



# GSA news & information

VOLUME 5, NUMBER 4

G.S.A. ARCHIVES

APRIL 1983

## Geology Gets New Cover

by Faith Rogers

*Geology's* new cover design, beginning with the April 1983 issue, reflects the journal's past success and future promise.

*Geology* Editor Eldridge Moores, Executive Director F. Michael Wahl, and Production Manager James Clark agreed late in 1982 that the journal should have an updated look. The new design, produced by Howard Smith of Hirschfeld Press, printer for *Geology*, is the result.

"*Geology* has become one of the most significant publications in our science," Wahl noted, "and we intend to present it in the best possible way."

A special offer to advertisers brought in color ads for the back covers of the April and May issues. This allows the use of color photos on the front covers of those issues at a fraction of the usual cost—a cost that GSA must bill to authors of articles with color photographs. "The new cover will, I hope, attract more advertising to *Geology*, thereby helping to keep cost increases to a minimum, and perhaps allow us to publish color photos and maps at less expense," Clark said.

Volume 1, number 1 of *Geology* was published in September 1973. Starting at 48 pages per issue, the journal has grown to ten 64-page issues and two 48-page issues for 1983. In 1977, five years after its inception, *Geology* received 183 manuscripts; in 1982 the count was 279.

Originally refereed only by reviewers chosen by authors, who were required to submit two reviews with their manuscripts, *Geology* is now refereed by an Editorial Board (47 geoscientists) and many other geologists chosen by Editor Moores or recommended by Editorial Board members. Each paper submitted is sent to two (in some cases three) reviewers, who are asked to return reviews 10 days after receiving manuscripts. The editor decides to accept or reject papers mainly on the basis of these reviews. Average time from acceptance of a paper to publication is 12 weeks.

Moores, a professor of geology at the University of California, Davis, was appointed editor in September 1981. He has from the start encouraged feedback on *Geology* and contributions from readers. A questionnaire in the January 1983 issue has brought in enthusiastic acclaim for the journal as



Editor Eldridge Moores, Executive Director F. Michael Wahl, Production Manager James Clark, and Managing Editor Faith Rogers (left to right) choose a photo for the cover of the April issue of *Geology*.

well as thoughtful suggestions for improvements. Moores is also asking readers to send geologically interesting photos for possible use on *Geology* covers.

Despite the increased number of pages budgeted for *Geology*, the increasing number of manuscripts submitted requires Moores to insist that authors pare their papers, preferably to four printed pages. "The alternative," Moores said, "is to increase the rejection rate above the current 50%. I don't want to have to do that."

*Geology* will continue to present short, innovative, provocative papers on all facets of earth science. The redesigned cover celebrates almost 10 years of success for this journal of current awareness in the earth sciences. "The new cover looks trim and elegant, just the way we like *Geology* articles to be," said Moores.

## GSA 1982 Publications Span Wide Range of Subjects

A definitive history of the Society and a hefty study of asteroid and comet impacts on Earth are among the new books GSA published in 1982. Below is the annual summary of new publications. Announcements of these publications are made throughout the year in the Society's journals, in this newsletter, in direct mail flyers and our twice-annual Publications Price List, and at the annual meeting.

A current Publications Price List can be obtained from the *Publications Sales Department*. Inquiries, orders, and requests for price lists should be addressed to that department at GSA, P.O. Box 9140, Boulder, CO 80301.

### BOOKS

Memoir 155 — *The Geological Society of America — Life History of a Learned Society*, by Edwin B. Eckel, 181 p., hardbound (the first GSA Memoir to appear in the new format of 8½" x 11"; all Memoirs produced subsequent to this one will be this size). ISBN 0-8137-1155-X.

Memoir 156 — *Geology and Tectonics of the Lake Superior Basin*, edited by R. J. Wold and W. J. Hinze, 285 p. + 1 color map and 2 black and white map overlays in rear cover pocket, hardbound. ISBN 0-8137-1156-8.

Special Paper 188 — *Sedimentary Structures in Dunes of the Namib Desert, South West Africa*, By Edwin D. McKee, 67 p., softbound. ISBN 0-8137-2188-1.

Special Paper 189 — *Recent Trends in Hydrogeology*, edited by T. N. Narasimhan, 456 p., softbound. ISBN 0-8137-2189-X.



Fellow and former Executive Secretary Edwin Eckel's *The Geological Society of America—Life History of a Learned Society* is one of GSA's 1982 publications.

### GSA News & Information

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GSA NEWS & INFORMATION (ISSN 0164-5854) is the monthly newsletter of The Geological Society of America, Inc., P.O. Box 9140, Boulder, Colorado 80301. Second-class postage rates paid at Boulder, Colorado.

Prepared from contributions from the staff and membership by F. Michael Wahl, Executive Director; James R. Clark, Production and Advertising Manager; Ann H. Fogel and June E. Thomas, Production Assistants.

Special Paper 190 — *Geological Implications of the Impacts of Large Asteroids and Comets on the Earth*, edited by Leon T. Silver and Peter H. Schultz, 548 p., softbound. ISBN 0-8137-2190-3.

Special Paper 191 — *Tectonic Studies in the Talladega and Carolina Slate Belts, Southern Appalachian Orogen*, edited by D. N. Bearce and others, 170 p., softbound. ISBN 0-8137-2191-1.

Special Paper 192 — *Interpretation of Windflow Characteristics from Eolian Landforms*, edited by R. W. Marris and K. E. Kolm, 110 p., softbound. ISBN 0-8137-2192-X.

Reviews In Engineering Geology (V) — *Geology Under Cities*, edited by R. F. Legget, 141 p., hardbound. ISBN 0-8137-4105-X.

Microform Publication 12 — *Bibliography of Circum-Pacific Plutonism*, edited by W. S. Pitcher and L. Aguirre, 351 p. on 4 cards.

### DNAG PUBLICATIONS (CENTENNIAL SERIES)

DNAG Special Publication 1 — *Perspectives in Regional Geological Synthesis*, edited by A. R. Palmer, 180 p., softbound.

### PERIODICALS

*Bulletin* — 1,342 p.

*Geology* — 688 p.

*News & Information* — 188 p.

### MAP AND CHART PUBLICATIONS

MC-28O — *Geologic Cross Section from Cape Sebastian to Upper Klamath Lake, Southwest Oregon*, by M. Clark Blake, Jr. One sheet in color, 40½ x 44½ inches at scale 1:250,000; with 1 page text, in illustrated file envelope.

MC-28P — *Cross Section of the Eastern Aleutian Arc, from Mount Spurr to the Aleutian Trench near Middleton Island, Alaska*, by George Plafker and others. One sheet in color, 56 x 41 inches at scale 1:250,000; with 1 page text, in illustrated file envelope.

MC-28Q — *Geologic Cross Section of the Ouachita Mountains*, by Jay Zimmerman. One sheet in color 33 x 26 inches at scale 1:250,000; with text, in illustrated file envelope.

