

GSA NEWS & INFORMATION

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Report from Washington

Earth Sciences and the Federal Budget

by Jim Evans

GSA Congressional Science Fellow

Federal funding for the earth sciences has sources in the annual budgets of a variety of agencies and departments, including the U.S. Geological Survey (USGS), Bureau of Mines, Minerals Management Service (MMS), National Oceanic and Atmospheric Administration (NOAA), Environmental Protection Agency (EPA), National Science Foundation (NSF), National Aeronautics and Space Administration (NASA), Smithsonian Institution, Department of Energy (DOE), and others. The process by which these agencies and departments secure their annual budget obviously is very important and yet is not widely understood.

Federal Budget Process

Because there are several ways to measure spending, it is useful to start with a few definitions. *Outlays* refer to the actual amounts of cash that may be spent during a *fiscal year* (each fiscal year begins on October 1; thus, FY88 goes from October 1, 1987, to September 30, 1988). *Budget authority* refers to Congressional approval to spend money this fiscal year or in future fiscal years. Budget authority permits agencies to enter into contracts or other long-term obligations that will actually be funded by outlays in subsequent fiscal years.

There are many different players in the budget process. Within the executive branch, budgetary policy is coordinated by the Office of Management and Budget (OMB). Within the legislative branch, the Congressional Budget Office (CBO) provides independent expertise and evaluation of the budget. The House and the Senate each have a single Budget Committee, which is responsible for determining the total federal spending levels each year. Both the House and Senate have an appropriations committee, which is split into thirteen subcommittees. Each year, the appropriations committees pass thirteen spending bills (one from each subcommittee) which address certain program areas in the federal budget. Finally, both the House and Senate have several other permanent, or standing, committees, which have legislative and authorizing power over certain federal agencies and departments. For example, the House Committee on Interior and Insular Affairs is responsible for establishing, changing, or abolishing programs within the Department of Interior.

The difference between what the appropriations committees do and what the various authorizing committees do can best be explained by the following analogy. If you consider the Federal

Treasury as a bank, then authorizing committees set up bank accounts for certain programs. The appropriations committees perform the task of actually putting money into those accounts (as outlays or budget authority). The fact that different players are involved can result in situations where programs are authorized, but receive more, less, or none of the funding originally envisioned. Obviously, if a program is authorized but receives no appropriations, it is effectively killed, which explains why seats on the appropriations committees are considered powerful positions.

At any given time, the federal government is involved with the budgets of three fiscal years. For example, right now the federal government is operating under the FY88 budget, and spending figures will show projections of spending throughout this year. At the same time, Congress is debating the proposed FY89 budget. Finally, work is underway in the executive branch to formulate the FY90 budget.

Each budget is a complex document that is far more than just a list of how money is to be spent. Because of entitlements and other programs, each budget includes projections about unemployment, numbers of people collecting health-care benefits, retirement, balance of trade, income from mineral and energy leases, crop yields (price supports), value of the dollar, gross national product, and so on. All of these factors affect federal spending, and add uncertainty to the process. In addition, obligations such as contracts or borrowing can involve estimates that turn out to be inaccurate.

Key Events or Actions

The first step in the budget process takes place within the executive branch ten months before the next budget request is sent to Congress. Each agency or department submits a budget request to the Office of Management and Budget. OMB will refine and modify these requests in response to political decisions made at the highest levels of the Administration. OMB will package all of these department and agency budgets into a single document, the *President's Budget Request*, which is sent to Congress in early January. The budget request is simply a proposal that outlines the priorities of the executive branch. Whether the final budget that passes Congress bears much resemblance to the President's Budget Request depends upon the political stature of the President.

After the budget request reaches Congress, the action shifts to
(continued on p. 138)

1988 ANNUAL MEETING

DENVER, COLORADO ■ OCTOBER 31 to NOVEMBER 3, 1988

FIELD TRIPS

Denver provides an ideal opportunity for many fine field trips, both in the local area and throughout the West. The trips, summarized below, will provide a look at all aspects of western geology, with something of interest and value for each geoscience specialty. Several trips, in keeping with the Centennial of GSA, emphasize and revisit areas and topics covered by the great western surveys of the late 19th century and the early pioneer geologists who assembled the geologic framework we now take for granted.

All trips begin and end in Denver unless otherwise noted. Costs are estimates. Registration forms will appear in the August issue of *GSA News & Information*. Preregistration is suggested because attendance is limited and will be determined on a first-come, first-served basis. **Preregistration deadline is October 7.**

For further information, contact the 1988 Field Trip Chairman, Gregory S. Holden, Dept. of Geology and Geological Engineering, Colorado School of Mines, Golden, CO 80401, (303) 273-3800 or the individual trip leaders.

PREMEETING

Crust of a Young Earth—Guide to the Precambrian Continental Core of Southeast Wyoming. George L. Snyder, USGS, Denver, Colorado, (303) 236-1233; B. Ronald Frost, James A. Grant. 3½ days, October 27 (afternoon) to October 30. Cost: \$220. Limit: 50.

Proterozoic Plutons and Pegmatites of the Pikes Peak Region, Colorado. Reinhard A. Wobus, Williams College, Williamstown, Massachusetts, (413) 597-2470; Robert M. Hutchinson. 3 days, October 28 (morning) to October 30. Cost: \$260. Limit: 36.

An Integrated View of Depositional Systems of the Early Tertiary Coal Measures, Powder River Basin, Montana and Wyoming. Romeo Flores, Coal

Geology Branch, USGS, Denver, Colorado, (303) 236-7774; Timothy Moore, Peter Warwick. Trip begins and ends in Casper, Wyoming. 3 days, October 28 (morning) to October 30. Cost: \$310. Limit: 35.

In Search of Hayden's Tertiary Lakes of the High Plains: The White River Formation Revisited. Robert H. Blodgett, University of Texas, Austin, (512) 471-5762; Emmett Evanoff, Russell G. Shepherd. Trip begins in Casper, Wyoming and ends in Denver. 3¼ days, October 27 (evening) to October 30. Cost: \$180. Limit: 33.

Geology and Hydrogeology of the Nebraska Sandhills. James B. Swinehart, University of Nebraska, Lincoln, (402) 472-7529; Thomas C. Winter, James Goeke. 3 days, October 28 (morning) to October 30. Cost: \$235. Limit: 40.

Paleohydrology and Hydrogeology of the Carbonate Rock Province of the Great Basin (East-Central Nevada to Southern Nevada). M. D. Mifflin, Mifflin and Associates, Inc., Las Vegas, Nevada, (702) 798-0402; J. Quade. 3 days, October 28 (morning) to October 30. Trip begins in Elko, Nevada, and ends in Las Vegas, Nevada. Cost: \$350. Limit: 40.

From the Basin and Range to the Edge of the Plains in the Tracks of Wheeler, Powell, and Hayden. R. L. Langenheim, Jr., University of Illinois, Urbana, (217) 333-3540; Pius Neibel. Trip begins in Las Vegas, Nevada, and ends in Denver. 4 days, October 27 (morning) to October 30. Cost: \$325. Limit: 40.

Pennsylvanian and Permian Depositional Systems and Cycles in Eagle Basin (Vail to Glenwood Springs), Northwest Colorado. Samuel Y. Johnson, USGS, Denver, Colorado, (303) 236-1545; Christopher J. Schenk; John A. Karachewski. 2 days, October 29 (morning) to October 30. Cost: \$120. Limit: 36.

Archaeological Geology in the Colorado Piedmont and High Plains of Southeastern

Wyoming. Vance T. Holliday, University of Wisconsin, Madison, (608) 262-6300; Adrienne B. Anderson, George C. Frison. Trip begins in Cheyenne, Wyoming, and ends in Denver. 2½ days, October 28 (evening) to October 30. Cost: \$175. Limit: 40.

Northeastern Front Range Revisited: Compression and Crustal Wedging in a Classic Locality for Vertical Tectonics. Eric Erslev, Colorado State University, Fort Collins, (303) 491-5661. 1 day, October 31. Cost: \$45. Limit: 28.

Geomorphology and Quaternary Geology of Canyonlands, Utah. Deborah Harden, San Jose State University, San Jose, California, (408) 277-2385; Steven Colman. Trip begins and ends in Grand Junction, Colorado. 3 days, October 28 (noon) to October 30. Cost: \$200. Limit: 40.

In the Footsteps of G. K. Gilbert—Lake Bonneville and Neotectonics of the Eastern Basin and Range Province. Michael Machette, USGS, Denver, Colorado, (303) 236-1243; Don Currey, Jack Oviatt, William McCoy, William Scott, Ted Barnhard, Alan Nelson, Steve Personius, David Schwartz, William Lund, Richard Van Horn. Trip begins and ends in Salt Lake City, Utah. 3 days, October 28 (morning) to October 30. Cost: \$185 (Salt Lake City residents \$95). Limit: 40.

Hydrogeology and Phytogeomorphology of the Mountains and Foothills near Denver, Colorado. K. E. Kolm, Colorado School of Mines, Golden, (303) 273-3800; J. C. Emerick. 1 day, October 30. Cost: \$40. Limit: 40.

Geology and Vertebrate Paleontology of Western Colorado and Eastern Utah. William L. Chenoweth, Grand Junction, Colorado, (303) 242-9062; Robert G. Young, Harley J. Armstrong. 3 days, October 27 (morning) to October 29. Trip begins and ends in Grand Junction, Colorado. Cost: \$200. Limit: 40.

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positions of the Society. Postmaster: Send address changes to GSA News, Membership Coordinator, P.O. Box 9140, Boulder, CO 80301.

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

Field Trips (continued from p. 139)
Major Landslides and Geotechnical Construction Problems in the Mountains of Colorado. William P. Rogers, Colorado Geological Survey, Denver, (303) 866-2611; Bruce Stover, Jim Soule. 2 days, October 28 (morning) to October 29. Cost: \$150. Limit: 40.

Precious-Metal Telluride Deposits at Gold Hill, Boulder County, Colorado. Bruce Geller, University of Colorado, Boulder, (303) 492-8141; W. W. Atkinson, Jr., Jeff Kurtz. 1 day, October 29. Cost: \$50. Limit: 20.

POSTMEETING

The Earth Has a History. A. R. (Pete) Palmer, Geological Society of America, Boulder, Colorado, (303) 447-2020. 1 day, November 4. Cost: \$25. Limit: 24.

Styles and Deformation of the Cordilleran Orogenic Belt and the Mid-Tertiary Tectonic Overprinting, Southeast Arizona. Harald Drewes, USGS, Denver, Colorado, (303) 236-5647; Steven Reynolds. Trip begins in Denver and ends in Tucson, Arizona. 3½ days, November 3 (5 p.m.) to November 6. Cost: \$320. Limit: 30.

