Tocor Exploration.

James Carew (MA '69, PhD '78) is a professor of geology at the College of Charleston in South Carolina. "My research in the Bahamas continues to be fun and bear fruit. I'm still on the South Carolina board of registration for geologists, vice-chairman at this time. I was elected treasurer of ASBOG (Association of State Boards of Geology) at its annual meeting in November 1990. Fak, sorry I didn't have time for a drink at NE/SE GSA. Catch you next time!"

Darryl E. Carlson (BS '64) is a senior associate for Pilko and Associates Inc. in Houston. "I perform hydrogeologic assessments relative to groundwater contamination in support of industrial property transfers."

Steve Carlson (MA '84) lives in Bellaire, Texas and is a geophysicist, Texas offshore, for Unocal Corp. "Second daughter, Rita Kathleen, born 1/24/90."

Royce P. Carr (BA '74, BS '76) operates an exploration office for W. B. Yarborough, an independent oilman located in Midland. 'Dub' is also a UT geology graduate. "We are primarily involved in assembling Gulf Coast prospects. I thoroughly enjoy my job and all the people I work with."

Richard F. Carroll (BS '80) is a senior exploration geologist for Ultramar Oil and Gas Ltd. in Houston. "I finally went and got myself married to a good looking, beer drinking, Texas woman named Robin. We will both stay in Houston where she will work outside the oil business to give us the edge you always need in a business as uncertain as oil and gas exploration."

Bob Carter (BS '48, MA '48) is retired and living in Austin. "Still leading the tough life at Lakeway; travel, golf, tennis, boating. Really enjoyed a 275-mile bike tour of Holland last year."

Jack C. Cartwright (BS '51, MA '55) is owner of an oil and gas business in Midland. "How time passes. This summer marks 40 years since graduating in 1951 and reporting for work in West Texas. I continue to operate my business with the

help of my two daughters. Barbara and I enjoy seeing our family grow and develop."

Lee Case (BS '71) is district chief for the U.S. Geological Survey, water resources division in Salt Lake City. "It's great living within four miles of three ski resorts! Life with the USGS, WRD continues to be exciting. Interest in water in the west remains high, and new initiatives in global climate change and national water quality assessment are keeping us busy."

David G. Casey Jr. (BS '60) writes, "Finally moved to Mandeville, Louisiana, where I can mess with our boat and sail on Lake Pontchartrain. Great place. Still messing with salt domes—love 'em. Hanging on by working with a guy from Merkle, Texas. Building a workover unit company, a fishing/rental tool company, small oil company and continuing with my old consulting firm. No lack of work or chances to drop a buck. Hope to make more events. Drop by."

Dwight E. Cassell (BS '55, MA '57) is a consulting geologist in Houston, involved principally in Austin Chalk horizontal drilling. "New concepts of target horizons, fracture systems are evolving as the data bank grows. Appears that a core of successful operators will keep the play alive. Have started building new home west of Austin. Hope to be there by the end of 1991."

Steven M. Cather and **Martha Cast Cather** (MA '80, PhD '86; BA '81, MA '86) report from San Antonio, New Mexico, "We are both still having fun doing geology, Steve in the Ruidoso area and Martha in Socorro, looking at whatever you can put under a microscope. Martha is still trying to convince engineers that rocks are interesting. We are adding on to the adobe hacienda, as always. We just got back from the New Orleans jazz fest with Ralph Kugler (now an annual tradition) and Martha has been inspired to add accordion to her ever-growing list of hobbies!" Martha is a research associate at PRRC and Steve is a geologist at the New Mexico Bureau of Mines.

Philip C. Cezeaux (BA '59) is vice president of the Texas Oil Company in Houston. "When I graduated, geologists were not being hired. After going to law school and practicing tax law for 25 years, I am finally in the oil business where I belong."

Henry Chafetz (PhD '70) comments, "Still at the same ship, University of Houston, and having fun investigating travertines, hot water types from the Rockies and ambient temperature deposits in Yugoslavia as well as playing with bacteria and their carbonate precipitates. Janet and Josh (12) doing fine. Regards to all those old hands I don't occasionally see at meetings." Hank lives in Houston and is a professor at the University of Houston.

Ralph S. Chamness (BS '57) lives in Greenville, North Carolina and works as chief geologist for Texasgulf. "Involved with research on applying phosphate to acid mine water from coal mine wastes. Other interests are in mine planning and ground water associated with phosphate mining."

John G. Champion (BS '47) is retired and living in Tyler. "I keep up with developments in East Texas and I watch my two oldest sons and son-in-law who are active as landmen and lease brokers in East Texas."

E. Walter Chatham Jr. (BA '48, MA '50) writes, "Nothing exciting has happened the past year. Hello to everyone." Walter is retired and living in Mineral Wells, Texas.

Joe Christie (BS '58) is president of Christie Gas Corp. in Austin.

Stephen Claypool (BS '78) is a petroleum geophysicist for Kerr McGee in Houston.

Wilbur R. Cleaves (BS '60) says, "I enjoy fond memories of working with Jim Underwood and Professor DeFord south of Van Horn, summer 1958. My son David is enjoying Plan II at UT this year. My wife, Peggy, just sold her 25th romance novel to Harlequin in New York." Wilbur is a physician in family practice in Corpus Christi.

D. B. Clutterbuck (MA '58) is president of AFG Energy in Houston.

Joel Coffman (BS '83) writes, "Still enjoying work in the environmental field. After a time evaluating sites in Hawaii, I'm back in the Bay Area in San Jose. 1983 grads, please look me up!"

H. Grady Collier Jr. (BS '45) is a consulting geologist in New Orleans. "Generating drillable prospects onshore and offshore South Louisiana along with activities in social clubs and heritage societies and geological organizations surely takes most of my time, but, when in New Orleans, drop by for a visit."

J. W. (Jim) Collins (BS '56) lives in Corpus Christi. "Still working as independent geologist, in other words—unemployed."

H. C. (Clay) Cooke (BS '41) is retired and living in Fort Pierce, Florida. "Still holding on, last year went to Moscow on 'People to People.' They want partners in the oil business—don't bite! New boat, will be in Bahamas June thru August 1991. Look us up in Freeport, Grand Bahamas."

Beaumont B. Cooley (MA '55) is retired and lives in Austin. "My wife and I spend as much time as possible traveling. In 1988 spent four months on east coast of Australia: 1989, six weeks in New Zealand: 1990, 3 1/2 months western and central Australia and Southeast Asia and now in 1991—transit Panama Canal and Alaska and Inland Passage back to U.S. Next year, who knows?"

William B. Copeland (MA '88) is an assistant project geologist for Woodward-Clyde Consultants in Oakland, California. "Daughter Julia born January 27, 1990. She's wonderfully happy, healthy and beautiful. Paid disgustingly typical high price for basic California home. Learned and became crazy about snow skiing. Got a great job. Hi to Drs. Cloos and Carlson."

Frank G. Cornish (MA '75) is an independent in Corpus Christi. "Laid off from sale of TXO to Bridge in November 1990. Putting together prospects while severance lasts; look for magazine article in spring 1992, *Texas Parks and Wildlife*. Doing other writing. Both boys doing well in school (10 & 12). Judi started a copying business."

Jeff Corrigan (MA '86, PhD '90) works for ARCO Oil and Gas Company Exploration Research in Plano.

Augustus S. Cotera (BS '52, MA '56, PhD '62) reports, "Building the first branch campus for Northern Arizona University in Yuma. Great winters, terrible summers. My two daughters will be married this sum-

mer and fall. My wife, Karen, and I are now looking forward to retirement in a couple of years in sunny Spain!" Gus is executive director of Northern Arizona University in Yuma.

Bill C. Cotner (BS '53) is owner of Meadco Properties in Midland. "Still working West Texas and Southeast New Mexico."

Jerry Covington (BS '43) is president of COV Inc. in Midland. "Another year has flown by and they seem to be flying faster. Best regards to all the classmates from 1940-43."

Raymond W. Cozby III (BA '83), an attorney with Hardy & Atherton, writes, "My wife, Mary Ann (UT, BA '85, Plan II), and I have enjoyed very much the move back to my hometown of Tyler. I have become associated with a wonderful, hardworking, progressive law firm. I intend to expand my oil and gas practice as much as possible in the East Texas area."

Alumni NOTES

R. Wilson Cozby Jr. (BS '61) is a pediatric dentist in Tyler. "Everything is fine. I am enjoying getting back to UT to see football, basketball, and baseball games with old (and prosperous) geology buddies, i.e., Gerald Baum, who keeps me informed on all UT sports and geology events."

Arthur S. Cramer Jr. (BS '57) reports, "I retired from Texaco 1 1/2 years ago after 34 years. Have been consulting for Fairfield Ind. about three days a week. Call me if you need a shallow water (60 ft.) or marsh 3-D." Arthur lives in New Orleans.

Fredrick E. Crawford (BS '83) is a registered professional surveyor for LCRA in Buda, Texas. "LCRA surveying and mapping department now has global positioning system equipment. This exciting new technology allows us to utilize Navstar satellites to generate very precise latitude and longitude on our control points."

Weyman W. Crawford (BS '50) is a petroleum consultant in Houston, and serves on the UT Geology Foundation Advisory Council.

Thomas M. Culbertson (MA '47) is retired and living in San Antonio. "Water and oil resources are important enough to our state and nation that we should have more definite policies."

Steve Cumella (BS '77, MA '81) is a consulting geologist in Grand Junction, Colorado.

Phyllis Cunningham (BA '89) is an environmental geologist for Maxim Engineers Inc. in Austin. "Have just completed a large job in the Midland area. First of its kind environmental service."

Hugh Curfman (BS '48) writes from Lafayette where he works as an independent geologist. "Number three landman son Pete moved to Corpus so will be traveling that way. Number four son, Locke, doing graduate work here at University of Southern Louisiana; otherwise very quiet around Lafayette, both business and family."

John M. Curchin (MA '85) is an instructor at the Community College of Aurora in Colorado, and lives in Denver. "Having a great time working part-time and playing full-time in Colorado Rockies. Keith Pollman could not ride a bike to save his life."

Thomas B. Curlee (BS '50) reports from Norman, Oklahoma where he is a petroleum consultant. "Ward Hall, a Texas-ex, just moved into office beside me. Lloyd Gatewood, another Texas-ex, is in the office on the floor below. The energy business is in a slump at the present time, hope to recover soon."

William W. Curtis (BA '82) is president of the Empire Royalty Company in Oklahoma City. "Empire trades and markets gas properties, mostly in the Arkoma Basin."

— **D** —

Harris P. (Koop) Darcy (BS '51) writes from Houston, "Fellow UT geology grad John A. Watson sent some amazing pictures to me. One is an iron hammer in Ordovician stone with pelecypod fossil, the other of a human foot print with dinosaur track in the Glen Rose formation." Koop is an independent.

M. Victor Dauzacker (PhD '81) is exploration manager for Cultus Petroleum N. L. "Moved to Perth, Western Australia, in 1985 after twenty years working for Petrobras in Brazil. Australia is a wonderful place to live and work. The family, Lina, Erico and Leon, is fine and happy."

Erik K. Davidsen (BS '83, MA '86) comments, "Currently working the ANWR area in the Arctic onshore district. Very interesting geology (and politics). Keeping busy organizing a field program to the ANWR this summer." Erik lives in Houston and works as an exploration geologist for Chevron USA.

Flavy E. Davis (MA '37) is retired and lives in Aspen, Colorado.

Mary Q. Davis (BS '48) reports from Tyler. "I am still farming and am a certified organic grower (Texas Department of Agriculture). Also enjoying watching my grandchildren grow."

Morgan J. Davis Jr. (MA '53) lives in Houston.

Scott D. Davis (MA '85, PhD '89) is a geophysicist for Unocal Geothermal in San Rosa, California.

William H. Davis (BS '41) is retired and lives in San Antonio.

Frederik E. Dekker (MA '66) lives in Santa Monica, California. "Still traveling a lot to find new exploration ventures in the Asia Pacific area. Business trips to Thailand and Singapore, New Zealand/Australia and vacation trip to U.K. and South Africa to visit family. Love the traveling because Jan comes along often, but am hoping for an overseas assignment."

Laura de la Garza (BS '83) moved to Salt Lake City in January of 1990 to work as a hydrogeologist for Kennecott's department of environmental affairs."Enjoying the weather, sports and cultural activities the Salt Lake area has to offer."

John Lane Denson III (BA '49, MA '50) is in private practice in Nashville, counseling and providing spiritual direction as a consultant at Vanderbilt University Medical Center Institute for Treatment of Addiction. He enjoys writing, music, and Dixieland jazz band.

William H. (Bill) Devine (BS '48) is retired in Houston. "Mary and I really enjoyed the 1947 Brady Bunch reunion October 18, 1990, at the Lakeway Inn, Austin."

Charles J. DeLancey (BS '40, MA '42)

writes, "We had a great trip this winter to the Antarctic by way of Argentina. On the way saw Iguaza Falls, Patagonia and some Andes glaciers as well as ending up in the 'most southern town in the world.' Then to the seventh continent with its stinking, noisy (but fascinating) penguins. Even in summer there is nothing but bare rocks, ice, snow, glaciers, and icebergs. Ended up with broken rib after being thrown down aboard ship in bad seas off the infamous Drake Passage." Charles is retired in Houston.

Rudi de Zoeten (MA '88) reports from Los Angeles, "I'm working on basins in the Asia Pacific region under the leadership of another UT alumnus, Fred Dekker. The rest of my time is taken up seeing the sights, and building a drought-resistant yard."

Patricia Wood Dickerson (BA '70) is living in Austin. "Two years' events to report since the last Dickerson *Newsletter* note. 1990 began with Ed working in Midland for clients there while I consulted in northeast Nevada on a field stratigraphy/structure project for Newmont Gold. Then two moves in one week: Elko-Midland-Austin, followed closely by participation in a petroleum exploration technology delegation to Poland, Czechoslovakia and Hungary, fascinating! Only half the daring Dickerson duo made the move to Austin, though, as Ed passed away unexpectedly in August. One more move within Austin and I'm now up to my como-se-llama in doctoral work at UT. Dissertation will be on Big Bend structure, stratigraphy—fun! Two field trips there this year, co-led with Dr. Muehlberger, one for GSA, one for AAPG, both memorable. Settled here now, stop by if you're in the territory!"

Kenneth L. Diebel (BS '50) writes, "Good health, enjoying retirement, enjoying traveling. Have two daughters living in Austin. Visited the campus in early March for basketball lettermen's reunion. Lettered in 1944." Kenneth lives in Conroe, Texas.

Mike Dildine (BS '72) reports, "Enjoying watching the ups and downs of our two children, Amy (9), and Steve (7), as well as the oil business. Greetings and best wishes to the 'Dillo' 660 class of 1972!" Mike lives in Katy, Texas and works as a manager of planning for Conoco.

Some of the participants in the 1947 Brady Bunch Reunion, October 18-20, 1990 at Lakeway Inn in Austin. From left, Bill Devine, Clem George, Mary Devine, Jack Wilson.

Jane Ormond Dinkins (BS '38) is retired and living in Houston. "Still have cattle raising operation at our Chappell Hill farm."

Gary and **Jennifer Kraft Donnan** (BS '84; MA '84) comment, "Gary and Jennifer had a baby boy on December 16, 1990. His name is William. Mom and Dad think he's really cute (of course!). Jennifer is currently working the North Slope of Alaska with Conoco. Gary is doing environmental geology with ERM-Southwest. He works with UT grads Sally Rothwell (MA '87) and Patti Alberta (BS '84). 'Hi' to Cornelia Henderson who I never wrote back." Jennifer and Gary are living in Houston.

George A. Donnelly Jr. (BS '40) is president of Eastland Oil Company in Midland. "Nothing new, just glad to be here." George is an active member of the UT Geology Foundation Advisory Council.

Gene G. Doty (BS '54) is retired in Las Vegas, Nevada. "Son Charles (BA '82, UT, English) was killed 2/11/91 when his aircraft crashed on White Sands Missile Range. Chuck was a naval aviator stationed at Albuquerque, New Mexico. Son Jeff still in Santa Fe, New Mexico; daughter Paula presented us with a grandson last August. Wife Mopsy still working, but thinking about retiring."

Robert E. Doyle (BS '55, MA '57) is president of American Energy Reserve Consultants in Houston. "We are actively involved in the purchase and operation of gas wells in Louisiana and Mississippi. Production is sold to large end users and other major buyers. Drop in for a visit if you happen to be in downtown Houston."

James Doyle (BS '73, MA '76) is a staff geologist for BP Exploration in Houston.

Ralph C. Duchin (MA '55) writes, "Moved to new home in Tucson, Arizona in July; still associated with Zinn Petroleum Company in Houston."

William E. Dunaway (MA '62) is self employed in Kingwood, Texas. "Still trying to keep my head above water in the oil and gas business."

Ed Duncan (BS '79, MA '87) lives in England. "I am into my ninth year with Standard (now BP) with the last three years in the U.K. I still have one wife but have added three kids and two dogs. Presently working sequence stratigraphy studies for BP's Frontier group in West Africa-Niger Delta. I spent a wonderful 1990 looking at the rifts

and passive margins of the world for BPX and managed to make contact with a few department friends of long ago. When in London, drop me a line or come on by for a beer."

David E. Dunn (PhD '64) is the dean of School of Natural Science and Mathematics at the UT Dallas. "The 1990 GSA meeting in Dallas was trouble-free and proved to be less of a chore than I had anticipated. Last Christmas Day I married Tim Denison's sister-in-law, proving it's a very small world indeed. Last February I was elected chairman of the board of directors of DOSECC proving that I have not yet learned how to say no. Cheers to all!"

William R. (Bill) Dupre (BS '68, MA '70) writes, "Elaine is still teaching second grade. Brian (13) and Phillip (11) are excelling in everything, and I'm still at the University of Houston. Much of my summer work is in California, however, working on earthquake hazards, with my spare time increasingly spent on earth science education for teachers (they need all the help they can get)."

William Kent Duran (BS '83) is a geologist for TGS Geophysical in Houston.

Connie Mayes Dyer (BA '58) reports from Houston, "No major changes in our lives this year. Being a grandmother to a 1 1/2-year-old and mother to a sixth grade boy at the same time is very taxing, but very rewarding. Enjoying seeing UT friends in Houston now and then."

— E —

Fred A. Ealand (BS '48) writes from Houston, "Have been retired for five years and life is sweeter than ever. Good friends and family and best of all, good health."

Joseph O. Ebeniro (MA '81, PhD '86) is currently living in Dallas. "From April 1987 through May 1990 I coordinated the geophysics program of the University of Port Harcourt, Nigeria, where I am a senior lecturer in the physics department. Since June 1990 I have been with research and technical services of ARCO as a post-doctoral, carrying out research in applied seismology. This position will last through June 1992 after which I will return to the University of Port Harcourt.

