

San Antonio
1986
ANNUAL MEETING
FIRST ANNOUNCEMENT (see page 71)

G.S.A. ARCHIVES

GSA NEWS & INFORMATION

Monthly Newsletter of
The Geological Society of America

VOLUME 8, NUMBER 4

APRIL 1986

United States to Host 28th International Geological Congress

The International Geological Congress (IGC) will hold its 28th meeting in Washington, D.C., July 9-19, 1989. The meeting, hosted by the National Academy of Sciences and the U.S. Geological Survey, will mark the first time the congress has met in the United States since 1933.

The International Geological Congress is a nonprofit scientific and educational organization under the sponsorship of the International Union of Geological Sciences (IUGS) and exists to encourage the advancement of fundamental and applied research in the earth sciences worldwide. To achieve this purpose, an international geological congress is organized approximately every four years by scientists in member countries to provide a forum for the communication of ideas and information, research developments, and other matters related to the earth sciences. The congress brings together a broad representation of the world's earth scientists for a unique opportunity to exchange scientific information and concepts.

Comprehensive Program Planned

The scientific program of the congress will consist of symposia, regular sessions, and poster presentations covering virtually every aspect of basic and applied earth science. Interdisciplinary symposia will be featured as a reflection of the growing requirement for broad, multidisciplinary approaches to many earth science problems.

The increasingly important role of the geological sciences in a variety of social issues will be emphasized in symposia and poster sessions dealing with resources (oil, gas, coal, water,

geothermal energy, minerals), pollution (toxic and nuclear wastes), geologic hazards (earthquakes, volcanic eruptions, landslides, and subsidence), and land use. Topics will be discussed both from a global viewpoint and by use of specific case histories.

A large area will be provided for exhibition of state-of-the-art technology for the broad range of earth sciences including laboratory instrumentation, computers, remote sensing equipment, geophysical exploration instrumentation, and other sophisticated field equipment. Exhibits will be organized to demonstrate the integration of technology with the substance of scientific research.

In addition, approximately 100 pre- and post-congress field trips are being planned throughout the United States (see February 1986 *GSA News & Information*), including Alaska and Hawaii. During the congress, local field trips will be offered, including visits to local museums, historical locations, and U.S. Federal agencies.

More than 40 short courses and workshops will be offered at the congress. These will cover a spectrum of fields and topics and will provide up-to-date information and training in critical research areas.

Organization

Support for the congress is being provided by the earth science community throughout the United States, including Federal and State agencies, professional societies and organizations, academia, and industry. A Bureau has been established to make preparations for the congress, to develop logistic support for an anticipated attendance of 6,000 people, and to operate and manage the actual event. The officers of the Bureau (all GSA Fellows or Members) are President: Charles L. Drake, Dartmouth College; Secretary General: Bruce B. Hanshaw, U.S. Geological Survey; Deputy Secretary General: Jack H. Medlin, U.S. Geological Survey; Vice-President for Programs: Leon T. Silver, California Institute of Technology; Vice-President for Operations: Charles D. Masters, U.S. Geological Survey; Vice-President for Finance: Howard R. Gould, Exxon Production Research Company; Vice-President for Scientific and Technical Sessions: P. Robin Brett, U.S. Geological Survey; Vice-President for Institutional Participation: William L. Fisher, Texas Bureau of Economic Geology; Vice-President for Field Trips: John C. Reed, Jr., U.S. Geological Survey; Treasurer: Priestley Toulmin III, U.S. Geological Survey.

(continued on p. 66)

IGC Field Trip Proposals Due May 1

The 28th International Geological Congress Field Trip Committee welcomes proposals for field trips for the IGC meeting to be held in Washington, D.C., in July 1989. A leaflet containing general guidelines for the field trips and information on how to propose a trip for the IGC meeting is available from

Field Trip Committee
28th International Geological Congress
c/o U.S. Geological Survey
MS 915, Box 25046
Federal Center
Denver, CO 80225 [telephone (303) 236-4614]

Deadline for proposals is May 1, 1986.

The congress is incorporated and has received a nonprofit status under Section 501(c)(3) of the Internal Revenue Service Code. This status allows receipt of contributions for its operations on a tax-deductible basis for the donor. The preliminary budget for the 1989 congress is estimated at \$4.5 million. Although the bulk of this will be recaptured through fees for registration, excursions, and exhibits, publication sales and other self-supporting events, a part of the capital must be sought as contributions from industry, Federal and State governments, and academic and research institutions. Contributions will ensure support for special overseas students, publicity on a global basis, and the development of scientifically exciting field excursions—a forum for exchange of knowledge that transcends language barriers.

The Bureau is contracting with the American Association of Petroleum Geologists to handle the operational aspects of the

congress. The Geological Society of America will support the congress in a variety of ways, including help with field-trip activities.

Publicity

The organizers of the 28th IGC are compiling digitized lists of U.S. and international organizations, agencies, and individuals associated with the earth sciences for distribution of the First Circular in autumn 1986. Organizations and agencies that have access to useful digitized lists of this kind are requested to contact the Secretary General, 28th International Geological Congress, P.O. Box 1001, Herndon, Virginia 22070-1001.

The International Geological Congress provides a unique forum for sustained international exchange of geological knowledge. It is an event with long-term value in the continuing effort to advance our understanding of the earth and thereby improve our capacity to manage it wisely for the good of all.

Wanted: GSA Members To Serve on Committees

The GSA Committee on Committees wants your help. As one of his duties, Vice-President Jack E. Oliver has appointed a group to look for talent to serve GSA as members of our committees and as our representatives to other organizations.

The Committee on Committees will meet in late July or early August and will present at least two nominations for each open position to the Council at its November 12 meeting in San Antonio, Texas. During that meeting, individual councilors may add other names to the lists for consideration. The entire Council will then select appointees for all positions, thus completing the process of bringing new expertise into Society affairs.

The Committee on Committees for 1986 consists of the following people: Chairman George A. Thompson, Department of Geophysics, Stanford University, Stanford, CA 94305, (415) 497-3714; Samuel S. Adams, Adams & Associates, 3030 Third St., Boulder, CO 80302, (303) 447-9093; Maria Luisa B. Crawford, Department of Geology, Bryn Mawr College, Bryn Mawr, PA 19010, (215) 645-5111; William S. Fyfe, Department of Geology, University of Western Ontario, London, Ontario K1N 6N5, Canada, (519) 679-3121; Amos Salvador, Department of Geological Sciences, University of Texas, P.O. Box 7909, Austin, TX 78712, (512) 471-5257.

This group is broadly based, both geographically and in disciplines, but its members cannot possibly know all the GSA members who are potential candidates for serving the Society. You can help them by volunteering yourself or by suggesting names of others you think should be considered for any of the openings and submitting your nomination on the form on page 68.

In making recommendations, please give serious consideration to the special qualifications of the individual for a particular committee. To assist you in nominating GSA members for these various positions, see the following brief summaries of what each committee does and what qualifications are desirable. Please be sure that your candidates are Members or Fellows of the Society and that they meet fully the requested qualifications.

All nominations received at headquarters on the official one-page form will be forwarded to the committee members. **DEADLINE: JUNE 16, 1986.** Information requested on this form will assist the Committee on Committees with their recommendations for the 1987 committee vacancies. Please use one form per candidate. (Additional forms may be copied or requested from GSA headquarters.)

Listed below are the committees and the number of vacan-

cies that will occur. Appointments will be made by the GSA Council at its meeting in San Antonio in November.

COMMITTEES AND QUALIFICATIONS

Day Medal (2 vacancies)

Selects candidates for the Arthur L. Day Medal.

Committee members should have knowledge of those who have made "distinct contributions to geologic knowledge through the application of physics and chemistry to the solution of geologic problems."

Geology & Public Policy (3 vacancies)

Translates knowledge of the earth sciences into forms most useful for public discussion and decision making.

Committee members should have an awareness of public policy and decisions involving the science of geology. They should also be able to develop, disseminate, and translate information from the geologic sciences into useful forms for the general public and for the Society membership; they should be familiar with appropriate techniques for the dissemination of information.

Headquarters Advisory (2 vacancies)

Gives advice on matters relating to headquarters operations.

Committee members should have an interest in management procedures and live within driving distance of GSA headquarters in Boulder.