MC-28R — *Geologic Cross Section from the Arbuckle Mountains to the Muenster Arch, Southern Oklahoma and Texas*, by Rodger E. Denison. One sheet in color, 31 x 16 inches at scale 1:125,000; with text, in illustrated file envelope.

(Note: The continuing MC-28 series is from Plate Margins Project, U.S. Geodynamics Committee, John C. Maxwell, Reporter.)

MC-35 — *North Atlantic Ocean: Bathymetry and Plate Tectonic Evolution*, by R. K. Perry and others. One sheet in color, 56 x 40 inches at scale 1:8,753,909. Text on map, in illustrated file envelope. (Completed in 1981, but author subsequently submitted 22-p. text, which GSA produced and added to the package.)

MC-44 — *Stratigraphy of the Montgomery Mountains and the Northern Half of the Nopah and Resting Spring Ranges, Nevada and California*, by B. C. Burchfiel, G. S. Hamill IV, and D. E. Wilhelms. Two sheets in black and white, 24 x 40 inches and 22 x

(continued on p. 55)



## CENTENNIAL NEWS by Allison R. (Pete) Palmer

### DNAG Synthesis Volume on *Geology of the Arctic Ocean Region* Now Organized

The organizational workshop for the DNAG synthesis volume on the Arctic Region was held in Ottawa, Canada, on January 29 and 30, 1983. More than 40 participants contributed to the planning and polishing of the outline given below. As with the other synthesis volumes, the chapter leaders listed below will be

in touch with other contributors to assist in preparing the best possible synthesis about this region. Peer-reviewable copies of the manuscripts and maps for this volume are to be in the hands of the editors by the time of the second Arctic workshop in November 1984.

- A. Introduction** — A. Grantz, L. Johnson, J. Sweeney
- B. History of Geological and Geophysical Exploration and Understanding** — F. Roots, N. Ostenso, K. Hunkins, M. Brewer, A. Threshnikov
- C. Arctic Ocean Ice Cover**
  - 1. Structure and Dynamics — N. Untersteiner
  - 2. Geological and Climatological Significance for North America — D. Clark
- D. Bathymetry and Physiography**
- E. Geophysical Data**
  - 1. Seismicity and Focal Mechanisms — K. Fujita, H. Hasegawa, R. Wetmiller, D. Forsyth
  - 2. Gravity Anomalies — L. Sobczak, S. May
  - 3. Magnetic Anomalies — R. Coles, P. Taylor, P. Vogt
  - 4. Geothermal Observations — M. Langseth, A. Judge
  - 5. Seismic Refraction and Reflection Data — R. Jackson, D. Forsyth, J. Hall
  - 6. Magnetotelluric Data — A. Camfield
- F. The North American Plate Boundary** — O. Eldholm, A. Karasik, P. Vogt
- G. Continental Margins**
  - 1. East Greenland — H. Larsen, P. Dawes
  - 2. Canadian Arctic Islands — J. Sweeney, L. Sobczak
  - 3. Mackenzie Delta — J. Dixon, J. Dietrich, D. Norris, L. Sobczak, R. Hyndman
  - 4. Alaska — A. Grantz, S. May
  - 5. Northeastern Siberia — K. Fujita, J. Pogrebetsky
- H. Ridges, Borderlands, and Basins**
  - 1. Alpha-Mendeleev and Lomonosov Ridges and Makarov Basin — H. Weber, J. Sweeney, S. Blasco, P. Taylor
  - 2. Chukchi Continental Borderland — J. Hall
  - 3. Norwegian-Greenland Sea — O. Eldholm
  - 4. Eurasian Basin — Y. Kristofferson
  - 5. Canada Basin — A. Grantz
- I. Origin of the Arctic Basin**
  - 1. Constraints Imposed by Plate Tectonics — K. Burke, D. Engebretson, E. Irving, W. Pitman
  - 2. Synopsis and Analysis of Leading Hypotheses — A. Green, A. Kaplan, R. Vierbuchen, Jr.
- J. Arctic Basin Sediments, Fossils, Paleoclimate, and History**
  - 1. Cretaceous and Cenozoic Faunal and Paleogeographic History of the Arctic — D. Hopkins, L. Marincovich, E. Brouwers
  - 2. Late Mesozoic and Cenozoic Paleooceanography of the North Polar Oceans — J. Thiede, D. Clark, Y. Herman
  - 3. Tertiary Continental Biota of Arctic Canada: Climatic and Zoogeographic Considerations — R. West, L. Hickey
- K. Quaternary Geology and Neotectonics of the Arctic Continental Margin**
  - 1. East Greenland and the Canadian Arctic Islands — B. Pelletier, J. Vincent
  - 2. Canadian Beaufort Shelf — S. Blasco, A. Judge, J. Hunter, M. O'Connor
  - 3. Alaska — D. Dinter, D. Hopkins
  - 4. Northeastern Siberia — M. Holmes, D. McManus
- L. Mineral Resources**
  - 1. Petroleum — R. Proctor, G. Ulmishek
  - 2. Gas Hydrate — K. Kvenvolden, A. Grantz, A. Judge
  - 3. Nonfuel Hard Mineral Resources — P. Hale, D. Dinter, D. Pasho, P. Smith
- M. Summary** — A. Grantz, L. Johnson, J. Sweeney

#### GSA 1982 Publications (continued from page 54)

17 inches at scale 1:62,500; with three 35 mm color slides of hand-colored version of printed base map.

#### OTHER PUBLICATIONS

*Abstracts with Programs* — six books published, 670 p. total.

Division newsletters — 14 published, 82 p. total.

*Membership Directory* — 231 p.

*Memorials Volume XIII* — 130 p.

*Future Employment Opportunities Forum* booklet — 20 p.

#### REPRINTS

Special Paper 180 — *Ash Flow Tuffs*, edited by C. E. Chapin and W. E. Elston, 219 p.

*Treatise on Invertebrate Paleontology, Part D, Protista 3* — 206 p.

*Treatise on Invertebrate Paleontology, Part I, Mollusca 1* — 374 p.

#### MEETING

International Conference on Radioactive Waste Management, May 16-20, 1983, in Seattle, Washington. Sponsored by the International Atomic Energy Agency. Inquiries about U.S. participation: Alex F. Perge, Office of Nuclear Waste Management, U.S. Department of Energy NE-20; GTN, Washington, DC 20545; telephone (301) 353-4677

#### IN MEMORIAM

Carl B. Anderson  
Clearwater, Florida

Chauncey G. Tillman  
Blacksburg, Virginia

Edward H. Cobb  
Menlo Park, California

Claude N. Valerius  
Shreveport, Louisiana

# GSA COMMITTEES SEEK CANDIDATES FOR APPOINTMENTS

The GSA Committee on Committees requests help from all members. As one of his duties, Vice-President M. Gordon Wolman has appointed a group to look for talent to serve GSA as members of our committees and as our representatives to other organizations.