Glacial-Marine Sedimentation, Mineral Fork Formation (Proterozoic III), Utah. Nicholas Christie-Blick, Lamont-Doherty Geological Observatory, Palisades, New York, (914) 359-2900; Paul Karl Link. 2½ days, November 3 (5 p.m.) to November 5. Trip begins in Denver and ends in Salt Lake City, Utah. Cost: \$190. Limit: 30.

Upper Cretaceous Shannon, Frontier, and Haystack Mountains Formations Shelf Sandstones. Roderick W. Tillman, Tulsa, Oklahoma, (918) 749-3184; Randi S. Martinsen, Marilyn Huff. 3½ days, November 3 (5 p.m.) to November 6. Cost: \$380. Limit: 30.

Dinosaur Trackways and Red Beds of the Purgatoire Valley: Early Mesozoic Depositional Environments and Paleogeology of Southeastern Colorado. Nancy K. Prince, University of Colorado, Denver, (303) 556-3456; Martin G. Lockley, Kelly Conrad. 2½ days, November 3 (5 p.m.) to November 5. Cost: \$220. Limit: 30.

Cretaceous-Tertiary Boundary in the Raton Basin—Evidence of Asteroid Impact. Charles L. Pillmore, USGS, Denver, Colorado, (303) 236-1240; Romeo Flores, R. Farley Fleming, Glen A. Izett. 2½ days, November 3 (5 p.m.) to November 5. Cost: \$200. Limit: 36.

Geology and Mineral Resources of Central Colorado. Bruce Bryant, USGS, Denver, Colorado, (303) 236-1234; D. W. Beaty, T.L.T. Grose, W. W. Mallory, P. K. Sims, S. R. Wallace, John C. Reed. 2 days, November 4 (morning) to November 5. Cost: \$135. Limit: 40.

Pleistocene and Recent Floods in the Big Thompson River Drainage, Northern Colorado Front Range. William H. Hoyt, University of Northern Colorado, Greeley, (303) 351-2647; Robert D. Jarrett. 1 day, November 4. Cost: \$30. Limit: 36.

SEG-SPONSORED FIELD TRIPS

For further information on trips listed below, contact Richard I. Grauch, USGS, Federal Center, MS 973, Denver, CO 80225, (303) 236-5551.

Epithermal Precious-Metal and Base-Metal Systems, San Juan Mountains, Colorado. Robert M. Hutchinson, Colorado School of Mines, Golden, (303) 273-3813. Trip begins and ends in Montrose, Colorado. 3½ days, October 26 (evening) to October 29. Cost: \$300. Limit: 25.

Deposits of the Colorado Mineral Belt: Leadville and Gilman Areas. Tommy Thompson, Colorado State University, Fort Collins, (303) 491-5430; David W. Beaty. 2 days, October 29 to October 30. Cost: \$150. Limit: 24.

Epithermal Precious-Metal Deposits Associated with an Island-Arc Environment: Japan. Shunso Ishihara, Government Industrial Research Institute, Tohoku, 2-1, 4-Chome, Nigatake, Sendai 983 Japan; telephone (022) 237-5211; Richard W. Hutchinson. 10 days, November 4 to November 13. Cost: \$3000. Limit: 25.

The Ga, Ge, Cu, Pb, Ag, and U Deposits of Southwestern Utah and the Arizona Strip. Erich Petersen, University of Utah, Salt Lake City, (801) 581-7238; Jim Rasmussen. Trip begins and ends in Las Vegas, Nevada. 3 days, October 27 (7 a.m.) to October 29. Cost: \$250. Limit: 30.

Air Transportation for 1988 Annual Meeting

GSA has again designated The Cain Travel Group of Boulder, Colorado, as the official airline reservation agent for the GSA Centennial Celebration. Meeting participants are encouraged to call Cain's toll-free number to take advantage of discounted fares on selected airlines.

Reduced rates are 5% off any available discount fare that generally has restrictions. If you do not meet the requirements for the discount fare, you will be offered a discount off the unrestricted coach fare.

To make a reservation:

- Call 1-800-346-4747 (toll-free outside Colorado) or 303-443-2246 (inside Colorado or collect from Canada). Hours Monday through Friday 8 a.m. to 5:30 p.m., Mountain Time.
- Call early for best availability and identify yourself as a GSA traveler.
- Be sure that you understand the restrictions on the type of ticket you request.
- Tickets can be paid for by check (payable to Cain Travel), major credit card, or invoice to company. The final payment must reach Cain Travel no later than seven days prior to departure to allow for mailing time.
- All tickets will be mailed via certified mail upon receipt of payment unless requested otherwise.

- After tickets are issued, you are protected from fare increases; if a fare decreases, call Cain Travel for an adjustment.
- Cain Travel will have an on-site Customer Service Desk at the Convention Center.

Cornell Celebrates GSA Centennial
Thursday, June 9, 1988
3 to 5 p.m.
Cornell University, Ithaca, New York

Three Cornellians and ten others met in the Cornell Botanical Hall in 1888. Could they have predicted that the Society would grow to become the world's premier geological organization?

You are invited to attend a symposium that will be held in commemoration of the Society's founding and its first annual meeting, hosted by Cornell. Cornell President Rhodes will be a featured speaker. A reception and dinner will follow. The event is part of Cornell's Alumni Week program.

For more information, contact Donald Turcotte, Department of Geological Sciences, Cornell University, Ithaca, NY 14853-1504, (607) 255-5267.

CONTESTS CORNER

Great Centennial Celebration T-shirt Contest

As part of the celebration of the GSA Centennial, we are planning Centennial T-shirts, one of which will be decorated with 100 three-word phrases using the letters G, S, and A, and having some geological content. For example: Granite Subducts Awkwardly, Grossularite Shimmers Adamantinely, Grenville Seems Ancient. Send your brilliant ideas (as many as you wish) to Centennial T-shirt, P.O. Box 9140, Boulder, CO 80301. Join the competition for the 100 best phrases. Maybe you'll see your phrase(s) immortalized! All entries must be received by July 1, 1988 in order to be considered.

Other brilliant geological one-liners for individual T-shirts, as well as geological T-shirt designs, are also requested.

Gondwana Slid Apart
Greisening South America
Glaciating South Africa
Goodness! Such Action

Grenville Seems Ancient
Geologists Seek Au
Granite Subducts Awkwardly

Grossularite Shimmers Adamantinely



Beard and Field Dress Contest

What is a centennial celebration without a beard contest? In conjunction with the 100th anniversary of the Geological Society of America, prizes will be awarded for the best field beard, the most unusual beard, the beard that most looks like that of a nineteenth-century geologist, and the most "unnatural" beard. Judging will take place during the evening Welcoming Party of the GSA Centennial Meeting in Denver on October 30, 1988.

Given the inability of a significant part of our membership to grow a beard, Centennial awards will be given to the best dressed and most unusually dressed field geologist also. These costumed geologists will represent the field explorer of 1888 and the modern, fully equipped field geologist of 1988. Here is an opportunity for creativity! Potential contestants should begin growing beards now and assembling their collection of modern and ancient field gear in time for the 1988 Centennial Celebration.

If you plan to participate in this contest, call or write Laura Wray, Amoco Production Co., 1670 Broadway, Rm. 2122, Denver, CO 80201, (303) 830-6227.



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1988 Centennial Celebration Symposia Highlights

4. Hazard Reduction in the 21st Century

Conveners: Thomas Holzer, F. Beach Leighton

Speakers: Dallas Peck, Clarence Allen, Robert Decker, Robert Schuster, David Varnes, Thomas Holzer, Richard Gray, Orrin Pilkey, Victor Baker, C. Allin Cornell

Many dynamic geologic and hydrologic processes, including earthquakes, volcanic eruptions, floods, landslides, subsidence and sea-level rise, threaten life and property when they affect areas occupied by people. Earth scientists have made tremendous progress during the past 100 years in understanding these processes. Invited speakers will review progress made during the past 100 years in understanding hazardous processes and identify where the research challenges are that would further reduce the damage from hazards during the next 100 years.

Understanding of dynamic geologic and hydrologic processes reduces the hazards from these processes by improving risk assessments and predictions. In some situations, it is now possible to make either long-term or short-term predictions that permit warnings to be issued. Although hazard reduction often is hampered by inadequate implementation of what is already known, research on hazardous processes frequently facilitates hazard reduction. Many challenges remain. For example, reliable and precise predictions of large and potentially disastrous processes that would permit evacuation or preparation could save more than 1,000,000 lives during the next 100 years.

5. Mars—Geological Analyses and Future Missions

Sponsored by the Planetary Geology Division

Conveners: Raymond Arvidson, Michael Carr

Speakers: Raymond Arvidson, Michael Carr, Philip Christensen, Ronald Greeley, James Head, Sean Solomon, David Stevenson

Analyses of space-borne observations of Mars over the past two decades have shown a planet with a long, complex volcanic and tectonic history, evidence for extensive reservoirs of CO₂ and H₂O beneath the surface, layered deposits of dust and ice at the poles that record cyclical variations in climate, and channel systems that indicate water once flowed across the surface. The symposium will highlight our current understanding of the geology of Mars; topics will range from the planet's earliest history to consideration of the current martian surface environment. Future missions will be highlighted, including Mars Observer, Soviet plans for a lander on Phobos, and orbiters, balloons, and rovers on Mars.

8. History of the Establishment of a Geologic Framework for Human Evolution

Sponsored by the History of Geology Division

Convener: Léo Laporte

Speakers: Léo Laporte, Donald Grayson, William Farrand, Michael Woodburne, Garniss Curtis, Richard Hay, Vance Haynes

The symposium will celebrate the contributions that geology—broadly defined—has made to our understanding of that most fascinating of subjects, our own evolution. Each speaker will review the key insights, methodological breakthroughs, and innovative concepts developed in the relevant geologic disciplines, and show how they crucially intersected with contemporary issues in understanding the temporal and environmental context of human origins.

11. The Chemistry and Physics of Minerals in the Mantle

Sponsored by the Mineralogical Society of America

Convener: Henry O. A. Meyer

Speakers: Robert Lieberman, Donald Weidner, Bernard Wood,

Christopher Scarfe, Alan Zindler, Jean Paul Poirier, Don Anderson, Raymond Jeanloz, N. Christensen, Larry Finger, Russell Hemley, S. E. Haggerty

The focus will be on the exciting recent advances that have taken place in mineralogy with respect to our understanding of the chemistry and physics of minerals that occur within Earth's mantle. Many of these advances are the result of new innovative techniques of studying minerals. Advances in geochemical analysis, particularly analysis of isotopes in very small samples, plus advances in detailed studies of mineral structures at very high pressures through spectroscopic and X-ray diffraction techniques have led to a new conception of the physical and chemical properties of minerals in the mantle.

