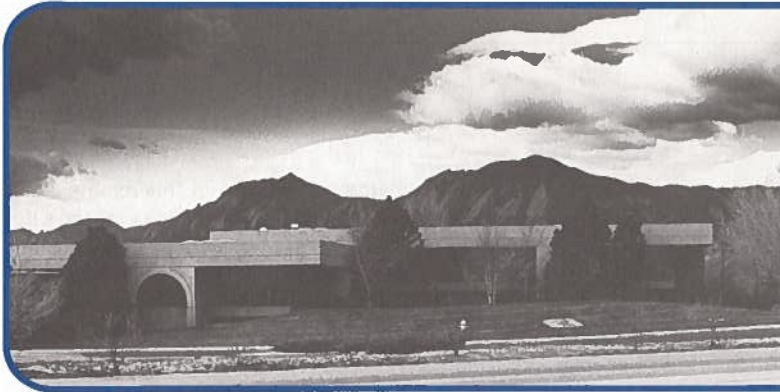


G.S.A. ARCHIVES



GSA NEWS & INFORMATION

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Geological Society of America Centennial Meeting Denver, Colorado October 31–November 3, 1988 see p. 89

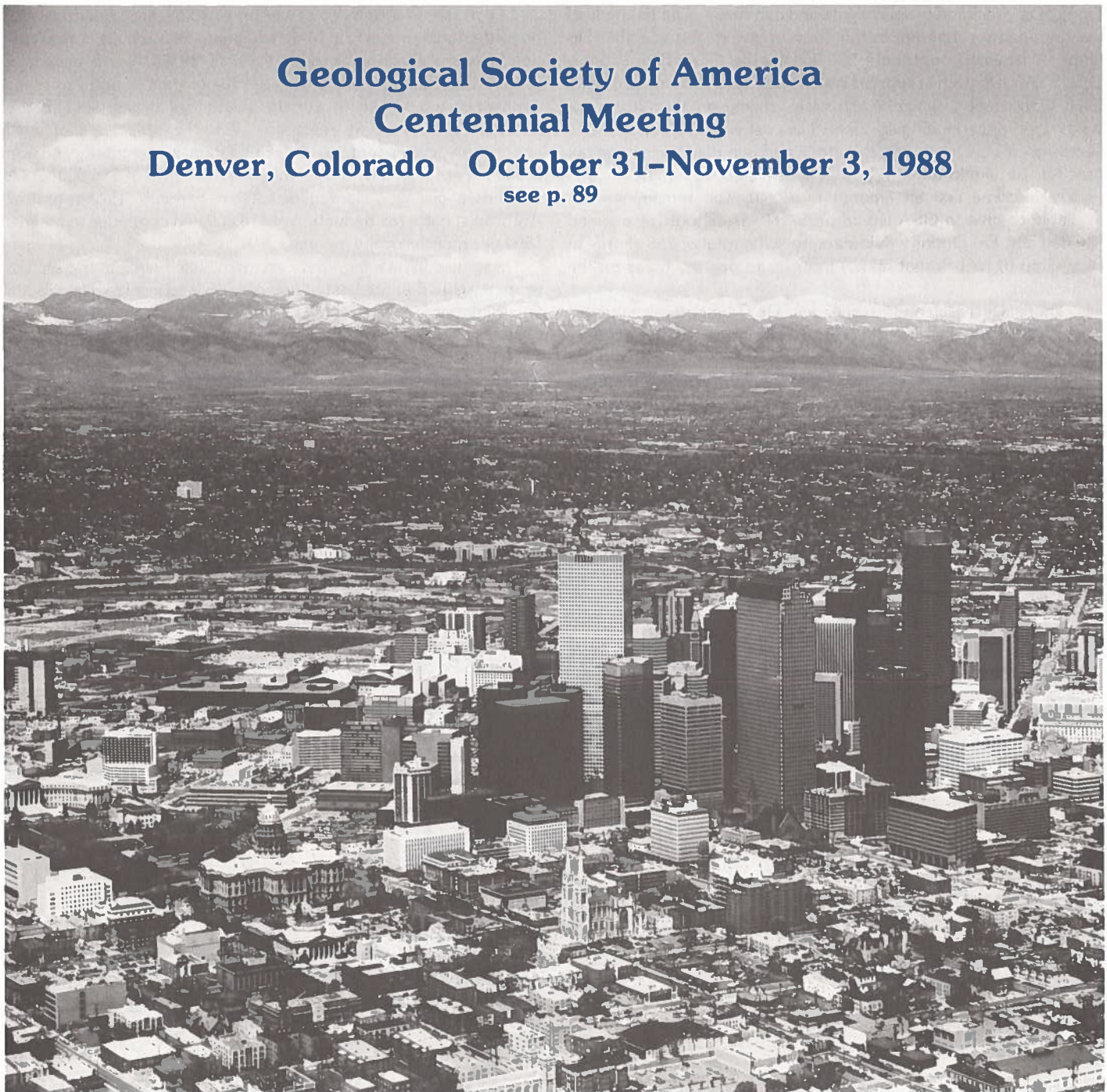


Photo: Denver Metro Convention & Visitors Bureau

FOUNDATION NEWS

by Robert L. Fuchs



Appreciated Property—The Double Whammy Gift

Most people think in terms of cash when considering a gift to an institution. When a decision is reached to make a donation, the giver usually sits down and writes a check to the recipient—church, school, charity, or professional society. A more sophisticated gift is one of property, real or personal. While slightly more complex to effect, a gift of property can provide greater personal satisfaction to the contributor, plus, in the case of appreciated property, generate significant additional tax benefits.

Stocks, bonds, and mutual fund shares are the most common types of appreciated property gifts and can serve as an example of the tax leverage inherent in this form of giving. Assume that Dr. Donor wishes to contribute \$10,000 to the GSA Foundation's GEOSTAR program to support research. He has 200 shares of Blue Chip Corporation, which is currently trading on the New York Stock Exchange at \$50 per share. His cost was \$10 per share 15 years ago. If Dr. Donor sells this stock and is in the 28% income tax bracket, he would have to pay 28% of his \$8000 capital gain as Federal income tax, an amount of \$2240. The remaining cash available to give to GSA would be \$7760. To fill out his planned \$10,000 gift, Dr. Donor would need to sell a total of 258 shares of Blue Chip (if he has that many) in order to pay the taxes on the transaction.

There is an easier and cheaper way. Dr. Donor merely takes his certificate for 200 shares of Blue Chip Corporation to a stock broker or to Blue Chip's transfer agent (always indicated on the stock certificate) and directs that the shares be transferred to the GSA Foundation. If the transfer is done on a day that the closing price is \$50, then GSA will have received a gift of \$10,000 and Dr. Donor will have a deduction for tax purposes of \$10,000. Timing determines the exact amount, since Blue Chip's stock price will fluctuate from day to day on the market.

The financial double whammy is evident in this example. By giving stock directly to the Foundation, Dr. Donor has created a full \$10,000 tax deduction, avoiding dilution of his gift due to the tax bite on capital gains. The Foundation immediately sells the shares for \$10,000 and, as a tax-free entity, has full use of the entire proceeds for the support of geologic research.

Real property, such as real estate or mineral interests, can be given to GSA as gifts of appreciated property. This is particularly important to geologists who receive nonproducing royalties as payment for services performed.

Professor Phil Anthropist was given a 0.5% net smelter royalty on a small gold property in Mineral County, Nevada, as compensation for some mapping he did in the early 1970s. Now a mine is in production, the royalty is paying \$1000 per month, and Professor Anthropist would like to donate one-half of this royalty to the Foundation to support research. With the assistance of legal counsel an assignment to the Foundation is executed, and the royalty is appraised by a mineral consulting firm at \$36,000. GSA receives a gift for research of \$500 per month. Professor Phil Anthropist has a tax deduction of \$18,000 and continues to receive \$500 per month royalty income.

As you can imagine, there are many fine points in the area of property gifts that are best handled by tax and legal experts. But if you think this is a way to make a gift with maximum tax leverage to GSA in this Centennial year, call the Foundation office at (303) 447-2020 and ask for the free booklet, *The Magic of Gifts of Appreciated Property*. Or you can clip and mail the accompanying coupon to us, if you prefer.

Century Challenge Report

At the end of January 1988, there were 390 gifts to the Century Challenge, totaling \$55,050. Challenge partners, those giving \$250 or more, now number 29, or 8% of the total contributors. This is GSA's Centennial year—make certain that you send GSA your birthday gift. Don't miss out on the celebration.

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DNAG NEWS

by Allison R. (Pete) Palmer

Further DNAG Progress

Volume K3 of *The Geology of North America, North America During the Last Deglaciation*, edited by Bill Ruddiman and Herb Wright, was printed in January, and all authors should have received their personal copies and reprints of their chapters. This handsome and informative book is the second of the set to be printed. By the time you receive this, the third volume, *The Atlantic Continental Margin: U.S.* should also be available. Meanwhile, the fourth volume in the series is in its final wrap-up stage. Larry Sloss, editor for *Sedimentary Cover of the Craton: U.S.* will have been in Boulder in February to go over the galley proofs for the entire book, after which it will go to the final paging stage and then to the printer. This will probably be a May publication. The South-Central Section Field Guide went to the printer in mid-January and has been scheduled for publication on March 24, a week after the South-Central Section meeting! Such is the price of delays! By April

(perhaps earlier) we should have available for distribution the *Gravity Anomaly Map of North America*. We are just about maintaining the rate that began last May of a major DNAG product a month.