Kathy Eckenrod (BS '80) is a project hydrogeologist in Austin.

Gus K. Eifler (BA '29, MA '30) is eager to visit with more UT geologists, and invites everyone to come by his consulting office in Austin.

Ab R. Ellis Jr. (BS '50), a consultant in Midland, says times are slow but there is always something to do.

Ralph I. Ellsworth (MA '49), semi-retired in Austin, is "still enjoying living at Lakeway and watching UT athletics. I do consulting work for a small oil and gas company in Austin."

Brian Elmiger (BS '86) is an environmental engineer for Allied Signal-Baron Blakeslee in Melrose Park, Illinois. "Working compliance (EPA) and hazardous waste for Allied's fluorine product division (ozone eaters) living in Chicago. If you're here, go to Lakeview Links Bar and ask for 'Moose.'"

Ross Ensley (BS '76) is an exploration geophysicist for Esso Norge in Stavanger, Norway.

Roger P. Espinosa (BS '85) is a geologist for Tesoro Exploration and Production Co. in San Antonio.

Rizer Everett (BS '37, BA '37, MA '69) writes, "Hildegard and I are still finding that grandchildren grow up faster than the children did. In May of last year our grandson, Mark, received his BS in geology from the University of Maryland. So now we have three generations of geologists in the family. Mark is the second of the grandchildren who is now a college graduate. The other four grandchildren are working on their bachelor degrees. One of the granddaughters is having the experience of attending school in Indonesia. She has lived with Indonesian families in several places in Bali and in Malang and Yoguakarta, Java. She writes very interesting letters about her experiences in Indonesia, and she has learned the language well enough to attend regular classes at Gadja Mada University in Java. She will complete her studies there in June and return to the States. In April we made a trip to Eagle Lake, Texas, to make a tour of the area where wild flowers are grown for seeds (American and European). We recommend April as the month to visit that spot as a place to see acres and acres of beautiful flowers (phlox, bluebonnets, galardia, Indian paint brush, coreopsis, verbena, poppies, etc.) in full bloom. In early November we moved into the Embassy Suites Hotel in Austin to attend the biennial reunion of people who have worked for the Standard Vacuum Oil Company in Indonesia. We had good visits with friends and enjoyed a real Indonesian meal as well as the excellent slide and video cassette shows of the tour of Indonesia that we made in 1989. That picture, on p.121 in last year's *Newsletter* taken in Santa Helena Canyon in 1936, reminds me of the sad fact that so many of our classmates are no longer living. Therefore, I think it is important for those of us who are still around to contribute comments to the *Newsletter* each year."

Norman Ewbank (BS '43) is retired in Midland. "Nowadays we just sit around and talk about arthritis, bursitis, basal cell carcinoma, gout and glaucoma."

— F —

Thomas E. Fanning (BS '56) is vice president of domestic exploration for Marathon in Houston. "Domestic exploration continues to fight the same old Washington battles without much success. The most rewarding part of the job continues to be working with our bright young geoscientists, many of whom were trained at UT." Tom serves on the Geology Foundation Advisory Council.

James David Farmer (BS '81) is an independent petroleum geologist in Midland.

Irma Morgan Feibelman (BS '59) continues to work at Johnson Space Center in Houston on the Space Station Freedom Program. She is software quality assurance section supervisor for Loral Space Information Systems. "Between work and family, staying very busy."

L. F. Fischer (BA '38) moved from Houston to Corpus Christi six years ago, and is now vice president and manager of exploration and production for Billfisch Exploration Company.

Dorothy Yates Fisher (BA '27) is

retired in Rosenberg, Texas.

Walter M. (Dub) Fitzgerald (BS '53) retired from Temple-Inland in Diboll, Texas, as senior geologist in August 1989. "Celebrated our 30th wedding anniversary March 25, 1991. Enjoying golf with the Geritol Nooners at Lufkin Country Club, shooting trap, skeet, and sporting clays at Pines Gun Club, Lufkin. Both super groups. I enjoy reading the geology *Newsletter*; keep up the good work."

Jack C. Fitzpatrick (BS '48, MA '50), a consultant geologist in Lafayette, is "still working to get a few wells drilled every year. It is good to still feel a part of the oil industry."

Ted Flanigan (MA '80) continues as a petroleum geologist at Flanigan & Flanigan Inc. in Reno, Nevada. "I'm enjoying the life of an independent geologist. The only problem I find is that when you work for yourself, the boss is a tyrant. Donna joins me in wishing all the old gang the best; we hope you'll all come visit in Reno."

Sterling H. (Chip) Fly III (BS '80, MA '85) has had a busy year as a geologist for Yates Petroleum Corporation in Artesia, New Mexico. "Yates drills a steady but active rate regardless of what the rest of industry does. Family is holding steady at two boys, 5 and 8."

Gary W. Foster (BS '86) comments, "I moved to Houston after earning my MBA from UT business school. I am presently working for KPMG Peat Marwick, a national accounting firm. My wife, the former Michele Anaya, and I are expecting our first child in July."

Thomas F. Foster (BS '84) is a logging supervisor in Lafayette.

Hewitt B. Fox (BA '47, BS '48, MA '48) writes, "The periodic reunion of the Brady Bunch (class of '47) was a great success last October in Austin. Many thanks to Jack Wilson and the Geology Foundation for super arrangements for a barbecue lunch on campus, great seats to watch the Horns demolish the Hogs, and an excellent dinner. Special credit to Dick Bloomer (alias 'Dr. Bloom') for the innovative awards ceremony."

James C. Freeman (BS '43) has spent 44 years in South Texas. He is an independent in Corpus Christi who is active in operating producing properties and drilling a few wells.

Alumni NOTES

Todd Freeman (BS '78) says, "I've just completed my second year of study at San Francisco Theological Seminary (Presbyterian). I will be doing a one-year internship in Canyon, Texas in 1991-92. I miss the science of geology, yet I am excited with my new calling."

Kevin Frenzel (BS '87) reports "This has been a great year. Sherry and I are expecting our second child this August. I have also enjoyed being the newsletter editor for the Austin Geological Society." Kevin is a geologist for Hall Southwest Corporation in Austin.

Annabelle Bannahan Friddle (BA '45, MA '50) continues to live in Aztec, New Mexico. "I'm still into skiing, painting, and tutoring in the Project Read literacy program at San Juan College in Farmington. Thank you for the *Newsletter*. I enjoy it."

Jack Q. Frizzell (BS '50) is president of Enrich Oil Corporation in Abilene. "I've seen boom and I've seen bust; believe me, boom is better. Finding out that good luck is imminent if you don't let a bunch of dry holes deter your trying. Try explaining that to your congressman as he ponders new means to tax the gains from a little luck along the way."

Donald W. Frye (BS '55) is a geophysical consultant for American Coastal Energy in Houston.

Walter Louis Furche (BS '51) is semi-retired. He and his wife Jane divide their time between their homes in Midland and Ruidoso, New Mexico.

James B. Furrh Jr. (BS '50) is president of James B. Furrh Jr. Inc. in Jackson, Mississippi. "Active in Mississippi, Louisiana, Alabama, and East Texas. First son is my landman, second son is an oil and gas attorney, and third son is in real estate."

— G —

Jay L. Gallia (BA '73) is a senior staff attorney for the Coastal Corporation in Houston.

Carla Everett Gardner (BA '89) married Adrian Reed, a petroleum engineer from UT, moved to New Orleans and gave birth to Ashley Austin Reed on 8/8/90.

Abato John Garza (BS '78), an exploration geologist with Mobil in Houston, says "I am still in exploration looking for the elephants (geo-fantasizing, again). We need some partners—anyone interested? The family is growing older (Jared 4 1/2 and Kate 2 1/2) and keeping us very busy. How many more Ninja Turtle movies will I have to see? Take care and keep in touch. Cindy and I say hello."

Janet Gaudaen (BA '86) lives in Bowie, Maryland. She is an engineer for Martin Marietta/Areo Naval Systems in Glen Burnie. "My husband Larry and I are thoroughly enjoying our first child, Steven, now 15 months old. We are expecting a second child in August 1991. Steven enjoys picking up rocks and eating them; he must be a future geology major. I am currently an engineer specializing in underwater acoustics, specifically towed array technology. Someday I would love to work in the field of geology."

Henry B. Gayle (BS '58, MA '60) is manager of environmental program support for Raytheon Services in Las Vegas. "Many changes since my last response. We have a granddaughter, Christina (2), our son got married, I changed companies after 25 years and have a new job, and we moved to a new house. Other than that, it's pretty calm out here in Las Vegas."

Thurman Geddie (BS '45) is exploration manager for L.B. Industries, oil and gas division in Austin. "Drilling horizontal holes in the Austin Chalk."

Frederick W. Geisendorff (BS '54) writes from New Orleans, "Six grandchildren says it all."

Clem E. George (BA '47, MA '48) traveled to Czechoslovakia with the Texas Exes in June. He is still in Midland searching for petroleum.

Fred M. Gibson (BA '51) is still living in Austin, where he is semi-retired and doing statistical work at the IRS Service Center.

Louis deA. Gimbrede (MA '51) lives in Lafayette, where he is retired from his position as professor of geology at University of South-

western Louisiana. "Presently trying to keep active in all interests and about to visit son, William F., in Baltimore in May. In June, on to Thousand Islands summer home until mid-September."

Michael H. Golden (BS '78) works as a geophysicist for Marathon Oil Company in Houston.

Wyeth L. Goode (BS '53), an independent in Midland, says "Everything continues to be going my way in West Texas. Have hot coffee in the office for anyone passing through Midland."

Phil Patrick Goodson (BA '84) is project manager for SWL Environmental in Austin.

Peggy Stanley Gormley (BA '46) is keeping a hand in the oil business in Dallas by keeping books for two geologists, George B. Rice and Leonard E. Bryans.

Ronald L. Graner (BS '58) is a technical support staff geologist in Nashville. "Still working for the soil conservation service in Tennessee. I am now eligible for retirement but will work until something better comes along."

Richard E. Grant (PhD '58) is senior paleontologist for the Natural History Museum in Washington, D.C. "Spring of '91 was the culmination of 11 years of stratigraphic work in West Texas Permian: The Guadalupian Symposium held at Sul Ross University in Alpine. Good day of talks, then field excursions. First day out I was attacked by a dog, got ten bites to my arm and right hand. Spent two days in the hospital. Local ranchers are locking gates, denying access to anyone. Field work in the region seems to be terminated."

Roy W. Graves (PhD '49) retired from the University of Tulsa and now lives in Desert Hot Springs, California. "Moved out here to loaf and play golf—doing more loafing than golfing."

C. DeVearle Gray (BS '57) writes, "Still waiting for $3 gas, but expect to retire before I see it. Visited Geological Sciences Department in February 1991 for the first time in many years, and enjoyed the visit. I was the only one on the campus wearing a suit. Warn me next time." He is senior vice president of exploration for CXY Energy Inc. in Dallas.

Will Green (MA '55) began a one-year term as chairman of AAPG's house of delegates on July 1. He hopes to see a lot of friends at the section meetings. Will is an independent in Midland.

Joe Greenberg (MA '86) is a senior geologist for Shell Western E&P in Houston. "I switched from exploring in the Permian Basin, West Texas to the Gulf Coast, Southeast Louisiana in October 1989. Also in October 1989 Claire gave birth to our daughter, Margaret. I work on the same floor as Tim Diggs and Dan Neuberger."

Barbara Hurley Greene (BA '44) is retired in Odessa, Texas. "Attended a reunion for relatives of George Rogers Clark in Louisville last July. It was so much fun we're hosting one for a small (50) 'branch' in October. Have first great-grandson. Birding has replaced rockhounding for us. We plan to view the hummingbird influx at Rockport next September. Page still consults, though the oil activity is meager in West Texas."

Charles J. Greene (BS '75) lives in Austin, where he is a geologist with the ground water section of the Texas Water Commission. "Dealing with NPS pollution and ground water contamination from agricultural sources and pesticides. SRV remembered at SXSW."

Jeremy T. Greene (MA '84) is an area geophysicist in Lafayette, where he reports that "Lynn, the girls and I are gettin' 'Cajunized' in the land of crawfish."

Charles R. (Dick) Grice (BS '46), retired in Midland, says he and Ann are still hanging in there.

Robbie Gries (MA '70) continues as a consulting petroleum geologist in Denver. "1990 ended with a heartbreaking dry hole (you get your hopes up with lots of great shows), but am working on new drilling for '91. 'Find Oil' is our constant theme. Daughter Lynn got pulled from geology to biology (pre-vet) at Colorado University. Have enjoyed working with lots of Texas people on AAPG distinguished lecture committee."

Ariel Dale Griffin (BS '57) continues to live in Houston.

Guy Groomer (BS '83) comments from Austin, "I have definitely diversified since working for Conquest Exploration in Houston. Now I work for the Austin Fire Department as a firefighter and on my days off I work as a safety engineer for Lockheed. I am still single, love living in Austin, and would like to hear from any exes."

Robert O. Gross (BS '63, MA '65), owner of Creole Exploration Company in Dallas, notes: "I remain active in the exploration business through the efforts of Creole Exploration Company, which we have managed to keep alive for four years now. The current year is shaping up to be a critical one for survival and growth. Enjoying working with UT grads Bub Joyce and Ray Burke."

Roy H. Guess (BA '39, MA '40) is a consulting geologist and expert witness in Casper, Wyoming. "The geologist/expert witness business and estate evaluation continue at full throttle. Also, in the high-tech Hereford breeding effort, our embryo transplants are doing great. Had a top performer at the Northwest Bull Test Center in Parma, Idaho."

—H—

Weldon W. Hammond Jr. (BA '60, MA '69, PhD '84) says, "This has been a very unusual year. Activity in all aspects of ground water increasing with many interesting research projects ongoing. On December 16, 1990, I received orders recalling a certain Captain Hammond to active duty with the Navy aboard *USS Blue Ridge* (LCC-19) in the Persian Gulf. Had a number of opportunities to closely observe eolian deposits, sabkhas, oil-well fires, oil spills and a few Iraqis from altitudes which were a bit lower than I deemed prudent. On March 30, 1991, I was released from active duty and, I hope, my last war. I can truthfully say that research in ground water is more to my liking and a whole lot safer than flying around in USN helos." Weldon is the director of the Center for Ground-Water Research and Technology at UT San Antonio.

John W. Hampton Jr. (BS '53) is owner of John W. Hampton and Son in Wichita Falls,. He reports that his fourth grandson was born on April 22, 1991.

Jim Hardwick (BS '40), retired in Midland, is "presently breaking in a

pair of new knees and am pleased with them. Otherwise, about all that I do is keep up with our nine grandchildren."

Louis H. Haring Jr. (BS '38) lives in San Antonio, where he is president of Haring Energy Company. "Participating in a few drilling prospects and traveling the world as much as possible."

Jess L. Harkness (BS '60) retired from the brokerage business in January to focus on ranching. "More interested in rainfall and grasses than rocks and stocks. Hoping to do a lot of traveling." He lives in George West, Texas.

Wiley B. Harle (BS '50) is enjoying retirement in Houston and still does a little geology.

John L. (Bill) Harmon (BS '52) comments, "Bettye and I have been living and working in Lubbock (garden spot of the Great American Desert) for the past five years. Still miss trees and water, but enjoy working for Texland Petroleum, a great bunch of people." He is drilling and workover supervisor for Texland.

Weldon J. Harrell (BS '49) has been retired for seven years and lives in Graham, Texas.

Cleason L. Harris Jr. (BS '51) lives in Slidell, Louisiana, where he is a consultant.

Holly Lanan Harrison (MA '81) works as a petroleum geologist for Phillips Petroleum Company in Houston. "I recently changed exploration areas from thrusted mountain-front granite overhangs in Montana to 60 miles offshore Louisiana, where salt is *fast*!"

Ann Lambeth Harry (BS '83) was previously a staff geologist with Trinity Engineering Testing Company in Austin. Currently she is home "being a mommy to our first baby, a son, Jeffrey, now four months old."

Margaret Hart (BS '83, MA '91) writes from Austin, "Finished my Master's this year; still employed at the Texas Water Commission, protecting and conserving the ground water of the state. Will continue working on ground water mysteries of the Trans-Pecos."

Richard E. (Rick) Hart (BS '74) is a geologist with Royal Oil and Gas Corporation in Corpus Christi. "We are enjoying our new home here in Corpus Christi and certainly enjoy the pace of life. It's nice to run into so many fellow Longhorns. I'm still working the expanded Yegua in Southeast Texas and the section still amazes me even after working it for so many years. Lots of risk but so much potential. The family (Jeanne and Derek) are doing fine and adjusting well to Corpus Christi."

Eric Hass (BS '78) is now a staff geologist for Mobil Oil in Denver. "Moved to Colorado in 1988. Tough duty after Houston. Working the Rockies and Nevada."

Glenn D. Hatcher (BS '73) writes from Houston, "Boy what a trip! Job change in April 1991. Talk about culture shock. From little to no activity to being extremely active. Air conditioning business growing. So are the boys. Mary and the rest of us are fine. Looking forward to another busy year." Glenn is a geologist with British-Borneo Exploration.

Alana Lynn Haveman (BS '89) comments, "I had a successful first year in grad school at Texas A&M, working on a Master's. I am spending the summer in Houston as a summer intern geologist with Phillips 66 and will return to Texas A&M in the fall."

Leslie W. Hay (BS '89), a hydrogeologist for Law Engineering in Dallas, asks "Where are Rusty Tarver and Bruce Turbeville nowadays?"

Edward F. Haye (BS '51) lives in Houston, where he is president of Benchmark Exploration Inc.

James F. Hayes (BS '48, MA '51) writes, "I have moved my residence to Point Venture on Lake Travis. Lib and I enjoy living on beautiful Lake Travis and visits from family, grandchildren (11) and friends at our home. I am still working on drilling prospects in South Louisiana in a very soft market." He continues to maintain an office in Houston.

J. Don Haynes (BS '56) is an independent petroleum geologist in Wimberley, Texas. "After 27 years in Corpus Christi, we enjoy living in the Texas Hill Country. Had our first grandchild in September 1991, a boy. Still active in oil business, just more centrally located."

Chip Heald (BS '80) is employed by Lone Star Gas Company as senior gas supply representative. "Daughter Jennifer and I returned to Houston after four years of exile in Birmingham, Alabama. It is great to be back in the Lone Star State."

Alyson C. Headle (BS '86) is a lieutenant in the U.S. Navy. "Currently serving as navigator/administrative officer/legal officer on board ammunition ship *USS Santa Barbara* (AE 28) homeported in Charleston, South Carolina. Deployed to Red Sea December 1990 through June 1991 in support of Operation Desert Storm. Will attend Navy postgraduate school in Monterey, California starting in September in pursuit of a Master's degree in operational oceanography. (Single still and not looking.)"

