

GSA NEWS & INFORMATION

Monthly Newsletter of
The Geological Society of America

VOLUME 9, NUMBER 1

JANUARY 1987

San Antonio Hosts GSA's 99th Annual Meeting

by Sue Beggs
GSA Meetings Manager

It has been a difficult year for many geologists, so we were pleased that 4452 people attended GSA's 1986 Annual Meeting, in San Antonio, Texas. The talk between sessions and along the River Walk was mostly about the economic trends and when (not if) the upturn would occur. The mood was positive, and the meeting was a way to share the anticipation. In spite of the construction at the Convention Center and the unusually cold weather, the 99th meeting, November 10-13, provided a useful forum for geoscience professionals to exchange ideas and to renew friendships.

Registration

Of the 4452 attendees, 2995 registered as professionals, 1114 registered as students, and 343 registered as guests. Preregistrants constituted 75% of the total registrations. This follows a trend of early registration that has been building over the past few years as the advantages of preregistration have increased. In 1983, 63% of attendees preregistered; in 1984, 67%; and in 1985, 70%.

Abstracts

Volunteered and symposia papers submitted totaled 1865. (The 1985 meeting drew 1629 abstracts; the record high is 2074, for the 1984 meeting.) A total of 1515 papers were presented at the meeting, 761 in oral sessions; 324 in symposia; and 430 in poster sessions.

Field Trips

The eight premeeting and four postmeeting field trips provided in-depth looks at a variety of geologic features for 310 registrants.

Those interested in guidebooks used for the trips should contact E. G. Wermund, Bureau of Economic Geology, University of Texas at Austin, Austin, TX 78712, (512) 571-1534.

Exhibits

The number of exhibits at GSA annual meetings has doubled since 1982, and the quality of the displays has increased. Recognition for this achievement goes to 12-year staff member Kathy Ohmie, who is also the field trip coordinator and registration manager for GSA annual meetings.

If you would like to recommend an exhibitor or, better yet, become an exhibitor at an annual meeting, call GSA headquarters.

GSA Bookstore

GSA is maximizing its utilization of the exhibit format for both the Decade of North American Geology (DNAG) and other GSA publications and products. The GSA Bookstore and DNAG display were two of the highlights of the exhibition. Several new publications—including two new DNAG volumes—sparked interest and spurred sales. Be sure to see the newest GSA books in the mini bookstore at the spring GSA Section meetings, and look for us under the banner at Phoenix in '87!

Employment Service

The service provided interview opportunities in approximately the same numbers as 1985. Thirty-one employers used the service to interview for 131 positions. Applicants totaled 270, and 578 interviews were conducted. Of the jobs available, 21 were corporate; 28 were academic; and 82 were for government positions.

Professional Horizons

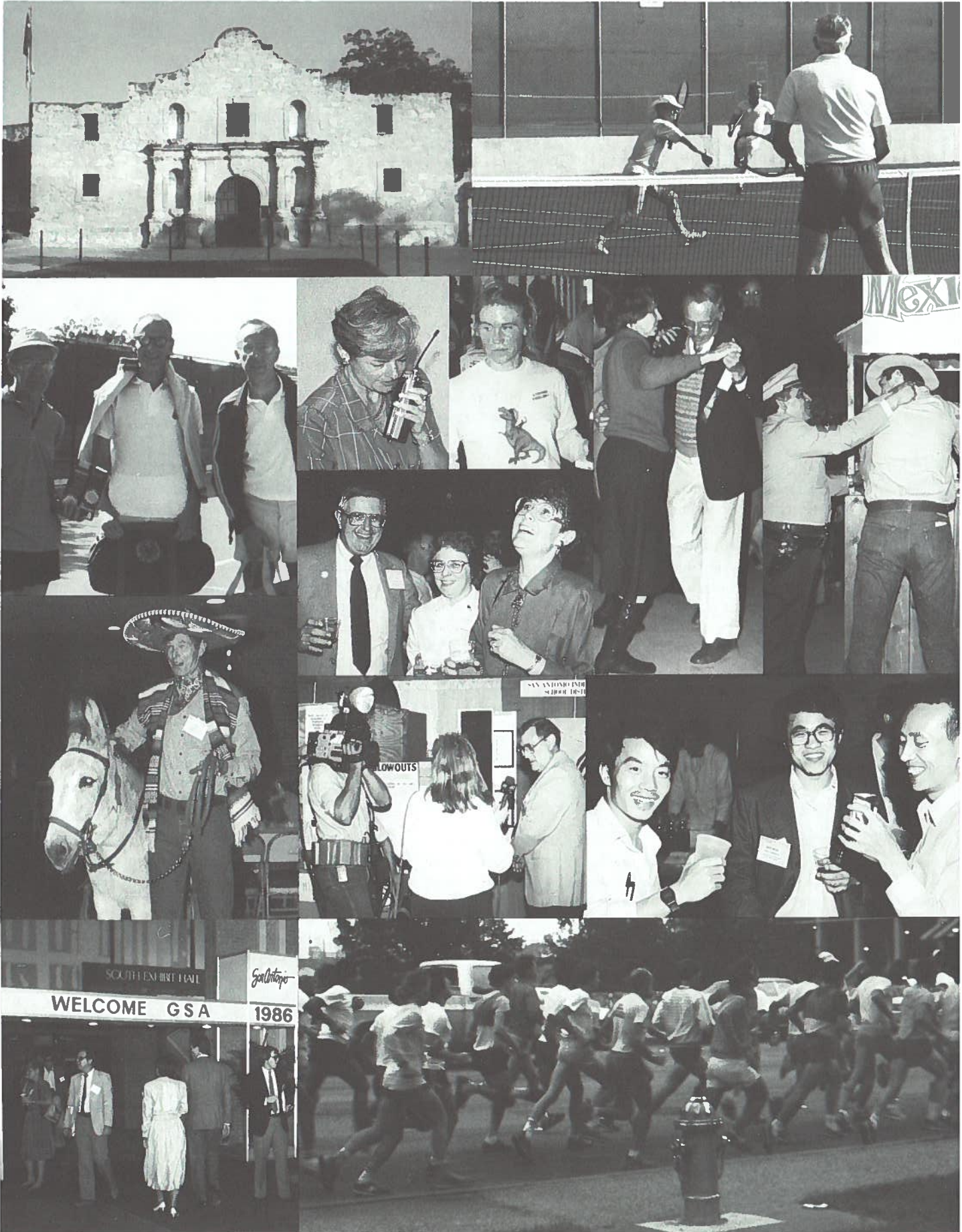
In its third year of sponsoring its own short courses, GSA offered seven courses, covering topics such as microcomputers, computer graphics, contaminant hydrogeology, and rock mechanics. Other societies and GSA divisions sponsored an additional five courses.

The Science Theater provided an interesting addition to the technical program, especially with the showing of the final segments of the Planet Earth television series.

Technical Program

The 1986 technical program offered some interesting innovations. The public policy forum was a full-day symposium, "Engineering Geology in Public Policy." Geologist Elisabeth Guerry Newton began the keynote address by quoting Will Durant: "Civilization exists by geological consent . . . subject to change without notice." A wide variety of symposia over the following three days verified Durant's observation. The Paleontological Society symposium session was standing room only by the end of the morning. Biologist and paleontologist Stephen Jay Gould gave the closing remarks, complete with an illustration of the ontogeny of Mickey Mouse. The planetary geology session looked at Mars, "Ten

(continued on p. 4)



San Antonio, Texas, November 10-13, 1986



99th Annual Meeting (continued from p. 1)

Years after Viking" and at the Uranian satellites. Of interest to the local news media were the K/T Boundary symposium, the special student forum, and the carbonate aquifers symposium, as well as the special forum on the Hubbard Glacier.

Special Events

Pictures tell part of the story, but you really had to be there to enjoy the excitement of "Burros & Burritos." After four days of meeting events and technical papers, geologists and guests enjoyed themselves at an evening of food, music, and dancing. The country/rock band inspired some to two-step and others to jitterbug. Everyone, however, enjoyed watching the traditional Spanish dancers. GSA President Gary Ernst arrived at the event wearing a sombrero and riding a burro: he was later "arrested" at the "border" but was out of the handcuffs in short order.

The 5K/10K races have become a part of this meeting. We are not at the New York Marathon stage, but we do have runners who enjoy the sport just as much as do more lauded runners. This year's winners: 10K men—Bob Anderson, at 33:23.7; 10K women—Alisa Mast, at 38:59.3; 5K men—Larry Kressek, at 16:35.8; 5K women—E. O'Leary, at 20:42.6.

The tennis tournament players took advantage of the best weather of the meeting; they volleyed, lobbed, and smashed for four hours. Winners (starting with first place) were Dan Weill (also 1985 first place), Lucian Platt, and Paul Melancon.

Presidential Address, Awards Ceremonies, and Reception

Among the most significant innovations for this meeting was the Awards Reception that followed W. Gary Ernst's Presidential Address and the Awards Ceremonies for AGI's Ian Campbell Award to William B. Heroy, Jr., and GSA's Penrose Medal to Laurence L. Sloss and Day Medal to E-an Zen. The tributes to the awardees provided an unusually moving and memorable event. The Awards Reception included toasting of the medalists before an audience of 3000.

Thanks

James Jones, 1986 General Chairman, deserves the praise for leading his committee over the past five years. It would be impossible to manage the annual meeting without the leadership of such geologists, who contribute personal time on behalf of GSA.

Let's also recognize the sherpas—GSA staff. In the Himalayas, sherpas carry the equipment and do a lot of the heavy work that gets an expedition team to the top of a magnificent peak. They rarely get their pictures taken holding the flag at 24,000 feet, but you can be sure their dedication and willingness to put in long hours help to make everything possible.

To everyone who participated in the 1986 meeting, thank you. Where do we go from here? Where else? Phoenix, Arizona, October 26–29, 1987.

Vol. 9, no. 1 GSA News & Information January 1987

GSA NEWS & INFORMATION (ISSN 0164-5854) is the monthly newsletter of The Geological Society of America, Inc., P.O. Box 9140, Boulder, Colorado 80301. Second-class postage rates paid at Boulder, Colorado and additional mailing office.

Prepared from contributions from the staff and membership. Executive Director: F. Michael Wahl; Managing Editor: Faith Rogers; Associate Editor: Lee Gladish; Director of Communications: Nancy A. Reed; Production and Advertising Manager: James R. Clark; Marketing/Advertising Assistant: Ann H. Fogel; Assistant Production Manager: Meredith L. Larson; Production Assistants: Mona T. Gonzales and Joan E. Manly.

*Advertising: Contact James R. Clark or Ann H. Fogel (303) 447-2020.

Applications Sought for Senior and Postdoctoral Research Associateships

The National Research Council announces the 1987 Resident, Cooperative, and Postdoctoral Research Associateship Programs for research in the sciences and engineering to be conducted in behalf of 26 federal agencies or research institutions, whose laboratories are located throughout the United States. The programs provide Ph.D. scientists and engineers of unusual promise and ability with opportunities to perform research on problems largely of their own choosing yet compatible with the research interests of the supporting laboratory. Initiated in 1954, the associateship Programs have contributed to the career development of more than 4000 scientists, from recent Ph.D. recipients to distinguished senior scientists.

Approximately 450 new full-time Associateships will be awarded on a competitive basis in 1987 for research in chemistry, earth and atmospheric sciences; engineering and applied sciences; biological, health, and behavioral sciences and biotechnology; mathematics; space and planetary sciences; and physics. Most of the programs are open to both U.S. and non-U.S. nationals, and to both recent Ph.D. degree recipients and senior investigators.

Awards are made for one or two years; senior applicants who have held the doctorate at least five years may request shorter tenure. Stipends for the 1987 program year will begin at \$26,350 a year for recent Ph.D.s and will be appropriately higher for senior Associates. A stipend supplement of about \$5000 may be available to regular (not senior) awardees holding recognized doctoral degrees in those disciplines wherein the number of degrees conferred by U.S. graduate schools is significantly below the current demand. In the 1986 program year these areas were engineering, computer science, and space-related biomedical science.

Reimbursement is provided for allowable relocation costs and for limited professional travel during tenure. The host laboratory provides the Associate with programmatic assistance including facilities, support services, necessary equipment, and travel necessary for the conduct of the approved research program.

Applications to the National Research Council must be postmarked no later than **January 15, April 15, and August 15, 1987**. Initial awards will be announced in March and April (July and November for the two later competitions), followed by awards to alternate later.

Information on specific research opportunities and federal laboratories, as well as application materials, may be obtained from the Associateship Programs, Office of Scientific and Engineering Personnel, JH 608-D3, National Research Council, 2101 Constitution Ave. N.W., Washington, D.C. 20418, (202) 334-2760.

Cole Award Applications Due

The Gladys W. Cole Memorial Research Award, for investigations of the geomorphology of semiarid and arid terrains in the United States and Mexico, is given each year to a GSA Fellow between 30 and 65 years old who has published one or more significant papers in geomorphology. The minimum amount of the award has been increased to \$2100. Funds cannot be used for work already accomplished, but previous recipients may reapply if additional support is needed to complete their work.

Application forms for the award can be obtained from Research Grants Administrator, Geological Society of America, P.O. Box 9140, Boulder, CO 80301; (303) 447-2020. **Applications must be postmarked by February 15, 1987.**



CENTENNIAL NEWS

by Allison (Pete) Palmer

Publication Schedule Picking Up Speed

Although predicting has turned out to be difficult in the DNAG Project, it appears that the following books should probably be at the printers by the time this text (written November 1) is printed:

1. *Centennial Field Guide, Northeastern Section*. All 100 texts are in hand and have been through copy-editing. This will be published before the spring Northeastern Section meeting, which means that for the spring meetings, the best 200 geologic localities for the entire east-coast sector of the U.S. and Canada will be available. Dave Roy of Boston College has done an outstanding job of bringing this book to completion.

2. *Geomorphic Systems of North America*. This is the Centennial contribution from the Quaternary Geology and Geomorphology Division and will be the second Division project to be completed. Will Graf of the University of Arizona has done a first-class job as editor of this volume. All 14 chapters in this book are already into copy-editing.