Status of Other DNAG Books

Some progress has been made on overdue chapters and on completion of chapter revisions. Of the 22 authors who received letters in December requesting their final revisions in January, five have sent those revisions and others have indicated that theirs are almost done. Only one new chapter has been received up to this writing (February 4), but it permitted us to finally get to the last stages of Larry Sloss's volume. We still can't predict which volume will follow *Sedimentary Cover of the Craton: U.S.*, but there are several possibilities. More on the Perils of DNAG next month.

Penrose Conference To Explore Marine Evaporites

A GSA Penrose Conference "Marine Evaporites: Genesis, Alteration, Associated Deposits" will be held August 28–September 2, 1988, at a lodge on the shores of Lake Erie. Conveners are Peter Sonnenfeld, Department of Geology, University of Windsor, Windsor, Ontario N9B 3P4, Canada, (313) 963-6112 or 6113, ext. 2490; and Chris Kendall, Department of Geology, University of South Carolina, Columbia, South Carolina 29208.

Several topics are targeted for detailed discussion: What petrographic, geochemical, or other criteria exist to define the water depths of ancient evaporite basins? How do we define the settings of "shallow shelf," "deeper shelf," "basin slope," "deep basin," "sabkha," "playa," etc.? What chemical models of evaporite interaction and evolution can be built? What are the strengths or shortcomings of available genetic models? What are the principal types of evaporite basins? What is the relation between evaporites, paleobathymetry, and subsidence?

By what criteria can one distinguish nonmarine evaporites (e.g., reprecipitated dissolution products) from marine salts? How can bromide, strontium isotope, gypsum crystal habit, or fluid inclusion studies help? How do we recognize secondary replacement fabrics? Pseudomorphs of almost every evaporite mineral after some other one are known, but the replacement is often obscured. Sulfation of Permian and Neogene potash deposits has occurred worldwide, yet K-Mg sulfates are absent or very limited in evaporites of other ages. What are the effects of very concentrated brines seeping through a still permeable basin floor into porous aquifers filled with less concentrated, but often sulfated formation waters? What, if any, are the catalytic effects of organic matter (acids, bases,

esters), base-metal complexes, other marine trace elements? What is the hydrocarbon source rock potential of evaporites and related facies? What is the relation between evaporites and beds rich in organic matter?

What major controlling factors for marine evaporite precipitation have prevailed during geological history? Marine bedded calcium sulfates appear to be absent from pre-Proterozoic and marine chlorides from pre-Ediacarian sediments. Primary tachyhydrites intercalated in carnallites appear to be restricted to Lower Cretaceous evaporites; secondary tachyhydrites occur in sequences of other ages. Chlorides appear also to be absent from certain time intervals in the Phanerozoic that are marked by maxima in phosphorite production.

Field trips are planned to an operating salt mine and a gypsum mine. The conference will end by collecting suggestions for further investigations.

The conference is limited to 64 participants, including graduate students and foreign scholars. Interested persons should write to Peter Sonnenfeld at the above address and state reasons for wishing to attend the conference. Include a brief description of past or present research relevant to any of the conference topics. **Deadline for applications is June 30, 1988.** The registration fee, \$340 for GSA members and \$355 for nonmembers, covers a single room, all meals, and the field trips.

We hope to have available limited support for a few qualified graduate students who are actively involved in evaporite research. Those students who wish to be considered for financial support should indicate this in their application.

1988 GSA Committees and Representatives

Committees are the key to GSA's accomplishments in promoting the science of geology. Committee members and representatives contribute their expertise and experience to all areas of GSA endeavor. Listed here are those currently serving the Society and the science as committee members and as GSA representatives to other scientific groups.

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Ad Hoc Committee on Minorities in the Geosciences

Penelope M. Hanshaw—Chairman, 1987–1989; Charles A. Baskerville
(continued on p. 85)

Vol. 10, no. 4 GSA News & Information April 1988

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(continued)

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Position vacant, February 16, 1988–February 15, 1991

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Thomas L. Holzer

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Richard W. Galster, July 1, 1986–June 30, 1989

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Richard E. Gray, July 1, 1986–June 30, 1989

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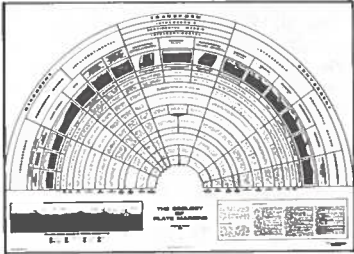
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Robert R. Jordan

GSA Representative to U.S. Committee for the International Association of Hydrogeologists

David A. Stephenson, 1978–1988

CLASSROOM & FIELD AIDS

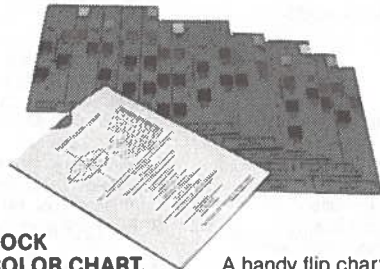


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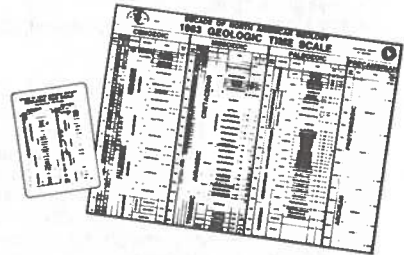
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Most Quaternary sediments in North America north of 45°N post-date the last deglaciation. This volume looks at those extensive deposits from the standpoints of timing, cause, and mechanism of the wastage of North American ice during the last deglaciation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

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edited by R. E. Sheridan and J. A. Grow, 1988

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

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of all cores collected from forearcs during the DSDP. These ten papers summarize that work; each paper could stand alone as an important contribution.

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edited by Ellen M. Morris and Jill D. Pasteris, 1987

Contains 26 papers originally presented at the Symposium on Alkaline Rocks and Kimberlites, in April, 1985, a noteworthy outgrowth of which was a heightened awareness that alkaline magmatism is not restricted to any single scenario but may occur in virtually all tectonic and petrologic settings. The editors focus on mantle metasomatism and the origin of alkaline magmas, kimberlites, and related rocks; alkalic rocks in oceanic settings, and alkalic rocks in continental settings.

SPE215, 392 p., ISBN 0-8137-2215-2, paperback, \$45.00

PALEOSOLS AND WEATHERING THROUGH GEOLOGIC TIME

edited by Wayne R. Sigleo and Jurgen Reinhardt, 1988

A timely, unique volume. Earth scientists from many disciplines will be keenly interested because of growing recognition that paleosols (Ps) contain such a treasure of clues to tectonics, structural geology, erosional history, geography, geomorphology, and climate that they can no longer be ignored. Many believe the time is right to extend the use of Ps through the geologic time scale. This volume arose from the first symposium dedicated to Ps at a GSA Annual meeting. Ten papers deal with Recognition of Ps; Ps and the Evolution of the Atmosphere; Recognition and Chemical Characterization; Pedogenesis, Ground-water, Topographic, and Tectonic Controls; Interpretation for Profiles Exhibiting Subaerial Exposure Crusts from the Mississippian; Calcareous Ps in the Triassic Dolores Formation; Ps from Some Cretaceous Environments in the S.E. U.S.; Pedofacies Analysis, a New Approach to Reconstructing Ancient Fluvial Sequences; and Climatic Influences on Rates and Processes of Soil Development in Quaternary Deposits of S. Cal.

SPE216, 200 p., indexed, ISBN 0-8137-2216-0, paperback, \$22.50

EARLY PERMIAN FUSULINIDS FROM THE OWENS VALLEY GROUP, EAST-CENTRAL CALIFORNIA

by R. T. Maggini, C. H. Stevens, and P. Stone, 1987

Sixty fusulinid species from the Lower Permian part of the Owens Valley Group in east-central California, 17 of which are newly named, are described in this volume: 2 species of *Triticites*, 1 of *Leptotriticites*, 16 of *Schwagerina*, 1 of *Pseudofusulina*, 3 of *Chusenella*, 1 of *Paraschwagerina*, 9 of *Stewartina*, 6 of *Pseudoschwagerina*, 3 of *Chalaroschwagerina*, 6 of *Cuniculinella*, 3 of *Eoparafusulina*, and 6 of *Parafusulina*. In addition, a new genus, *Reticulosepta* (with three species), is described. Most of the fusulinids are from sediment-gravity-flow deposits, and they provide evidence for biostratigraphic subdivision of the Lower Permian part of the Owens Valley Group.

SPE217, 72 p., indexed, paperback, ISBN 0-8137-2217-9, \$11.25

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DEBRIS FLOWS/AVALANCHES: PROCESS, RECOGNITION, AND MITIGATION

edited by J.E. Costa and G.F. Wieczorek, 1987

Debris flows and debris avalanches are among the most dangerous and destructive natural hazards. They claim hundreds of lives and millions of dollars in property loss every year. The past two decades have produced much new scientific and engineering understanding of these occurrences and have led to new methods for mitigating the loss of life and property. These 17 papers pull together much of this recent research and present it in three categories: (1) process; (2) recognition; and (3) mitigation.