Alumni NOTES

Kristopher K. Hefton (BS '78) is a geologist for Freeport Indonesia Inc. "My family and I moved to Tembagapura, Indonesia in 1990, where I do mineral exploration in the central highlands of Irian Jaya. I have enjoyed working with the UT students and faculty involved in various projects there. Marti and Lindsay (5) enjoy living in Indonesia, and we are expecting our second child in August."

James H. Helland (BS '43) writes from San Antonio, "Finally have a grandson (James W. Kuntz, 9 lbs. 10 oz.). Hope there is a viable oil business 21 years from now. No other business is as interesting and self rewarding as this one." Jim is president of Inland Ocean Inc.

Michael D. Helton (BS '82) comments, "Left BHP Petroleum (Americas) and am back again with Amoco Production Company attempting to construct a regional stratigraphic framework for South Louisiana." He is a senior geophysicist for Amoco in Houston.

Cornelia Henderson (BS '81) is a lawyer in the 13th Court of Appeals in Corpus Christi. "Mudhead Ed, my potter man, and I are suffering from the demise of the neighborhood which occurred when my sister Virginia (BS '85)

moved in across the street and down the block."

John D. Henderson (BS '37) is retired in Dallas, but keeps busy with various business interests.

Charles W. Henslee (BS '51) notes, "Since retiring in February 1989 from Maxus (formerly Diamond Shamrock) after 28 years, have been enjoying golf and travel (no boredom). Now have have eight grandchildren ranging in age from four months to 12 years." Charles lives in Houston.

Jon Herwig (MA '82) is still manager of geology and geohydrology at ERC Environmental in San Diego. "Am interested in hearing from UT grads who would like to work in the environmental field. My wife Bobbie and I are keeping busy getting moved into a new house and we see UT folks like Gene Pisasale, Lee Leininger, and Rick Debus fairly often. Looking forward to seeing a lot of you at GSA here in October. If you need a place to stay, let me know."

Patricia M. Hester (BS '83) comments, "Alive and well in Albuquerque, New Mexico. Saw a lot of UT alums, professors and BEG folks at recent regional GSA conference in Albuquerque. It was great to see such friendly and familiar faces. The *Newsletter* is great. Tell Matt Myers where I am and keep sending me *Newsletters*. I'll keep sending money. Mike (son) is eighteen. Finished MS at University of New Mexico in August 1988."

Christoph Heubeck (MA '88) notes, "I am a PhD student at Stanford. Last year, I had the opportunity to return from my field area in South Africa to California by traveling around the world. I spent three months hiking and sightseeing in Australia, New Zealand, Fiji and Hawaii, and don't believe anymore that the world is flat."

Charlie Hewitt (BS '88, MA '90) is an environmental specialist with Shell Mining Company in Gillette, Wyoming. He plans to marry Suzanne Mechler (BS '89) in June 1991.

Charles H. Hightower Jr. (BS '56) lives in Lafayette, Louisiana, where he is president of Hightower Oil Corporation.

Janice L. Hill (BS '79) writes from Oklahoma, "Since John will start in Amoco's petrophysics program in August, we get to live in Tulsa another year, which is fine by me. Those two big boxes of rocks are still in the dining room. I blow the dust off occasionally. Russell (2) and Caitlin (4) keep me running all day. Plus I've become The Volunteer."

Nolan Hirsch (BS '44) is president of MVC Inc., oil exploration and independent, in Midland. "1991 started off with great results, new discovery participation in Scurry County, Texas. Still enjoy the oil patch, taking more trips. Sue and I are enjoying ourselves, We have a new granddaughter (makes fifth grandchild). Our son, Dr. Victor Hirsch, in Dickinson, Texas, and daughters in Santiago, Chile, and Odessa, Texas, are doing OK."

Dave Hixon (MA '59) continues as a software engineer for UniSys in Houston.

Carroll Ann Hodges (BA '58), a geologist for the U.S. Geological Survey in Menlo Park, California, reports: "Finally, a 'new lease on life'; I'll be a 'visiting prof' at Stanford next year ('91-'92), thanks to an NSF Visiting Professorship for Women (decided I might as well capitalize on gender). Meanwhile, I'm off to East Africa for a month to see as many animals as I can before they're consigned to oblivion by our proliferating human herd. Greetings to all."

F. A. (Fred) Hoeninghaus (BS '49) is enjoying his retirement from Exxon in Houston. He also enjoys "eight grandchildren, and the *Newsletter* that comes each year. Many thanks for it."

Paul F. Hoffman (BS '75) writes from Houston, "Completed ten great years at Ladd Petroleum in December, the last two as vice president of Gulf Coast Region. Was 'set free' ten days after Ladd's acquisition by AMAX, and am in the fourth month of a welcome 'sabbatical.' It's been most interesting, and satisfying somehow, to learn that so many of the really capable professionals I've met in the business turned out to be fellow UT grads."

William C. (Boomer) Holland (BS '81) is working in Houston for Hall-Houston Oil Company as senior exploration/production geologist. "Wife Debbie doing fine with a baby due in July. Daughter Elise (6) is growing. Mom, dad and sisters doing well also. I'll always remember the good old days at UT. (Right, Bill Layton? Remember the Black Bear.) Hook 'em.

Raymond F. Holsch (BS '50) says, "Ann and I can't believe we have been retired five years in Houston. When we get tired of the city we go to our little shack in the country. After a few days of picking weeds, mowing, etc. we are happy to come back to our nice air conditioned house."

C. Lee Holt (BS '49, MA '50) lives in Port Aransas, Texas. "Retired, but consulting part-time in ground water management, as well as advancing new career in sculpture. Large-scale wall reliefs, leaning heavily on geologic structure, are award winners."

Ben P. Hooper (BS '80) is working Texas Gulf Coast as senior exploration geologist for Chevron in Houston.

Brian C. Hoover (BS '84) is director of marketing for Colwick Travel Corporation in Dallas.

Eleanor M. Hoover (BS '56) continues working for Exxon onshore exploration division as a geological associate in Houston. "Enjoyed visiting with several Texas exes at the AAPG convention in Dallas."

Lawrence E. Hoover (BS '48) is an independent geologist in Corpus Christi, "prospecting for Oligocene and Eocene gas along with Cretaceous oil in South Texas, so I'm not showing any favoritism."

Carlton W. Hornbeck (BS '53) notes, "This ongoing oil patch decline is unreal in its length and depth. I have been through three other slowdowns, but this one is tough. I am preparing for the next boom because, as everyone knows, it's just around the corner." Carlton is a consulting geologist in Round Rock, Texas.

Susan Hovorka (MA '81, PhD '90) continues as a geologist for the Bureau of Economic Geology in Austin.

G. B. (Bill) Howard IV (BS '82) is managing director of Flare Resources Inc. in Houston. "My partner and I recently entered into a joint venture with a company which funds our lease/seismic and drills 50% of each play. We are generating and looking for leads on the upper Texas Gulf Coast and South Louisiana. Claire and I

THE FIELD GEOLOGY CLASS OF 1947, otherwise known as the Brady Bunch, plus wives and friends, held its third reunion at the Lakeway Resort on Lake Travis just outside of Austin October 18-20, 1990. Informal get togethers in the bar Thursday and Friday evenings brought on lots of discussion on good times and hard times and even old times. Those days were spent reviewing acquaintances with Austin and the University campus and trying to find recognizable places. Saturday, October 20 was the big day. The Department furnished "carryalls" to transport the group to the Geology Building and after a short look around, we had a fajita lunch on the East Mall. Thanks to Joyce Best and Jim Vick we had a block of football tickets, beautiful seats to watch Texas say goodbye to Arkansas in proper style. Everyone enjoyed that game. The Geology Class of 1947 was recognized over the PA system at the game. The students in front of us turned and said, "Now we know what the '47 is on your cap!" and gave us the Hook 'Em sign. Chuck Weiner, who couldn't attend, and Al Nelson provided white caps with orange '47 on them.

That evening was the banquet at Lakeway. Dean Bob Boyer and Betty Boyer and Chairman Clark Wilson and Ellin were guests. Dick Bloomer passed out appropriate awards to various attendees. Fred Bullard and Gus Eifler were the faculty at Brady the summer of 1947 and were both present at the banquet.

The whole group is grateful to the Geology Foundation and the Department of Geological Sciences for helping with the local arrangements, in particular Joyce Best, Scott Schroeder, Betty Kurtz and Clark Wilson.

The Class of '47 is unique because it is the only Geology class that has reunions even 40 years after graduation!

— by Jack Wilson,
local chairman for 1990

Front row, L-R: Kent Waddell, O. D. Weaver, Anita Weaver, Pat Morris, Betty George. Second row, L-R: Margaret Fox, Kay Waddell, Martha Vickers, Evelyn Bullard, Fred Bullard, Gus Eifler, Essie Mae Eifler. Third row, L-R: Ed Kennedy, Martha Kennedy, Hewitt Fox, Ted McFarlan, Bettie Rose McFarlan, Bob Vickers, Eva Worrel, Anne Bloomer, Al Nelson, Ruth Nelson, Charles Jenkins, Glynnis Jenkins, Mike Morris, Clem George, Bill Devine, Mary Devine, Jack Wilson, Billie Fay Grayson, Marge Wilson, Charlie Worrel, Dick Bloomer, Bob Grayson.

had our first child (Blaire) last June. She is almost a year old. She is a real 'daddy's girl.'"

Jack M. Howard (BS '51) is a lands analyst/geologist for the University of Texas System in Austin. "Thirty years in Austin—last 6 1/2 with UT System office downtown, a great place to work and live."

John Wright Howard (BS '86) began working for Transco Energy Marketing Company in September 1990, and lives in Houston.

Hugh Hay-Roe (MA '52, PhD '58), a consultant with Energy World Trade Ltd. in Houston, is "once again checking out oil and gas prospects in Latin America, this time for Energy World Trade; daily commute to center of Houston is the only bad part. Also still training tech writers (mainly engineers) part-time."

Jack T. Hughes (BA '41, MA '42) is retired and consulting in Canyon, Texas. "Still doing some geoarcheology—turns out I was doing it long before there was any such thing."

Ed Hughston (MA '50) writes, "Continuing to live in Taos, New Mexico. Occasional oil and gas work in Texas, Louisiana and Oklahoma."

Steven D. Hulke (MA '78) is a senior geologist for Hunt Oil in Dallas.

Emmett A. Humble (BA '49, MA '51) is retired and does consulting in Houston. "Enjoying our new home, a new granddaughter and a reasonable amount of consulting, all international and mostly in the Far East."

Elvin M. Hurlbut Jr. (BS '43) is "still leapfrogging in Tyler, Texas. Virginia and I and the two cats are fine. Listed in 12th and 20th editions of *Who's Who in the South and Southwest* and 9th and 10th editions of *Who's Who in the World.*" He is a semi-retired editor and writer.

Janie Bell Hurley (BS '78) is working on her Master's in biology at Southeastern Louisiana University and living in the country with her geologist husband, Stephen. She lives in Abita Springs, Louisiana.

Daniel C. Huston (MA '87) writes, "In August 1989 I published the results of my thesis research in geophysics and in 1990 I was awarded Unocal's creativity prize for my work in 1989 in California at the science and technology division. In early 1991 I transferred to Houston to work in exploration."

David E. Hutchison (BS '79) sends best wishes to everyone from Montclair, California. "After graduation I worked with Superior Oil (1979-81) in The Woodlands, then went to work for Mid Con in Denver as an exploration geologist (1981-86). I was laid off in the merger with Occidental and I have recently graduated from chiropractic college in Los Angeles. I plan to practice in my hometown of Montclair."

—I—

Jim Immitt (MA '81) is a financial analyst for Hewlett Packard in Colorado Springs. "After six adventurous years doing metal exploration for Chevron in U.S. and Chile, I tired of the constant travel. Earned an MBA from UT in 1989. Couldn't find work in oil or mining, so here I am in the electronics industry enjoying Colorado. My wife Pam and I had a tough 1990: our daughter Alicia died in December at the age of seven months. Now we take everything one day at a time. We would like to say 'hi' to everyone."

Paula Ivey (BA '84) will graduate in December with a Master's degree in international management from the American Graduate School of International Management in Glendale, Arizona. "Still running my business, Access Australia, Inc."

—J—

Joe L. Jackson (BS '56) retired after 37 years of federal service. "Am in business from time to time as J^2 Consulting Service (engineering geologist). Am still an Okie, which is not too far removed from being a Texan." Joe lives in Choctaw.

Russell W. Jackson (BS '76) has started Tyler Oil & Gas with an engineer partner. "Still enjoying life in Tyler, just need to see more drilling activity in our area."

S. Lance Jackson (BS '79) is exploration supervisor for Exxon Co. USA in Houston. "Still working the Gulf of Mexico slope and enjoying it. Patty and I are up to four kids now and it seems all our free time is spent going to soccer and baseball games. Took the kids on a drive through the UT campus; they wanted to know which building UT was in."

Eric H. Jager (MA '41) lives in Wichita, Kansas, where he is a consultant and frequently attends Kansas Geological Society lectures relevant to oil and gas geology and new technology.

Otis L. James Jr. (MA '52) is still hunting oil and gas in Gainesville, Texas.

Gerhard Jansen (MA 57) remarks that "trying to grow citrus fruit in the drought is a challenge." He lives in San Clemente, California.

Kenneth L. Jarratt (BS '57) is president of Mauro Corporation in Ganado, Texas. "Still in oil business (oil jobber) and real estate. Now have three grandchildren. Wife Joyce doing fine also. Happy to see Horns improve and hope it lasts."

Beth Ann Janssen (BS '84) writes, "Todd Mitchell (MA '87) and I are living in Houston where Todd has his own business. I'm still flying and have received my commercial pilot's license. I hope to make aviation a big part of my future. I'm currently working on my instructor rating, and flying aerobatics for fun. Look for me doing barrel rolls over LaPorte." Beth is a business systems analyst for Metallgesellschaft.

Borden Jenkins (BS '77) is an independent petroleum geologist in Corpus Christi.

William A. Jenkins Jr. (PhD '52) is retired in Dallas.

Eric Jerome (BS '86) lives in Austin, where he is a lab analyst/microscopist for Environmental Monitoring Service.

Alice Domingues Jobes (BA '23) comments, "Kerrville is still home to me, although it has outgrown me by far. My brother, Louis Domingues (UT '22) and his wife Peggy also live here. We must the be the Last of the Mohicans."

Charles B. John (BS '51) retired in 1989 and lives with his wife Norma in Tulsa. "Plan to resume doctoral studies at UT El Paso this fall if my request for reinstatement is approved. Proposed dissertation: the geometry and geochronology of

the Ouachita faulting of Southern Oklahoma."

Ann C. Johnson (BA '86) is resident instructor at the Gemological Institute of America in Santa Monica, California.

Charles G. Johnson (BS '83) lives in Tyler where he is an independent geologist.

Kenneth R. Johnson (BS '50) is an independent geologist in Austin.

John E. Johnston III (MA '77) is the acting state geologist at the Louisiana Geological Survey in Baton Rouge. "I am filling in for Chip Groat while he is serving as the Executive Director of the American Geological Institute."

Charles R. Jones (BS '50) is semi-retired in Midland. "We spend most of our time at our farm near Hico, Texas, and cabin in the mountains at Ruidoso, New Mexico. We do a reasonable amount of leisure travel to other places. Spent 11 days at St. Maarten having a wonderful time in the Caribbean."

Gordon A. Jones (BS '76) received a Master's of divinity from Denver Seminary in 1987. In 1988 he joined Texas Bible College in San Antonio, where he is academic dean and associate professor of Old Testament. He has three children.

Gene Funkhouser (Keyser) Jones (BA '48) writes from Midland, "We have our offices at home, and are someplace between retired and working for free. Life is interesting and busy with 19 grandchildren. With not much activity in our local oil patch to keep us busy and the time and good health to allow us to see some of this beautiful country, family and friends, we're doing well and wishing all our friends well, too."

J. Phil Jones (BS '64) is a petroleum land consultant for Classic Exploration Trades Inc. in Edmond, Oklahoma. "For the past year I have enjoyed working on a large secondary recovery federal unit in the Powder River Basin for client Kerr-McGee Corporation. It appears this miscible gas field will commence production in July if all goes well."

Luther G. Jones (BS '59) reports that his recent retirement from federal civil service is great. He continues to live in San Antonio.

Wayne E. Jones (BA '72) comments, "I'm back in Houston again, as consultant to Hanky Oil Company, creating deep Wilcox plays throughout South Texas, and really enjoying it. Gwen and my son Alex are fine and will join me here in June. I was honored to be president of South Texas Geological Society in 1989-90, and look forward to an active role in the Houston Geological Society. Give us a call when you come for GCAGS this fall."

—K—

Edwin N. Kasper Jr. (BS '51) continues to live in Houston. "Feeling happy in retirement and my family and I are enjoying good health. Stan Pyndus and I have been coming to UT's Up-Date series each summer for a number of years. The new Ex-Students center should make it more enjoyable in '91. Come join us."

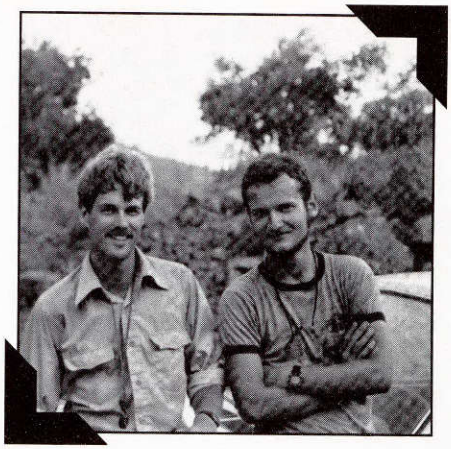
Steven G. Katz (PhD '75) writes, "Connie and I continue to enjoy living in Granville, Ohio. I was 'retired' (again) in the latter part of 1990 when my previous job was eliminated. I'm now with a consulting firm in the fiberglass reinforced plastics industry and enjoying it very much. Best regards to the gang at UT." Steve is business manager for ISORCA Associates.

Gene Ross Kellough (BA '32) is retired in Seneca, South Carolina. "Jobs were very scarce in 1932 until Humble (Exxon) sent a group to Venezuela and this gal lucked into a subsurface geologist/micropaleo/secretary job with Conoco. Married a Schlumberger engineer 54 years ago—still married, still happy, still healthy."

Kevin M. Kelly (BS '82) is ROV manager for Hawaii Undersea Research Lab at the University of Hawaii in Honolulu.

Paul D. Kemp (BS '81) comments, "OXY's bi-annual reorganization/layoff finally nailed me. Am now back in Texas exploring the mid-continent for Pennzoil. Though Ann and I miss Oklahoma City, the boys, Brian (6) and Mark (3) enjoy being closer to both the Hill Country and Lake Livingston." Paul is a senior geophysicist for Pennzoil in Houston.