On the basis of current information, the following books should have all their parts through the review process and be in the final production phases, getting ready to go to the printer early in 1987:

1. *Centennial Field Guide, Rocky Mountain Section*
2. *Centennial Field Guide, North-Central Section*
3. *Centennial Field Guide, South-Central Section*
4. *Centennial Field Guide, Cordilleran Section*
5. *Groundwater Hydrogeology of North America*
6. *Surface Water Hydrology of North America*
7. *North America and Adjacent Oceans During the Last Deglaciation*

Overdue authors for chapters in several more volumes are promising their chapters before the end of the year, so all chapters for these volumes should be at least into review or beyond:

1. *Sedimentary Cover of the Craton*
2. *The Arctic Ocean Region*
3. *The Appalachian and Ouachita Orogens: U.S.*
4. *The Atlantic Continental Margin: U.S.*

I hope by the time I write the March column in early January there will be a better fix on completion of overdue chapters in several more of the volumes that had been expected last year.

To all of those who have completed their commitments in this enormous project, many thanks and have a good (and less harassed?) New Year.

In Memoriam

Victor T. Allen
Carlsbad, California

Jeffrey A. Morehouse
Flagstaff, Arizona
March 1985

Stephen W. Dana
Redlands, California
October 11, 1986

Newman W. Thibault
Worcester, Massachusetts
September 10, 1986

Harold T. Stearns

It was with sorrow that we learned of the death of Harold T. Stearns on July 28, 1986. Harold Stearns was a Fellow and benefactor of the Society and through a major gift in 1974 established the Harold T. Stearns Fellowship Fund. The income from this fund has been used to award grants for support of research on the geology of the circum-Pacific region. To date, more than 32 investigators have received awards totaling more than \$25,000. Harold Stearns was also author of *Memoirs of a Geologist, From Poverty Peak to Piggery Gulch*. In this book he recounted experiences and impressions of his 60-year career as a U.S. Geological Survey geologist and an independent consultant. As a geologist, author and benefactor, he will be missed by all those who knew him.

F. Michael Wahl

PBS Series PLANET EARTH to Run Again

The 1986 Emmy Award-winning public television series PLANET EARTH returns to the Public Broadcasting Service beginning Monday, January 19 at 8 p.m. ET (please check local listings), exploring the most significant achievements in geoscience.

The culmination of four years of research and production, PLANET EARTH travels to every continent, to the depths of the seas, and to outer space as it tracks the work of the men and women who have produced what some have described as a contemporary revolution in our knowledge about Earth. The seven-part prime-time series (and television course) is made possible by major funding from The Annenberg/CPB Project with corporate funding from IBM. It is produced by WQED/Pittsburgh (co-producer of the National Geographic Specials) in association with the National Academy of Sciences. The series was first aired in 1985.

Each program features rare film footage (the first program contains film of Alfred Wegener's final expedition), interviews with the scientists (many of whom are GSA members) whose patient, expert work is producing new knowledge, and a look at the contemporary tools used by scientists.

The PLANET EARTH television programs are also offered as part of a college- and university-level television course nationwide. The series is also available as 14 30-minute programs for college, university, and secondary school use. (Anyone wanting more information about the television course can call 1-800-LEARNER.)

CALL FOR APPLICATIONS & NOMINATIONS

FOR GEOLOGY CO-EDITOR

GSA solicits applications and nominations for the position of co-editor of **Geology**, to serve with outgoing editor E. M. Moores for the remainder of 1987 and to continue for a full three-year term, with option for one renewal, as one of a two-editor team. Desirable characteristics for the successful candidate include:

1. Broad interest and experience in geology
2. Iconoclastic
3. International stature
4. Willing to take risks and try innovations
5. Sense of humor
6. Sense of perspective
7. Organized and productive
8. No "ego-trip"
9. Willing to work closely with GSA headquarters staff.

This is not a salaried position, but GSA pays the expenses for secretarial assistance, mail, telephone, and travel to GSA headquarters.

If you wish to be considered, please submit a resume and a brief letter describing why you should be chosen. If you wish to nominate another, submit a letter of nomination and the individual's written permission and resume. Send nominations and applications to F. Michael Wahl, Executive Director, Geological Society of America, P.O. Box 9140, Boulder, CO 80301, **by February 28, 1987**. For more information, call Eldridge Moores, (916) 752-0352.

THE GEOLOGICAL SOCIETY OF AMERICA



Jack Oliver



Albert Bally



Gary Ernst



Robert Fuchs

GSA Officers and Councilors for 1987

PRESIDENT

Jack E. Oliver

b. Massillon, OH, 9-26-23; m. 64; c. 2. **GEOPHYSICS.** *Educ.*: Columbia Univ., BA, 47, MA, 50, PhD (geophys.), 53. *Prof. exp.*: scientist's aide, U.S. Naval Res. Lab., 47; physicist, Air Force Cambridge Res. Lab., 51; res. assoc. Lamont-Doherty Geol. Observ., Columbia Univ., 53-55; from instr. to prof. geol., 55-71, chmn. dept. geol., 69-71, adj. prof., 71-73, Columbia Univ.; chmn. dept. geol. sci., 71-81, DIR. INST. FOR THE STUDY OF THE CONTINENTS (INSTOC), 83-, IRVING PORTER CHURCH PROF. ENG. CORNELL UNIV., 71-. *Concurrent pos.*: consult. President's Scientific Advisory Comm. Panel on Seismic Improvement, 58-59; Air Force Tech. App. Ctr., 58-65; Advanced Res. Proj. Agency, 59-63; U.S. Arms Control & Disarmament Agency, 62-73; Comm. on Seismology & Earthquake Eng., UNESCO, 65; AEC, 69-74; mem. Comm. on Polar Res., 59-71, mem. Comm. on Seismology, 60-72, chmn., 66-70, NAS; chmn. Geodesy Comm., 75-76; mem. Scientific Advisory Bd., U.S. Air Force, 60-63, 64-69; mem. Ofc. of Scientific Res. Contractor's Res. Eval. Panel, 61-74, chmn., 66-68; mem. Advisory Comm., U.S. Coast & Geod. Surv., 62-66, Panel Solid Earth Probs, 62; mem. Natl. Comm. Upper Mantle Prog., 63-71, Site Selection Comm., 65; Carnegie Inst. Advisory Comm. Awards, Gilbert & Wood Fund, 64-68; Geophys. Res. Bd., 69-70; chmn. exec. comm. Ofc. Earth Sci., NRC, 76-79; chmn. Geol. Sci. Bd., Assembly Math & Applied Sci., 81-84; mem. U.S. Geodynamics Comm., 79-88, chmn. 84-88; mem. Continental Scientific Drilling Comm., 81-84; mem. Advisory Comm. Sch. of Earth Sci., Stanford Univ., 84-87. *Honors & awards*: Walter Bucher Medal, Am. Geophys. Union, 81; Virgil Kaufmann Gold Medal Award, Soc. Explor. Geophysicists, 83; Eighth Medal of the Seismol. Soc. Amer., 84; mem. Natl. Acad. Sci., 84; Cabot Distinguished Visiting Scholar, Univ. Houston, 85-86. *Mem.*: fel. Am. Assoc. Adv. Sci.; fel. Seismol. Soc. Amer. (v. pres., 62-64, pres., 64-65); fel. Am. Geophys. Union; fel. Geol. Soc. Amer. (counc., 71-73; v. pres., 86; pres., 87). *Res.*: Seismology; geotectonics. *Mailing address*: INSTOC, 3120 Sneec Hall, Cornell University, Ithaca, NY 14853. *Phone*: (607) 255-2377.

VICE-PRESIDENT

Albert W. Bally

b. The Hague, Netherlands, 4-21-25; m. 50, c. 3; cit. Switzerland. **GEOLOGY.** *Educ.*: Univ. Zurich, PhD (geol.), 53. *Prof. exp.*: Gulf Oil, 53; post-doctoral Lamont-Doherty Am. Geol. Observ., 53-54; expl., 54-62, chief geol., 62-66, Shell Canada; mgr. geol. res., Shell Dev. Co. (Houston), 66-68; chief geol. U.S.A., 68-75, consulting geol., 75-80, sr. expl. consultant, 80-81, Shell Oil; chmn. dept. geol., Rice Univ., 81-86; HARRY CAROTHERS WIESS PROFESSOR OF GEOLOGY, RICE UNIV., 81-. *Concurrent pos.*: mem. ad hoc comm. on the geol. sci., NRC, 68; Crosby visiting prof., Massachusetts Inst. Tech., Spring 77; mem. passive margin panel Internatl. Panel Ocean Drilling (IPOD), 75-78; mem. Interunion Comm. Geodynamics and section ed. final rept., 78-79; mem. U.S. Geodynamics Comm., 77-80; chmn. site selection comm., 74-80, exec. comm., 74-80, 82-, Consortium Continental Reflection Profiling; mem. oceanography advisory, exec. comm., Natl. Sci. Found., 78-79; chmn. panel res. and problems on continental margins, Natl. Acad. Sci., 76-78; mem. sci. comm., 78-80, chmn., 80-83, Internatl. Geol. Correlation Programme (IGCP); mem. IUGS task group post-geodynamics proj. planning, 78-79; mem. plate tectonics delegation, Natl. Acad. Sci. comm. scholarly communication with People's Republic of China, 79; mem. ocean sci. bd., Natl. Acad. Sci., 82; mem. Am. Assoc. Petrol. Geol. educ. comm., 82; mem. publications advisory comm., Am. Geol. Inst., 83-; sci. consultant, Institut Francais du Petrole, 82-; Trans Alaska Lithosphere Investigation, 83; Tectonics Panel, 84-85, Atlantic Regional Panel, 84-85, JOIDES Ocean Drilling Proj.; ed. three vols. "Seismic Expression of Structural Styles: a picture and work atlas," pub. AAPG, 84; mem. Lithoprobe Eval. Comm. for Sci. Engineering Res. Coun. Canada, 85-; chmn. Am. sedimentary basins delegation to the People's Republic of China, comm. on scholarly communication with People's Republic of China, Natl. Acad. Sci., 85-86. *Honors & awards*: Canadian Soc. Petrol. Geol. Merit Award Medal (together

with P.L. Gordy, C. Steward), 66; Geol. Soc. London William Smith Medal, 82; mem. Assoc. Soc. Geol. de France, 84; Am. Assoc. Petrol. Geol. President's Award, Best Special Publication, 85; hon. mem., Am. Assoc. Petrol. Geol., 86. *Mem.*: Am. Assoc. Petrol. Geol.; Am. Geophys. Union; fel. Geol. Soc. Amer. (counc., 75-77; v. pres., 87); fel. Am. Assoc. Adv. Sci.; Canadian Soc. Petrol. Geol.; Geologische Vereinigung; Schweizerische Geologische Gesellschaft; Vereinigung Schweiz Petroleum-Geologen und Ingenieure; Houston Geol. Soc.; Soc. Geologica Italiana; Assoc. Geoscientists for Internatl. Development. *Res.*: Petroleum geology, structural geology, tectonics, and regional geology. *Mailing address*: Dept. of Geology, Rice University, P.O. Box 1892, Houston, TX 77251. *Phone*: (713) 527-4880.

PAST PRESIDENT

W. Gary Ernst

b. St. Louis, MO, 12-14-31; m. 56; c. 4. **PETROLOGY. GEOCHEMISTRY.** *Educ.*: Carleton Coll., BA, 53; Univ. Minnesota, MS, 55; Johns Hopkins Univ., PhD (geol.), 59. *Prof. exp.*: geol. U.S. Geol. Surv. Petrol. Br., 55-56; fel. Geophys. Lab., Johns Hopkins Univ., 58-60; from asst. prof. to assoc. prof., 60-68, chmn. dept. geol., 70-74, PROF. GEOL. & GEOPHYS. UNIV. CALIF., LOS ANGELES, 68-, chmn. dept. earth & space sci., 78-82. *Concurrent pos.*: Fulbright fel. Univ. Tokyo, 63; Crosby visiting prof., MIT, 68; NSF sr. fel. Univ. Basel, 70-71; Guggenheim fel. Swiss Fed. Inst. Technol., 75-76; William Evans visiting prof. Univ. Otago, 82-83; chmn. NRC Bd. on Earth Sci., 84-. *Honors & awards*: Mineral. Soc. Amer. award, 69. *Mem.*: Natl. Acad. Sci.; Am. Assoc. Adv. Sci.; fel. Mineral. Soc. Amer. (counc., 68-71; v. pres., 80; pres., 81); Am. Acad. Arts and Sci.; Am. Geophys. Union; Mineral. Soc. London; Schweiz. Mineral. Pet. Gesell.; Geol. Soc. Amer. (counc., 76-78; v. pres., 85; pres., 86). *Res.*: Igneous and metamorphic petrology; application of theoretical and experimental phase equilibria to geologic problems; plate tectonics; crustal evolution. *Mailing address*: Dept. of Earth & Space Sciences, University of California, Los Angeles, CA 90024. *Phone*: (213) 825-7970.

TREASURER

Robert L. Fuchs

b. Bay Shore, NY, 12-7-29; m. 86; c. 2. **GEOLOGY.** *Educ.*: Cornell Univ., BA, 51; Univ. Illinois, MS, 52. *Mil. serv.*: U.S. Navy. *Prof. exp.*: area expl. supervisor, analyst, staff geol., party chief, jr. geol., Mobil Oil, NY, Louisiana, Venezuela, Libya, 52-65; dir. prog. support Flow Labs, Inc., 65-66; pres., founder, dir. Con-Serv Corp. & Automation Inst., 66-69; sr. vice-pres., Intercontinental Energy Corp., 69-71; dir. Canyon Resources Corp., 80-; dir. Sheffield Explor. Co., Inc., 81-; dir. Sundance Oil Co., 82-84; PRES., FOUNDER, DIR. GEOSYSTEMS CORP., 71- (name changed to CALAND PETROLEUM CORP. in 84). *Mem.*: Am. Assoc. Petrol. Geol., Energy Minerals Div. (pres., 81-82); Am. Inst. Prof. Geol.; Am. Inst. Min. Eng.; fel. Geol. Soc. Amer. (treas., 83-); Geol. Soc. Amer. Foundation (trustee, vice-chmn., 81-82); Rocky Mtn. Assoc. Geol. *Res.*: Natural resource exploration, technical analytical exploration management, venture/asset management, economic geology of petroleum. *Mailing Address*: Caland Petroleum Corp., 1675 Larimer St., Suite 720, Denver, CO 80202. *Phone*: (303) 571-0885.

