



# GSA news & information

VOLUME 3, NUMBER 4

G.S.A. ARCHIVES

APRIL 1981

## Report of the Executive Director

*To the Council and Membership of the Geological Society of America:*

The year 1980 was an eventful one for the Geological Society of America. During the year, the Centennial Program and the Decade of North American Geology (D-NAG), which had been in the planning stage the previous two years, were fully implemented and under way. A. R. Palmer was employed as Centennial Science Program Coordinator, the Centennial Steering Committee became fully activated, and a wide range of national and project working committees was appointed and started to work. The GSA program is cooperating closely with other organizations and institutions, and it is safe to say that the Decade is firmly embarked.

A closely related activity during the year was the organization of the Centennial Development Committee under the chairmanship of James Boyd. This committee urged the establishment of a Geological Society of America Foundation. Such a move was approved by the Council, and, by year's end, the Foundation was a legal entity. Its Board of Trustees consists of Robert L. Fuchs, Michel T. Halbouty, Hollis D. Hedberg, John C. Maxwell, and Caswell Silver. The Foundation employed Dwight V. Roberts as president, and he will start his duties early in 1981. The Foundation is a separately incorporated organization and will play a major role in the support of scientific programs that are part of the Decade of North American Geology. At least at the outset, the Foundation offices will be in the GSA headquarters building in Boulder.

During the year, the total membership of the Society continued its slow growth; 12,603—an all-time high—were on the rolls at year's end. The membership is made

up of 3,229 Fellows, 40 Honorary Fellows, 7,500 Members, and 1,834 Student Associates.

The year 1980 was the second year of publication of the *Bulletin* in its two-part format—*Part I* in essentially the old format, and *Part II* on microfiche. It was also the second year in which members paid basic dues and then selected which, if any, of the scientific publications they wished to buy at member prices. This system was continued into 1981. By year's end, 67% of the 1981 dues statements had been returned to headquarters. Of these, 32½% ordered *Bulletin, Part I*, 8½% ordered *Bulletin, Part II*, 51½% ordered *Geology*, 41% ordered the annual meeting abstracts book, and 17% ordered the Membership Directory (Yearbook). About 40% were affiliated with one or more divisions.

At the annual meeting in November 1980, a special publications study committee was appointed and held its first meeting in December. The committee was charged with an in-depth study of the Society's entire publications program and the preparation of a report, including recommendations for the future, for the May 1981 meeting of the Council.

The 1981 dues notice, mailed in September 1980, contained a questionnaire on areas of employment of the members. Of those returned by year's end, 10% were students and 5% were retired. Of those actively employed, 46% were in industry of all types (20% petroleum industry), 31% were in academic employment, and 23% were employed by government at all levels.

The November annual meeting in Atlanta was a success in all regards. It was a full 4-day meeting in contrast to the 3½ days in 1979 in San Diego. The total

*(continued next page)*

Annual Report for 1980  
The Geological Society of America

registration was 4,285, which placed it slightly smaller than the total registration of 4,574 at the San Diego meeting. Of the total at Atlanta, 2,758 were professionals, 1,051 were students, and 280 were spouses/guests. Of the total, 2,844 had preregistered for the meeting. Of a total of 1,505 abstracts submitted in all categories, 1,094 were accepted for the program and were presented in 49 half-day sessions. There were ten poster sessions, which included 244 presentations. A first at this meeting was the GSA public forum on Mount St. Helens. Twelve pre-meeting and eleven postmeeting field trips were attended by 747 participants.

The GSA employment service was operated simultaneously with the annual meeting in Atlanta. At the meeting, 116 employers conducted interviews for 193 jobs. The year-round program served 47 employers seeking to fill 47 positions. Approximately 400 applicants used the service during the year. The employment service did the largest volume of business ever during 1980.

All six of the GSA sections conducted successful annual meetings during the year. The total attendance at the six meetings was approximately 4,200, and more than 1,200 papers were presented. During the year three topical Penrose Conferences were held. As usual, they represented a range of topics and were quite successful.

There were 402 applications for research grants in 1980, and of these 192 were funded. A total of \$81,000

was awarded by the Committee on Research Grants. This total includes \$2,000 from Mobil Oil Corporation, \$2,000 from Marathon Oil Company, and \$1,000 from the Stearns Fund. The average award during 1980 was \$422.

The headquarters staff stayed at the level of 40 to 42 full-time-equivalent employees through the year. The one key addition to the staff was Allison R. Palmer, who assumed the duties of Centennial Science Program Coordinator in mid-summer.

Although at the time of this writing the books have not yet been closed for 1980, it appears that the Society's total operations for the year 1980 finished at "break even" or slightly in the black; income from investments (not including capital gain or loss), from dues, from publication sales, and from meetings at least equalled the total expenditures. The Irving Trust Company of New York continues to be custodian for the Society's securities, and advice is furnished to the Committee on Investments by the Irving Trust Company and by Reich and Tang, Inc., also of New York. The final settlement of the transfer of the *Bibliography and Index of Geology* from GSA to the American Geological Institute was completed during the year.

Respectfully submitted,

JOHN C. FRYE, Executive Director

#### Wanted: Contributions to new "Letters to the Editor" column

In an effort to provide an additional forum of communication regarding items of general interest to GSA members, the Committee on Membership is initiating a "Letters to the Editor" column in *GSA News & Information*. The following questions are composites of questions asked by members when they submitted their 1981 dues:

1. Has the Society ever considered establishing a professional code of ethics?

Yes, but no action was ever taken.

2. Has a reduced annual meeting registration fee for retired members ever been considered?

Yes, it is under consideration now by the Council.

3. How does one go about selecting an adequate microfiche reader?

There are four basic kinds of microfiche readers: hand-held readers, measuring 15 x 5 x 3 cm and ranging in cost from \$15 to \$90; portable readers, which come in carrying cases measuring approximately 35 x 40 x 10 cm and ranging in cost from \$150 to \$260; desk readers with average dimensions of 53 x 40 x 32 cm and priced from \$130 to \$500; and larger reader-printers, which are generally used by libraries and corporations, ranging in price from \$900 to \$3,500.

Most microfiche-reader manufacturers supply free catalogs or brochures to anyone interested in purchasing this equipment. A partial list of manufacturers can be found on p. 39 of the March 1979 issue of *GSA News & Information*, or you may write to the Marketing Manager, Geological Society of America, P.O. Box 9140, Boulder, CO 80301 for a copy of this list.

4. Has the Society taken a survey of the number of members who own a microfiche reader?

No.

5. What does the cost of basic dues provide for the members?

The basic dues assessed all GSA members cover the costs of producing the monthly newsletter, *GSA News & Information*; membership department operations, such as maintenance of the membership records, processing new members and changes in member category, claims for missing publications, changes of address, mailing labels, and dues billings; recruitment of new members and student affiliates; and member benefit programs

We invite your contributions to this monthly column. If you have a question or concern that would be of interest to the membership, please write to Editor, *GSA News & Information*, Geological Society of America, P.O. Box 9140, Boulder, CO 80301.

#### GSA News & Information

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Prepared from contributions from the staff and membership by John C. Frye, Executive Director; James R. Clark, Production Manager; and June Thomas and Ann H. Fogel, Production Assistants.

### GSA Foundation now organized

The Board of Trustees of the new GSA Foundation met in Boulder on February 4 to elect officers and to determine the terms of service for the first group of trustees that had been nominated by the Council. This group will provide the critical early leadership in the development of the Foundation to serve the needs of all of us and, particularly, to have as one of its major programs the support of the Decade of North American Geology.

