

From the Geological Association of Canada to GSA Members

by J. Alan Coope, GAC president 1985-1986

The Geological Association of Canada is Canada's national society for the geosciences. Our members come from all branches of the profession, in Canada and in many other countries. The GAC has specialist divisions for environmental earth sciences, geophysics (Canadian Geophysical Union), mineral deposits, paleontology, Precambrian geology, sedimentology (Canadian Sedimentology Research Group), structural geology and tectonics, and volcanology. There are also regional sections in Victoria (Pacific), Vancouver (Cordilleran), Edmonton, Winnipeg, and Newfoundland. Affiliated to the GAC are the Atlantic Geoscience Society, the Canadian Quaternary Association, and the Toronto Geological Discussion Group.

The Association sponsors national and regional meetings, field trips, short courses, lecture tours, student prizes, and professional awards and grants. Many of these activities are centered about the GAC's annual meeting held jointly with the Mineralogical Association of Canada. Most divisions, sections and affiliates also hold their own meetings. The GAC has a long record of cooperation with GSA in this respect, having held joint annual meetings twice in Toronto. The GAC's Cordilleran Section met last year in Vancouver jointly with the Cordilleran Division of GSA.

The GAC maintains liaison with other earth science societies in Canada (directly or through the Canadian Geoscience Council), appoints representatives to national and international scientific organizations (such as NACSN) and provides advice on geological issues to government and to the general public. GAC has a very active publication program, which includes two quarterly periodicals—*Geoscience Canada*, its science journal, and *Geolog*, an informal newsletter. The GAC has also adopted the *Canadian Journal of Earth Sciences* (published by Canada's National Research Council) as its principal medium for publication of scientific papers.

The GAC, which was founded in 1947, is governed by a Council and officers elected annually. Following Canadian tradition, the Sections and Divisions operate more or less independently, while maintaining strong ties with the national organization. The GAC operates from a national headquarters now based at Memorial University of Newfoundland.

There are several categories of membership in the GAC. Fellows have a Bachelor of Science degree in geology or a closely related field and five years post-B.Sc. experience, and Associates include students, those with B.Sc. degrees but less than 5 years



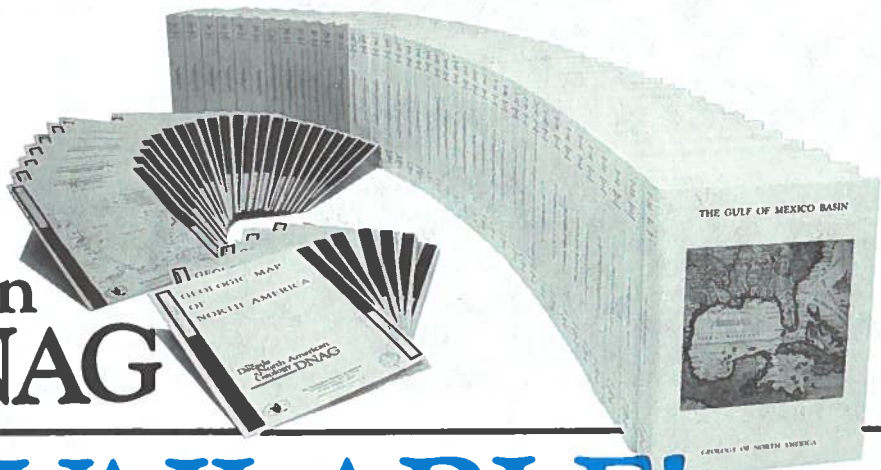
J. Alan Coope

of experience, and those with more than 5 years of experience who do not qualify as members. There are also Life, Retired, Honorary, and Corporate (institutional) members. Fellow status in GAC is regarded by many Canadian organizations as an indication of professional standing.

Membership in the GAC brings 12 issues annually of the *Canadian Journal of Earth Sciences*, four issues each of *Geoscience Canada*, and *Geolog*, a copy of the Program and Abstracts volume for the annual meeting with the Mineralogical Association of Canada, reduced prices for other GAC publications, reduced registration fees for many meetings, field trips, and short courses, and the chance to participate in the activities of regional sections and specialist divisions. The dues (in Canadian funds) for 1986 are as follows: Fellows—\$55, Students—\$30, Associates with less than 5 years post-B.Sc. experience—\$47, with more than 5 years—\$55. At current exchange rates, these dues in US currency work out at close to \$39, \$21, \$33, and \$39, respectively.