COUNCILOR 1985-1987

Samuel S. Adams

b. Lincoln, NH, 1-26-37; m. 58; c. 3. **ECONOMIC GEOLOGY.** *Educ.*: Dartmouth Coll., AB, 59, AM, 61; Harvard Univ., PhD (geol.), 67. *Prof. exp.*: Mine geol., expl. geol. International Minerals and Chemical Corp., 61-67; geol., chief geol. uranium and aluminum, v.-pres. The Anaconda Co., 67-77; v.-pres. Ertec Rocky Mtn., Inc., 80-82; consulting geol., 77-86; HEAD, DEPT. GEOL. & GEOL. ENG., COLORADO SCHOOL OF MINES, 86-. *Concurrent pos.*: Thayer Lindsley lect., 78-79; Geol. Soc.

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Officers and Councilors

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Bd., NAS, 80-83. *Mem.*: Soc. Econ. Geol. (counc., 83-85, Res. Comm., 82-84, Comm. on Committees, 81); fel. Geol. Soc. Amer. (counc., 85-87); Am. Inst. Prof. Geol.; Am. Assoc. Petrol. Geol.; Am. Assoc. Adv. Sci. *Res.*: Exploration and mining geology; industrial and metallic mineral deposits in sediments; integrated data-process-diagnostic criteria mineral deposit models for exploration, deposit evaluation, resource studies, and research. *Mailing address*: 1114 Maple Street, Golden, CO 80401. *Phone*: (303) 273-3800.

COUNCILOR 1985-1987

David E. Dunn

b. Dallas, TX, 10-13-35; m. 58; c. 2. ROCK MECHANICS, STRUCTURAL GEOLOGY. *Educ.*: Southern Methodist Univ., BS, 57, MS, 59; Univ. Texas PhD (geol.), 64. *Prof. exp.*: asst. prof. struct. geol. Texas Tech. Coll., 62-63; visiting asst. prof. Univ. North Carolina, Chapel Hill, 63-64, from asst. prof. to assoc. prof., 64-73, actg. chmn. dept. geol., 67, asst. chmn., 66-69, prof. struct. geol., 73-79; prof. Earth Sci. and dean Coll. Sci., Univ. New Orleans, 79-84; PROF. GEOSCIENCES AND DEAN NATURAL SCI. & MATH., UNIV. TEXAS AT DALLAS, 84-. *Concurrent pos.*: consult. geol., 80-; Louisiana Univs. Marine Consortium, 79-84, chmn., 81-83. *Mem.*: Am. Assoc. Adv. Sci.; Am. Geophys. Union; Am. Inst. Prof. Geol.; Geol. Soc. Amer. (counc., 85-87); Natl. Assoc. Geol. Teachers. *Res.*: Deformation in orogenic belts; rock mechanics. *Mailing address*: Natural Sci. & Math., Univ. of Texas at Dallas, Box 830688, Richardson, TX 75083-0688. *Phone*: (214) 690-2516.

COUNCILOR 1985-1987

Melvin C. Schroeder

b. Saskatoon, Canada, 7-19-17; natl. U.S.; m. 83; c. 2. GROUNDWATER GEOLOGY. *Educ.*: Washington State Univ., BS, 42, MS, 47, PhD, 53 (geol.). *Mil. serv.*: U.S. Air Corps, 43-46 (radar). *Prof. exp.*: miner, Idaho mines, 41; survey crew United Engr. and Found., 42; summer field asst. Washington Div. Mines and Geol., 46-48; geol. U.S. Geol. Surv. Ground Water Br., 49-55; from asst. prof. to assoc. prof., 54-63, PROF. GEOL. TEXAS A&M UNIV., 63-. *Mem.*: Am. Assoc. Petrol. Geol.; fel. Geol. Soc. Amer. (counc., 85-87); Natl. Assoc. Geol. Teachers (Texas Sect., sec.-treas., 66, v.-pres., 67, pres., 68). *Honors & awards*: Phi Kappa Phi; fel. Texas Acad. Sci.; Sigma Gamma Epsilon; Sigma Xi; hon. life mem. Sci. Teachers Assoc. Texas. *Res.*: ground-water management, radiohydrology. *Mailing address*: Dept. of Geology, Texas A&M University, College Station, TX 77843. *Phone*: (409) 845-8973.

COUNCILOR 1985-1987

Lee J. Suttner

b. Hilbert, WI, 6-3-39; m. 65; c. 2. GEOLOGY. *Educ.*: Univ. Notre Dame, BS, 61; Univ. Wisconsin, MS, 63, PhD (geol.), 66. *Prof. exp.*: from asst. prof. to assoc. prof. geol., 66-78, PROF. GEOL. INDIANA UNIV., BLOOMINGTON, 78-. *Mem.*: Natl. Assoc. Geol. Teachers (v.-pres., 80-81, pres., 81-82); Internat. Assoc. Sediment.; Soc. Econ. Paleont. and Mineral. (Great Lakes Sect. pres., 77); fel. Geol. Soc. Amer. (counc., 85-87). *Concurrent pos.*: assoc. ed. *Jour. Sed. Petrology*, 80-. *Res.*: Sedimentology and sedimentary petrology. *Mailing address*: Dept. of Geology, Indiana University at Bloomington, Bloomington, IN 47401. *Phone*: (812) 335-4957.

COUNCILOR 1986-1988

David L. Jones

b. Chicago, IL, 11-12-30; m. 53; c. 4. GEOLOGY, PALEONTOLOGY. *Educ.*: Yale Univ., BS, 52; Stanford Univ., MS, 53, PhD, 56. *Prof. exp.*: geol. Western Region, U.S. Geol. Surv., 55-85; PROF. DEPT. GEOL. GEOPHYS. UNIV. CALIFORNIA, 85-. *Honors & awards*: co-recipient GSA Structural Geol. Tectonics Div. Best Paper Award, 84. *Mem.*: Geol. Soc. Amer. (counc., 86-88); Paleont. Soc. *Res.*: Molluscan paleontology; Cretaceous of the Pacific Coast region of North America; stratigraphy, structure, radiolarian biostratigraphy and sedimentology of Paleozoic and Mesozoic cherts, Accretionary tectonics of Western North America. *Mailing address*: Department of Geology and Geophysics, University of California at Berkeley, Berkeley, CA 94720. *Phone*: (415) 642-3993.

COUNCILOR 1986-1988

C. Barry Raleigh

b. Little Rock, AR, 8-11-34; m. 76; c. 4. GEOPHYSICS. *Educ.*: Pomona Coll., BA, 56, MA, 59; Univ. California, Los Angeles, PhD (geol.), 63. *Prof. exp.*: res. fel. geophys., 63-65, fel., 65-66. Inst. Advanced Studies, Australian Natl. Univ.; res. geophysicist Natl. Ctr. Earthquake Res., 66-73, br. chief earthquake tectonics, U.S. Geol. Surv.; DIR. LAMONT-DOHERTY GEOL. OBSERV. and PROF. GEOL. SCI. COLUMBIA UNIV., 81-. *Honors & awards*: Interdisciplinary Award, Intersoc. Comm. Rock Mech., 69, 74; Meritorious Service Award Dept. Interior, 75. *Mem.*: fel. Geol. Soc. Amer. (counc., 86-88); fel. Am. Geophys. Union. *Res.*: Experimental deformation of rocks at high pressure and temperature; studies of earthquakes triggered by fluid injection; plastic deformation of rock-forming minerals. *Mailing address*: Lamont-Doherty Geological Observatory, Columbia Univ., Palisades, NY 10964. *Phone*: (914) 359-2900.

COUNCILOR 1986-1988

E-an Zen

b. Peking, China, 5-31-28; natl. U.S. GEOLOGY, PETROLOGY. *Educ.*: Cornell Univ., BA, 51; Harvard Univ., AM, 52, PhD (geol.), 55. *Prof. exp.*: res. fel., 55-56, res. assoc., 56-58, Oceanog. Inst. Woods Hole; visiting asst. prof. Univ. of North Carolina, 58-59; RES. GEOLOGIST, U.S. GEOL. SURV., 59-. *Concurrent pos.*: visiting assoc. prof. California Inst. Technol., 62; Crosby visiting prof. Massachusetts Inst. Technol., 72; Harry Hess visiting fel. Princeton, 81. *Honors & awards*: Arthur L. Day Medal, GSA, 86. *Mem.*: Natl. Acad. Sci.; fel. Am. Acad. Arts and Sci.; fel. Am. Assoc. Adv. Sci.; fel. Geol. Soc. Amer. (counc., 86-88); fel. Mineral. Soc. Amer. (pres., 76); Mineral. Assoc. Canada. *Res.*: Phase equilibrium of sedimentary and metamorphic rocks; stratigraphy and structure of northern Appalachians and northern Rockies; igneous petrology and tectonics of the Western Cordillera. *Mailing address*: U.S. Geological Survey, 959 National Center, Reston, VA 22092. *Phone*: (703) 648-6166.

COUNCILOR 1986-1988

Mary Lou Zoback

b. Sanford, FL, 7-5-52. GEOPHYSICS, GEOLOGY. *Educ.*: Stanford Univ., BS, 74, MS, 75, PhD (geophys.), 78. *Prof. exp.*: res. assoc., 78-79, GEOPHYSICIST, U.S. GEOL. SURV., 79-. *Mem.*: Am. Geophys. Union (prog. chmn., tect. sec., 81); Geol. Soc. Amer. (counc., 86-88); Natl. Res. Coun., U.S. Geodyn. Comm., 85-88. *Res.*: Basin and Range tectonics; state of stress in conterminous U.S.; earthquake hazards-Wasatch fault. *Mailing address*: U.S. Geological Survey, Seismology Branch, MS-977, 345 Middlefield Rd., Menlo Park, CA 94025. *Phone*: (415) 323-8111, Ext. 2367.

COUNCILOR 1987-1989

William W. Hay

b. Dallas, TX, 10-12-34. MICROPALAEONTOLOGY, MARINE GEOLOGY. *Educ.*: Southern Methodist Univ., BS, 55; Univ. of Illinois, MS, 58; Stanford Univ., PhD (geol.), 60. *Prof. exp.*: NSF fellowship in geol., Univ. of Basel, 59-60; from asst. prof. to prof. geol., Univ. of Illinois, Urbana-Champaign, 60-73; chmn. div. marine geol. geophys., 74-80, dean, 77-80, *Mem.*: Am. Geophys. Union (prog. chmn., 68-80, Rosenstiel School of Marine and Atmospheric Sciences, Miami; pres., Joint Oceanographic Institutions Inc., 79-82; PROF., NATL. HISTORY AND GEOL. DIR., UNIV. MUSEUM, FEL., COOPERATIVE INST. FOR RESEARCH IN ENVIRONMENTAL SCI., UNIV. OF COLORADO, BOULDER, 82-. *Concurrent pos.*: adjunct assoc. prof., Marine and Atmospheric Sci., Univ. of Miami, 67-68; honorary research fel., Univ. of Columbia, Univ. of London, 71-. *Mem.*: Am. Geophys. Union; fel., Geol. Soc. Amer. (counc., 87-89); Am. Assoc. Petrol. Geol.; Paleont. Soc.; Soc. Econ. Paleont. Mineral. *Res.*: Pelagic sedimentation; calcareous nannoplankton; probability in stratigraphy sedimentary mass balance. *Mailing address*: University Museum, University of Colorado, Campus Box 218, Boulder, CO 80309-0218. *Phone*: (303) 492-7370.

COUNCILOR 1987-1989

Marcus E. Milling

b. Galveston, TX, 10-8-38; m. 59; c. 1. PETROLEUM GEOLOGY; SEDIMENTOLOGY. *Educ.*: Lamar Univ., BS, 61; Univ. Iowa, MS, 64, PhD (geol.), 68. *Prof. exp.*: res. specialist, sr. res. specialist, sr. res. geol., res. supervisor, EXXON Production Research Co., 68-77; sr. supervisory production geol., 77-79, dist. explor. geol., 79-80, EXXON Co., USA; mgr. geol. res., 80-86, MGR. GEOLOGIC STAFF, 86-. ARCO OIL & GAS CO. *Mem.*: fel., Geol. Soc. Amer. (counc., 87-89); Am. Assoc. Petrol. Geol.; Soc. Econ. Paleont. Mineral.; Am. Geol. Inst. Found. Bd. of Trustees; Offshore Technology Comm., vice-chmn. Bd. of Dir.; Dept. of Energy Earth Science Advisory Bd., mem. Solid Earth Science Panel. *Res.*: Environmental facies analysis clastic depositional systems; subsea foundation characteristics; seismic stratigraphy deep-sea fans. *Mailing address*: ARCO Oil and Gas Company, Room DAB 36-100, P.O. Box 2819, Dallas, TX 75221-2819. *Phone*: (214) 880-5880.

COUNCILOR 1987-1989

John S. Scott

b. Hamilton, Ontario, 7-14-29; m. 56; c. 2. GEOLOGY. *Educ.*: McMaster Univ., BSc, 53; Univ. Illinois, Urbana, PhD (geol.), 60; Natl. Defence Coll., Kingston, 77. *Prof. exp.*: geol., Photographic Surv. Corp., Ltd., Canada, 53-57; geol., Geol. Surv. Canada, 60-67; consulting geol., H.G. Acres & Co., Ltd., Canada, 67-69; research scientist, 69-74, DIR., TERRAIN SCIENCES DIV., GEOL. SURV. CANADA, 74-. *Concurrent pos.*: mbr. assoc., Comm. on Geotechnical Research, Natl. Res. Council of Canada, 61-66, 78-. *Mem.*: fel., Geol. Soc. Amer. (counc., 87-89); fel., Geol. Assoc. Canada; mbr. Canadian Geotechnical Soc.; Internat. Assoc. Engineering Geol. *Res.*: Engineering geology; hydrogeology as related to construction; stability of slopes in overconsolidated shales. *Mailing address*: Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario, Canada K1A 0E8. *Phone*: (613) 995-4938.