Christopher G. St. C. Kendall (Postdoctoral, 1966-68) continues as a professor of geology at the University of South Carolina in Columbia. "Usual 'overworked/underpaid' professor story. Meanwhile working on simulation of sedimentation/sea level and tectonics. Go to field work in the Bahamas and Abu Dhabi. Plan to take a year's sabbatical in Italy to study cycles in Mesozoic carbonates. Have eight graduate students but we are all surviving."



Rudi DeZoeten (left) and Christoph Heubeck in the field in the Dominican Republic, January 1988. Both completed their degrees on the geology of the Dominican Republic in 1988. Photo submitted by Paul Mann.

Edward R. Kennedy Jr. (BS '48, MA '49) is a consultant in Midland. "Still plugging away at the Delaware Basin. Enjoying my new lens implant. Can see the maps again."

Allan R. Keown (BS '58) writes from El Paso, "Am still earning a meager living as a forgery expert. This is difficult since the price of meagers has gone up. I am remarried, this time to an old high school flame. Grandkids popping up like weeds. The *Newsletter* is a superb publication and shows a lot of hard work on your part."

George L. Keprta (BS '52) comments, "After 39 years of full employment, I'm planning to retire in December of this year. My wife and I plan to do a lot of traveling in the years ahead. May do some consulting work."

Don Kerr Jr. (BS '60) is president of Kerr Construction Services in Houston.

Howard W. Kiatta (BS '58), independent geologist in Houston, is "cur-

rently conducting an oil and gas exploration program along with Gulf Coast for myself and a number of other investors. Could sure use an increase in the price of natural gas."

Wilton Killam (BS '49) is dean of students at Angelina College in Lufkin, Texas.

Robert J. Killian (BS '77) writes from Houston, "1991 will be an eventful year. Moving into 'new house' after almost two years of renovation. Suzanne to graduate from South Texas College of Law this summer and begin practice with Andrews & Kurth in fall. Planning a trip to Europe in September. Have several wildcats which we will be drilling early this year." Bob is an independent geologist.

David L. Kirchner (BS '74) is pleased to announce the birth of his first child, Kory Lee Kirchner, born May 18, 1991 in Phoenix. Kory will add a new dimension to David's environmental consulting business. Basin & Range Hydrogeologists now has ten employees and is seeking additional professional staff. His firm specializes in performing water supply studies, ground-water contamination investigations, environmental assessments, hazardous-waste related studies, and providing expert testimony. David has been appointed by Governor Symington to serve a six-year term as commissioner on the eleven-member Commission on the Arizona Environment. This is a voluntary position which involves providing technical advice on environmental matters to the state legislature and the governor. David recently founded a new organization called the Arizona Aquifer Protection Association (TAAPA) and the Risk Aversion Group (RAG). The RAG organization provides educational programs designed to help environmental professionals to obtain errors and omissions insurance. He also remains active in the Arizona Hydrological Society, a professional non-profit group he helped to found in 1983. David invites his old friends to visit Phoenix and meet his wonderful, geologist wife and charming and googling, future geologist son and talk about the good old days in Austin.

Alumni NOTES

Tom Kirkpatrick (BS '84) is a systems analyst for Exxon International in Houston. "At work, I provide computer support to geologists and geophysicists. At home, my wife Stacy and I are expecting our first child this Christmas."

Don L. Kirksey (BS '60) lives in Oklahoma City where he is owner of Recycling Consultants. "After 29 years in oil exploration, mostly with Tenneco Oil Company, which took me to Alaska and Holland, I am enjoying a new career as a result of Tenneco Oil being sold. My business develops all employee office paper recycling programs for major organizations. Hope to eventually travel some in this expanding field. Please call if your company is interested in recycling."

John Kleist (PhD '74) is currently living in The Woodlands, Texas.

Walter L. Knighten (BA '51) is retired from Chevron. "Christine and I are enjoying the greenery of East Texas in semi-retirement. I am taking a few courses at UT-Tyler and doing a little research at the library there. This year I have become quite a history buff and am serving as commander, James P. Douglas Camp 124, Sons of Confederate Veterans, in Tyler."

Richard Kolb (MA '81) writes from Raleigh, North Carolina, where he is an environmental geologist for Law Engineering. "After watching six rounds of layoffs and voluntary separations, I have resigned from Mobil after eight years. Naturally, the atmosphere there was not very positive. Realizing the opportunities to go overseas were minimal, I've started a new career in a place where *I* want to live, in an industry that is expanding rapidly (for a change)."

Jake Kons (BA '89) received his naval flight officer wings of gold in September 1990 and was designated overwater jet navigator after a year of arduous flight training in Pensacola, Florida. "I am currently stationed at NAS North Island (San Diego), learning to fly the S-3A Viking antisubmarine jet as both copilot and tactical coordinator. I missed the war (unfortunately), but could be deployed on a carrier in the Gulf as early as October of this year."

Erwin K. Krause (BS '49, MA '54) is retired in Houston.

J. David Krause (BS '53) continues to live in Denton, Texas, where he is owner of Dave Krause Pontiac-Toyota-Dodge. "Same old hard fight in the car business. Bessie and I just enjoyed our 40th year of marriage—gonna try for 40 more. We hope the Horns go back to the Cotton Bowl."

John Scott Kuykendall (BA '75) has been enjoying a new career as an environmental geologist for the last year. "Oil and gas reserves may be dropping in this country but there certainly seems to be no shortage of toxic waste to deal with." He is a staff geologist for ENSR Consulting and Engineering in Houston.

Bruce A. Kuyper (BS '77) writes, "After five years as chief mine geologist at Echo Bay's McCoy/Cove Mines at Battle Mountain (a very small town in the middle of Nevada), I'm back in exploration again. Gold is still the only game in Nevada."

—L—

Laurel J. Lacher (BS '87) is a graduate student at the University of Arizona in Tucson. "I plan to complete my Master's degree in hydrology by October, and begin work toward my PhD in the fall. I have been awarded a DOE environmental restoration and waste management fellowship for three years, so my work will focus on that area."

George A. Laguros (MA '87) writes from Houston, "My job as a geophysicist for Marathon keeps me busy. Recently I spent six weeks in Argentina on a seismic crew."

Charles (Chuck) F. Lamb (BS '46) says he "got tired of doing nothing so went to work for the U.S. Environmental Protection Agency under the AARP program." Chuck lives in Littleton, Colorado.

Leon M. Lampert (BS '51, MA '53), a geologist for Dalport Oil Corporation in Corpus Christi, writes: "The

Republicans are not concerned with an energy policy that would stabilize oil and gas prices. Perhaps the Democrats will do it. Still have a daughter, Ellen, in Denver; a son, Wayne, in Oakland, California; and a married daughter, Gail, in Dallas."

Randy Larkin (BS '86, MA '88) resides in Austin and works as a hydrogeologist for IT Corporation.

Kent E. Laughery (BS '53) is vice president of mineral resources for Baroid Corporation in Houston. "Lea and I are fine and enjoy several Texas games every fall. Our five sons are all on their own. Our Texas-Ex geologist gave up the oil field and took an MBA at Darden this spring and is now in New Jersey. Too bad. We'd like to hear from any of our friends from the 'good ol' days.'"

Jeff Lawton (MA '81), a geophysicist for Conoco in Houston, is "working international gravity and magnetics for new ventures group."

Tom and **Rosa Carillo Layman** (MA '87; BS '85) moved from New Orleans to Midland in late 1990. Tom is a geologist for Exxon. "Son Bruce is 14 months old and already likes to collect and taste rocks."

Bill Layton (BS '81) lives in San Antonio where he is an exploration geologist for Stallion Oil Company. "Exploring along the Wilcox trend looking for the big one. Slowly completing Master's degree thesis at night from UTSA. Wife Vicki and three children are all doing well. Wondering if gas prices will ever rise again? Special hello to John Clinch and Richard Lanfear at Tri-C Resources. Would enjoy hearing from 1981 grads Lisa, Kim L., Mike Darr, Jeff Ambrose, John Ligon, Bill Holland and Steve Compton."

H. Louis Lee (BS '54, MA '58) is still enjoying being back in Austin. "It's not exactly the center of the oil business, but these days, who cares. Kudos to Bob Boyer for getting the Austin chapter of SIPES started. Looks like we'll have a great group." Louis is an oil and gas consultant.

Joseph W. Lee (BS '50) is with the Industry Consulting Group in Dallas.

Ernest F. Lenert (BS '36) is retired in Santa Monica, California.

Ray Leonard (MA '77) is director of new ventures for Amoco Production Company and is responsible for the Soviet Union, China and Pacific areas. He lives in Houston with his wife Margaret, sons Benjamin (13), Daniel (11) and daughter Anya (7).

Warren Leve (MA '52), president of GWL Inc. Environmental in Jacksonville, Florida, enjoys the *Newsletter*, "especially news of alumni. Seems like most of my classmates are retired. I just might have to follow their lead very soon."

David M. Levin (BA '78) reports, "1991 is a big year. Added baby girl, Martha Betsy, to go with Blair (3). Actually drilling wells in South Texas, even though they have nothing to do with the Austin Chalk boom, which I managed somehow to avoid. Look us up in San Antonio when you come to visit." David is owner of DML Exploration Inc.

Max Levin (BS '47, MA '51) continues working as a consulting geologist in Midland.

Walter S. Light Jr. (BS '77) resides in Houston where he is president of Thunder Exploration Inc. "Still working carbonates in South Texas. Several on-going Austin Chalk—Buda horizontal projects RRCD 1."

John F. Ligon (BS '81) says, "I continue in the search for oil and gas along the Texas coast. The two big events of 1990 were the sale of Sandalwood's reserves at the height of war-inflated oil prices, and an even more fortunate event—I finally found a wife, Beth Rutz, a military brat, computer programmer, and an Aggie." John is president of Sandalwood Oil & Gas Inc. in Houston.

Ken Liles (BS '50) writes from Bullard, Texas, "After having retired from Enserch Exploration (30 years) and Transco Exploration (eight years), I retired as president from Producing Properties Inc. (three years). Fran and I live on a golf course on Lake Palestine near Tyler (Emerald Bay Club). Playing golf, traveling and fishing. Expecting our eighth grandchild in August. Our oldest granddaughter has plans to attend UT Law School next year. Hook 'em Horns."

Russell M. Lilly (BS '53) is semi-retired in Oklahoma City.

Tung-Hung Thomas Lin (MA '84) is an exploration geophysicist for Marathon Oil Company in the Gulf of Mexico offshore region. He lives in Houston.

Eugene Lipstate (BS '49) is vice president of Northwest Oil and partner in Lipstate Associates in Lafayette. "If gas prices do not go up and oil stays in the $18-$21/bbl. range, this may be the year for me to hang it up. Deals are getting too difficult to put together and investment capital is practically nil. It is not as much fun anymore."

Nancy Green Lister (BS '55), a housewife in Houston, reports "Everyone was fine and busy the last time I checked. 'Hi' and best wishes to everyone."

Larry D. Littlefield (BS '57) comments, "By the time the *Newsletter* is published we will be back in California after three enjoyable, but unfortunately non-oil-productive, years in Buenos Aires." Larry is managing director of Chevron International (Argentina) Ltd. in San Ramon, California.

April Lloyd (BS '89) is a hydrogeologist in Philadelphia. "I'm very busy and enjoying work. I like Philadelphia, but will probably leave in the next few months."

Allen C. Locklin (BS '54) is president of Locklin Oil Company in Tyler. "My life continues to be blessed. Our son Chris and wife Lisa just gave us our first grandson, Ross Christopher Locklin. They already had Alyson Renee, our fourth granddaughter. Our daughter Lee Ann and husband Scott Shaver have given us Lindsey, Claire and Macy. Wife Nancy (Summers) and I are doing very well. Our business was excellent in 1990 due to the best production tool known—luck. Our best to you and all our friends."

John L. Loftis Jr. (BS '40) is a petroleum geologist in Houston.

Laddie Long (BS '52) is retired. "Still enjoying traveling, making new friends and renewing old friendships. Midland will remain the home port."

Susan A. Longacre (BS '64) is a senior

scientist at Texaco E&P Technology Department in Houston. "'Life is full' is an understatement. Between teaching carbonates, field tripping in CO_3 and SS areas, field studies in West Texas, Kuwait, California and North Sea, working on the Trail Guide to McKittrick Canyon (a joint industry-BEG project) and reading manuscripts for the *AAPG Bulletin*, my days and evenings are busy. Plus, the frequent-flyer mileage will get me to Australia next year (I hope). Ken and I now have a grandson—Missy's first child. Christina's a junior in college, working on transferring to UT in spring '92."

T. E. (Ted) Longgood (BS '58, MA '60) just celebrated 31 years with Exxon in Houston. "My golly, what changes we have seen in technology applicable to the oil business in this time. It sure has changed (for the better) the way we do a lot of things. I hope the rest of you guys are having as much fun as I am and enjoying success."

E. William Longmire (BS'50) continues enjoying retirement in Dallas. "Still the same—golf, travel, healthy, happy."

Stephen E. Lovell (BS '82) is a senior geologist for Radian Corporation in Manhattan Beach, California.

Robert G. Lovick (BS '51), a consultant in New Orleans, reports that all is well.

Howard R. Lowe (BS '48) is semi-retired in Coupeville, Washington. "Attended inaugural meeting of the Littlefield Society in Austin this past February. Great chance to see a lot of old friends—Jack Wilson, Bob Folk, Virgil Barnes, Bill Fisher, Ernie Lundelius, Bill Muehlberger and Earle McBride. At the meeting I saw the Stokes, Olivers and Flawns—was a great chance to visit."

Lester E. Ludwick (BS '50) is enjoying his retirement in El Paso. "Still like to keep up with oil and gas industry affairs. Always nice getting back to Austin for a football game and campus visit."

Don A. Lundy (BS '70) notes, "After working for Geraghty & Miller Inc. for nine years, I have joined a smaller environmental consulting firm and will be moving to Colorado in the very near future." Don's new position is as a senior hydrogeologist/associate for Remediation Technologies Inc. in Fort Collins.

Vance M. Lynch (BS '51) has retired from Unocal. "I have moved to Dripping Springs (actually an Austin address), and I am enjoying retirement, especially not getting up early and putting on a necktie every morning."

— M —

W. A. Maley (att. '20) retired from Exxon in 1965, and celebrated his 91st birthday earlier this year. He lives in Smithville, Texas.

Steven D. Mann (MA '82) is still working as a geologist at the Geological Survey of Alabama in Tuscaloosa. "Our son Trevor was born last June, our fourth (and last) child. Our three daughters are doing well. Jessica (9) and Elena (7) are making straight A's. Heather is almost three and growing like a weed. Sometimes it's a struggle to manage, but Jennie and I are managing OK."

Bill Mantinband (BA '59) continues as a cartographer for the Defense Mapping Agency Aerospace Center in St. Louis. "The first 32 years are the hardest. If you like your job, why retire? Three of my five children now live in Israel. If I want to see my grandchildren, I have to go there."

Al and Ruth Nelson at reunion of 1947 Brady Bunch in Austin, October 1990.

David F. Martineau (BS '60) is exploration manager for Pitts Oil Company in Dallas. "Our company has enjoyed working with the Bureau of Economic Geology at UT Austin on tight gas sands research program. Missed my first meeting as a new member of the UT Geology Foundation Advisory Council because of a trip to Albania to review their oil and gas potential."

Robert D. Manson (BS '76) is program manager for Radian Corporation in Houston. "It's great to be back in Texas and working for Radian, no less. Atlanta was OK but kind of boring. I did get my MS there and lots of good environmental experience. New focus is hazardous waste and RCRA. Hello to Peter Megaw and Kitty Coley."

Frank L. Manville (BS '55) will complete 20 years as a draftsman for the Cameron County Engineer's Office in Brownsville in September. "I have made no plans for retirement but I may do so later this year."

Sabin W. Marshall (BS '52) is manager of geology for Texas Gas Transmission Corp. in Houston.

David Martens (BS '84) notes, "I'm beginning my seventh year with Unocal, now exploring for Smackover and Norphlet plays in the MAFLA area." David continues to live in Houston.

Jeffrey G. Martin (BS '84) is president of PetroQuest Corporation in Mandeville, Louisiana. "Originating and selling oil and gas prospects in South Louisiana. Hoping that one day the natural gas bubble (sausage) will finally burst (be consumed) and we'll see decent gas prices."

Dallam Masterson (MA '81), an area explorationist for ARCO Alaska Inc. in Anchorage, is "back in development again, this time at Prudhoe Bay."

Michael J. Mattalino (BA '81) lives in Houston, where he is an exploration geologist for Trinity Petroleum Exploration Inc.

Sharon Pickett Maxwell (BS '78) writes, "Steve and I have been at

our church, Sunny Glen Baptist, for five years now, with Steve serving as minister of music, and love it. He is also still working with my dad in his CPA practice. After 7 1/2 years, it looks like he will be staying, possibly even looking at buying the business when dad retires in a few years. Nathan is now 4 1/2 years old. He has been in an early childhood preschool program through the Richardson ISD this past year, because he was delayed in his speech and articulation due to ear infections. What an improvement! He will be enrolled in the same program again next school year and we hope he will be ready for kindergarten the next year. I function in several different capacities of self-employment: I provide child-care for several friends; I enjoy catering, mostly at holiday times; I provide assistance as needed for one of our neighbors in his graphic design business, and I have been a Mary Kay Cosmetic consultant for seven years. In a volunteer capacity, I am chairman of one of Dallas' Christian Women's Clubs. I also am director of one of our children's choirs at church. We would like to hear from those whom I knew at UT. Please drop us a note at 10919 McCree Road, Dallas, 75238, or call 214/349-1040."

Robert L. McBroom Sr. (BA '51), independent consultant in Wichita Falls, is "still working North Central Texas and frontier areas when possible. Teaching literature and humanities at Midwestern State University as adjunct professor."

William E. McBroom (BS '40) is retired in Vernon, Texas, but still looks at the occasional deal, "in spite of Federal government lack of any cooperation in providing any incentive."

Jim McCalpin (BA '72) writes from Estes Park, Colorado, "After nine years of teaching at Utah State University, I am going into full-time research and consulting in geologic hazards, specializing in seismic hazards and landslides. Alums feel free to drop by and visit me in my log cabin in the woods in Estes Park. I'll provide the homebrew."

A. Nelson McCarter Jr. (BS '83) lives in Houston.

Charles Embree McCarter (BS '34), an independent in Houston, relates: "I have fond memories UT. I worked for Dr. E. H. Sellards at the Bureau of Economic Geology. I remember that Dr. Virgil E. Barnes worked on fellowship at the Bureau after graduating from the University of Wisconsin. He got stranded in Texas during the Depression. Married UT co-ed Mildred, and went back to Austin to work at the Bureau."

Willard A. McCracken (BS '58) continues as an associate professor of geology at Western Illinois University in Macomb. "Enjoyed visiting with alumni at the Dallas AAPG. Will spend the summer teaching, traveling, working on my home in Houston, and collecting quartz crystals in Arkansas."