Many Canadian geologists are members of both GSA and GAC, and we invite all GSA members to join our Association. Application forms and further information can be obtained from our national head office: Geological Association of Canada, Dept. of Earth Sciences, Memorial University of Newfoundland, St. John's, Newfoundland A1B 3X5, Canada.

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CENTENNIAL NEWS

by Allison (Pete) Palmer

DNAG Master Publication Schedule Set for 1986

Development of the DNAG Project has gone through several phases and has now reached the point where a specific publication schedule is necessary. In mid-February, this schedule was finally fixed, and all authors for chapters in volumes of *The Geology of North America* to be published by GSA in 1986 were sent special notices of the deadlines that are required by this schedule. All earlier promised completion dates were prior to these deadlines. Publication deadlines were also sent to editors of Centennial Field Guides and Centennial Special Volumes promised in 1986.

All volumes of *The Geology of North America* that are to be published by GSA have gone through the following organizational stages. Authors of each volume had an organizational meeting at which they agreed to participate in the volume and to come to a second meeting (Final Coordinating Conference), usually 18-24 months later, with synthesis chapter manuscripts ready for review. Beginning six months before the Final Coordinating Conference, monthly reminders were mailed to all senior authors, reminding them of their commitments to provide reviewable manuscripts and asking them to contact their editors if they anticipated any problems. At the conference, those authors whose chapter manuscripts were not yet completed were asked for new commitment dates, which usually were 2-3 months ahead. Beginning in Decem-

ber 1984, a system of telephone contacts was developed to follow up on all uncompleted commitments as "promise dates" arrived. New agreements to complete assignments were then arranged. For the large majority of DNAG authors, this system has worked reasonably well.

However, the specification of a detailed schedule, particularly for *The Geology of North America*, is now necessary for several reasons: well over 700 members and institutions have ordered DNAG books and maps in response to prepublication purchase offers, based on author promises as of last summer; the production department at GSA must have a clear idea of its upcoming workload and also must be sure that the printer is ready to handle the DNAG work; and finally, dependence on "promises" simply was not working for a number of authors, some of whom indicated that they complete agreements only for "the squeakiest wheel" or when faced with "real" deadlines.

The schedule below is now firm. In subsequent columns, if necessary, you will be informed of those chapters that have not been received by the key deadlines and therefore are delaying scheduled completion of particular DNAG books. This information will reflect conditions at the time of the writing of this column, which is 6 weeks prior to publication and distribution.

Master Schedule for DNAG Books, 1986

Title	Manuscript for initial review	Manuscript revised, and final pocket plate copy* at GSA	Corrected galley returns	To printer	Published
The Western North Atlantic Region		March 15	April 15	June 1	Aug. 15
Centennial Field Guide: Southeastern		"	"	"	"
Centennial Field Guide: North-Central		May 1	June 1	July 15	Sept. 15
Centennial Field Guide: Rocky Mountain		"	"	"	"
The Atlantic Continental Margin: U.S.	March 15	May 15	June 15	Aug. 1	Oct. 1
The Appalachian/Ouachita Regions: U.S.	"	"	"	"	"
The Arctic Ocean Region	April 1	June 1	July 1	Aug. 15	Oct. 15
The Precambrian: Conterminous U.S.	"	"	"	"	"
The Caribbean Region	April 15	June 15	July 15	Sept. 1	Nov. 1
The Gulf of Mexico Basin	"	"	"	"	"
Centennial Field Guide: South-Central		July 1	Aug. 1	Sept. 15	Nov. 15
Centennial Field Guide: Northeastern		"	"	"	"
Sedimentary Cover of the Craton: U.S.	May 15	June 15	Aug. 15	Oct. 1	Dec. 1

*For volumes of *Geology of North America*.

Laramide Beneath the Prairies Is Subject of October Penrose Conference

A GSA Penrose Conference, "Laramide Beneath the Prairies," will be held October 13-17, 1986, in Rapid City, South Dakota. Conveners are Alvis L. Lisenbee, Department of Geological Engineering, South Dakota School of Mines, and George Shurr, Department of Earth Sciences, St. Cloud State University.

The Laramide orogeny is traditionally recognized in the great uplifts and basins of the Rocky Mountain region. Less well known is the fact that "Laramide" deformation and sedimentation are present far to the east and north of the Front Range, Big Horns, etc., beneath younger sedimentary cover or the generally flat topography from the Plains of Alberta to the Big Bend country of Texas.