COUNCILOR 1987-1989

Stephen H. Stow

b. Oklahoma City, OK, 9-18-40; m. 65; c. 2. GEOCHEMISTRY. *Educ.*: Vanderbilt Univ., BA, 62; Rice Univ., MA, 65, PhD (geochem.), 66. *Prof. exp.*: res. scientist, Plant Foods (continued on p. 9)

Officers and Councilors (continued)

Res. Div., Continental Oil Co., 66-69; consultant, Geol. Surv. Alabama, 70-74; industry consultant, 70-80; part-time geol., U.S. Bureau of Mines, Tuscaloosa, 74-76; from asst. prof. to prof. geol., 69-80, adjunct prof., 82-84, Univ. Alabama, Tuscaloosa; GROUP LEADER GEOL. GEOCHEM., SR. RES. GEOL., OAKRIDGE NATL. LABORATORY, 80-. *Concurrent pos.:* part-time prof. geol., Univ. Tennessee, Knoxville, 81-. *Mem.:* Am. Geophys. Union; fel., Geol. Soc. Amer. (counc., 87-89) (hydrogeol. div.); fel., Am. Assoc. Adv. Sci.; Soc. Econ. Geol.; Alabama Geol. Soc. (vice-pres., 72-73, 75-76, pres., 76-77); Georgia Geol. Soc.; The Universities Counc. on Water Resources, 72-79;

Internat. Assoc. Hydrogeol. (Comm. Hydrogeol. Hazardous Waste). *Honors & awards:* Sigma Xi Best Thesis Award, Rice Univ., 65; elected to Outstanding Young Men of Amer., 71; ed. bd. *Environ. Geol. and Water Sci.* *Res.:* Geochemistry and element distribution in igneous and metamorphic rocks, geology and geochemistry of phosphates; environmental geology; geochemistry of mafic rocks of southern Appalachians; sulfide ore deposits; trace elements in galena; geology for nuclear and hazardous waste disposal. *Mailing address:* Environmental Sciences Div., Oak Ridge National Laboratory, P.O. Box X, Oak Ridge, TN 37830. *Phone:* (615) 574-7830.

Call for Field Trips

GSA Centennial Celebration • Denver, Colorado, October 31–November 3, 1988

Field trips for the GSA Centennial Celebration 1988 should have a flavor different from field trips for our regular annual meetings. Not only are the paradigms for interpretation of geologic data in all parts of earth science largely different, but many have been replaced. Looking back to the past to see how our thought processes have changed can help prepare us for the similar changes that no doubt will take place in the next 100 years.

In keeping with the GSA Centennial theme, the focus of the trips should be on geologic problems or areas of classic geology about which our understanding now is much different from what it was 100 years ago. Flamboyant notions such as "Along Part of the 40th Parallel with King" would be welcome.

The following guidelines should be followed:

- Eighteen to perhaps as many as 24 field trips, about evenly divided before and after the meeting, will be selected from those offered.
- Pre-Centennial trips may start and end at any point of convenient access, but travel to Denver at the conclusion of the trip should be arranged.
- Post-Centennial trips should start in Denver; travel to initial

point should be part of the field trip. The trip may end at any convenient point for dispersal.

- Length should be 1-3 days for most trips, but longer ones are possible.
- Although the trips will have a topical or areal orientation, as much information as possible should be included on development of geologic knowledge and changes in concepts as our science has matured in the past 100 years.

It will be helpful if all proposals can be in the same format, and a form has been prepared for your use. In order for the summer of 1987 to be available to field trip leaders for work on the trip, as needed, please respond by **April 30, 1987**. Write or call GSA headquarters at the address below, and the form will be sent to you along with a brief statement of duties and responsibilities of field trip leaders.

Gregory S. Holden
Geology Department
Colorado School of Mines
Golden, CO 80401
Phone: (303) 273-3800

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THE GEOLOGICAL SOCIETY OF AMERICA

Geological Society of America



CONGRESSIONAL SCIENCE FELLOWSHIP 1987-1988

The Geological Society of America invites applications for the 1987-1988 Congressional Science Fellowship. The Fellow selected will spend a year (September 1987-August 1988) on the staff of a member of Congress or a congressional committee advising on a wide range of scientific issues as they pertain to public questions. Guided by the American Association for the Advancement of Science, the Fellow selects a congressional staff position in which he or she can work on major legislative issues.

CRITERIA

Requirements for the Fellowship include a Ph.D and exceptional competence in some area of the earth sciences, cognizance of a broad range of matters outside the Fellow's particular area, and a strong interest in working on a range of public policy problems.

AWARD

The GSA Congressional Science Fellowship carries with it a \$25,000 stipend and a limited relocation and travel allowance.

TO APPLY

Procedures for application and detailed requirements are available in the geology departments of most colleges and universities in the United States or upon request from

Executive Director
Geological Society of America
P.O. Box 9140
Boulder, Colorado 80301
(303) 447-2020



Deadline for receipt of all application materials is March 31, 1987

Penrose Conference on Cordilleran Metamorphic Core Complexes Has April Application Deadline

A GSA Penrose Conference, "Cordilleran Metamorphic Core Complexes, Revisited: Implications for Crustal Extension and Shortening in the North American Cordillera" will be held September 14-17, 1987, in Elko, Nevada. A two-day field trip will precede the conference and begin from Salt Lake City, Utah. The conveners for this conference are Arthur W. Snoke, University of Wyoming; Gordon S. Lister, Australian Bureau of Mineral Resources; and Charles H. Thorman, U.S. Geological Survey.

The purpose of the conference is to provide a forum to bring together regional geologists, geophysicists, igneous and metamorphic petrologists, and various others interested in the role of Cordilleran metamorphic core complexes in the tectonic evolution of the western North American Cordillera. The focus will be to provide an overview of the developmental history of Cordilleran metamorphic core complexes as well as an opportunity to evaluate specific constraints on the tectonic history provided by the rapidly evolving battery of studies on fabric transitions and kinematics, uplift history, *P-T-t* variations, granite magmagenesis, and deep crustal seismic reflection profiling.

A polygenetic history is indicated by many recent studies of Cordilleran metamorphic core complexes. Commonly, the early history developed during a regime of compressional tectonics, while the later deformation, including the tectonic denudation of the complex, was during continental crustal extension. In this light, several key questions arise: (1) How can the structural features developed during compressional tectonics be separated from structural features developed during the regional crustal extension history? (2) What are the time and spatial relations between the

compressional and extensional history recorded in the core complexes and broad-scale, regional tectonic features of the Cordillera (e.g., the foreland fold and thrust belt and the Basin and Range province)? (3) How can geophysical and rock mechanical understanding of processes in present-day extending terranes be reconciled with the apparently conflicting observations made by geologists in the metamorphic core terranes? (4) What are the implications of observations in Cordilleran core complexes for tectonic processes in other terranes where similar processes may be important in the unroofing history of deep-seated crystalline complexes?

Numerous other more specific problems exist concerning modes of extension in the upper and middle crust, the role of Precambrian crystalline basement in the evolution of the complexes, and the nature of the metamorphism and magmatism associated with the core complexes.

Prospective participants should send a letter of application which outlines (1) their experience in the topic, (2) areas in which they might expect to contribute, and (3) their reason for wanting to attend the conference to Arthur W. Snoke, Department of Geology and Geophysics, P.O. Box 3006, University of Wyoming, Laramie, WY 82071, (307) 766-5457. **Deadline for applications is April 15, 1987.** The registration fee, which has not been established, will cover lodging, meals, and field trip.

Limited support may be available for a few graduate students who are actively involved in research related to Cordilleran metamorphic core complexes or possible similar phenomena in other orogenic belts.

Application for participation in a Penrose Conference

Title of Penrose Conference _____

Your name and title _____

Organization _____

Mailing address _____

Street or P.O. Box

City and State

Zip Code

Telephone number _____

Area Code

Number

Field of interest _____

Please state briefly what your interest and experience have been with regard to the conference topic.

International Geological Congress 1989

Charles L. Drake, president of the 28th International Geological Congress, has announced that President Ronald Reagan issued a Presidential message (reproduced below) concerning the IGC. He also stated that Vice-President Bush has accepted the position of honorary president of the Congress. A draft of the First Circular is currently undergoing review by the Organizing Committee; more than 100,000 copies will be mailed to the world geoscience community in early 1987.

THE WHITE HOUSE

WASHINGTON

August 5, 1986

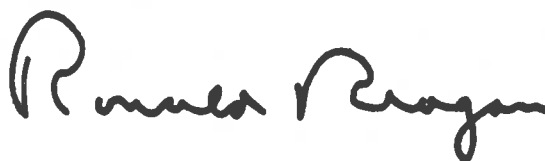
I am delighted to send a word of greetings and encouragement to members of the geological community of the United States who are helping to plan the 28th International Geological Congress to be held in Washington in July 1989.

The development and prosperity of the entire world depend largely on the availability of water, energy, and mineral resources. A deeper understanding of geological hazards such as earthquakes, floods, landslides, and volcanic eruptions can reduce loss of lives and property. By expanding the boundaries of geologic knowledge, the earth's hidden riches can be transformed into needed productive reserves.

Scientific advance, and the search for it, stimulates communication among nations. The relevance of geology to major societal problems requires that all earth scientists work together to continue the long tradition of geology in service to mankind. The United States recognizes that environmental problems do not end at national boundaries. We will continue to collaborate closely with other nations to discover new and better ways of searching for and managing natural resources, in order to improve the quality of living conditions throughout the world.

This will be the first time in more than 50 years that the United States has welcomed the earth scientists of the world to its shores. The 28th International Geological Congress, by affording thousands of geoscientists from around the world a unique opportunity to share new scientific data and theories, will help further the noble task of improving the welfare of the world through science and through the sharing of new knowledge.

God bless you.



NEW GSA MEMBERS

The following 307 Members have been elected to Membership by Council action during the period from February 1, 1986, through August 29, 1986 (* indicates transfer from Student Associate to Member).

- | | | | | |
|--|---|---|---|---|
| <p>David W. Abbott
Seyed N. Alavi
*Allen V. Ambrose
Robert Anderhalt
Camille L. Anderson
Duwayne M. Anderson
Abu A. Azmi
Peter S. Baker
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John W. Ballantyne
Stanton N. Ballard
James E. Barron
Mark W. Bartlett
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Stacey A. Benfer
Christopher L. Berlin
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Michael G. Bersch
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Carl B. Bowman
Charles F. Boyette
Daniel G. Bradfield
Stephen E. Bradstreet
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*Clifford N. Brandon III
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*Robert A. Butts
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Hughbert A. Collier
James L. Conca
*Sterling S. Cook
Bradley L. Cornell
*Richard M. Cousineau
Ana-Maria Cox
Catherine S. Cravens
Neil B. Crow
David G. Darby
Wang Dawei</p> | <p>James M. de Lambert
*Nancy Lee A. Dellamonte
John P. de Melas
Maarten J. de Wit
William E. Doll
Michael E. Donnelly
Paul E. Drez
William M. Dunne
*Barbara L. Dutrow
Larry D. Dyke
Denise M. Dyrby
Edwin H. East
Harvey S. Edwards
*Michael A. Eger
Mervet A. El Haddad
Donald L. Ellison
Craig F. Erdman
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Samuel Estrada
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Olubode O. Faseke
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*John D. Files
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Kurt R. Fraese
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Benjamin R. Frothingham
Alfred L. Futrell, Jr.
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Michael E. Gantenbein
Rafael A. Garcia
Jack Garvin
Michael Gauthier
Dianna J. Gentry
Jeff D. Gentry
Matthew L. Gibson
Lisa A. Gilbert
Harry N. Giles
John B. Gilmore
*Steven L. Gobelman
*Steven R. Gordon
*Samuel W. Gowan
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Scott R. Green
David M. Greenan
David J. Grover
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*James W. Haggart
*Walter R. Hale
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Burt C. Hardin
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Raynold Irvin Kabanow II
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Richard C. Karr, Jr.
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Jeffrey F. Katz
Karen K. Katz
Richard S. Kaumeyer
David T. Kendrick
Charles Kerans
Mary J. Keskinen
Younjun Kim
Paul H. King
Stephen C. Knowles
R. Craig Kochel
*Daniel J. Kontak
John H. Kreiger
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Scott W. Krueger
*Matthew M. Kuchta
Mary Jo P. Kuhns
Kenji Kurihara
*Elizabeth C. Kurzius
Timothy R. Kustic
Frank T. Kyte
Nicholas Lancaster
Jeanne P. Lawler
Linda P. le Seur
Shaul Levi
*Barry R. Levine
Frank M. Lewis
Ronald D. Lewis
Xu Z. Liang
W. David Liddell
Christopher D. Lidstone
Paul A. Lipinski
David M. Lis
*Lester A. Litzinger
Daniel J. Lombardi
Carol S. Lopp
Gordon S. Magenheimer
Arun Majumdar
J. K. Manful
Michael J. Mangini
*Bernard Markunas
Jay J. Martin
Steve Massie
David Mathew
Dennis L. Matson
David M. Matzner</p> | <p>Michael D. Max
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Richard E. McCutchen
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Rowan P. McKittrick
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Nancy E. Moll
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Paul E. Mooney
*Judy E. Moore
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A. Edward Morelan
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Laura E. Munger
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*Charles B. Schneider, Jr.
*Peter J. Schubert
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Marcus R. Van Baalen
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George P.L. Walker
A. Wesley Ward, Jr.
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*Timothy A. Watchers
Richard F. Wells
*Christopher W. Wenczel</p> |
|--|---|---|---|---|

(continued on p. 14)

New Members (continued from p. 13)

Christopher A. Wener
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Richard B. Wice

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James H. Williams
Paul F. Williams

Richard T. Williams
Scott C. Wilmot
Mark C. Wiseman
Todd A. Worsfold
Douglas H. Wright

Howard A. Wright
Kenneth W. Yarbrough
*Peter B. Yuan
Zahanzeb

Cynthia F. Zauner
William G. Zempolch
Abdulaziz M. Ziab
Terrence J. Zich

NEW GSA FELLOWS

The following candidates were elected to Fellowship by Council action at the November 1986 meeting.

James A. Austin, Jr.
Lawrence W. Braile
James Malcolm Coleman
Robert G. Douglas
Pembroke J. Hart

Rosalind T. Helz
James Wright Horton, Jr.
Kenneth S. Johnson
Mervin Kontrovitz
Michael T. Ledbetter

Peter T. Lyttle
Harry Y. McSween, Jr.
Fred K. Miller
Walter D. Mooney
Douglas M. Morton

Dennis L. Nielson
James F. Quinlan
Samuel M. Savin
Gerald L. Shideler

Thomas M. Usselman
Michael J.P. Welland
James E. Wilson

NEW GSA STUDENT ASSOCIATES

Listed are 427 Student Associates who became affiliated with the Society during the period from February 1, 1986, through August 29, 1986.