#### BOARD OF TRUSTEES, GSA FOUNDATION

*Chairman*—Caswell Silver, Chief Executive Officer and Chairman of the Board, Sundance Oil Co., Denver, Colorado (1980–1985)

*Vice-Chairman*—Robert L. Fuchs, President, Geosystems Corp., Westport, Connecticut (1980–1985)

*Members*—Michel T. Halbouty, Consulting Geologist and Petroleum Engineer, Houston, Texas (1980–1983); John C. Maxwell, William Stamps Farish Professor of Geological Sciences, University of Texas, Austin, Texas (1980–1983); Hollis D. Hedberg, Emeritus Professor of Geology, Princeton University, Princeton, New Jersey (1980–1982)

#### PRESIDENT

Dwight V. Roberts

#### SECRETARY-TREASURER

John C. Frye

### Preston E. Cloud receives award

Preston E. Cloud was recently advised by President Witold Nowacki that he had been elected a Foreign Member of the Polish Academy of Sciences at the meeting of their General Assembly.

An official ceremony of induction was conducted by Polish Ambassador Romuald Spasowski (a former physicist) at the Embassy of the Polish People's Republic in Washington. The Polskiej Akademii Nauk numbers only eleven other Americans and two other geologists among its foreign members.

Cloud left in late January for a year in Australia as a Queen's Senior Research Fellow, stationed at Baas-Becking Geobiology Laboratory, associated with the Australian BMRGG in Canberra.

Cloud was the 1976 recipient of the GSA Penrose Medal and has served the Society as a Councilor and as a member on several committees.

### Annual Report for 1979 available on request

Librarians who wish to receive a copy of the GSA Annual Report for 1979 for archival purposes may obtain a photocopy by writing to

The Geological Society of America  
P.O. Box 9140  
Boulder, Colorado 80301  
(Attention: Administrative Assistant)



## CENTENNIAL NEWS

### D-NAG public workshops—late April to early June

The remainder of the spring schedule of public workshops on "Problems and Perspectives in Regional Geological Synthesis" related to the planning for the synthesis volumes for the Geology of the North American Plate is now available. At each of these workshops, plans for several of the synthesis volumes whose topics will be relevant to the audience at the meeting will be presented by one or more of the volume planners for discussion. This is your opportunity to share in this project to create a masterwork on the geology of our continent.

Monday, April 13, 1:00 to 3:00 p.m., South-Central Section Meeting, San Antonio, Texas: Continental Interior Phanerozoic, Gulf Region, Ouachitas.

Friday, April 17, 10:20 a.m. to 12:20 p.m., Rocky Mountain Section Meeting, Rapid City, South Dakota: Continental Interior, U.S. Cordillera, Precambrian.

Friday, May 1, 2:00 to 4:30 p.m., North-Central Section Meeting, Ames, Iowa: Continental Interior, Precambrian.

Thursday, May 14, morning, Lake Superior Institute, East Lansing, Michigan: Precambrian.

Monday, May 25, 3:00 to 5:00 p.m., Eastern AGU Meeting, Baltimore, Maryland: Atlantic Coastal Plain and Shelf, Western and Northwestern Atlantic, Eastern Pacific.

Tuesday, June 2, 1:00 to 3:00 p.m., AAPG Meeting, San Francisco, California: Alaska, Eastern Pacific, U.S. Cordillera.

### SECTION MEETINGS FOR 1982 •TENTATIVE DATES•

- Southeastern, Northeastern Sections . . . March 24–26, 1982  
(Joint meeting), Shoreham Hotel, Washington, D.C.
- South-Central . . . . . March 29–30, 1982  
University of Oklahoma, Norman, Oklahoma
- Cordilleran . . . . . April 19–21, 1982  
Anaheim Convention Center, Anaheim, California
- North-Central . . . . . April 29–30, 1982  
Purdue University, West Lafayette, Indiana
- Rocky Mountain . . . . . May 7–8, 1982  
Montana State University, Bozeman, Montana

# GSA OFFICERS AND COUNCILORS FOR 1981

Howard R. Gould, *President*  
Houston, Texas

William B. Heroy, Jr., *Treasurer*  
Dallas, Texas

Digby J. McLaren, *Vice-President*  
Ottawa, Ontario

Laurence L. Sloss, *Past President*  
Evanston, Illinois

## 1979-1981 COUNCILORS

Helen Tappan Loeblich  
John D. Moody  
Raymond A. Price  
Jack A. Simon

## 1980-1982 COUNCILORS

Robert E. Boyer  
Frank E. Kottlowski  
Dallas L. Peck  
Peter R. Vail

## 1981-1983 COUNCILORS

Hubert Gabrielse  
Bruce B. Hanshaw  
John C. Harms  
Robert D. Hatcher, Jr.

## Joint Technical Program Committee

The Joint Technical Program Committee (JTPC) will meet at GSA Headquarters in Boulder, Colorado, on July 9 and 10, 1981. JTPC is responsible for final selection and rejection of all abstracts submitted for presentation at the annual meeting. The following list includes representatives and conferees from GSA divisions and associated societies who will participate in the JTPC meeting:

Cochairman	Norman Hester
Cochairman	Martin C. Noger
General Chairman, Local Committee	Warren D. Huff
Chairman, 1980 JTPC	Robert D. Hatcher, Jr.
Chairman, 1981 JTPC	William W. Craig
President, GSA, ex officio	Howard R. Gould
Executive Director, GSA, ex officio	John C. Frye
GSA Representatives-at-Large	Roland E. von Huene (1979-81), John T. Whetten (1979-81) Thomas H. Anderson (1980-82), Lynn Glover III (1980-82), Steven S. Oriel (1980-82)

### GSA DIVISION REPRESENTATIVES

Archaeological Geology	Norman Herz	History of Geology	Kennard Bork
Coal Geology	Russell Brant	Hydrogeology	Paul R. Seaber
Engineering Geology	Howard A. Coombs	Quaternary Geology & Geomorphology	Troy L. Péwé
Geophysics	David B. Slemmons	Structural Geology & Tectonics	Sharon Mosher

### ASSOCIATED SOCIETY REPRESENTATIVES

Cushman Foundation	Don L. Eicher	National Assn. of Geology Teachers	John R. Coash
Geochemical Society	Carl E. Hedge	Paleontological Society	J. A. Fagerstrom
Geoscience Information Society	Mary Scott	Society of Economic Geologists	Stephen E. Kesler
Mineralogical Society of America	J. S. Huebner	Society of Vertebrate Paleontologists	Not meeting with GSA

### ASSOCIATED SOCIETY CONFEREES

Cushman Foundation	None appointed	National Assn. of Geology Teachers	None appointed
Geochemical Society		Paleontological Society	Roger D. K. Thomas
Geoscience Information Society	None appointed	Society of Economic Geologists	Arnold Brokaw
Mineralogical Society of America	Gordon E. Brown, Jr.	Society of Vertebrate Paleontologists	Not meeting with GSA

## Call for nominations for officers and councilors

The future of your Society—the Geological Society of America—is largely in the hands of your elected officers and councilors. Furthermore, in these present times of rapid change, rapid inflation, and rapidly evolving science, sound decisions for the Society's future must be made on a continuing basis.

It is the charge of the Nominations Committee to consider the total membership of the Society and submit a list of persons to the Council for their consideration for nomination to elective posts. The committee does not do the electing or the formal nominating; that is reserved for the Council. The committee is charged, however, with the task of recommending several (each of whom they consider fully qualified) for each of the elective posts.

It will be of great help to the committee if you will furnish basic data and a description of qualifications about each person you recommend. For the good of the Society, take this request seriously and act.

At press time, the meeting date of the committee had just been set—March 23. Nominations received too late for this year's consideration will be retained for attention next year.