This conference is intended to bring together industry, academic, and state and federal agency representatives who are studying the geological evolution of various areas of the Prairie foreland province. The many studies to date on the Prairie foreland region are generally of a provincial nature. There is as yet no overview against which workers can compare work in the particular area of their interest with a general framework. Particular attention will be given to defining the timing, structural style, and character of sedimentation in the Prairie foreland.

Active participation will be expected of all who attend. They will share their knowledge with others through talks, poster sessions, or working sessions and through the ongoing exchange of ideas and information on an informal basis throughout the conference.

Prospective participants should send a letter of application that outlines (1) their experience in the topic, (2) areas in which they might expect to contribute, and (3) their reason for wanting to attend the conference to George W. Shurr, Department of Earth Sciences, St. Cloud State University, St. Cloud, Minnesota 56301, (612) 255-2009. **Deadline for applications is July 1, 1986.**

Students with a research interest in some aspect of Laramide activity in the prairies region are encouraged to apply. We hope to have available limited support for a few qualified graduate students. The registration fee, which has not as yet been established, will cover lodging, meals, and field trip.

Vol. 8, no. 5 GSA News & Information May 1986

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Application for participation in a Penrose Conference

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

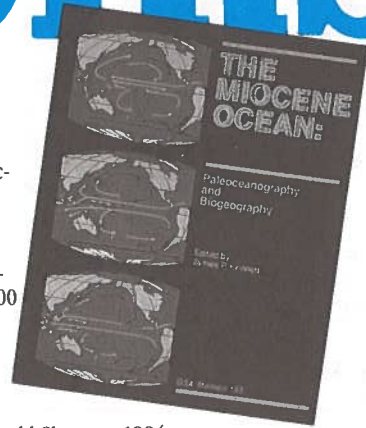
GSA MEMOIRS

The Miocene Ocean: Paleoceanography and Biogeography
 edited by James P. Kennett, 1985

NEW

The book covers paleogeography and paleodepth of the Miocene ocean; stratigraphy; stable isotopic history of the Pacific and Indian Oceans; benthic foraminiferal distributions in relation to bottom and intermediate water structure and history; surface-water biogeography of planktonic foraminifers and radiolaria in relation to paleoceanographic history; and paleoceanographic studies of the Atlantic Ocean.

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The Caribbean-South American Plate Boundary and Regional Tectonics

edited by William E. Bonini, Robert B. Hargraves, and Reginald Shagam, 1984

The diversity of the subject matter covered by the 28 papers in this volume is a reflection of the complexity of the debates which continue on the evolution of the Caribbean plate and its borderlands. Some authors postulate a distant Pacific source for Caribbean crust. Others consider the geometry, timing, and effects of collision, and the subsequent phases of obduction over the craton. Still others view the process of evolution from the vantage point of the craton.

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"One of the most valuable publications in regional tectonics to appear in a long time. . ." AAPG Bulletin

"... an important addition to the geologic literature pertaining to Proterozoic rocks of the Great Lakes Region." Journal of Geological Education

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"... a wealth of information, both in detailed text and accompanying diagrams and maps." Geophysics

Early Proterozoic Geology of the Great Lakes Region
 edited by L. G. Medaris, Jr., 1983

The first two papers in this volume provide an overview of the Penokean orogeny. The next five papers present more restricted topical or areal views of the period. The final two papers discuss two post-Penokean, early Proterozoic events in the region—the 1780-Ma felsic magmatism in south central Wisconsin and the deposition and significance of red quartzites in Wisconsin and Minnesota.

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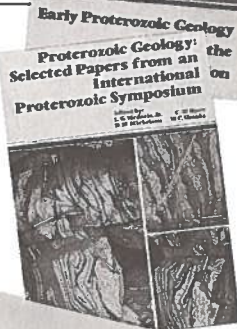


Proterozoic Geology: Selected Papers from an International Proterozoic Symposium

edited by L. G. Medaris, Jr., C. W. Byers, D. M. Michelson, and W. C. Shanks, 1983

Twenty-three papers cover Proterozoic tectonics, magmatism and metamorphism, mineral deposits, life and the oceans, and glaciation.