Anthony S. Able
Kelly L. Acker
Benjamin N. Adams
Patrice L. Agostino
Jonathan C. Aitchison
Gregory R. Albright
Gordon P. Alexander
Saif A. Al-Hajari
Arnold W. Allison
James J. Allred
Charles N. Alpers
Robert S. Anderson
Steven C. Anderson
Robert J. Andres
Deborah J. Anthony
T. Bruce Appelgate, Jr.
Cynthia P. Ardito
Mark J. Arniola
James R. Ashby
Jon M. Aspie
Jack W. Austin
David B. Bagley
Brett Baker
Edward B. Baker
James M. Barish
Karin M. Barovich
Michael J. Becker
James A. Beer
Henry T. Belenski
Marian S. Benham
Maryann W. Benoit
James A. Bergen
Janell A. Bergman
Augusto Bertohero
Steven E. Best
Robert J. Beyke
Glenn P. Biasi
David M. Bice
Matthew E. Bidwell
Bill D. Black
Bonnie A. Blackwell
David E. Blake
Mary A. Bloodgood
Margaret H. Bloom
Michael D. Blum
Margaret E. Bonaker
Pamela S. Bowen
Timothy L. Bowers
George E. Boyajian
Kenneth C. Bransky, Jr.
Thomas F. Bray, Jr.
Glen D. Brecheen
Melissa A. Brown
Charles R. Bryan

John T. Bryant
Douglas M. Buchanan
Paul E. Buck
Mark W. Bultman
David J. Burdette
Richard K. Burroughs
Marcus I. Bursik
Mohamed N. Bushara
Tim L. Butts
Nancy J. Byrd
Shawna W. Caldwell
Daniel G. Carpenter
David L. Carr
Brian L. Carter
Larry S. Carter
Tracey E. Cascadden
Augusto C.M. Castro, Jr.
Ronald L. Catazaro
Steven R. Chambers
Peter P. Chaplinsky
Punya Charusiri
Janet L. Chase
Craig A. Chesner
Arthur D. Cisneros
Alan L. Clark
Melanie L. Clark
Julia S. Clay
Valerie P. Clements
Catherine A. Coffin
Mark R. Colberg
Richard R. Condrin
Sean D. Connell
Jane M. Connet
Chris J. Conway
Peter A. Corson
Laurie M. Corwin
David S. Cowie
Espan Crespo
Peter M. Cronan
John A. Cusatis
Daniel A. Cutrone
Charles M. Darling
Gareth J. Davies
John M. Davis
Larry E. Davis
Mark J. Davis
Marlene A. Dean
Susan M. Debari
Richard A. De Jong
Anne Demitrack
Sydney B. Dent
Mary M. Dew
Emidio Dicensio
Raye A. Dickerson

Peter M. Dillon
Leonard J. Diprima, Jr.
William R. Dorsch
Rosemarie Doss
Ted P. Doughty
Larry A. Drane
Michael E. Duffin
M. John M. Duke
Brenda S. Dulaney
Edward M. Dullaghan
Trevor A. Dumitru
Gilbert R. Dunn
Lisa A. Durham
Kurt A. Easthouse
Cortland F. Eble
Cynthia A. Edwards
Gloria Eisenstadt
David C. Elbert
Yehouda Enzel
Jay B. Erickson
Mary T. Ervin
Jane E. Estes
Arthur C. Evans
John W. Ewert
Dennis J. Fagundes
Steven R. Fekete
Bernard G. Fenelon
Greg Ferdock
Judy E. Fierstein
Tom K. Fink
Thomas J. Fitz
Cynthia L. Fong
Robert Craig Ford
Paul W. Genovese
Carol E. Gerber
Larry D. Gerken
Stephen R. Getty
Ronda L. Geving
Christopher W. Goetz
Patrick M. Goldstrand
Juan L. Gonzalez
Laurel B. Goodwin
Wendy C. Grant
Dennis J. Graves
Michael G. Gray
Thomas E. Gray
Maureen Green
Karen M. Griffin
Alice E. Gripp
Jay A. Gunderson
Bjorn Gunnarsson
Maja Haag
Peter J. Haeussler
Mohamad Hafid

Steven J. Hageman
David J. Hagen
Laurie B. Haines
Edwin R. Hajic
John D. Halfman
Jean P. Hall
William W. Hallinan
Steven A. Hammett
Diana K.T. Hansen
Patricia E. Hardt
Douglas E. Harris
Mark T. Harris
William M. Harris, Jr.
Patti L. Harting
Allan P. Hascall
Scott W. Hassler
Erik H. Hauri
Harald Havstad III
Jennifer Hess
Lindsay R. Hill
Jane M. Hiller
Karl F. Hillier
Mark L. Hineline
Michael P. Hingston
Michael M. Hobby
Steve R. Hohensee
Hanafy M. Holail
Thomas J. Hollis
Hillary E. Hollister
Thomas K. Honeycutt
Marcie R. Horowitz
J. Richard Houncaren
Lawrence D. Hoy
William F. Hunneke
Paul K. Hunter
Bethany A. Ihle
Robert P. Ilchik
William B. Isbell
Jiin-Shuh Jean
Anne E. Jennings
D. Chad Johnson
Jennifer D. Johnson
Nicholas M. Johnson
Laura E. Jones
Edward L. Kaczmarek
Theresa A. Kalaghan
Philippos M. Katsouris
Kim C. Keith-Hyatt
Kevin M. Kelly
Choon S. Kim
Randy E. Kirby
Andrew P. Kisiel
Martin O. Klein
Martin C. Kleinrock

Darin R. Klewsaat
Douglas P. Klicman
Lari A. Knochenmus
Martin A. Knoll
Celia M. Kohn
C. Eugene Kooper
Bridget P. Krause
Katherine A. Kuhn
Kay K. Kunert
Jeffrey P. Kurr
Keith B. Kutz
Frank P. Lambert IV
Timothy N. Lambert
John H. Larabee
Bradley R. Larsen
Thomas S. Lawrence
Theresa G.M. Lebar
David S. Leigh
Corinne R. Lemieux
Keith R. Libert
Scott C. Lindvall
Katharine S. Little
Curtis D. Littleton
Barbara A. Livingston
Christer J. Loftenius
Stephen L. Lombardo
Ronald G. Long
Judy A. Lopas
Barner D. Loucks
Pamela D. Lucas
Stephen B. Lucas
Milena M. Macesich
David V. Maglietta
Paul A. Magnani
Lonnie W. Mansell
Anthony J. Martin
Hamid Masood
Jeffrey M. Matthews
John J. Maurer
Kevin P. McCartney
Richard F. McCartney
Mary A. McCaskey
Daniel C. McCormack
Veronica A. McFarland
Kevin B. McGillicuddy
Kara A. McGuirk
Lawrence W. McKenna
David W.A. McMullin
Norman C. Meek
Monty Mehlhorn
Douglas B. Mendelson
Javier J. Meneses-Rocha
Paul E. Meriney

(continued on p. 15)

Student Associates (continued)

Elise B. Mezger
Asta Miklius
Kenneth W. Milender
Jean-Luc R. Miossec
Kim R. Montanez
Daniel K. Moore
Martin V. Moran
Julia K. Morgan
Stephanie A. Mosher
Chris Mousley
Gerald J. Murphy
Mark A. Naughton
Kerrie E. Neet
Stephen T. Nelson
William M. Nelson
Brigitte P. Neus
Virginia A. Newbern
Lynda S. Nicholson
Dru R. Nielson
Elliot J. Nightingale
Michael A. Nix
Thomas E. Noce
Michael D. Noll
Christopher C. Nyce
Jennifer A. O'Brien
James C. Ohman
Daniel L. Orange
Michael H. Ort
Craig W. Oyen
David G. Palais
John M. Pandolfi

Phillip A. Pappano, Jr.
Vikram S. Patel
Joseph D. Peterlin
Bruce D. Peterman
Daniel E. Peterson
Don J. Pettit
Randall F. Pfahler
Deborah S. Pfeiffer
Robert B. Pharr
Aaron R. Phillips
Andrew T. Phillips
Lyle V. Phillips
Mark E. Phillips
Perri A. Phillips
Victoria A. Phillips
Steven W. Pierce
Laurie A. Piskura
Walter E. Pittman, Jr.
Walter J. Pochron
Roland D. Pool
Michael B. Portnoy
Jeffrey M. Prewitt
Lance B. Prothro
Kenneth R. Puentes
Tina Quo
Judith K. Radloff
Anthony J. Ranalli
Frank R. Rancadore
Joris B. Rapelje
Brian C. Reed
Michael K. Regan

Chris E. Reinheimer
Paul R. Renne
Charles E. Reynolds
Jeremy P. Richards
Jon L. Riedel
Peter E. Riemersma
John R. Rihs
Greg W. Riley
John A. Ring
Zein E. Rizk
Lance C. Robert
Susan M. Roberts
Bret A. Robinson
David M. Ronnei
Bruce C. Ross
Eric A. Roth
Marilyn K. Rothstein
William D. Rowe, Jr.
Julie L. Rowen
Michael W. Ruddy
Scott H. Rugg
Silvio J. Sandino
Marc W. Sanford
Gultekin Savci
Lawrence W. Schenmeyer
Eric B. Schmidley
Jack C. Schmidt
David A. Schneider
Robert V. Schneider
David S. Shafer
Erik A. Shamberger
Gerald L. Sharp
Joyce L. Sheridan
Judith M. Sheridan

Robert L. Shipman
Frank E. Shore
Thomas A. Siewert
Neil S. Simmons
Taeyoung S. Song
Steven R. Spengler
Timothy M. Stepp
Michael R. Stevens
Lisa L. Stillings
John P. Stimac
Thomas M. Stodd
Gary P. Straub
Ruth A. Strauss
Georgiana L. Strickland
Elizabeth D. Stroock
Joseph H. Summerour, Jr.
Kenneth C. Summerour
Robin L. Sweeney
Brian L. Tanaka
Sara E. Tarr-Weaver
Rick R. Tate
Doug S. Taylor
Gary L. Thompson
Michael T. Towle
Paul J. Treble
Jacques Trottier
Lori K. Tuck
Bruce N. Turbeville
Julianne M. Turko
Kenneth C. Tyson
James W. Vallance
Gregory T. Van
Christel Van Den Bogaard
Karl M. Villemez

David L. Violette
Sandi C. Wang
Weiyang J. Wang
W. Bruce Ward
Scott J. Weber
Matthias Weger
Alan Werner
Rachel L. Werner
Susan B. Werner
Christopher E. Wernicke
David L. West
Charlene K. White
Jack H. White
Wendi J. Whitehead-Williams
Ian J. Whyte
Nasraldean A. Widatalla
Greg C. Wiles
Debra A. Willard
Sheryl E. Williams
Thomas J. Williams
Jacqueline Windh
Richard B. Winston
Michael J. Wood
Robert A. Wood
Michael A. Woplat
Julie I. Wulff
Richard L. Wunderman
Brian K. Yamamura
An Yin
Evelyn Zeman
Shihua Zhao
J. David Zuber
Dennis R. Zurn

GSA REVIEWS IN ENGINEERING GEOLOGY VI MAN-INDUCED LAND SUBSIDENCE

Edited by Thomas L. Holzer

Every earth scientist should be keenly interested in the timely and important subject of this GSA volume. Land subsidence has been caused by man in at least 37 states of the U.S.A. It affects an aggregate area of more than

MAN-INDUCED LAND SUBSIDENCE



EDITED BY THOMAS L. HOLZER

40,000 km² and may cost the nation as much as \$100 million annually.

This review includes nine papers in three categories: (1) Fluid withdrawal from porous media; (2) Drainage of organic soil; and (3) Collapse into man-made and natural cavities.

Hardbound in 8½" x 11" format, 231 pages, in illustrated dust cover. ISBN 0-8137-4106-8. \$28.00

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THE GEOLOGICAL SOCIETY OF AMERICA

Final Announcement
South-Central Section, GSA, 21st Annual Meeting

Waco, Texas
March 30-31, 1987

The South-Central Section of the Geological Society of America will meet at the Waco Convention Center and adjoining Hilton Hotel, together with the Pander Society and the Texas Section of the National Association of Geology Teachers. The meeting is sponsored by the Geology Department of Baylor University.

Local Committee: *Chairman:* Rena M. Bonem; *Technical Program Chairmen:* Don F. Parker; *Field Trip Co-chairman:* O. T. Hayward and Joe Yelderman. All are at the Department of Geology, Baylor University, Waco, TX 76798, (817) 755-2361.

REGISTRATION

Registration is required for all persons participating in any event, including technical sessions, symposia, exhibits, planned social events, and field trips.

Preregistration. You are urged to register in advance to aid the local committee in making final plans. A discount is offered to those who preregister using the accompanying forms before February 20, 1987. Preregistration is required for those who plan to attend field trips or guest/spouse activities.

Complete the preregistration form and return it with check or money order in U.S. funds (made payable to South-Central Section GSA 1987 Annual Meeting) to **South-Central GSA, Department of Geology, Baylor University, Waco, TX 76798. Preregistration must be postmarked no later than February 20, 1987,** to qualify for discounted registration rates. Refunds on canceled registration will be made until February 20, 1987. After that date, no refunds will be made except for field trips that are canceled or oversubscribed.

On-Site Registration. Registration and pick-up of meeting materials will be from 3 to 8 p.m. on Sunday, March 29, 1987, in the lobby of the Waco Hilton. On Monday and Tuesday, March 30 and 31, registration will be held from 8 a.m. to 5 p.m. in the lower level of the Waco Convention Center.

WELCOMING PARTY

A welcoming party for those attending the meeting will be held Sunday evening, March 29, from 8 to 10 p.m. The party will be held adjacent to the Waco Hilton on the historic Waco Suspension Bridge over the Brazos River. In case of inclement weather, the party will be held in the Waco Hilton.

TECHNICAL PROGRAM

Technical sessions on a variety of topics and symposia will be presented on Monday and Tuesday, March 30 and 31. Symposia topics will include

1. **Conodont Biozones—Evolutionary or Environmental Control.** Sponsored by the Pander Society. Robert Grayson and Glen Merrill.
2. **Paleoecology of Mesozoic Reptiles.** James O. Farlow.
3. **Southern Oklahoma Aulacogen.** William G. Brown.
4. **Edwards Limestone-dominated Landscape: Form, Process, and Evolution.** O. T. Hayward.
5. **Edwards Aquifer Problems.** Joe Yelderman.
6. **Stratigraphic and Structural Development of the East Texas Basin.** H. H. Beaver and Chris Hayward.
7. **Late Paleozoic Sedimentary Facies: Relationship Between Cyclic Sedimentation and Diagenesis.** Robert Grayson.