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

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

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

Grenville Seems Ancient
Geologists Seek Au
Granite Subducts Awkwardly

Grossularite Shimmers Adamantinely



Beard and Field Dress Contest

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

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

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



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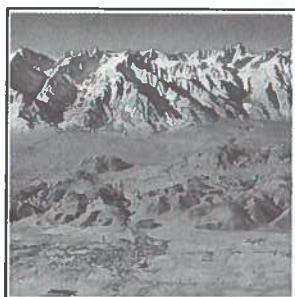
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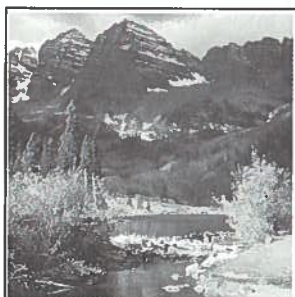
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edited by S.S. Beus, 1987

Field guides with area maps to locations in northern AZ, CO, ID, MT, NM, ND, SD, UT, WY, and Alberta. Indexed. Orange spine.

CFG002, 489 p., ISBN 0-8137-5402-X, \$43.50

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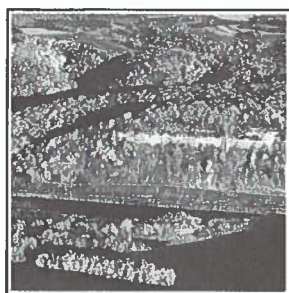
NORTH-CENTRAL SECTION

edited by D.L. Biggs, 1987

Field guides with area maps to locations in IL, IN, IA, MI, MN, MO, NE, OH, and WI. Indexed. Violet spine.

CFG003, 490 p., ISBN 0-8137-5403-8, \$43.50

NORTH-CENTRAL SECTION OF THE GEOLOGICAL SOCIETY OF AMERICA



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Centennial Field Guide Volume 4

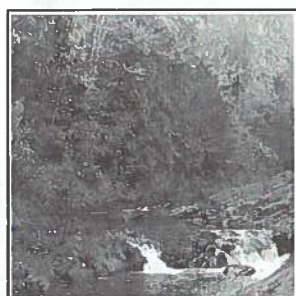
SOUTH-CENTRAL SECTION

edited by O.T. Hayward, 1987

Field guides with area maps to locations in AR, KS, OK, and TX. Indexed. Red spine.

CFG004, 475 p., ISBN 0-8137-5404-6, \$43.50

NORTHEASTERN SECTION OF THE GEOLOGICAL SOCIETY OF AMERICA



Centennial Field Guide Volume 5

SOUTHEASTERN SECTION OF THE GEOLOGICAL SOCIETY OF AMERICA



Centennial Field Guide Volume 6

VOLUMES 5 & 6

NORTHEASTERN SECTION

edited by D.C. Roy, 1987

Field guides with area maps to locations in CT, DE, DC, ME, MD, MA, NH, NJ, NY, PA, RI, VT, New Brunswick, Newfoundland, Nova Scotia, eastern Ontario, and Quebec. Indexed. Tan spine.

CFG005, 517 p., ISBN 0-8137-5405-4, \$43.50

SOUTHEASTERN SECTION

edited by T.L. Neathery, 1986

Field guides with area maps to locations in AL, FL, GA, KY, LA, MS, NC, SC, TN, VA, and WV. Indexed. Green spine.

CFG006, 477 p., ISBN 0-8137-5406-2, \$40.50

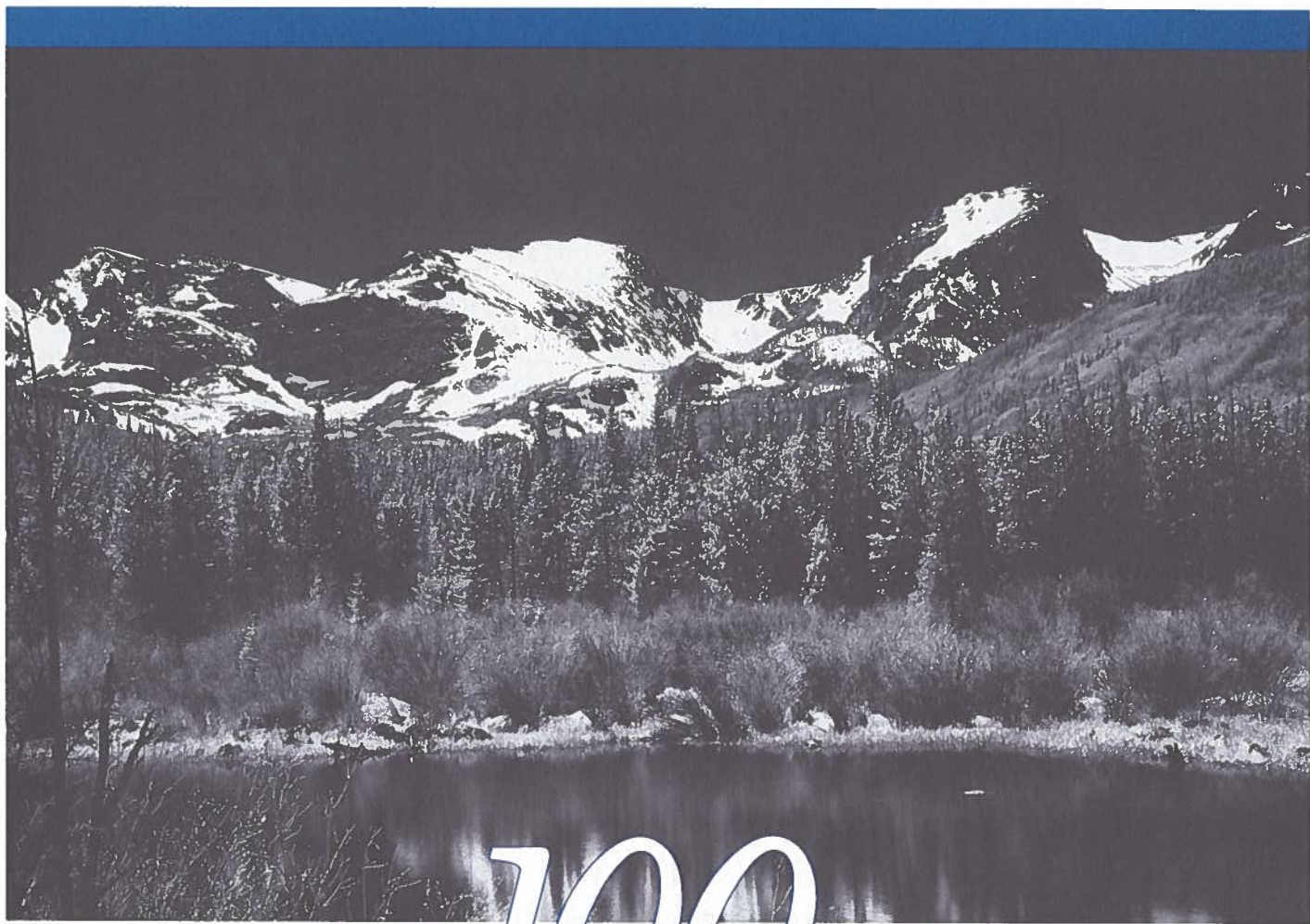
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1988 Annual Meeting

DENVER, COLORADO ■ OCTOBER 31 to NOVEMBER 3, 1988

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

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

ASSOCIATED SOCIETIES MEETING WITH GSA

Cushman Foundation ■ Geochemical Society ■ Geoscience Information Society
Mineralogical Society of America ■ National Association of Geology Teachers
Paleontological Society ■ Sigma Gamma Epsilon ■ Society of Economic Geologists
Society of Vertebrate Paleontologists

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THIS IS A MEETING AT A SPECIAL PLACE WITH SPECIAL PLANS FOR YOU. WE INVITE YOU TO ATTEND—PREPARE NOW FOR THAT "ONCE-IN-A-CENTURY TRIP"!

Denver is situated where the vast Interior Plains of the United States meet the spectacular Front Ranges of the Rocky Mountains. It provides one of the most varied geologic settings of any major American city and is an extraordinary location in which to celebrate GSA's 100th year.

The topographic and structural basin beneath the city is an important source of hydrocarbons in the Rocky Mountain foreland region. The Front Ranges to the west are characterized by colorful upper Paleozoic sedimentary rocks, which bring tourists to the Garden of the Gods and to the Red Rocks Amphitheater, and by the historical mining districts in the Precambrian igneous and metamorphic rocks of the Colorado Mineral Belt. The ranges also mark the eastern edge of the geologically complex Cordilleran mountain system that extends from Alaska to Tierra del Fuego.

In addition to their mineral wealth, the mountains to the west provide a dramatic geologic display that you will not want to miss. This is indeed a special place for a special year.

CENTENNIAL OPENING CEREMONIES AND MEGASYMPOSIUM

The *Centennial Opening Ceremonies* will lead off the Centennial Celebration on Monday morning, just prior to the General Session. The ceremonies will be a tribute to GSA and to the science of geology.

Centennial General Session

On Monday morning, October 31, after the Opening Ceremonies, the Opening General Session will be "North America in 4-D."

This megasymposium, unopposed by any other session, will be convened by Albert W. Bally, GSA President.