The Committee on Committees will meet in late July or early August and will present at least two nominations for each open position to Council at its November 2 meeting in Indianapolis. During that meeting, individual councilors may add other names to the lists for consideration. The entire Council will then select appointees for all positions, thus completing the process of bringing new expertise into Society affairs.

The Committee on Committees for 1983 consists of the following people: *Brian J. Skinner*, Chairman, Department of Geology, Yale University, New Haven, CT 06520, phone (203)

436-1073; *Albert W. Bally*, Department of Geology, Box 1892, Rice University, Houston, TX 77001, phone (713) 527-4880; *Edward D. Ghent*, Department of Geology, University of Calgary, Calgary, Alberta T2N 1N4, phone (403) 284-5847; *Susan W. Kieffer*, U.S. Geological Survey, 2255 North Gemini Drive, Flagstaff, AZ 86001, phone (602) 779-3311, ext. 1583; *William A. Thomas*, Department of Geology, University of Alabama, Tuscaloosa, AL 35486, phone (205) 348-5095.

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

(continued on p. 57)

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## Penrose Conference Slated on Evolution of Central Atlantic Ocean and Its Continental Margins

A Penrose Conference, "The West-African Connection—Evolution of the Central Atlantic Ocean and Its Continental Margins" will convene January 16-21, 1984, in France. This conference has also been accepted by the NSF-USA and the CNRS-France as a Joint Seminar under the Cooperative Science Program between the United States and France.

The Appalachian Mountains of eastern North America and the Caledonide and Hercynide chains of western Europe have been studied for a long time, yet new ideas about them are constantly appearing. In recent years it has become increasingly evident that they were originally contiguous parts of a much larger entity that extended not only from Europe into North America but also into Africa and probably South America. The "European connection" is well studied and has been the subject of numerous conferences, but the relations with Africa are less well known; indeed, their very existence was hardly suspected until about twenty years ago. Furthermore, only in recent years has much information been available on what is hidden beneath the sediments of the coastal plains on either side of the Atlantic and the history of separation recorded by those sediments and by those on the bottom of the ocean itself.

The goal of this conference is to bring together specialists with new geologic and geophysical data on the various parts of the history of this connection, so that all will better understand how their data contribute to solving problems in other domains and how their own problems could be attacked using the information contributed by others. For this reason, the conveners insist on *synthesis* in each domain, even if this seems premature, so that the interrelations of the different problems can be discussed at length on the basis of the latest information.

To have enough time to study the history of the "African connection" in some detail, the geographic extent will be restricted to the West African bulge and the opposing Atlantic margin of America (from Maritime Canada to Florida). Conference participants could consider first the later part of the story—spreading of the Atlantic, deposition along its margins—then the rifting episode in the erstwhile continuous continent, then the Paleozoic history (here we would be able to draw on the results of the Rabat meeting of I.G.C. Program 27 in September 1983), and finally the basement and its Pan-African cover, to determine as far as possible the original relations.

The conference will be held at Giens, on the Mediterranean coast of France, not in a resort hotel but in a simple, comfortable vacation village for families, on the shore 6 km from the Toulon airport (two flights a day to Paris). This will, the conveners hope, keep the cost to participants down to \$300 (2,000 Fr) or less, not including the cost of travel to France for those in the Americas.

Those wishing to participate or to obtain more details should write to Professor J. Sougy at the address below, before *June 15, 1983*, explaining what their contributions to the subject of the conference would be.

### Conveners

J. Sougy, Laboratoire de Géologie dynamique, L.A. CNRS n° 132, Faculté des Sciences et Techniques de Saint-Jérôme, 13397 Marseille Cedex 13, France (Telephone (91)98 90 10, ext. 510)

X. Le Pichon, Laboratoire de Géodynamique, Université Pierre et Marie Curie, 4, place Jussieu, 75230 Paris Cedex 05, France

J. Rodgers, Department of Geology & Geophysics, Yale University, P.O. Box 6666, New Haven, Connecticut 06511

## **Committees** (continued from p. 56)

In making recommendations, please give serious consideration to the special qualifications of the individual for a particular committee. For example, those nominated to serve on the Committee on Investments should be familiar with and have knowledge and experience in the management of funds and securities. To assist you in nominating GSA members for these various positions, the following brief summaries of what each committee does and what qualifications are desirable are provided. Please be sure that your candidates are Members or Fellows of the Society and that they meet fully the requested qualifications.

All nominations sent through headquarters will be forwarded to the committee members. **Deadline: June 15, 1983.** Listed below are the committees on which vacancies will occur. Appointments will be made by Council at its meeting in Indianapolis on November 2, 1983.

## **COMMITTEES AND QUALIFICATIONS**

### **Geology & Public Policy**

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

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

### **Headquarters Advisory**

Gives advice on matters relating to headquarters operations.

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

### **Penrose Medal**

Selects candidates for the Penrose Medal.

Committee members should be familiar with outstanding achievements in the geological community that are worthy of consideration for the honor. Emphasis is placed on "eminent research in pure geology which marks a major advance in the science of geology."

### **Day Medal**

Selects candidates for the Arthur L. Day medal.

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

### **Honorary Fellows**

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

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

### **National Medal of Science**

Selects candidates for presentation to the committee that advises the President of the United States on this award.

Committee members should know of those whose achievements are of an unusually significant nature and deserve special recognition by reason of their outstanding contributions to knowledge in the physical, biological, mathematical, or engineering sciences.

### **Investments**

Advises the Council about investment and reinvestment of GSA's funds, securities, equities, etc.

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

### **Membership**

Screens Member and Fellow applications; evaluates membership benefits and makes recommendations to the Council about them.

Committee members must be GSA Fellows and must be able to attend one meeting a year. Previous experience in recruitment programs and in the evaluation of professional qualifications is desired.

### **Nominations**

Recommends to the Council nominees for the positions of GSA officers and councilors.

Committee members should be familiar with a broad range of well-known and highly respected geological scientists.

### **Penrose Conferences**

Considers Penrose Conference proposals and makes recommendations to the Council.

Committee members must either be past conveners or have attended two or more Penrose Conferences.

### **Publications**

Makes recommendations to the Council concerning Society publications.

Committee members should be familiar with a wide range of scientific publications and especially GSA publications. Should also have some knowledge of publication processes and costs, and have concern for the quality of content and presentation of GSA publications.

### **Research Grants**

Evaluates research grant applications and selects grant recipients.

Committee members should have experience in directing research projects and in evaluating research grant applications.

### **GSA Representative to the North American Commission on Stratigraphic Nomenclature**

Must be familiar with and have expertise in stratigraphic nomenclature.