Edward McFarlan Jr. (MA '48) is a consulting geologist in Houston. "Significant regional Pleistocene oil and gas plays in offshore Louisiana continue to be investigated by me for Petroleum Information Corp.'s exploration systems division. New biostratigraphic and seismic sequence information continues to be essential and challenging for interpretation."

Edward F. McGee (BS '50, MA '52) is retired in Wimberley, Texas.

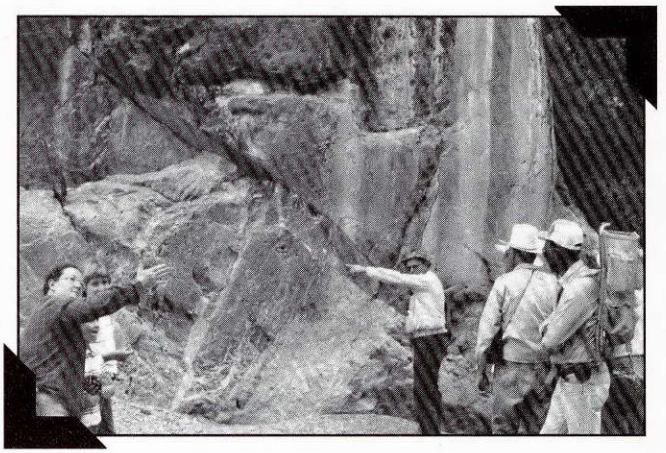
Dick McGehee (BS '55, PhD '63) is a professor of physical education at Southeastern Louisiana University in Hammond. "Am enjoying my research on early Guatemalan and Mexico sport history."

Katherine M. McGinley (BS '78) lives in Ramona, Oklahoma.

Bill J. McGrew (BS '54, MA '55) is a cattle rancher in Mena, Arkansas.

Bill S. McGowen (BS '58) is an oil operator, rancher, and investor in Hockley, Texas.

Lack of consensus on Dog Canyon structure, Big Bend, 3rd Old Mexicans' Field Conference, Lie-Swap and Geo-extravaganza, 1986. From left, Pat Dickerson, Walt Haenggi, Bill Bourbon, and Frank Dougherty. Photo submitted by Pat Dickerson.



Wayne Eugene McIntosh (BS '56) is still living in Rockwall, Texas with frequent consulting trips to Washington, D. C. Hazel and I expect to cut back on the work and travel more after she retires from the Corps of Engineers in May '91. We need to have a 'grandkid fix' periodically and they are scattered from Florida to California. Enjoy the *Newsletter*; keep up the good work."

W. N. (Mac) McKinney Jr. (BS '60, MA '63) is a senior staff geologist for Sonat Exploration. "After 19 years in Houston I've been transferred to Oklahoma City to work the Anadarko Basin in the Texas Panhandle. After five years of management I'm back doing what I like best—geology."

Jim McLaren (MA '84) works as a senior staff seismologist for Woodward-Clyde Consultants in Pasadena, California. "Alternating between studying East Coast seismic hazards and looking at nuclear blast recordings. My wife Nora and I are enjoying our new baby Tommy (born December 16, 1990). With a family now, we're thinking it's time to get back home to the Lone Star State." Jim would like to hear from grads from '84.

Mike McLeod (BS '86) writes, "I have been with Ebasco Services since May 1990 working on a variety of geotechnical and environmental jobs for them. I work from the Sacramento office but work on a lot of out of town jobs. The variety keeps the work interesting." Mike lives in Davis, California.

Pete McMahon (MA '84) and his wife Lori recently celebrated the

birth of their second child, Audrey. Pete is a hydrologist for the U.S. Geological Survey in Columbia, South Carolina.

Jereld E. McQueen (BS '61, MA '63) is vice president of Medallion Oil Company in Houston.

Jude McMurry (MA '82) writes from Winnipeg, Canada, "I completed my PhD in geology at Texas Tech in May of 1991. My dissertation was a detailed study of a megacrystic quartz monzonite pluton in northeastern Brazil."

Lee I. Meador (BS '57) is "enjoying life in the beautiful Puget Sound and selling real estate to old friends. I get together with Howard Lowe to tell stories and remember the good old days. There are a number of Longhorns up this way. Saw Charles Johns last fall." Lee lives in Anacortes, Washington, where he is employed by Coldwell Banker.

James L. Meadows (BA '30, MA '30, PhD '39) lives in Port Arthur. "I am getting along fine. I have a great granddaughter two years old. I enjoy playing chess, and poker when I can line up the mullets."

Joe N. Meadows (BA '62) is an attorney in Waco.

Charles E. (Gene) Mear (BA '51, MA '53) is senior vice president of geologic development for Cross Timbers Oil Company in Fort Worth. "Received Monroe G. Cheney Science Award from Southwest Section AAPG. South Texas Archaeological Society reprinted part of my MA thesis on Quarternary geology of Upper Sabinal River Valley for use at a field school held near Utopia last summer. Only one full-time student (fifth son) now at UT Austin."

Robert D. Mebane (BS '36), retired in San Antonio, is "still playing with antiques and grandchildren."

Suzanne Mechler (BS '89) writes, "This has been a year of changes. I am still working on my thesis at Texas A&M. I am hoping to finish this year, but at long distance. On June 29th, Charlie Hewitt (BS '88, MA '90) and I got married and moved to Kentucky. I am looking forward to exploring Appalachia and East Coast geology, but will miss Texas."

William J. Meek (BS '55) is president of W. J. Meek Insurance Agency Inc. in Arlington. "Insurance business continues to grow and my association with U.S. Naval Academy as their North Texas area coordinator hasn't slowed down a bit either. I continue to see a bunch of bright young boys and girls be appointed to the Naval Academy. Grandson #4, Andrew William Averatt, born March 8, 1991. No grandgirls yet. If you get to Arlington give me a call. Always glad to see ol' Teasips."

Peter K. M. Megaw (BA '76, MA '79) is working in Mexico looking for gold, silver and mineral specimens, "and finding some, too, thanks to Fred McDowell and Steve Clabaugh." Peter is president of IMDEX Inc. in Tucson.

Doug Melius (MA '82) lives in San Anselmo, California. "Imagine our surprise when I received a call to pastoral ministry. Safely nestled in the corporate world, picture our resistance. See yourself back in grad school, and as the primary caregiver for our two boys. I am in the first year of a Master's of divinity program at San Francisco Theological Seminary. Todd Freeman (BS '80) is here too. I miss geology, but not much else of the old life."

Charles M. Merrill (BS '56) "recently retired after five years in the oil patch and 30 years in public education and state level bureaucracy. Anxious now to get down to some serious handball playing, marathon running, and leading all five grandkids on romps up Enchanted Rock, the Chisos Mountains, and other fun places from our old field trip days. Might even take along the old rock hammer, too." Charles lives in Austin.

Mario L. Messina (BS '59, MA '62) is CEO of Messina Inc. in Dallas. "Still traveling to far corners of the world. Wife Jenny opened her second restaurant, called 'Messina's.'"

Harry A. Miller Jr. (BS '41), an independent geologist in Midland, is "having fun working up prospects in West Texas and Southeast New Mexico." He continues to participate on the UT Geology Foundation Advisory Council.

Michael R. Miller (BS '80) is a geologist for Environmental Testing Systems Inc. in Austin.

R. Dick Miller (BS '51) is retired and enjoys the country living northwest of Georgetown, Texas. He reports pretty good fossil hunting on part of his property.

Steven K. Miller (BS '85, MA '89) is currently exploring for deep gas in the Frio and playing as much golf as he can. He is a geologist for Exxon's onshore exploration division in Houston.

Wayne D. Miller (MA '57) lives in Midland, where he is an independent consulting geologist. "The last year has been generally quiet and uneventful. Got a few wells drilled and working and am trying to put together some new prospects to drill, just need money. Family is fine and doing okay, including three grandchildren."

Alumni NOTES

Richard A. Mills (BS '50) is still actively consulting in Houston, working mainly on prospects in Central America.

James R. Moffett (BS '61) is chairman and CEO of Freeport-McMoRan Inc. in New Orleans. "Freeport-McMoRan and UT research project in Irian Jaya, Indonesia, is an unbelievable opportunity for UT to use its expertise to help develop geologic data that will help unravel 'archipelagic geologic history.' Hope other companies will form partnership with UT faculty and students to enhance the learning curve for all concerned."

Laura Lee Hill Moffett (BA '84) reports the birth of her son, Patrick, on July 4, 1990. In January 1991 she joined the Railroad Commission of Texas in Austin as an investigator working in the surface mining and reclamation division.

Charley Montero (BS '84) is a senior hydrogeologist for Rosengarten, Smith & Associates Inc. "Still living in Austin; the environmental business has been good to us all."

Charles Gardley Moon (BS '40, MA '42, PhD '50) is retired from Exxon and still living in Houston.

R. McKay Moore (BS '52) is an independent geologist in Shreveport.

Terry L. Moore (BS '80) works for Phillips Petroleum Company as an associate exploration geophysicist in Houston. "Hopefully, the family is going back to Disneyland this year. I'm thinking great thoughts

regarding exploration and wife Beverly works for a company doing business in Russia and Eastern Europe. It's kind of nice getting inside information from those places without having to attend."

Maggie Dalthorp Moorhouse (BS '80) is an independent geologist in Corpus Christi.

Duane E. Moredock (BS '58) is a consulting geologist in Denver.

Francis W. Morgan (BA '39), a consulting geologist in El Dorado, Kansas, is "still doing a little consulting and putting a few drilling deals together. We sold our farm and livestock—too old to chase cattle."

Julian (Hank) Morgan (BA '49) writes, "Moved to Blue Ridge Mountains of North Carolina a year ago. Seriously considering moving back to Texas Hill Country—miss the Longhorns. Keep up the good work with the *Newsletter*." Hank lives in Blowing Rock.

Michael B. Morris (BS '47) continues to live in Houston, where he is a petroleum consultant. "Enjoyed the AAPG meeting in Dallas and looking forward to the AAPG Foundation meeting in the Napa Valley in May." Mike is an active member of the UT Geology Foundation Advisory Council.

Susan J. Deutsch Morris (BS '70) is currently working for Exxon International in Houston as a senior geological technician. "Bill will be entering high school next year, is enjoying school and is looking forward to driving (unlike his mother). Amanda is playing softball this year and will be finishing second grade. Don is working too hard. So all is normal."

Charles Motz (BS '60) is enjoying retirement, life and his grandchildren in New Braunfels, Texas.

David Murphy (BS '84) writes, "Monica and I recently relocated to New Orleans when I accepted a job with Mobil. We love the city and our 100-year-old Victorian home. At Mobil, I am learning that exploration does not stop at the shoreline, and am enjoying being inundated with seismic data, computers and the works."

John Murphy (BS '85) is still doing environmental work for Jones and Neuse Inc. in Austin. "Our second baby is due in August 1991. I hope all my former classmates are doing well."

Susan Hallam Murosko (MA '82) lives in Ellicott City, Maryland. "Thoroughly enjoying my dual career as an environmental project manager with a consulting engineering firm (Schnabel Engineering Associates), and a mommy to Daria (18 months) and Nicholas (2 months). Still nostalgic for the boom days with ARCO but pleased to be beyond my teaching experience in earth science."

Dennis Murphy (MA '77) lives in Houston, where he is a senior staff geologist for Exxon Coal & Minerals. "Last December I married Liz Brown, another coal geologist from Illinois."

— N —

Jerry Namy (PhD '69) is vice president of exploration for Texland Petroleum Inc., in Fort Worth. "Took a nostalgic trip to Marble Falls and then Llano uplift this spring. Recalled many of the field trips and stops with Charlie Bell and his students. I could not remember the bar in Llano that Charlie used to take us to for a cold beer in the late afternoon. Thought it was Shorties, then Pinkies; as Peter Rose corrected me, it was Fuzzy's Corner."

Kenneth E. Neavel (BS '82) works as a geologist for Chevron in Lafayette. "Recently completed PhD from Purdue University and after having roamed the Smoky Mountains and Paradox Basin for ten years, have taken my first permanent position."

Richard A. Neeley (BS '86) reports "I recently completed a Master's degree in geology at UTA, and just started a new job with Deminex U.S. Oil Company in Dallas."

G. Allan Nelson (BS '47) writes from Denver, where he is working as a consultant. "It was great getting back to Austin after 39 years. What happened to the spacious lawns between the campus buildings? Kudos to Dr. Jack Wilson for chairing a very enjoyable reunion of the class of 1947 (and we beat the tar out of Arkansas)."

Daniel and **Deborah Travis Neuberger** (MA '87; MA '88) are both working as geologists. Dan is a geologist with Shell and Deborah is a geologist with Amoco in Houston. "We have been fishing and playing down in Port Aransas a lot since Debbie's father, Bob Travis (BS '57) went into semi-retirement (at least for the time being). Bob and Peggy are having a blast and we are having fun watching! Still enjoying Houston and our jobs."

Paul Neumann (BS '87) comments, "Still logging open hole oil and gas wells in South Texas, learning cased hole logging to gain experience, to eventually go over seas with Halliburton Logging Services." Paul is living in Victoria and is a senior field engineer.

W. B. Newberry (MA '52) is president of MGN Oil and Gas Corp. in Austin.

Richard Nicholas (BS '68) is the dean of students in Evansville, Indiana "New position following receiving PhD from UT in May 1990."

David C. Noe (MA '84) writes "I've been happily immersed in the hydrogeology program at Colorado School of Mines, following a summer of work on the Exxon *Valdez* oil spill. In May, I will join the Colorado Geological Survey as a member of their environmental geology division. Best wishes to the old ground floor gang." Dave lives in Boulder.

Isaac W. Norman (BS '48) is retired and living in Tyler.

Susan Stone Norman (BS '76) reports, "John and I have two daughters now, Lara (1 1/2) and Jenna (6)." Susan and her family live in Duncanville, Texas.

Carol Doran Northern (BS '84) lives in Alpharetta, Georgia and is employed as a senior geologist for Law Environmental.

George E. Nowotny Jr. (BS '55) is director of leasing, sales and acquisitions for Case and Associates in Tulsa, Oklahoma. "Still active in commercial real estate and banking while watching the energy industry closely."

Lt. James Mark Null (BS '87) is a naval oceanographer, assigned as a geophysical research officer in the numerical modeling division for the Navy Oceanographic and Atmospheric Research Lab at Stennis Space Center in Mississippi. "No

outcrops in Louisiana or Mississippi. Still looking!" James is living in Slidell, Louisiana.

—O—

Bob O'Brien (BS '52, MA '56) "just spent a semester teaching in London, to be followed by a summer touring the Continent: the hard life of a geography professor!" Bob is at San Diego State University in San Diego.

John F. O'Donohoe (BS '50) is president of Coastline Exploration Inc. in Houston.

Josh and **Diana Oden** (BS '56, MA '58; BA '55) write from Eagle Pass, Texas, "Still working part time and raising pecans part time. Diana is up to her ears in helping a private school start a library. Daughter Michelle will graduate from UT in May." Josh is a geologist for Winn Exploration Company.

A. M. (Red) Olander (BS '48) is "staying busy and still enjoying retirement in Houston. Enjoyed visiting with Bill Fisher at the SEG Trustee Associates meeting in Point Clear, Alabama."

David Orchard (MA '80) reports from Houston, "I'm working in new ventures, Western Hemisphere with projects from Canada to Argentina. Aprendo Español. Those of you who remember when Emily was born might want to know that she is now as tall as Marie!" David is working as exploration manager for BHP Petroleum.

John C. Osmond (BA '47) comments, "Enjoyed a very busy year as chairman of AAPG house of delegates plus keeping consulting projects going. Good to see friends at AAPG meetings in Lafayette, Abilene and Dallas." John is a consultant in Englewood, Colorado.

Jeff Ottmann (BS '77) writes from Houston, "Best news of the year was birth of our second child; boy with blonde hair, blue eyes, named Robert Davis. The family is doing well and enjoying our weekends at Lake Livingston. Exxon still keeps me busy. I'm now working in the deep potential group."

Robert D. Ottmann (BS '51) retired from Exxon in July 1990 in Houston. He comments, "Adjusting to retirement was like Bre'r Rabbit and the briar patch. Enjoy participating on the Geology Foundation Advisory Council."

Philip M. Oviatt (BA '78) is a senior geophysicist for Arkla Exploration Company in Houston.

Robert M. Owens (BS '51) is a consulting geologist in Houston.

—P—

David P. Palmer (MA '81) is a development geologist for Marathon Oil Company in Lafayette.

Jack M. Parks (BS '50) is an independent geologist in Dallas.

Tim and **Leah K. Parks** (BS '88; BS '87) write "Since summer field camp in 1986, we began dating and married on October 27, 1990. Since graduating, Leah worked four years as a geologist for Kelley Oil Corporation; Tim worked at Brammer Engineering in Shreveport before pursuing and receiving a Master's degree in geology from Texas Tech University in May 1991. He is currently a geologist for Kelley Oil Corporation." They are living in Houston.

Matthew J. Parsley (MA '88) works for Marathon Oil Company as a development geologist in Midland.

Dorothy S. Paterson (BA '77, MA '80) contributes, "After 11+ years with Chevron, I've made the switch to Marathon Oil Company. I'm very much enjoying working international reservoir geology again (after having spent more than three years with Chevron in London in such a position). I still maintain a role as a Chevron spouse. Malcolm and I are now quite settled in Houston. Our two kids, Audrey (4) and Andrew (2 1/2), love living so close to my parents, and I do too. After 15 years away from Houston, I'm getting to know my hometown all over again."

J. F. Patterson (BS '52) lives in Bellaire, Texas and works as a consultant.

Jacob L. Patton (BA '32, MA '32) writes from Tyler were he is working as a consultant. "I am still working for the Saner Estate in Dallas. Still in relatively good health and still go to the office daily."

Bill R. Payne (BA '40, MA '41) reports "very little new this year except for additional pains (not Paynes) and aches. I continue to enjoy the *Newsletter*. Keep it coming. My first grandchild did choose the Naval Academy over Harvard for which I am grateful. He just finished the first year and he thoroughly enjoyed it." Bill is retired and living in Houston.

Stephen R. Payton (BS '78) is an independent geologist in Midland. "Oil and gas drilling has remained strong at current $20 oil, and expect it to remain so at this price. Our ostrich ranching is in its third year and looks promising."

William Y. Penn (att. 1925-29) is self employed in Midland.

Benjamin J. Petrusek (BA '42) is "retired, good health prevailing, and continue residing in Metairie, Louisiana. In 1990 enjoyed a vacation trip viewing the nature wildlife of southern Argentina and the remarkable Torres del Paines mountain scenery and glaciers in southern Andes of Chile-Argentina."

Elliott Pew (MA '82) has "been in Houston nearly two years as a geologist for South Texas division of Fina. Terry and I are living in the Woodlands and our two kids, Ben and Jenny, are growing up quicker than I admit. Looking forward to hearing from alumni in the area."

