

# GSA NEWS & INFORMATION

Monthly Newsletter of  
The Geological Society of America

VOLUME 7, NUMBER 10

OCTOBER 1985

## GSA Book Series Offer Flexibility, Fast Publication

by **Campbell Craddock**  
GSA Books Editor

Memoirs and Special Papers are two GSA book series that provide a publication medium for research workers in the geological sciences. Although these series have existed for many years, the GSA Council in 1981 created a new plan for their supervision by an external (some say outhouse) scientific editor. Since my appointment to that position late in 1982 it has been my goal to establish and maintain a steady flow of high-quality Memoirs and Special Papers. In this effort I have been aided greatly by my predecessor, Glen Caldwell, University of Saskatchewan, and Executive Director F. Michael Wahl, Centennial Science Program Coordinator Pete Palmer, and Books Manager Lee Gladish at GSA headquarters in Boulder.

GSA Memoirs and Special Papers are flexible in style and take a variety of forms. Many of these books are collections of related papers by different writers, but some consist of a single long manuscript, usually written by one or two authors. Many volumes are based upon a meeting or a symposium (commonly one held at a GSA meeting); some others spring from a major project involving one or many investigators. Single-manuscript books contain papers too long for consideration as *GSA Bulletin* articles; there is no statutory limit on length—one 600-page manuscript is now with the author for some revision.

### Choice of Series

It is the responsibility of the GSA Books Editor to decide whether an accepted volume is more suitable for the Special Paper series or the Memoir series. The Special Paper series is for state-of-the-art treatments of rapidly evolving subjects; nearly all symposium-based volumes fall into this category. The Memoir series is for works likely to remain the authoritative reference on a subject for a number of years; the final report of a major project and the life-work summary commonly fall in this category.

### Criteria for Publication

Manuscripts on any kind of significant research in the geological sciences can be considered; there are no prescribed limits on subject matter or geographical area. The decision on acceptance for publication is based mainly on scientific content and clarity of presentation; two formal reviews are required. Some consideration is given to breadth of appeal and potential sales. Ability to pay page contributions is not a criterion in the decision



**Campbell Craddock**

on acceptance, but GSA will subsequently ask for a contribution toward the publication costs in order to hold down the selling price of the book. The Society will publish about 10 books during 1985 on a variety of subjects. At a given time there are usually 20-25 book projects in different stages of completion.

### Submission of Manuscripts

GSA has the capacity to publish more books per year and thus would like the number of manuscripts submitted for consideration to increase. Some selectivity must be exercised, but there is advantage for the Society and its members in bringing out more books if the quality remains high. The GSA book series offer prospective authors several advantages. The large page size can accommodate most tables, maps, and other figures; outside materials can be included in a rear pocket. Recent books feature attractive covers and dust jackets, clean figures, and easy-to-read type. GSA books meet the American National Standard for Information Sciences requirements for permanence and should last several hundred years under normal library use and storage conditions. Perhaps best of all, with full cooperation from authors, GSA can publish most books within 6-8 months of the date of acceptance.

(continued on p. 186)



## PLANET EARTH Preview

### IBM to Sponsor Science Theater at GSA Annual Meeting in Orlando

IBM and PBS production center WQED/Pittsburgh (co-producer of the National Geographic Specials) will preview the new public television earth science series PLANET EARTH at the GSA 1985 Annual Meeting Science Theater. Several of the just-completed programs in the seven-part series will be scheduled into the Science Theater, which is sponsored this year by IBM. (A complete Science Theater schedule will be in registration packets for the Orlando meeting.)

PLANET EARTH, produced in association with the National Academy of Sciences (NAS) will premiere on PBS January 22, 1986. The series will also be available to colleges and universities as a 14-part television course. PLANET EARTH's major funder is The Annenberg/CPB Project, with corporate funding from IBM. GSA provided funding for the NAS Geophysics Film Committee, convened by the Academy to ensure the scientific accuracy and integrity of the programs and educational media.

PLANET EARTH documents modern theories in the earth sciences in hour-long productions that feature high-quality film documentary and animation. "Man has enhanced his knowledge of Earth more in the past two decades than in all previous history," says series producer Greg Andorfer, who previously produced "Cosmos" with Carl Sagan for PBS. This series presents an exciting overview of scientists' spectacular achievements.

Andorfer points to at least four developments that have fueled recent discoveries: confirmation of the theory of plate tectonics; the interdisciplinary nature of recent science studies; the international approach to studying problems; and the incredible advances in technology. Production sequences that reflect these themes have been filmed on all seven continents, in situations as extreme as eruption of the Kilauea Volcano and in Antarctica.

One segment of the premiere PLANET EARTH episode features GSA Centennial Science Program Coordinator A. R. "Pete" Palmer. The program, "The Living Machine," dramatizes the theory of plate tectonics. Palmer appears in a helicopter over the Grand Canyon as he discusses geologic time and how the canyon's layers reflect the chronology of Earth's development.

The six remaining episodes in the series include "The Blue Planet," which unveils major new revelations about the sea; "The Climate Puzzle," which explores weather—now and in the future; "Tales from Other Worlds," which analyzes what outer space can tell us about Earth; "Gifts from the Earth," which highlights Earth's resources; "The Solar Sea," which provides new information about the sun and its effect on Earth, and "Fate of the Earth," which examines the possible consequences of the way we live today.

For the college course, WQED/Pittsburgh has edited the 14 half-hour segments, and offers custom-written course materials to instructors. Study guides were developed and written by the University of Pittsburgh External Studies Program with the advice and approval of the National Academy of Sciences Geophysics Film Committee. For more information, and a telecourse preview package, GSA members can call 1-800-LEARNER.

Also in connection with the series, a hardbound book entitled *Planet Earth* will be published by Bantam Books and available in book stores nationally to coincide with the premiere broadcast in January 1986.

### GSA Book Series

(continued from p. 185)

Interested authors and organizers of volumes are encouraged to submit appropriate manuscripts for consideration for these series. Write to Books Editor, Geological Society of America, P.O. Box 9140, Boulder, CO 80301. Describe your proposed book, including its background and significance, and tell something about yourself and your involvement in the research being reported. For volumes composed of a collection of papers, please provide a list of titles and authors; if available, abstracts of the papers are helpful. The Books Editor can neither commission a book nor guarantee eventual acceptance for publication but can evaluate your proposal, encourage those projects that seem appropriate for GSA books, and suggest procedures that will enhance your prospects for success.

Are you qualified by education, professional experience, and standing among your peers?

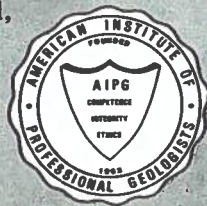
## Why Not Join AIPG?

The Institute welcomes the membership application of those who may meet its high standards for acceptance as Certified Professional Geological Scientists.

AIPG services to its members, and to the public, include: certification, education, information, and representation.

If you'd like to know more, call or write Victor C. Tannehill, Executive Director.

American Institute of  
Professional Geologists  
7828 Vance Drive-Suite 103  
Arvada, Colorado 80003  
(303) 431-0831



### Vol. 7, no. 10 GSA News & Information October 1985

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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.

# 144 Proposals Receive GSA Research Grant Support for 1985

by June Forstrom  
Administrator, Research Grants

Working with a budget of \$119,650, the GSA Research Grants Committee recommended support for 144 of the 523 proposals received for 1985. The committee—Chairman James F. Tull, members Timothy A. Cross, Nancy Lindsley-Griffin, George H. Brimhall, Jr., and Sharon Mosher, and National Science Foundation Conferee James F. Hays—met at GSA headquarters in Boulder, Colorado, in April.

The \$119,650 budget includes donations (\$8,750 in contributions from oil companies), income from the Harold T. Stearns Fund (\$4,000), the Arthur L. Day Fund (\$650), and contributions made by GSA members to the GSA Foundation (\$4,786). The budget also included \$100,000 interest from the Penrose Endowment and a gift of \$1,464 from the GSA Foundation. The Gladys W. Cole Memorial Research Award was \$1,800, which is interest from the Cole Award Fund.

Of the 144 proposals funded, 109 are doctoral proposals and 35 are master's proposals. The average grant is \$834—compared to \$779 in 1984 and \$663 in 1983. Women geologists represent 25% of the total applicants and 29% of the grant recipients. Increased grant support this year (compared to \$92,000 for 1984) enables support for 28% of the applicants, compared to 21% in 1984. GSA members, in response to an appeal made by the Foundation last fall, contributed \$4,786 to the research grants fund.