STUDENT AWARDS

The South-Central Section will present three cash awards (\$200, \$100, and \$50) for the best student papers. Only papers written and presented by students will be eligible.

FIELD TRIPS

Field trip participants must preregister for the meeting. Field trip registration is on a first-come, first-served basis. If a trip is oversubscribed or canceled, the field trip fee will be refunded. **Preregistration for field trips, accompanied by full payment, must be postmarked by February 20, 1987.** Requests for refunds will be honored until that date. Trips may be canceled by the South-Central Section if registration is insufficient or for reasons beyond our control. Notification of cancellation will be made if possible by March 15. All field trips will depart from the Waco Hilton unless otherwise noted.

Premeeting Trips

1. **Early and Late Paleozoic Conodont Faunas of the Llano Uplift Region, Central Texas—Biostratigraphy, Systemic Boundary Relationships, and Stratigraphic Importance.** This field trip provides an opportunity to collect stratigraphically significant conodont faunas from Cambrian-Ordovician, Early Mississippian, Mississippian-Pennsylvanian, and Middle Pennsylvanian stratigraphic units of the Llano Uplift region in central Texas. Special emphasis will be given to (1) the potential of the Llano Uplift Cambrian-Ordovician succession as a boundary stratotype, (2) conodont evidence for conformity at the Mississippian-Pennsylvanian boundary and the diachronous development of the lower Marble Falls carbonate platform, and (3) application of conodont lineages and biofacies to resolution of Carboniferous stratigraphic problems.

Leaders: Robert C. Grayson, Jr., Baylor University, Waco, Texas 76798, phone (817) 755-2361; Glen K. Merrill, University of Houston—Downtown; James F. Miller, Southwest Missouri State University, Springfield.

Dates: March 28 and 29, 1987. **Departure time:** 7:30 a.m., March 28. **Cost:** \$120, includes guidebook, 2 lunches, transportation, and 2 nights lodging (based on double occupancy).

Limit: 40 participants.

2. **Lower Cretaceous Dinosaur Footprints of the Paluxy River Valley, Somervell County, Texas.** This one-day field trip will visit the classic dinosaur track sites in and around Dinosaur Valley State Park, Glen Rose, Texas. Topics to be considered in the field include the stratigraphy of the footprint sites, the kinds of dinosaurs represented in the ichnofauna, factors affecting footprint morphology, and information about dinosaur locomotion and behavior ascertained from trackways.

Leader: James O. Farlow, Indiana University—Purdue University at Fort Wayne, Fort Wayne, Indiana 46805, phone (219) 481-6251.

Date: March 29, 1987.

Cost: \$60, includes guidebook, lunch, and transportation.

Limit: 20 participants.

(continued on p. 17)

South-Central Section Annual Meeting (continued)

3. Hydrogeology of the Edwards Aquifer in the Northern Balcones and Washita Prairie Segments. The Edwards and associated limestones form one of the major aquifers in Texas. The Edwards Limestone is the principal water-bearing unit in the Edwards Plateau and along the Balcones fault zone. The Balcones Edwards aquifer is no longer considered a major aquifer north of Salado, Texas, but the Edwards Limestone continues to the northwest where it crops out in the Washita Prairie and Lampasas Cut Plain. Participants will examine the hydrogeology along this transition zone, comparing and contrasting the transition zone with the area to the south. Stops will include several major historical springs.

Leaders: Raymond M. Slade, Jr., USGS, Austin, Texas; John M. Sharp, Jr., University of Texas, Austin; Charles M. Woodruff, Jr., Austin, Texas; Joe C. Yelderman, Jr., Baylor University, Waco, Texas 76798, phone (817) 755-2361.

Dates: March 28 and 29, 1987.

Cost: \$130, includes guidebook, 2 lunches, banquet dinner, transportation, and lodging for Saturday night (double occupancy at Stagecoach Inn in Salado).

Limit: 40 participants.

Postmeeting Trips

4. Pre-Pennsylvanian Geology of the Arbuckle Mountain Region, Southern Oklahoma. Participants will study outcrops of pre-Pennsylvanian rocks in the Arbuckle Mountain region of southern Oklahoma. Emphasis will be on the depositional history and structural development of the Arbuckle Anticline and Tishomingo Uplift. Particular attention will be given to the development of local structures as evidence of the regional structural style. Changes in the depositional history of the area will be discussed, and the role stratigraphy played in controlling bedding-plane thrusts will be demonstrated.

Leaders: Robert Laurry, Southern Methodist University, Dallas, Texas; William G. Brown, Baylor University, Waco, Texas 76798, phone (817) 755-2361.

Dates: Leave Waco Tuesday afternoon, March 31, and return Thursday afternoon, April 2.

Cost: \$120, includes guidebook, 2 lunches, transportation, and motel for 2 nights (double occupancy).

Limit: 40 participants.

5. Edwards-dominated Landscapes in the Lampasas Cut Plain: Form, Processes, and Evolution. "The Lampasas Cut Plain is the modified northern extension of the great Edwards Plateau.... It is a greatly dissected dip plain now recognizable by the general level of its many remnant summits, which dominate all the country south of the Brazos between the Western Cross Timbers and the Balcones Fault Zone" (Hill, 1901, p. 78). While for many years this land of buttes and mesas has been considered to be a product of a simple geomorphic history, recent work suggests that it reflects a far more complicated sequence of events. Within the cut plain are drainage systems with complex entrenched valleys, extensive erosional surfaces apparently unrelated to modern drainage, and alien alluvial soils in unusual physiographic positions. Most of these features appear to have implications far beyond the area of the cut plain. The purpose of this trip is to see the cut plain in typical development, to consider its geomorphic development, and to introduce questions yet unanswered, but of major importance in the study of landscape evolution.

Leaders: P. M. Allen and O. T. Hayward, Baylor University, Waco, Texas 76798, phone (817) 755-2361.

Dates: Leave Waco at 8 a.m., Wednesday, April 1, and return at 5 p.m., Thursday, April 2.

Cost: \$100, includes guidebook, transportation, 2 lunches, banquet, and lodging for one night (double occupancy, Holiday Inn, Brownwood, Texas).

Limit: 20 participants.

PUBLICATIONS

Additional copies of *Abstracts with Programs* for the meeting and a limited number of field trip guidebooks may be purchased at the registration desk. After the meeting, remaining guidebooks may be purchased from the Department of Geology, Baylor University, Waco, TX 76798.

PROJECTION EQUIPMENT

All slides used in presentations must be 2" x 2" and fit in a standard 35-mm carousel tray and projector. Only one projector and screen will be provided in each meeting room. Please plan your presentations accordingly and bring your own loaded carousel tray (80-slide capacity only) if possible. A technical assistance and speaker preparation room will be available in Ranger Room #3 of the Waco Convention Center from 8 a.m. to 5 p.m. on Monday and Tuesday.

EXHIBITS

Exhibits of geological books, equipment, and research and educational materials will be on display during the meeting in Texas Room #2 of the Waco Convention Center. Rental fees for single (8' x 8') exhibit booths will be \$125. Larger booths will also be available. Special rates are available for nonprofit organizations and educational institutions. For additional information, contact H. H. Beaver, Department of Geology, Baylor University, Waco, TX 76798, phone (817) 755-2361.

SPECIAL EVENTS

GSA South-Central Section Annual Banquet, Monday, March 30, 7:30 p.m.

Department Chairmen Breakfast, Tuesday, March 31, 7 a.m.

Pander Society Luncheon, Tuesday, March 31, 12 noon.

NAGT Texas Section Luncheon, Tuesday, March 31, 12 noon.

GSA South-Central Section Management Board Meeting, Sunday, March 29, 6 to 8 p.m. in the Huaco Room, Waco Convention Center.

GSA South-Central Section Business Meeting, Monday, March 30, 4 p.m.

GUEST/SPOUSE ACTIVITIES

The following activities have been planned for guests of spouses of convention participants. **Preregistration is required by February 20, 1987.**

1. **Salado Shopping Spree.** Participants will visit antique stores and arts and crafts shops in scenic Salado and have lunch in the historic Stagecoach Inn.

Date: Monday, March 30, 9 a.m. to 2:30 p.m. Leaves from the Waco Convention Center.

Cost: \$25, includes transportation to Salado, lunch, and return to Waco.

Limit: 40 participants.

2. **Field Trip for People Who Learn Geology by Osmosis.** This look at urban geology of the Waco area will be led by Baylor geology students. Please dress appropriately for weather and casual walking over broken ground.

(continued on p. 18)

South-Central Section Annual Meeting (continued from p. 17)
Date: Tuesday, March 31, 9 a.m. to 2 p.m. Leaves from the Waco Convention Center.
Cost: \$15, includes transportation and box lunch.
Limit: 40 participants.

TRAVEL

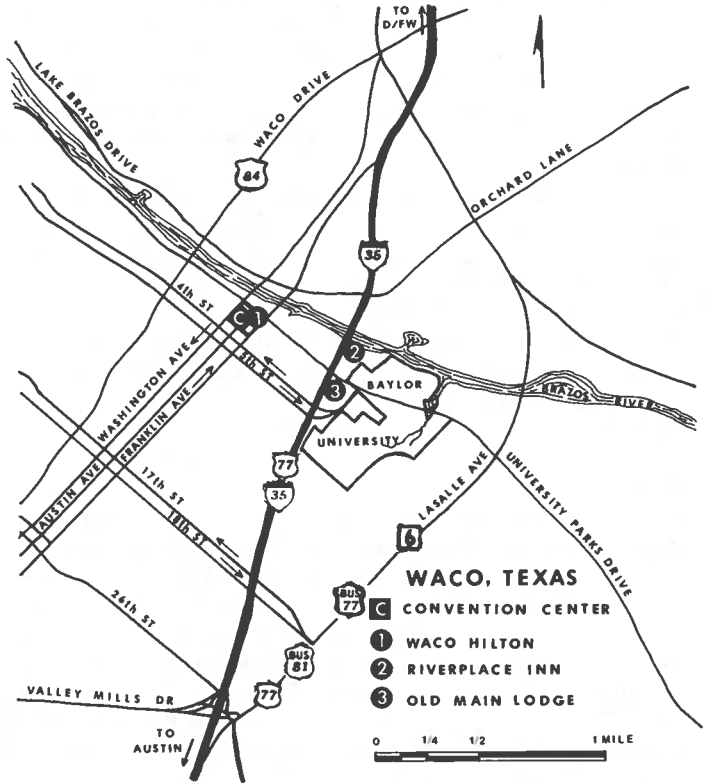
Waco is conveniently located on Interstate 35 between the Dallas-Fort Worth Metroplex and Austin. Greyhound and Continental Trailways bus service is available. Air service to Waco is provided from Dallas/Fort Worth Airport by American Eagle and Rio Airways. In addition, the Waco Eagle shuttle van travels between Dallas-Fort Worth and Waco; call (817) 772-0430 for information or reservations.

HOUSING

Several hotels and motels are available in the Waco area. Special rates for convention participants have been arranged at the Waco Hilton (headquarters hotel), the Riverplace Inn, and Old Main Lodge. Reservations may be made by contacting the hotel directly or through the Waco Convention Center by using the accompanying form. **Reservations through the Convention Center must be made prior to February 27, 1987.**

1. **Waco Hilton** (headquarters hotel), located adjacent to the Convention Center in downtown Waco. This is the only hotel within easy walking distance of the Convention Center and will be the location of many special events. At 113 South University Parks Drive, Waco, TX 76701; phone (817) 754-8484, or toll-free 1-800-HILTONS. **Rates: \$50 single; \$60 double, triple, or quad.**
2. **Riverplace Inn**, located on the Brazos River at 101 N. Interstate 35 and Lake Brazos Drive, Waco, TX 76704, across from the Texas Ranger Hall of Fame and Ft. Fisher. Free continental breakfast. Phone (817) 752-8222, or Texas toll-free 1-800-792-3267. **Rates: \$30 standard single with a double bed for 1 or 2, \$36 single, double, triple, or quad with 2 double beds and balcony overlooking Brazos River.**

3. **Old Main Lodge** (Best Western), located off the 5th Street exit of Interstate 35 adjacent to Baylor University and 4 blocks (0.6 mile) from the Convention Center. Extra-large rooms with queen-size beds. Free continental breakfast. At 215 Dutton Ave., P.O. Box 174, Waco, TX 76701, phone (817) 753-0316, or toll-free 1-800-528-1234. **Rates: \$30 single; \$34 double, triple, or quad.**



HOUSING FORM

South-Central Section, GSA, March 30-31, 1987, Waco, Texas

DEADLINE FOR RESERVATIONS: February 27, 1987

Please type or print the information required below. Complete only ONE form for EACH room requested. Confirmations will be sent by the hotel to the first person listed on the form unless you specify otherwise. Telephone reservations cannot be made through the Waco Convention Center, and no reservations will be accepted after February 27, 1987. Requests made after that date must be made directly to the hotel, are subject to room availability, and may not qualify for the convention rates. Cancellations must be made at least 48 hours prior to scheduled arrival. Credit card or first-night deposit will be required by the hotel to guarantee reservations.

Name _____

Address _____

_____ city _____ state _____ ZIP code _____

Phone (____) _____

Hotel/motel choices: _____ Type of room desired (circle one)

1st choice: _____ Single Double Triple Quad

2nd choice: _____ Single Double Triple Quad

Arrival date: _____ Time: _____ a.m. or p.m.

Departure date: _____ Time: _____ a.m. or p.m.

Others staying in room: Name: _____

Address _____

Name: _____

Address _____

Name: _____

Address _____

Credit card information for guaranteed reservation (check one)

American Express Diners Club VISA MasterCard

Name of cardholder: _____

Address for billing: _____

Credit card number: _____ Exp. date _____

Signature _____

Mail completed housing form to

SC GSA Reservations
 Waco Convention Bureau
 P.O. Box 2570
 Waco, TX 76702-2570

PREREGISTRATION FORM

South-Central Section, GSA, 21st Annual Meeting
March 30-31, 1987, Waco, Texas

IMPORTANT

1. Full payment must accompany registration.
2. Register one: professional, student, spouse/guest per form.
3. Your check will be your receipt. Copy this form for your records. If you wish acknowledgment of your preregistration, please enclose a self-addressed, stamped envelope.
4. Preregistration deadline: **Must be postmarked no later than February 20, 1987.** Preregistration deadline for field trips and guest/spouse activities is also February 20, 1987.