TECHNICAL PROGRAM

*CALL FOR PAPERS
ABSTRACTS DEADLINE FOR
SYMPOSIA AND
VOLUNTEERED PAPERS
FRIDAY, JUNE 10, 1988*

Technical sessions consist of both volunteered and invited papers, organized in one of four presentation formats: invited symposia, open symposia, theme sessions, and discipline sessions. The formats are distinguished by the mix of invited and volunteered papers. In *invited symposia*, all speakers are invited by the conveners. *Open symposia* have both invited and volunteered components; volunteer contributors must contact the convener about submitting an abstract. If a paper is not accepted for an open symposium, it will be considered for a discipline session along with regular volunteered abstracts. *Theme sessions* have no invited speakers but are organized around specific topics listed on the 1988 abstract form. If an abstract is submitted to, but not accepted for, a theme session, it will continue through the evaluation process to be considered for the appropriate discipline session. *Discipline sessions* are organized from volunteered abstracts submitted to GSA on a general basis and assigned to one of 34 discipline classifications.

After review, selection of volunteered papers for presentation in theme or discipline sessions is made by members of the Joint Technical Program Committee (JTPC). Each discipline has a representative on the JTPC, appointed by either a GSA Division or an Associated Society.

Theme session organizers will be designated either by the sponsoring Division or Associated Society or by the Technical Program Committee chairmen.

1988 Technical Program Chairmen

William W. Hay
University Museum
Campus Box 218
University of Colorado
Boulder, CO 80309
(303) 492-7370

Samuel S. Adams
Dept. of Geology and
Geological Engineering
Colorado School of Mines
Golden, CO 80401
(303) 273-3800

A. R. (Pete) Palmer
GSA
3300 Penrose Place
P.O. Box 9140
Boulder, CO 80301
(303) 447-2020

INVITED SYMPOSIA PROCEDURE

- All symposium abstracts (invited and volunteered) are to be submitted directly to the convener by June 10.

OPEN SYMPOSIA PROCEDURE

- Authors interested in volunteering an abstract for an open symposium must contact the convener by May 1 to be sure that the abstract will be consistent with the mission of the symposium.
- If agreed upon with the convener, the author will submit the abstract directly to the convener by June 10. The paper then will be reviewed with the other abstracts submitted for the symposium.
- After review, abstracts not selected by the convener for inclusion in the symposium will be automatically submitted for consideration as volunteered papers.

SYMPOSIA

- Open symposia are indicated with an asterisk (*). Convener contact information is given for the open symposia only. The symposium schedule will be finalized in July, but a preliminary schedule will be available by May 1. Please call the GSA Meetings Department for information.

1. **Phanerozoic Tectonics of North America.** Structural Geology and Tectonics Division. A. W. Snoke, University of Wyoming; G. A. Davis, University of Southern California.
- *2. **Controls on the Distribution and Quality of Cretaceous Coals.** Coal Geology Division. P. J. McCabe, USGS, MS 972, Federal Center, Box 25046, Denver, CO 80225, (303) 236-7550; J. T. Parrish, University of Arizona.
- *7. **Ancient Glaciomarine Deposits: Polar vs. Temperate Environments.** J.M.G. Miller, Vanderbilt University, Nashville, TN 37235, (615) 322-2976; Carolyn Eyles, McMaster University.
8. **History of the Establishment of a Geologic Framework for Human Evolution.** History of Geology Division. L. F. Laporte, University of California, Santa Cruz.



Longs Peak

- *3. **Processes of Continental Growth: Geophysical and Geologic Evidence.** Geophysics Division. W. D. Mooney, USGS, MS 977, 345 Middlefield Road, Menlo Park, CA 94025, (415) 329-4764; A. G. Green, Geological Survey of Canada, Ottawa.
- *4. **Hazard Reduction In the 21st Century.** Engineering Geology Division. T. L. Holzer, USGS, MS 977, 345 Middlefield Road, Menlo Park, CA 94025, (415) 329-5637; F. B. Leighton, Leighton and Associates.
5. **Mars: Geologic Analyses and Future Missions.** Planetary Geology Division. R. E. Arvidson, Washington University.
- *6. **Modern Glaciomarine Deposits: Polar vs. Temperate Environments.** Quaternary Geology and Geomorphology Division. G. M. Ashley, Dept. of Geological Sciences, Rutgers University, New Brunswick, NJ 08903, (201) 932-2221; J. B. Anderson, Rice University.
9. **New World Geoarchaeology.** Archaeological Geology Division. Fekri Hassan, Washington State University; C. R. Ferring, North Texas State University.
10. **Use of Geophysical Methods for Hydrogeologic Characterization and for Problems of Contaminant Transport.** Hydrogeology Division. S. W. Wheatcraft, University of Nevada, Reno.
11. **Chemistry and Physics of Minerals in the Mantle.** Mineralogical Society. H.O.A. Meyer, Purdue University.
12. **A Tale of Two Cratons: Contrasts in Crust-Mantle Evolution.** Geochemical Society. P. A. Mueller, University of Florida; J. L. Wooden, USGS, Menlo Park.
13. **Individual Work Stations: Information Supermarkets for Geoscientists.** Geoscience Information Society and International Association of Mathematical Geology. J. V. Lerud,

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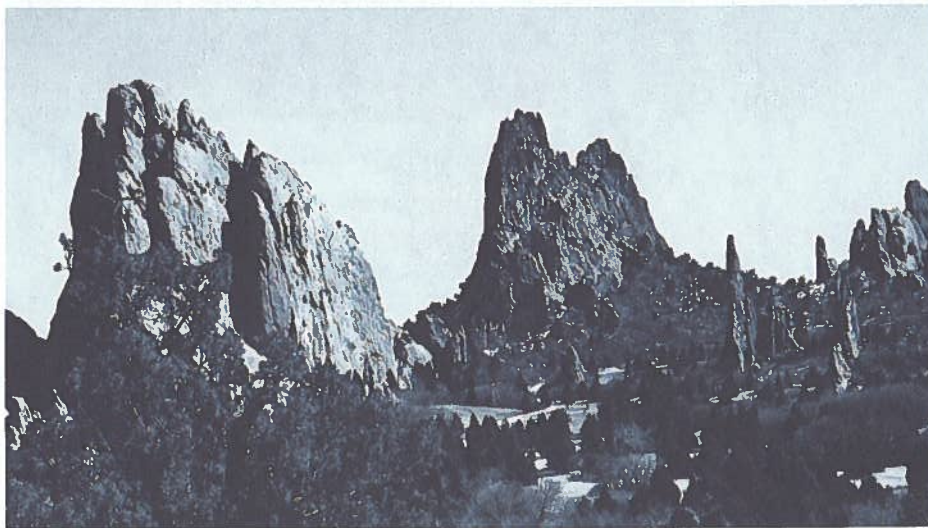


Montana College of Mineral Science and Technology; D. C. Ward, University of Illinois, Urbana.

14. **Computer-Assisted Phylogeny Programs in Research and Teaching.** Paleontological Society and Society of Vertebrate Paleontologists. K. Padian and D. Lindberg, University of California, Berkeley.
15. **Case Histories of World-Class Mineral Discoveries.** Society of Economic Geologists. R. W. Hutchinson, Colorado School of Mines.
16. **Sedimentary Petrology: Old Foundations and New Implications for Teaching.** National Association of Geology Teachers. M. D. Picard, University of Utah.

20. **Siljan Ring Well, Sweden: Deep Drilling in Crystalline Rocks.** J. R. Castano, Consultant, Houston, Texas.
- *21. **Seismicity, Quaternary Faulting, and Earthquake Hazards in the Rocky Mountain Region.** I. G. Wong, Woodward-Clyde Consultants, 500 12th St., Suite 100, Oakland, CA 94607, (415) 893-3600; W. P. Rogers, Colorado Geological Survey.
22. **Thermal Evolution of the Sevier Hinterland.** K. V. Hodges, Massachusetts Institute of Technology; J. F. Sutter, USGS, Reston.
23. **Historical Perspectives and Future Directions in Mineral Deposits Research and Major Metals Utilization.** R. W. Hutchinson, Colorado School of Mines.

- *27. **Late Proterozoic Evolution of Western North America: A Reevaluation.** G. M. Ross, Geological Survey of Canada, 3303 33rd St., N.W., Calgary, Alberta T2L 2A7, Canada, (403) 284-0323; N. Christie-Blick, Lamont-Doherty Geological Observatory.
- *28. **Mineral Resources of Solution-Collapse Breccias and Filled Sinkholes.** K. J. Wenrich, USGS, MS 905, Federal Center, Box 25046, Denver, CO 80225, (303) 236-1563; H. A. Tourtelot, USGS, Denver.
29. **Fractals in Geology.** C. C. Barton and G.C.P. King, USGS, Denver.
- *30. **Paleomagnetism and North American Apparent Polar Wander Paths: Cenozoic to Precambrian.** J. W. Geissman, Dept. of Geology, University of New Mexico, Albuquerque, NM 87131, (505) 277-0887; R. F. Butler, University of Arizona.



Garden of the Gods

17. **Last Interglaciation/Glaciation Transition (122-64 ka) in North America.** P. U. Clark, University of Illinois, Chicago; P. Lea, University of Colorado.
- *18. **Role of Geology in the Superconducting Super Collider Site-Selection Process.** K. V. Lusa and H. H. Suneson, Oklahoma Geological Survey, University of Oklahoma, 830 Van Vleet Oval, Norman, OK 73019, (405) 325-3031.
- *19. **Andean Magmatism and Its Tectonic Setting.** R. S. Harmon, Dept. of Geological Sciences, Southern Methodist University, Dallas, TX 75275, (214) 692-2750; I.W.D. Dalziel, University of Texas, Austin; S. M. Kay, Cornell University.