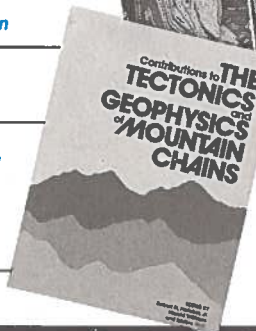
Memoir 161, 324 p., ISBN 0-8137-1161-4, CIP, hardbound \$49.00



Contributions to the Tectonics and Geophysics of Mountain Chains
 edited by Robert D. Hatcher, Jr., Harold Williams, and Isidore Zietz, 1983

Subjects covered include regional geology and tectonics of the Appalachian orogen; comparisons with the Caledonides, Mauritanides, Alps, and the North American Cordillera; and the application of the mechanical principles to the solution of structural problems; and the utilization of the technique of reflection seismology, as well as data from aeromagnetic and gravity studies, to interpret large-scale problems in the tectonics of mountain chains.

Memoir 158, 228 p., + 12 pocket plates, ISBN 0-8137-1158-4, CIP, hardbound \$42.50



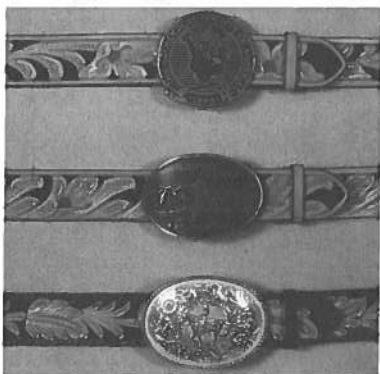
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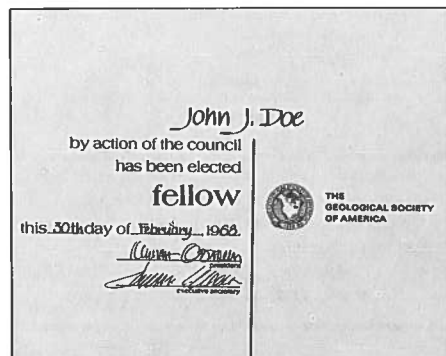
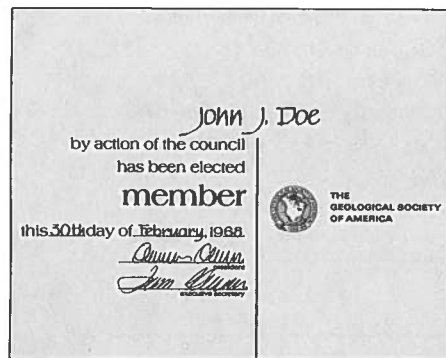
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GSA Divisions and Sections

1986

DIVISIONS

GSA's ten specialty divisions provide a focus for members interested in a particular discipline. The divisions hold annual business meetings in conjunction with the Society's annual meeting, and each division publishes a newsletter periodically. Division membership totals are as of December 31, 1985.

Archaeological Geology Members: 533
Officers: Charles J. Vitaliano, chairman; John A. Gifford, first vice-chairman; Fekri A. Hassan, second vice-chairman; Vance T. Holliday, secretary-treasurer; David M. Hopkins, past chairman

Coal Geology Members: 563
Officers: C. Blaine Cecil, chairman; Daniel J. Casagrande, first vice-chairman; Frederick J. Kuellmer, second vice-chairman; James C. Cobb, secretary; Edwin R. Landis, past chairman

Engineering Geology Members: 1,170
Officers: David M. Cruden, chairman; Christopher C. Mathewson, chairman-elect; Ellis L. Krinitzsky, secretary; Robert L. Schuster, past chairman

Geophysics Members: 813
Officers: William E. Bonini, chairman; Bryan L. Isacks, first vice-chairman; Mary Lou Zoback, second vice-chairman; William D. MacDonald, secretary-treasurer; Nikolas I. Christensen, past chairman

History of Geology Members: 473
Officers: J. Thomas Dutro, Jr., chairman; William M. Jordan, first vice-chairman; Leo F. Laporte, second vice-chairman; Michele L. Aldrich, secretary-treasurer; Joseph T. Gregory, past chairman

Hydrogeology Members: 1,352
Officers: William Back, chairman; Wayne A. Pettyjohn, first vice-chairman; John M. Sharp, Jr., second vice-chairman; Phyllis M. Garman, secretary-treasurer; Grover H. Emrich, past chairman