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Amount _____	
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Preregistration (before February 20, 1987)

GSA member	\$ 30	
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GSA member	\$ 34	
Non-GSA member	\$ 39	
GSA Student Associate	\$ 11	
Non-GSA student	\$ 14	

Spouse/guest	\$ 5	
GSA South-Central Section Banquet (March 30)	\$ 15	
Pander Society Luncheon (March 31)	\$ 8	
NAGT Texas Section Luncheon and Meeting (March 31)	\$ 8	
Department Chairmen Breakfast (March 31)	\$ 6	

Field Trips and Spouse/Guest Activities

(Preregistration deadline is February 20, 1987)

Premeeting Field Trips

1. Early and Late Paleozoic Conodont Faunas (March 28-29)	\$120	
2. Lower Cretaceous Dinosaur Footprints (March 29)	\$ 60	
3. Hydrogeology of the Edwards Aquifer (March 28-29)	\$130	

Postmeeting Field Trips

4. Pre-Pennsylvanian Geology of the Arbuckle Mountains (March 31-April 2)	\$120	
5. Edwards-dominated Landscapes (April 1-2)	\$100	

Spouse/Guest Activities

1. Salado Shopping Spree (March 30)	\$ 25	
2. Field Trip for People Who Learn Geology by Osmosis (March 31)	\$ 15	

TOTAL FEES \$ _____

Enclose check or money order, U.S. funds only, made payable to South-Central Section GSA, 1987 Annual Meeting

PREREGISTRATION FORMS MUST BE POSTMARKED NO LATER THAN FEBRUARY 20, 1987

Full refunds on canceled registrations will be made until February 20, 1987. After that date, no refunds will be made except for canceled field trips. Mail completed registration forms and fee remissions to

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A-2: Kodiak to Kuskokwim, Alaska

R. von Huene, S. Box, B. Detterman, M. Fisher, C. Moore, H. Pulpan, 1985. One sheet in color each 55" x 41"

TRA A-2 Rolled \$9.50; folded \$7.50

B-1: Intermontane Belt (Skeena Mountains) to Insular Belt (Queen Charlotte Islands)

C.J. Yorath, G.J. Woodsworth, R.P. Riddihough, R.G. Currie, R.D. Hyndman, C.G. Rogers, D.A. Seemann, A.D. Collins, 1985. Two sheets in color, each 52" x 39"

TRA B-1 Rolled \$17.00; folded \$15.00

B-2: Juan de Fuca Plate to Alberta Plains

J.W.H. Monger, R.M. Clowes, R.A. Price, P.S. Simony, R.P. Riddihough, G.J. Woodsworth, 1985. Two sheets in color, each 55" x 40"

TRA B-2 Rolled \$17.00; folded \$15.00

B-3: Juan de Fuca Spreading Ridge to Montana Thrust Belt

D.S. Cowan, C.J. Potter, 1985. Three sheets in color, each 50" x 40"

TRA B-3 Rolled \$26.30; folded \$24.30

C-2: Central California Offshore to Colorado Plateau (San Francisco to Socorro)

J. Saleeby and others, 1986. Two sheets in color, 40½" x 56"

TRA C-2 Rolled \$18.20; folded \$16.20

C-3: Pacific Abyssal Plain to the Rio Grande Rift

D.G. Howell, J.D. Gibson, G.S. Fuis, J.H. Knapp, G.B. Haxel, B.R. Keller, L.T. Silver, J.G. Vedder, 1985. Three sheets in color, each 54½" x 41"

TRA C-3 Rolled \$24.50; folded \$22.50

D-1: Northern Appalachian: (West sheet) Grenville Province, Quebec, to Newfoundland. (East sheet) Rifted Margin Offshore Northeast Newfoundland

R.T. Haworth, H. Williams, C.E. Keen, 1985. Two sheets in color, each 56½" x 41"

TRA D-1 Rolled \$17.00; folded \$15.00

D-2: Transform Margin South of Grand Banks: Offshore Eastern Canada

C.E. Keen, R.T. Haworth, 1985. One sheet in color, 38" x 57"

TRA D-2 Rolled \$ 9.50; folded \$ 7.50

D-3: Rifted Continental Margin Off Nova Scotia: Offshore Eastern Canada

C.E. Keen, R.T. Haworth, 1985. One sheet in color, 38" x 57"

TRA D-3 Rolled \$ 9.50; folded \$ 7.50

D-4: Rifted Continental Margin Off Labrador

C.E. Keen, R.T. Haworth, 1985. One sheet in color, 32" x 54½"

TRA D-4 Rolled \$ 9.50; folded \$ 7.50

G: Canadian Arctic, Somerset Island to Canada Basin

J.F. Sweeney and others, 1986. Two sheets in color, 40½" x 57", with 5-page text

TRA G Rolled \$19.40; folded \$17.40

VOLUMES

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Four topical volumes prepared by four of GSA's discipline-oriented Divisions.

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edited by Ellen T. Drake and William M. Jordan, 1985.

GSV-1, 520 p., ISBN 0-8137-5301-5, CIP, hard bound \$37.50

Centennial Field Guides

Six volumes prepared by each of the six sections of GSA describing 100 outstanding geologic localities within that Section.

Centennial Field Guide, Volume 6, Southeastern Section of GSA.

edited by T.L. Neathery, 1986.

CFG-6, 477 p., ISBN 0-8137-5406-2, CIP, hardbound \$40.50

Geology of North America

The centerpiece of the DNAG project, a modern synthesis of the geology and geophysics of North America and adjacent oceanic regions.

Geology of North America, Volume M, The Western North Atlantic Region.

edited by P.R. Vogt and B.E. Tucholke, 1986.

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MEETINGS

(Asterisk indicates new or changed information)

American Current Research on Fluid Inclusions, January 5-7, 1987, Socorro, New Mexico. Information: David I. Norman, Dept. of Geoscience, New Mexico Institute of Mining and Technology, Socorro, NM 87801; (505) 835-5404.

Palaeoenvironment of East Asia—2nd International Conference, January 9-14, 1987, Hong Kong. Information: E.K.Y. Chen, Centre of Asian Studies, University of Hong Kong, Hong Kong.

Hawaii Symposium on How Volcanoes Work, January 19-23, 1987, Hilo, Hawaii. Information: Robert Decker, U.S. Geological Survey, MS 910, 345 Middlefield Rd., Menlo Park, CA 94025.

International Symposium on Granites and Associated Mineralizations, January 21-31, 1987, Salvador, Brazil. Information: Augusto J. Pedreira, ISGAM, SME-CPM, Rua Ceara, 3-Pituba, 40.000, Salvador, Bahia, Brazil.

Canadian Reef Research Symposium, January 27-30, 1987, Banff, Alberta, Canada. Information: Canadian Reef Research Symposium, University of Calgary, Conference Office, 2500 University Dr. N.W., Calgary, Alberta T2N 1N4, Canada.

Sinkholes and the Environmental Impacts of Karst—2nd Multidisciplinary Conference, February 9-11, 1987, Orlando, Florida. Information: Barry F. Beck, College of Engineering, University of Central Florida, Orlando, FL 32816.

***6th Annual Symposium on Caribbean Geology**, February 11-15, 1987, Mayaguez, Puerto Rico. Information: James Joyce, Dept. Geology, University of Puerto Rico, Mayaguez, PR 00708; (809) 834-4040, ext. 3452.

Energy-sources Technology Conference, February 15-19, 1987, Dallas, Texas. Information: American Society of Mechanical Engineers, Meetings Dept., 345 E. 47th St., New York, NY 10017; (212) 705-7057.

Prospectors and Developers Association of Canada 55th Annual Convention, March 8-11, 1987, Toronto, Ontario. Information: Susan Sikala, Prospectors and Developers Association, Suite 420, 74 Victoria St., Toronto, Ontario M5C 2A5, Canada; (416) 362-1969.

***U.S. Geological Survey Third Annual McKelvey Forum**, on all aspects of mineral resources research in the U.S. Geological Survey, March 11-12, 1987, Denver, Colorado. Information: Buhler and Abraham, Inc. (Forum organizers), (301) 681-3980.

18th Annual Lunar and Planetary Science Conference, March 16-20, 1987, Houston, Texas. Information: Pamela Jones, 3303 NASA Rd. 1, Houston, TX 77058; (713) 486-2150.

***Ninth Geophysical Convention of Turkey**, March 23-27, 1987, Ankara, Turkey. Information: TMMOB Jeofizik Mühendisleri Odasi,

(continued on p. 22)

GSA
MEMOIR 162

The Caribbean- South American Plate Boundary and Regional Tectonics

EDITED BY WILLIAM E. BONINI,
ROBERT B. HARGRAVES, AND
REGINALD SHAGAM

The fact that the debate continues on the evolution of the Caribbean plate and its borderlands is reflected in the 28 papers included in this volume. Some authors postulate a distant Pacific source for Caribbean crust; others consider the geometry, timing, and effects of collision; still others view the process of evolution from the vantage point of the craton, from the time prior to collision, through the ensuing orogeny caused by collision, to the youngest phases of Plio-Pleistocene time.

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Meetings (continued from p. 21)

Türkiye Jeofizik Bilimsel ve Teknik Kurultayı, Yürütme Kurulu, Bayindir Sok. 7/14. P.K. 255, Kizilay-Ankara, Turkey.

Seismological Society of America Annual Meeting, March 25-27, 1987, Santa Barbara, California. Information: SSA Headquarters, 6431 Fairmount Ave., Suite 7, El Cerrito, CA 94350; (415) 525-5474.

Workshop to Develop Scientific Drilling Initiatives in the South Atlantic and Adjacent Southern Ocean, April 6-8, 1987, Woods Hole, Massachusetts. Information: J. A. Austin, Jr., Inst. for Geophysics, University of Texas, 4920 North I.H. 35, Austin, TX 78751.

***23rd Annual Symposium on Engineering Geology and Soils Engineering**, April 6-9, 1987, Logan, Utah. Information: James McCalpin, Department of Geology, Utah State University, Logan, UT 84322-0705; (801) 750-1273.

7th Biannual Petroleum Conference of Turkey, April 6-10, 1987, Ankara, Turkey. Information: Necdet Pamir Türkiye, Petrolleri A.O. Üretim Grubu Müdafaa Cad. No: 22 Bakanlıklar, Ankara, Turkey; telephone 17 91 60/453-553.

Phanerozoic Ironstones and Related Deposits, April 7-8, 1987, Sheffield, England. Information: Gordon Taylor, Dept. of Science, Luton CHE, Park Square, Luton LU1 3JU, England.

Mathematical Geologists of the United States 1987 Conference, Emerging Concepts, April 13-15, 1987, Redwood City, California. Information: Harry M. Parker, Fluor Engineering, Inc., 10 Twin Dolphin Dr., Redwood City, CA 94065.

Society of Economic Paleontologists and Mineralogists Permian Basin Section Spring Field Conference, April 29-May 2, 1987. Information: Chris Chandler, P.O. Box 2990, Midland, TX 79702; (915) 675-0575.

Analysis of Naturally Fractured Reservoirs, May 4-8, 1987, Snowbird, Utah. Information: Jane Rider, AAPG Education Dept., P.O. Box 979, Tulsa, OK 74101-0979; (918) 584-2555.

***10th Annual Spring Systematics Symposium**, Evolutionary Ideas of Progress, May 9, 1987, Chicago, Illinois. Information: Matthew H. Nitecki, Field Museum of Natural History, Roosevelt Rd. at Lakeshore Dr., Chicago, IL 60605-2496; telephone (312) 922-9410.

Institute on Lake Superior Geology Annual Meeting, May 11-14, 1987, Wawa, Ontario. Information: E. D. Frey, P.O. Box 57, Wawa, Ontario P0S 1K0, Canada; (705) 856-2396.

Coastal Sediments '87, May 12-14, 1987, New Orleans, Louisiana. Information: Nicholas C. Kraus, USAE Waterways Experiment Station, Coastal Engineering Research Center, P.O. Box 631, Attn. WESCR-P, Vicksburg, MS 39180-0631.

Midwest Friends of the Pleistocene Annual Meeting, May 15-17, 1987, Mansfield, Ohio. Information: John P. Szabo, Dept. of Geology, University of Akron, Akron, OH 44325; (216) 375-7630.

International Geoscience and Remote Sensing Symposium, May 18-21, 1987, Ann Arbor, Michigan. Information: Joan Eadie, Secretariat, University of Michigan Extension Service, Dept. of Conferences and Institutes, 200 Hill St., Ann Arbor, MI 48104-3297.

Coastal Lowlands Symposium: Geology and Geotechnology, May 25-27, 1987, The Hague, Netherlands. Information: Coastal Lowlands Symposium, c/o CONGREX, Keizersgracht 610, 1017 EP Amsterdam, The Netherlands; Telex NL-14527.

Geological Association of Canada-Mineralogical Association of Canada Annual Meeting, May 25-27, 1987, Saskatoon, Saskatchewan. Information: W. O. Kupsch, Dept. of Geological Sciences, University of Saskatchewan, Saskatoon, Saskatchewan S7N 0W0, Canada; (306) 966-5696.

28th U.S. Symposium on Rock Mechanics, June 29-July 1, 1987, Tucson, Arizona. Information: 28th U.S. Symposium on Rock Mechanics, Special Professional Education, Box 9, Harvill Bldg., University of Arizona, Tucson, AZ 85721; (602) 621-5104 or 621-3054.

First International Congress, Geochemistry and Cosmochemistry, June 30-July 6, 1987, Paris, France. Information: C. J. Allegre, Lab. de Géochimie et Cosmochimie, 4 place Jussieu, Tour 14, 3 étage, 75252 Paris Cedex, France; telephone 43.54.84.63.

***Growth of Continental Crust** workshop, July 13-17, 1987, Oxford, England. Information: Pamela Jones, Lunar and Planetary Institute, 3303 NASA Road 1, Houston, TX 77058.