## Awards

**Robert K. Fahnestock Award.** This grant is awarded to the applicant with the best proposal in fluvial geomorphology and sediment transport. The 1985 nominee is Dorothy J. Merritts, University of Arizona, for "Geomorphic Response to Late Quaternary Uplift, Northern Coastal California."

**Harold T. Stearns Fellowship Award.** The five nominees for this award, for research on aspects of the geology of the Pacific Islands and the circum-Pacific region, are Pamela B. Barnard, University of Maryland, for "A Geochemical and Mineralogical Analysis of Andesitic Basalt Weathering in the Tropics"; Lee Dolores DiTullio, Brown University, for "Evolution of Structural Fabric in an Accretionary Prism: Tertiary Shimanto Belt, Shikoku, Japan"; Rebecca J. Dorsey, Princeton University, for "Sedimentology of a Modern Arc-Continent Collision, Eastern Taiwan"; James P. Hibbard, Cornell University, for "Deformation Paths in an Accretionary Prism: Tertiary Shimanto Complex, Shimanto, Japan"; and John Anthony Tarduno, Stanford University, for "Paleomagnetic Investigation of Accreted Limestones of the Circum-Pacific Region."

**Gladys W. Cole Memorial Research Award.** This award goes to Athol D. Abrahams, State University of New York at Buffalo, to investigate the relative importance of denudational processes and rock mass strength as controls of the form of granitic rock slopes in the Mojave Desert.

**Grants Funded by Industry.** Donations from Amoco Produc-

tion Company (\$250), Conoco, Inc. (\$2,000), Marathon Oil Company (\$2,000), Marathon Oil Foundation (\$2,500), and Mobil Oil Corporation (\$2,000) are funding grants to the following applicants:

David M. Bice, University of California, Berkeley, for "The Evolution and Significance of By-pass Margins of Carbonate Platforms"

Elizabeth Burton, Washington University, St. Louis, for "Pore Water Geochemistry and Early Diagenesis of Shallow Marine Carbonates"

Russell K. Davies, Texas A&M University, for "Faulting in Layered Sedimentary Rocks"

Kevin A. Maher, California Institute of Technology, for "The Structure, Stratigraphy, Geochronology, Petrology and Paleomagnetism of the Happy Creek Igneous Complex and Related Rock Units of the Jackson Mountains, Northwest Nevada"

Carol Mankiewicz, University of Wisconsin, Madison, for "Facies Analysis and the Role of Algae in Late Miocene Reefs of the Western Mediterranean"

Charles E. Savrda, University of Southern California, Los Angeles, for "Comparison of Sediment Fabric and Faunal Elements in Modern and Ancient Oxygen-deficient Basins: A Continuation"

Peter Schwans, Ohio State University, for "Synorogenic Clastics in West-central Utah, A Case-study of Foreland Sedimentation in Response to Tectonism, Basin-margin Subsidence, and Eustasy"

Janet Bauder Thornburg, University of Colorado, Boulder, for "Depositional Environment, Diagenesis, and Petroleum Potential of the Permian Shedhorn Sandstone, Southwest Montana and Northwest Yellowstone National Park"

Edward Timothy Wallin, University of Kansas, for "Provenance of Lower and Middle Paleozoic Sandstones in Allochthonous Terranes of California and Nevada"

Timothy P. Wilson, Michigan State University, for "Chemical Constraints on the Origins of Interior Platform Basin Brines: The Michigan Basin."

**Outstanding Mention.** The Committee in Research Grants specially recognized fourteen of the proposals as being of exceptionally high merit in conception and presentation:

Elaine Angela Aliberti, Harvard University, for "A Structural, Geochemical, and Petrologic Study of the Riggins Quadrangle, Idaho"

Warren D. Allmon, Harvard University, for "Evolution in the Family Turritellidae (Mesogastropoda) in the Paleogene of the Atlantic and Gulf Coastal Plains"

Pamela B. Barnard, University of Maryland, for "A Geochemical and Mineralogical Analysis of Andesitic Basalt Weathering in the Tropics"

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Lindsley-Griffin



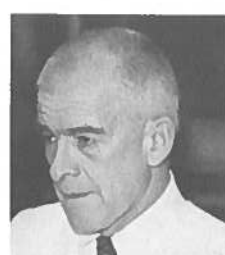
Brimhall



Cross



Tull



Hays



Mosher

## Research Grant Support for 1985

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Susan Rebecca Calder, University of Washington, for "Transport and Accumulation of Pollen and Sediments by Wind and Water on the Blue Glacier, Olympic Mountains, Washington"

Elizabeth E. Culotta, University of Michigan, for "Predatory Responses to Prey Extinction in Evolutionary Time"

Lee Dolores DiTullio, Brown University, for "Evolution of Structural Fabric in an Accretionary Prism: Tertiary Shimanto Belt, Shikoku, Japan"

Steven R. Dunn, University of Wisconsin, for "Fluid Interaction between Gabbro and Calcareous Metasediments during Intrusion and Regional Metamorphism"

Tanya Furman, Massachusetts Institute of Technology, for "Investigation into the Origin of Iceland's Neovolcanic Rhyolites"

Dana Geary, Harvard University, for "Patterns of Variation and Evolutionary Rate in Melanopsid Gastropods of the Pannonian Basin (Upper Miocene, Eastern Europe)"

John W. Goodge, University of California, Los Angeles, for "Petrologic and Structural Analysis of an Early Mesozoic Blueschist Belt in the Klamath Mountains, Northern California"

Vicki L. Hansen, University of California, Los Angeles, for "Kinematic and Petrologic Analysis of an Ancient Subduction Zone, Teslin Suture, Yukon"

Donald Hickmott, Massachusetts Institute of Technology, for "Pressure-Temperature-Time Paths of Acadian Metamorphism in the Connecticut Valley Synclinorium, Western Massachusetts"

Dorothy J. Merritts, University of Arizona, for "Geomorphic Response to Late Quaternary Uplift, Northern Coastal California"

John Anthony Tarduno, Stanford University, for "Paleomagnetic Investigation of Accreted Limestones of the Circum-Pacific Region."

*Other Successful Applicants.* Other applicants who were recommended for funding are the following: David S. Adlis, Mark H. Anders, R. Scott Anderson, Steven D. Balsley, Jeffrey L. Bannon, Karen Wetmore Barrett, Paul W. Bauer, Bret S. Beall,

Kathi K. Beratan, James Alan Bergen, Margaret E. Berry, John G. Bloom, Andrea Borgia, Ann Bykerk-Kauffman, Jack M. Callaway, Geoffrey Christ, Richard A.N. Coghlan, J. Calvin Cooper, Jeanne L. Cooper, Kevin P. Corbett, Ellen A. Cowan, Kristine J. Crossen, Erik K. Davidsen, David A. Dellinger, Mary-Ann del Marmol, Raymond A. Donelick, Michael J. Dorais, Mary L. Droser, Emmett Evanoff, James P. Evans, Carol Anne Evans, Mark Alan Evans, Richard W. Evoy, Billy E. Faggart, Jr., Kathleen M. Farrell, Craig Stratton Feibel, Kurt M. Ferguson, Anthony R. Fiorillo, G. Reid Fisher, Peter B. Flemings, John H. Fournelle, Douglas J. Geller, Mario Joseph Giarmita, Jane A. Gilotti, Malcolm Omand Green, Lawrence R. Guth, Thomas W. Hargett, Jennifer Ann Hayward, Silvia Maria Heinrich, John Patrick Hogan, Amy L. Hoover, Karin A. Hoover, Rebecca L. Horner, Brian T. Huber, Curtis M. Hudak, Susan Denise Ivy, Roy E. Jensen, Amy S. Johnson, John A. Karachewski, Kurt T. Katsura, Steven J. Keating, Douglas W. Keith, James Ian Kirkland, Stanley T. Krukowski, Timothy M. Kusky, William Lamb, Brian D. Leavy, Stephen W. Little, Craig Manning, Duncan Mardon, Daniel McDonough, Rodney V. Metcalf, Joanne Kluessendorf Mikulic, Scott Herbert Miller, Christopher B. Mitchell, David Paul Moecher, David C. Mohrig, Jean Morrison, Dennis Ray Owen, Thomas J. Pallesen, Rosann E. Park, Tony D. Peterson, David A. Pickett, Carol S. Prentice, Kelvin W. Ramsey, Paul R. Renne, Suzanne Reynolds, John B. Ritter, David Gwyn Robinson, W. John Russell, Craig M. Schiffries, Gunnar Schlieder, Richard L. Sedlock, James R. Shannon, Zachary D. Sharp, R. Craig Shipp, David Lee Smith, Larry N. Smith, Gregory A. Snyder, Steven Spengler, Kevin G. Stewart, Neil S. Summer, Julia Ann Sykes, Rachel Tabachnick, Kevin P. Thomson, Yen Touyinhthiphonexay, Patricia Ann Turner, Ryan David Turner, Paul J. Umhoefer, Anne W. Vaughn, Kenneth A. Wallace, Thomas J. Weiland, Howard B. West, James W. Westgate, Eric E. Wetzstein, James D.L. White, Stephen L. Wust, Gregory A. Zielinski.