This emphasizes the IMPORTANCE of suggestions from the membership to assist the committee in its deliberations. Please send your suggestions to the Nominations Committee chairman, Dr. Robert E. Boyer, 7644 Parkview Circle, Austin, TX 78731.

## UPDATE

### Articles in *Bulletin*, Part II, April 1981

Articles in *Bulletin*, Part II are listed below. (Summaries only of these articles are in *Bulletin*, Part I.)

1. Chemical composition and stratigraphic correlation of the Mesozoic basalt units of the Newark Basin, New Jersey, and the Hartford Basin, Connecticut, by J. H. Puffer, D. O. Hurtubise, F. J. Geiger, and Paul Lechler. (On microfiche: 39 p., 4 figs., 6 tables)
2. Geology of the Victorville region, California, by Elizabeth L. Miller. (On microfiche: 55 p., 8 figs.)

### In April *Geology*

1. Paleomagnetism of northern Cocos seamounts: Constraints on absolute plate motion, by M. McNutt, R. Batiza
2. High-grade metamorphism and possible overturning of the Tugela Rand layered intrusion in southeast Africa, by O. R. Dix
3. Origin of a thick, redeposited carbonate bed in Eocene turbidites of the Hecho Group, south-central Pyrenees, Spain, by D. R. Johns, E. Mutti, J. Rosell, M. Séguret
4. Vitrinite reflectance anisotropy as a tectonic fabric element, by J. C. Hower, A. Davis
5. Late Proterozoic zircon ages from a basic-ultrabasic complex: A possible Cadomian orogenic complex in the Hercynian belt of western Europe, by J. J. Peucat, Y. Hirbec, B. Auvray, J. Cogné, J. Cornichet
6. The case against a Phanerozoic Kolyma plate in the northeastern USSR, by C. P. Andrews-Speed
7. Paleomagnetic evidence for tectonic rotation of northern Mexico and the continuity of the Cordilleran orogenic belt between Nevada and Chihuahua, by J. Urrutia-Fucugauchi
8. Tectonic rotations in the Cascade Range of southern Washington, by R. G. Bates, M. E. Beck, Jr., R. F. Burmester

### Frank Press to address 1981 GSA annual dinner

Frank Press, president-nominee for the National Academy of Sciences and former National Science Advisor to President Carter, will address the GSA Annual Dinner on Wednesday evening, November 4, 1981.

Press has been a Professor of Geophysics and Director of the Seismology Laboratory at California Institute of Technology; since 1965 he has been Professor of Geophysics and Chairman of the Department of Earth and Planetary Sciences at Massachusetts Institute of Technology. In addition, he has served the following government agencies and committees: Office of Science and Technology, Arms Control and Disarmament Agency, AID, U.S. delegation to Nuclear Test Ban Conference, President's Advisory Committee and International Geophysics Committee, Lunar and Planetary Mission Board, Scientific Planetary Mission Board, National Center for Earthquake Research, and the National Science Board.

As one of this nation's outstanding scientific leaders, Press has been recognized for excellence by Columbia University, U.S. Department of Interior, and NASA. A member of the National Academy of Science since 1958, he is also past president of AGU and the Seismological Society of America. A Fellow and former Councilor of GSA, Press was also recipient of the 1972 Day Medal.

### *Geology* to have interim editor

Henry Spall has been named Interim Editor of *Geology* until the GSA Council has determined the future direction of the Society's publication program. Dr. Spall served as editor of *Geology* from its inception in 1973 until 1978. He is now with the U.S. Geological Survey in Reston, Virginia. However, manuscripts submitted for *Geology* should be sent to him at GSA, P.O. Box 9140, Boulder, CO 80301.

# 1981 GSA

## Committees and Representatives

Note: The President, or a representative designated by him, shall be an Ex Officio member of every committee.

### EXECUTIVE COMMITTEE

Howard R. Gould (Chairman), Digby J. McLaren, William B. Heroy, Jr., Laurence L. Sloss, Jack A. Simon (Budget Committee Member of the Executive Committee).

### BUDGET COMMITTEE

Jack A. Simon (Chairman), Howard R. Gould, Digby J. McLaren, William B. Heroy, Jr., Laurence L. Sloss, Ex Officio: C. Harry Burgess (Committee on Investments Chairman).

### AUDIT COMMITTEE

Dallas L. Peck (Chairman), Hubert Gabrielse, Robert D. Hatcher, Jr., Conferee: William B. Heroy, Jr.

### COMMITTEE ON COMMITTEES

John O. Wheeler (Chairman), Randolph W. Bromery, Robert D. Hatcher, Jr., Charles J. Mankin, Brian J. Skinner.

### COMMITTEE ON GEOLOGY & PUBLIC POLICY

Charles G. Groat (Chairman, 1981-83), Carol S. Breed (1979-81), Jesus Najera (1979-81), Lawrence W. Lundgren, Jr. (1980-81), Ernest E. Angino (1980-82), Victor R. Baker (1980-82), John C. Harms (1981-82), Larry J. Doyle (1981-83), Geoffrey G. Snow (1981-83).

### GSA-TREATISE ADVISORY COMMITTEE

Richard E. Grant (Chairman, 1979-82), Robert F. Lundin (1981-84), John C. Frye (Continuing).

### HEADQUARTERS ADVISORY COMMITTEE

Robert J. Weimer (Chairman, 1980-82), John C. Harms (1980-82), Donald D. Runnells (1980-82), John D. Haun (1981-83), William R. Keefer (1981-83).

### COMMITTEE ON HONORS AND AWARDS

Frank E. Kottowski (Chairman), Robert D. Hatcher, Jr., Joseph R. Curray, Alfred G. Fischer.

### SUBCOMMITTEE ON THE PENROSE MEDAL AWARD

Frank E. Kottowski (Chairman, 1981), Lloyd C. Pray (1979-81), E-an Zen (1979-81), Paul B. Barton (1980-82), M. Gordon Wolman (1980-82), Peter A. Rona (1981-83), George A. Thompson (1981-83).

### SUBCOMMITTEE ON THE ARTHUR L. DAY MEDAL AWARD

Robert D. Hatcher, Jr. (Chairman, 1981), Robert A. Berner (1979-81), Iris Y. P. Borg (1979-81), George W. Fisher (1979-81), Gerald J. Wasserburg (1979-81), Rosemary J. Vidale (1980-82), Amos M. Nur (1981-83).

### SUBCOMMITTEE ON HONORARY FELLOWS

Joseph R. Curray (Chairman, 1980-81), W. Gary Ernst (1980-81), William Back (1980-82), Hans P. Eugster (1980-82), John M. Guilbert (1981-83), E. H. Timothy Whitten (1981-83).

### SUBCOMMITTEE ON THE NATIONAL MEDAL OF SCIENCE

Alfred G. Fischer (Chairman, 1979-81), Peter J. Wyllie (1980-82), John C. Crowell (1981-83).

### COAL GEOLOGY DIVISION PANEL ON GILBERT H. CADY AWARD

Edward C. Beaumont (Chairman, 1980-81), Frank E. Kottowski (1980-81), Peter A. Hacquebard (Immediate Past Recipient), Heinz H. Damberger (Division Chairman, 1981), Russell A. Brant (Division First Vice-Chairman, 1981).

### ENGINEERING GEOLOGY DIVISION PANEL ON E. B. BURWELL, JR., AWARD

Ellis L. Krinitzsky (Chairman, 1980-82), Alice S. Allen (1979-81), Roy J. Shlemon (1979-81), John H. Peck (1980-82), David M. Cruden (1981-83), John F. Gartner (1981-83).

### HYDROGEOLOGY DIVISION PANEL ON O. E. MEINZER AWARD

Philip Cohen (Chairman, 1979-81), Irwin Remson (1979-81), James J. Geraghty (1980-82), Wayne A. Pettyjohn (1981-83), Frank W. Trainer (1981-83).