Kathleen Pfaunkuche (BA '25) is retired and living in Houston.

Deborah S. Pfeiffer (MA '88) is "working for Shell in New Orleans, and Ron is working for Whitney Bank. The big news is that we're expecting our first child in October."

Cynthia Philipson (BS '82) is a geologist with Core Laboratories in Houston.

Loren Phillips (BA '82, BS '82) comments, "Moved back to Texas in February 1991. Feels good to be back. Happily married to wife Lisa. We have one son, Adam (2 1/2). Enjoying work in environmental field."

George B. Pichel (BS '51) writes, "My wife, Connie, and I crossed the Pacific in our 37-foot sailboat. While going from Tonga to New Zealand, I heard I was made an Honorary Member of AAPG. 1991 will see us return to California, a long upwind trip." Home port for George is San Marino, California.

William T. Pickens (BS '82) works in Kingston, Surrey, England. "I started working with the French State Oil Company in January trading petroleum futures in association with the refineries operations in Northwest Europe. I love it. It's like gambling fever and getting

paid for it. But I still miss Austin and the folks thereabouts."

Gerald S. Pitts (BS '54) is president of Pitts Energy Company in Midland. "Pitts Energy continues to develop reserves at the Scott Delaware Field at Barstow, Texas. We have completed 19 producers and one salt water disposal well. Our budget has at least four wells scheduled for this year in the area. We are scheduled to drill 2-12000 Devonian well in Lea County, New Mexico plus 2-8200 test wells in Dawson County in 1991. Would like to find two or three additional prospects to make our year complete. We need this much activity to satisfy my younger partners (partners are sons Greg, David, and Steve). They say this keeps dad young!"

Phil M. Pitzer (BS '54) is president of Caddo Creek Corporation in Breckenridge, Texas. "Hoping for a steady year within our oil industry. Family just keeps on growing, six grandchildren. Polly gets younger while I just 'age.'"

Michael P. Plamondon (MA '75) lives in Englewood, Colorado while working as a sales representative for Geo Graphix.

William A. Poe (BS '48) reports from Houston, "We are doing well for our age. Son Bill is still minister of First Presbyterian church in Sherman, where granddaughter Sarah will graduate from Austin College this year. Son Rich is supervising counsellor with several school districts in the Hill Country. Son Marshall is avionics engineer for Rockwell, Int. in Sacramento, California. Grandson Nate is in hydrogeology at University of Idaho. This is a great thing you folks do. Keep it up."

Nick B. Pollard (BS '84) comments, "1990 was a busy year for Nanci and me: our first child, Clay Austin, was born in March; we moved from Houston to Tyler in September; and I finished my Master's degree at University of Houston in December. I sure hope '91 is less eventful, except for a discovery or two." Nick is working as a geologist for Lake Ronel Oil Co. in Tyler.

Morris E. Pollock (BA '62) is president of Marrock Petroleum Exploration, Inc. in Phoenix, Arizona. "I'm hoping the Iraqi war will result in an energy policy that will rejuvenate domestic exploration and reliance on foreign oil; but I doubt it."

Alumni NOTES

John M. Pope (BS '86) writes to say "hello to all my fellow graduates." John is an account manager, environmental claims for The Travelers in Houston.

Charles E. Porter (BS '49, MA '51) writes from Jackson, Mississippi where he is retired and hating it. "All you Cushing Quadrangle (East Texas) commandos from the summers of 1949 and 1950 are lucky; I almost sent your pictures in to show why your were kicked out of the dorm in Nacogdoches. They did bring back memories. Zada and I are preparing for first grandchild, believe it or not. Makes me sad not to recognize 50% of the courses being taught in the department these days; am afraid that the days of the field geologists are gone forever."

Robert B. (Bob) Porter (MA '51) reports from Midland, where he works as an independent. "Polly and I doing great. Kids and grandkids going strong. Much to be thankful for. Still doing some geology and enjoying more than ever. We love to visit with 'old' Longhorn friends and look forward to another football season following grandson Turk McDonald and his teammates in Austin! Win another SWC championship! See ya in Austin!"

J. T. Portwood (BA '83) is vice president of Alpha Environmental Midcontinent., Inc. in Oklahoma City. "Baby boy, Colton J., born April 1990. Affiliated with company that used oil-eating microbes on *Mega Borg* tanker oil spill in Gulf of Mexico, June 1990. I am in the business of bioremediation, microbial enhanced oil recovery and microbial paraffin control."

J. Dan Powell (PhD '61) comments, "It seems that we have finally alighted permanently. Dorothy works at the bank in Aspen and I still work on Rocky Mountain gas reservoirs and various precious metals projects. We now have five grandchildren. We would be glad to hear from or see any of our friends (303/923-3448) anytime."

Ron R. Pressler (BS '76) lives in Houston and is a division geologist for Amerada Hess. "Though gas prices remain soft, we are finding viable opportunities and remaining aggressive in the Gulf of Mexico."

Leo Pugh (BS '52) reports in from Houston: "The oil capital is still selling seismic and geophysical data but wish natural gas prices would go up. Became a grandfather this fall twice with twin girls, Ashley and Lindsey Pugh in Lafayette, Louisiana, Hoo-Ray!"

— R —

Jack H. Ragsdale (BS '51) is president of Forge' Energy Corp. in Horseshoe Bay, Texas.

Rick Railsback (BA '74) writes from Corpus Christi. "I am currently an independent geologist on retainer to Suemaur Exploration Co."

Clyde M. Rascoe (BS '49) is president of Merit Oil Company in San Angelo.

Robert Randy Ray (BS '74) reports, "I am still busy exploring for oil and gas at R^3 Exploration Company. Both boys, Brandon (9) and Austin (7), are busy at basketball, soccer and enjoy summer camping and fishing. Kathy is also working at my office part-time and house full-time! Enjoyed seeing classmates at AAPG in Dallas, some I have not seen since 1974 field camp! Hello to Joe Medina and Bonnie Weise." Randy is living in Lakewood, Colorado and working as a consulting geophysicist/geologist.

M. Allen Reagan (BA '50) comments, "Sue Ann and I moved into our new townhouse on January 31, 1990, looking forward to no yard work and more travel. My regards to all the Geology Department exes." Allen is retired and lives in Houston.

Donald F. Reaser (PhD '74) lives in Waxahachie, Texas and is a associate professor of geology at UT Arlington. "I'm still involved with geology of the Superconducting Super Collider (SSC) site in North Texas. I co-led two field trips to the SSC vicinity last year for the GSA National Meeting (Dallas) and the AAPG Annual Meeting (Dallas). Also, I am now one of the 'old-timers' at UT-Arlington, received

a 25-year service pin and plaque last April."

H. Clay Reichert (BA '38) is an independent geologist in Lafayette. "There are a lot of contour lines from 1926 to 1991, and I hope to add some more."

Charles B. Renaud (BS '49, MA '50) "visited Japan with Flying Longhorns in March 1991. Served in GHQ (MacArthur's Hq) in Tokyo 45 years ago, so I saw a lot of familiar landmarks. Having risen from the ashes, Tokyo is the miracle of the century." Charles lives in Midland and works as an independent geologist.

Todd W. Reynolds (BS '85) is vice president of United Oil and Minerals in Austin. "My wife Pat, and I had our first child in February, a little boy named Evan. Drilling horizontal Austin Chalk wells is fun, but I find greater satisfaction in drilling a successful vertical well."

James Van (Jim) Richards (BS '56) writes, "Opened an office for Crossroads Oil Company in Houston and helped form a new company with six geologists, Louisiana Offshore Ventures. We're exploring in Federal water using a major company's data base. Picked up five blocks with another major international oil company partner in the March Federal sale. We're building an exciting company here; offshore is the name of the game for independents now."

James W. Richards (BS '58) works as an independent operator in Midland. "Still putting oil and gas and gas prospects together in Texas and growing grapes in California."

Brian E. Richter (BS '78), a geologist in Denver, says, "The Colorado annex continues to shrink as more alumni retreat to the mother country. Julie and I, however, will stay put. Life on the western frontier is great! We wish all our good friends were still here to enjoy it with us. Come back soon!"

Gary Don Richter (BS '79) lives in Houston.

Wade C. Ridley (BS '53, MA '55) is president of Ridley Oil Corporation in Tyler. "Still fighting the oil business in East Texas because I'm not clever enough to do anything else."

Frank Wm. Rife (BS '50) writes from Irving, Texas, "Still developing El Viejo oil field in Bastrop County."

Clem H. Roberts (BS '49) is a retired consultant in Midland. "Need help with a problem in West Texas, Southeast New Mexico? 915/694-3289."

Roland S. (Rock) Robertson (BS '55, MA '56) is an independent geologist in Corpus Christi.

Edwin C. Robinson (BS '50) is retired from Unocal International in Carlsbad, California. "Youngest daughter, Cristina (21), graduates this summer from Washington & Lee. Enjoying life with wife Edith, six children and seven grandchildren. Life just doesn't get much better than this!"

Margaret Anne Christie Rogers (BA '64, MA '69) is president of MARA, Inc. in Los Alamos, New Mexico. "Am thoroughly enjoying my business. Lots of challenges, absolutely no ruts!"

Lucy O. Ross (BS '50) lives in Colorado Springs and is president of Deltex Royalty Company, Inc.

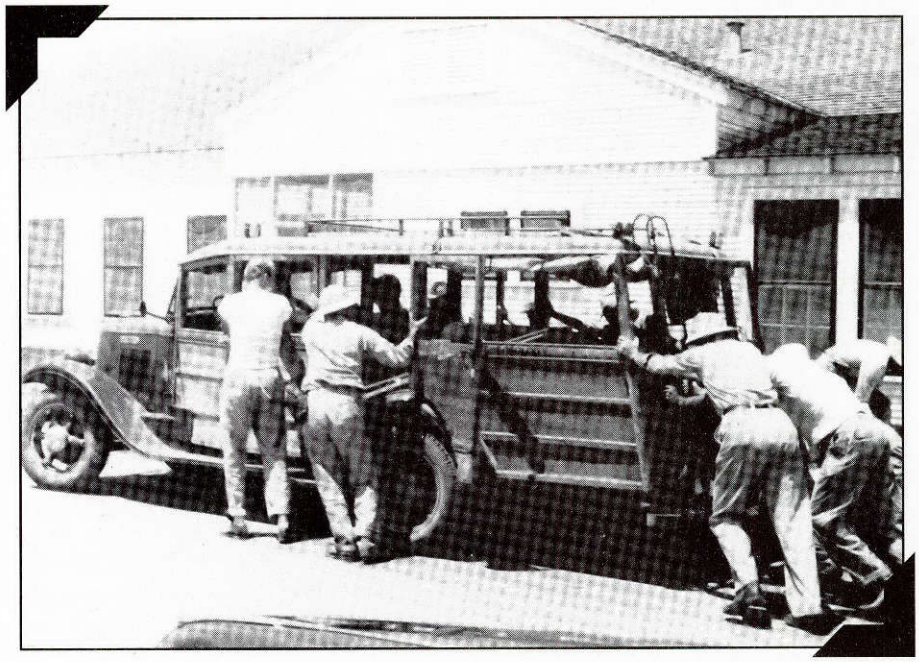
Robert Brooks Ross (BS '50) writes from Houston where he is manager of exploration for Partners Oil Company. "Started my tenth year with Partners on February 1, 1991. Still looking for development type deals with upside potential in Federal waters, Gulf Coast of Texas and Louisiana, and certain parts of the Fort Worth Basin. Look forward to the *Newsletter* to find out where classmates are located."

Peter D. Rowley (PhD '68) is a geologist with the USGS in Denver. "Continue with quadrangle mapping in the Caliente Caldera complex, Nevada. Mary is in the home stretch of her PhD, data crunching and writing on her dissertation."

W. Wayne Roye (BS '51) is self-employed in Midland.

Jimmie Norton Russell (BS '52, MA '54) is a geologist for the Texas Water Commission in Austin. "In addition to other duties, I am also now deeply immersed in feedlot and dairy matters."

Carolyn Rutland (MA '79) reports from Kalamazoo, Michigan where she works as a project manager for American Hydrogeology Corporation. "In July 1990 I quit my job with SAIC in Las Vegas and returned to Michigan. I now have the best of all possible worlds, a terrific family—husband Chris Schmidt, a geology professor at Western Michigan University, and sons Charlie (8) and Gene (3), a pleasant house, a job that is far above average in every way and is in the same town where we live, and time for myself. The company I work for does environmen-



1947 field camp participants push the truck (the"Yellow Peril") outside their living quarters at Curtis Field in Brady, Texas. Photo submitted by Al Nelson.

tal consulting. I personally do a lot with underground-storage-tank-related projects. I still read igneous petrology and geochemistry papers on the sly, however."

— S —

Floyd F. Sabins (BS '52) is continuing world-wide projects on remote sensing for Chevron. In my UCLA remote sensing course I note a slight up-turn in undergraduate geology students." Floyd is a senior research scientist for Chevron in La Habra, California.

Luis A. Sanchez-Barreda (PhD '81) writes, "Several years ago, Mary and I decided to move to Navasota, Texas, where we started a full-time ranching operation with some consulting. We now have a full-time consulting firm, specializing in frontier areas of Central and South America. If you are in Navasota or planning business in Latin America, we'd love to hear from you."

Jack S. Sanders (BS '57) is a geologist for DOE/EIA, "still in Dallas, and no foreign work planned."

James W. Sansom Jr. (BS '63) is an independent geologist in Austin. "Continuing to do engineering and environmental geological consulting for clients and consulting firms in Texas."

Steffen Saustrup (BS '88) is a graduate student in geophysics at UT Austin. He participated in the research cruise to the Antarctic this past year, and writes of his experiences: "One of the most striking things about this place is the sheer size of everything—everything except the penguins and us—and the huge distances. I remember how big this ship looked when I first saw it at that crowded pier in Punta Arenas. That feeling changed pretty quickly on our second day out when we hit The Big Storm just east of Tierra del Fuego and were tossed around like a bathtub toy for the better part of the day, with no land in sight and lots of seasickness. It's so beautiful here, but it is an ominous, powerful, and quiet beauty. The islands are jet black where not covered with snow and ice and they rise straight up from the water line. The icebergs are huge and sharp, ranging in color from pure white to a deep blue, the larger ones visible from 15 miles away. It's pretty impressive when a berg bigger than Memorial Stadium slides silently past the ship. As it gets closer we can see the waves crashing against its flank and then we realize that the little black streak at its base is a colony of over 100 penguins and that there are seals hanging around in the water, apparently waiting for a penguin to jump or fall off in time for lunch. Makes me think a little bit on nights when we're heading into thick fog and snow with visibility of only about 50 yards, dodging bergs every few minutes. Sunsets and sunrises are fantastic and they last forever. Lots of blue, yellows, and grays, not so many reds and oranges like we get at home. Everybody's in very good spirits and the science is going well. We're brainwashing the Yankees with Jerry Jeff, Bob Wills, Lyle Lovette, and Marcia Ball. Food's great, but I sure could use a steamin', greasy plate of enchiladas and a pitcher of Shiner Bock."

George W. Schneider Jr. (BS '57) reports from Austin, "Enjoyed seeing old friends at the luncheon honoring Bill Gipson and Don Boyd in Houston in January. Congratulations to Bob Boyer on the anniversary of the Natural Sciences College and the weekend activities in April!" He continues to serve on the Geology Foundation Advisory Council.

Louis I. Schneider Jr. (BS '60) is vice president of Teledyne Exploration in Houston. "Elected assistant chairman and chairman elect of International Association of Geophysical Contractors for 1991-1992."

Tom Schneider (BS '50, MA '51) comments from Midland, "Now spending most of time prospecting and operations with the help of son Thomas."

Paul E. Schnurr (MA '55) writes, "Right now I'm catching up on 'honey do's'! Plan to accompany wife on choral concert tour of Europe in June. Will help son and daughter do some remodeling on respective homes when we return." Paul is living in Concord, California.

Ted Schulenberg (MA '58) says, "Have recently agreed to extend my assignment here for another year (until May 1992). Enjoy the country, the work and the people, so how can I go wrong. Janet recently took a cruise to Antarctica and I joined her for a New Zealand touring vacation. Occasionally find a UT ex passing through here. Wish there were more." Ted is a technical advisor for Korea Petroleum Development Corp. in Seoul.

Milt Scholl (BS '47, MA '48) reports from Chula Vista, California where he is retired. "Awaiting arrival of grandchild number seven late June. Then getting ready for seven-day bicycle trip in Oregon in late summer. Retirement is great. Sorry we missed the reunion in Austin last year."

Frederick E. Schultz (BS '47) is retired and living in Ojai, California.

Rubin A. Schultz Jr. (BS '61) from Corpus Christi works for the State Department of Highways and Public Transportation as a district maintenance construction superintendent. "Still with the highway department. Plenty of work and like everyone else, short of funds. Family is growing, wife is now a grandmother. We are planning what seems to be our annual pilgrimage to Miami this summer."

Alan J. Scott (faculty 1959-1984) lives in Boulder, Colorado. He moved to Boulder about four years ago and worked on regional stratigraphic studies for the Research Planning Institute. Last year he formed his own consulting company, focusing on field studies, seminars and proprietary research projects. He still sees a lot of Texas exes working for companies he is involved with and at various meetings. "It's great to see how former students have grown professionally and personally!" They seem to also be surprised that Al has at last mellowed. Al was married almost three years ago to Lilian Baer from Zurich, Switzerland. They share an avid interest in mountains, hiking and skiing. This summer, they are spending a month hiking in the Alps and helping celebrate the 700th anniversary of the Swiss Confederation. In addition to enjoying wildflowers and geology, they are scouting out trails and places to stay for European hiking tours they are planning to lead in 1992 (for Lilian's Travel Company).

Eugene P. Scott (BS '56) is a petroleum geologist consulting in Corpus Christi. "Still involved in fair share settlement of force pooling hearing proceeding matters before Texas RRC Oil and Gas Division/ Austin concerning Exxon, Lichtenberger mineral fee 797.9 acre section and adjoining tracts, Seven Sisters, East Field, Duval County, Texas; however, the very persistent low prices per MCF (1,000 cubic feet) and the low 'take' (MMCF per month) is not conducive toward inducing the fee owner/operator to fulfill the requirements of full-development drilling of the natural gas producing subsurface reservoirs in order to bring the force pooling process to consummation. Hopefully, in the near term, these sets of conditions will improve, and the force pooling process may ensue to completion under the laws of our State of Texas Mineral Interest pooling act/M.I.P.A."

George Sealy (MA '53) "keeps busy looking after oil and gas, timber, grazing and lignite for Sealy Land Company and working on a system for monitoring all of the above for the Sealy and Smith Foundation properties scattered around the state. Regularly say a prayer for 'firmer' gas prices to help the foundation's philanthropy to the UT systems." He is a managing partner for Sealy Land Company in Houston.