## More 1985 GSA Award Winners

Completing the list of 1985 award winners published in the July 1985 issue of *GSA News & Information* are Archaeological Geology Division Award

*Karl W. Butzer*

Department of Geography  
University of Texas at Austin  
Austin, Texas 78712-1098

Gilbert H. Cady Award (Coal Geology Division)

*Gordon H. Wood, Jr.*  
U.S. Geological Survey  
956 National Center  
Reston, Virginia 22092

E. B. Burwell Award (Engineering Geology Division)

*Lawrence D. Dyke*  
Department of Geological Sciences  
Queen's University  
Kingston, Ontario, Canada K7L 3N6

Structural Geology and Tectonics Division Best Paper Award

*John G. Ramsay*  
and  
*Martin I. Huber*  
Geologisches Institut  
ETH-Zentrum, CH-8092 Zurich  
Switzerland

## November 27 Is 1986 Dues Deadline

Last year you sent your dues payment in before the November 30 deadline. As a result, you received your GSA publications without delay. This year the timing is still critical because all section meeting *Abstracts with Programs* will be mailed to members early in the year. If we do not receive your dues payment before the November 27 deadline, you may not get that much-needed *Abstracts with Programs* in time for the section meeting you plan to attend. Remember, back orders take 6 to 8 weeks to reach you!

If you have any questions, please call or write the Membership Department, P.O. Box 9140, Boulder, CO 80301, (303) 447-2020.

## 1986 GSA SECTION MEETINGS

### Northeastern

Concord Resort Hotel  
Kiamesha Lake, New York  
March 12-14

### South-Central/Southeastern

Peabody Hotel  
Memphis, Tennessee  
April 2-5

### Rocky Mountain

Little America  
Flagstaff, Arizona  
April 30-May 2

### Cordilleran

California State University  
Los Angeles, California  
March 25-28

### North-Central

Kent State University  
Kent, Ohio  
April 24-25

PRELIMINARY ANNOUNCEMENT AND CALL FOR PAPERS

# NORTH-CENTRAL SECTION, GSA, 20th Annual Meeting

Kent, Ohio  
April 24-26, 1986

The **North-Central Section** of the Geological Society of America, hosted by the Department of Geology, Kent State University, will meet concurrently with the North-Central Section of the Paleontological Society, the Great Lakes Section of the Society of Economic Paleontologists and Mineralogists, and the National Association of Geology Teachers.

## CALL FOR PAPERS

Technical sessions on Thursday, April 24, and Friday, April 25, will include the following: paleontology, stratigraphy, sedimentology, economic geology, geomorphology, hydrogeology and hydrology, Quaternary geology, mineralogy and petrology, geochemistry, structural geology, geophysics and subsurface geology, engineering and environmental geology, and general geology. Papers on these and other subject areas are solicited. Sessions may be added or deleted after abstracts have been received by the Program Committee. Poster sessions will be presented throughout the meeting.

## SYMPOSIA

1. **Polar Research: Contributions to the Earth Sciences.** David Elliot, Rodney Feldmann
2. **The Hydrogeology of Glacial Terranes.** Lon Ruedisili, Yoram Eckstein
3. **Paleoceanography of Paleozoic Midcontinental Seaways.** Rodney Feldmann, Markes Johnson. Sponsored by the Paleontological Society
4. **Late Paleozoic Strata of Southeastern Ohio and Adjacent Areas.** Mark Boardman. Sponsored by the Society of Economic Paleontologists and Mineralogists
5. **The Geochemistry of Coal.** Lindgren Chyi, C. L. Chou
6. **New Horizons in Geo-Education.** Kennard Bork, George Econ. Sponsored by the National Association of Geology Teachers

## ABSTRACTS

Abstracts, which are limited to 250 words, must be submitted camera ready on official abstract forms available from R.M. Feldmann or Abstracts Coordinator, Department of Geology, Geological Society of America, Kent State University, P.O. Box 9140, Kent, OH 44242, Boulder, CO 80301. (216) 672-2680 (303) 447-8850

Acceptance or rejection of an abstract will be based on the abstract as submitted by the author. Send one original and five copies to

R. M. Feldmann  
Department of Geology  
Kent State University  
Kent, OH 44242

## PROJECTION EQUIPMENT

All slides must be 2" x 2" and fit a standard 35-mm carousel projector. Only one projector will be available in each meeting room.

## STUDENT AWARDS

Student papers are encouraged, and awards will be made to students presenting the most outstanding papers. Student papers must be clearly identified as such and must be authored exclusively by students. Prizes awarded for student papers with more than one author will be divided among the authors.

## FIELD TRIPS

All formal field trips will be scheduled for Saturday, April 26. Field trip coordinator is Alan Coogan.

1. **Structural and Stratigraphic Controls of Mississippi Valley-type Mineralization at the United Gypsum Company Quarry, Genoa, Ohio.** E. H. Carlson
2. **Geomorphology of the Lake Erie Shore in Northeastern Ohio.** D. E. Guy, J. A. Fuller
3. **Devonian and Mississippian Strata in Northeastern Ohio.** A. H. Coogan
4. **Pleistocene Geology of Selected Sites in Northeastern Ohio.** J. P. Szabo, B. B. Miller
5. **Landslide Occurrences in Summit County, Ohio.** M. Jones, A. Shakoor

## SOCIAL EVENTS

A welcoming party will be held on Wednesday evening, April 23, and the annual banquet will be on Thursday evening, April 24. The Paleontological Society will hold a luncheon on Friday, April 25.

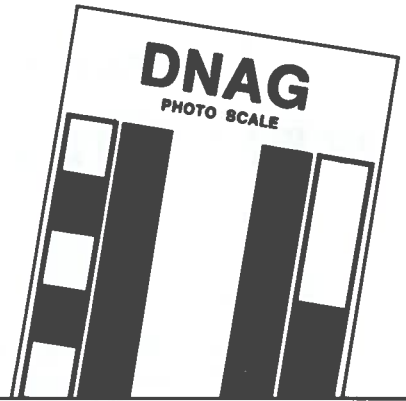
## DETAILED INFORMATION

Information concerning registration, motel and hotel accommodations, transportation, and other activities will appear in a future issue of *GSA News & Information* and as part of *Abstracts with Programs* for 1986. Additional information, requests, or suggestions should be directed to