Honorary Fellows (2 vacancies)

Selects candidates for Honorary Fellows, usually non-North Americans.

Committee members should have knowledge of geologists throughout the world who have distinguished themselves through their contributions to the science.

Investments (2 vacancies)

Meets with GSA money managers and informs the Council about investment of GSA's funds, securities, equities, etc.

Committee members should have knowledge of and experience in portfolio management and be able to make recommendations concerning investment policies.

Membership (2 vacancies)

Screens Member and Fellow applications; evaluates mem-

(continued on p. 67)

NOMINATION FOR GSA COMMITTEES FOR 1987

(One form per candidate, please. Additional forms may be copied.)

Name of candidate:

Address:

Phone:

(Please Print)

COMMITTEE(S) BEING VOLUNTEERED or NOMINATED FOR (please check):

Committee(s):

Comment on special qualifications:

GSA Fellow ()

Section affiliation:

GSA Member ()

Division affiliation(s):

Candidate's year of birth:

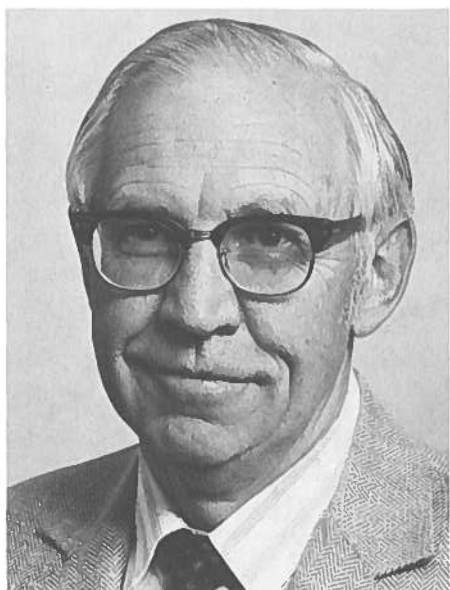
Brief summary of education:

Brief summary of work experience (include scientific discipline, principal employer—e.g., mining industry, academic, USGS, etc.):

If you are nominating someone other than yourself to serve GSA and are not volunteering, please give your name, address, and phone number (please print):

DEADLINE: Please return this form to headquarters by June 16, 1986.

Weimer, Wahl, Lowell to Head Centennial Meeting Committee



Robert J. Weimer



F. Michael Wahl



James D. Lowell

Three outstanding geologists have been named general committee chairmen for the Centennial Celebration Meeting of the Geological Society of America. Robert J. Weimer, professor emeritus at Colorado School of Mines, will serve as the general chairman of the meeting. Cochairmen for the event are F. Michael Wahl, executive director of GSA, and James D. Lowell, president of Colexcon, Inc. The Society's 100th Annual Meeting will be in Denver, Colorado, October 31 to November 3, 1988.

Robert J. Weimer has been recognized for contributions to petroleum geology; he holds a doctorate in geology from Stanford University and has taught at Colorado School of Mines for 29 years. His numerous scientific and community awards include The Mines Medal, awarded to him in 1983 by the Colorado School of Mines Board of Trustees, and the American Association of Petroleum Geologists' prestigious Sidney Powers Memorial Award in 1984. From 1979 to 1983, Weimer participated in a unique summer educational program in mineral and energy resource problems in the West for congressional aides and professional journalists.

F. Michael Wahl supervises a staff of 44 people at GSA headquarters in Boulder, Colorado. He received his doctorate from the University of Illinois. Prior to assuming the position of executive director of the Geological Society of America, he spent more than 25 years in academic and administrative posts at the University of Florida and the University of Illinois.

James D. Lowell received his doctorate in geology from Columbia University. His firm, Colexcon, Inc., specializes in geologic consulting and training services; it is based in Denver. Lowell has worked as a research specialist for Esso Production Research and as an exploration geologist for Exxon Company U.S.A.

Other nationally recognized earth scientists will be named to the committee as plans for the Centennial Celebration Meeting progress.

IN MEMORIAM

John S. Brown
Charlotte, North Carolina
December 1, 1985

Frederic M. Chace
Durham, North Carolina
August 19, 1984

John F. Curran
Santa Barbara, California
December 6, 1985

Bob G. Donegan
Tucson, Arizona

Leo Hall
Amherst, Massachusetts
December 26, 1985

Arthur S. Huey
Long Beach, California

James R. Huff
Piedmont, South Carolina

Clifford A. Kaye
Boston, Massachusetts

Robert M. Lindvall
Denver, Colorado
October 27, 1985

Evans B. Mayo
Tucson, Arizona
January 3, 1986

Melissa J. Montz
Baton Rouge, Louisiana
October 4, 1985

Harold Quin
Vancouver, British Columbia

Howard S. Stafford
Indian Harbor Beach, Florida
November 14, 1985

Francis J. Turner
Berkeley, California
December 21, 1985

Vol. 8, no. 4 GSA News & Information April 1986

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 Larson; Production Assistants: Joan E. Manly and June E. Thomas.

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

The Decade of North American Geology DNAG

**BEST PRICE
OFFERS EXTENDED
UNTIL MAY 1**



A NEW SYNTHESIS OF THE GEOLOGY OF NORTH AMERICA AND ADJACENT OCEANIC REGIONS—AND MORE!

The Decade of North American Geology (DNAG) project is sponsored by the Geological Society of America in celebration of its centennial decade, 1979-1988. Participating in the project are the U.S. Geological Survey, the Canadian Geological Survey, the Canadian Earth Physics Branch, and more than 1,000 authors and editors from the U.S., Canada, Mexico, and other countries.

DNAG's goal is a suite of publications which include a 28-volume modern synthesis of the geology and geophysics of North America and adjacent oceanic regions, six volumes of field guides, four special topical volumes, 23 continent-ocean transects, and seven wall size continent-scale geologic and geophysical maps.

OFFER EXTENDED!

~~LOW COST PRE-PRESS OFFERS
EXPIRE MARCH 1, 1986.~~

Exceptionally low pre-press prices are now available under our special prepayment, installment payment, or standing order plans. But hurry! The best discount offers have been extended until May 1, 1986. GSA is now shipping these publication orders but you still have time to order and save. All orders placed before May 1 will be assured of receiving the complete DNAG series as they are published.

A comprehensive prospectus of these publications is now available. Write, or call our toll-free number for your copy if you haven't received one.



Geological Society of America
3300 Penrose Place • P.O. Box 9140
Boulder, CO 80301
(303) 447-2020
Outside Colorado call toll-free: 1-800-GSA-1988

**ACT NOW
FOR
BEST PRICES
EVER**

THE GEOLOGICAL SOCIETY OF AMERICA

These publications are funded, in part, by the Geological Society of America Foundation.



San AntonioSM

GEOLOGICAL SOCIETY OF AMERICA

P.O. BOX 9140, BOULDER, COLORADO 80301 • 303/447-2020

99th ANNUAL MEETING AND EXPOSITION

NOVEMBER 10-13, 1986

SAN ANTONIO CONVENTION CENTER

SAN ANTONIO, TEXAS

ABSTRACTS DUE JUNE 13

For Abstract Forms 303/447-8850

PREREGISTRATION DUE OCTOBER 10

For Meeting Information 303/447-2020

ASSOCIATED SOCIETIES MEETING WITH GSA

Cushman Foundation • Geochemical Society • Geoscience Information Society
Mineralogical Society of America • National Association of Geology Teachers
Paleontological Society • Society of Economic Geologists

99th ANNUAL MEETING AND EXPOSITION

PRELIMINARY ANNOUNCEMENT AND CALL FOR PAPERS

Technical sessions consist of both volunteered and invited papers. Invited papers were preorganized into symposia. Papers submitted on a volunteered basis will be reviewed and then selected by the Joint Technical Program Committee in July. Chairmen are John C. Maxwell, University of Texas at Austin, and Eric R. Swanson, University of Texas at San Antonio.

VOLUNTEERED PAPERS

Abstracts for the technical sessions (both oral and poster presentations) must be submitted on 1986 abstract forms, available from GSA headquarters, Miriam Hansen, and from the geology departments of most colleges and universities. The abstract form will be used as camera-ready copy for publication of *Abstracts with Programs*. Senior authors will be charged a \$15 fee if retyping is necessary, and there will be no opportunity for authors to review or revise typed abstracts after they are submitted. Note: No more than one abstract from any person as sole or senior author will be accepted for publication, and due to scheduling difficulties, no author may present more than one volunteered paper. These restrictions do not apply to symposia.