SEE NOMINATION FORM ON NEXT PAGE

# NOMINATIONS FOR GSA COMMITTEES FOR 1984

Geology & Public Policy  
(3 vacancies)

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Headquarters Advisory  
(2 vacancies)

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Penrose Medal  
(1 vacancy)

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Day Medal  
(2 vacancies)

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Honorary Fellows  
(2 vacancies)

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National Medal of Science  
(1 vacancy)

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Investments  
(2 vacancies)

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Membership  
(2 vacancies)

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Nominations  
(4 vacancies)

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Penrose Conferences  
(2 vacancies)

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Publications  
(2 vacancies)

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Research Grants  
(1 vacancy)

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## GSA Representative for 1984

North American Commission on  
Stratigraphic Nomenclature  
(1 vacancy)

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**GSA**  
**IS OFF**  
**TO**  
**INDY**

**GEOLOGICAL SOCIETY  
OF AMERICA  
96th ANNUAL MEETING  
INDIANAPOLIS**

**October 31 — November 3, 1983**

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**Associated Societies Meeting with GSA**

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

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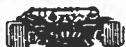
## PRELIMINARY ANNOUNCEMENT AND CALL FOR PAPERS

Technical sessions for the 1983 GSA Annual Meeting consist of both volunteered papers and invited symposia. Chairman of the Joint Technical Program is Haydn Murray, Department of Geology, Indiana University, Bloomington, IN 47405, (812) 335-5582; Co-Chairman is Herbert Howe, Department of Geosciences, Purdue University, West Lafayette, IN 47906, (317) 494-8171.

**VOLUNTEERED PAPERS.** Abstracts for the technical sessions (both oral presentations and poster sessions) *must be submitted on 1983 abstract forms* available from GSA Headquarters, Boulder, and from 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 accepted paper; these restrictions apply only to technical sessions other than invited symposia.

### DEADLINE FOR RECEIPT OF VOLUNTEERED ABSTRACTS AT GSA FRIDAY, JUNE 3, 1983

Speakers in the regular technical sessions will be allotted 15 minutes, *including* time for questions and discussion. Projection equipment will consist of a single 35 mm (2 x 2 in.) projector in each room; dual projectors will not be available. Each poster session participant will be provided with three tackboards approximately 4' wide x 8' high for display. No projection equipment, electrical outlets, or tables will be available.



### INVITED SYMPOSIA

Any communication concerning symposia abstracts or participation should be addressed to the specific symposium organizer. **Symposia Abstracts Must Be Sent Directly To The Symposium Organizer, Not To GSA.**

1. **Late Glacial Environments of Early Man in North America:** Archaeological Geology Division; H. W. Borns, Jr.
2. **Paleoclimatic Controls on Coal Resources of the Pennsylvanian System of North America:** Coal Geology Division; C. Blaine Cecil and Tommy L. Phillips.

3. **Geologic Disposal of Radioactive Wastes:** Engineering Geology Division; Lokesh Chaturvedi.
4. **Gravity and Lithospheric Buoyancy:** Geophysics Division; William Hinze and William E. Bonini.
5. **Some Significant Geologic Ideas Originating from the Study of Cratons:** History of Geology Division; Ursula B. Marvin.
6. **Hydrodynamics and Geochemistry of Ore Generation in Sedimentary Environments:** Hydrogeology Division & Society of Economic Geologists; William C. Kelly and John M. Sharp.
7. **Planetary Volcanism:** Planetary Geology Division; Robin Brett.
8. **Quaternary Dating Methods:** Quaternary Geology and Geomorphology Division; Don J. Easterbrook.
9. **Structure and Tectonics of Continental Interiors:** Structural Geology Division; Richard H. Groshong, Jr. and Donald Steeples.
10. **Miocene Paleooceanography:** Cushman Foundation; G. P. Lohmann and Samuel M. Savin.
11. **Some Geochemical Problems in the People's Republic of China:** Geochemical Society; Robin Brett.
12. **Roles and Responsibilities in Geoscience Information:** Geoscience Information Society; Unni Rowell.
13. **Silicate-Oxide and Silicate-Native Element Interactions in Igneous and Metamorphic Rock:** Mineralogical Society of America; B. Ron Frost and Cornelis Klein.
14. **Recent Advances in Geomorphology: Implications for Instruction:** National Association of Geology Teachers; Marvin E. Kauffman and Dale F. Ritter.
15. **Frontiers in Paleontology: 1983:** Paleontological Society; Erle G. Kauffman and A. R. Palmer.
16. **The Southern Margin of the Shield and Beyond: New Insights on the Precambrian Geology of the Midwestern U.S.:** Val W. Chandler.
17. **Deep Ocean Black Shales: Organic Geochemistry and Paleo-Oceanographic Setting:** Philip A. Meyers and Richard M. Mitterer.
18. **Mesozoic Magmatism in Eastern North America:** J. Gregory McHone and Paul C. Ragland.
19. **Geology and Hydrogeology of the Teays-Mahomet Bedrock Valley System:** W. N. Melhorn and John P. Kempton.
20. **Evolutionary and Environmental Significance of Skeletal Growth Patterns:** Gary D. Rosenberg and Richard A. Lutz.
21. **Stable Isotope Studies of Clastic Rocks:** Nelson R. Shaffer, Gunter Faure, and I. R. Kaplan.
22. **Fluid Flow in Crystalline Rocks at Elevated Temperatures:** Maria Luisa Crawford.



### SHORT COURSES

More information will be available in May *News & Information*, or contact those named.

**Strain Measurement: Techniques and Tectonic Implications.** Sponsored by the Structural Geology and Tectonics Division. Thursday evening, Nov. 3 to Saturday noon, Nov. 5. For information: R. Kligfield, Dept. of Geological Sciences, University of Colorado, Boulder, CO 80309, (303) 492-8141.

**Glacial Sedimentary Environments.** Sponsored by the Society of Economic Paleontologists and Mineralogists. Sunday, Oct. 30. For information: Robin Dixon, P.O. Box 4756, Tulsa, OK 74104, (918) 734-9765.

**Carbonates: Mineralogy and Chemistry.** Sponsored by the Mineralogical Society. Friday morning, Oct. 28 to Sunday noon, Oct. 30. For information: R. J. Reeder, Dept. of Earth and Space Sciences, SUNY at Stony Brook, Stony Brook, NY 11794, (516) 246-6541.

**Geo-Writing: Quickly. Clearly. Concisely.** Sponsored by the American Geological Institute. Saturday, Oct. 29 and Sunday, Oct. 30. For information: Wendell Cochran, *Geotimes*, 5205 Leesburg Pike, Falls Church, VA 22041, (703) 379-2480.



## FIELD TRIPS

The field trip locales are in the cratonic area of lowland arches and basins; in the unglaciated cuesta, vale, and karst terranes of the northernmost Highland Rim Peneplain; in the classic area for study of continental glaciation; in the world's largest building-stone district; in the western and southern Great Lakes area of Precambrian exposures and classic Silurian reef study; within both the simplest and most complex of structural conditions; in the village that was home of the first U.S. Geological Survey; in one of the nation's great coalfields; and more.