All invited speakers are among the leaders in the fields of mineralogy, geochemistry, and geophysics, with expertise in crystal structure analysis, isotopic studies, spectroscopy, and rock and mineral deformation at high pressures.

12. A Tale of Two Cratons: Contrasts in Crust-Mantle Evolution

Sponsored by the Geochemical Society

Conveners: Paul Mueller, Joseph Wooden

Speakers: A. E. Peterman, Carol Frost, J. Patchett, K. Collerson, S. Bowring, S. Shirey, K. Condie, A. Irving, W. Leeman, G. Tilton

This symposium will draw attention to one of the fundamental, but not well-recognized, aspects of crust-mantle evolution. It will be concerned with demonstrable geochemical differences between Archean cratons and the possible consequences of these differences for models of crustal evolution and the origin of mantle heterogeneities. This issue will be dealt with by focusing on two case histories in North America: the Superior and Wyoming provinces that were almost completely generated during the Late Archean. One of the goals is to promote recognition by the general geochemical public that what is observed in the Archean and modern rock record must be modeled together rather than separately.

13. Individual Workstations: Information Supermarkets for Geoscientists

Sponsored by the Geoscience Information Society and the International Association of Mathematical Geologists

Convener: Donald McIntyre

Speakers: Donald McIntyre, Stephen Krajewski, William Hambleton, John Butler, Paul Yarka, Dave Hastings, John Cubitt, John Unger

GIS and IAMG represent the information wing of the profession and hope to introduce into the existing GSA program a dimension that is new, exciting, and futuristic. The topic focuses on the personal research benefits that are obtainable at a scale and cost that make technology accessible to the individual geoscience researcher. The speakers represent viewpoints from academia, industry, and government. Applications include numeric data, bibliographic data, software, hardware, and the interaction of people and the new tool of the profession.

15. Case Histories of World Class Mineral Discoveries

Sponsored by the Society of Economic Geologists

Conveners: R. W. Hutchinson, R. I. Grauch

Speakers: D. Lowell, D. deCarvalho, R. Wallis, J. Ballantyne, P. D. Parker, J.M.A. Forman, others to be named

The purpose of this half-day symposium is to outline the
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Symposia (continued from p. 142)

procedures followed and methods applied in discovery of major mineral deposits during the past two decades. The discoveries to be discussed include current and future major world suppliers of copper, lead, zinc, gold, uranium, iron, and bauxite; all are significant in the current inventory of world mineral resources.

As resources are exhausted and as the older, readily found deposits become known, it becomes even more vital to know and understand the procedures that have resulted in successful new discoveries, and to identify those that have not. Differing methods of

geochemistry, geology, geophysics, and remote sensing are applicable for different elements and materials. It is important to know what combinations of these methods have proven successful. Case-history studies offer practical examples of the approaches that have been successfully applied and thereby provide guidance for future exploration.

Note: The entire listing of 30 symposia is in the April 1988 *GSA News & Information* and will be published again, in the August issue (1988 Centennial Meeting Final Announcement).

MUSICAL SCIENTISTS!

... don't miss the chance to play in

THE GSA CENTENNIAL ORCHESTRA



More than 50 scientists with strong music backgrounds have already responded to our call for musical geologists. If you are actively playing an orchestral instrument and would like to participate in this musical celebration in honor of the Centennial Meeting of the Geological Society of America, please contact

Holly Stein
U.S. Geological Survey
M.S. 905, Federal Center
Denver, CO 80225
(303) 236-5592
(303) 985-2797

or Wally Pratt
same address
(303) 236-5598

or John Aleinikoff
same address,
except M.S. 963
(303) 236-7882

Players should be

- (1) geoscientists (or spouses) planning to attend the 1988 GSA Centennial Meeting;
- (2) present for the full length of two rehearsals scheduled for Sunday afternoon (October 30) and early Tuesday evening (November 1), and the Tuesday evening concert (November 1);
- (3) strong intermediate to advanced level on their instrument.

This promises to be a memorable special event for both the performers and the audience. Tickets may be reserved during preregistration (August issue, *GSA News & Information*).

Non-U.S. Subscribers To Receive Final Announcement for 1988 Annual Meeting by Air Mail

This year, in honor of GSA's Centennial, the August issue of *GSA News & Information* will be mailed to all non-U.S. subscribers via air rather than via the usual second-class, surface mail.

This important issue will contain the final announcement, plus registration and housing forms, for GSA's 100th Annual Meeting, scheduled for Denver, Colorado, October 31–November 3, 1988.

We repeat that this service applies only to the August issue. The other eleven 1988 issues will move by second class mail, as usual.

We will welcome reports from non-U.S. subscribers on how

much this service improved your delivery and how important the improvement is to you. Comments will help us evaluate the service and its related cost, and decide on procedures for future years. Send comments to: GSA Production Manager, P.O. Box 9140, Boulder, CO 80301 USA.

Please remember, however, that some non-U.S. subscribers may receive the August issue before they receive the July issue. Please allow the normal delivery time for the July issue before sending in a claim for nondelivery.

Meeting Accommodations: What To Do If the Rates Are Too High

by Sue Beggs

GSA Meetings Manager

A complaint we hear at GSA Annual Meeting registration time is, "Hotel rates in GSA's hotel block are too high. Why doesn't GSA publish information about other places to stay?" Here are some answers.

GSA has a contractual arrangement with each of the hotels in its block in the Annual Meeting city. This agreement provides GSA registrants with a discount of 25%–30% off the hotel's standard rack rates. In addition, the hotel has had to meet standards of proximity, cleanliness, and operating policies in order to achieve a GSA endorsement. In exchange, GSA agrees to promote those hotels to its registrants.

There is a general understanding that the properties selected will either be within reasonable walking distance of the convention center or be serviced by a GSA shuttle. When we decide which hotels to put in the block, we try to provide properties that suit a variety of needs. We are especially aware of the need for properties that offer low rates (\$25–\$39). We always book properties such as Travelodges, La Quinta Inns, and Quality Inns when they are available.

There are several reasons we may not include such properties, however. First, these properties usually offer a small room block (fewer than 75 rooms). If the location is far from the rest of the hotel rooms, it will not be cost-effective to service the property with a separate, time-consuming shuttle route. We have tried to offer low-cost rooms without shuttle service, but this always brings complaints on-site when registrants find that they have to use public transportation, taxi, or rental car. Second, such properties often are "tour and travel" destinations. They will not hold a block of rooms for conventions. Instead, they rely on business from organized bus tours, walk-ins, and family travelers. This business is much more reliable for them. Third, some properties are below grade. In good

faith, GSA cannot recommend them, even though some individuals may find the properties acceptable. Fourth, GSA's housing is handled by convention bureaus. The bureau may refuse to make reservations at properties that are not members of the bureau.

Are there alternatives? Yes—but they require individuals to take independent action and to accept responsibility for their choices.

1. Every city in which GSA holds an Annual Meeting has a convention bureau that provides maps and information about lodging and transportation. The phone number appears in GSA meeting information and is available through long-distance operator information (1-area code-555-1212). For the 1988 meeting, call the Denver Convention and Visitors Bureau—303-892-1505, or the Colorado Tourism Board—1-800-433-2656.

2. Almost all hotel/motel chains have a national reservations system available through the 800-number system; for example, La Quinta Inns (1-800-531-5900); Travelodge (1-800-255-3050); Quality Inns (1-800-228-5151). Look in the Yellow Pages, or call the 800 operator (1-800-555-1212).

3. Call the local Department of Geology. Numbers are available from the AGI Directory, the long-distance information operator, or GSA headquarters.

4. Pay attention to the arrival of the August issue of *GSA News & Information*. Check off the lowest cost room as your first choice. Mail the form the day you receive it. The lower cost rooms are filled by the end of August.

5. Share a room with a friend—even for just a day or two. Hotels will set up separate billings for "share-withs."

We hope these suggestions will help those who want alternatives. Good luck, and we look forward to having you with us in Denver this year.

1888 · Geological Society of America · 1988

OCTOBER 31–
NOVEMBER 3, 1988



DENVER,
COLORADO

CENTENNIAL MEETING & EXHIBIT

Important Deadlines

ABSTRACTS DUE JUNE 10
for abstract forms (303) 447-8850

PREREGISTRATION DUE OCTOBER 7
for meeting information (303) 447-2020
or 1-800-GSA-1988

HOUSING FORMS DUE OCTOBER 7

1989 ANNUAL MEETING November 6–9 St. Louis, Missouri CALL FOR FIELD TRIP PROPOSALS

The theme for the 1989 meeting will be Frontiers in Geoscience. The emphasis of the field trips and the technical program will be on the future and on leading-edge technology. This is in keeping with St. Louis as the Gateway City site and with the beginning of GSA's second century.

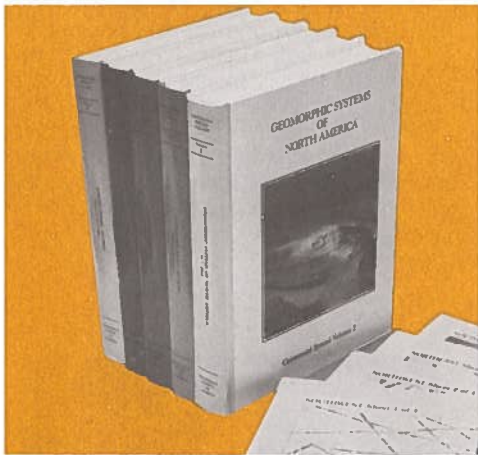
The committee would like to structure field trips to complement the Frontiers in Geoscience theme and to coincide with topics of major symposia or theme sessions. Field trips that have this focus will be particularly welcomed.

Selection of trips will be made during July of 1988, leaving 15 months for preparing guidebooks and making arrangements.

To submit your proposal or for further information, contact the 1989 Field Trip Chairman

Jerry D. Vineyard
Dept. of Natural Resources
Div. of Geology and Land Survey
P.O. Box 250
Rolla, MO 65401

(314) 364-1752



GSA FOUNDATION

1987 Annual Report





GEO STAR
Supporting The Advancement of Research



President's Message

1987 was an important year for Foundation income. A new record was set in the number of member contributors, reflecting the start of Century Challenge, a fund-raising program to celebrate GSA's 1988 Centennial. GEOSTAR, Supporting The Advancement of Research, the Foundation's five-year program to expand the amount of money available for research, began near the end of the year. Through gifts from families and friends the Antoinette Lierman Medlin Scholarship Award Fund was established to assist students of coal geology. Corporate contributions to DNAG were \$236,000. Revenues from the sale of DNAG publications began to rise, reaching \$248,627.