### QUATERNARY GEOLOGY & GEOMORPHOLOGY DIVISION PANEL ON KIRK BRYAN AWARD

Don J. Easterbrook (Chairman), Gail M. Ashley (1980-81), Richard P. Goldthwait (1980-81), Richard J. Janda (1980-81), Edward B. Evenson (1981-82), Allan F. Schneider (1981-82), George I. Smith (1981-82).

### COMMITTEE ON INVESTMENTS

C. Harry Burgess (Chairman, 1981-83), Donald A. Parks (1980-82), Thomas W. Stern (1980-82), James A. Anderson (1981-83), Robert L. Fuchs (1981-83), Ex Officio: William B. Heroy, Jr., Treasurer (voting), Jack A. Simon, Budget Committee Chairman (non-voting).

### COMMITTEE ON MEMBERSHIP

Anthony J. Naldrett (Chairman, 1980-82), Jose C. Guerrero (1979-81), Richard H. Groshong, Jr. (1980-81), Penelope M. Hanshaw (1980-82), F. Beach Leighton (1981-83), William A. Thomas (1981-83).

#### **COMMITTEE ON NOMINATIONS**

Robert E. Boyer (Chairman), Garrett Briggs, Clifford A. Hopson, William C. Kelly, Kenneth N. Weaver.

#### **COMMITTEE ON PENROSE CONFERENCES**

Lee J. Suttner (Chairman, 1980-82), Marie Morisawa (1981-82), Elwood R. Brooks (1981-83), Daniel R. Shawe (1981-83), Conferee: Bruce B. Hanshaw (1981).

#### **PROGRAM REVIEW COMMITTEE**

Bruce B. Hanshaw (Chairman, 1981-83), Richard W. Berry (1979 JTPC Chairman), Robert D. Hatcher, Jr. (1980 JTPC Chairman), Norman Hester (1981 JTPC Chairman), William W. Craig (1982 JTPC Chairman).

#### **COMMITTEE ON PUBLICATIONS**

E. R. Ward Neale (Chairman, 1979-81), Robert H. Dott, Jr. (1979-81), Gerald M. Friedman (1980-82), E. G. Wermund (1980-82), Charles L. Pillmore (1981-83), John W. Rold (1981-83), Conferees: Burrell C. Burchfiel (Past Chairman), John C. Frye (Executive Director), \_\_\_\_\_ (Science Editor), James A. Clark (Production Manager).

#### **COMMITTEE ON RESEARCH GRANTS**

Emile A. Pessagno, Jr. (Chairman, 1979-81), Walter Alvarez (1979-81), Robert V. Ruhe (1981-83), Conferee: Robin Brett (1981).

#### **AD HOC COMMITTEE ON MINORITIES IN THE GEOSCIENCES**

Louis A. Fernandez (Chairman), Charles A. Baskerville, David A. Lopez, Louis C. Pakiser.

#### **AD HOC PUBLICATIONS STUDY COMMITTEE**

Brian J. Skinner (Chairman), Robert G. Blackadar, Gregory A. Davis, E. R. Ward Neale, Steven S. Oriel, Thomas J. M. Schopf, Arthur A. Socolow, William A. Thomas (Vice-Chairman), Conferees: Fred A. Dix, Jr. (AAPG), Christopher G. A. Harrison (AGU).

#### **GSA STEERING COMMITTEE ON "DECADE OF NORTH AMERICAN GEOLOGY"**

Laurence L. Sloss (Chairman), Howard R. Gould, Digby J. McLaren, Albert W. Bally (1980-81), Robin Brett (1980-81), Gabriel Dengo (1980-81), Charles L. Drake (1980-81), Jose C. Guerrero (1980-81), William R. Keefer (1980-81), Raymond A. Price (1980-81), Guillermo P. Salas (1980-81), John O. Wheeler (1980-81), Robert G. Blackadar (1981-82), John C. Reed, Jr. (1981-82), Ex Officio: John C. Frye, Executive Director, A. R. "Pete" Palmer, Centennial Science Program Coordinator.

#### **CENTENNIAL DEVELOPMENT COMMITTEE**

James Boyd (Chairman), Kenneth H. Crandall, Robert E. Folinsbee, Robert L. Fuchs, George Grow, Jr., Michel T. Halbouty, Caswell Silver, Leon T. Silver, Ex Officio: Laurence L. Sloss, Chairman, Steering Committee on D-NAG, John C. Frye, Executive Director, A. R. "Pete" Palmer, Centennial Science Program Coordinator. (Disbanded- Feb. 4, 1981.)

#### **GSA REPRESENTATIVES TO AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE (AAAS)**

Robert E. Riecker (1979-81, Section E-Geology & Geography), Phyllis M. Garman (1979-81, Section W-Atmospheric & Hydro-spheric Sciences).

#### **GSA DESIGNEES TO NORTH AMERICAN COMMISSION ON STRATIGRAPHIC NOMENCLATURE (NACSN)**

GSA has three representatives (commissioners) each year and one commissioner-elect on the NACSN. The term is for three years. Appointments terminate and commence at the end of the NACSN annual meetings which are held during the GSA annual meetings. The commissioner-elect takes office one year following his appointment.

Clarence A. Hall, Jr., (1978-81), Malcolm P. Weiss (1979-82), A. R. "Pete" Palmer (1980-83), Michael A. Murphy (1981-84, Commissioner-elect; term begins during NACSN meeting in Cincinnati).

#### **GSA DESIGNEES TO JOINT ASCE-GSA-AEG COMMITTEE ON ENGINEERING GEOLOGY (AMERICAN SOCIETY OF CIVIL ENGINEERS)**

John B. Ivey (July 1, 1978-June 30, 1981), Cole R. McClure, Jr., (July 1, 1979-June 30, 1982).

#### **GSA DESIGNEE TO U.S. NATIONAL COMMITTEE ON GEOCHEMISTRY**

Paul C. Ragland (July 1, 1980-June 30, 1983).

#### **GSA DESIGNEE TO U.S. NATIONAL COMMITTEE ON ROCK MECHANICS (USNCORM)**

George A. Kiersch (July 1, 1980-June 30, 1983).

#### **GSA DESIGNEE TO U.S. NATIONAL COMMITTEE ON TUNNELING TECHNOLOGY**

Lloyd B. Underwood (January 1, 1981-June 30, 1983).

#### **GSA DESIGNEES TO GSA-SSSA INTER-DISCIPLINARY COMMITTEE (SOIL SCIENCE SOCIETY OF AMERICA)**

Leon R. Follmer, John W. Hawley, Robert V. Ruhe, Peter W. Birkeland.

#### **GSA MEMBER OF THE AGI GOVERNING BOARD**

Howard R. Gould (January 1, 1981-December 31, 1983).

#### **GSA DESIGNEE TO THE STEERING COMMITTEE OF COSUNA (CORRELATION OF STRATIGRAPHIC UNITS OF NORTH AMERICA)**

Robert R. Jordan.

#### **GSA REPRESENTATIVE TO ASSEMBLY OF MATHEMATICAL & PHYSICAL SCIENCES (NRC)**

John C. Frye (Effective May 1, 1975).

#### **GSA DESIGNEE TO U.S. NATIONAL COMMITTEE ON SCIENTIFIC HYDROLOGY**

David A. Stephenson (1978-81), Paul A. Witherspoon (Alternate).

#### **GSA REPRESENTATIVE TO COMMITTEE FOR EVALUATION OF EARTHQUAKE PREDICTIONS**

Clarence R. Allen

**CINCINNATI** the beautiful Ohio valley city famed for German beer and southern comfort, spiced by the touch of many cultures, will host the four-day 1981 Annual Meeting of the Geological Society of America from 8:00 a.m., November 2 through 5:00 p.m., November 5.