24. **EEZ-Scan: Results of the U.S. Geological Survey GLORIA Survey Program.** M. L. Holmes, University of Washington; G. W. Hill, USGS, Reston.
- *25. **Dynamics of Climate Change.** M. Leinen, School of Oceanography, University of Rhode Island, Narragansett, RI 02882-1197, (401) 792-6268; D. K. Rea, University of Michigan.
26. **Productivity, Accumulation, and Preservation of Organic Matter: Recent and Ancient Sediment Records.** J. W. Farrington, University of Massachusetts, Boston; J. K. Whelan, Woods Hole Oceanographic Institution.

THEME SESSION PROCEDURE

To submit an abstract for consideration for a theme session, the author must check the appropriate theme session box, as well as a discipline box.

- All abstracts will be reviewed by the appropriate JTPC reviewers in the discipline for which they are submitted.
- During its July 15 meeting, the JTPC will organize theme sessions from the abstracts approved for presentation.

THEME SESSIONS

- Diagenesis of Lacustrine Rocks
- Geology and Public Policy for the 21st Century
- Geophysical Patterns in North America
- Global Aspects of Sedimentary Geology
- Organic Compounds in Ground Water
- Paleontologic Constraints on Accreted Terranes
- Physics and Chemistry of Mylonites
- Secular Variation in the Sedimentary Record

PRESENTATION MODES

Papers may be presented in either oral or poster mode:

Oral Presentation Mode. The normal length of an oral presentation is 15 minutes, including time for discussion. Projection equipment consists of TWO 35-mm projectors, one overhead projector, and two screens.

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Poster Presentation Mode. Approximately 40% of volunteered papers are presented as posters. Each poster session speaker is provided with three horizontal, free-standing display boards approximately 8' wide and 4' high. Poster presentations are scheduled in four-hour intervals.

ABSTRACTS INSTRUCTIONS

All abstracts must be submitted on the 1988 abstract form, available from the Abstracts Coordinator, GSA Headquarters, from the conveners of symposia, and from the geology departments of most colleges and universities. The abstract form will be used as camera-ready copy for publication of *Abstracts with Programs*.

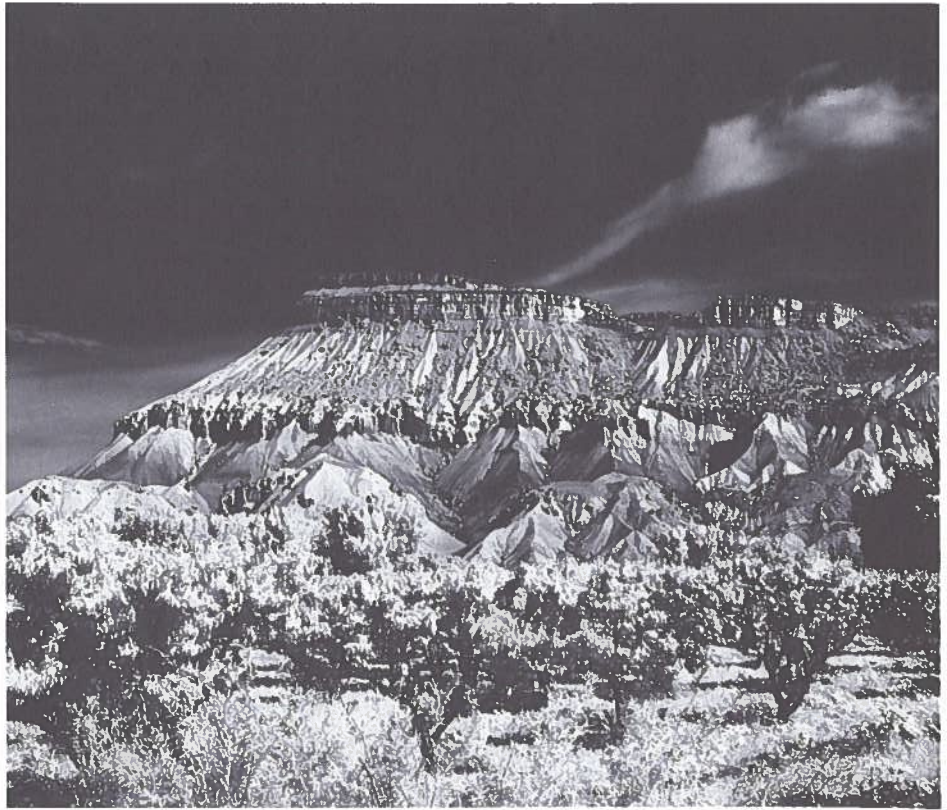
Senior authors will be charged a \$15 fee if retyping is necessary, and there will be no opportunity for authors to review or revise typed abstracts after they are submitted. Note: No more than one abstract from any person as sole or senior author will be accepted for publication, and due to scheduling difficulties, no author may present more than one volunteered paper. These restrictions do not apply to symposia.

FIELD TRIPS

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

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

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



Mt. Garfield, north of Palisade, Colorado. Mesa Verde formation at top, Cozette, Corcoran beds half way up.

PREMEETING

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

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

An Integrated View of Depositional Systems of the Early Tertiary Coal Measures, Powder River Basin, Montana and Wyoming. Romeo Flores, Coal Geology Branch, USGS, Denver, Colorado, (303) 236-7774; Timothy Moore, Peter Warwick. Trip begins and ends in Casper, Wyoming. 3 days, October 28 (morning) to October 30. Cost: \$310. Limit: 35.

In Search of Hayden's Tertiary Lakes of the High Plains: The White River Formation Revisited. Robert H. Blodgett, University of Texas, Austin, (512) 471-5762; Emmett Evanoff, Russell G. Shepherd. Trip begins in Casper, Wyoming and ends in Denver. 3 days, October 28 (morning) to October 30. Cost: \$180. Limit: 40.

Geology and Hydrogeology of the Nebraska Sandhills. James B. Swinehart, University of Nebraska, Lincoln, (402) 472-7529; Thomas C. Winter, James Goeke. 3 days, October 28 (morning) to October 30. Cost: \$220. Limit: 40.

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

From the Basin and Range to the Edge of the Plains in the Tracks of Wheeler, Powell, and Hayden. R. L. Langenheim, Jr., University of Illinois, Urbana, (217)

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333-3540; Pius Neibel. Trip begins in Las Vegas, Nevada, and ends in Denver. 4 days, October 27 (morning) to October 30. Cost: \$325. Limit: 40.

Pennsylvanian and Permian Depositional Systems and Cycles in Eagle Basin (Vail to Glenwood Springs), Northwest Colorado.

Samuel Y. Johnson, USGS, Denver, Colorado, (303) 236-1545; Christopher J. Schenk; John A. Karachewski. 2 days, October 29 (morning) to October 30. Cost: \$120. Limit: 36.

Archaeological Geology in the Colorado Piedmont and High Plains of Southeastern Wyoming.

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

Northeastern Front Range Revisited: Compression and Crustal Wedging in a Classic Locality for Vertical Tectonics.

Eric Erslev, Colorado State University, Fort Collins, (303) 491-5661. 1 day, October 31. Cost: \$45. Limit: 28.

Geomorphology and Quaternary Geology of Canyonlands, Utah.

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

In the Footsteps of G. K. Gilbert—Lake Bonneville and Neotectonics of the Eastern Basin and Range Province.

Michael W. West, Littleton, Colorado, (303) 972-1537; Mike Machette, Don Currey. Trip begins in Salt Lake City, Utah, and ends in Denver. 3 days, October 28 (morning) to October 30. Cost: \$320. Limit: 40.

Hydrogeology and Phytogeomorphology of the Mountains and Foothills near Denver, Colorado.

K. E. Kolm, Colorado School of Mines, Golden, (303) 273-3800; J. C. Emerick. 1 day, October 30. Cost: \$40. Limit: 40.

Geology and Vertebrate Paleontology of Western Colorado and Eastern Utah.

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

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

Precious-Metal Telluride Deposits at Gold Hill, Boulder County, Colorado.

Bruce Geller, University of Colorado, Boulder, (303) 492-8141; W. W. Atkinson, Jr., Jeff Kurtz. 1 day, October 29. Cost: \$50. Limit: 20.

POSTMEETING

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

Styles and Deformation of the Cordilleran Orogenic Belt and the Mid-Tertiary Tectonic Overprinting, Southeast Arizona.

Harald Drewes, USGS, Denver, Colorado, (303) 236-5647; Steven Reynolds. Trip begins in Denver and ends in Tucson, Arizona. 3½ days, November 3 (5 p.m.) to November 6. Cost: \$320. Limit: 30.

Glacial-Marine Sedimentation, Mineral Fork Formation (Proterozoic III), Utah.

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

Upper Cretaceous Shannon, Frontier, and Haystack Mountains Formations Shelf Sandstones.

Roderick W. Tillman, Tulsa, Oklahoma, (918) 749-3184; Randi S. Martinsen, Marilyn Huff. 3½ days, November 3 (5 p.m.) to November 6. Cost: \$380. Limit: 30.