Louie Sebring Jr. (BS '41) reports from Corpus Christi where he is an independent geologist. "No new grandchildren or great grandchildren. No business news. No more 19 1/2 pound sea run brown trout caught on a fly. No more trips to fish in Argentina or Chile or New Zealand. No more trips to Alaska to fish or to Africa to photograph animals. Must be getting old."

George C. Seibert (BS '60) is president of King Oil Tools in Houston. "Enjoying grandchildren. Excellent growth in drilling tools for environmental, monitor well drilling market."

Robert T. Sellars Jr. (BS '57) writes, "Enjoying the world of consulting. Splitting time between Gulf Coast and Rockies, some success." He is a consulting geologist in Denver.

Holmes A. Semken Jr. (BS '58, MA '60) is professor and chairman, department of geology at the University of Iowa in Iowa City. "Holmes and Elaine had a delightful do-it-yourself excursion to Turkey and enjoyed our oldest son's wedding (Steve). These events were tempered because our youngest son (David) was in the Gulf with the Third Armored Cavalry. He reports many adventures but no serious conflicts for his unit. Holmes continues as departmental chairman; in the area of research, he invaded a Paleo-Indian underground flint mine in search of late Pleistocene/Early Holocene fossil vertebrates."

Paula Wright Sessions (BS '84) is currently employed with Metcalf and Eddy doing hazardous waste and petroleum clean up work in Hollywood, Florida. "We have no kids yet, but are starting to entertain the idea. Hello to Anne, Wacey, Mary Lynn and other friends from the June 1984 field camp. Come visit us in South Florida; we keep a boat in Key Largo, 15 minutes from some of the best reef diving in the Keys."

Charles R. Sewell (MA '55, PhD '64) is the owner of Sewell Mineral Exploration in Tucson, Arizona. "Louise and I drilled in Utah and Nevada in 1990 (copper-gold; yellow kind). 1991 will put us back in the USSR for some work and then touch the land of Hutton and Scotch whiskey. We have had many nice visits with the Ralph Duchins; They have built a truly lovely home on the solid rocks of Tucson. Come see us both."

George B. Sewell (BS '54) writes from Denver, "Weren't those royalty checks great for a month or two? Horizontal drilling and gas prospects aren't fulfilling the promise we felt for awhile, so what should the independents do? Some are retiring, some are becoming travel agents or water geologists and a few are just going sailing."

John S. Shambaugh (BS '49, MA '51) "moved from The Woodlands back to Corpus Christi in July 1990. Good to be back with most of family and long-time friends after being in the Houston area for eleven and a half years." John is retired.

William (Bill) W. Sharp (BS '50, MA '51) writes from Dallas, "Plan to visit with Cajun oil patch/tennis friends in Lafayette shortly. Later mom and I plan European trip. Exploits of youngest daughter (paramedic) regularly appear in area TV news clips and newspapers. Oldest daughter (attorney) is president of Grayson County Bar Association and had her first daughter this year. Only a few oldtimers attended the AAPG in Dallas; too bad, it was great."

Stephen L. Shaw (BS '71, MA '74) has recently became president-elect of West Texas Geological Society. "Nancy and I will have both kids in Robert E. Lee High School this year. Katie is a senior and Will a sophomore." Steve is a geological advisor for Meridian Oil Company in Midland.

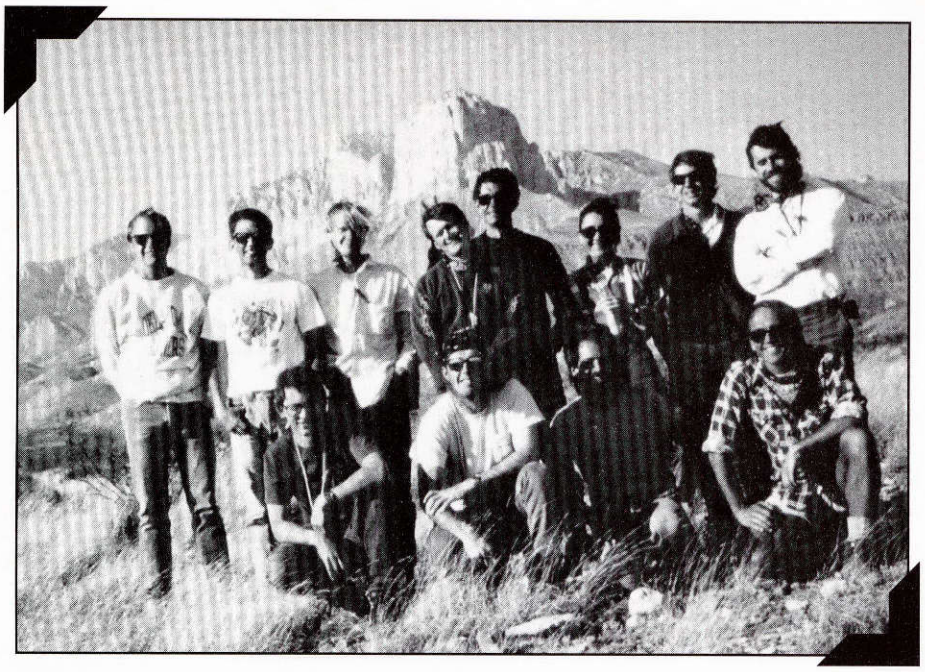
Don B. Sheffield (BS '58) works for Halliburton Energy Service Group in Houston. "Looks like a good time to encourage young people to begin a career in geology. Things are going to be better." Don continues his participation on the Geology Foundation Advisory Council.

Wm. T. (Bill) Sherman (BS '51) reports, "Working on contract basis for the oil company I first did business with in 1955. Actually my favorite. Showing a few prospects around and looking for production." Bill lives in Houston and is marketing representative for Quintana Petroleum Services.

Mark S. Shield (BS '88) is "still in Austin working as a computer geologist with Landmark/Zycor. This year brought Donna and me a new baby boy and a home in the hills."

Samuel J. Sims (MA '57) continues doing consulting work to stone industry in southeastern Pennsylvania. He lives in Bethlehem.

Scott Simmons (BS '87) is a geologist for Marathon Oil Company in Lafayette. "After completing a Master's at an undisclosed location, I'm now sucking oil and gas from North Louisiana and South Texas. If anyone has seen any outcrops (especially skarns) in Louisiana, let me know. If you have



Geology 383N class, Spring 1990, at El Capitan, Guadalupe Mountains, West Texas. Kneeling, from left: Robert Buehring, Khib Kugler, John Hartley, Carl Fiduk. Back row, from left: Walter Denny, Kevin Lyons, Colin Sumrall, Michael Starcher, Hercules Da Silva, Izaskun Azpiritxaga, William Fitchen, Jay Banner. Photo submitted by Jay Banner.

found Shiner Bock, call me day or night."

R. Sam Singer (BS '61) says, "The hunt for oil and gas continues. Horizontal drilling may be the elephant we need in the industry." Sam lives in Houston and is manager of reserves and acquisitions for Pennzoil Exploration and Production Company.

Harry H. Sisson (BS '40) is an independent in Houston. "The big news is that Nancy and I celebrated our 50th wedding anniversary. The celebration involved a family reunion which was delightful and we felt honored that so many friends attended."

David K. Skidmore (BS '76) is president of Skidmore Exploration, Inc. in Nocona, Texas.

Marriott Wieckhoff Smart (BS '57) is director of the library/information center for Cyprus Minerals Company in Englewood, Colorado.

Tommy T. Smiley (BS '51) is "keeping busy and trying to keep fit (losing battle)." Tommy is retired in San Antonio.

Anne Smith Miller (BA '83) is a geologist for the Texas Water Commission in Austin. "In my free time, I've been perfecting my skydiving, mountain climbing, and race-car driving skills. A special message to Judy, Paula and Barb: Hope you're all still 'wild at heart.'"

A. Richard Smith (BS '64) writes, "Ann and I continue to enjoy living in Austin and working for the Texas Department of Health, looking after our fellow Texans."

Bruce Dixie Smith (BS '58) is a partner at Fulbright and Jaworski in Houston. "I am still practicing admiralty law in Houston. Marja and I continue to travel as much as time and career will allow.

Daniel L. Smith (BS '58) is executive vice president for Texoil Company in Houston. "I continue to manage exploration for Texoil and do some basic geology and prospect generation in the Gulf Coast. I am currently general co-chairman of the 1991 GCAGS Convention which will be in October in Houston. Also, this year I am a national director of SIPES and chairman of the National Energy Advisory Council for SIPES."

Debra A. Smith (BS '82) is a senior transportation representative for MidCon Marketing Corporation in Houston.

Glenn C. Smith (BS '53) is an artist in Edmond, Oklahoma.

Harry L. Smith (BS '51, MA '56) comments, "Sold all of my oil operations in 1990. Climate in the oil business to me did not justify further participation." Harry is living in Boerne, Texas.

Edmund D. (Ed) Sneed (MA '55) is a region exploration manager for Gulf Coast and offshore region for Marathon in Houston.

John L. Snider (MA '55) writes from Pineville, Louisiana, "Enjoy retired life, especially senior bowling league, gem and mineral club, travel, and reading the UT Geology Department *Newsletter*."

Kemp D. Solcher (BS '39) reports, "I have been associated with the George A. Musselman oil interests for 35 years. George (MA '40) passed away in 1986, but I have continued to monitor the oil and gas properties for the heirs." Kemp lives in San Antonio.

Howard J. Speer (BS '56) is the first vice president for Dean Witter Reynolds in Dallas.

Stephen W. Speer (MA '83) writes, "On January 1, 1991, we took the plunge and decided to try the oil and gas game as an independent, having had 7 1/2 great years with Yates Petroleum. Therese and I decided there was no ideal time to try it, so it seemed like the best thing for us to do. I think we made the right choice as things are working, but I sure would like to see better gas prices. Hello to everyone." Steve is living in Roswell, New Mexico.

Laurie L. Sperrazza (BS '87) reports, "Husband, Dale Sperrazza, with Landmark Graphics International, Jakarta, Indonesia. Presently living there with him and my three sons."

Fred Spindle (BS '49) is living in Sugarland, Texas. "In July we will have been retired five years after 38 1/2 years with Marathon Oil Company. We are weathering above like granite—becoming more rounded and softer. I see Bits Woolfolk and Roger McDuffie at least twice a month. We were all part of the group when UT geologists made up about half of Marathon staff. Those really were the good old days."

Scott Dunbar Spradling (BS '75, MA '80) is a senior supervisory geologist for Exxon Company USA in Kingwood, Texas. "Have been on loan to an Exxon Corporation Geoscience Computing Task Force since August. In this role, I have

visited our offices in Great Britain, Norway, France, Malaysia, Australia, Canada and the USA. Should complete the assessment this summer, then back out on the road to communicate our findings. (It's a hard job, but someone had to do it!) My learning curve has yet to flatten at Exxon. I still run across 416M 'Dep Dump' lab students (they are all over the world)."

Scott Staerker (BS '88) is a Master's candidate at Florida State University. "Recently participated on the Ocean Drilling Program's Leg 134 cruise to Vanuatu (New Hebrides Island Arc). I was the sole nanno-fossil biostratigrapher on that leg."

Walter Stein (BA '52) is "still hunting and finding (occasionally) Strawnsand oil patches on the Muenster Arch in North Texas." He is an independent in Dallas.

Burgess H. Stengl (BS '85) reports, "I'm still having a great time living in Austin and working for the Water Commission. If you're ever in town look me up!'

James A. Stimac (MA '83) says, "I finally finished my PhD on the Clear Lake volcanics at Queen's University in April. Then I headed to Arizona to finish some work with the Arizona Geological Survey begun many years ago. Next, I'm getting married and heading off to England (to sample Cornish granite for a postdoc at Queen's) and attend a conference in Finland. Come fall I hope I'll be back in Kingston teaching and beginning postdoc research. While in Arizona I ran into Sharon Mosher and spent a day with her crew in the Granite Wash Mountains. I'm also working on research with another alumnus, Dave Wark, and will be presenting some of our results in Finland."

William T. Stokes (BS '50) is living in Dallas. "In August Fifi and I are to attend Cambridge University in England. Before that we will be at Silverado with the AAPG trustee associates in May. We enjoyed the breakfast with the Geology Department and our ex-classmates at the AAPG convention. It pleased me to see George Pichel and Bill Gipson being honored by the AAPG." Bill continues his activity as a member of the Geology Foundation Advisory Council.

Alumni NOTES

Winston L. (Skip) Stokes (BA '57) comments, "My last day with Tenneco Oil Company was June 1989. Since then have been working as independent. Currently involved in Austin Chalk lease play. Great life. One grandson (Nathan) who will soon be two." Skip lives in The Woodlands, Texas.

Glenn W. Storrs (MA '81) has accepted a post-doctoral research position at the University of Bristol, England. He will examine macroevolutionary patterns and the quality of the vertebrate fossil record.

Michael Stowbridge (BS '82) writes from Abilene, "I'm still spending most of the time following drilling rigs around West Texas. I'd like to take this opportunity to send congratulations to the Beckers on their baby (hope you're reading, Terri)." Mike is a geologist for Geosite Consultants in San Angelo.

Robert E. Stowers II (BA '86) lives in Spring, Texas and works for Law Environmental as UST department manager. "Lisa and I are enjoying our son Cameron (1). Hope to get to Austin soon to visit old friends and take in a couple of football games. The environmental industry is 'hot'—no pun intended!"

Michael W. Strickler (BS '78) is vice president of Hardy Oil and Gas USA, Inc. in Houston. "Things are going well. Enjoy hearing from classmates, especially summer 1978 Geo. 660. Apparently a good number of us are still in the business, and a lot of us are in Houston. Happy hunting, everybody!"

Hal S. Stubblefield (BS '54) is vice president for Mosbacher Energy Company in Kingwood, Texas.

Martin Stupel (BS '88) is a operations geophysicist for Western Geophysical in Houston.

Paul D. Suddath (BS '76) works as an independent geologist in Abilene.

—T—

James B. Tartt (BS '48) writes from Houston, "Enjoy retirement—wish I had known about it years ago. Thanks to UT."

J. L. Taylor Jr. (BA '59) is employed as an international business consultant in Houston.

Dick Teel (BS '39) reports from Houston, "Still working with Petroleum Information as a consultant. Had a great safari in Zimbabwe last year with my number one son, Dick Jr. Planning another safari in 1992."

Ray S. Thompson (BS '83) is a natural gas sales representative for Phillips Petroleum Company in Houston.

T. J. Thompson (BS '57) comments "It is always good to receive the *Newsletter*. Keep up the good work." He is owner of Toro Exploration Company in Dallas.

John M. Thomson (BS '82) is a staff geophysicist for Mobil New Exploration Ventures in Dallas, "on the Africa/Middle East team. Spent two years in Indonesia where I married my wife. My son, Andrew, is 2 1/2 years old."

Jerry T. Thornhill (BS '60) reports "Continuing research into mechanical integrity of injection wells; coordinating training courses at Robert S. Kerr Environmental Research Laboratory, and teaching ground-water course at East Central University." He lives in Ada, Oklahoma.

Elsworth (El) Tonn (BS '55) is president of CEO KAMEL Corporation in Houston.

John M. Townley (BA '54, PhD '76) is director for Great Basin Studies Center at the University of Nevada in Sparks. "After a career as a historian, I'm returning to the field of mining. Will compile a two-volume bibliography on mining history, worldwide. It's a five-year project supported by the Skaggs Foundation and Huntington Library. When finished with that job, I'm preparing a study of minerals exploration from prehistory to the present. Austin, here I come to be a retread student. Wonder if it's still as much fun as in the 50's."

Traci E. Trauba (BS '85) lives in Houston and works as an account manager for the Travelers.

Robert F. Travis (BS '57) writes, "Since the last *Newsletter* I have retired. I have made several trips that I have been putting off, one of which was to Mexico to learn Spanish. I have had a lot of fun this year. Bob lives in Corpus Christi.

Roy W. Tronrud (BS '40) comments "I play a lot of golf, travel, and enjoy reading about my friends in the

Newsletter." Roy is retired from Sun Oil Company and lives in Dallas.

Steven R. Trudeau (BS '70) is consulting in Dallas in the area of reserve acquisitions, evaluations, and geological environmental assessments since leaving Oryx two years ago. "I have made many great business contacts, especially in Dallas and Ft. Worth, and find the work most gratifying."

Arthur J. (Art) Tschoepe (BS '51) notes, "Still active in South Texas exploration (39 years)." He is an independent geologist—oil operator in Corpus Christi,

John D. Tuohy (BS '39) writes, "Still at Canyon Lake and still trying to grow things on this Cretaceous out-crop. The contest with the raccoons as to who first gets the peaches and apples is about a draw. Spent some time in '90 wandering around Ireland—now there is a country worth emigrating to. Children doing well, daughter living in Colorado and son working for Amoco in China."

Edd R. Turner (BA '43) writes from Kerrville that he is "enjoying retirement."

Neil L. Turner (PhD '70) is a senior staff geologist in Houston. "Since transferring to Amoco's international group in early 1987, I've been spending most of my time working in the South China Sea on Miocene platform carbonates."

Katherine Archer Tyson (BA '35) continues to enjoy living in Dallas.

—U—

Martin S. Ullrich (BS '75) is an independent geologist in Houston, "Julie and I are doing fine. We have a new daughter, bringing the total to three girls, no boys. I am still exploring in the Texas and Louisiana Gulf Coast, as well as East Texas. We can almost see a light, hopefully at the end of the right tunnel. Hello to all the old school mates."

Don Urbanec (BS '60, MA '63) is working as an independent geologist in San Antonio. "Still putting prospects together and operating, mostly in South Texas."

—V—

James B. (Jim) and **Amy Vanderhill** (PhD '86; BS '83) are both employed at Mobil Oil Corp. in Midland. James is a production geologist and Amy is a senior production geologist. "Our second daughter, Shannon Elizabeth, arrived May 24th."

Van N. Veenstra (BS '74) reports "My family and I have enjoyed living in Houston since moving here in 1990. Staying quite busy, with active drilling programs in the Mid Continent and East Texas basins at work, and the boys heavily involved in scouting, baseball, and soccer at home." Van works as a division supervising geologist for Exxon Co., USA.

David C. Vaughn (BA '84) is a partner in Vaughn Petroleum in Dallas.

Charles D. Vertrees Jr. (BS '51) says, "Enjoying retirement. Lots of golf in the summer and skiing in the winter. Nancy and I enjoy living close to both daughters in Dallas."

Harry Vest (MA '59) is a part-time consultant in Houston. "Oldest son, Steven (BS '89) working for Shell; next son, Alec (BS '91) looking for a job; youngest son, John, will be a junior in fall '91 at UT Austin. Go to all football games and see some old friends at Ex Students center before kickoff. Hope to see all of you there. Look for me."