Without having to leave the city, one can experience many places—the fabled hills of San Francisco, the festive spirit of Munich, the river-front flavor of New Orleans, the gourmet restaurants of Paris, or the cosmopolitan mood of New York; they all come together in Cincinnati for your enjoyment.

The Society has not met in Cincinnati since 1961. Here's a fresh opportunity to experience Cincinnati as well as to study the fossiliferous Cincinnati Series, the stratigraphy of coal-rich Kentucky, the mineralization of the St. Francois Mountains, and the wide variety of mid-continent geomorphology. These and other field trips provide a wide panorama of geologic experiences. The program consists of technical sessions, poster sessions, 19 field trips, a four-day science film theater, exhibits, employment service, and a wide variety of guest programs and business and social functions.

Cincinnati is a compact, convenient site. Stouffer's is directly across the street from the Convention Center, which is the location of technical sessions, exhibits, and employment service. Most of the other hotels are within easy walking distance. A covered, lighted walkway connects the downtown areas, making it easy to get around—day or night. Moderate prices make it convenient to enjoy Cincinnati attractions.

The 1981 logo is the famous Tyler-Davidson Fountain. The Fountain was crafted in Munich and dedicated to Cincinnati in 1871. It is located in the center of Fountain Square—the focal point for all of greater Cincinnati. It represents the tradition and graciousness of the city.

Seven associated societies will hold concurrent meetings with GSA. They are: Cushman Foundation, Geochemical Society, Geoscience Information Society, Mineralogical Society of America, National Association of Geology Teachers, Paleontological Society, and Society of Economic Geologists.

**General Chairman:** Warren D. Huff, Department of Geology, University of Cincinnati, Cincinnati, OH 45221, (513) 475-3731 or 475-3732.



# 1981 ANNUAL MEETING

## GSA and ASSOCIATED SOCIETIES

### NOVEMBER 2—5

Headquarters Hotel — Stouffer's Cincinnati Towers

Technical Sessions and Exhibits — Cincinnati Convention-Exposition Center

**ABSTRACTS DEADLINE — JUNE 5**

**PREREGISTRATION DEADLINE — OCTOBER 2, 1981**

CINCINNATI

CINCINNATI

**REGISTRATION.** Preregister in order to avoid the delays of on-site registration. We have extended the deadline to **October 2**, which will make preregistration more convenient. Preregistration fees will be lower than on-site registration fees. Registration fees and forms will be included in the August issue of *GSA News & Information*. You may receive a copy by contacting the Meetings Secretary in Boulder. **Meeting and field trip preregistration must be received no later than October 2, 1981.**

**HOUSING.** GSA's room block includes 8 hotels with room rates ranging from \$30 to \$60 single and \$36 to \$60 double. The majority of rooms are in the low \$40s. Triple and quad rooms will be available.

**GUEST PROGRAM.** Cincinnati, the river town that's far from sleepy, is known as the Queen City, the Paris of the West, City of Seven Hills, and the Gateway to the South. The guest program provides an opportunity to understand why the town is all these things, and more, in its presentation of full- and half-day tours to cultural attractions, parks, restaurants, shops, and entertainment. Included in the trips are an Ohio River luncheon cruise, a caving adventure at the Museum of Natural History, a luncheon tour of one of the oldest premium wineries in the United States, and visits to the Krohn Conservatory, historic Mount Adams, the Kentucky Horse Park, and Shakertown, Kentucky.

**SCIENCE THEATER.** There will be an excellent variety of short films available for registrant viewing from Monday through Thursday. If you would like to suggest a particular film you believe to be outstanding, contact the Chairman: Napoleon Bryant, Dept. of Teacher Education, Xavier Univ., Cincinnati, OH 45207, (513) 745-3701.

**EXHIBITS.** November 2, 3, 4. Exhibit space is available at the Convention-Exposition Center. Exhibitor information and contracts are now available. Exhibits are a vital part of the meeting. We encourage exhibitors to contact us. **For information write or call Exhibits Coordinator, GSA, Boulder, (303) 447-2020.**

**BUSINESS AND SOCIAL GROUP FUNCTIONS.** Space assignments for meetings, breakfasts, luncheons, dinners, and cocktail receptions are made by the GSA Meetings Coordinator. In March, invitations were sent to those groups who sponsored functions at the 1979 and 1980 meetings. Anyone else wishing to reserve space for 1981 should contact the Meetings Secretary, GSA, Boulder. **Deadline is June 1.**

**EMPLOYMENT SERVICE.** GSA conducts an employment interview service during its annual meeting. Booths are provided for employers to hold in-person interviews with applicants who are registered with the service. Staff is available to assist in scheduling these interviews. Computer listings of our applicant



file and resumes are available to employers for screening purposes. See the July issue of *GSA News & Information*. You may receive a copy by contacting the Employment Service Coordinator, GSA, P.O. Box 9140, Boulder, CO 80301.

The Employment Service sponsors a forum on "Future Employment Opportunities in the Geological Sciences." A panel of six persons will give a brief overview of employment opportunities in State and Federal government, industry, and academia.

**WELCOMING PARTY.** The Cincinnati Union Terminal is the site for a unique opening night reception. GSA will have exclusive access to the terminal which boasts something for everyone. The halls and ramps of the terminal lead to 2 levels of restau-

rants and shops. All the restaurants will be open, and the food will range from French cuisine to tacos and Cincinnati chili. The usual cash bars will have the unusual price of \$1-1.50 for all beverages.

Completed in 1933, the Cincinnati Union Terminal is among the world's finest examples of art deco architecture and at \$41,000,000, the most expensive railroad station ever built. During its heyday in the 1940s, the terminal could accommodate 216 trains and 1,700 passengers. As passenger-train travel declined, the terminal underwent transition from a station to a place to go for stores and markets, restaurants, and night life. Its grand opening was in August, 1980.

### MAKE YOUR TRAVEL ARRANGEMENTS NOW!

Excursion air fares can save up to 50% so book as soon as possible

## TECHNICAL PROGRAM – CALL FOR PAPERS

The technical sessions consist of both volunteered papers and invited symposia. **Chairman of JTTC:** Norman Hester, Consolidated Resources of America, Inc., P.O. Box 721, Henderson, KY 42420, (502) 826-5012; **Co-Chairman:** Martin Noger, (*Symposia*), Kentucky Geological Survey, University of Kentucky, Lexington, KY 40506, (606) 258-5863.

**VOLUNTEERED PAPERS.** Abstracts for the technical sessions (both oral presentations and poster sessions) must be submitted on 1981 abstract forms available from the GSA Abstracts Coordinator (GSA/Boulder) and from geology departments of most colleges and universities. The abstract form will be used as camera-ready copy for publication in *Abstracts with Programs*. A \$15 fee will be charged to the senior author if retyping is necessary, and there will be no opportunity for authors to review or revise retyped abstracts. Note: there is no limit to the number of abstracts on which an author's name may appear; however, an author may present only ONE volunteered paper. Only one paper—oral or poster session—not one of each.

**Deadline for Receipt of Volunteered Abstracts at GSA/Boulder Friday, June 5, 1981**

Speakers in the regular technical sessions will be allotted a total of 15 minutes and will be expected to leave time for questions and discussion at the end of their presentations. Projection facilities will consist of a single 35 mm (2x2 in.) projector in each room; dual projectors will not be available. Each poster session participant will be provided with three approximately 8'h x 4'w tackboards for display, but no projection equipment, electrical outlets, or tables will be available.