Planetary Geology Members: 482
Officers: Victor R. Baker, chairman; Arden L. Albee, first vice-chairman; James W. Head III, second vice-chairman; Theodore A. Maxwell, secretary-treasurer; Donald U. Wise, past chairman

Quaternary Geology & Geomorphology Members: 1,492
Officers: Gail M. Ashley, chairman; Victor R. Baker, first vice-chairman; James C. Knox, second vice-chairman; Richard F. Madole, secretary; Donald F. Eschman, past chairman

Sedimentary Geology Members: 854
Officers: George DeVries Klein, chairman; Robert Raymond, Jr., first vice-chairman; Lee J. Suttner, second vice-chairman; Robert H. Osborne, secretary-treasurer

Structural Geology & Tectonics Members: 2, 411
Officers: Winthrop D. Means, chairman; John H. Spang, first vice-chairman; Gregory A. Davis, second vice-chairman; George H. Davis, secretary-treasurer; Robert S. Yeats, past chairman

SECTIONS

GSA has six regional North American sections, generally including GSA members who live within the geographical limits of each section. (Members who live in one section but have a professional interest in another section can become members of the section of interest.) Each section holds annual technical and business meetings. The number of voting members shown for each section is as of December 31, 1985.

Cordilleran Voting members: 3,232
Geographic area: Alaska, Arizona south of lat 35°N, California, Hawaii, Nevada, Oregon, Washington, British Columbia, Yukon, Northwest Territories
Officers: J. Lawford Anderson, chairman; Warren B. Hamilton, vice-chairman; Bruce A. Blackerby, secretary; Richard L. Armstrong, past chairman

Rocky Mountain Voting members: 2, 099
Geographic area: Arizona north of lat 35°N, Colorado, Idaho, Montana, New Mexico, North Dakota, South Dakota, Utah, Wyoming, Alberta, Saskatchewan
Officers: Mary J. Kraus, chairman; Edwin E. Larson, vice-chairman; Kenneth E. Kolm, secretary; Stanley S. Beus, past chairman; David M. Best, past vice-chairman

North-Central Voting members: 1,079
Geographic area: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, Ohio, Wisconsin, Manitoba, Ontario west of 89th meridian
Officers: Peter J. Hudleston, chairman; Robert E. Sloan, vice-chairman; Kenneth G. Brill, Jr., secretary; Richard A. Heimlich, past chairman; Rodney M. Feldmann, past vice-chairman

South-Central Voting members: 1,567
Geographic area: Arkansas, Kansas, Oklahoma, Texas
Officers: John D. McFarland III, chairman; Rena M. Bonem, vice-chairman; Page C. Twiss, secretary-treasurer; Robert C. Morris, past chairman (deceased)

Northeastern Voting members: 2,015
Geographic area: Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, New Brunswick, Newfoundland, Nova Scotia, Prince Edward Island, Quebec, Ontario east of 89th meridian
Officers: Harold W. Borns, Jr., chairman; Peter Robinson, vice-chairman; Kenneth N. Weaver, secretary; John B. Lyons, past chairman

Southeastern Voting members: 1,505
Geographic area: Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia
Officers: Walter H. Wheeler, chairman; Randall S. Spencer, vice-chairman; Stephen H. Stow, secretary-treasurer; Gilles O. Allard, past chairman; Robert W. Deininger, past vice-chairman

Call for Papers: Sinkholes and Karst

The 2nd Multidisciplinary Conference on Sinkholes and the Environmental Impacts of Karst will be held February 9-11, 1987, in Orlando, Florida. This meeting is a continuation of the interdisciplinary communication initiated at the First Multidisciplinary Conference on Sinkholes in 1984. The banquet speaker for the 1987 meeting will be Yuan Daoxian, director of the Karst Institute

in Guilin, China, who will speak on environmental problems of karst geology in China. A field trip to the west coast area of Florida's classic karst will precede the meeting.

Technical papers and case studies are invited on the following broad subjects: geology and engineering studies of karst areas, with emphasis on sinkholes and other practical aspects; hydrogeology and environmental problems of karst; international examples of applied karst geology and hydrology; specific engineering considerations of karst terrane; any additional related topics.

Abstracts are due by August 15, 1986, and full manuscripts will be required by November 14, 1986. As before, the professionally bound and printed proceedings volume will be distributed at the meeting. Prospective contributors should submit a tentative title as soon as possible to Barry F. Beck, Director, Florida Sinkhole Research Institute, College of Engineering, University of Central Florida, Orlando, FL 32816.