R. A. Heimlich  
Department of Geology  
Kent State University  
Kent, OH 44242  
(216) 672-2680

**ABSTRACTS ARE DUE DECEMBER 6, 1985**

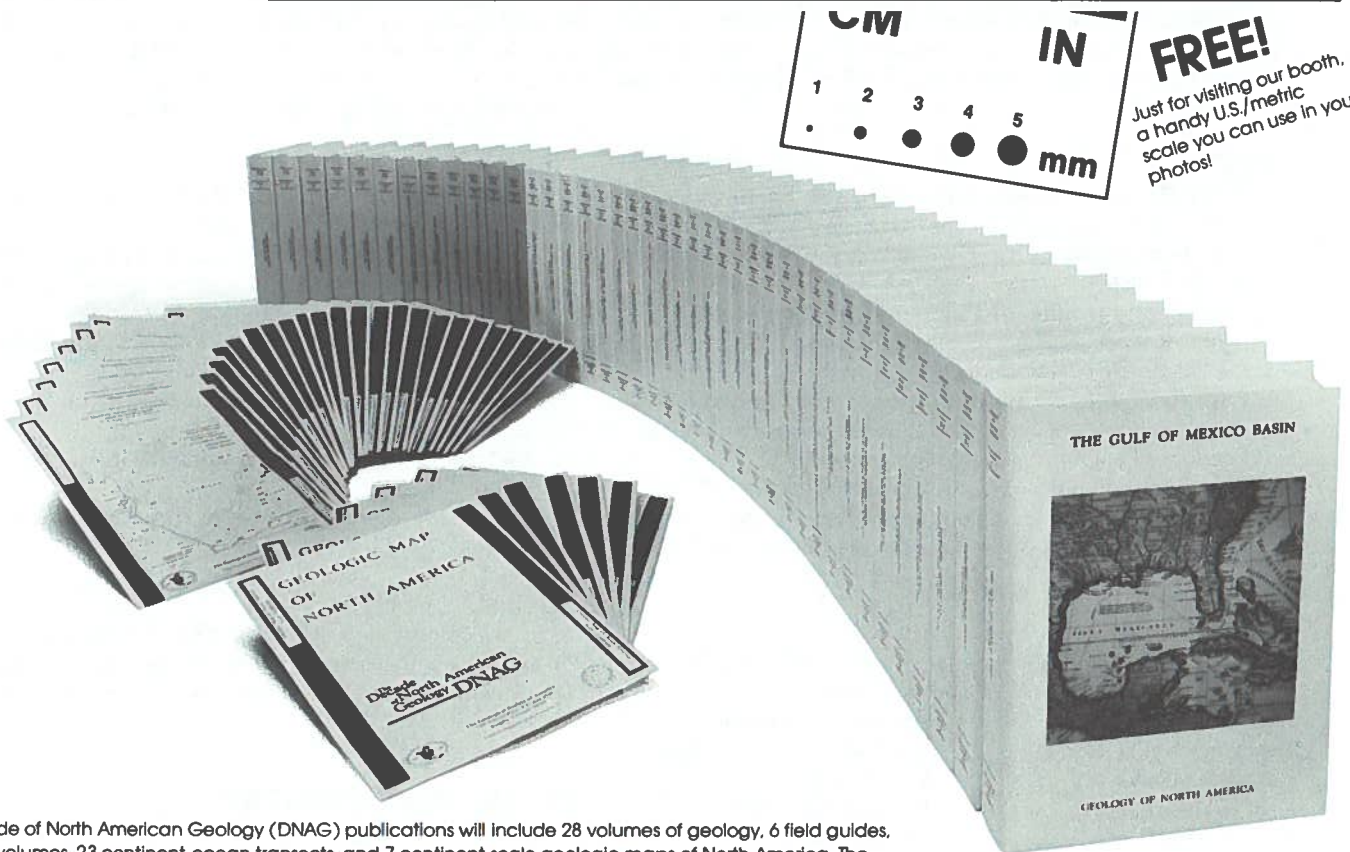
# The Decade of North American Geology DNAG



## FREE DRAWING!

Register to win a complete set of centennial publications

# BOOTH 308



The Decade of North American Geology (DNAG) publications will include 28 volumes of geology, 6 field guides, 4 special volumes, 23 continent-ocean transects, and 7 continent scale geologic maps of North America. The project is sponsored by the Geological Society of America to celebrate its centennial decade, 1979-1988. Publications will appear throughout the decade. Funded, in part, by the GSA Foundation.



Specialists will be available at the DNAG Booth (#308) to explain the special prepayment and installment payment purchase options, and to answer other questions about these publications. First volumes and transects will be on display.

PRELIMINARY ANNOUNCEMENT AND CALL FOR PAPERS  
**ROCKY MOUNTAIN SECTION, GSA, 39th Annual Meeting**  
**Flagstaff, Arizona**  
**April 30–May 2, 1986**

The **Rocky Mountain Section** of the Geological Society of America will meet Wednesday, Thursday, and Friday, April 30 through May 2, 1986, at Little America, Flagstaff, Arizona. The meeting is sponsored by the Department of Geology, Northern Arizona University and by the U.S. Geological Survey, Geologic Division, Flagstaff.

### CALL FOR PAPERS

Papers are invited for presentation at technical and poster sessions and symposia. Fifteen minutes for presentation and five minutes for discussion will be the format for the technical sessions. Papers of local and regional interest to geologists in the Rocky Mountain area will be considered for the program. Symposia and conveners are listed below.

### SYMPOSIA

1. **Late Quaternary Alluvial History of the Southwest: Toward a Process Paradigm.** \*Eric Karlstrom, (602) 523-2432; Richard Hereford
2. **Pacific-Arizona Crustal Experiment (PACE).** \*Keith Howard, (415) 323-8111, ext. 2282
3. **Geophysics of the Colorado Plateau.** \*John Sass, (602) 527-7226; David S. Brumbaugh; G. Randy Keller
4. **Tertiary Extensional Tectonism along the Western Margin of the Craton (Stable Core of North America).** a: Tectonics and Structure. \*Ivo Lucchitta, (602) 527-7151; b: The Stratigraphic Record, \*J. Dale Nations, (602) 523-4561; H. Wesley Peirce
5. **Early Proterozoic Orogenic History and Ore Deposits of the Southwest.** \*Karl E. Karlstrom, (602) 523-4561; Clay Conway; Paul Lindberg
6. **Planetary Geology.** \*Elliott Morris, (602) 527-7194
7. **Sedimentologic, Stratigraphic, and Paleontologic Studies in the Grand Canyon and Southern Colorado Plateau.** \*Ron Blakey, (602) 523-2740; Stan Beus; Larry Middleton
8. **Mineralization of Breccia Pipes on the Colorado Plateau.** \*Karen Wenrich, (303) 236-1563; Paul Rasmussen; George Billingsley

### ABSTRACTS

Abstracts are limited to 250 words and must be submitted camera ready on official abstract forms. Contributors to symposia should submit their abstracts to the symposium coordinator whose name above has an asterisk. One original and five copies should be submitted on or before December 11, 1985. Obtain abstract forms from

David M. Best, Chairman	or	Abstracts Coordinator
Department of Geology		Geological Society of America
Box 6030 Code GSA		P.O. Box 9140
Northern Arizona University		Boulder, CO 80301
Flagstaff, AZ 86011-6030		(303) 447-8850
(602) 523-4561		

Submit abstracts to:

Ivo Lucchitta, Technical Program Committee Chairman  
c/o U.S. Geological Survey  
2255 North Gemini Drive  
Flagstaff, AZ 86001 (602) 527-7151

### PROJECTION EQUIPMENT

Equipment will be provided for 2" x 2" slides and single projectors only. *Please bring your own loaded carousel trays.*

### FIELD TRIPS

#### Premeeting

1. **Grand Canyon River Trip.** John Hendricks
2. **Precambrian of Central Arizona.** David Brumbaugh, Clay Conway, Karl Karlstrom
3. **Central San Francisco Volcanic Field.** Richard F. Holm
4. **Breccia Pipes of Northern Arizona.** Karen Wenrich, George Billingsley, J. D. Rasmussen
5. **Modern Fluvial Processes on the Paria and Little Colorado Rivers.** Richard Hereford

#### Postmeeting

6. **Mesozoic Depositional Complexes in Northern Arizona.** Ron Blakey, Larry Middleton
7. **Tertiary Basins in the Arizona Transition Zone.** J. Dale Nations, H. Wesley Peirce
8. **Quaternary of Black Mesa.** Richard Hereford
9. **Jerome-Bagdad Mining Areas.** Paul Lindberg, Clay Conway
10. **Depositional and Structural History of the Grand Wash Trough.** Ivo Lucchitta
11. **Triassic Stratigraphy and Reptiles of the Petrified Forest.** David Gillette

### SPECIAL EVENTS

A Welcoming Party will be held Tuesday evening, April 29. The annual banquet will be Wednesday evening, April 30.

### EXHIBITS

Space will be available for educational, research, and industry exhibits. Contact Larry T. Middleton, Department of Geology, Box 6030, Northern Arizona University, Flagstaff, AZ 86011; (602) 523-2429.

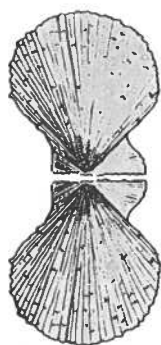
### DETAILED INFORMATION

Information concerning registration, accommodations, and other activities will appear in *GSA News & Information* and as part of *Abstracts with Programs* for 1986.

Inquiries, additional information, requests, or suggestions should be directed to

Stanley S. Beus  
General Chairman GSA  
Department of Geology  
Box 6030  
Northern Arizona University  
Flagstaff, AZ 86011  
(602) 523-4561

**ABSTRACTS ARE DUE DECEMBER 11, 1985**



# ORLANDO

## 1985 GEOLOGICAL SOCIETY OF AMERICA ANNUAL MEETING AND EXPOSITION

OCTOBER 28-31, 1985

### SPECIAL EVENTS

#### ORLANDO WELCOME

Orlando, one of the world's most popular tourist destinations, offers endless entertainment. Within a 20-minute drive is the WALT DISNEY WORLD Complex, which includes the MAGIC KINGDOM® and EPCOT® Center. Sea World is around the corner from the Convention Center, and Kennedy Space Center is only an hour away. October offers entertainment for family and friends, good weather, and fewer tourists.