### PREMEETING

1. **The Paleozoic Systemic Boundaries of the Southern Indiana-Adjacent Kentucky Area and Their Relations to Depositional and Erosional Patterns**—Carl B. Rexroad and Henry H. Gray, Indiana Geological Survey, Bloomington, and Anne V. Noland, University of Louisville. Three days, October 28–30.
2. **Paleontology and Stratigraphy of the Borden Delta of Southern Indiana and Northern Kentucky**—N. Gary Lane, Indiana University, Bloomington; William I. Ausich, Wright State University, Dayton, Ohio; and Thomas W. Kammer, West Virginia University, Morgantown (Paleontological Society). Two days, October 28–29.
3. **Stratigraphy of the Wedron and Trafalgar Formations (Wisconsinan) in East-Central Illinois and West-Central Indiana**—John P. Kempton, Illinois State Geological Survey, Champaign; Ned K. Bleuer, Indiana Geological Survey, Bloomington; and W. Hilton Johnson, University of Illinois, Urbana (Quaternary Geology and Geomorphology Division). Two days, October 29–30. Begins in Peoria, Illinois, and ends in Indianapolis.
4. **Precambrian Geology South of Lake Superior**—Campbell Craddock, University of Wisconsin, Madison; Michael G. Mudrey, Jr., Wisconsin Geological and Natural History Survey, Madison; and Timothy B. Holst, University of Minnesota, Duluth (Structural Geology and Tectonics Division). Three days, October 28–30. Begins in Duluth, Minnesota, and ends in Indianapolis.
5. **Geology of the Kentland Dome Structurally Complex Anomaly, Northwestern Indiana—An Intimate Look into the Core**—Raymond C. Gutschick, University of Notre Dame, Notre Dame, Indiana. One day, October 30.
6. **Shoreline Processes and Geomorphology, Southwestern Lake Michigan**—Charles Collinson, Ardith K. Hansel, and Rodney D. Norby, Illinois State Geological Survey, Champaign, and others (Quaternary Geology and Geomorphology Division). Two days, October 29–30. Starts in Chicago and ends in Indianapolis.
7. **Ground-Water Hydrology and Geomorphology of the Mammoth Cave Region, Kentucky, and of the Mitchell Plain, Indiana**—Ralph O. Ewers, Eastern Kentucky University, Richmond; Noel Krothe, Indiana University, Bloomington; Richard L. Powell, Geosciences Research Associates, Inc., Bloomington, Indiana; and James F. Quinlan, National Park Service, Mammoth Cave, Kentucky (Quaternary and Geomorphology Division and Hydrogeology Division). Four days, October 26 (afternoon)–30. Starts in Louisville, Kentucky, and ends in Indianapolis.
8. **Urban and Engineering Geology of the Indianapolis Area**—Arthur Mirsky, Indiana University–Purdue University, Indianapolis, and Edwin J. Hartke, Indiana Geological Survey, Bloomington, with contributions from Curtis H. Ault and Gordon S. Fraser, Indiana Geological Survey;

For further information, contact Robert H. Shaver, Indiana Geological Survey and Indiana University (812) 335-7428, Jack A. Sunderman, Department of Earth and Space Sciences, Indiana University–Purdue University, Fort Wayne (219) 482-5849, or the designated trip leaders.

**Trips originate and end in Indianapolis unless otherwise specified. Fees will be announced later. Assume morning starting time and late afternoon ending time unless noted otherwise.**

Bruce Bailey, ATEC Associates, Inc., Indianapolis; Konrad J. Banaszak, U.S. Geological Survey, Indianapolis; Thomas M. Bruns and James T. Strange, Indiana Division of Water, Indianapolis; Andrew Haumesser, American Aggregates Corp., Indianapolis; and Karyl K. Schmidt, Indiana State Board of Health, Indianapolis (Engineering Geology Division). One day, October 30.

9. **Origin and Economic Geology of the Springfield Coal Member in the Eastern Interior Basin**—Donald L. Eggert and Denver Harper, Indiana Geological Survey, Bloomington (Coal Geology Division). Two days, October 29–30.
10. **Metalliferous Shales of the Illinois Basin**—Raymond M. Coveney, Jr., University of Missouri at Kansas City, and Bertram G. Woodland and Rainer Zangerl, Field Museum of Natural History, Chicago (Society of Economic Geologists). One day, October 30.
11. **The New Harmony Geologic Legacy**—John B. Patton, Indiana University and Indiana Geological Survey, Bloomington (History of Geology Division). One and a half days, October 29 (afternoon)–30.



### POSTMEETING

12. **Silurian Reef and Interreef Strata as Responses to a Cyclical Succession of Environments, Southern Great Lakes Area**—Robert H. Shaver, Indiana University and Indiana Geological Survey, Bloomington, and Jack A. Sunderman, Indiana University–Purdue University, Fort Wayne; Joanne Kluessendorf and Donald G. Mikulic, Illinois State Geological Survey, Champaign; James E. McGovney, Exxon Production Research Co., Houston, Texas; and Lloyd C. Pray, University of Wisconsin, Madison. Three days, November 3 (afternoon)–6.
13. **History of Pleistocene Alluviation of the Middle and Upper Wabash Valley**—Gordon S. Fraser and Ned K. Bleuer, Indiana Geological Survey, Bloomington, and Norman D. Smith, University of Illinois Chicago Circle (Quaternary Geology and Geomorphology Division). Two days, November 4–5.
14. **Archaeological Geology of the Wyandotte Cave Region, South-Central Indiana**—Henry H. Gray, Indiana Geological Survey, Bloomington; John L. Bassett, Geosciences Research Associates, Inc., Bloomington; and Cheryl A. Munson and Patrick J. Munson, Indiana University, Bloomington (Archaeological Geology Division). Two days, November 3 (afternoon)–5.
15. **Lithostratigraphy, Mineralogy, and Geochemistry of the New Albany Shale (Devonian and Mississippian) in Southeastern Indiana**—Nancy R. Hasenmueller, R. K. Leininger, and Nelson R. Shaffer, Indiana Geological Survey, Bloomington. One day, November 4.
16. **The Salem Limestone in the Indiana Building-Stone District**—John B. Patton and Donald D. Carr, Indiana Geological Survey, Bloomington. One day, November 4.



## GSA IS OFF TO INDY

Convenient, friendly, and reasonably priced — that's Indianapolis. This Midwest city is within a day's drive of half the U.S. population and is served by major air and bus lines. Best known for the annual Indianapolis 500 auto race, it's a city with many other attractions: museums, theaters, a symphony orchestra, and professional and amateur sports events. Cost for transportation, lodging, food, and entertainment run as much as 20% less than New York, Chicago, or San Francisco. Technical sessions and exhibits for the 1983 GSA Annual Meeting will be under the same roof in the Indiana Convention Center. The Center has ample meeting space, exhibit area, conversation lounges, food service, phones, and luggage storage. GSA and General Chairman Arthur Mirsky, Indiana University-Purdue University, invite you to Indianapolis for the 1983 Annual Meeting.