The total fund balance decreased 7.6% during the year, from \$418,763 to \$387,418. The changes reflect revenues of \$796,933 comprising new funds received, DNAG sales proceeds, and interest earned, offset by expenses of \$828,278 for DNAG and research, a portfolio decline due to lower bond prices, and the costs of running the Foundation. Management of the money in the Foundation was assigned to the fixed income managers at the Irving Trust Company, where GSA has kept its cash and bonds for many years.

The most gratifying part of the Foundation's operation is the disbursement of cash to fund geologic activities, the real reason for the Foundation's existence. In 1987, \$598,032 was disbursed for DNAG publication costs and \$22,500 for research. This latter category will increase in 1988 and include scholarships, awards, and student travel grants.

The terms of two trustees, Larry Funkhouser and Harry Jamison, end in 1988. Larry has been a strong supporter of the Foundation at a time of heavy involvement in the leadership of AAPG. The busiest people get the most done. Harry will be sorely missed. His guidance, perception, and balanced understanding as Chairman since 1986 have served GSA well. As a helmsman, Harry is without equal.

1988, the Centennial year, promises to be a time of further growth. DNAG sales will increase and new contributions will flow into Century Challenge and GEOSTAR. DNAG costs will be high as this is the peak publication year. Disbursements for research will increase to a new high level. Such growth is possible only through the strong support of GSA members, industry, and government, all of whom recognize the importance of geology in our social and economic environment.

Fuchs is managing director of First Fairfield Investment Company in Denver, Colorado. He is a Fellow of the Geological Society of America and has been treasurer since 1982. Fuchs is a member of the AAPG and a director of several mining, oil, and gas companies. He received his B.A. from Cornell University and his M.S. from the University of Illinois.

Robert L. Fuchs
President



Chairman's Message

As we record the completion of the GSA Foundation's seventh year, we can all take pride in our joint accomplishments.

Certainly the entire membership, and many others as well, can now view the tangible results of the DNAG project, as the published volumes fill our bookshelves. The Foundation is shifting from DNAG to Century Challenge and on to GEOSTAR. We are entering a long-term growth period dedicated to funding geologic research, student scholarships, and geologic communication.

Perhaps our current success story can best be told by the adjacent table which illustrates GSA Foundation gifts **from our members**.

Part of our ability to solicit funds for the Foundation from institutions and individuals lies in the strong support demonstrated by our members. In the early days of the Foundation, those charged with raising funds from outside sources repeatedly stressed the importance of financial participation by the membership. In 1987 you once again vividly demonstrated that participation and support, as the Foundation posted record numbers of member donors and higher contributions.

Totals for the year show that 1340 donors gave \$484,850, compared with 1046 donors and \$425,274 in 1986.

During the year we brought the Board of Trustees to full strength with the election of Brian Skinner and Beach Leighton. Larry Funkhouser and I complete our five-year terms at the annual Board meeting in March, and do not seek re-election, so two new Board members will be elected to fill our places. I want to thank Larry for his active and faithful support as a valued member of the Board of Trustees.

As a five-year member and two-year Chairman of the Board, I take this opportunity to offer my sincere appreciation to the other Trustees for their strong and effective support. I also thank Bob Fuchs, President of the Foundation, for his creative leadership and careful stewardship.

But the real credit for our progress lies with you, the members of the Society, as strong believers in the need for and purpose of the GSA Foundation. Keep up the good work!

H. C. Jamison
Chairman

Trustees



Harrison C. Jamison,
Chairman

Jamison retired in 1985 as president of Atlantic Richfield Exploration Company. He received his bachelor of science degree in geology at the University of California, Los Angeles. A Fellow of the Geological Society of America, Jamison is also a member and trustee associate of the American Association of Petroleum Geologists. He is currently consulting in petroleum exploration.



Lawrence W. Funkhouser

Funkhouser is a former director and vice president of exploration and production for Chevron. Prior to retirement in 1986, he had been with the predecessor Standard Oil Company of California since 1948. Funkhouser earned his bachelor degree in geology at Oberlin College and his master of science at Stanford. He also served in the U.S. Air Force. He is currently president of the American Association of Petroleum Geologists.



Michel T. Halbouty

Halbouty is the chief executive officer and chairman of the board of the Michel T. Halbouty Energy Co. in Houston. A Fellow of the Geological Society of America, Halbouty served as chairman of President Reagan's Energy Policy Advisory Task Force and leader of the Transition Team on Energy. He is an active member of the National Academy of Engineering and past president of the American Association of Petroleum Geologists.



Charles J. Mankin

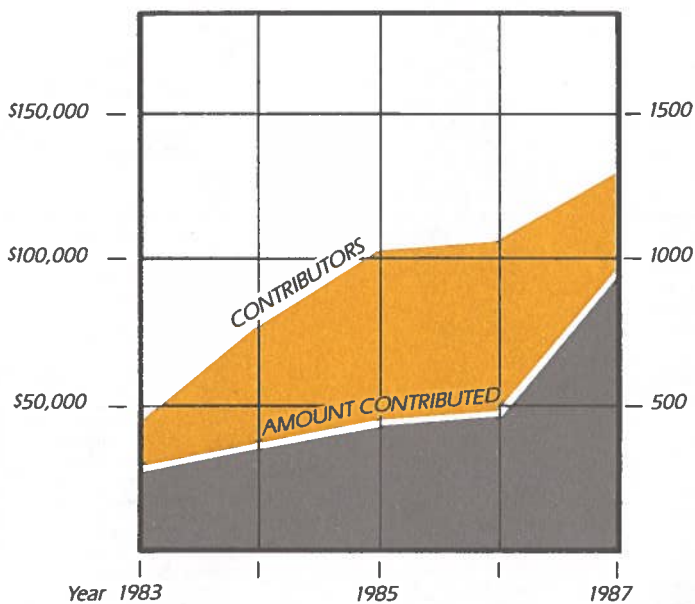
Mankin is director, Oklahoma Geological Survey, and executive director of the Energy Resources Institute, The University of Oklahoma. He is a Fellow of the Geological Society of America and is currently serving as chairman of the Stratigraphic Correlations Committee for the American Association of Petroleum Geologists. Mankin is also currently chairman of the Royalty Management Advisory Committee for the Department of Interior. He is past president of the American Institute of Professional Geologists. He received his B.S., M.A., and Ph.D. in geology at the University of Texas.



Hollis D. Hedberg,
Honorary Trustee

Hedberg is professor emeritus of geology at Princeton University in Princeton, N.J. He is a former vice-president in charge of exploration for Gulf Oil Corp. A fellow of the Geological Society of America, he is a former Society president and the 1980 recipient of the Society's Penrose Medal. He has also served as the president of the American Geological Institute.

CONTRIBUTIONS FROM INDIVIDUALS - 1983-87



Foundation Mission Statement

The GSA Foundation operates under the following mission statement:

The GSA Foundation exists to fund those research, student support, and publication programs of the Geological Society of America that the Society deems necessary to accomplish its purpose of promotion of the science of geology.

To accomplish this mission, the Foundation's long-term policy is to raise money from members, individuals, companies, and institutions. Funds received are invested for income, preservation of capital, and growth of principal. GSA program funding requirements are met out of income and such principal as is necessary. The Foundation's financial goal is to build a fund balance in the \$5-10 million range.



McLain J. Forman

Forman is president and chief executive officer of Forman Exploration Company located in New Orleans, Louisiana. He received his bachelor of science degree in geology at Tulane University, and his M.A. and Ph.D. at Harvard University. A Fellow of the Geological Society of America and a member of the American Association of Petroleum Geologists, Forman has authored several publications dealing with sub-surface geology of southern Louisiana.



Philip E. LaMoreaux

LaMoreaux is chairman of the board of P. E. LaMoreaux & Associates, Inc. He is a Fellow of the Geological Society of America and has membership in a number of professional and scientific societies including the American Geological Institute, the International Association of Hydrogeologists, and the Board of Minerals and Energy. LaMoreaux is a member of the National Academy of Engineering. He received his B.A. from Denison University and his M.A. from the University of Alabama, both in geology. He is the author of many professional publications.



John C. Maxwell

Maxwell retired in 1984 from the University of Texas in Austin, where he was the William Stamps Farrish Professor of Geological Sciences. A Fellow of the Geological Society of America, he has been active in the Society as a councilor and president. He is also a member and chairman of the U.S. Geodynamics Committee, and a member and vice-chairman of the Board of the UNESCO-IUGS-sponsored International Geological Correlation Programme. Maxwell is a former president of the American Geological Institute.



F. Beach Leighton

Leighton is chairman of the board and chief executive officer of Leighton and Associates, an engineering geology consulting firm located in the Los Angeles area. Dr. Leighton is well known for his work in engineering geology, particularly as it relates to urban planning and land use. He has published extensively on landslides, urban geology, and earthquakes. Leighton is a recognized leader in the rapidly expanding application of geology to urban environment.



Brian J. Skinner

Skinner has been professor of geology and geophysics at Yale University since 1966, serving as chairman of the department for six years during that period. He is a well-known expert in economic geology and the geochemistry of ore deposits. Dr. Skinner has been editor of *Economic Geology* for seventeen years. Currently he is chairman of the U.S. National Committee on Geology, the Board of Earth Sciences, and the board of overseers of the *American Journal of Science*. Skinner has held numerous important posts in the Geological Society of America, including president and chairman of the Special Publications and Path to 2,000 and Committees.



Caswell Silver, Honorary Trustee

Silver is president of Argentia Corporation, based in Denver. He is the former chief executive officer and chairman of the board of directors of Sundance Oil Company. Actively involved in the scientific community, Silver is a Fellow of the Geological Society of America and the American Association for Advancement of Science. He is also a member of the American Association of Petroleum Geologists and the Society of Economic Geologists.

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Financial Statements

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March 3, 1988

Board of Trustees
The Geological Society of America
Foundation, Inc.
Boulder, Colorado

We have examined the combined balance sheets of The Geological Society of America Foundation, Inc. as of December 31, 1987 and the related combined statements of operations and fund balances and changes in financial position for the year then ended. Our examination was made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

We have previously examined the financial statements of the Foundation for the year ended December 31, 1986, comparative financial information from which is presented herein. In our opinion, such comparative financial information has been properly extracted from the prior year's financial statements.