#### WALT DISNEY WORLD Resort: Special Two-Day Pass.

Anytime before, during, or after the GSA meeting, you and your family and friends may take advantage of the special two-day pass that will be available for GSA registrants and guests who want to visit the WALT DISNEY WORLD Resort. This special pass, available only through GSA, provides back-and-forth access to both the MAGIC KINGDOM® and EPCOT® Center during any two days between October 24 and November 3. The days do not have to be consecutive, and the pass includes all rides, attractions, adventures—and parking. Transportation is not included, but commercial charter buses run regularly between hotels and the Magic Kingdom. The passes are offered at a 10% discount from the at-gate fees. Passes are available on-site.

Fee: \$32 for adults and children

#### SEA WORLD

Wednesday, October 30, 6:00 to 11:00 p.m.

GSA's major special event evening begins with music, beer, and an outdoor dinner. Beverages courtesy of Academic Press. Four major shows follow: Shamu®, Dolphins, Waterski, and Shark Encounter. Sea World of Orlando has earned its reputation as one of the nation's top attractions, setting the standard for aquatic zoological parks. More than 8,000 animals, including marine mammals, birds, reptiles, fish, invertebrates, and Shamu® the world's favorite killer whale, make their home at Sea World. Buses begin the loop from the hotels at 5:30 p.m. and return throughout the evening until 11:30 p.m. Tickets available on-site.

Fee: \$24 inclusive

#### CIRCUS WORLD

A famous theme park with acres of rides and spectacular circus performances is close to the Convention Center. In celebration of its Grand Expansion, the circus spectacular has offered GSA special rates. Tickets may be purchased on-site at GSA's ticket counter.

Fee: Adults \$8 Youth (5 to 11) \$7

#### MARDI GRAS

The Mercado Center (next to the Marriott)  
Tuesday, October 29, two shows, 6:00 and 9:00 p.m.

This is a 500-seat theatrical dinner attraction located at the Mercado Festival Center on Plaza International, facing the Justus Aquatic Center and near the Orlando/Orange County Convention and Civic Center.

Never before has a show like this been produced in central Florida. More than \$1.5 million has been spent by Orlando Entertains to bring together this 45-minute cabaret show. Each evening recreates the beat of the West Indies, the Carnival festival of Latin America, and the rhythm of New Orleans jazz. The evening is filled with French Creole cuisine and a variety of specialty acts, including can-can dancers, clowns and circus acts, musicians, and singers.

Tickets available on-site include

- A Welcome "Mint Julep" Reception
- An authentic four-course (lightly seasoned) Creole Dinner, featuring gumbo, salad, a main entree choice of either beef or fish, served with vegetables, and an unforgettable praline dessert . . . prepared by a famous New Orleans Master Chef
- New Orleans Jazz Band during dinner

Fee: \$17 inclusive

#### WELCOMING PARTY

Convention Center  
Sunday, October 27, 6:00 to 9:00 p.m.

You are cordially invited to attend the Society's reception to meet your old friends and to make new ones as well. The GSA shuttle will make continuous loops from the GSA hotels to the Center between 5:30 and 9:30 p.m. This is your opportunity to both register (registration will be open until 7:30 p.m.) and visit the 1985 technical and scientific exhibits. Cash bars remain open until 9:00 p.m. We hope you'll arrive in Orlando in time to join us.

#### ALUMNI NIGHT

Marriott at International Drive  
Monday, October 28, 6:00 to 9:00 p.m.

Pool night is alumni night. Bring your suit—waterproof or water-wearable. Marriott landscaping includes several large pools where alumni will gather to celebrate. Live Nashville music will be featured. Special music requests? Send them in writing to the

(continued)



Events Coordinator, GSA Headquarters. If your university wants to hold an alumni reception, please notify the Coordinator today.

**SPORTS EVENTS**

**PRESIDENT'S INVITATIONAL TENNIS**

Marriott Hotel, East Courts  
 Sunday, October 27, 8:00 a.m. to 12 noon

GSA President Brian Skinner challenges tennis players to participate in an open round-robin doubles tournament on the Marriott courts. The tournament is organized by a tennis professional. Bring a partner, or we'll assign you one on Sunday morning. No singles or mixed doubles will be played. Entry will be limited; first come, first served. The fee includes beverage, balls, and court fee. Preregistration only.

Fee per person: \$6

**ORLANDO 5K/10K RUN**

Convention Center, Main Entrance  
 Wednesday, October 30, 8:30 to 9:30 a.m.

The second annual 5K/10K races start from the Convention Center for a flat run in open spaces, palm trees, and warm breezes. Everyone is welcome: racers, joggers, walkers. Ribbons go to all finishers, and special prizes to the first-place winners. Our professional race director suggests that if you are not from Florida, you should be aware that the heat and humidity may affect your run; drink adequate fluids. Finnegan MAT, Inc., manufacturers of isotope ratio mass spectrometers, has graciously agreed to sponsor the race shirts for runners. Additional shirts may be purchased in the registration area.

Fee including T-shirt: \$7      Limit: 400

**American Institute of Physics Offers Reduced-Rate Subscriptions to GSA Members**

The American Institute of Physics offers reduced-rate subscriptions for its own journals to individual members of affiliated societies, of which GSA is one. This offer is limited to one subscription per person to each journal. Following is a list of AIP-owned journals showing the member rates for 1986, which are available to individuals who are members of GSA and, for comparison, the nonmember rates.

GSA members who want to subscribe to any of these journals at the reduced rates should send subscription orders, with payment and a statement that they are GSA members, to American Institute of Physics, 335 East 45 St., New York, NY 10017.

	Domestic Rates		Foreign Rates Incl. Canada & Mexico	
	Member	Nonmember	Member	Nonmember
Journal of Applied Physics	\$ 80.00	\$495.00	\$130.00	\$545.00
Applied Physics Letters	40.00	300.00	65.00	325.00
Journal of Chemical Physics	100.00	835.00	165.00	900.00
Journal of Mathematical Physics	50.00	530.00	68.00	548.00
Physics of Fluids	45.00	475.00	67.00	497.00
Physics Today	20.00	60.00	35.00	75.00
Review of Scientific Instruments	30.00	300.00	45.00	315.00
Current Physics Index	65.00	320.00	83.00	338.00
Journal of Physical and Chemical Reference Data	55.00	220.00	65.00	230.00
General Physics Advance Abstracts	12.00	150.00	24.00	162.00

**Tectonic Evolution of a Forearc Terrane, Southern Scotia Ridge, Antarctica**  
 By Ian W. D. Dalziel

**SPECIAL PAPER 200**

GSA Special Paper 200:  
*Tectonic Evolution of a Forearc Terrane, Southern Scotia Ridge, Antarctica*,  
 by Ian W. D. Dalziel,  
 8½" x 11", paperback,  
 37 pages, illustrated.  
 ISBN 0-8137-2200-4, CIP,  
 paperback . . . . . \$ 9.00.

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THE GEOLOGICAL SOCIETY OF AMERICA

## Annual Meeting Symposia Participation

by Sue Beggs  
GSA Meetings Manager

Do you want to convene a symposium for a GSA Annual Meeting? Would you like to participate as a speaker? If you are interested, read on, to learn how symposia are determined.

The GSA Council has established a limit of 25 half-day symposia sessions for each annual meeting. Our seven associated societies and the ten GSA divisions are each awarded one half-day session. The eight remaining sessions may be sponsored on an at-large basis.

The Technical Program Chairman invites all potential conveners to submit proposals by January 2 of the meeting year. The proposals are reviewed and a selection made by February 1. This list is published in the April issue of *GSA News & Information*.

If you want to convene a symposium, the best way is to contact in advance the associated society or division with which you would most likely share interests (the spring prior to the meeting would be good timing). You are also welcome to call the Technical Program Chairman for advance information. The chairman's name, address, and phone number are usually published in the September and October issues of *GSA News & Information*.

### 1986-1988 Technical Program Chairmen

1986  
John C. Maxwell  
Dept. of Geological Science  
University of Texas at Austin  
Austin, TX 78712  
(512) 471-5355

1987  
Clement Chase  
Dept. of Geosciences  
University of Arizona  
Tucson, AZ 85721  
(602) 621-6024

1988  
William W. Hay  
University Museum  
University of Colorado  
Boulder, CO 80309  
(303) 492-7370

### GSA DIVISIONS

Archaeological Geology  
Coal Geology  
Engineering Geology  
Geophysics  
History of Geology  
Hydrogeology  
Planetary Geology  
Quaternary Geology and Geomorphology  
Sedimentary Geology  
Structural Geology and Tectonics

### ASSOCIATED SOCIETIES

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

The convener usually has invited most of the speakers at the time the proposal is sent to the Technical Program Chairman; therefore, addresses and phone numbers for conveners are not published in the Annual Meeting Call for Papers/First Announcement that appears in the April issue of *GSA News & Information*. The call is just for volunteered papers, not for the symposia.