DEADLINE FOR RECEIPT OF VOLUNTEERED ABSTRACTS AT GSA: FRIDAY, JUNE 13, 1986

Normal length of presentation is 15 minutes, including time for discussion. Projection equipment consists of TWO 35-mm (2" x 2") projectors and two screens. Overhead projectors will be provided on request. Each poster session speaker will be provided with three tackboards approximately 8' wide and 4' high. The boards are horizontal and free-standing in an 8' x 8', three-sided area. Poster speakers are scheduled in four-hour intervals.

INVITED SYMPOSIA

Conveners for the listed symposia have already chosen their speakers, who submit invited abstracts directly to the convener. If you are interested in more information on a given symposium, please contact the convener directly. Call GSA for contact information. The schedule of symposia and other programming will appear in the Final Announcement in August.

1. **Surveying and Prospecting for Archaeological Sites.** Archaeological Geology Division; John Gifford, Miami University.
2. **New Techniques for Coal Characterization.** Coal Geology Division; Jesse Yeakel, Exxon Production Research Company.
3. **Engineering Geology and Public Policy.** Engineering Geology Division and GSA Committee on Geology and Public Policy; Christopher Matthewson, Texas A&M, and John S. Scott, Geological Survey of Canada.
4. **Tectonics and Geophysics of the Western Himalayas.** Geophysics Division and Structural Geology and Tectonics Division; Lawrence Malinconico, Southern Illinois University, and Robert Lillie, Oregon State University.
5. **Nineteenth-Century Exploration in the Rio Grande Embayment.** History of Geology Division; Thomas Dutro, Jr., U.S. National Museum.
6. **Hydrology of Sedimentary Basins.** Hydrogeology Division; Charles Kreitler, Texas Bureau of Economic Geology.
7. **Mars, Ten Years After Viking.** Planetary Geology Division; Arden Albee, California Institute of Technology.
8. **Quaternary Evolution of the Mississippi Valley.** Quaternary Geology and Geomorphology Division; James Knox, University of Wisconsin.
9. **Tide- versus Storm-Dominated Shelves: Their Modern and Ancient Oceanographic Settings and Deposits.** Sedimentary Geology Division; Rudy Slingerland, Pennsylvania State University.
10. **Microbial Contributions and Transformations in the Sedimentary Record.** Geochemical Society; Robert Gagorian, Woods Hole Oceanographic Institution.
11. **The User and Geoscience Information.** Geoscience Information Society; Robert Bier, Lakewood, Colorado.
12. **Crystal-Liquid Reactions in Granites and Migmatites.** Mineralogical Society of America; Richard Abbott, Appalachian State University.
13. **Recent Advances in Hydrology: Implications for Instruction.** National Association of Geology Teachers; Bernard Pipkin, University of Southern California.
14. **Ontogeny and Heterochrony in the Fossil Record.** Paleontological Society; Michael McKinney, University of Tennessee.
15. **Precious Metal Mineralization in Carbonate and Skarn Environments.** Society of Economic Geologists; Joaquin Ruiz, University of Arizona.
16. **Timing and Depositional History of Eustatic Sequences: Constraints on Seismic Stratigraphy.** Cushman Foundation; Charles Ross, Chevron USA.
17. **Scientific Advances in Geology and Hydrology from Studies of Contaminant Plumes.** Keros Cartwright, Illinois State Geological Survey.
18. **High Pore-Fluid Pressures in Active Tectonic Areas.** John Bredehoeft, USGS, Menlo Park.
19. **Terranes in the Circum-Atlantic Paleozoic Orogens.** David Dallmeyer, University of Georgia.
20. **New Perspectives on the Old Rocks in Northeastern Mexico.** Thomas H. Anderson, University of Pittsburgh.
21. **Global Events and Sequence Stratigraphy.** Ashton Embry, Geological Survey of Canada.
22. **Late Cenozoic Evolution of Stream Systems in the Western United States.** Peter C. Patton, Wesleyan University.
23. **Paleozoic Southern Margin of the United States.** M. Charles Gilbert, Texas A&M.
24. **DNAG Final Reports: Continent-Ocean Transects—Atlantic, Arctic, Gulf.** DNAG; Robert C. Speed, Northwestern University.
25. **Evolution of the Rio Grande Rift and Geochemistry of Related Magmatism.** Geochemical Society; E. Craig Simmons, Colorado School of Mines.
26. **Mineralization in Restricted Basins.** Society of Economic Geologists; Gregory E. McKelvey, Cominco American, Inc.
27. **Recent Concepts and Quantitative Methods Applied to Carbonate Aquifers.** Robert W. Maclay, USGS, San Antonio.
28. **The Precambrian Framework of the Caribbean and Gulf of Mexico.** Allan K. Gibbs, Cornell University.

San Antonio

GEOLOGICAL SOCIETY OF AMERICA • P.O. BOX 9140, BOULDER, COLORADO 80301

FIELD TRIPS

San Antonio, Texas, via varied transportation means, offers ready access to diverse and unique geological exposures of Texas and adjacent states for which a representative sampling will be offered. Trans-Pecos calderas and structure, Marathon basin sedimentation and structure, Ouachita Mountains tectonics, Wichita Mountains stratigraphy and intrusives, High Plains morphology, Pennsylvanian cycles, Edwards limestone aquifer systems, Llano granites of the craton, salt domes, lignite reserves, and coastal processes on barrier islands offer great diversity. This menu will offer new experiences and concepts for igneous petrologists, geochemists, stratigraphers and sedimentary petrologists, structural geologists, hydrologists, geomorphologists, economic geologists, engineering geologists, archaeological geologists, and the generalist. It is hoped that many will participate in one or more trips.

For further information, contact Jerry Wermund, Bureau of Economic Geology, University of Texas at Austin, Austin, TX 78713, (512) 471-1534; Weldon Hammond, Division of Earth and Physical Sciences, Geology Program, University of Texas at San Antonio, San Antonio, TX 78285, (512) 691-5447; or Field Trip Coordinator, GSA headquarters.

Estimated costs are tentative and are for planning purposes. They cover lodging and transportation but for some trips do not include all meals. Registration will begin August 1, 1986. Forms will be available in the Final Announcement.

Premeeting Trips

Quaternary Geology and Geomorphology of the Rolling Plains, Texas Panhandle. Thomas C. Gustavson, Robert W. Baumgardner, Jr., Chris Caran, and Edward Collins, Bureau of Economic Geology, University of Texas, Austin; and Walter Dalquest, Midwestern State University, Wichita Falls. Two days. Estimated cost: \$200. Limit: 45 participants.

Archaeological Geology of Classic Paleo-Indian Sites on the Southern High Plains, Texas and New Mexico. Vance T. Holliday, Texas A&M University, College Station; Eileen Johnson, The Museum, Texas Tech University, Lubbock; Vance Haynes, University of Arizona, Tucson; and Glen Evans, Austin. Two days. Estimated cost: \$200. Limit: 45 participants.

Igneous Geology of Trans-Pecos Texas. Jonathon G. Price and Christopher D. Henry, Bureau of Economic Geology,

University of Texas, Austin; Don F. Parker, Baylor University, Waco; and Daniel S. Barker, University of Texas, Austin. Three days. Estimated cost: \$300. Limit: 45 participants.

Ouachita Mountain Geology—Structure, Stratigraphy, Depositional and Thermal History, Arkansas. Charles G. Stone, Arkansas Geological Commission, Little Rock, and Boyd R. Haley, Little Rock. Two and one-half days. Estimated cost: \$200. Limit: 45 participants.

Engineering Geology of San Antonio, Texas. Jeffrey R. Walker and Edward G. Miller, Raba-Kistner Consultants, San Antonio. One day. Estimated cost: \$50. Limit: 25 participants.

Stratigraphy and Structure of the Maverick Basin and Devil's River Trend, Lower Cretaceous, Southwest Texas. C. I. Smith, University of Texas, Arlington; Peter R. Rose, Telegraph Exploration, Telegraph, Texas; R. E. Webster, Dallas; and C. H. Humphreys, Ensearch Exploration, Dallas. Three days. Estimated cost: \$240. Limit: 90 participants.