In our opinion, the combined financial statements referred to above present fairly the financial position of The Geological Society of America Foundation, Inc. as of December 31, 1987 and the results of its operations and the changes in its financial position for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Touche Ross & Co.
Certified Public Accountants

Financial Statements

ASSETS	COMBINED BALANCE SHEETS (with comparative totals for 1986)			TOTALS DECEMBER 31,	
	OPERATING	UNRESTRICTED	RESTRICTED	1987	1986
	Cash	\$ 3,562	\$ 8,511	\$170,668	\$ 182,741
Contributions receivable	--	764	7,757	8,521	2,577
Due from other funds	191	--	--	191	248
Investments, at market (Note B)	7,854	168,055	393,905	569,814	639,820
Furniture and equipment, net of accumulated depreciation of \$15,423 and \$12,098	12,899	--	--	12,899	14,829
	<u>\$ 24,506</u>	<u>\$177,330</u>	<u>\$572,330</u>	<u>\$ 774,166</u>	<u>\$849,033</u>
LIABILITIES AND FUND BALANCES					
Accounts payable	\$ 3,337	\$ --	\$ 50	\$ 3,387	\$ 1,571
Due to Geological Society of America (Note C)	200,000	--	183,171	383,171	428,452
Due to other funds	--	--	191	191	247
Commitments (Note F)					
Fund balances (deficit):					
Unrestricted	(178,831)	177,330	--	(1,501)	(9,614)
Restricted	--	--	369,958	369,958	408,253
Held in trust for others (Note D)	--	--	18,960	18,960	20,124
	<u>(178,831)</u>	<u>177,330</u>	<u>388,918</u>	<u>387,417</u>	<u>418,763</u>
	<u>\$ 24,506</u>	<u>\$177,330</u>	<u>\$572,330</u>	<u>\$ 774,166</u>	<u>\$849,033</u>

	COMBINED STATEMENTS OF OPERATIONS AND FUND BALANCES (with comparative totals for 1986)			TOTALS YEARS ENDED DECEMBER 31,	
	OPERATING	UNRESTRICTED	RESTRICTED	1987	1986
	REVENUES:				
Contributions	\$ --	\$ 16,695	\$ 474,530	\$491,225	\$ 425,275
Decade of North American Geology Program	--	--	248,627	248,627	209,630
Interest and dividends	355	12,567	36,869	49,791	64,282
Other	217	87	6,986	7,290	5,886
	<u>572</u>	<u>29,349</u>	<u>767,012</u>	<u>796,933</u>	<u>705,073</u>
EXPENDITURES:					
Operating expenses	128,458	46	56	128,560	194,636
Decade of North American Geology Program	--	--	598,033	598,033	658,339
Distribution of assets held in trust	--	--	692	692	500
Other	--	2,234	36,173	38,407	22,737
	<u>128,458</u>	<u>2,280</u>	<u>634,954</u>	<u>765,692</u>	<u>876,212</u>
EXCESS (DEFICIENCY) OF REVENUES OVER EXPENDITURES	(127,886)	27,069	132,058	31,241	(171,139)
INVESTMENT ACTIVITY:					
Realized loss on investments	(447)	(16,623)	(44,002)	(61,072)	(11)
Unrealized loss on investments	--	--	(1,515)	(1,515)	(2,143)
	<u>(447)</u>	<u>(16,623)</u>	<u>(45,517)</u>	<u>(62,587)</u>	<u>(2,154)</u>
TRANSFERS IN (OUT)	<u>126,000</u>	<u>--</u>	<u>(126,000)</u>	<u>--</u>	<u>--</u>
EXCESS (DEFICIENCY) OF REVENUES OVER EXPENDITURES, including investment activity	(2,333)	10,446	(39,459)	(31,346)	(173,293)
FUND BALANCE (DEFICIT), beginning of year	<u>(176,498)</u>	<u>166,884</u>	<u>428,377</u>	<u>418,763</u>	<u>592,056</u>
FUND BALANCE (DEFICIT), end of year	<u>\$(178,831)</u>	<u>\$177,330</u>	<u>\$ 388,918</u>	<u>\$387,417</u>	<u>\$ 418,763</u>

See next page for notes to combined Financial Statements.

Financial Statements

COMBINED STATEMENT OF CHANGES IN FINANCIAL POSITION

YEAR ENDED DECEMBER 31, 1987

RESOURCES USED:

Deficiency of revenue over expenses before investment activity	\$ 31,346
Items that do not use resources:	
Provision for depreciation	3,506
Unrealized losses on investments	1,515
Excess of revenue over expenses after investment activity and depreciation	26,325
Purchases of:	
Furniture and equipment	1,574
U. S. Treasury bills	191,923
Mutual funds	729,148
Demand notes	359,000
Increase in contributions receivable	5,944
Decrease in due to Geological Society of America	45,281
Increase in due to other funds	56
	<u>1,359,251</u>

RESOURCES PROVIDED:

Proceeds from sales of investments	1,348,561
Increase in accounts payable	1,816
Decrease in due to other funds	56
	<u>1,350,433</u>

DECREASE IN CASH \$ 8,818

See notes to financial statements.

NOTES TO COMBINED FINANCIAL STATEMENTS

YEAR ENDED DECEMBER 31, 1987
(with comparative totals for 1986)

A. Summary of Significant Accounting Policies:

The Geological Society of America Foundation, Inc. (the Foundation) was established in December, 1980 to promote the science of geology.

A primary objective of the Foundation is to provide funds for the Decade Program, which was established to publish a series of geological references in celebration of the 100-year anniversary of the Geological Society of America (the Society) in 1988. Revenues are recorded by the Decade Program when its qualified expenses are incurred.

The financial statements of the Foundation have been prepared on the accrual basis of accounting. The accounts of the Foundation are maintained in accordance with the principles of fund accounting which classify funds, for accounting and reporting purposes, according to the Foundation's activities or objectives.

Donor-restricted funds may be used only in accordance with purposes established by the donor, in contrast to use of unrestricted and operating funds. The Foundation board has full authority to use donated unrestricted funds for operational purposes.

The Foundation records investments at fair market value. The difference between cost and fair market value is reflected in the combined statements of operations and fund balances as unrealized appreciation or depreciation on investments.

The Foundation is exempt from federal income taxes pursuant to Section 501(a)(3) of the Internal Revenue Code of 1954, as amended.

Furniture and equipment are stated at cost. Depreciation is provided by the straight-line method over the estimated useful lives of various classes of assets.

In-kind contributions are recorded at fair value at date of gift.

B. Investments:

Investments held are summarized as follows:

	DECEMBER 31, 1987		DECEMBER 31, 1986	
	COST	MARKET	COST	MARKET
Mutual fund	\$ 10,770	\$10,253	\$629,666	\$629,666
U. S. Treasury bills	191,923	191,923	--	--
Demand notes	359,000	359,000	--	--
Stocks	175,795	7,688	175,795	9,204
Other	950	950	950	950
	<u>\$738,438</u>	<u>\$569,814</u>	<u>\$806,411</u>	<u>\$639,820</u>

C. Due to Geological Society of America:

The amount due to the Society includes a non-interest-bearing advance to the Foundation to enable it to begin operations. The advance is to be repaid from unrestricted funds of the Foundation as they become available.

Also due to the Society at December 31, 1987 is \$183,171 for reimbursement of expenses incurred by the Centennial Program in excess of designated 1987 contributions received from the Foundation.

D. Assets Held in Trust:

The Foundation has an agreement with the Symposium of the Geology of Rocky Mountain Coal (the Symposium) whereby the Foundation will manage the assets of the Symposium. The Foundation receives a management fee equal to 1% per year of the market value of the funds. The agreement can be terminated by either party upon 90-day written notice.

E. Pension Plan:

Employees of the Foundation participate in a discretionary pension plan covering substantially all employees. Contributions to the plan are made at the discretion of the Foundation's Board of Directors, and totaled \$2,520 and \$10,200 in the years ended December 31, 1987 and 1986.

F. Commitments:

In March, 1987, the Foundation entered into an employment contract with its President. The contract provides for an annual salary of \$20,000 and expires in March, 1988.

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RECENT RELEASES FROM GSA

DNAG GEOLOGY OF NORTH AMERICA

NORTH AMERICA AND ADJACENT OCEANS DURING THE LAST DEGLACIATION

edited by W.F. Ruddiman and H.E. Wright, Jr., 1987

Most Quaternary sediments in North America north of 45°N post-date the last deglaciation. This volume looks at those extensive deposits from the standpoints of timing, cause, and mechanism of the wastage of North American ice during the last deglaciation and the accompanying environmental changes in the nonglaciated and deglaciated areas. It particularly examines the mechanisms by which a mass of ice equivalent to 100 m of global sea-level was returned to the ocean within about 8,000 years. A truly comprehensive synthesis of marine and terrestrial information in 22 chapters grouped into five sections: Chronology of Disintegration of the North American Ice Sheets, Ice Core and Other Glaciological Data, the Nonglacial Physical Record on the Continent, Biological Record on the Continent, and Analysis and Summary. Includes two oversize pocket-plates in color showing time-series maps of pollen densities and vegetation changes since 18 ka.

GNA-K3, 509 p., 2 pocket plates, indexed, ISBN 0-8137-5203-5, \$43.50

THE ATLANTIC CONTINENTAL MARGIN: U.S.

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This synthesis covers stratigraphy, depositional processes, and geophysical interpretation of the major onshore and offshore marginal basins from Maine to the Bahamas, and includes an up-to-date review of thinking on regional tectonic history. Additional chapters discuss the theoretical aspects of thermal evolution, subsidence, and seismic stratigraphy as applied to this region. Geological resources including petroleum, water, sand and gravel, hard minerals, and heat flow are reviewed, and environmental hazards such as seismicity, coastal erosion, waste disposal and submarine instability as it relates to site of drilling platforms and mining are evaluated. A summary chapter reviews areas of controversy and suggests key topics for research.

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by Earle E. Spamer, 1988

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GSA Divisions and Sections 1988

DIVISIONS

GSA's ten specialty divisions provide a focus for members interested in a particular discipline. The divisions hold annual business meetings in conjunction with the Society's annual meeting, and each division publishes a newsletter periodically. Division membership totals are as of December 31, 1987.

Archaeological Geology Members: 482
Officers: Fekri A. Hassan, chairman and continuing first vice-chairman; Robert M. Thorson, second vice-chairman; Vance T. Holliday, secretary-treasurer; John A. Gifford, past chairman.
Newsletter editor: David L. Weide.