Again, the best way to participate in a symposium is to contact the society or division of your choice. These organizations vary considerably in the methods of determining their programming for a GSA Annual Meeting. It is best to contact the group directly, because we here in Boulder see the results but may not know the process. Call or write the Meetings Coordinator at GSA Headquarters for specific names and addresses.

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## 1986 GSA ANNUAL MEETING

NOVEMBER 10-13  
SAN ANTONIO, TEXAS  
SAN ANTONIO CONVENTION CENTER

SYMPOSIA PROPOSALS DUE JANUARY 2, 1986

### For 1986 information, please contact

John C. Maxwell, Chairman	or	Eric R. Swanson, Co-Chairman
Dept. of Geological Sciences		Div. of Earth & Physical
University of Texas at Austin		Sciences/Geology Program
Austin, TX 78712		University of Texas
(512) 471-5172		at San Antonio
		San Antonio, TX 78285
		(512) 691-4455

### For general information on symposia participation, please contact

Sue Beggs, Meetings Manager  
GSA, P.O. Box 9140, Boulder, CO 80301  
(303) 447-2020

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## 51 WIN AGI MINORITY PARTICIPATION PROGRAM SCHOLARSHIPS

The American Geological Institute has awarded 51 scholarships for the 1986-1987 academic year. Awards given to Black, Hispanic, and Native American students ranged from \$500 to \$1500 each and totaled \$50,000. Contributions for the scholarships were pledged by geoscience societies (including GSA), more than a score of companies, and several individuals. Since its inception in the early 1970s the scholarship program has distributed more than \$500,000 to nearly 400 minority students. The scholarships are based upon academic achievement, financial need, and judged potential for future success in the geological profession.

The 1986-1987 recipients are as follows:

*Graduate students:* Roger E. Amerman, Colorado School of Mines; Jannette Aquilar, University of Oklahoma; Edward Arias, University of New Orleans; Jarrall Barnett, Bowling Green State University; Deborah M. Brooks, Virginia State University; Enrique Casas, State University of New York at Binghamton; Rufus Catchings, Stanford University; Jerry B. Coleman, Louisiana State University; Avery H. Demond, Stanford University; Placido Dos Santos, Jr., University of Arizona; Diana Frances Elder,

(continued)

### **AGI Scholarships** (continued)

Northern Arizona University; David A. Gonzales, Northern Arizona University; Luis A. Gonzalez, University of Michigan; Susan E. Haycock, Baylor University; Michael W. Howell, University of South Carolina; Eve H. Iversen, San Francisco State University; Conrad C. Labandeira, University of Chicago; Jacqueline S. Lee, George Washington University; Gregory F. Martin, University of New Orleans; Jolecia Mitchell, Louisiana State University; Claudia I. Mora, University of Wisconsin; Thomas J. Reed, Stanford University; Lauret E. Savoy, University of Colorado; José J. Sequeria, Jr., Texas A&M University; Robert Solis, Southern Methodist University; Ramon H. Trevino, University of Texas—Arlington; Raul J. Viera, University of Southwestern Louisiana; Anne F. Vigil, Colorado School of Mines; Ricardo L. Zepeda, University of California—Santa Barbara.

*Undergraduate students:* Philip J. Bart, University of New Orleans; George T. Basabilvazo, New Mexico Highlands University; Randy D. Bauer, New Mexico State University; Victor G. Carrillo, Hardin Simmons University; Shirl Davis, Virginia State

University; Robert DeBerry, University of Georgia; Kathryn Fink, Colorado School of Mines; William L. Fink, Colorado School of Mines; David A. Foiles, Adams State College; Dora M. Gallegos, Boise State University; Jake E. Gallegos, New Mexico State University; Swen Magnuson, New Mexico Institute of Mining and Technology; Orinda M. Marquez, Colorado School of Mines; Ian Palao, Loyola University; Tardie Lee Roupe, South Dakota School of Mines and Technology; Tonia E. Rucker, Clemson University; Kenneth J. Vernon, University of Southwestern Louisiana; Karlo R. Zvonarek, Lyndon State College.

*First-year students:* Edward Camarena, Harvard-Radcliffe University; Charlotte M. Crisp, University of California—Davis; Christopher S. T. Dube, Cornell University; J. Gavin Gonzalez, Stanford University.

For more information regarding the program, contact Andrew J. Verdon, Jr., AGI Director of Education, American Geological Institute, 4220 King Street, Alexandria, VA 22302; (703) 379-2480. The deadline for application for the 1986-1987 academic year is February 1, 1986.

## MEETINGS

### 1985

**Computer Applications in Oil and Gas Exploration and Development**, October 3-5, 1985, Wichita, Kansas. Information: D. F. Merriam, Dept. of Geology, Wichita State University, Wichita, KS 67208; (316) 689-3140.

**Association of Engineering Geologists Annual Meeting**, October 7-11, 1985, Winston-Salem, North Carolina. Information: Norman R. Tilford, Ebasco Services, 2211 Meadowview, Greensboro, NC 27047; (919) 855-7500.

**International Symposium on Management of Hazardous Chemical Waste Sites**, October 9-10, 1985, Winston-Salem, North Carolina. Information: Norman R. Tilford, Dept. of Geology, Texas A&M University, College Station, TX 77843-3115; (409) 845-9682.

**Forum on Geological Manpower—II**, October 10-11, 1985, Columbus, Ohio. Information: Peter Webb, Dept. of Geology and Mineralogy, Ohio State University, Columbus, OH 43210-1398; (614) 422-2721.

**Recent Advances in Interpretations of Late Paleozoic Cyclothems, Midcontinent SEPM Field Conference**, October 11-13, 1985, Lawrence, Kansas. Information: W. L. Watney, Kansas Geological Survey, 1930 Constant Ave.—Campus West, Lawrence, KS 66044; (913) 864-4991.

**Processing and Utilization of High Sulfur Coals**, October 13-17, 1985, Columbus, Ohio. Information: Louise Larew, OSU Conferences & Institutes, 2400 Olentangy River Rd., Columbus, OH 43210; (614) 422-8571.

**16th Annual Underwater Mining Institute**, October 20-23, 1985, Halifax, Nova Scotia. Information: Helen Joseph, Ocean Mining Division, 355 River Rd., Ottawa, Ontario K1A 0E4, Canada; (613) 993-3760; or Allen H. Miller, UW Sea Grant Institute, 1800 University Ave., Madison, WI 53705; (608) 262-0645.

**Geological Society of America Annual Meeting**, October 28-31, 1985, Orlando, Florida. Information: Meetings Department, GSA, P.O. Box 9140, Boulder, CO 80301; (303) 447-2020.

**Oceans '85: Ocean Engineering and the Environment**, November 12-14, 1985, San Diego, California. Information: Oceans '85, P.O. Box 6830, San Diego, CA 92106.

**American Society of Mechanical Engineers Winter Annual Meeting**, November 17-22, 1985, Miami Beach, Florida. Information: Marisa Scalice, ASME, 345 E. 47th St., New York, NY 10016; (212) 705-7053.

**Eastern Oil Shale Symposium**, November 18-20, 1985, Lexington, Kentucky. Information: Connie S. Blakemore, Institute for Mining and Minerals Research, University of Kentucky, P.O. Box 13015, Lexington, KY 40512-3015.

**Geological Society of Malaysia Petroleum Geology Seminar**, December 6-7, 1985, Kuala Lumpur, Malaysia. Information: Michael Leong, Dept. of Geology, University of Malaya, Kuala Lumpur 22-11, Malaysia; telephone 03-577036.

**American Geophysical Union Fall Meeting**, December 9-13, 1985, San Francisco, California. Information: American Geophysical Union Fall Meeting, 2000 Florida Ave., N.W., Washington, DC 20009; 800-424-2488.

### 1986

**American Geophysical Union and American Society of Limnology and Oceanography Ocean Sciences Meeting**, January 13-17, 1986, New Orleans, Louisiana. Information: Ocean Sciences Meeting, American Geophysical Union, 2000 Florida Ave., N.W., Washington, DC 20009; 800-424-2488.

**6th Offshore South East Asia Conference**, January 28-31, 1986, Singapore. Information: D. H. Morgan, SEAPEX OSEA Committee, Marathon Petroleum Exploration, Ltd., P.O. Box 227, Tanglin Post Office, Singapore 9124.

**International Volcanological Congress**, February 1-9, 1986, New Zealand. Information: John A. Gamble, Victoria University, Private Bag, Wellington, New Zealand.