### GETTING THERE

Indianapolis is a crossroads for interstate highways: east-west I-70, southeast-northwest I-74, south-northwest I-65, and several others. More national highways converge on Indianapolis than on any other city in the U.S. **BY AIR.** The close-in international airport, 10 minutes from downtown, is served by major air carriers, including American, TWA, Eastern, Allegheny, Delta, Frontier, United, and Piedmont. Chicago, Detroit, and Cleveland are within an hour's flying time. Two hours away by air are New York, Miami, and New Orleans. Denver and Boston are less than three hours' flying time away.



### ACCOMMODATIONS

Indianapolis has a wide range of hotels with reasonable rates: from \$25 to \$65 single and \$25 to \$75 double. Most of the rooms are in the \$40 range. The Hyatt Regency, headquarters hotel, and 12 other hotels, downtown and at the airport, will accommodate those attending the meeting. The downtown hotels are within walking distance of the Convention Center; the airport hotel group (10 minutes from downtown) will be serviced by the GSA shuttle. Housing forms will be published in the August issue of *News & Information*. **SHUTTLE SERVICE.** Shuttle service is scheduled from Sunday through Thursday, Oct. 30–Nov. 3, to transport GSA registrants from hotels to meeting events. The shuttle will run at 10–15 minute intervals and will continue into the evening for special events—including the Welcoming Party.



### WHAT'S HAPPENING

**EXHIBITS.** Exhibitors will display books and other publications, measurement equipment, maps, X-ray diffraction and other instruments, photographic equipment, spectrometers, microscopes, microanalysis equipment, cameras, and rock objets d'art. New exhibitors include computer hardware and software companies that provide services tailored for the geologist. Exhibits will be open Sunday evening, kicking off the 1983 Welcoming Party. Space is available for 144 booths. Exhibitors can call or write to the GSA Exhibits Coordinator for more information. **WELCOMING PARTY.** The traditional opening-night reception offers a good central place to renew friendships, to make plans, and to share ideas. The party will be in the Convention Center on Sunday evening, Oct. 30. Exhibits will be open, and food and beverages will be available. For added convenience, registration for the meeting will continue through the evening. **SPECIAL EVENT.** The Indianapolis Annual Meeting hosts are planning Tuesday evening at Market Square, to include free beer and wine, three music groups—bluegrass, jazz, and chamber—and plenty of food—from gyros to crepes, tacos to feta. **GUEST PROGRAM.** Our Indianapolis hosts will offer morning and afternoon tours of the Conner Prairie Pioneer Settlement, the beautiful Indianapolis Museum of Art, the Children's Museum (for adults too), and the Indianapolis Speedway. In addition, a stimulating technical session for a nontechnical audience is planned. **GROUP FUNCTIONS.** Meetings, meal functions, and alumni receptions are scheduled by the GSA Meetings Department. Anyone wishing to reserve space should call or write to the Meetings Department by May 1.



### EMPLOYMENT SERVICE

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

---

## PREREGISTRATION, FIELD TRIPS, AND HOUSING FORMS

Available in August *News & Information*

**ABSTRACTS DEADLINE—JUNE 3, 1983**

**PREREGISTRATION DEADLINE: SEPTEMBER 30**

### CONTACTS FOR INFORMATION

Abstracts Coordinator  
abstract forms

Employment Service Coordinator  
participation by employers/applicants

Exhibits Coordinator  
trade exhibits

Meetings Department  
for all other information

## STUDENT ASSOCIATE APPLICATION

Dear GSA Member:

Do you know a student who wants to join GSA? If so, pass this and the next 3 pages on to him or her. Encourage students to join GSA. They are the Members and Fellows of the future.

### STUDENT ASSOCIATE INFORMATION

#### Minimum Eligibility Requirements

Applicant must be a full-time student in-residence majoring in the geological sciences or a related field at a degree-granting institution.

#### Sponsorship Requirements

A candidate must have his/her Student Associate application signed by the Department Chairman or GSA Campus Representative, verifying that he/she is a full-time geoscience student in-residence at the respective institution.

#### Student Associate

Student Associates are added to the membership rolls monthly upon the approval of the Committee on Membership. Dues payment and publication selection is on a calendar year basis (January through December). Publications already issued are back ordered for members sending payments after January 1.

Student Associates may serve on committees as conferees; they have all the rights and privileges afforded Members and Fellows except the rights to vote and hold office. Students are also eligible for a membership discount on the first copy of any GSA publications except the periodicals.

Students may transfer to regular membership upon graduation or on leaving graduate school. Annual dues statements for the coming year are mailed in September, and application for transfer should occur at that time. The dues option form provides a place for the Student Associate to obtain the signature of a GSA member as sponsor to transfer to Member status.

#### Submission of Form

Please forward the completed application, signed by your Department Chairman or official GSA Campus Representative to

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

### PAYMENT MUST ACCOMPANY APPLICATION

#### Address Change

Prompt notification is necessary for uninterrupted mail. At least six weeks notice is required.

#### Student Associate Dues

See attached dues form for information regarding Student Associate dues.



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

**N&I**

**For office use only.**

type \_\_\_\_\_

42 \_\_\_\_\_

46 \_\_\_\_\_

47 \_\_\_\_\_

49 \_\_\_\_\_

**APPLICATION FOR STUDENT ASSOCIATE**

No. \_\_\_\_\_  
Leave blank

1. NAME \_\_\_\_\_  
Last First Middle

2. ADDRESS \_\_\_\_\_

\_\_\_\_\_ City/Province State/Country Zip

3. BIRTH DATE \_\_\_\_\_ 4. BIRTH PLACE \_\_\_\_\_

5. MARITAL STATUS \_\_\_\_\_ 6. TELEPHONE NO. \_\_\_\_\_

7. EDUCATION

a. Current institution	Department	Major subject	Graduate	<input type="checkbox"/>
_____	_____	_____	Undergraduate	<input type="checkbox"/>

b. College, university, or other institutions attended	Date of attendance (from-to)	Degree and year received	Major subject
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

8. SECTION AFFILIATION DESIRED (check one only)

Cordilleran  Rocky Mountain  North-Central  South-Central  Northeastern  Southeastern

9. DIVISION AFFILIATIONS DESIRED

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

I am a full-time student in-residence at a degree-granting institution and have fulfilled the eligibility requirements as stated on the reverse side of this form.

SIGNATURE \_\_\_\_\_

I certify that the above named student is a full-time geoscience major in residence for the \_\_\_\_\_ academic year.