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Newsletter editors: James C. Cobb, Russell A. Brant.

Engineering Geology Members: 1,164
Officers: Ellis L. Krinitzsky, chairman; Thomas L. Holzer, chairman-elect; Jeffrey R. Keaton, secretary; Christopher C. Mathewson, past chairman.
Newsletter editor: Art Keene.

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Officers: Mary Lou Zoback, chairman; Walter D. Mooney, first vice-chairman; Clement G. Chase, second vice-chairman; Francis S. Birch, secretary-treasurer; Bryan L. Isacks, past chairman.
Newsletter editor: Henry Spall.

History of Geology Members: 382
Officers: Léo F. Laporte, chairman; Clifford M. Nelson, first vice-chairman; Nancy Alexander, second vice-chairman; Michele L. Aldrich, secretary-treasurer; William M. Jordan, past chairman.
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Officers: James W. Head III, chairman; Raymond E. Arvidson, first vice-chairman; Ronald Greeley, second vice-chairman; Baerbel K. Lucchitta, secretary-treasurer; Arden L. Albee, past chairman.
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Officers: James C. Knox, chairman; Dale F. Ritter, first vice-chairman; Kenneth L. Pierce, second vice-chairman; Richard F. Madole, secretary; Victor R. Baker, past chairman.
Newsletter editor: Michael N. Machette.

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Officers: Juergen Reinhardt, chairman; James R. Steidtmann, first vice-chairman; Stephan A. Graham, second vice-chairman; Donald H. Zenger, secretary-treasurer; Robert Raymond, Jr., past chairman.
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Structural Geology and Tectonics Members: 2,102
Officers: Gregory A. Davis, chairman; Arthur W. Snoke, first vice-chairman; Peter J. Hudleston, second vice-chairman; Donald T.

Secor, secretary-treasurer; John H. Spang, past chairman.
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GSA has six regional North American sections, generally including GSA members who live within the geographical limits of each section. (Members who live in one section but have a professional interest in another section can become members of the section of interest.) Each section holds annual technical and business meetings. The number of voting members shown for each section is as of December 31, 1987.

Cordilleran Voting members: 3,559
Geographic area: Alaska, Arizona south of lat 35°N, California, Hawaii, Nevada, Oregon, Washington, British Columbia, Yukon, Northwest Territories
Officers: Robert S. Yeats, chairman; Mary Lou Zoback, vice-chairman; Bruce A. Blackerby, secretary; Warren B. Hamilton, past chairman.

Rocky Mountain Voting members: 1,970
Geographic area: Arizona north of lat 35°N, Colorado, Idaho, Montana, New Mexico, North Dakota, South Dakota, Utah, Wyoming, Alberta, Saskatchewan
Officers: John H. Bush, Jr., chairman; Peter E. Isaacson, vice-chairman; Kenneth E. Kolm, secretary; Paul K. Link, past chairman; William R. Hackett, past vice-chairman.

North-Central Voting members: 1,174
Geographic area: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, Ohio, Wisconsin, Manitoba, Ontario west of 89th meridian
Officers: Michael J. Murphy, chairman; James A. Rigert, vice-chairman; Richard A. Hoppin, secretary; Arthur E. Burford, past chairman; Lindgren L. Chyi, past vice-chairman.

South-Central Voting members: 1,496
Geographic area: Arkansas, Kansas, Oklahoma, Texas
Officers: Anthony W. Walton, chairman; Charles I. Smith, vice-chairman; Page C. Twiss, secretary-treasurer; Rena M. Bonem, past chairman.

Northeastern Voting members: 2,176
Geographic area: Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, New Brunswick, Newfoundland, Nova Scotia, Prince Edward Island, Quebec, Ontario east of 89th meridian
Officers: Donald B. Potter, chairman; Nicholas M. Ratcliffe, vice-chairman; Kenneth N. Weaver, secretary; Peter Robinson, past chairman.

Southeastern Voting members: 1,580
Geographic area: Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia
Officers: James F. Tull, chairman; Earl A. Shapiro, vice-chairman; Michael J. Neilson, secretary-treasurer; Dennis N. Bearce, past chairman; William H. Kanes, past vice-chairman.

MEETINGS

(Asterisk indicates new or changed information)

1988

Case Histories in Geotechnical Engineering 2nd International Conference, June 1-5, 1988, St. Louis, Missouri. Information: Shamsher Prakash, Room 308, Dept. of Civil Engineering, University of Missouri, Rolla, MO 65401; (314) 341-4461.

WaterTech China '88, International exposition and congress of water technologies, June 3-8, 1988, Beijing, China. Information: Management Committee, WaterTech China '88, c/o MartLink Communications Group, GPO Box 13477, Hong Kong; phone 5-225705; Telex 72091 HX.

Second International Symposium on Rockbursts and Seismicity in Mines, June 8-10, 1988, Minneapolis, Minnesota. Information: Charles Fairhurst, Dept. Civil and Mineral Engineering, University of Minnesota, 500 Pillsbury Dr. S.E., Minneapolis, MN 55455-0220.

29th U.S. Symposium on Rock Mechanics, June 13-16, 1988, Minneapolis, Minnesota. Information: Jan Becker, Dept. Professional Development, University of Minnesota, 315 Pillsbury Dr. S.E., Minneapolis, MN 55455; (612) 626-1358.

Fourth Symposium on the Geology of the Bahamas, June 17-22, 1988, San Salvador Island, Bahamas. Information: Donald T. Gerace, CCFL Bahamian Field Station, 270 Southwest 34th St., Fort Lauderdale, FL 33315.

Shelf Sedimentation: Events and Rhythms (SEPM research conference), June 26-July 1, 1988, Santa Cruz, California. Information: M. Field or E. Clifton, USGS, 345 Middlefield Rd., Menlo Park, CA 94025; (415) 354-3088 or 3112.

Seismic Probing of the Continents and Their Margins International Symposium, July 6-8, 1988, Canberra, Australia. Information: Jim Leven, Bureau of Mineral Resources, P.O. Box 378, Canberra, ACT 2601, Australia; phone (062) 499 111; Telex AA62109.

International Working Meeting on Soil Micromorphology (meeting of Subcommittee B of the International Society of Soil Science), July 10-15, 1988, San Antonio, Texas. Information: L. P. Wilding, Dept. of Soil and Crop Sciences, Texas A&M University, College Station, TX 77843-2474; (409) 845-3604.

First International Conference on Radiolaria, July 18-20, 1988, Marburg, Federal Republic of Germany. Information: Joyce R. Blueford, U.S. Geological Survey, MS 144, 345 Middlefield Rd., Menlo Park, CA 94025; (415) 329-4004, or R. Schmidt-Effing, Internad Conference, Dept. of Geosciences, Philipps-Universität, Lahnberge, D-3550 Marburg, Federal Republic of Germany.

5th International Symposium on Fossil Cnidaria, including Archaeocyatha and spongiomorphs, July 25-29, 1988, Brisbane, Australia. Information: John Jell, Uniquet Ltd., University of Queensland, St. Lucia, QLD 4067, Australia; phone (07) 344 2733.

Soil and Water Conservation Society Annual Meeting, July 31-August 3, 1988, Columbus, Ohio. Information: Alan C. Epps, 7515 NE Ankeny Rd., Ankeny, IA 50021-9764; (515) 289-2331.

Permafrost 5th International Conference, August 2-5, 1988, Trondheim, Norway. Information: V International Conference on Permafrost, Norwegian Institute of Technology, Studies Administration, N-7034 Trondheim-NTH, Norway.

Eighth International Conference on Basement Tectonics, August 8-12, 1988, Butte, Montana. Information: M. J. Bartholomew, Montana Bureau of Mines and Geology, Montana Tech, Butte, MT 59701; (406) 496-4177.

Fifth International Symposium on the Ordovician System, August 9-12, 1988, St. John's, Newfoundland. Information: Chris R. Barnes, ISOS, Dept. of Earth Sciences, Memorial University, St. John's, Newfoundland A1B 3X5, Canada; (709) 737-8143.

Mineralogy of Precious Metal Deposits, August 12-15, 1988, Golden, Colorado. Information: James A. McGlasson, 7387 South Flower St., Littleton, CO 80123; (303) 972-0376; or James F. Hurlbut, 2240 So. Adams, Denver, CO 80401; (303) 279-7796.

Paleozoic Biogeography and Paleogeography, August 14-19, 1988, Oxford, England. Information: C. R. Scotese, Shell Development Co., P.O. Box 481, Houston, TX 77001, (713) 663-2688, or W. S. McKerrow, Dept. Earth Sciences, Parks Rd., Oxford OX1 3PR, England.

39th Annual Highway Geology Symposium, August 17-19, 1988, Park City, Utah. Information: Highway Geology Symposium, T. Leslie Youd, 368 Clyde Bldg., Dept. Civil Engineering, Brigham Young University, Provo, UT 84602; (801) 378-6327.

American Association of Petroleum Geologists Rocky Mountain Section, August 21-24, 1988, Bismarck, North Dakota. Information: Roger N. Borchert, Box 5006, Bismarck, ND 58501; (701) 223-3588.

Society of Economic Paleontologists and Mineralogists Fifth Midyear Meeting, August 21-24, 1988, Columbus, Ohio. Information: SEPM, P.O. Box 4756, Tulsa, OK 74159-0756; (918) 743-9765.

***Space '88**, international conference on engineering, construction, and operation of facilities and bases in space, August 29-31, 1988, Albuquerque, New Mexico. Information: Specialty Conferences, American Society of Civil Engineers, 345 East 47th St., New York, NY 10017; (212) 705-7139.

6th International Fission Track Dating Workshop, September 5-9, 1988, Besançon, France. Information: J.-L. Janier-Dubry, Lab. de Microanalyses Nucléaires, U.F.R. des Sciences et Techniques, 16 Route de Gray, 25030 Besançon cedex, France; phone 81-53-81-22.

International Symposium on Geochemistry and Mineralization of Proterozoic Mobile Belts, September 6-10, 1988, Beijing, China. Information: Proterozoic Geochemistry Symposium, c/o Prof. Sun Dazhong, Tianjin Inst. Geology and Mineral Resources, CAGS No. 4, 8th Rd., Dazhigu, Tianjin 300170, People's Republic of China.

Wyoming Geological Association Annual Field Conference and Symposium: Eastern Powder River Basin-Black Hills, September 9-11, 1988, Casper, Wyoming. Information: Janet de Vries, Dwight's Hotline, P.O. Box 2934, Casper, WY 82602; (307) 237-1004.