Engineering Geology Abstracts Subscription Price Increases

In order to maintain the quality of *Engineering Geology Abstracts*, the American Geological Institute has found it necessary to increase the subscription fee for 1986. Members of the Association of Engineering Geologists, the Canadian Geotechnical Society, the International Association of Engineering Geology, and the Engineering Geology Division of the Geological Society of America will continue to receive a discount of more than 14%. The member rate is now \$30 and the nonmember rate \$35.

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GSA Fellows Head Society for Organic Petrology

Three GSA Fellows head the list of 1986 officers for the three-year-old Society for Organic Petrology (TSOP). They are President John R. Castano, Shell Development, Houston; Vice-President Neely H. Bostick, U.S. Geological Survey, Denver; and President-Elect John C. Crelling, Southern Illinois University, Carbondale. For more information about TSOP, write or call John Castano, Shell Development Company, P.O. Box 481, Houston, TX 77001; (713) 663-2630.

GSA REVIEWS IN ENGINEERING GEOLOGY VI MAN-INDUCED LAND SUBSIDENCE

Edited by Thomas L. Holzer

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

MAN-INDUCED LAND SUBSIDENCE



EDITED BY THOMAS L. HOLZER

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

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

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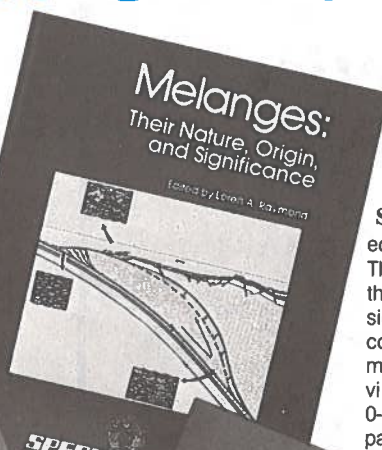
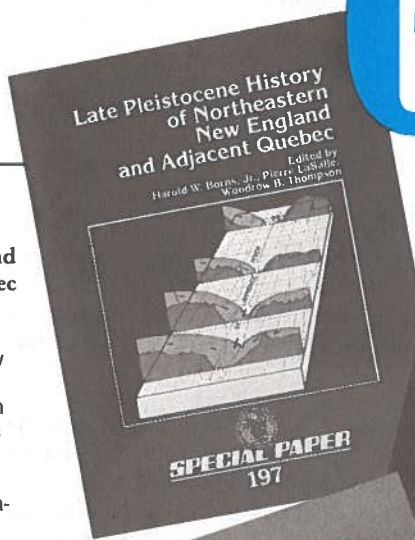
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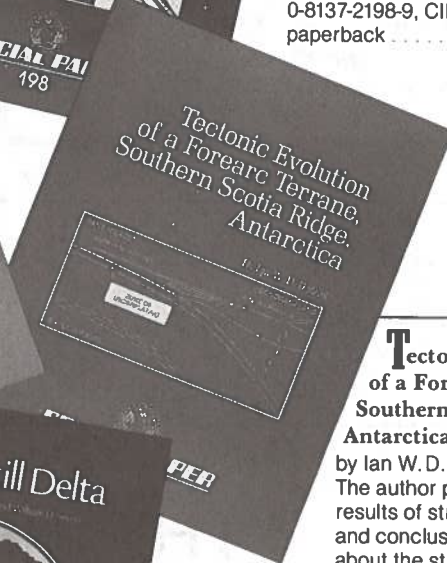
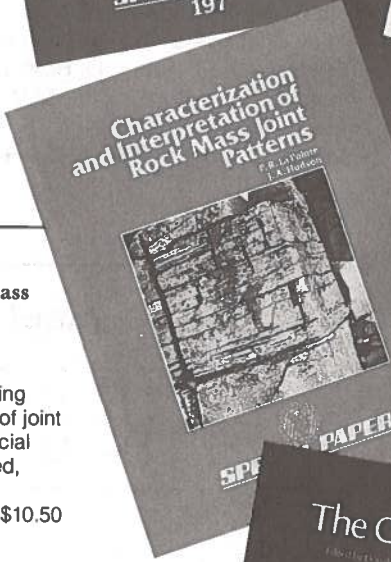
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Late Pleistocene History of Northeastern New England and Adjacent Quebec
 edited by Harold W. Borns, Jr., Pierre LaSalle, and Woodrow B. Thompson, 1985
 13 papers dealing with the timing and models for the late Wisconsinan deglaciation of New England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