Petrology of the Cambrian Wichita Mountains Igneous Suite. M. C. Powell, Texas A&M University, College Station; B. N. Powell, Phillips Petroleum, Bartlesville; and D. London, University of Oklahoma, Norman. Three days. Estimated cost: \$250. Limit: 40 participants.

Hydrology of the Edwards Aquifer, San Antonio Region, Texas. Weldon W. Hammond, Jr., University of Texas, San Antonio; and Robert L. Bluntzer, Texas Water Commission, Austin. One day. Estimated cost: \$100. Limit: 45 participants.

Paleoenvironments and Fossil Communities of the Late Pennsylvanian of North-Central Texas. Thomas E. Yancey, Texas A&M University, College Station; and Steve Schutter, Exxon Production Research Company. One day. Estimated cost: \$190. Limit: 45 participants.

Geology of Gulf Coast Lignites. Bob Finkelman, Exxon Production Research Company, Houston; Walter Ayers, Bureau of Economic Geology, University of Texas, Austin; John Breyer, Texas Christian University, Ft. Worth; and John Johnston, Louisiana Geological Survey, Baton Rouge. Three days. Estimated cost: \$250. Limit: 45 participants.

Postmeeting Trips

Economic Geology of the Ouachita Mountains and Vicinity, Southwestern Arkansas. Ben Clardy, Mike Howard, and Bill Prior, Arkansas Geological Commis-

sion, Little Rock; and Don Owens, UMETCO Minerals Corporation, Hot Springs, Arkansas. Two days. Estimated cost: \$200. Limit: 45 participants.

Precambrian Granite Magmatism and Diapirism, Llano Uplift, Central Texas. Volker W. Gobel, Stephen F. Austin State University, Nacogdoches, Texas; and Robert M. Hutchinson, Golden, Colorado. Two days. Estimated cost: \$180. Limit: 45 participants.

Comparison of Cap Rocks, Natural Resources, and Surface Features Over Boling and Damon Mound Salt Domes. Steven Seni, Bureau of Economic Geology, University of Texas, Austin, and Richard Kyle, Department of Geological Sciences, University of Texas, Austin. One day. Estimated cost: \$80. Limit: 45 participants.

Geologic and Geomorphic History of the Edwards Limestone Aquifer and Surface Drainage System, South-Central Texas. Patrick L. Abbott, San Diego State University, San Diego, and Charles M. Woodruff, Jr., Austin. One day. Estimated cost: \$50. Limit: 45 participants.

South Texas Modern Depositional Systems. John L. Russell and Jon A. Baskin, Texas A&I University, Kingsville. Three days. Estimated cost: \$240. Limit: 30 participants.

Stratigraphy of the El Paso Borderland, Texas. David V. LeMone, University of Texas, El Paso. Two days. Estimated cost: \$150. Limit: 45 participants.

Upper Cretaceous Volcanic Centers of South and Central Texas. Thomas E. Ewing, Frontera Exploration Services, San Antonio; S. Christopher Caran, Bureau of Economic Geology, University of Texas, Austin; and L. Joy Hudson, San Antonio. Two days. Estimated cost: \$150. Limit: 45 participants.

SHORT COURSES

Exploration Geochemistry: Design and Interpretation of Soil Surveys. Sponsored by the Society of Economic Geologists and the Association of Exploration Geochemists. Thursday, November 6 through Sunday, November 9, 8:00 a.m. to 5:00 p.m. For information: Lois Elms, Western Experience, 2369 Carriage Circle, Oceanside, CA 92056; (619) 722-0027.

Fossil Land Plants. Sponsored by the Paleontological Society. Sunday, November 9, 8:00 a.m. to 5:00 p.m. For information: Robert A. Gastaldo, Dept. of Geology, Auburn University, Auburn, AL 36830; (205) 826-4282.

ABSTRACTS COORDINATOR 303/447-8850 • ALL OTHER MEETING INFORMATION 303/447-2020



Stable Isotopes in High-Temperature Geological Processes. Sponsored by the Mineralogical Society of America. Tentatively scheduled for Thursday evening, November 6 to Sunday noon, November 9. For information: Barbara Minich, MSA Business Office, 1625 I Street N.W., Suite 414, Washington, DC 20006; (202) 775-4344.

The following short courses will be sponsored by GSA. For further information, contact Edna Collis, GSA headquarters.

Basic Principles of Rock Mechanics. Friday, November 14 and Saturday, November 15, 8:00 a.m. to 4:00 p.m. Instructed by John H. Sprang, N. L. Carter, M. Friedman, J. Handin, A. Kronenberg, and J. M. Logan, Texas A&M University.

Computer Graphics and Geologic Applications. Saturday, November 8 and Sunday, November 9, 8:00 a.m. to 5:00 p.m. Instructed by Richard G. Craig and Barry L. Roberts, Kent State University; Michael P. Singer, URS Dalton, Environmental Consultants; and Harlan P. Foote, Battelle Memorial Institute.

Contaminant Hydrogeology. Saturday, November 8 and Sunday, November 9, 8:00 a.m. to 4:30 p.m. Instructed by Frank W. Schwartz, University of Alberta; and Leslie Smith, University of British Columbia.

Glacial-Marine Sedimentation. Saturday, November 8 and Sunday, November 9, 8:00 a.m. to 5:00 p.m. Instructed by Bruce F. Molnia, Polar Research Board, National Academy of Sciences; and John B. Anderson, Rice University.

Seawater Chronostratigraphy Using Strontium Isotopes. Sunday, November 9, 1:00 p.m. to 5:00 p.m. Instructed by Richard W. Hurst and Terry E. Davis, California State University.

WORKSHOPS

The Earth as a Planet. Sponsored by the Lunar and Planetary Institute and the GSA Planetary Geology Division. Sunday, November 9, 8:00 a.m. to 5:00 p.m. For information: Pam Jones, Lunar and Planetary Inst., 3303 NASA Road 1, Houston, TX 77058, (713) 486-2150.

GeoRef Trainers' Workshop. Sponsored by the Geoscience Information Society and the American Geological Institute. Thursday, November 13, 8:00 a.m. to 12:00 noon. For information: Julie Jackson, AGI, 4220 King Street, Alexandria, VA 22302, (800) 336-4764.

Introduction to GeoRef: Learn to Search the Geological Literature by Computer. Sponsored by the Geoscience Information Society and the American Geological Institute. Wednesday, November 12, 8:00 a.m. to 12:00 noon. For information: Julie Jackson, AGI, 4220 King Street, Alexandria, VA 22302, (800) 336-4764.

SAN ANTONIO INVITATION

James O. Jones, University of Texas at San Antonio, General Chairman, welcomes you to his exciting city and to an excellent opportunity for scientific exchange. He has selected his committee members from his own campus plus the campuses of the University of Texas at Austin, St. Mary's University, and Texas A&M University.

ACCOMMODATIONS

GSA has selected twelve official hotels, which will offer special convention rates. A block of 525 rooms is reserved at the Hyatt Regency, which, as headquarters, will host most of our social and business events. Hotel rates range from \$35 to \$83 for a single and from \$42 to \$104 for a double.

The San Antonio Convention Center will be the location of all technical sessions and exhibits. Most hotels are within a short, easy walking distance of the Center, although the farthest hotel is two miles away. Hotel forms will be available in the Final Announcement in August. All housing will be processed in San Antonio by the official Housing Bureau.

TRANSPORTATION

The major carriers into San Antonio are American and United, but other airlines are becoming more competitive in both number of flights and fares available. Advance booking is the route to lowest fares, so check with your travel agent now to secure a seat. GSA will be naming an official travel agency that will establish special discounted air fares.

HIGHLIGHTS

Exhibits. The 200-booth Geoscience Exhibit opens Sunday, November 9, 6–9 p.m. Exhibitors will display and demonstrate computer hardware and software, measurement equipment, maps, X-ray diffraction and other instruments, cameras, spectrometers, microscopes, microanalysis equipment, publications, field supplies, and camping equipment. Booth space in this expanding show will soon be sold out, so if you would like to become an exhibitor, please call Kathy Ohmie, GSA headquarters, immediately.