Second Symposium on the South Atlantic Evolution, July 23-25, 1987, Rio de Janeiro, Brazil. Information: Dimas Dias-Brito, PETROBRAS/CENPES, Ilha do Fundão, Quadra 7, Rio de Janeiro - 21.910 - Brazil; and P. Y. Berthou, Lab. de Géologie des Bassins Sédimentaires, Tour 14-15, 4 étage, 4 place Jussieu, 75252 Paris Cedex 05, France.

Tectonic Setting of Layered Intrusives, July 27-28, 1987, Pretoria, South Africa. Information: Secretary, Indaba Organising Committee, Dept. of Geology, University of Pretoria, Pretoria, South Africa.

4th International Congress of the Regional Committee on Pacific Neogene Stratigraphy (affiliated with IUGS) and joint meeting of **IGCP Project 246**, July 29-31, 1987, Berkeley, California. Information: Charlotte Brunner, Chairperson of Organizing Committee, Dept. of Paleontology, University of California, Berkeley, CA 94720.

5th Magmatic Sulphide Field Conference, August 3-13, 1987, Zimbabwe. Information: A. Martin, Geological Society of Zimbabwe, P.O. Box 8427, Causeway, Harare, Zimbabwe.

International Symposium on Erosion and Sedimentation in the Pacific Rim, August 3-7, 1987, Corvallis, Oregon. Information: 1987 Corvallis Symposium, Conference Coordinator, College of Forestry, Oregon State University, Corvallis, OR 97331; (503) 754-2004.

7th International Conference on Basement Tectonics, August 17-21, 1987, Kingston, Ontario, Canada. Information: Bob Mason, c/o Events Management Inc., 4 Cataragui St., Suite 209, Kingston, Ontario K7K 1Z7, Canada; (613) 547-5093.

Society of Economic Paleontologists and Mineralogists Fourth Annual Midyear Meeting, August 20-23, 1987, Austin, Texas. Information: SEPM, P.O. Box 4756, Tulsa, OK 74159; (918) 743-9765.

XVI Pacific Science Congress, August 20-30, 1987, Seoul, Korea. Information: Choon Ho Park, XVI Pacific Science Congress, K.P.O. Box 1008, Seoul 110, Korea; telephone (2) 733-4478; Telex ILSKOR 23881.

***International Symposium on Nonmarine Cretaceous Correlations**, August 25-30, 1987, Urumqi, China. Information: Shen Yanbin, Nanjing Institute of Geology & Paleontology, Nanjing, People's Republic of China; or Niall J. Mateer, 1467 N. 17th, Laramie, WY 82070.

(continued on p. 24)

SPECIAL PAPERS

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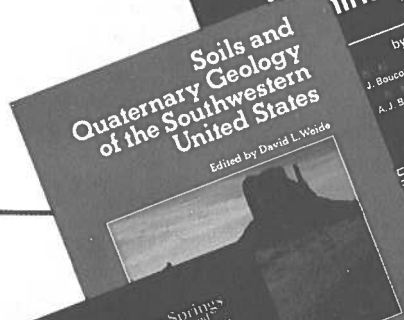


Correlation of the Silurian Rocks of China

by Mu En-zhi, A. J. Boucot, Chen Xu, Rong Jia-yu
 edited by A. J. Boucot and W.B.N. Berry, 1986

A comprehensive compilation of information relevant to the correlation of the Chinese Silurian rocks by means both of fossils and physical data available through 1980 is presented.

Special Paper 202, 88 pages plus pocket plate, illustrated,
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Soils and Quaternary Geology of the Southwestern United States

edited by David L. Weide, 1985

Five papers explore the pedogenic process of carbonate and clay accumulation of their rates and depths of formation. Three papers are a series of regional studies.

Special Paper 203, 158 pages, illustrated, ISBN 0-8137-2203-9,
 CIP, paperback \$20.00

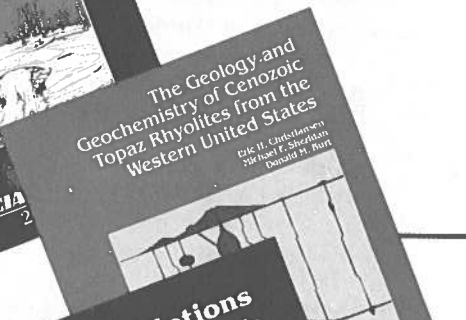


Mastodon-Bearing Springs and Late Quaternary Geochronology of the Lower Pomme de Terre Valley, Missouri

by C. Vance Haynes, Jr., 1985

Fourteen field sessions in the area have provided a radiocarbon-dated chronostratigraphic sequence in 4 terraces reflecting 5 major episodes of aggradation and degradation. Spring deposits within the terraces contain bone beds associated with peat lenses containing pollen, plant, and beetle remains, all of which have provided paleoecological data.

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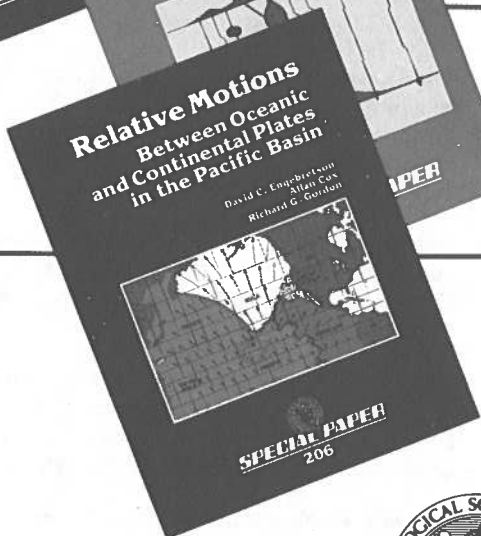


The Geology and Geochemistry of Cenozoic Topaz Rhyolites from the Western United States

by Eric H. Christiansen, Michael F. Sheridan, Donald M. Burt, 1986

High-silica, topaz-bearing rhyolites of Cenozoic age are widely distributed across the western U.S. and Mexico. In the U.S., their ages span much of the Cenozoic Era. Emplacement followed or was contemporaneous with calc-alkaline and basaltic magmatism in the Basin and Range province, along the Rio Grande rift, and in Montana.

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Relative Motions Between Oceanic and Continental Plates in the Pacific Basin

by David C. Engebretson, Allan Cox, and Richard G. Gordon, 1985

A model is presented for the displacement history between western North America, eastern Eurasia, and adjacent oceanic plates for the past 180 million years. The model uses a new determination for relative motion between the oceanic plates of the Pacific basin.

Special Paper 206, 64 pages, illustrated, ISBN 0-8137-2206-3,
 CIP, paperback \$12.50

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Meetings (continued from p. 22)

International Congress on Geology, Structure, Mineralization, and Economics of the Pacific Rim, August 26-29, 1987, Queensland, Australia. Information: C/-Aus. IMM Congress Secretariat, P.O. Box 731, Toowoong 4066, Queensland, Australia.

Sixth International Congress on Rock Mechanics, August 31-September 3, 1987, Montreal, Quebec, Canada. Information: J. Franklin, Dept. of Earth Sciences, University of Waterloo, Waterloo, Ontario N2L 3G1, Canada.

XI International Congress of Carboniferous Stratigraphy and Geology, September 7-11, 1987, Beijing, China. Information: Yang Jingzhi, Nanjing Institute of Geology and Paleontology, Academia Sinica, Nanjing, China.

International Workshop on Computerized Basin Analysis, September 7-12, 1987, Szeged, Hungary. Information: Laszlo Somos, Geological Survey of Hungary, Pf. 106, H-1442, Budapest, Hungary; telephone (36-1) 634 431; Telex 225 220 mafi h.

18th Annual Geomorphology Symposium on Catastrophic Flooding, September 26-28, 1987, Oxford, Ohio. Information: Larry Mayer, Dept. of Geology, Miami University, Oxford, OH 45056; (513) 529-3218.

International Conference on Geophysical and Geochemical Exploration for Minerals and Groundwater, September 27-October 1, 1987, Toronto, Ontario. Information: Exploration '87, c/o 222 Snidercroft Rd., Concord, Ontario L4K 1B5, Canada; (416) 669-2280; Telex 06-964570.

Fifth International Flint Symposium, September 27-October 2, 1987, Bordeaux, France. Information: 5th International Flint Symposium, Secrétaire General, c/o Michel Lenoir, Institut du Quaternaire, Batiment de Géologie, Avenue des Facultés, Université de Bordeaux I, 33405 Talence Cedex, France.

***Troodos 87: Ophiolites and Oceanic Lithosphere**, October 5-10, 1987, Nicosia, Cyprus. Information: Troodos 87 Symposium, Geological Survey Dept., Nicosia, Cyprus.

***Mathematical Methods in Geology**, 16th Annual Geochautauqua, October 12-16, 1987, Pribiam, Czechoslovakia. Information: V. Nemeč, Geindustria, Geologicka 2, 152 00 Praha 5, Barrandov, Czechoslovakia; telephone (42-2) 590228 or (42-2) 7811801.

Society of Economic Paleontologists and Mineralogists Gulf Coast Section 8th Annual Research Conference, Paleontological Applications in Petroleum Exploration, December 6-9, 1987, Houston, Texas. Information: Charles L. McNulty, Dept. of Geology, University of Texas, UTA Box 19049, Arlington, TX 76019; (817) 273-2979.

GSA 1987 Section Meetings

Northeastern Section, March 4-7, 1987, Pittsburgh, Pennsylvania
Southeastern Section, March 26-27, 1987, Norfolk, Virginia
South-Central Section, March 30-31, 1987, Waco, Texas
North-Central Section, April 30-May 1, 1987, St. Paul, Minnesota
Rocky Mountain Section, May 2-4, 1987, Boulder, Colorado
Cordilleran Section, May 20-22, 1987, Hilo, Hawaii

Annual Meeting, October 26-29, Phoenix, Arizona

Penrose Conferences

Geochemistry of Waters in Deep Sedimentary Basins, March 16-20, 1987, Oxnard, California. Information: Yousif K. Kharaka, U.S. Geological Survey, Water Resources Division, M.S. 427, 345 Middlefield Rd., Menlo Park, CA 94025; (415) 323-8111, ext. 2523.


Late Quaternary Sea Level: The Marine and Terrestrial Record, April 6-12, 1987, Ferry Reach, Bermuda. Information: James L. Carew, Dept. of Geology, College of Charleston, Charleston, SC 29424; (803) 792-5589.

The Construction of Geological Cross Sections: Techniques, Assumptions, and Methods, May 3-8, 1987, Rosendale, New York. Information: Peter A. Geiser, Dept. of Geology and Geophysics, University of Connecticut, Storrs, CT 06268; (203) 486-4432 or 4433.

Glacial Facies Models, May 3-8, 1987, Manitoulin Island, Ontario. Information: Nicholas Eyles, Dept. of Geology, Scarborough Campus, University of Toronto, Scarborough, Ontario M1C 1A4, Canada; (416) 284-3336.

Geological Decisions for the 21st Century, July 12-17, 1987, Steamboat Springs, Colorado. Information: David A. Stephenson, Dames & Moore, Pointe Corporate Centre, 7500 North Dreamy Draw Dr., Suite 145, Phoenix, AZ 85020; (602) 371-1110.

Cordilleran Metamorphic Core Complexes, Revisited: Implications for Crustal Extension and Shortening in the North American Cordillera, September 14-17, 1987, Elko, Nevada. Information: Arthur W. Snoke, Dept. of Geology and Geophysics, P.O. Box 3006, University of Wyoming, Laramie, WY 82071; (307) 766-5457.



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SUMMARY SESSION
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THE GEOLOGICAL SOCIETY OF AMERICA

Annual research awards program

1987

The Geological Society of America will continue its annual research awards program in 1987. Eligibility is not restricted to GSA members. New application forms for the current year and detailed requirements are available each fall in the geology departments of colleges and universities offering graduate degrees in earth sciences. Forms are mailed annually to GSA Campus Representatives and department secretaries and chairmen in the United States and Canada. They are also available upon request from the Research Grants Administrator, Geological Society of America, P.O. Box 9140, Boulder, Colorado 80301. PLEASE USE ONLY THE 1987 APPLICATION AND APPRAISAL FORMS.

The primary role of the research grant program is to provide partial support of master's and doctoral thesis research for graduate students at universities in the United States, Canada, Mexico, and Central America. If necessary, applications may be submitted in Spanish or French.

The Geological Society of America awarded \$146,000 in grants in 1986. The awards went to 168 students doing research for advanced degrees. The average amount awarded was \$871. The largest award was \$1,500, but there is no predetermined maximum amount.

Confidential evaluations from two faculty members are required from master's and doctoral candidates and must accompany applications submitted. PLEASE USE THE "APPRAISAL OF APPLICANT" FORMS, WHICH ACCOMPANY THE 1987 APPLICATION FORMS.

Applications will also be accepted for the Harold T. Stearns Fellowship(s). These grants are awarded periodically in support of research on one or more aspects of the geology of Pacific Islands and of the circum-Pacific region. They are distinct from the GSA Penrose research grants and are restricted in their use to the particular region. The awardee(s) will be selected by the Research Grants Committee. Applications must be postmarked by **February 15**. Application forms are the same as those used for the Penrose research grants.

The Committee on Research Grants will meet in April to evaluate applications and award grants. In April, all applicants for grants will be informed of the committee's actions by the Executive Director of the Geological Society of America.

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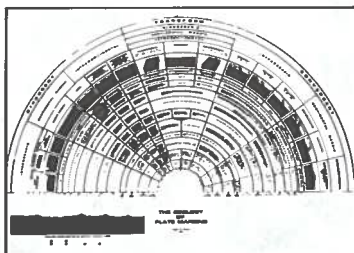


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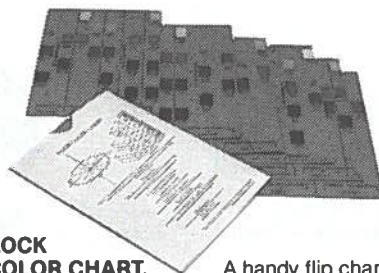
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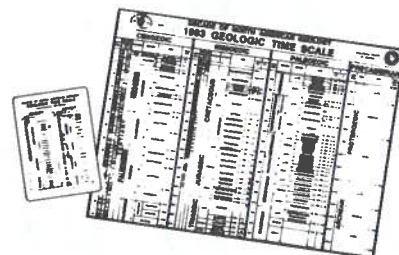
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