**INVITED SYMPOSIA.** Twenty-one symposia will convene during the 4-day meeting. Additional symposia may convene on Sunday, November 1. Any communication concerning symposia abstracts or participation should be addressed to the specific symposium organizers. Abstracts must be sent directly to symposium organizers, not to GSA.

1. *Archaeological Geology in the Eastern Mediterranean:* Archaeological Geology Division; Norman Herz
2. *The Origin of Coal:* Coal Geology Division; Norman C. Hester and James C. Cobb
3. *The Role of Government Agencies in Development of Engineering Geology:* Engineering Geology Division; James W. Skehan, S. J. and Richard H. Jahns
4. *Active Mid-Plate Tectonics:* Geophysics Division; Robert M. Hamilton and Otto W. Nuttli

5. *The History of American Paleontology: Selected Views:* History of Geology Division; Kennard B. Bork
6. *Regional Hydrogeology—Past, Present, and Future:* Hydrogeology Division; Harry LeGrand and Wayne Pettyjohn
7. *Marine and Continental Correlation of the Cenozoic:* Madeleine Briskin, Rhodes W. Fairbridge, and George J. Kukla, William A. Berggren, Claude Deplessy, and Alan Hecht
8. **1981 Centennial Frontier Symposium: *Frontiers of Structural Geology:*** Structural Geology Division; Donald U. Wise, George Davis, Peter Giser, Paul Hoffman, and Sharon Moser
9. *Paleozoic Foraminiferal Evolution, Paleocology and Paleobiogeography:* Cushman Foundation; Charles A. Ross and Raymond C. Douglass
10. *Shales and Subsurface Hydrology:* Geochemical Society; Donald L. Graf and Yousif Kharakha
11. *The Future of the Journal:* Geoscience Information Society; Mary W. Scott
12. *Microstructure of Minerals as Determined by X-Ray and Electron Diffraction:* Mineralogical Society of America; C. T. Prewitt and J.D.C. McConnell
13. *Recent Advances in Sedimentary Geology:* National Association of Geology Teachers; Lee J. Suttner
14. *Biotic Interactions in Recent and Fossil Benthic Communities:* Paleontological Society; Michael J. S. Tevesz and Peter L. McCall
15. *Metal Deposits in Clastic Sedimentary Rocks:* Society of Economic Geologists; Stephen E. Kesler
16. *Comparative Planetary Geology:* Leon T. Silver and Harold Masursky
17. *Ordovician Stratotype Sections, Biostratigraphy, and Interpretative Lithostratigraphy:* John Pojeta and Earle R. Cressman
18. *Hydrology of High-Level Nuclear Waste:* P. A. Witherspoon and F. J. Pearson
19. *Pennsylvanian-Mississippian Boundary in the Appalachian Basin:* Charles L. Rice and Donald C. Haney
20. *Late Miocene Paleocceanographic and Biogeographic Reconstructions:* Michael L. Bender and Lloyd H. Burckle
21. *Melanges: Their Nature, Origin, and Significance:* Loren A. Raymond

### SUNDAY "AT LARGE" SYMPOSIA

22. *Flow in Karst Groundwater Basins:* James F. Quinlan
23. *Paleogeography and Climate:* Eric J. Barron
24. *Geology and Mineral Resources of the Precambrian St. Francois Terrane, Southeastern Missouri:* Jerry D. Vinegard

## FIELD TRIPS

The Cincinnati area has a long history of attracting geologists because of its abundantly fossiliferous strata and its position on the crest of the Cincinnati Arch. Within easy reach are karst features, coal-producing regions, glacial sediments, Paleozoic rocks from Ordovician through Permian age, as well as shores of large lakes. Within reasonable distances, the Appalachians and the Ozarks are also accessible.

For further information concerning any field trip, contact either **Lois J. Campbell, Chairman**, or **Thomas Roberts, Co-Chairman**, Department of Geology, University of Kentucky, Lexington, KY 40506 (606) 257-3758. Unless otherwise indicated, all trips originate and terminate in Cincinnati.

### Premeeting

1. **Upper Ordovician (Richmondian) Stratigraphy and Paleogeology of Southeastern Indiana and Southwestern Ohio (1 day).** John K. Pope, Roy H. Reinhart, and Wayne D. Martin, Miami Univ., Oxford, OH; and Helen B. Hay, Earlham College, Richmond, IN.
2. **Stratigraphy of Devonian and Lower Mississippian Agglutinate Foraminifera of Northwestern Kentucky and Southern Indiana (2 days. Origin. Louisville, KY).** James E. Conkin, Univ. of Louisville; and Barbara M. Conkin, Jefferson Community College, Louisville, KY.
3. **Chattanooga Shale—Potential Source of Oil, Gas, and Heavy Metals (3 days. Origin. Chattanooga, TN).** Roy C. Kepferle, USGS, Cincinnati, OH; and John B. Roen, USGS, Reston, VA.
4. **Mississippian-Pennsylvanian Boundary in the Central Part of the Appalachian Basin (4 days. Origin. Princeton, WV).** Kenneth J. Englund and Thomas W. Henry, USGS, Reston, VA; John C. Horne, Colorado School of Mines; and Frank R. Ettensohn and John C. Ferm, Univ. of Kentucky. (Mississippian-Pennsylvanian Boundary Group, SEPM.)
5. **Geohydrology of the Ohio River Alluvial Aquifer (1 day).** Donald S. Mull and Robert J. Faust, USGS, Water Res. Div. Louisville, KY.
6. **The Serpent Mound Cryptoexplosion Structure, Southwestern Ohio (1 day. Same trip as postmeeting 16).** Stephen P. Reidel, Rockwell Hanford Operations, Research Dept., Richland, WA; and Frank L. Koucky, College of Wooster, Wooster, OH.
7. **Coastal Geomorphology and Geology of the Ohio Shore of Lake Erie (2 days. Origin. Cleveland, OH).** C. H. Carter, D. E. Guy, Jr., and J. A. Fuller, Ohio Geological Survey, Lake Erie Section, Sandusky, OH.
8. **Hydrogeology of the Mammoth Cave Region, Kentucky (4 days).** James F. Quinlan, National Park Service, Mammoth Cave, KY; and Ralph Ewers, Cumberland Karst Research Lab., Stab, KY.
9. **Quaternary Deposits of Southern Ohio (3 days).** R. P. Goldthwait, Ohio State Univ.; D. P. Stewart, Miami Univ.; D. A. Franz, Syracuse Univ.; and Michael J. Quinn, Shell Oil Co., New Orleans, LA.
10. **Stratigraphical and Structural Geology of the Hot Springs Traverse, Tennessee—North Carolina (3 days. Origin. and Term.: Knoxville, TN. Hdqs: Newport, TN).** Nicholas Rast and James C. Bolton, Univ. of Kentucky.