**Second Annual McKelvey Forum—USGS Research on Energy Resources**, February 5-6, 1986, Denver, Colorado. Information: Pam Jackson, TRAC, P.O. Box 6100, Denver, CO 80206; (303) 393-7061.

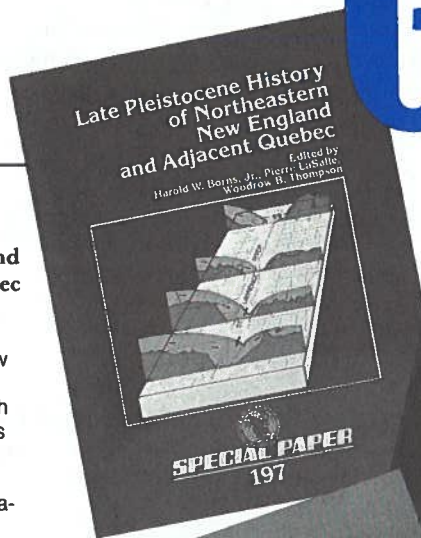
(continued on p. 196)

# SPECIAL PAPERS

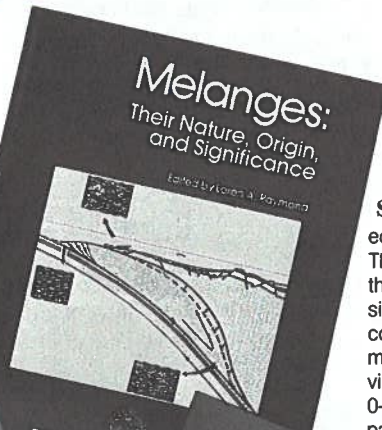
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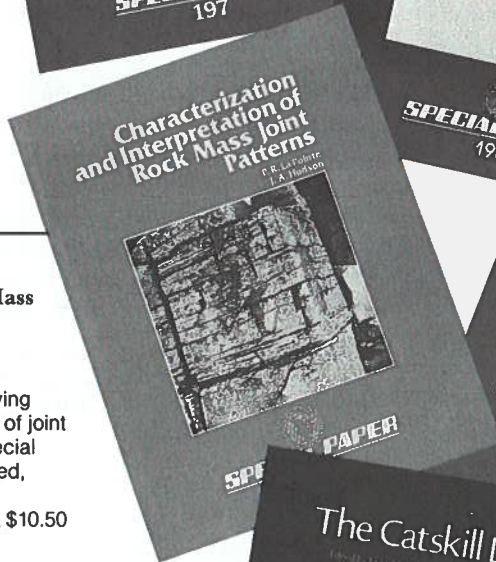
**Late Pleistocene History of Northeastern New England and Adjacent Quebec**  
 edited by Harold W. Borns, Jr., Pierre LaSalle, and Woodrow B. Thompson, 1985  
 13 papers dealing with the timing and models for the late Wisconsinan deglaciation of New England and adjacent Quebec. Special Paper 197, x + 159, illustrated, ISBN 0-8137-2197-0, CIP paperback ..... \$22.50



**Melanges: Their Nature, Origin, and Significance**  
 edited by Loren A. Raymond, 1984  
 This volume provides images of the nature of melanges, discussion of possible origins, and comments on the significance of melanges. Special Paper 198, vi + 170, illustrated, ISBN 0-8137-2198-9, CIP paperback ..... \$22.00



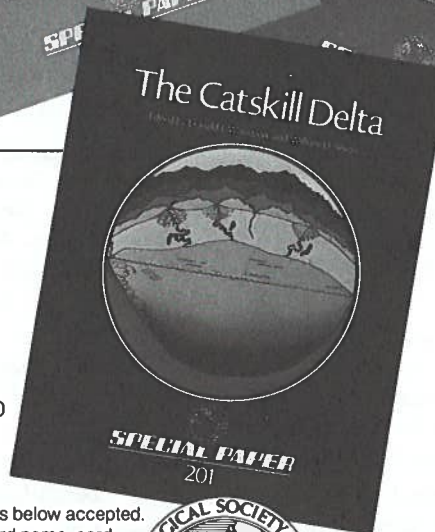
**Characterization and Interpretation of Rock Mass Joint Patterns**  
 by P.R. La Pointe and J.A. Hudson, 1985  
 New techniques for quantifying and analyzing the geometry of joint patterns are developed. Special Paper 199, viii + 37, illustrated, ISBN 0-8137-2199-7, CIP paperback ..... \$10.50



**Tectonic Evolution of a Forearc Terrane, Southern Scotia Ridge, Antarctica**  
 by Ian W.D. Dalziel, 1984  
 The author presents the results of structural studies, and conclusions are drawn about the structural evolution of the forearc terrane and the tectonic evolution of the southern Scotia Ridge. Special Paper 200, vi + 32, illustrated, ISBN 0-8137-2200-4, CIP paperback ..... \$ 9.00



**The Catskill Delta**  
 edited by Donald L. Woodrow and William D. Sevon, 1985  
 The authors of the 18 chapters present either new ideas involving plate tectonics, paleogeography, and depositional models or sedimentologic and paleobiologic concepts not emphasized until recent years. Special Paper 201, viii + 246, illustrated, ISBN 0-8137-2201-2, CIP paperback ..... \$32.00



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**THE GEOLOGICAL SOCIETY OF AMERICA**

**Meetings** (continued from p. 195)

**Geotechnical and Geohydrological Aspects of Waste Management Symposium**, February 5-7, 1986, Fort Collins, Colorado. Information: Eighth Annual Symposium on Geotechnical and Geohydrological Aspects of Waste Management, Geotechnical Engineering Program, Civil Engineering Dept., Colorado State University, Fort Collins, CO 80523; (303) 491-6081.

**Symposium on Engineering Geology and Soils Engineering**, February 26-28, 1986, Boise, Idaho. Information: Spencer H. Wood, Dept. of Geology and Geophysics, Boise State University, Boise, ID 83725; (208) 385-1631.

**Symposium on Geochemistry of the Earth Surface and Processes of Mineral Formation**, March 16-22, 1986, Granada, Spain. Information: R. Rodriguez Clemente, National Museum of Natural Sciences, c/o Jose Gutierrez Abascal, 2, 280006 Madrid, Spain; telephone (91) 2.62.25.13.

**The Global Ocean: Its Chemistry and Resources**, March 24-29, 1986, Woods Hole, Massachusetts. Information: P. A. Meyers, Oceanography Program, University of Michigan, 2455 Hayward Ave., Ann Arbor, MI 48109; (313) 764-0597.

**Fourth Federal Sedimentation Conference**, March 24-27, 1986, Las Vegas, Nevada. Information: Doug Glysson, U.S. Geological Survey, 412 National Center, Reston, VA 22092; (703) 860-6834.

**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.

**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.

**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.

**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.

**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.

**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.

**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.

**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. (Abstracts due November 30, 1985.)

**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.

**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.

(continued on p. 199)

# CLASSIFIED ADVERTISING

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

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Situations Wanted:	\$1.25	\$1.10	\$ .95	\$ .85
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All coded mail will be forwarded within 24 hours of arrival at GSA News office.

## Situations Wanted

**ATTENTION**, male, 30, geology, B.S., seeks employment in East, East Central or Southeast U.S. Environmental/engineering applications desired but not necessary. Previous work exp. in comm. const., mine const., and steel industry. It's taken alot of hard work and sacrifice to get this degree and NOW I'm ready to go! Put me to work and you'll not regret it. Excellent ref. & resume on request. W. Pack, 2646 1st Ave. Rear, Huntington, WV 25702.

## Positions Open

### YALE UNIVERSITY INVERTEBRATE PALEONTOLOGIST

The Department of Geology and Geophysics is soliciting applications for a faculty position in invertebrate paleontology to begin in the academic year 1986-1987. The position may be filled at either the tenured or the untenured level. A vita, list of publications and the names of three referees should be sent by November 15, 1985 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.

### BUREAU OF ECONOMIC GEOLOGY

Applicants are invited for two research scientist positions in a major geologic research center in Texas. A history of publication and strong communication skills, both oral and written, are preferred.

One position requires a Ph.D. in structural geology. Will develop mechanical analytical models of natural and artificially induced fracture systems in reservoir rocks for varied rock types, and in varied terrains of different structural styles.

The other position requires a Ph.D. in geochemistry and a demonstrated research ability. Should have competence to operate electron microprobe and scanning electron microscope, with interest in sedimentary rocks.

The University of Texas at Austin is an equal opportunity/affirmative action employer. Send resumes to E.G. Wermund, Bureau of Economic Geology, University of Texas, Box X, University Station, Austin, TX 78713.