Guest Program. Bienvenidos a San Antonio from the Guest Committee, which invites you to join in the fiesta spirit for the 99th GSA Annual Meeting. Fantastic tours have been arranged, including missions, art museums, gardens, style shows, luncheons, and caverns. The committee has selected the finest San Antonio has to offer to cater to guests' diverse interests.

In addition to the tours, each day offers a relaxing time in the hospitality room or a leisurely walk along the river, where shops and restaurants await. The Guest Committee urges you to make plans now for the best GSA meeting ever.

Employment Service. GSA will again offer its employment interview service. Booths are provided for employers to interview applicants who are registered with the service. Staff will be available to assist in scheduling these interviews. Computer listings of our applicant file and resumes are available to employers. See the March issue of *GSA News & Information* for forms and further information, or contact the Employment Service Coordinator at GSA headquarters.

SPECIAL EVENTS

Welcoming Party. The opening-night reception is at the San Antonio Convention Center, 6–9 p.m. Exhibits will be open until 9:00 p.m., and you may register for the meeting until 7:30 p.m.

All-GSA Reception. A special reception honoring GSA's Penrose and Day Medalists will follow the GSA Presidential Address and Award Presentations on Monday, November 10, 6–7 p.m. Everyone is invited.

Alumni Night. Immediately following the all-GSA reception, alumni receptions will begin at the San Antonio Convention Center and surrounding hotels. If you would like to schedule an alumni reception, please contact Jean Kinney, GSA headquarters, before June 1.

Vittles & Fiddles. Enjoy both Texas and Mexico during this very special evening of barbecue and tacos, country-western and mariachis, cowboys and Spanish dancers. On Wednesday evening, November 12, an exclusive GSA Western Hoe-Down and Mexican Fiesta will open at La Villita, the Mexican village in the heart of downtown. Cloggers, square-dancers, and the Mexican Big Band sound will provide the background for dancing, singing, and all the Mex-Tex food and beverage you can hold. Everyone will be there.

San Antonio



Penrose Conference on Archaeological Geology To Meet in December

A five-day GSA Penrose Conference, "Archaeological Geology: Environmental Siting and Material Usage," will be held December 7-12, 1986, at St. Simons Island, Georgia. The conference will be cosponsored by the Society for American Archaeology, the Society for Archaeological Sciences, and the Association for Field Archaeologists. Conveners are Charles J. Vitaliano, Department of Geology, Indiana University, Bloomington, IN 47405, and Norman Herz, Department of Geology, University of Georgia, Athens, GA 30602.

The burgeoning of archaeological geology as an interdisciplinary science has involved archaeologists and geologists representing almost every field of specialization. In the literature resulting from the research of these specialists, constant reference is made to the effect of climate and terrain on site selection; the subsequent modification of site and site environment by erosion, volcanism, and other geologic processes; and the relationship of sources of artifact raw materials to site selection, trade route development, and the well-being of ancient communities and of the material itself to techniques for fashioning of tools and weapons.

Integration of the results, widely scattered in the literature, and consideration of the nature and thrust of past research, constitute the foremost aim of the conference. Through it we also hope to clarify the present state of this interdisciplinary science, to identify important outstanding problems for future research, and to investigate the potential of powerful new tools and techniques for archaeological geology research. To accomplish this, we plan (1) a one-day field trip to a recently excavated site on St. Catherines Island, off the coast of Georgia, which was located and developed using some of the new research techniques, and (2) a series of sessions of symposium-like reports, followed by a period of freewheeling discussions, under the following headings:

I. *Site Reconstruction, Geomorphology and Environmental Influences*: site geology, palynology, paleogeography, volcanic hazards, and marine usage.

II. *Site Sedimentation, Stratigraphy, and Climatology*: sedimentation processes and interpretation, and pedology.

III. *Lithic Artifacts*: mineralogy and petrology of artifacts, and provenance studies, including magnetic source determination.

IV. *Metal Artifacts*: geochemistry of pseudomorph development, ancient metal mining, smelting, and metallurgical techniques, as well as determination of raw material sources.

V. *Dating Techniques*: radioactive isotope techniques, tephrochronology, and archaeomagnetism.

VI. *Applications of Stable Isotopes*: Sr, O, and C in human teeth, as artifact fingerprints, and clues to ancient diet and agriculture.

VII. *Geophysics and Geophysical Techniques*: electromagnetic prospecting, mapping and logging, remote sensing and resistivity.

VIII. *Ceramics*: the importance of ceramics in archaeological research, and the nature and provenance of ceramic raw materials.

The field trip to St. Catherines Island, scheduled for the third day of the conference, will emphasize site selection. We will discuss the use of such research techniques as remote sensing, ground-penetrating radar, and resistivity surveying as applied to site studies.

The conference will be limited to 60-70 participants, including graduate students and foreign scholars. Interested persons should write Charles J. Vitaliano at the above address, stating reasons for wishing to attend the conference. Include a brief description of past or present research relevant to any of the conference sessions. **Deadline for applications is August 15, 1986.**

We hope to have available limited support for a few qualified graduate students. Ample time will be provided for formal and informal discussion, and poster presentations will be encouraged. The registration fee, about \$500, will cover lodging, meals, field trips, and local transportation.

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.

MEETINGS

1986

Geochemistry and Mineralisation of Proterozoic Volcanic Suites, April 2-5, 1986, Nottingham, England. Information: Tim Pharaoh, Deep Geology Research Group, British Geological Survey, Keyworth, Nottingham NG12 5GG, England.

International Symposium on Coal and Coal-bearing Strata, April 8-11, 1986, London. Information: A. C. Scott, Geology Dept., Chelsea College, 552 King's Road, London SW10 0UA, England.

Experimental Mineralogy and Geochemistry: Applications to Petrology and Ore Deposits, April 17-19, 1986, Nancy, France. Information: A. Weisbrod, E.N.S.G., B.P. 452, 54001 Nancy Cedex, France.

Arizona-Nevada Academy of Science 30th Annual Meeting, April 19, 1986, Glendale, Arizona. Information: Jim Bales, 8643 E. Buena Terra, Scottsdale, AZ 85253; (602) 949-1549.

International Symposium on Environmental Geotechnology, April 21-24, 1986, Allentown, Pennsylvania. Information: H. Y. Fang, Geotechnical Engineering Div., Dept. of Civil Engineering, Lehigh University #13, Bethlehem, PA 18015; (215) 861-3549 or 3520.

Texas A&M Geodynamics Research Program Symposium: Mesozoic and Cenozoic Plate Tectonic Reconstructions, April 23-25, 1986, College Station, Texas. Information: Geodynamics Research Program, Texas A&M University, College Station, TX 77843-3114; (409) 845-8477.

32nd Institute on Lake Superior Geology, April 29-May 4, 1986, Wisconsin Rapids, Wisconsin. Information: Jeffrey K. Greenberg, Wisconsin Geological Survey, 3817 Mineral Point Rd., Madison, WI 53705; (608) 263-7385.

Forum on Global Sedimentary Geology—Challenges and Opportunities, May 3-4, 1986, Bloomington, Indiana. Information: Lee J. Suttner, Dept. Geology, Indiana University, Bloomington, IN 47405; (812) 335-4957.

New Perspectives in Basin Analysis: A Symposium in Honor of Francis J. Pettijohn, May 8-9, 1986, Minneapolis, Minnesota. Information: Karen Kleinspehn or Chris Paola, Dept. of Geology and Geophysics, 310 Pillsbury Dr. SE, Minneapolis, MN 55455; (612) 373-4078.

5th International Symposium on Biomineralization: Evolution of Ocean Chemistry and Its Significance to Biomineralization, May 18-23, 1986, Arlington, Texas. Information: Rex Crick, Dept. Geology, University of Texas, Arlington, TX 76019; (817) 273-2987.

Geological Association of Canada—Mineralogical Association of Canada Annual Meeting, May 19-21, 1986, Ottawa, Ontario. Information: J. A. Donaldson, Dept. of Geology, Carlton University, Ottawa, Ontario K1S 5B6, Canada; (613) 231-2630.

First International Symposium on Dinosaur Tracks and Traces, May 23-24, 1986, Albuquerque, New Mexico. Information: David D. Gillette, New Mexico Museum of Natural History, P.O. Box 7010, Albuquerque, NM 87194.