### Postmeeting

11. **Paleoenvironmental Interpretation of the Middle Ordovician High Bridge Group in Central Kentucky (1 day).** Gary L. Kuhnenn, Eastern Kentucky Univ., Richmond, KY; George Grabowski, Rice Univ., Houston, TX.
12. **Stratigraphy, Sedimentology, and Paleogeology of the Cincinnati Series (Upper Ordovician) in the Vicinity of Cincinnati, Ohio (2 days).** D. L. Meyer, W. A. Pryor, and R. C. Tobin, Univ. of Cincinnati; R. G. Osgood, College of Wooster, Wooster, OH; and W. B. Harrison, Western Michigan Univ., Kalamazoo, MI.
13. **Early Mississippian Deltaic Sedimentation in Central and Northeastern Ohio (3 days. Term. Cleveland, OH).** R. A. Heimlich and A. H. Coogan, Kent State Univ., Kent, OH; R. J. Malcuit and K. B. Bork, Denison Univ., Granville, OH; and T. L. Lewis, Cleveland State Univ.
14. **Coals and Coal-Bearing Strata of Southeastern Kentucky (4 days).** James C. Cobb, Norman C. Hester, and Donald R. Chestnut, Kentucky Geological Survey; and James C. Hower, Inst. for Mining and Minerals Research, Univ. of Kentucky (Coal Geology Division).
15. **Precambrian Geology and Mineralization, the St. Francois Mountains, Southeastern Missouri (3 days. Origin. and Term.: St. Louis, MO. Hdqs: Flat River, MO).** Eva B. Kisvarsanyi and Arthur W. Hebrank, Missouri Geological Survey, Rolla, MO; and Richard F. Ryan, Pilot Knob Pellet Co., Ironton, MO.
16. **The Serpent Mound Cryptoexplosion Structure, Southwestern Ohio (1 day. Same trip as 6).** Stephen P. Reidel, Rockwell International, Geoscience Group, Richland, WA; and Frank L. Koucky, College of Wooster, Wooster, OH.
17. **Geoarchaeology of the Flint-Mammoth Cave System and the Green River Valley, Western Kentucky (2 days).** Julie Stein, Univ. of Washington; Patty Jo Watson, Washington Univ. in St. Louis; and William B. White, Penn State Univ. (Archaeological Geology Division).
18. **Engineering Geology of Cincinnati (1 day).** Robert W. Fleming, USGS, Denver, CO; Arvid M. Johnson, Univ. of Cincinnati; and James E. Hough, Consulting Geol., Cincinnati. (Engineering Geology Division)
19. **Structure and Stratigraphy of the Pine Mountain Thrust Sheet (2 days. Term.: Knoxville, TN).** T. Dennis Coskren, Univ. of Kentucky.

ABSTRACTS ACCEPTED ON 1981 ABSTRACT FORMS ONLY—DEADLINE: JUNE 5, 1981

PREREGISTRATION, FIELD TRIPS, AND HOUSING FORMS

Available in August issue of *GSA News & Information*

### CONTACTS FOR INFORMATION

Abstracts Coordinator  
abstract forms

Employment Service Coordinator  
participation by employers/applicants

Exhibits Coordinator  
trade exhibits

Requests For All Other Information—Meetings Coordinator

Geological Society of America, P.O. Box 9140, Boulder, CO 80301 (303) 447-2020

BRIEF REQUIREMENTS FOR . . .

# BULLETIN:

**MANUSCRIPT LENGTH:** 1–70 pages, including illustrations and tables.

**STYLE:** See a recent *Bulletin* for general style.

**TYPING:** All manuscript pages must be double spaced. Tables may be single spaced. Use one side of paper only.

**REFERENCES CITED:** All journal names, publishers, and cities must be spelled out; do not abbreviate.

**ABSTRACTS:** Include abstract with each paper.

**BULLETIN PART II:** Authors submitting manuscripts longer than 70 pages or those with numerous tables may be asked to put their manuscript into the *Part I–Part II* format. Details may be secured from the *Bulletin* Manager.

**MANUSCRIPT COPIES:** Submit three copies of the manuscript and illustrations for review purposes.

**FOLDOUTS:** Foldouts are permitted if author pays for additional costs of folding and inserting them. An estimate will be secured from the printer in each case.

**COLORS:** Colors other than black may be used in illustrations if author pays the cost. Estimates will be provided upon request.

Please address all manuscripts to The Editors



**THE  
GEOLOGICAL SOCIETY  
OF AMERICA**

P.O. Box 9140 · 3300 Penrose Place  
Boulder, Colorado 80301

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## COMMITTEE ON COMMITTEES SEEKS CANDIDATES FOR COMMITTEE APPOINTMENTS

The Committee on Committees requests help from all members. As is customary, a committee has been appointed by Vice-President Digby J. McLaren. Its sole purpose is 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 August or early September and will present at least two nominations for each open position to Council at its November 4 meeting in Cincinnati. During that meeting, individual councilors may or may not 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 blood into Society affairs.

The Committee on Committees for 1981 is made up of the following people: *John O. Wheeler*, Chairman, Geological Survey of Canada, 100 West Pender Street, Vancouver, British Columbia V6B 1R8, Phone (604) 666-2958; *Randolph W. Bromery*, Department of Geology and Geography, Morrill Science Center, University of Massachusetts, Amherst, MA 01003, Phone (413) 545-2120; *Robert D. Hatcher, Jr.*, Department of Geology, University of South

Carolina, Columbia, SC 29208, Phone (803) 777-6684; *Charles J. Mankin*, Oklahoma Geological Survey, 830 Van Vleet Oval, Norman, OK 73019, Phone (405) 325-3031 (Survey) and (405) 360-1600 (University); *Brian J. Skinner*, Department of Geology, Yale University, New Haven, CT 06520, Phone (203) 436-1073.

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 immensely by volunteering yourself or by suggesting names of others who you think should be considered for any of the openings.

To ensure thorough consideration of your candidates, please include a note explaining their special qualifications for particular jobs. Please be sure that your candidates are Members or Fellows of the Society.

All nominations sent through headquarters will be forwarded to the committee members. **Deadline: July 15, 1981.** Listed below are the committees on which vacancies will occur in November. Appointments will be made by Council at its meeting in Cincinnati on November 4, 1981.

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**PLEASE RETURN THIS FORM TO CHAIRMAN JOHN O. WHEELER OR TO HEADQUARTERS  
 BY JULY 15, 1981.**

GSA Committees for 1982	Members suggested to serve on committees	GSA Representatives for 1982	Members suggested to serve as GSA Representatives
Day Medal _____ (4 vacancies)	_____	AAAS—Geology/ Geography _____ (1 vacancy)	_____
Geology & Public Policy _____ (3 vacancies)	_____	AAAS—Atmospheric/Hydrospheric _____ (1 vacancy)	_____
Honorary Fellows _____ (2 vacancies)	_____	NACSN _____ (1 vacancy)	_____
Membership _____ (2 vacancies)	_____	Remarks: _____	_____
National Medal of Science _____ (1 vacancy)	_____	_____	_____
Nominations _____ (5 vacancies)	_____	_____	_____
Penrose Medal _____ (2 vacancies)	_____	_____	_____
Publications _____ (2 vacancies)	_____	_____	_____
Research Grants _____ (2 vacancies)	_____	Signature (optional) _____	_____

## APRIL BULLETIN BRIEFS

By Council action, the *Bulletin* Separates program is being discontinued. Effective with the January 1981 issue of *Bulletin*, GSA will no longer publish Separates. Members who hold coupons for *Bulletin* Separates PUBLISHED DURING 1980 may redeem those coupons any time during 1981; however, no new orders for the Separates program will be accepted.

GSA will continue to publish *Bulletin* Briefs in *GSA News & Information* each month for the convenience of the membership.