\_\_\_\_\_  
(print name of school and department)

Signature (Department Chairman)

Also print Chairman's name

Date

**DUES STATEMENT AND PAYMENT MUST ACCOMPANY THIS APPLICATION**



**THE  
GEOLOGICAL SOCIETY  
OF AMERICA**

P.O. Box 9140 • Boulder, Colorado 80301  
(303) 447-2020

MEMBER NUMBER \_\_\_\_\_  
(leave blank)

NAME \_\_\_\_\_

Phone number during business hours: ( ) \_\_\_\_\_

Dear Student Associate:

Your interest in joining the Society is appreciated. After the Committee on Membership approves your application, you will be sent a new member packet containing a personal membership card, a mini-catalog listing GSA publications, and information on the member discount for GSA books and maps.

Dues payment and publication selection is on a **CALENDAR YEAR** basis (January through December). Publications already issued are back ordered for members sending payments after January 1.

Please inform us as soon as possible of any address change, as it usually takes four to six weeks to correct the files. Meanwhile publications continue to be mailed to your former address. Because they are sent second class, the Post Office will not forward them without special instructions and additional expense to you.

**STUDENT ASSOCIATES** should use a **BLUE** Student Associate form. Verification of student status is required. *If you are not a STUDENT, please use a MEMBER form.*

Information about the publications listed below is on the reverse side of this form.

Sincerely,

Clara Hodgson  
Membership Coordinator

**TO HELP US GATHER MEMBERSHIP DATA, PLEASE CHECK the ONE CATEGORY that best describes your current professional status:**

<b>CONSULTING:</b>	<b>GOVERNMENT:</b>	<b>RESOURCE COMPANIES:</b>	<b>RESOURCE COMPANIES:</b>	<b>OTHER:</b>
1 <input type="checkbox"/> Engineering/Environmental	4 <input type="checkbox"/> Federal	6 <input type="checkbox"/> Coal	9 <input type="checkbox"/> Petroleum	11 <input type="checkbox"/> Academic
2 <input type="checkbox"/> Mineral Resources	5 <input type="checkbox"/> Other	7 <input type="checkbox"/> Metallic	10 <input type="checkbox"/> Uranium	12 <input type="checkbox"/> Retired
3 <input type="checkbox"/> Petroleum		8 <input type="checkbox"/> Nonmetallic		13 <input type="checkbox"/> Student
				14 <input type="checkbox"/> Other _____

**1983 ANNUAL DUES AND PUBLICATION SELECTION**

(Please see explanation on back of form.)

**GSA MEMBERSHIP DUES:**

Dues are required and include receipt of: *The Geological Society of America Bulletin, Geology, and GSA News & Information.* Both journals will automatically be sent in **paper copy** unless you indicate your preference for positive microfiche by checking the appropriate box/boxes.

(2) STUDENT .....	\$28	\$ 28.00
(3) SPOUSE/MEMBER .....	\$22	\$ _____

(See explanation on back of form.)

(4) <input type="checkbox"/> <i>Bulletin</i> , positive microfiche
(5) <input type="checkbox"/> <i>Geology</i> , positive microfiche

**DIVISION DUES:**

CHECK AFFILIATIONS DESIRED

(10) <input type="checkbox"/> Archaeological Geology .....	\$3	(14) <input type="checkbox"/> Coal Geology .....	\$2
(11) <input type="checkbox"/> Engineering Geology .....	\$5	(15) <input type="checkbox"/> Geophysics .....	\$3
(12) <input type="checkbox"/> History of Geology .....	\$3	(16) <input type="checkbox"/> Hydrogeology .....	\$3
(13) <input type="checkbox"/> Quaternary Geology & Geomorphology .....	\$2	(17) <input type="checkbox"/> Planetary Geology .....	\$3
		(18) <input type="checkbox"/> Structural Geology & Tectonics ..	\$3

TOTAL COST OF ALL DIVISIONS CHECKED \$ \_\_\_\_\_

**ABSTRACTS WITH PROGRAMS:**

CHECK ABSTRACTS DESIRED

(25) <input type="checkbox"/> Annual Meeting .....	\$6	(29) <input type="checkbox"/> South-Central .....	\$3
(26) <input type="checkbox"/> Cordilleran/Rocky Mountain .....	\$3	(30) <input type="checkbox"/> Northeastern .....	\$3
(28) <input type="checkbox"/> North-Central .....	\$3	(31) <input type="checkbox"/> Southeastern .....	\$3

TOTAL COST OF ALL ABSTRACTS CHECKED \$ \_\_\_\_\_

MEMBERSHIP DIRECTORY (Yearbook) mailed in spring ..... (32) **\$6.50** \$ \_\_\_\_\_

<input type="checkbox"/> Check or Money Order	<input type="checkbox"/>	<input type="checkbox"/>	Card Number <input type="text"/>
Card Expires	Mo Yr <input type="text"/>	Signature _____	Required for credit card payment

TOTAL AMOUNT REMITTED FOR 1983 \$ \_\_\_\_\_

Submittal of this form after October 31, 1983, will be considered for affiliation beginning January 1, 1984. Price differences will be billed.

**Please return this form, your completed application, and your payment in U.S. funds**

## For your information . . .

### MEMBERSHIP DUES

All members are required to pay annual dues. Participation as a member sustains the Society's activities. In addition to receiving all membership benefits, members receive monthly copies of the *Bulletin*, *Geology*, and *GSA News & Information*. Other publications are optional.

### STUDENT VERIFICATION AND MEMBER SPONSORSHIP

If you are continuing your Student Associate status for 1983, you must provide verification by obtaining your department chairman's signature on the left side of the dues statement. However, when you are no longer a student and wish to transfer to Member status, you must have someone who is a GSA Member or Fellow sponsor your transfer by signing the dues statement on the right-hand side. (If you expect to change your status to Member next year, you may wish to have a faculty member who is a GSA Member or Fellow sign the statement at this time and indicate the calendar year you anticipate the transfer to take effect.) This signature is not required at time of transfer if you have obtained a signature previously.

### DIVISION DUES

The annual dues of the divisions support the activities of the specific divisions. Divisions meet at the time of the Society's annual meeting. Each of the divisions has its own newsletter, issued at irregular intervals.

### THE GEOLOGICAL SOCIETY OF AMERICA BULLETIN

The *Bulletin* is a monthly journal, usually 128 pages. Generally, articles will not exceed 20 printed pages, including tables and illustrations. The *Bulletin* is published both in the traditional paper copy format and in positive mode microfiche. The microfiche is a reproduction of the printed paper copy. Each microfiche (card) contains 98 frames (pages) and is most easily read at 24X magnification. Positive microfiche is black type on a transparent background which reduces eyestrain when read for prolonged periods with the aid of a microfiche reader.

### GEOLOGY

*Geology* is a monthly journal of 8 to 12 short scientific articles per issue. This journal is also available both in the traditional paper format and in positive microfiche.

### ABSTRACTS WITH PROGRAMS

To assure prompt arrival before the meetings, please be sure to order your *Abstracts with Programs* when you pay your dues. *Abstracts with Programs* are published approximately two months before each meeting.