### GEOCHEMIST AND STRUCTURAL GEOLOGIST

The Department of Geological Sciences at Lehigh University is seeking to fill two tenure-track positions at the Assistant Professor level for Fall 1986. The successful candidates will be expected to conduct an active research program, supervise graduate students, and teach both undergraduate and graduate-level courses in their fields of expertise. The two positions are as follows:

**Low Temperature Aqueous Geochemist.** Expertise in water/rock reactions is preferred, but highly qualified individuals in other areas of low-temperature geochemistry will be considered. Course offerings should include introductory geochemistry, groundwater geochemistry, and geochemical techniques.

**Structural Geologist.** Interest in tectonics with an emphasis on field investigations is preferred, but highly qualified individuals in other areas of structural geology/tectonics will be considered. Course offerings should include introductory structural geology, plate tectonics, and structural field techniques.

Please send application (with research interests), curriculum vitae, and the names of three references to: Dr. Bobb Carson, Chairman, Department of Geological Sciences, Williams Hall #31, Lehigh University, Bethlehem, PA 18015. Applications received after December 15, 1985, cannot be guaranteed full consideration. Lehigh University is an AA/EEO employer.

### ECONOMIC GEOLOGIST—FACULTY POSITION

**Hunter College, City University of New York** Position, fall 1986. Rank and salary open. Advanced or starting scientist to assume an aggressive role in developing a research and teaching program in economic geology, including linkages with remote sensing, mathematical modeling, and geostatistical data analysis.

Candidate will teach undergraduate geology, strengthen existing doctoral program and help develop focused MA program. Proven extramural funding ability required for advanced-level appointment. Experience with government, industry, and foreign nations also helpful. Ph.D. required at time of appointment. Send vitae, publications, names of at least three referees to Dr. Alan H. Strahler, Chair, Geology & Geography Dept., Hunter College, CUNY, 695 Park Ave., New York, NY 10021. Closing date Jan. 15, 1986. Equal Opportunity Employer.

### STATE GEOLOGIST INDIANA GEOLOGICAL SURVEY

The Indiana Department of Natural Resources and the Department of Geology, Indiana University, invite applications and nominations for the position of State Geologist and Director of the Indiana Geological Survey. This will be a joint appointment between the two organizations and the successful candidate will also hold a professional rank in Indiana University. The State Geologist must have skills in administering the Geological Survey and have the capacity to foster and maintain communication and cooperation among the Geological Survey, the Department of Natural Resources, other governmental agencies and the public. The successful applicant must have a broad knowledge of geology and mineral resources, possess an appreciation of Survey research and services, and agree in principle with long-range Survey goals. The position demands a commitment to research and public service excellence. The State Geologist should possess an advanced degree in geology.

The Department of Natural Resources and Indiana University are affirmative action/equal

opportunity employers and they encourage applications from women and minority candidates. Preliminary interviews will be held at the Geological Society of America meeting, Orlando, Florida, October 28-30, 1985. A nomination must include a brief outline of the nominee's qualifications and include his or her current address and telephone number. Applications should include a letter of application, a complete resume, and 5 references with telephone numbers. To be assured of consideration, nominations must be received by November 30, 1985, applications by December 31, 1985. The starting date for the appointment will be July 1, 1986. All communications should be with: N. Gary Lane, Chairman, Search Committee for State Geologist, Department of Geology, Indiana University, Bloomington, IN 47405.

### MINERAL PHYSICIST

The Department of Geology at Indiana University, Bloomington, has an opening for a tenure track position in mineral physics. Preference will be given to candidates with a background in electron microscopy. The successful applicant will be expected to initiate a research program to develop graduate courses in his/her speciality and to participate in undergraduate teaching. Primary consideration will be given to applicants at the assistant professor level but outstanding persons at more advanced levels will also be considered. As an equal opportunity/affirmative action employer, Indiana University strongly encourages applications from women and minority candidates. Interviews will be held at GSA, Orlando and at AGU, San Francisco. To be sure of consideration, please have a resume and three letters of recommendation sent by December 31, 1985 to Professor N. Gary Lane, Chairman, Department of Geology, Indiana University, Bloomington, Indiana 47405.

### ORGANIC GEOCHEMISTRY INDIANA UNIVERSITY

The Department of Geology at Indiana University, Bloomington seeks applicants for a tenure-track faculty appointment in organic geochemistry or closely related aspects of sedimentary geochemistry. Applicants are sought primarily at the level of assistant professor, but more senior persons may be considered. Candidates should be well qualified to teach at the undergraduate and graduate level in the Department of Geology and to develop a strong research program. Active research programs and excellent facilities exist on the campus in the related fields of biogeochemistry, isotopic and low-temperature geochemistry, microbiology, sedimentology and stratigraphy, and organic chemical analysis.

As an equal opportunity/affirmative action employer, Indiana University strongly encourages applications from women and minority candidates. Interviews will be held at GSA in Orlando, Florida, October 28-30, 1985. The department will begin reviewing applications on October 1, 1985 and will continue until a suitable candidate is appointed, but to be sure of fullest consideration applicants should respond no later than December 31, 1985. Send resume, statement of research interests, reprints, and names of at least three references to Prof. N. Gary Lane, Chairman, Department of Geology, Indiana University, Bloomington, IN 47405.

### HYDROGEOLOGIST OR HYDROLOGIST

The Department of Geology at Indiana University, Bloomington, has an opening for a tenure track position in hydrogeology. We are interested in candidates with a strong background in quan-

titive hydrology with research interests in the physical aspects of ground water flow. The successful applicant will be expected to teach undergraduate and graduate physical hydrology courses with a strong emphasis on the modeling of ground water flow. Primary consideration will be given to applicants at the assistant professor level but outstanding persons at more advanced levels will also be considered. As an equal opportunity/affirmative action employer, Indiana University strongly encourages applications from women and minority candidates. Interviews will be held at GSA, Orlando, and at AGU, San Francisco. To be sure of consideration, please have a resume and three letters of recommendation sent by December 31, 1985 to Professor N. Gary Lane, Chairman, Department of Geology, Indiana University, Bloomington, Indiana 47405.

**STRUCTURAL GEOLOGY/HYDROGEOLOGY**  
Applications are invited for 2 tenure-track positions to begin Sept. 1986. The Ph.D. is required for appointment at the asst. prof. level. Research interests should be in the areas of structural geology and tectonics of the western U.S., geologic hazards, groundwater geology of the arid west, hydrogeochemistry as related to groundwater and waste disposal, basin analysis, or engineering geology. Application deadline is

Dec. 15, 1985. Detailed descriptions of these positions are available from the Dept. of Geology, Utah State University, Logan, Utah 84322-0705. USU is an equal opportunity/affirmative action employer.

**SUPERVISING PROFESSIONAL HYDROGEOLOGIST**

Involves technical direction and professional coordination of groundwater including groundwater use regulation, groundwater computer modeling, well construction regulation and deep-well injection, as well as administrative and financial responsibilities. Work is performed under the general direction of a unit manager. Requires Bachelor's in geology, civil engineering, and five years of appropriate professional experience; or, a Master's with specialization in hydrogeology or water resource engineering and three years related professional experience; demonstrated managerial ability in directing the work of professional employees is required. Salary range \$29,931—\$44,907. For an official application, contact the South Florida Water Management District, Personnel Office, P.O. Box V, West Palm Beach, FL 33402 or call 305/686-8800 ext 265. APPLICATIONS MUST BE RECEIVED NO LATER THAN 5:00 P.M. ON NOVEMBER 1, 1985. EQUAL OPPORTUNITY EMPLOYER.

**Consultants**

**MEETING COORDINATORS.** Western Experience offers 15 years experience in coordinating all types and sizes of Earth Science meetings. If you need help with a conference or workshop call or write Lois Elms for more information. Phone (303) 449-3352. Address 2450 Central Ave., P2, Boulder, CO 80302.

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**Meetings (continued from p. 197)**

**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 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.)

**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.

**GEOLOGICAL SOCIETY OF AMERICA Annual Meeting—November 10-13, 1986, San Antonio, Texas**

**GSA 1986 Penrose Conferences**

**Southern Oklahoma Aulacogen,** March 23-28, 1986, Quartz Mountain State Park, Oklahoma. Information: M. Charles Gilbert, Dept. of Geology, Texas A&M University, College Station, TX 77843; (409) 845-2464 or 845-2451.

**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.

**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.


**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

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**Future GSA Annual Meetings**

- 1986 San Antonio, Texas  
November 10-13
- 1987 Phoenix, Arizona  
October 26-29
- 1988 Denver, Colorado  
October 31-November 3
- 1989 St. Louis, Missouri  
November 6-9
- 1990 San Diego, California  
October 22-25

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