Dinosaur Trackways and Red Beds of the Purgatoire Valley: Early Mesozoic Depositional Environments and Paleocology of Southeastern Colorado.

Nancy K. Prince, University of Colorado, Denver, (303) 556-3456; Martin G. Lockley, Kelly Conrad. 2½ days, November 3 (5 p.m.) to November 5. Cost: \$220. Limit: 30.

Cretaceous-Tertiary Boundary in the Raton Basin—Evidence of Asteroid Impact.

Charles L. Pillmore, USGS, Denver, Colorado, (303) 236-1240; Romeo Flores, R. Farley Fleming, Glen A. Izett. 2½ days, November 3 (5 p.m.) to November 5. Cost: \$200. Limit: 36.

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

Pleistocene and Recent Floods in the Big Thompson River Drainage, Northern Colorado Front Range.

William H. Hoyt, University of Northern Colorado, Greeley, (303) 351-2647; Robert D. Jarrett. 1 day, November 4. Cost: \$30. Limit: 36.

SEG-SPONSORED FIELD TRIPS

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

Epithermal Base- and Precious-Metal Systems, San Juan Mountains, Colorado.

Robert M. Hutchinson, Bernard Koch, Colorado School of Mines, Golden, (303) 273-3813. Trip begins and ends in Durango, Colorado. 3 days. Cost: \$250.

Deposits of the Colorado Mineral Belt: Leadville and Gilman Areas.

Tommy Thompson, Colorado State University, Fort Collins, (303) 491-5430. 2 days. Cost: \$150.



Mouth (N) of Lodore Canyon, Dinosaur National Monument, N.W. Colorado, Green River.

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

Low-Temperature Metal (Ga, Ge, U, Cu, Ag, Au) Deposits of the Arizona Strip. Erich Petersen, University of Utah, Salt Lake City, (801) 581-7238; Jim Rasmussen. Trip begins and ends in St. George, Utah. 3 days. Cost: \$250.

PROFESSIONAL HORIZONS: GSA-SPONSORED SHORT COURSES/ FORUM

For more information on any of the courses listed below, contact Edna Collis, Course Registrar, GSA headquarters.

Fees will be approximately \$75-\$100 for the first day, \$50-\$75 for the second day, and \$25-\$50 for the third day. Courses will be held in Denver and Boulder, Colorado. Actual fees and more information will be published in the May issue of *GSA News & Information*.

PREMEETING COURSES

Use of Microcomputers in Structural Geology. Friday, October 28, to Sunday, October 30. Cosponsored by the Structural Geology and Tectonics Division. Roy Kligfield, University of Colorado; David Sanderson, Queen's University at Belfast; Richard H. Groshong, Jr., University of Alabama.

Ore Deposition Associated with Magmas. Friday, October 28, to Sunday, October 30. Cosponsored by the Society of Economic Geologists. A. J. Naldrett, University of Toronto; James A. Whitney, University of Georgia; Philip A. Candela, University of Maryland; Carl M. Leshner, University of Alabama; Alan H. Clark, Queen's University at Kingston, Ontario; D. E. Mathez, American Museum of Natural History.

Geographic Information Systems: A Tool for Geological Data Analysis and Interpretation. Saturday, October 29. David A. Hastings, NOAA National Geophysical Data Center; Michael Crane, USGS.

Glacial Facies Models. Saturday, October 29, and Sunday, October 30. Cosponsored by the Quaternary Geology and Geomorphology Division and the Sedimentary Geology Division. Gail M. Ashley, Rutgers University; Bruce F. Molnia, Polar Research Board, National Research Council; John B. Anderson, Rice University; Ross D. Powell, Northern Illinois University; John Shaw, Queen's University at Kingston, Ontario.

Seismic Imaging of the Continental Crust. Saturday, October 29, and Sunday, October 30. Cosponsored by the Geophysics Division: Larry D. Brown, Cornell University; Walter D. Mooney, USGS; Nikolas I. Christensen, Purdue University.

Geological Considerations in Hazardous Waste Site Characterization. Saturday, October 29, and Sunday, October 30. John D. Rockaway, University of Missouri; David E. Daniel, University of Texas; Allen W. Hatheway, University of Missouri; Christopher R. Ryan, Geo-Con, Inc.; Charles Riggs, Sverdrup Corporation.

Quantitative Sedimentary Basin Modeling. Saturday, October 29, and Sunday, October 30. Cosponsored by the Sedimentary Geology Division. Paul L. Heller and Charles L. Angevine, University of Wyoming; Chris Paola, University of Minnesota.

Seminar in Engineered Writing for Scientists. Sunday, October 30. Hugh Hay-Roe, Murray Associates International.

Planning and Management of Hydrogeologic Investigations and Reports. Sunday, October 30. Cosponsored by the Hydrogeology Division. John E. Moore, USGS.

POSTMEETING COURSE

Evolution of Reef Communities. Friday, November 4, and Saturday, November 5. Cosponsored by the Paleontological Society. J. A. Fagerstrom, University of Nebraska; Erle G. Kauffman, University of Colorado; George D. Stanley, Jr., University of Montana.

FORUM

Geology and Public Policy Forum: Fibrous Minerals, Mining and Disease. Tuesday, November 1, 5 to 7:30 p.m. For information: Meetings Department, GSA headquarters.

NON-GSA- SPONSORED SHORT COURSES/ WORKSHOPS/ FORUMS/ SEMINARS

GeoRef Advanced Workshop. Tuesday, November 1, 2 to 4 p.m. Sponsored by the Geoscience Information Society and GeoRef. For information: Margy Walsh, Texaco USA, P.O. Box 770070, Houston, TX 77215-0070, (713) 954-6000, ext. 6630.

GeoRef Beginners' Workshop. Monday, October 31, 2 to 4 p.m. Sponsored by the Geoscience Information Society and GeoRef. For information: Margy Walsh, Texaco USA, P.O. Box 770070, Houston, TX 77215-0070, (713) 954-6000, ext. 6630.

GIS Data Base Forum. Thursday, November 3, 9 to 11 a.m. Sponsored by the Geoscience Information Society. For information: Jim O'Donnell, Geology Library 170-25, California Institute of Technology, Pasadena, CA 91125, (818) 356-2199.

Hydrous Phyllosilicates Exclusive of Micas Short Course. Saturday, October 29, and Sunday, October 30, 8 a.m. to 5 p.m. Sponsored by the Mineralogical Society of America. For information: MSA Business Office, 1625 I Street, N.W., Suite 414, Washington, DC 20006, (202) 775-4344.

Introduction to the Scientific Applications of Ocean Drilling Program Downhole Logging Seminar. Saturday, October 29, 8 a.m. to 5 p.m. Sponsored by the Joint Oceanographic Institution and the U.S. Science Support Program. For information: Robin Smith, JOI, Inc., 1755 Massachusetts Avenue, N.W., Washington, DC 20036, (202) 232-3900.

Molecular Evolution and the Fossil Record Short Course. Sunday, October 30, 8 a.m. to 5 p.m. Sponsored by the Paleontological Society. For information: Jennifer Kitchel, Museum of Paleontology, University of Michigan, Ann Arbor, MI 48109, (313) 764-7543.

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EMPLOYMENT SERVICE

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

EXHIBITS

A 260-booth exhibit will be open from Sunday, October 30, through Wednesday, November 2, in Currigan Hall. Exhibitors will be on hand to display and demonstrate computer hardware and software, X-ray diffraction and measurement equipment, powder diffraction equipment, cameras, isotope ratio mass spectrometers, microanalysis equipment, publications, maps, mineral and fossil specimens, gems, jewelry, field supplies, and camping equipment. Many universities and educational organizations will have booths as well.

GSA welcomes many repeat exhibitors, but we also encourage participation by innovative companies, universities, and organizations with products and services appealing to geologists. If you are interested in participating or want to see a particular exhibitor in Denver, please contact Kathy Ohmie, Exhibits Coordinator, GSA headquarters.

GUEST PROGRAM

Beginning on Sunday, October 30, the Guest Committee invites you to visit the Hospitality Room. You will be greeted by hostesses who will introduce you to new friends and offer suggestions on what to do while visiting the Mile High City. Exciting tours are planned that include The Fort, Georgetown, the U.S. Air Force Academy, and walking tours of both historic and modern Denver. Don't miss the Centennial Fashion Show featuring "Molly Brown's Trunk Showing." More details and registration for tours will be published in the August issue of *GSA News & Information*.

SPORTS EVENTS

Centennial 5k/10k. Wednesday, November 3, 7 a.m., downtown Denver. Register in August or on site.

Ice Hockey Game. Tuesday, November 1, 9:45 to 11:45 p.m., University of Denver Ice Arena. For participation, contact Bruce Nesbitt, Department of Geology, University of Alberta, Edmonton, Alberta T6G 2E3, Canada, (403) 432-5071.

CENTENNIAL SPECIAL DISPLAYS

Prior to and during the meeting, Science of Geology displays sponsored by GSA may be seen at the Denver Museum of Natural History, the Denver Public Library, and the downtown Columbia Savings Bank.

During the meeting at Currigan Hall, the GSA Founders Display will exhibit rare maps and books in addition to other memorabilia related to the founding, development, and future of GSA.

HIGHLIGHTS

The Centennial Opening Party will be on Sunday, October 30, 6 to 9 p.m., in Denver's Currigan Hall in conjunction with the opening of the 1988 exhibits.