### OVERSEAS MAILING

Publications mailed overseas by second-class postage take as long as 3 to 4 months to arrive at their destinations. If you are interested in air-printed-matter postage rates (this is in addition to dues and publications), please check this box.

### ADVERTISING LISTINGS

We occasionally allow universities and publishing houses to use our membership list for the purpose of advertising scientific courses, books, or periodicals. If you do not want your name and address to be released for such purposes, please check this box.

### SPOUSE MEMBER INFORMATION

Married couples who are both GSA members will be allowed a reduction in 1983 dues. Such couples will pay \$54.00 for the first member (\$28.00 for Student Associates) and \$22.00 for the second. They will receive a single subscription to the *Bulletin* and *Geology*, but both members will continue to receive *GSA News & Information*, ballots, and other miscellaneous mailings. Please identify your spouse and which one is requesting a reduction in the dues in the spaces below. We can activate the policy for married couples only upon specific instructions from you.

---

Full-paying member's name

---

Spouse member receiving reduction in dues

**Please contact the Membership Department if you have any questions.**

**ANY COMMENTS and SUGGESTIONS you have about YOUR SOCIETY may be included in the SPACE BELOW.**



## WHAT THEY WERE READING

### 25 years ago . . .

"We may surmise, however, that it [potassium] has been completely removed from the regions below a few hundred kilometers. The principal argument for this is based on considerations of heat flow, though the close association of potassium with uranium in igneous rocks gives qualitative support. With the adopted values for uranium and potassium, the present rates of heat generation are  $0.48 \cdot 10^{20}$  cal/year for uranium,  $1.35 \cdot 10^{20}$  cal/year for potassium; allowing  $0.48 \cdot 10^{20}$  cal/year for thorium, we find a total of  $2.3 \cdot 10^{20}$  cal/yr ( $1.8 \cdot 10^{20}$  cal/year based on the mass of the mantle). This is not significantly different from the rate of loss of heat from the Earth's interior,  $2 \cdot 10^{20}$  cal/year. Unless this is coincidence, it implies that nearly all the heat currently generated is reaching the surface; this in turn, unless we envisage complex schemes of compensation, implies that all the heat sources are close to the surface, probably not deeper than several hundred kilometers. This must be true for oceanic as well as continental sectors because of the equality of heat flow, though the details of the distributions differ markedly with regard to uranium (and presumably thorium), and to a lesser extent with regard to potassium. If the uranium were distributed through a depth of 200 km below the oceans, the average would be about 0.2 ppm, or about one-third that of typical basaltic rocks."

From "Differentiation of the Mantle" by Francis Birch  
*Bulletin of the Geological Society of America*  
v. 69, p. 483-486, April 1958

### 50 years ago . . .

"Since the year 1900, discoveries and fertile hypotheses about conditions beneath the accessible part of our planet have

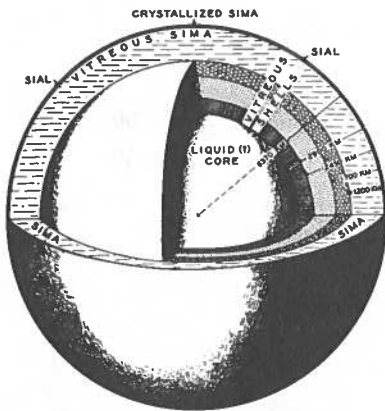


FIGURE 1. — Diagram illustrating a tentative Suggestion as to the Nature of the Earth's Interior

been pouring into the literature and summarized in thick handbooks. The young science, geophysics, has become a giant with a giant's power to move, and then in a measure fix, the foundations of geological thought. . . . I offer a speculative and necessarily tentative picture of the earth's interior in the light of the new geophysics, checked by facts of geology and by the possibilities of cosmogony."

From "The Depths of the Earth"  
Presidential Address to GSA by Reginald A. Daly  
*Bulletin of the Geological Society of America*  
v. 44, p. 243-264, April 30, 1933

### 75 years ago . . .

"To justify fully the emphasis placed on the dual division of the pre-Cambrian, the separating unconformity needs support by other contrasts. Some of the more important of these are as follows:

1. The Archean is a series dominantly composed of igneous rocks, largely volcanic and for extensive areas probably submarine. Sediments are subordinate. The Algonkian is a series of rocks which is mainly sedimentary. Volcanic rocks are subordinate.

2. The Algonkian sediments, where not too greatly metamorphosed, are similar in all essential respects to those which occur in the Paleozoic and later periods. When the Algonkian rocks were laid down essentially the present conditions prevailed on the earth. The Archean rocks, on the other hand, indicate that during this era the physical conditions had not yet become such as to widely lead to the orderly succession of sedimentary rocks like those being formed today.

3. The folding and metamorphism of the Archean are on the whole very much further advanced than the Algonkian. The Archean complex has an intricacy of structure which is approached only locally by the Algonkian.

4. Martin and Leith have noted that the Archean and Algonkian contrast in their surface expression, often making it possible to separate areas of the two groups on a physiographic basis.

In consequence of all of the above differences it follows that ordinary stratigraphic methods may be applied to the Algonkian, while such methods are not applicable at all, or only with extreme difficulty, to the Archean.

From "The Problem of the Pre-Cambrian"  
Presidential Address to GSA by Charles Richard Van Hise  
*Bulletin of the Geological Society of America*  
v. 19, p. 1-29, March 30, 1908

### GSA Past-President, Penrose Medalist Dies

Wendell P. Woodring, geologist and paleontologist, died of coronary failure at Pinecrest Hospital, Santa Barbara, California, Saturday, January 29, 1983. Woodring, a Research Associate of the Department of Geological Sciences at the University of Santa Barbara, was a member of the National Academy of Sciences and the American Philosophical Society, Penrose Medalist and past-President of the Geological Society of America, and an internationally noted scientist. He made fundamental and pioneering contributions to the Tertiary geology and paleontology of southern coastal California, Central America, and the Caribbean region. Born June 13, 1891 in Reading, Pennsylvania, Woodring received his Ph.D. from Johns Hopkins University in 1916 and then served in World War I. During most of his professional career, he was a geologist with the U.S. Geological Survey and a resident of the Washington, D.C. area. He made his final home in Santa Barbara beginning in 1979. He was a towering figure in the American geology of his day. Persons wishing to honor Dr. Woodring may send contributions to the Woodring Memorial Fund, Department of Geological Sciences, University of California, Santa Barbara, California 93106.

A memorial ceremony for Dr. Woodring will be held in Washington, D.C., on Wednesday afternoon, April 27, 1983, at the Cosmos Club.

# Visit SEPM in Dallas

April 17-20, Booth No. 350

Visit the SEPM exhibit at the AAPG/SEPM/EMD Annual Meeting in Dallas. **SEPM is pleased to extend special SEPM member prices** to all registrants who purchase books during our 1983 Annual Meeting.

*The Society  
of Economic  
Paleontologists  
and Mineralogists*

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

## Why Not Join AIPG?

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

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

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

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



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