49th Annual Northeastern Friends of the Pleistocene meeting and field trip, May 23-25, 1986, Fort Kent, Maine. Information: J. S. Kite, Dept. of Geology and Geography, University of West Virginia, Morgantown, WV 26506; (304) 293-5603.

American Association for the Advancement of Science National Meeting, May 25-30, 1986, Philadelphia, Pennsylvania.

Information: AAAS Meetings Office, 1333 H St., NW, Washington, DC 20005; (202) 326-6400.

Third International Conference on Geoscience Information, June 1-5, 1986, Adelaide, Australia. Information: Secretary, Organising Committee 3ICGI, Australian Mineral Foundation, PB97, Glenside, South Australia 5065, Australia.

American Quaternary Association 9th Biennial Meeting, Environments at Glacier Margins—Past and Present, June 2-4, 1986, Champaign, Illinois. Information: Wayne M. Wendland, AMQUA Local Arrangements Committee, Illinois State Water Survey, 2204 Griffith Dr., Champaign, IL 61820; (217) 333-0729.

Geology of the Bahamas, Third Symposium, June 6-10, 1986, San Salvador, Bahamas. Information: H. Allen Curran, Dept. of Geology, Smith College, Northampton, MA 01063; (413) 584-2700, ext. 3943.

27th U.S. Symposium on Rock Mechanics, June 23-25, 1986, University, Alabama. Information: Howard L. Hartman, Dept. of Mineral Engineering, University of Alabama, P.O. Box 1468, University, AL 35486; (205) 348-6578.

6th International Conference on Geochronology, Cosmochronology and Isotope Geology, June 30-July 4, 1986, Cambridge, England. Information: Organising Committee, Sixth International Conference, Dept. of Earth Sciences, University of Cambridge, Downing St., Cambridge CB2 3EQ, England.

Geocongress '86, July 7-11, 1986, Johannesburg, South Africa. Information: Symposium Secretariat, S. 339, CSIR, P.O. Box 395, Pretoria, Republic of South Africa 0001.

International Field Conference on Proterozoic Geochemistry, July 13-19, 1986, central Colorado. Information: K. C. Condie, Dept. of Geoscience, New Mexico Institute of Mining and Technology, Socorro, NM 87801.

Deep Seismic Reflection Profiling of the Continental Lithosphere, July 15-17, 1986, Cambridge, England. Information: Bullard Laboratories, Madingley Rise, Madingley Rd., Cambridge CB3 0EZ, England.

Mars: The Evolution of Its Climate and Atmosphere, July 18-19, 1986, Washington, D.C. Information: Pamela Jones, Lunar and Planetary Institute, 3303 NASA Road 1, Houston, TX 77058; (713) 486-2150.

International Symposium on Natural and Man-made Hazards, August 3-9, 1986, Rimouski, Quebec, Canada. Information: Mohammed El-Sabh, Dept. d'océanographie, Université du Québec à Rimouski, 310, avenue des Ursulines, Rimouski, Québec G5L 3A1, Canada; (418) 724-1755; Telex 051-31623.

Symposium on Intermontane Basins: Sedimentology, Tectonics, and Mineral Resources, August 4-7, 1986, Chiang Mai, Thailand. Information: S. D. Nio, Comparative Sedimentology Div., State University of Utrecht, P.O. Box 80.021, 3508 TA Utrecht, Netherlands.

Third International Humic Substances Society Meeting, August 4-8, 1986, Oslo, Norway. Information: Egil Gjessing, Norwegian Institute for Water Research, P.O. Box 333, Blindern, Oslo 3, Norway, or Wesley L. Campbell, IHSS Standards & Reference Committee, 5293 Ward Rd., Arvada, CO 80002; (303) 236-3615.

Fifth International Symposium on Water-Rock Interaction, August 8-17, 1986, Reykjavik, Iceland. Information: Halldor Armannsson, Orkustofnun — National Energy Authority Grensasvegur 9, 108 Reykjavik, Iceland.

Energy Resources in Asia, August 11-14, 1986, Hong Kong. Information: Asian Research Service, G.P.O. Box 2232, Hong Kong.

Fourth International Kimberlite Conference, August 11-15, 1986, Perth, Western Australia. Information: J. D. Lewis, Geological Survey of Western Australia, Mineral House, 66 Adelaide Terrace, Perth, Western Australia.

North American Paleontological Convention IV, August 11-15, 1986, Boulder, Colorado. Information: NAPC IV, Box 315, University of Colorado, Boulder, CO 80309-0315; (303) 492-8069.

Basins of Eastern Canada and Worldwide Analogues, August 13-15, 1986, Halifax, Nova Scotia. Information: Secretary, Dept. of Oceanography, Dalhousie University, Halifax, Nova Scotia, Canada B3H 4J1.

Friends of the Pleistocene, Midwest Cell, August 15-17, 1986, Lawrence, Kansas. Information: W. C. Johnson, Dept. Geography, University of Kansas, Lawrence, KS 66045; (913) 864-5143.

Circum-Pacific Energy and Mineral Resources Conference, August 17-22, 1986, Singapore. Information: Allen G. Hatley, c/o Gaffney, Cline & Assoc., P.O. Box 76309, Dallas, TX 75379.

International Association on the Genesis of Ore Deposits Seventh Symposium, August 18-22, 1986, Lulea, Sweden. Information: Inger Wallin, Centek Conference, S-951 87 Lulea, Sweden.

37th Annual Highway Geology Symposium, August 20-22, 1986, Helena, Montana. Information: Joseph E. Armstrong, Montana Dept. of Highways, 2701 Prospect Ave., Helena, MT 59620; (406) 444-6280.

Third U.S. National Conference on Earthquake Engineering, August 24-28, 1986, Charleston, South Carolina. Information: James E. Beavers, Martin Marietta Energy Systems, Inc., Bldg. 9733-4, M/S 2, P.O. Box Y, Oak Ridge, TN 37831.

International Symposium on Large Rock Caverns, August 25-28, 1986, Helsinki, Finland. Information: International Symposium on Large Rock Caverns, Technical Research Center of Finland, Lehtisaarentie 2, SF-00340 Helsinki, Finland; telephone 358-0-4566172; Telex 122972 vttha sf.

International Symposium on Remote Sensing for Resources Development and Environmental Management, August 25-29, 1986, Enschede, Netherlands. Information: Secretariat Symposium Commission VII, ISPRS, c/o ITC, P.O. Box 6, 7500 AA Enschede, Netherlands; Telex 44525.

Iberian Terranes and Their Regional Correlation, September 1-6, 1986, Oviedo, Spain. Information: E. Martinez-Garcia, Dept. de Geotectónica, Facultad de Geología, Universidad de Oviedo, 33005 Oviedo, Spain.

International Conference on Landscapes of the Southern Hemisphere, September 2-7, 1986, Adelaide, South Australia. Information: Jon Firman, C/-S.A. Dept. of Mines and Energy, P.O. Box 151, Eastwood, S.A. 5063, Australia.

Second International Conference on Paleoceanography, September 7-12, 1986, Woods Hole, Massachusetts. Information: W. A. Berggren, Dept. of Geology & Geophysics, Woods Hole Oceanographic Institution, Woods Hole, MA 02543.

1986 International Gas Research Conference, September 8-11, 1986, Toronto, Ontario. Information: 1986 International Gas Research Conference, c/o Gas Research Institute, 8600 West Bryn Mawr Ave., Chicago, IL 60631; (312) 399-8300, Telex 253812 or 503802.

International Association of Hydrogeologists Congress, September 8-15, 1986, Karlovy Vary, Czechoslovakia. Information: A. Zaporozec, AIH, 3817 Mineral Point, Rd., Madison, WI 53705.

Society for Organic Petrology Third Annual Meeting, September 22-24, 1986, Lexington, Kentucky. Information: James Hower, IMMR, University of Kentucky, Box 13015, Lexington, KY 40512; (606) 277-0777.

Oceans '86 Conference and Exposition, September 23-25, 1986, Washington, D. C. Information: Oceans '86, Suite 500, 2000 Florida Ave., N.W., Washington, DC 20009; (301) 279-4700.

National Association of Geology Teachers East-Central Section Annual Meeting, September 26-28, 1986, Muncie, Indiana. Information: Harlan H. Roepke, Dept. of Geology, Ball State University, Muncie, IN 47306; (317) 285-8266.