International Symposium on Rock Mechanics and Power Plants, September 12-16, 1988, Madrid, Spain. Information: ISRM

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MEETINGS (continued from p. 155)

Symposium, Sociedad Española de Mecánica de las Rocas, Paseo Bajo de la Virgen del Puerto, 3, 28005 Madrid, Spain.

Clay Minerals Society Annual Meeting, September 18-21, 1988, Grand Rapids, Michigan. Information: T. J. Pinnavaia, Dept. of Chemistry, Michigan State University, East Lansing, MI 48824; (517) 353-4511.

ECORS Program: International Meeting on a Deep Seismic Line with Field Trip across the Pyrenees, September 19-22, 1988, Toulouse, France, to Balaguer, Spain. Information: Société Géologique de France, 77 rue Claude Bernard, 75005 Paris, France; phone 331-43-31-77-35.

International Symposium on Engineering Geology: Study, Preservation and Protection of Ancient Works, Monuments and Historical Sites, September 19-23, 1988, Athens, Greece. Information: Paul G. Marinos, Greek Committee of Engineering Geology, 1988 Symposium Secretariat, P.O. Box 19140, GR-117 10 Athens, Greece; Telex 45 4312 POLX.

International Conference on Disposal of Radioactive Waste in Seabed Sediments, September 20-21, 1988, Oxford, England. Information: Society for Underwater Technology, 1 Birdcage Walk, London SW1H 9JJ, England; phone 01-222 8658; Telex 917944.

Fourth International Tectonostratigraphic Terrane Conference, September 23-October 7, 1988, Nanjing University, Nanjing, People's Republic of China. Information: Tom Wiley, U.S. Geological Survey, MS 999, 345 Middlefield Road, Menlo Park, CA 94025; (415) 354-3067.

Mediterranean Basins Conference, September 25-28, 1988, Nice, France. Information: AAPG Convention Dept., P.O. Box 979, Tulsa, OK 74101-0979; (918) 584-2555.

Geographic Information Symposium, September 26-30, 1988, Denver, Colorado. Information: Thomas Usselman, GIS Symposium, National Academy of Sciences, 2101 Constitution Ave., Washington, DC 20418.

Environments and Physiology of Fossil Organisms Symposium, September 28-30, 1988, Edinburgh, Scotland. Information: Meetings Secretary, Royal Society of Edinburgh, 22, 24 George St., Edinburgh EH2 2PQ, Scotland.

***19th Annual Underwater Mining Institute**, October 2-5, 1988, Woods Hole, Massachusetts. Information: Allen J. Miller, University of Wisconsin Sea Grant Institute, 1800 University Ave., Madison, WI 53705; (608) 262-0645.

Mars: Evolution of Volcanism, Tectonism and Volatiles, October 5-7, 1988, Washington, D.C. Information: Projects Office, Lunar and Planetary Institute, 3303 NASA Road 1, Houston, TX 77058-4399; (713) 486-2150.

***53rd Annual Field Conference of Pennsylvania Geologists**, October 6-8, 1988, Hazelton, Pennsylvania. Information: Donald M. Hoskins, Pennsylvania Geological Survey, P.O. Box 2357, Harrisburg, PA 17120; (717) 787-2169.

***Ter-Qua '88**, symposium and field conference on global climate and the future of the High Plains aquifers, October 6-9, 1988, Lincoln and North Platte, Nebraska. Information: Institute for Tertiary-Quaternary Studies, 2739 Centenary, Houston, TX 77005; (713) 661-4038.

Geological Association of New Jersey Annual Meeting, October 7-9, 1988, Lawrenceville, New Jersey. Information:

Jonathan Husch, Dept. of Geosciences, Rider College, 2083 Lawrenceville Rd., Lawrenceville, NJ 08648; (609) 896-5330.

New York State Geological Association Annual Field Trip Meeting, October 7-9, 1988, Plattsburgh, New York. Information: Tom Wolosz, Center for Earth and Environmental Science, SUNY College, Plattsburgh, NY 12901; (518) 564-4031.

***Geothermal Resources Council Annual Meeting**, October 9-12, 1988, San Diego, California. Information: Geothermal Resources Council, P.O. Box 1350, Davis, CA 95617-1350; (916) 758-2360; Fax (916) 758-2839.

Association of Engineering Geologists 31st Annual Meeting, October 16-21, 1988, Kansas City, Missouri. Information: William Bryson, Kansas Corporation Commission, 4th Floor, State Office Bldg., Topeka, KS 66612; (913) 296-5113.

Global Catastrophes in Earth History: An Interdisciplinary Conference on Impacts, Volcanism and Mass Mortality, October 20-23, 1988, Snowbird, Utah. Information: Global Catastrophes Conference, Lunar and Planetary Institute, 3303 NASA Road 1, Houston, TX 77058-4399; (713) 486-2150.

International Symposium on Remote Sensing of Environment, October 20-26, 1988, Abidjan, Ivory Coast. Information: Alan K. Pakder, P.O. Box 8618, Ann Arbor, MI 48107-8618; (313) 994-1200, ext. 3886.

American Society of Civil Engineers Convention, October 23-27, 1988, St. Louis, Missouri. Information: ASCE Conventions and Exhibits Dept., 345 East 47th St., New York, NY 10017; (212) 705-7543.

Geological Society of America 100th Annual Meeting, October 31-November 3, 1988, Denver, Colorado. Information: Meetings Department, GSA, P.O. Box 9140, Boulder, CO 80301; (303) 447-2020.

Second International Gold Mining Conference, November 7-9, 1988, Vancouver, British Columbia. Information: C. O. Brawner, P.O. Box 91651, West Vancouver, B.C. V7V 3P3, Canada; (604) 922-3717.

American Association of Stratigraphic Palynologists Annual Meeting, November 10-12, 1988, Houston, Texas. Information: John A. Clendening, Amoco Production Company, P.O. Box 3092, Houston, TX 77253; (713) 556-3549.

Advances in Ground-Water Hydrology, November 16-18, 1988, Tampa, Florida. Information: American Institute of Hydrology, 3416 University Ave. S.E., Suite 200, Minneapolis, MN 55414; (612) 379-1030.

Symposium on Hot Spots in the South Pacific, November 21, 1988, Paris, France. Information: Société Géologique de France, 77 rue Claude Bernard, 75005 Paris, France; phone 331-43-31-77-35.

Geochemistry of Gulf Coast Oils and Gases, December 4-7, 1988, New Orleans, Louisiana. Information: Dietmar Schumacher, Pennzoil Co., P.O. Box 2967, Houston, TX 77252, (713) 546-4028, or Mahlon C. Kennicutt, Geochemical and Environmental Research Group, Texas A&M University, Ten South Graham Rd., College Station, TX 77840; (409) 690-0095.

American Geophysical Union Fall Meeting, December 5-9, 1988, San Francisco, California. Information: Ann E. Singer, American Geophysical Union, 2000 Florida Ave., N.W., Washington, DC 20009; (202) 462-6903.

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MEETINGS (continued from p. 156)

ECORS Program: Deep Seismic Line across the Western Alps, joint meeting of French, Swiss, and Italian geological societies, December 12-13, 1988, Paris, France. Information: François Roure, Inst. Français du Pétrole, 1-4 ave. du Bois Préau, 92506 Rueil-Malmaison, France.

GSA 1988

Centennial Celebration, October 31-November 3, Denver, Colorado

PENROSE CONFERENCES

Paleozoic and Early Mesozoic Paleogeographic Relations Between the Klamath Mountains, the Northern Sierra Nevada, and North America, June 5-10, 1988, Redding, California. Information: David S. Harwood, U.S. Geological Survey, MS 975, 345 Middlefield Rd., Menlo Park, CA 94025; (415) 329-4932.

Origin of Massif Anorthosites and Related Rocks, August 14-19, 1988, Chugwater, Wyoming. Information: B. Ronald Frost, Dept. of Geology and Geophysics, University of Wyoming, Laramie, WY 82071; (307) 766-4290.

Marine Evaporites: Genesis, Alteration, Associated Deposits, August 28-September 2, 1988, Detroit, Michigan, and Windsor, Ontario. Information: Peter Sonnenfeld, Dept. of Geology, University of Windsor, Windsor, Ontario N9B 3P4, Canada; (313) 963-6112 or 6113, ext. 2490.

Volcanic Influences on Terrestrial Sedimentation, August 28-September 3, 1988, Crystal Mountain, Washington. Information: Gary A. Smith, Dept. of Geology, University of New Mexico, Albuquerque, NM 87131; (505) 277-4204.

Criteria for Establishing the Relative Timing of Pluton Emplacement and Regional Deformations, September 10-15, 1988, California. Information: Scott R. Paterson, Earth Science Board, University of California, Santa Cruz, CA 95064; (408) 429-3251.

1989

Australasian Tectonics, February 6-10, 1989, Kangaroo Island, Australia. Information: A. Grady, c/o Dept. of Earth Science, Flinders University, Bedford Park, SA 5042, Australia.

Society of Mining Engineers Annual Meeting, February 27-March 2, 1989, Las Vegas, Nevada. Information: Society of Mining Engineers, Meetings Dept., P.O. Box 625002, Littleton, CO 80162.

Symposium on Energy and Mineral Potential of the Central America-Caribbean Region, March 5-9, 1989, San Jose, Costa Rica. Information: Mary Stewart, Circum-Pacific Council for Energy and Mineral Resources, 5100 Westheimer Road, Houston, TX 77056.

European Geophysical Society XIV General Assembly, March 13-17, 1989, Barcelona, Spain. Information: EGS Office, c/o MPI für Aeronomie, D-3411 Katlenburg-Lindau, Federal Republic of Germany. (Abstracts deadline: December 15, 1988.)

International Symposium on the Silurian System (Murchison Symposium), March 28-April 9, 1989, Keele, England. Information: M. G. Bassett, Dept. of Geology, National Museum of Wales, Cardiff CF1 3NP, Wales; phone 02222-397951.

American Association of Petroleum Geologists Annual Meeting, April 23-26, 1989, San Antonio, Texas. Information: AAPG, P.O. Box 979, Tulsa, OK 74101; (918) 584-2555.

American Geophysical Union Spring Meeting, May 8-12, 1989, Baltimore, Maryland. Information: AGU, Convention Director, 2000 Florida Ave., N.W., Washington, DC 20009; (202) 462-6903.

Engineering Geology in Tropical Terrains, June 26-29, 1989, Selangor Darul Ehsan, Malaysia. Information: Organising Secretary, Conference on Engineering Geology in Tropical Terrains, Dept. of Geology, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor Darul Ehsan, Malaysia.