Alumni Receptions will offer a chance to meet friends on Monday, October 31, 7 to 9 p.m. Space for the group receptions will be limited to the first 50 groups to request space. Call or write Jean Kinney, Meetings Coordinator, GSA headquarters, by June 1.

The GSA Centennial Orchestra performs on Tuesday evening, November 1. Geologists are being auditioned and will be rehearsing for this concert for music-loving geologists and their friends. For information: Holly Stein, (303) 236-5592 or (303) 985-2797.

A Centennial Birthday Bash, a last-night fling, will be the social tribute to the Society's 100th year. Held on Wednesday evening, November 2, this will be a party for geologists to remember!

A Beard Contest is being held for the best field beards and field dress. See the April issue of *GSA News & Information*, or for information, contact Laura Wray, 3747 South Jasmine Street, Denver, CO 80237, (303) 830-6267.

The Great Centennial Celebration T-Shirt Contest invites everyone to submit ideas for three-word phrases using the letters G, S, A, and having some geological content. For example, "Granite Subducts Awkwardly." Ideas for other T-shirt designs are also welcome. Send your brilliant ideas to Centennial T-Shirt, GSA headquarters, by June 1.

TRAVEL AND LODGING

TRANSPORTATION

Air carriers offering the most convenient and economical fares from major U.S. cities into Denver are United and Continental. Advance bookings are the best route to lowest fares, so check with your travel agent now. Be aware, however, of cancellation and/or change penalties. Official rental-car and travel agencies will be announced in the May issue of *GSA News & Information*.

ACCOMMODATIONS

GSA has selected eight official downtown hotels, which will offer special convention rates: Brown Palace, Denver Inn, Executive Tower Inn, Holiday Inn, Hyatt Regency, Marriott City Center, Radisson, and Westin. Both the Hyatt Regency and the Marriott City Center will serve as headquarters.

The nontechnical program (social and business events) will be held at the Hyatt Regency and the Marriott Hotels; the technical program will be at the Denver Convention Complex and the Radisson Hotel; Exhibits, Registration, and Employment Service will also be at the Denver Convention Complex. The Technical Program schedule and hotel information/reservation forms will be published in the August issue of *GSA News & Information*.

COLORADO INFORMATION

Abundant information and friendly service are available at the following contact numbers:

Colorado Tourism Board
1625 Broadway, Suite 1700
Denver, CO 80202
1-800-433-2656

Denver Metro Convention & Visitors Bureau
225 West Colfax Avenue
Denver, CO 80202
(303) 892-1505

*Photography by Jack Rathbone,
Denver, Colorado*

REGISTRATION/FULL DETAILS: August *GSA News & Information*

FOR MEETING INFORMATION: GSA, P.O. Box 9140, Boulder, CO 80301, (303) 447-2020 or 1-800-GSA-1988

Update on *Treatise on Invertebrate Paleontology*

Because no new *Treatise* volumes have appeared for some time, we felt that an update for our members and standing-order customers is in order. As a brief reminder, the University of Kansas Paleontological Institute is responsible for the editorial development of the *Treatise*, and GSA is responsible for marketing the volumes (Parts).

Roger L. Kaesler, recently appointed new Editor and Director of the Paleontological Institute, prepared this update.

All current volumes of the *Treatise* are listed in our latest publications catalog. Write or call for a free copy. To order volumes or to enter a standing order, contact GSA Publication Sales or our Standing Order Coordinator. Call toll free 1-800-GSA-1988 from the United States, except Colorado; others please phone 1-303-447-2020, a toll call. Or write to the Geological Society of America, P.O. Box 9140, Boulder, CO 80301.

Treatise on Invertebrate Paleontology: Update as of January 1988

Part B. Protista 1 [an original part]. Because of the diverse and extensive nature of this group, Part B will probably be published as several separate, smaller volumes. Progress on the various taxa varies widely. Manuscript on both the Ebrata and the Silicoflagellata, coordinated by York Mandra with Jim Ling, has been on hand for some time and will be revised when the companion parts are completed. Specialists on both charophytes and benthic calcareous algae are making good progress. Coordinated by Richard M. Forester, the charophyte specialists have submitted a detailed outline and are now working on SEM illustrations. Organized only last summer, the benthic calcareous algae group, under the direction of R. M. Riding, has a good plan for completing its work. W. A. S. Sargeant is coordinating the dinoflagellate group, which is now working. Marie-Pierre Aubry has agreed to coordinate the calcareous nannofossils and estimates that she can complete the work in three to four years. Progress on the chitinozoan volume, being coordinated by Russell M. Jeffords, is uncertain, and the diatom project is on hold, following the withdrawal of the third set of coordinating authors; another coordinating author has been approached.

Part E. Porifera, Revised. Volume 2. With the assistance of J. Keith Rigby, both original authors—R. E. H. Reid and R. M. Finks—are now making good progress. Work on the illustrations is in progress.

Part E. Stromatoporoidea, Revised. Volume 3. Barry Webby has just accepted the role of coordinating author. He has not yet had time to put together his team of authors for this volume.

Part F. Scleractinia, Revised. As with the stromatoporoids, this volume is still in the planning stages. Brian R. Rosen has been enlisted as coordinating author but has not yet had time to put together his list of authors.

Part H. Brachiopoda, Revised. Alwyn Williams, coordinating author for this volume, will retire as Principal of the University of Glasgow in October 1988. At that time he intends to devote himself to work on the *Treatise*.

Part J. Mollusca 2, Gastropoda [an original part]. Work on this part is on hold, following the withdrawal of Norman Sohl, who was

coordinating author from the beginning of the project. A new coordinating author is being sought.

Part L. Ammonoidea, Revised. Volume 1. Introduction. When volumes 2 and 3 have been completed, M. R. House will coordinate the writing of this material. He has already submitted a preliminary outline.

Part L. Ammonoidea, Revised. Volume 2. Devonian to Triassic. We await manuscripts from four authors, two of whom have reported that they are now making good progress, one of whom has only a short section to write, and one of whom is waiting until the others finish their work before doing yet another revision of his completed manuscript. M. R. House is coordinating this project.

Part L. Ammonoidea, Revised. Volume 3. Jurassic and Cretaceous. Progress on this volume, coordinated by D. T. Donovan, is arrested, awaiting the receipt of manuscript from two authors. Three other authors have supplied all their material, and their illustrations are either completed or nearly so.

Part O. Trilobitomorpha, Revised. At least two volumes are planned, one to contain an introduction and systematics of agnostids and eodiscids, the other to cover systematics of other trilobites. Coordinating author H. B. Whittington is making good progress.

Part Q. Ostracoda, Revised. Two volumes are planned, one on Paleozoic forms and one on Mesozoic and Cenozoic forms. Coordinating author D. J. Siveter, with the assistance of Robert F. Lundin, is keeping the Paleozoic authors to a tight schedule. They plan to meet in Leicester in July. The post-Paleozoic authors, coordinated by R. C. Whatley, plan to meet in Aberystwyth in late July, at which time more information about their progress will be forthcoming.

Part R. Arthropoda 4, Hexapoda. Volume 3 [an original part]. We are awaiting Frank Carpenter's revision of his manuscript on the Protorthoptera, which should arrive very soon. Carpenter then plans to finish his revision of the Hemiptera, the largest group remaining to be revised. The remainder of the manuscript to be received consists of revisions of shorter manuscripts on less important groups of insects. Carpenter anticipates having those completed by mid-summer, and we expect this long-awaited work to be the next *Treatise* volume published.

Cordilleran Section Seeks Display Items

Members of the GSA Cordilleran Section seek your help in locating materials suitable for use in a Founders Display for the GSA Centennial Meeting. They request items specifically related to the founders of the Section, particularly Andrew C. Lawson.

If you have any historical information, photographs, recorded information, stories, or other tidbits about the people who helped organize the Cordilleran Section, or know about a source for such items, please call or write

Dorothy L. Stout
Cypress College
9200 Valley View St.
Cypress, CA 90630
(714) 826-2220

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

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

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

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

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

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

In Memoriam

Robert H. Dott, Sr.
Tulsa, Oklahoma
February 2, 1988

Richard W. Lewis, Jr.
Rio de Janeiro, Brazil

Hans P. Eugster
Baltimore, Maryland
December 1987

John Oleksyshyn
Philadelphia, Pennsylvania
December 19, 1987

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

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

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

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

To submit your proposal or for further information, contact the 1989 Field Trip Chairman
Jerry D. Vineyard
Dept. of Natural Resources
Div. of Geology and Land Survey
P.O. Box 250
Rolla, MO 65401

(314) 364-1752

People

GSA Member **Charles E. Savrda**, Auburn University, was one of the first-place winners of the Society of Economic Paleontologists and Mineralogists 1987 Excellence of Oral Presentation Award for a paper presented at the SEPM Midyear Meeting in Austin, Texas.

Rocky Mountain Association of Geologists (RMAG) 1987 awardees include three GSA Fellows: **Graham R. Curtis**, Lakewood, Colorado, for distinguished service to RMAG; **Harold E. Kellogg**, Lakewood, Colorado, for distinguished public service to earth science; and **James A. Peterson**, Missoula, Montana, outstanding scientist award.