R. B. (Bob) Vickers (BS '47) reports from Abilene, "The 1947 class reunion at Lakeway was most enjoyable and much credit should go to Jack Wilson, the Geology Department staff and others responsible. Our grandson is preparing to enter UT this fall. Another grandson will be a college senior at San Marcos."

William Vrana (BA '39) says "Still here and always glad to answer the 'roll call.'" William is a petroleum geologist-consultant in Corpus Christi.

—W—

Martin James Wachel Jr. (BS '56) took early retirement from Texaco and left Kuwait in May 1989, "about a year before the 'Big Trouble.' Presently am self employed selling and installing weight monitoring systems for large trash compactors. My new company is called Weigh Waste System. Good to read the *Newsletter* each year! Presently living in Bakersfield, California."

William R. (Bill) Waddell (BS '38) is an independent geologist in Houston. "Still getting one or two wells drilled per year. Have written eight books for our six grandchildren. I also have become a walker, a bird watcher and a rosarian."

A. H. Wadsworth Jr. (BS '41, MA '41) is an independent geologist and oil producer in Houston. "Continuing to work and proudly wearing my 50 year AAPG button. Retired from the board of Kemper Military School and SIPES only to get on the APGE board (Association of Petroleum Geochemical Explorationists) and elected president in 1991. Must be some use still in the old body."

T. J. (Tommy) Waggoner III (BA '56) is "still running a small publicly-held oil and gas company. Primarily acquiring producing properties in the Mid Continent area and waiting for oil and gas prices to stabilize before returning to my favorite game of exploration. My wife and I would still love to live outside of Austin on a golf course."

Sandra Waisley (MA '77) received a Master's degree in public policy from the University of Michigan at Ann Arbor in December 1990. "My husband, Simon Dance, is graduating from University of Notre Dame Law School in May 1991. We both quit British Petroleum in August 1988 to go back to school and change our careers. We are both working in Washington, D.C. and are still in the energy field, law and public policy. I work in the office of policy, planning and analysis in the office of the secretary of DOE and I'm having a great time with energy policy!"

Hershel (Huck) Walker (BS '50) who lives in Corpus Christi, retired in March 1990 and still enjoys golf, fishing, and "working just enough to stay out of trouble."

Joe D. Walker Jr. (BS '51, MA '54) is now retired and practicing as an independent. "Retired from Aminoil USA and for the last few years have been taking advantage of good health doing outdoor activities. Still maintain a geologic office as an independent working South Texas Eocene and upper Cretaceous gas ideas—maybe

prices will improve? Really appreciate all the work done to put out the *Newsletter.*"

Mark C. Walker (BA '81) was recently promoted to shareholder in the law firm of Grambling and Mounce. He also recently became board certified in personal injury trial law, by the Texas Board of Legal Specialization. He is know living in El Paso, Texas.

Bernie Ward (BA '55) is an independent geologist. "Two out of three children married. We're all happy! Prosperity just around the corner, geologically speaking!"

Bill and Kathy Ward (BS '55, MA '57; BA '57) are living in New Orleans. Bill is a professor at University of New Orleans and Kathy is enjoying teaching geology and physical science at a New Orleans high school for gifted students. Bill and Kathy will return to Mallorca (Spain) this summer to continue work on the Miocene reef complex.

Dan L. Ward (BA '49, MA '50) is retired and living in Grand Junction, Colorado. "Playing golf and catching rainbow trout! It's great!"

Herbert E. Ware III (BS '84) who is working as a geologist in Midland, has a daughter, Alicia (4), and a son, Wesley (1).

Alumni NOTES

Ralph H. Warner (MA '61) is "still in Kingwood, but children are now moving out of state. Looking for that retainer/investor to participate in some oil and gas prospects so we can re-discover 'Cibola.'"

Greg Warren (BS '89) is a graduate student at Utah State University in Logan. "I'll be hanging out in western Wyoming this summer; hope to have my thesis done by December 1991. Send me some Shiner Bock, please!!"

L. Coy Warren (BS '48) writes from Abilene, "Enjoy reading the *Newsletter* to see what all my old friends are doing. I note many have done well over the years—congratulations. My daughter, Connie, lives in Ft. Worth; she has one son, eight years old. I have two stepsons in Abilene and they have a total of five children. One stepson is a doctor, one a geologist. My health is fair."

Joel S. Watkins (PhD '61) is still teaching geophysics to Aggies. "Enrollment is finally starting to recover and salaries are excellent for graduates. I'm into ranching in a modest way—breeding quarterhorses—and have the bumps and bruises to prove it." Joel lives in Hearne, Texas.

John A. Watson (BS '56) lives in Austin, and writes "My research and writing during the year as an associate of Creation Evidences Museum has been especially rewarding—producing the manuscript for the work "Antediluvian Hydrology." The Bible's inerrant record (Proverbs 8:28b, Ezekiel 31:4, Job 38:8) of pre-Noahic flood hydrology of the huge Eden River system, and its obliteration during the flood through the cataclysmic downfolding of the Lebanese trough (Ezekiel 31:15,16), together with its equally rapid filling with up to six miles thickness of sediments now lithified—establishes a general pattern of events that occurred in the cataclysmic structuring, development, and filling of the Euphrates-Tigris-Persian Gulf geosyncline and every other geosyncline and trough worldwide. Plate tectonics in the Biblical young earth time frame adds details to the pattern. True science in the origin of things is rooted in God's word."

W. Carlton Weaver (BA '32) lives in Corpus Christi. "Still operating and producing a few leases. If there is no energy policy there is little incentive to drill new wells; the administration seems to be only interested 'for cheap fuel for the heavy populated eastern states.'"

Buck Weber (BA '87) is working in San Antonio as a consulting geologist for an environmental firm, KEI consultants. "Designing remediation systems related to UST releases keeps me busy, among other things. Bioremediation appears to be gaining acceptance, especially with more stringent Texas Health Department regulations."

Paul Weimer (PhD '89) is an assistant professor at the University of Colorado in Boulder.

Charles Weiner (BA '48), chairman of Texas Crude Group in Houston, is "struggling to master the new names given by the new young geologists to the same concepts we have always called by other names (that we invented to obsolete our elders). Does this compute?" Chuck now serves as a member of the Geology Foundation Advisory Council.

Bonnie Weise (BS '74, MA '79) is chief geologist for Venus Oil Company in San Antonio.

Rob Weyman (BA '82) is a geologist for Ray Holifield and Associates in Dallas.

Hugh G. White III (BA '54, BS '52) "just earned two more degrees in computer science and accounting. Now I can keep track of how bad the oil business is becoming. Still dabbling in geology, too." Hugh is a consultant in Midland.

Jane Brite Dunkle White (BA '46) lives in Marfa, Texas and writes "Martha Bybee Mills and Herbert Mills, of Houston, visited us at the Brite Ranch in April. We had a delightful time and observed the Sierra Vieja. The Mills' traveled on to Midland, joining other Bybee family members, to attend the induction of Dr. Hal Bybee in the Petroleum Hall of Fame."

Leslie P. White (BS '56) is a geologic advisor for Exxon International in Houston. "A highlight of the AAPG convention was seeing some of my former professors there: Bullard, DeFord, Ellison, Muehl-berger. I will look forward to reading about the others in the *Newsletter.*"

Robert R. White (BA '64) writes "I was recently elected president of the Historical Society of New Mexico." He is a writer and historian in Albuquerque.

Steve White (BS '78) is an independent geologist in Tyler.

Ben T. Whitefield (BS '60) is president of Equitable Resources Exploration in Kingsport, Tennessee.

Charles D. Whiteman Jr. (BS '58) retired June 1,1990 from water resources division, U.S. Geological Survey in Austin.

F. L. Whitney (BS '43) says "Thanks for all the good news of old friends and new. Buenas suerte." He resides in Kerrville.

Marion Whitney (BA '30, MA '31, PhD '37) comments "I'm still working on wind erosion projects and gave a paper on wind eroded features in Egypt at the meeting of the Michigan Academy of Science last spring." Marion is a retired geology professor living in Shepherd, Michigan.

Robert Whitson (BS '85) writes from Houston, "I am currently employed by my father, James A. Whitson Jr. We operate wells in South Louisiana. If you have any prospects in the above mentioned area, please contact us; we will pay cash and an override for the right ideas."

James C. Whitten (BS '56) is "still in Midland looking for prospects, but I am enjoying my 26 weeks of vacation this year."

Catherine Raine Wilde (BA '81) is a Houston attorney. "Married David C. Wilde in November 1990; first child due in late August 1991."

Michael A. Wiley (BA '57, MA '63, PhD '70) is "continuing to consult on computer applications and mapping for the oil patch. Now also working on New Madrid seismic zone. Gave a paper on same at ERIM Eighth Thematic Conference in April. Great to see old friends at AAPG." Mike lives in Carrollton, Texas.

A. B. (Bo) Williams (BS '53) is "still fishing. Caught an octopus last year, 12 ft. spread tip-to-tip." He continues his retirement in Sequim, Washington.

James L. Williams II (BS '81) notes, "Dad and I still work together exploring South Texas. We have made some nice oil discoveries (not chalk) recently which helps during these unstable times. My wife, Shannon, and I are expecting our first child in mid-July. Life is wonderful!" Jim lives in Corpus Christi.

Richard Williams (BS '50) is "still consulting for Cholla Petroleum in Dallas. Work approximately one day a week. Play golf, fish, hunt, and do yard work. Live at Emerald Bay on Lake Palestine. Still married to Ouitau and have three children and three grandchildren."

Jefferson B. Williams (BA '88) is a logging engineer for MPI, Loyang Offshore Supply Base in Singapore.

Larry E. Williams (BS '78) writes "I'm in my sixth year with Ballard Exploration Company, helping to run a successful exploration effort in the Gulf Coast." He lives in Seabrook, Texas.

Some of the class of 1947 field camp participants. From left: Al Nelson, Jack Osmond, O. D. Weaver, Harry Williams, Hank Wynecken, G. M. Walker, Dr. Fred Bullard, Charlie Worrel (standing). Photo submitted by Al Nelson.

Mark Williams (BS '50) lives in Fountain Hills, Arizona.

Robert R. Williams (BS '54), a consultant in Dallas, writes "Oil business slowed in last quarter of '90 but is picking up some now. It was good to see UT exes at the AAPG convention in Dallas."

Eddie A. Williamson (BS '69) is an area vice president for Amoco in Houston. "Now back in the domestic side after two years in international, as Amoco's exploration vice president for the eastern U.S. and Gulf of Mexico. Living on the great plains of Katy, and looking forward to a couple of visits a year to Austin." Eddie continues as a member of the Geology Foundation Advisory Council.

James C. Willrodt (BS '77) works in Houston as a senior operations supervisor for Exxon International. "All is going quite well, Karen and I now have a daughter named Erika. Best wishes to all my old classmates."

Clayton H. Wilson (BS '83, MA '85) comments "Last summer we were transferred to offshore production for Exxon in New Orleans. The new job is very different and interesting. After one year the family is still adjusting to the culture shock. I very much enjoyed seeing some of ya'll at AAPG in Dallas. Have a good year!"

Douglas H. Wilson (BS '80) writes "We are working hard in Lafayette to sharpen our sailing and prospecting skills. However, the best news of all is that Becky and I are expecting our first child in November." He is a senior geologist for ARCO.

Homer C. Wilson (BS '42) says "I continue my volunteer effort at Dallas Museum of Natural History where Charles Finsley is a curator of earth sciences and a fine geologist. Touring 50,000 7-12 year olds each year through our prehistoric Texas fossil exhibits brings a great deal of satisfaction to a retired geologist."

Louita D. Wilson (BA '40) is "still enjoying San Antonio very much. Was honored to be in 1991-92 *Who's Who of American Women.*"

C. Robert Winkler Jr. (BS '50) is president of RW Operating Corp. in Midland. "Formed RW Operating Corporation last year to assume operations from Richards and Winkler. Continuing to develop wildcat prospects for sale to industry partners."

Irwin T. Winter (BS '53) writes "quoting Ray Holasek in the 1990 *Newsletter,* 'Retirement is for the birds' is a valid statement unless one stays busy. I'm staying busy and enjoying retirement!" He lives in Fort Worth.

Kurt J. Wiseman (BS '76) is self employed in Houston. "I am still helping other geologists finance and sell their ideas. Bring me some of yours!"

Kristina Witt-LaRue (BS '83) is a geologist in the enforcement section of the hazardous and solid waste division of the Texas Water Commission. "I'm still here in Austin working for the state. My husband and I are enjoying our sweet little girl, Brigitte, who was born August 15, 1990. Babies sure do change your life—for the better, of course!"

James H. Wittke (PhD '84) moved to Flagstaff in August 1990 because he got a job at Northern Arizona University. He's in charge of the electron microprobe and is looking forward to doing further research in his dissertation area. Jim and Anne had their third child, Rebecca, on April 9, 1991, and are loving every minute, "especially because she already sleeps through the night!"

Ed Wolcott (BS '40) is "still chasing Goex Reefs in Runnels County. Family fine. Going to get in lots of fishing this year." He is president of Edco Petroleum in Dallas.

Herbert Wolff (BS '60) is the assistant section chief for the Texas Water Commission in Austin.

Arnold Woods (MA '81) comments, "AAPG development geology manual should be out this year (co-editing with Diana Morton-Thompson). Putting together a talk on the K/T extinctions (it wasn't just the asteroid!) for the Wyoming Geological Association. Saw several familiar UT faces in Dallas—hope to see more in Calgary next year. Have given up chasing women—they're just fast. (Now I set snares.)" Arnold is a staff geologist for Conoco in Casper.

Robert L. Woods Jr. (BA '56) is president of Occidental Crude Sales Inc. and executive vice president of Occidental Oil and Gas Corporation in Houston. "No changes from last year, just getting older."

Gene Woodyard (MA '56) writes from Houston "Sorry to report the loss of my wife to cancer last summer." Gene retired from Conoco in 1985.

Thomas J. Worbington (BS '51) notes "We are still living here on Lake Jacksonville in deep East Texas and enjoying retirement. We take a few trips, do a lot of square dancing and in general take life easy. We still enjoy and look forward to the *Newsletter* every year. We appreciate it very much. Thanks."

Charles F. Word (BS '37) reports, "Not much new. Plan on taking a trip to Alaska to fish in the Bristol Bay area. Our three girls are pretty well scattered. Our oldest is head of costume department in fine arts at UT. Our middle lives near Kerrville and stays busy. Our youngest is at Washington University, Washington, D.C."

David L. Work (BS '84) writes from Houston that "things are going fine at Anadarko; hope the natural gas 'bubble' will finally disappear."

Charles E. Workman (MA '61) continues to teach high school math in Monterey, California.

John B. Wright (MA '56) retired from Shell in 1986 and lives in New Orleans.

J. Robert Wynne (BS '57) is an independent in Ft. Worth and has "three beautiful grandchildren. Everything still turning to the right."

—Y—

Anthony E. Yates (BS '88) writes from Houston that he recently joined the Houston Texas Exes. "Congratulations to Bruce Turbeville on achieving his doctorate." Anthony is a geologist with Western Atlas International-Core Laboratories.

John C. Yeager (MA '60) is a senior geologist for ARCO in Lafayette.

—Z—

Kevin Zonana (BS '82) is an instructor for Zycor Training Seminars in Austin.

Photo Captions

Front cover captions, top to bottom: 1) Dickson Cunningham in Southern Chile; 2) Nick Walker in Antarctica standing on Lucy Glacier; 3) Stefan Saustrup and Sevin Bilir on board *R/V Ewing*, March 1991.

Back cover captions, top to bottom, space shuttle photos: 1) Big Bend; 2) Austin; 3) Oil well fires in Kuwait; 4) sunset.

Research report divider captions, clockwise from upper left, scenes from Gary Kocurek's fall 1990 field work in Mauritania: 1) Gary Kocurek at trench in Holocene Fluvial Channel in Mauritania; 2) Mary Crabaugh at Holocene Lake deposits (limestone) in Akchar Erg; 3) Mary Crabaugh and Gary Kocurek at end of field season in the Sahara of Mauritania. Abduli, the Moor driver holds a soil auger in the background; 4) Karen Havholm and Mary Crabaugh visited by a group of Moors at a Saharan campsite, 5) Taking drinking water from camel well in the Sahara of Mauritania.

Student activities divider captions, top to bottom: 1)Keith Klepeis packs into his field area in Southern Chile; 2-3) Dickson Cunningham in Southern Chile near Beagle Channel; 4) Tim Hoar on a post-cruise roam through Southern Chile.

Department news divider captions, clockwise from top: 1) Sally Sutton sampling an ancient paleosol with a portable rock saw. The paleosol underlies middle Precambrian quartz-pyrite conglomerate near Sudbury, Ontario; 2) January 1982 "Cave of Swords," Chihuahua, Mexico; back to front, Tucker Barrie, Rich Kyle, and Ing. Garcia (mine geologist) surrounded by "swords" of selenite in Compania Fresnillo's Naica mine; 3) Mark Helper at Big Bend on Geology 660; 4) Earle McBride teaching on Geology 660 (also in Big Bend region; 5) Martin Lagoe on Middleton Island, Gulf of Alaska, stands next to giant dropstone weathered out of glaciomarine diamictite facies of Yakataga Formation.

Foundation news divider captions: top, old Geology Building (now Will C. Hogg Building); bottom, present Geology Building

Alumni news divider caption: Students in early '60's examine globes in faculty conference room, old Geology Building, left to right, Tom Freeman, _____, _____, Don Reaser, _____, _____, Bill Muehlberger, Dan Bridges, Joe Meyer.

Photo and Graphics Credits

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Newsletter Design

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A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

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.

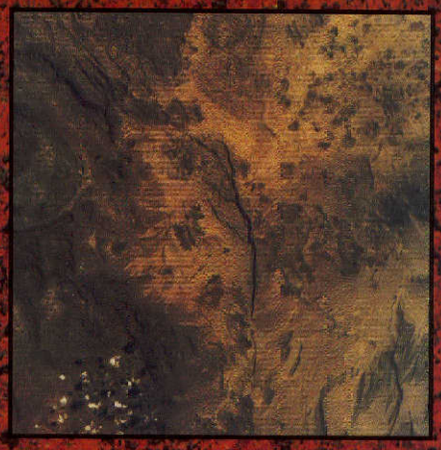
We are anxious to keep your current address on our mailing list and solicit your cooperation in advising us if you move. Also, if you know of other alumni who do not receive our letters, please send their names and addresses; we would like to add them to our files.

We need your financial assistance in many areas — scholarships for worthy undergraduate and graduate students, teaching and research equipment, cost of publications of the Newsletter — and other.

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 in 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 512-471-6048 or fax 512-471-9425.



Staff

Editor: Clark R. Wilson
Associate Editor: Joyce E. Best
Layout and Graphics: Scott K. Schroeder
Assistants: Rosemary Brant and Kimberly Kurtz

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