Society of Economic Paleontologists and Mineralogists Third Annual Midyear Meeting, September 26-28, 1986, Raleigh, North Carolina. Information: Chuck Nittrouer, Dept. of Marine, Earth and Atmospheric Sciences, North Carolina State University, Raleigh, NC 27695. (*Abstracts due April 1, 1986.*)

17th Annual Binghamton Geomorphology Symposium on Aeolian Geomorphology, September 27-28, 1986, Guelph, Ontario. Information: William G. Nickling, Dept. of Geography, University of Guelph, Guelph, Ontario, Canada N1G 2W1; (519) 824-4120.

Geothermal Resources Council Annual Meeting, September 29-October 1, 1986, Palm Springs, California. Information: Geothermal Resources Council, P.O. Box 1350, Davis, CA 95617; (916) 758-2360.

American Association of Petroleum Geologists Eastern Section, October 2-4, 1986, Ann Arbor, Michigan. Information: Paul A. Catacosinos, Dept. of Geology, Delta College, University Center, MI 48710; (517) 686-9252.

Association of Engineering Geologists 29th Annual Meeting, October 5-9, 1986, San Francisco, California. Information: Alan D. Tryhorn, 1986 AEG Annual Meeting, GeoResource Consultants, Inc., 851 Harrison St., San Francisco, CA 94107; (415) 777-3177.

American Association of Stratigraphic Palynologists Annual Meeting (with Congrès Internationale du Microflore Paléozoïque), October 29-31, 1986, New York, New York. Information: Dan Habib, Graduate School of City University of New York, 33 West 42nd St., New York, New York 10036; (212) 790-4218.

Society of Economic Paleontologists and Mineralogists Mid-Continent Section Annual Field Conference, October 30-November 1, 1986, Ponca City, Oklahoma. Information: William A. Morgan, Conoco, Inc., 1000 S. Pine, Ponca City, OK 74603; (405) 767-2853.

International Conference on Coastal Engineering, November 9-14, 1986, Taipei, Taiwan. Information: Billy L. Edge, Cubit Engineering Limited, 207 East Bay St., Suite 311, Charleston, SC 29401.

(continued on p. 79)

CLASSIFIED ADVERTISING

Ads (or cancellations) for the June issue must reach the GSA office by April 15. Contact Advertising Department (303) 447-2020.

Per line per issue	1x	3x	6x	12x
Situations Wanted:	\$1.25	\$1.10	\$.95	\$.85
Positions Open:	\$3.00	\$2.64	\$2.28	\$2.04
Consultants:	\$3.00	\$2.64	\$2.28	\$2.04
Services & Supplies:	\$3.20	\$2.81	\$2.43	\$2.17
Code number	\$2.75 extra.			

Agencies and organizations may submit purchase order or payment with copy. Individuals must send prepayment with copy. To determine cost, count 44 characters per line, including all punctuation and blank spaces.

To answer coded ads, use this address: Code # , GSA News, P.O. Box 9140, Boulder, CO 80301.

All coded mail will be forwarded within 24 hours of arrival at GSA News office.

Situations Wanted

HYDROGEOLOGIST/GEOHYDROLOGIST, MS. 9 years of experience: aquifer mechanics, geochemistry, computer modeling, resource evaluation, supply design, monitoring, contamination cleanup. Seeks research, industry or regulatory position. Reply Code #1031.

EXPERIENCED GEOLOGIST. Science Educator seeks a position in undergraduate instruction, training, or public relations. Background includes graduate degrees in geology, science education, and instructional systems technology. Experienced in mineralogy, geomorphology, and stratigraphy as well as media and message design. An innovator looking for a new challenge. Resume upon request. Reply code #1032.

GEOLOGIST: Petrologist-mineralogist, 46, Ph.D. with 20 years teaching of geosciences. Seeks to relocate to a college or university where good teaching and advising students comes first. Reply code #1033.

Positions Open

THE DEPARTMENT OF EARTH SCIENCES MEMORIAL UNIVERSITY OF NEWFOUNDLAND with over 30 faculty and a new Centre for Earth Resources Research is expanding into areas related to East Coast offshore geology, petroleum exploration and development and has both new and replacement faculty positions available.

Subject to budget, three tenure-track positions

at the assistant/associate professor level may be available in 1986 and applications are invited from specialists in: Clay Mineralogy, Offshore Engineering Geology, Economic Geology (experimental aspects of mineral deposits), North Atlantic Lithostratigraphy, Marine Geophysics, Mineralogy.

In addition to these positions, a one year appointment in Geophysics is available, also subject to budget.

A Ph.D. in earth sciences or related field is required together with proven research and teaching capability; salary will be commensurate with qualifications and experience.

Enquiries, or applications, with a curriculum vitae and the names of three referees should be sent to: Dr. C.R. Barnes, Head, Department of Earth Sciences, Memorial University of Newfoundland, St. John's, Newfoundland, Canada A1B 3X5, Telephone: (709) 737-8142.

NOTE: In accordance with Canadian Immigration requirements, preference will be given to qualified Canadian citizens and permanent residents; non-Canadians may apply.

RESEARCH CHAIR IN SEISMOLOGY AND FACULTY POSITION IN MARINE GEOPHYSICS

Applications are invited for a recently funded NSERC/Petro-Canada Research Chair in marine reflection seismology which provides for an appointment at the Associate or Full Professor level, a research associate and the acquisition of a multichannel reflection system. Also a tenure-track opening exists for a Marine Geophysicist with interests in crustal seismology or a complementary area. The Department of Earth Sciences is the largest single geoscience department in Canada and has particularly strong interdisciplinary research programs in East Coast crustal structure and tectonics. There are excellent opportunities for collaborative research within the Department, with industry and with the Atlantic Geoscience Centre. In accordance with Canadian immigration requirements, preference will be given to Canadian citizens and permanent residents of Canada; non-Canadians may apply. Enquiries or applications with names of three referees to: Dr. C.R. Barnes, Head, Centre for Earth Resources Research, Department of Earth Sciences, Memorial University, St. John's, Newfoundland, Canada A1B 3X5. (709) 737-8142.

SOLID EARTH GEOPHYSICIST MEMPHIS STATE UNIVERSITY

As part of the expansion of the geophysics program at Memphis State University, the Tennessee Earthquake Information Center [TEIC] and the Department of Geological Sciences invite applications for a new faculty position in solid earth geophysics. Preferred specialties include global seismology, deep earth structure, and tec-

tonophysics; however, other research interests will be carefully considered. The PhD is required; all experience levels are eligible, but we especially seek someone with 10 years or more post-PhD research and academic experience. The successful candidate will be expected to carry out a vigorous research program, to include externally sponsored projects. He or she will join a group of 7 research faculty active in intraplate seismology, seismic hazard assessment, applied geophysics and neotectonics. TEIC maintains a 40-station seismic network and supports a VAX 11/785 dedicated to geophysical research use.

The appointment is for fall, 1986, and will be a joint appointment to TEIC and the Department of Geological Sciences at the full, associate, or possibly the assistant professor level. The position is classified as permanent research faculty, non-tenure track. Some teaching and substantial involvement with the development of a PhD program in geophysics is expected. Salary is commensurate with experience and intended to be competitive nationally. Applicants should submit a complete resume, several reprints of research work, and name and address of 3 references to: Arch C. Johnston, Director; Tennessee Earthquake Information Center, Memphis State University, Memphis, TN 38152.

Application deadline is May 1, 1986. MSU is an equal opportunity/affirmative action employer. Applications from minorities and women are encouraged.

PALEONTOLOGIST

The Department of Geology of the University of Oregon invites applications for a faculty position as Visiting Assistant Professor in the general area of paleontology. Appointment at a more senior rank will be considered only in the case of applicants desiring this position during sabbatical leave from their own institute. The exact area of expertise is less important than are demonstrated and potential achievement in research and teaching. The department currently includes two paleontologists, two additional faculty in allied areas of sedimentary geology and five participating faculty from other departments. In addition to a variety of laboratory facilities for modern paleontological research, the department maintains the Condon Collection, Oregon's leading collection of fossils, rich in type material of Tertiary mammals. This appointment is initially for four academic terms, (September 1986 to December 1987) after which it will be reconsidered. The deadline for applications is April 15, 1986, but late applications will be considered until the position is filled. Candidates should send an outline of their research and teaching aims, together with the names, addresses and telephone numbers of three referees, a curriculum vitae and selected reprints of professional publications to Dr. G.J. Retallack, Department of Geology, University of Oregon, Eugene, OR 97403. Minimum salary, \$24,000.