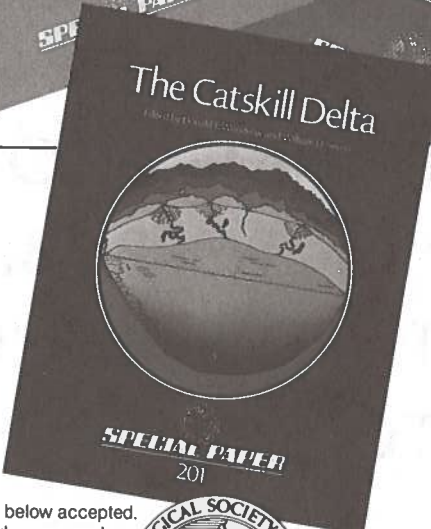
Melanges: Their Nature, Origin, and Significance
 edited by Loren A. Raymond, 1984
 This volume provides images of the nature of melanges, discussion of possible origins, and comments on the significance of melanges. Special Paper 198, vi + 170, illustrated, ISBN 0-8137-2198-9, CIP paperback \$22.00

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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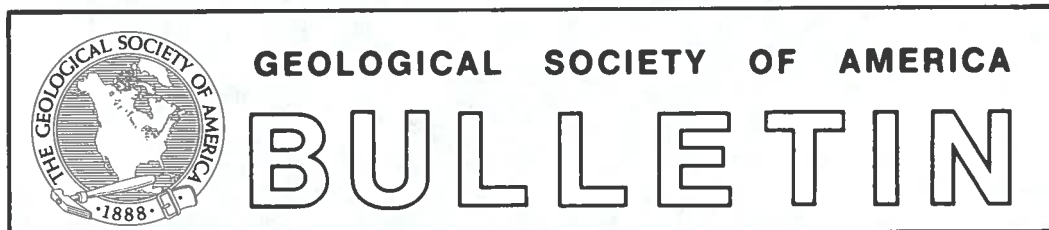
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Bulletin Editors

MEETINGS

1986

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.

(continued on p. 92)

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MEETINGS (continued)

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 Qué-

bec 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, Geo-

(continued)

GSA
MEMOIR 162

The Caribbean-South American Plate Boundary and Regional Tectonics

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

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MEETINGS (continued)

logical 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. Geology, 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 Paleocyanography, 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: Nancy Hopper, OISTL, University of Kentucky, Lexington, KY 40506; (606) 257-2837.

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.

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.

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.

(continued on p. 94)

CORRECTION

The Penrose Conference "The Construction of Geological Cross Sections" will be held in May 1987, not in fall 1986. Deadline for applications is January 15, 1987. See GSA 1987 meetings listing, page 94, this issue, for information.

MEETINGS (continued from p. 93)

GSA 1986

Executive Committee, May 15

Audit Committee, May 15

Section Treasurers, May 15

Council, May 16

Program Review Committee, July 17

Joint Technical Program Committee, July 18

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

Penrose Conferences

The Penrose Conference on **Reefal Development on a Terrigenous Province**, scheduled for May 17-21, 1986, Veracruz, Mexico (conveners: Paul R. Krutak and Raul Gio-Argaez), has been canceled.

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.

Laramide Beneath the Prairies, October 13-17, 1986, Rapid City, South Dakota. Information: Alvis L. Lisenbee, Dept. of Geological Engineering, South Dakota School of Mines, Rapid City, SD 57701; (605) 394-2463 or 2461.

Archaeological Geology: Environmental Siting and Material Usage, December 7-12, 1986, Saint Simons Island, Georgia. Information: Charles J. Vitaliano, Dept. Geology, Indiana University, 1005 East Tenth Street, Bloomington, IN 47405; (812) 335-1407.

Computer Oriented Geological Society Selects 1986 Board of Directors

GSA Member Douglas C. Peters, U.S. Bureau of Mines, Denver, has been re-elected to the Board of Directors of the Computer Oriented Geological Society (COGS) for 1986 and will serve this year as Director-at-Large. Peters was President of COGS in 1985. Also elected to the Board of COGS for 1986 are President—F. Jay Phillips, Vice-President—James Reed, Treasurer—Carol Peterson, Secretary—Stephen A. Krajewski. For information about COGS, write to Computer Oriented Geological Society, P.O. Box 1317, Denver, CO 80201-1317.