28th International Geological Congress, July 9-19, 1989, Washington, D.C. Information: 28th International Geological Congress, P.O. Box 1001, Herndon, VA 22070-1001; (703) 648-6053; Telex 248418.

***12th Caribbean Geological Conference**, August 7-11, 1989, Christiansted, St. Croix, Virgin Islands. Information: Frederick Nagle, 12th Caribbean Geological Conference, c/o Dept. of Geological Sciences, P.O. Box 249176, University of Miami, Coral Gables, FL 33124.

Dunes '89: Geomorphology and Ecology of Desert and Coastal Sand Dunes, August 14-17, 1989, Swakopmund, Namibia. Information: Dunes '89, c/o J. D. Ward, P.O. Box 2168, Windhoek 9000, Namibia.

14th International Cartographic Conference, August 17-24, 1989, Budapest, Hungary. Information: Conference Secretary, Institute of Geodesy, Cartography and Remote Sensing, POB 546, H-1373 Budapest, Hungary.

Second International Research Symposium on Clastic Tidal Deposits, August 22-25, 1989, Calgary, Alberta. Information: Ray Rahmani, Canadian Hunter Exploration Ltd., 435-4th Ave., S.W., Calgary, Alberta T2P 3A8, Canada; (403) 260-1818.

***9th International Clay Conference**, August 28-September 2, 1989, Strasbourg, France. Information: Hélène Paquet, Inst. de Géologie, 1, rue Blessig, 67084 Strasbourg, France.

***3rd International Conference on Palaeoceanography**, September 10-16, 1989, Cambridge, England. Information: I. N. McCave or N. J. Shackleton, Dept. of Earth sciences, University of Cambridge, Downing St., Cambridge CB2 3EQ, England; phone 223-333422/334876.

World Gold '89, October 22-25, 1989, Reno, Nevada. Information: Meetings Dept., World Gold '89, Society of Mining Engineers, P.O. Box 625002, Littleton, CO 80162; (303) 973-9550; Telex 881988. (Abstracts deadline: July 1, 1988.)

In Memoriam

Marc W. Bodine, Jr.
Denver, Colorado
January 25, 1988

Alexander W. McCoy III
Tulsa, Oklahoma

Charles M. Gilbert
Berkeley, California
February 26, 1988

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February 17, 1988

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ECONOMIC GEOLOGIST, Ph.D. Seeks senior position in ore deposits/coal/lignite exploration, mining or research. Nine years worldwide exploration/mining; antimony, coal, copper, diamonds, gold, nickel, platinum, tin. Six years University teaching; ore deposits, industrials, mineralogy, petrology. Seven years petroleum company; gold, lignite, mining chemicals, process mineralogy, petroleum. Reply to GSA Code 1046.

Positions Open

HYDROGEOLOGIST

UNIVERSITY OF NEBRASKA—LINCOLN

Conservation and Survey Division announces a tenure-leading position to begin September 1, 1988. Position requires a Ph.D. in hydrogeology or geology with specialization in hydrogeology. Applicant must be familiar with geochemical processes and experienced in numerical modeling as applied to groundwater flow and solute transport. Successful applicant will develop and implement an innovative research program in quantitative hydrogeology in Nebraska. Responsibilities include acquisition of funding to support research. Development and maintenance of a working relationship with other departments of the University and with personnel in governmental agencies, private industry and individuals involved in water resources is expected. Opportunities to teach and advise graduate students are available. This position is annual full time; salary and academic rank are commensurate with experience and qualifications. Send a detailed resume, transcripts, and four letters of reference to: Jerry F. Ayers, Search Committee, Conservation and Survey Division, University of Nebraska-Lincoln, 113

Nebraska Hall, Lincoln, NE 68588-0517. Closing date for application is July 1, 1988, or until a suitable applicant is found.

UNL is an equal opportunity/affirmative action employer. Proof of U.S. citizenship or eligibility for U.S. employment will be required prior to employment (Immigration Reform and Control Act of 1986).

SENIOR GEOHYDROLOGIST to establish groundwater hydrology practice in a multidisciplinary engineering, planning and design firm. Candidate needs 5 to 10 years experience, M.S. in hydrogeology or registered civil engineer preferred. Should have experience in siting studies for potable groundwater supplies; 3-D pollutant transport modelling; groundwater mounding analyses; modelling aquifer zones of contribution; development of commercial and residential projects.

Contact Richard Orton at Sasaki Associates, Inc., 64 Pleasant Street, Watertown, MA 02172. Phone: (617) 926-3300.

HYDROLOGIST

UNIVERSITY OF NEBRASKA—LINCOLN

Conservation and Survey Division announces a tenure-leading position to begin September 1, 1988. Position requires a Ph.D. in hydrology or civil engineering with specialization in hydrology. Successful applicant is expected to conduct research in Nebraska with emphasis in open-channel hydraulics, aquifer-stream interactions, and solute transport processes. Responsibilities include acquisition of funding to support research. Development and maintenance of a working relationship with other departments of the University and with personnel in governmental agencies, private industry and individuals involved in water resources is expected. Opportunities to teach and advise graduate students are available. This position is annual full time; salary and academic rank are commensurate with experience and qualifications. Send a detailed resume, transcripts, and four letters of reference to: Jerry F. Ayers, Search Committee, Conservation and Survey Division, University of Nebraska-Lincoln, 113 Nebraska Hall, Lincoln, NE 68588-0517. Closing date for application is July 1, 1988, or until a suitable applicant is found.

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ENVIRONMENTAL GEOLOGISTS, HYDROGEOLOGISTS, ENVIRONMENTAL SCIENTISTS

ATEC Associates, Inc. a multi-disciplinary environmental services and engineering firm with 30 offices nationwide, is seeking experienced and entry level environmental professionals.

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science, chemistry or biology. Advanced positions require a minimum of an M.S. and 2 years experience in any of the following areas: site assessments, hazardous/toxic waste investigations, hydrogeologic investigations, ecological studies, wetland delineations, or subsurface geophysical investigations.

Interested persons are requested to forward a resume with salary history in confidence to: M.A. Slivinski, CPG, Division Manager, ATEC Environmental Consultants, 8918 Herrmann Dr., Columbia, MD 21045-4780.

FLORIDA INTERNATIONAL UNIVERSITY THE STATE UNIVERSITY OF FLORIDA AT MIAMI

The Department of Geology invites applications for a tenure-track geophysics/geology position at the assistant professor level in the areas of crustal dynamics or paleomagnetism, or related fields. The successful applicant will be expected to teach courses at undergraduate and graduate levels, and to initiate and pursue a vigorous program of original research complementing the department's existing interests in geophysics, structural geology, and tectonics. The department is well equipped with facilities that include Lacoste-Romberg gravimeter, field magnetometer, 12 channel seismograph, data logger, XRD, microprobe and IC spectrometer. Starting date for the position is August 1988.

Applicants should send a current resume, a brief statement of teaching and research interests, transcripts and at least three letters of recommendation to: Dr. Florentin Maurrasse, Department of Geology, Florida International University, Miami, Florida 33199. Deadline for the application is June 10, 1988.

Florida International University is an equal opportunity/affirmative action employer and is a member of the state university system of Florida.

UNIVERSITY OF PUERTO RICO MAYAGUEZ CAMPUS

The Department of Geology is accepting applicants for tenure-track faculty appointment (Ph.D. required) at the assistant professor level. The successful candidate should have research interest in one or more of the following areas: Biostratigraphy, Micropaleontology, Seismic Stratigraphy or Geochronology. The Candidate will be expected to teach both general undergraduate courses and those in his/her specialty, as well as carry out an active research program on Caribbean Geology. Subject to final budgetary approval, the position will become effective August 1, 1988. Please submit resume, including the names of 3 referees, by July 1, 1988 to: Chairman, Department of Geology, University of Puerto Rico, Mayaguez, Puerto Rico, 00708. An Affirmative Action/Equal Opportunity Employer.

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This is a career civil service position with a salary range of \$39,501 to \$60,683, dependent upon qualifications. Applications must be made by Standard Form 171 (Personal Qualification Statement) available from any federal personnel office, and a professional vita. Applications must be received by June 20, 1988. Send applications and inquiries to:

John M'Gonigle
Chair, Search Committee
U.S. Geological Survey
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Structural Geologists

The Research and Technical Services Group of ARCO Oil and Gas Company located in Plano, Texas is interviewing candidates for positions in STRUCTURAL GEOLOGY. We have a group of five structural geologists working on compressional and extensional tectonics and the modeling of geological structures. Our current research efforts are directed towards developing new concepts and methods for interpreting structural styles, physical and numerical modeling, and seismic modeling and interpretation. We anticipate adding new positions in the areas of compressional, wrench and salt tectonics in 1988.

Candidates interested in entry-level positions or those with past professional experience and interest in senior-level positions are invited to apply. A Ph.D. degree is required and past experience in structural interpretation is preferred.

Please send resume with salary history to: Ronald L. Milam, ARCO Oil and Gas Company, P.O. Box 2819 E-709, Dallas, Texas 75221.

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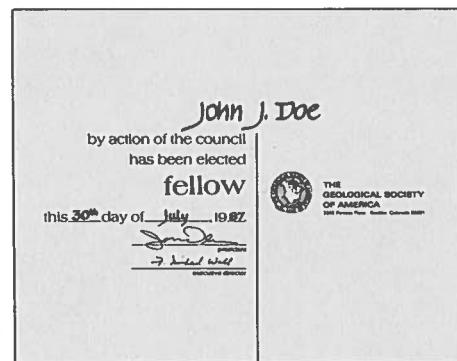
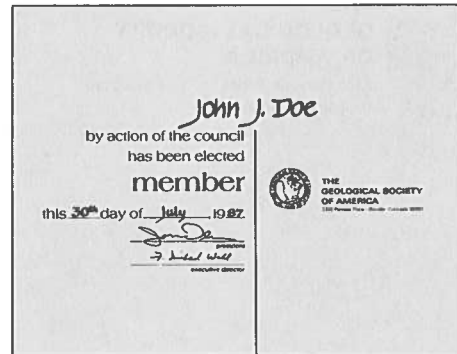
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CENTENNIAL MEETING & EXHIBIT

ABSTRACTS DEADLINE: JUNE 10

Abstracts must be typed on 1988 abstract forms, available from Abstracts Secretary, Geological Society of America, P.O. Box 9140, Boulder, CO 80301, or call (303) 447-8850. Volunteered abstracts must be mailed to the same address in time to arrive on or before June 10, 1988.

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