The University of Oregon is an equal opportunity, affirmative action institution.

GEOLOGIST, Structural Min. 4 years experience & MS in Structural Geology req. Duties include Structural Analysis, Subsurface geology, exploration management. Must be knowledgeable about satellite imagery analysis. Salary \$2,842 per month. 40 hour week. Jobsite & interview: Riverside, CA. Send this ad & your resume to: Job # HO6702, P.O. Box 9560, Sacramento, CA 95823-0560 not later than May 1, 1986.

ENVIRONMENTAL GEOPHYSICIST

Consultant geophysicist for detecting hazardous fluids problems and drilling in contaminated soils. Locating and evaluating extent of contamination in soil by geophysical methods. 3 years experience and B.S. in in geology. \$10.82 per hour. Job site/interview Signal Hill. Send this ad and

MOVING?

Don't risk missing a single issue of **GSA News and Information!** If you're planning on changing your address, please give us 8 weeks notice. Simply write in your new address below and mail this coupon —ALONG WITH YOUR SUBSCRIPTION MAILING LABEL—to:

The Geological Society of America
Membership Department
P.O. Box 9140
Boulder, Colorado 80301



(please print)

Name

Address

City State Zip

Phone number during business hours ()

Check here if you DO NOT WISH to have this number included in the Membership Directory

your resume to job no. HO 0048, P.O. Box 9560, Sacramento, CA 95823-0560, not later than May 1, 1986. If offered employment must show legal right to work.

**BIOSTRATIGRAPHER
KANSAS GEOLOGICAL SURVEY**

Full-time position. University of Kansas staff. Master's degree (Geology) with 5 years' experience. Doctorate (Geology) preferred. Research in stratigraphic paleontology or paleoecology of Paleozoic strata in mid-continent region. Knowledge and interest in using subsurface data. Send letter, resume, college transcripts, three references: Personnel Manager, Kansas Geological Survey, 1930 Constant Avenue, University of Kansas, Lawrence, KS 66046-2598. 913-864-3965. Complete announcement on request. Applications must be received on or before June 6, 1986. EO/AA Employer.

YALE UNIVERSITY / PETROLOGY

The Department of Geology and Geophysics is soliciting applications for an Assistant Professorship in petrology to begin as early as the Fall of 1986. The department is interested in all aspects of igneous and metamorphic petrology, broadly defined, including laboratory, field and theoretical approaches, and candidates in any of these areas will be considered. A vita, list of publications and the names of three referees should be sent if possible by April 30, 1986 to Karl K. Turekian, Chairman, Department of Geology and Geophysics, Yale University, Box 6666, New Haven, CT 06511.

Yale University is an equal opportunity/affirmative action employer and encourages applications from all qualified scientists.

Consultants

MEETING COORDINATORS: Western Experience offers coordination of Earth Science meetings of all types including field trips. If you need assistance call us at our new location. Phone (619) 722-0027. Address 2369 Carriage Circle, Ocean-side, CA 92056.

Services & Supplies

FIELD EQUIPMENT! For the lowest prices and our unbeatable guarantee of 100% satisfaction, check our listings of field hammers—Brunton compasses—magnifiers—pouches—plus over 2,000 other products for the geoscientist. Call today for a catalog: 1-800-742-2677. It's absolutely free! Geoscience Resources, 2990 Anthony Road, Burlington, NC 27215.

WANTED: AAPG Memolr 115, Future Oil Provinces, E.A. Elliott, 2837 Yale, Dallas, TX 75006.

MEETINGS (continued from p. 77)

Geological Society of America Annual Meeting—November 10-13, 1986, San Antonio, Texas. Information: Meetings Dept., GSA, P.O. Box 9140, Boulder, CO 80301; (303) 447-2020.

GSA 1986

Penrose Conferences

Reefal Development in a Terrigenous Province, May 17-21, 1986, Veracruz, Mexico. Information: Paul R. Krutak, ARCO Exploration Co., P.O. Box 51408, Lafayette, LA 70505; (318) 264-4452.

Miocene Reconstruction of Southern California, May 30-June 4, 1986, Oxnard, California. Information: Peter W. Weigand, Dept. of Geological Sciences, California State University, Northridge, CA 91330; (818) 885-3541.

Migmatites and Crustal Melting, June 8-13, 1986, Amherst, Massachusetts. Information: Robert J. Tracy, Dept. of Geology and Geophysics, Yale University, New Haven, CT 06511; (203) 436-3539.

Mechanisms of Reservoir Diagenesis and Their Geological Constraints, June 8-13, 1986, Cannes, France. Information: G. Michel Lafon, EXXON Production Research Company, P.O. Box 2189, Houston, TX 77252-2189; (713) 965-4688.

Synsedimentary Tectonics, September 7-12, 1986, Durango, Colorado. Information: William A. Thomas, Dept. of Geology, University of Alabama, University, AL 35486; (205) 348-1880.

The Construction of Geological Cross Sections: Techniques, Assumptions, and Methods, October or November 1986, New Paltz, New York. Information: Peter A. Geiser, Dept. of Geology and Geophysics, University of Connecticut, Storrs, CT 06268; (203) 486-4432 or 4433.

Sections

Northeastern, March 12-14, 1986, Kiamesha Lake, New York

Cordilleran, March 25-28, 1986, Los Angeles, California

South-Central/Southeastern, April 2-5, 1986, Memphis, Tennessee

North-Central, April 24-25, 1986, Kent, Ohio

Rocky Mountain, April 30-May 2, 1986, Flagstaff, Arizona

Annual Meeting, November 10-13, 1986, San Antonio, Texas.

1987

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.

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. (*Abstracts due April 30, 1986.*)

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.

Society of Economic Paleontologists and Mineralogists Fourth Annual Midyear Meeting, September 11-14, 1987, Austin, Texas. Information: SEPM, P.O. Box 4756, Tulsa, OK 74159; (918) 743-9765.

GSA 1987

Penrose Conference

Exposed Cross Sections of the Continental Crust, spring 1987, southeastern Ontario. Information: David M. Fountain, Dept. of Geology and Geophysics, University of Wyoming, Laramie, WY 82071; (307) 766-6299.

Annual Meeting, October 26-29, Phoenix, Arizona

GEOLOGIC Classroom & Field Aids

An essential and handy 5" x 7½" flip chart with 115 color chips giving precise rock colors for all geologic purposes. Provides numerical designations for *hue*, *value*, and *chroma*. Form and arrangement based on Munsell system; color names based on ISCC-NBS system.

Compiled by
Chart
GSA, USGS, AAPG, SEG, and AASG. With text, mask, & envelope.
Each

ROCK COLOR CHART

Rock-Color
Committee of

\$12.00

A new chronostigraphic and numeric time scale in three forms for class and field use. Includes magnetic reversal stratigraphy and estimates of uncertainties of assigned Paleozoic and Mesozoic numerical ages, with sources cited. Prepared by GSA's Decade of North American Geology project.

GEOLOGIC TIME SCALES

8½" x 11", 3-hole drilled, on heavy stock,
package of 50 \$ 8.00
Wallet-size vinyl cards, package of 25 \$ 6.00
Wall-size poster, 30" x 36", on heavy, durable stock,
rolled, in tube, each \$ 8.50



JUNE 13 IS ABSTRACTS DEADLINE

FOR THE ANNUAL MEETING IN SAN ANTONIO.

Abstracts must be typed on 1986 abstract forms, available from Abstracts Secretary, Geological Society of America, P.O. Box 9140, Boulder, CO 80301 [or call (303) 447-8850]. Volunteered abstracts should be mailed to the same address in time to arrive on or before June 13, 1986.

INSIDE _ _ _

Call for Committee Nominations	p. 66
1986 Annual Meeting	p. 71
Penrose Conference on Archaeological Geology	p. 75



**THE
GEOLOGICAL SOCIETY
OF AMERICA**
3300 Penrose Place • P.O. Box 9140
Boulder, CO 80301

**SECOND CLASS
Postage Paid**
at Boulder, Colorado
and at additional mailing office