SEPM Section Elects Officers

The Mid-Continent Section of the Society of Economic Paleontologists and Mineralogists has elected the following officers for 1986: President—William A. Morgan, Ponca City, Oklahoma; President-Elect—Walter L. Manger, Fayetteville, Arkansas; Treasurer—Doy L. Zachry, Fayetteville; and Secretary—Shirley P. Dutton, Austin, Texas. Morgan, Manger, and Dutton are GSA Members; Zachry is a GSA Fellow. The SEPM Mid-Continent Section includes Arkansas, Iowa, Kansas, Kentucky, Missouri, Nebraska, Oklahoma, Tennessee, and the Texas Panhandle.

1987

Palaeoenvironment of East Asia—2nd International Conference, January 9-14, 1987, Hong Kong. Information: E.K.Y. Chen, Centre of Asian Studies, University of Hong Kong, Hong Kong. (Abstracts due July 31, 1986.)

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

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

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

Sinkholes and the Environmental Impacts of Karst—2nd Multidisciplinary Conference, February 9-11, 1987, Orlando, Florida. Information: Barry F. Beck, College of Engineering, University of Central Florida, Orlando, FL 32816. (Abstracts due August 15, 1986.)

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.

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

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.

18th Annual Geomorphology Symposium on Catastrophic Flooding, September 25-27, 1987, Oxford, Ohio. Information: Larry Mayer, Dept. of Geology, Miami University, Oxford, OH 45056; (513) 529-3218.

GSA 1987

Penrose Conferences

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

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

Annual Meeting, October 26-29, Phoenix, Arizona

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tiary 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.

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The Department of Geological Sciences and the Tennessee Earthquake Information Center, Memphis State University, have a number of new half-time Masters program research assistantships and fellowships available in the fall, 1986, for well qualified students. This is an opportunity to join an expanding program with new faculty and new research projects. Fields of emphasis include regional tectonics, tectonic geomorphology, seismology, and continental crustal studies. Half-time stipends start at \$650/mo.; full time summer support is available. For further information contact: Tennessee Earthquake Information Center, Memphis State University, Memphis, TN 38162.

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The Department of Geological Sciences, University of Tennessee-Knoxville invites applications for a tenure track position in geophysics (Assistant Professor level) to be filled January, 1987, or as soon thereafter as possible. Applicants should have a Ph.D. degree, and interest in initiating a strong research program in crustal structure and tectonics, and both graduate and undergraduate teaching. Preference will be given to applicants with interests in seismic reflection profiling and potential fields (gravity and magnetism). The University of Tennessee is located in a classic region for research into the structure of orogenic belts and evolution of continental crust. Excellent computing and other facilities are available at the University and nearby Oak Ridge National Laboratory. The University has agreed to provide the salary needed to attract the best candidate. Application deadline: Oct. 15, 1986. Send resume with summary of research interests, publications, experience, and names and addresses of three references to: Geophysics Search Committee, Department of Geological Sciences, University of Tennessee, Knoxville, TN 37916. UTK is an EEO/Title IX/Section 504 Employer.

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The Director will work actively to sustain and enhance the environment for creative research and service of the Kansas Geological Survey to meet the needs of the State and profession and to anticipate future problem areas. Must work and communicate effectively with the public, government officials, industry, and the university community.

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To apply send letter, complete resume, and names, addresses, and telephone numbers of three references to Lila Watkins, Personnel Manager, Kansas Geological Survey, 1930 Constant Avenue, University of Kansas, Lawrence, Kansas 66046-2598. 913-864-3965. Complete announcement on request. Full consideration will be given to applications received on or before June 30, 1986. Review of applications will begin on 6/30/86. Subsequent reviews will be every two weeks thereafter until final selection is made. EO/AA Employer.

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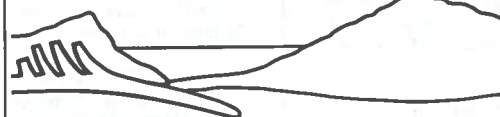
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Abstracts must be typed on 1986 abstract forms, available from Abstracts Secretary, Geological Society of America, P.O. Box 9140, Boulder, CO 80301 [or call (303) 447-8850]. Volunteered abstracts should be mailed to the same address in time to arrive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

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