Fellow **George L. Freeland**, Key Biscayne, Florida, has been appointed to the Florida Board of Professional Geologists by Governor Bob Martinez.

Kansas State University has appointed Fellow **Peter R. Rose**, Telegraph, Texas, its first Visiting Distinguished Professor of Geology.

Member **Kathleen M. Johnson**, Denver, Colorado, has been named secretary of the Association for Women Geoscientists Denver chapter for 1987–1988.

Member **Ellis Koch**, Terryville, New York, has been promoted to vice president by Geraghty and Miller, Inc.

Member **Mary Michael Page**, The Woodlands, Texas, has been appointed regional manager of the new Houston office of Barringer Geoservices, Inc.

Centennial Edition Publications Catalog

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MEETINGS

(Asterisk indicates new or changed information)

1988

Anadarko Basin Symposium, April 5-6, 1988, Norman, Oklahoma. Information: Kenneth S. Johnson, Oklahoma Geological Survey, University of Oklahoma, Norman, OK 73019; (405) 325-3031.

***Seismic Verification of Nuclear Tests Symposium**, April 7, 1988, New Haven, Connecticut. Information: Philippe Van Cappellen, Dept. Geology and Geophysics, Yale University, P.O. Box 6666, New Haven, CT 06511-8310; (203) 432-3136.

American Association of Petroleum Geologists Pacific Section, April 17-19, 1988, Santa Barbara, California. Information: Jack Cunningham, Celeron Oil & Gas, 111 West Micheltorena, Santa Barbara, CA 93101-3018; (805) 966-0831.

Geology of Industrial Minerals, 24th annual meeting, May 2-5, 1988, Greenville, South Carolina. Information: Alan-Jon Zupan, South Carolina Geological Survey, Harbison Forest Rd., Columbia, SC 29210; (803) 737-9440.

First Catamarca International Mining Exposition and Fair, May 7-15, 1988, Catamarca, Argentina. Information: FEMICA, Uruguay 435, 3° piso, Of. E, Buenos Aires (1015), Argentina; Telex 17808 ANCYA-AR.

Canadian Institute of Mining and Metallurgy 90th Annual General Meeting, May 8-12, 1988, Edmonton, Alberta. Information: Ivana Savic, CIM, 1130 Sherbrooke St. W., Suite 400, Montreal, Quebec H3A 2M8, Canada: (514) 842-3461.

V. M. Goldschmidt Conference for geochemistry, May 11-13, 1988, Baltimore, Maryland. Information: Goldschmidt Conference Coordinator, Pennsylvania State University, 410 Keller Bldg., University Park, PA 16802.

Evolutionary Innovations: Patterns and Processes, Spring Systematics Symposium, May 14, 1988, Chicago, Illinois. Information: Matthew H. Nitecki, Field Museum of Natural History, Roosevelt Rd. at Lake Shore Dr., Chicago, IL 60605-2496; (312) 922-9410.

International Conference on Fluid Flow in Fractured Rocks, May 15-18, 1988, Atlanta, Georgia. Information: Ram Arora, Dept. of Geology, Georgia State University, University Plaza, Atlanta, GA 30303; (404) 651-2272.

Sixth Thematic Conference on Remote Sensing for Exploration Geology, May 16-19, 1988, Houston, Texas. Information: Thematic Conference, Environmental Research Institute of Michigan, P.O. Box 8618, Ann Arbor, MI 48107; (313) 994-1200, ext. 3382; Telex 4940991 ERIMARB.

American Geophysical Union Spring Meeting, May 16-20, 1988, Baltimore, Maryland. Information: Ann E. Singer, American

Geophysical Union, 2000 Florida Ave., N.W., Washington, DC 20009; (202) 462-6903.

Bicentennial Gold 88, May 16-20, 1988, Melbourne, Australia. Information: R. R. Keays, Dept. of Geology, University of Melbourne, Parkville, Victoria 3052, Australia; phone (03) 345 1844; Telex AA35185.

Geological Association of Canada-Mineralogical Association of Canada-Canadian Society of Petroleum Geologists Joint Annual Meeting, May 23-25, 1988, St. John's, Newfoundland. Information: John Fleming, St. John's '88, P.O. Box 13577, Postal Station A, St. John's, Newfoundland A1B 4B8, Canada; (709) 576-2768.

Society for the Preservation of Natural History Collections Annual Meeting, May 30-June 3, 1988, Pittsburgh, Pennsylvania. Information: Duane A. Schlitter or Stephen L. Williams, Carnegie Museum of Natural History, 5800 Baum Blvd., Pittsburgh, PA 15206; (412) 665-2611.

Radon in the Northeast: Perspectives and Geologic Research, May 31-June 2, 1988, Troy and Albany, New York. Information: Gerald M. Friedman, Northeastern Science Foundation, 15 Third St., P.O. Box 746, Troy, NY 12180-0746; (518) 273-3247.

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

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

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

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

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

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

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

(continued on p. 100)

Southeastern Section Meeting Offers Software Exchange Program

The Southeastern Section of GSA, in cooperation with the Computers in Geology Society (COGS), will provide a Software Exchange Program at the annual meeting of the GSA Southeastern Section in Columbia, South Carolina. The program will be held from 4 to 5 p.m. on Thursday, April 7 and Friday, April 8 in the Gamecock Room of the Radisson Hotel. Personal computers will be available. For more information, please contact either Robert Ressetar, (803) 777-2929, or George Koch, (404) 542-2652.

MEETINGS (continued from p. 99)

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

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

5th International Symposium on Fossil Cnidaria, including Archaeocyatha and spongiomorphs, July 25-29, 1987, Brisbane, Australia. Information: John Jell, Uniquist Ltd., University of Queensland, St. Lucia, QLD 4067, Australia; phone (07) 344 2733.

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

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

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

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

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

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

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

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

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

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

International Symposium on Geochemistry and Mineraliza-

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

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

International Symposium on Rock Mechanics and Power Plants, September 12-16, 1988, Madrid, Spain. Information: ISRM Symposium, Sociedad Española de Mecánica de las Rocas, Paseo Bajo de la Virgen del Puerto, 3, 28005 Madrid, Spain.

***Clay Minerals Society Annual Meeting**, September 18-21, 1988, Grand Rapids, Michigan. Information: T. J. Pinnavaia, Dept. of Chemistry, Michigan State University, East Lansing, MI 48824; (517) 353-4511. *Abstract deadline: April 29, 1988.*

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

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

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

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

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

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

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

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

Geological Association of New Jersey Annual Meeting, October 7-9, 1988, Lawrenceville, New Jersey. Information: Jonathan Husch, Dept. of Geosciences, Rider College, 2083 Lawrenceville Rd., Lawrenceville, NJ 08648; (609) 896-5330.

(continued on p. 101)

MEETINGS (continued from p. 100)

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

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

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

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

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

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

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

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

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

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

GSA 1988

Southeastern Section, April 6-8, Columbia, South Carolina

North-Central Section, April 21-22, Akron, Ohio

Rocky Mountain Section, May 16-18, Sun Valley, Idaho

Annual Meeting, October 31-November 3, Denver, Colorado

PENROSE CONFERENCES

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

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

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

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

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

1989

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

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

International Symposium on the Silurian System (Murchison Symposium), March 28-April 9, 1988, Keele, England. Information: M. G. Bassett, Dept. of Geology, National Museum of Wales, Cardiff CF1 3NP, Wales; phone 02222-397951.

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

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

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

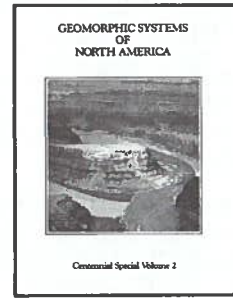
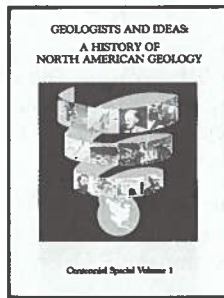
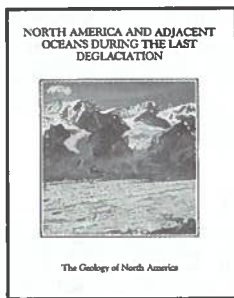
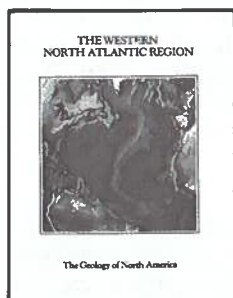
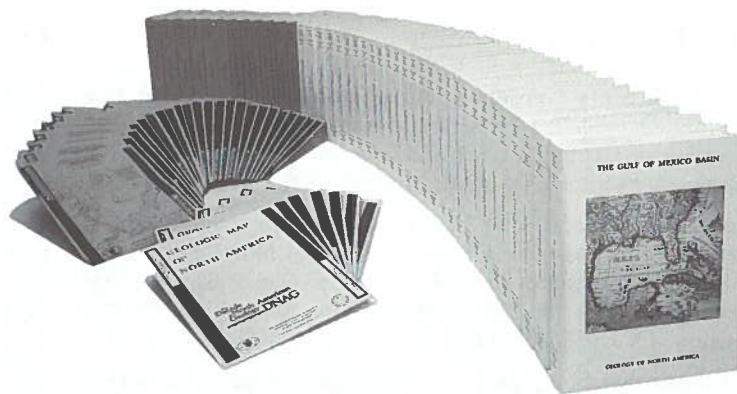
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