### Article Summaries

- Geology of the Victorville region: Summary.  
*Elizabeth L. Miller, Department of Geology, Stanford University, Stanford, California 94035. (4 figs.)*
- Chemical compositions of Mesozoic basalts, Newark Basin: Summary.  
*J. H. Puffer, D. O. Hurtugise, F. J. Geiger, Paul Lechler, Department of Geology, Rutgers University, Newark, New Jersey, 07102. (1 fig., 1 table)*

### Articles Complete in the April Issue of Part I

- $^{40}\text{Ar}/^{39}\text{Ar}$  incremental release ages on plutonic rocks from the Victorville region, California.  
*Elizabeth L. Miller, Department of Geology, Stanford University, Stanford, California 94305; John F. Sutter, Department of Geology, Ohio State University, Columbus, Ohio 43210. (3 figs., 1 table)*
- Metamorphic facies and tectonics in part of the Cascade Range and Puget Lowland, northwestern Washington.  
*E. H. Brown, M. L. Bernardi, J. N. Sondergaard, R. A. Haugerud, P. M. Rady, B. W. Christenson, J. R. Cruver, Department of Geology, Western Washington University, Bellingham, Washington 98225 (present address: Bernardi, Bendix Field Engineering Corp., P.O. Box 2144, Spokane, Washington 99210; Sondergaard, Hart Crowser & Associates, 1910 Fairview East, Seattle, Washington 98101; Rady, AMOCO Production Company, AMOCO Building, Denver, Colorado 80201). (3 figs., 2 tables)*
- Oliverian syenites of the Pliny region, New Hampshire.  
*K. A. Foland, Department of Geology, University of Pennsylvania, Philadelphia, Pennsylvania 19104; M. C. Loiselle, Department of Geological Sciences, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061 (present address: Foland, Department of Geology and Mineralogy, The Ohio State University, Columbus, Ohio 19104). (5 figs., 6 tables)*

Metamorphic assemblages in pre-Tertiary rocks of northwestern Washington can be grouped into eight facies types which represent recrystallization under widely diverse P-T conditions. Consideration of these assemblages together with their regional distribution and age allows speculation concerning some aspects of the regional metamorphic and tectonic history: (1) High pressure assemblages indicate that much of the metamorphosed rock has been affected by subduction; (2) two ages of subduction are represented, Permian-Carboniferous and Early Cretaceous; (3) during the Cretaceous event, rock masses of local to regional extent gained mutually distinctive metamorphic assemblages, indicating that the rock units acted as separate tectonic elements during the subduction process; (4) sea-floor metamorphism may be indicated by the occurrence of low-pressure assem-

blages in ophiolitic rocks; (5) in some rock units, low-pressure assemblages are overprinted by high-pressure minerals, suggesting a history of sea-floor spreading followed by subduction metamorphism; (6) some rock units contain only low-pressure assemblages and thus may have escaped subduction; (7) diverse origins of rock units and profound movement on unit-bounding faults are suggested by the disparity of ages and facies type.

Recent field work in the Pliny Range of northern New Hampshire established the existence of two syenite units which predate the igneous activity of the White Mountain magma series but postdate the formation of highly foliated units of the Oliverian Jefferson dome. A total of ten syenite samples were analyzed for Sr isotopes, major elements, and selected trace elements. The syenites describe a whole-rock Rb-Sr isochron of  $441 \pm 5$  m.y. with initial  $^{87}\text{Sr}/^{86}\text{Sr}$  of  $0.70453 \pm 0.00006$ . The syenites of the Jefferson Dome thus formed during the same Oliverian activity which produced the rocks of the domes extending along the Bronson Hill anticlinorium in New Hampshire. Furthermore, the structural position of the rocks establishes 441 m.y. as a minimum age for the Taconic deformation in northern New Hampshire.

The syenites have high total alkalis, high  $K_2O/Na_2O$ , high  $Al_2O_3$  contents, and low  $MgO$  and  $CaO$  concentrations. They have extremely fractionated chondrite-normalized rare-earth element patterns with either small negative or no  $Eu$  anomalies. The magmas which produce the syenites were probably produced from partial melting of eclogite; however, the composition of the source material (either mid-ocean ridge basalt, MORB plus sediments, altered MORB, or island-arc tholeiite) prior to metamorphism within the eclogite facies is uncertain.

- Active fault hazard in Southern California: Ground rupture versus seismic shaking.

*Robert S. Yeats, Department of Geology, Oregon State University, Corvallis, Oregon 97331; Michael N. Clark, Edward A. Keller, Thomas K. Rockwell, Department of Geological Sciences, University of California, Santa Barbara, California 93106 (8 figs.)*

There are exceptions to the common assumption that surface rupture by faulting is always accompanied by a damaging earthquake. Near Ventura, California, faults of the Oak View-Ojai area and Orcutt and Timber Canyons displace late Pleistocene and/or Holocene alluvial materials and soils by several tens of metres. The movement is almost exclusively along bedding planes in response to flexural slip during folding. Therefore these faults constitute a ground-rupture hazard. However, because they do not extend downward to rocks of high shear strength which could store large amounts of elastic strain energy, they do not constitute a seismic-shaking hazard. In contrast, the Oak Ridge fault near the coast does not cut strata shallower than 1,250 to 1,500 m below the surface, although pressure ridges attest to recent activity. Similarly, the Newport-Inglewood fault between Long Beach and Inglewood oil fields in the Los Angeles basin is expressed at the surface as a line of anticlinal hills rather than a throughgoing fault. Historical faulting at Inglewood and possibly at Rosecrans and Dominguez oil fields may be related to oil-field development rather than earthquake-related displacement. Those portions of the Oak Ridge and Newport-Inglewood faults pose seismic-shaking hazards but not ground-rupture potential from earthquakes alone. For planning purposes, it is necessary to distinguish faults with only ground-rupture potential or with only seismic-shaking potential from the well-known faults with potential for both.

- Fecal pellet flux into modern bottom sediment of Santa Barbara Basin, California, based on sediment trapping.

*Robert B. Dunbar, Wolfgang H. Berger, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California 92093. (4 figs., 1 table)*

Fecal pellets constituted more than 60% of the material collected during 45 days of deployment of a suitcase-type sediment trap in Santa Barbara Basin. The flux was  $660 \text{ g m}^{-2} \text{ yr}^{-1}$ , of which  $22 \text{ g m}^{-2} \text{ yr}^{-1}$  was carbon flux. Pellet

transport can account for about one-half of the sediment flux to the central basin floor, including the supply of terrigenous matter. The clearing activities of pellet-producing plankton have important implications for sedimentation and fertility in the coastal ocean.

- The paradox of drowned reefs and carbonate platforms.

*Wolfgang Schlager, Comparative Sedimentology Laboratory, Rosenstiel School of Marine and Atmospheric Science, University of Miami, Fisher Island Station, Miami, Florida 33139. (14 figs. 2 tables)*

Shallow-water carbonate platforms and reefs are drowned when tectonic subsidence or rising sea level outpaces carbonate accumulation, and benthonic carbonate production ceases. Drowned platforms are common in the geologic record, but they present a paradox if one considers rates of processes involved. During the early Holocene, when sea level rose at rates of  $6,000$  to  $10,000 \mu\text{m/yr}$  ( $=\text{mm}/1,000 \text{ yr}$ ), most of the reefs and platforms were outpaced by the rising sea. During the late Holocene with sea level rising  $500$  to  $3,000 \mu\text{m/yr}$  in the Atlantic-Caribbean area, reefs and platforms started to recover, built to sea level and prograded seaward.  $1,000 \mu\text{m/yr}$  is thus a conservative estimate of the average growth potential of modern reefs and platforms. Independently, accumulation rates of prograding platforms in the geologic record suggest growth potential in excess of several hundred microns per year.

The growth potential of  $1,000 \mu\text{m/yr}$  exceeds any relative rise of sea level caused by long-term processes in the geologic record. Newly formed ocean crust subsides at a maximum of  $250 \mu\text{m/yr}$ , basin subsidence averages  $10$  to  $100 \mu\text{m/yr}$ , and sea level rises due to increased sea-floor spreading amount to less than  $10 \mu\text{m/yr}$ . Rapid pulses of relative rise of sea level or reduction of benthic growth by deterioration of the environment remain the only plausible explanations of drowning.

The geologic record shows examples of both of these processes. Global mass extinctions of reefs and platforms occurred, among others, in the middle Cretaceous (eustatic rise due to submarine volcanism or desiccation of a small ocean basin?) and the Late Devonian (global crisis of ocean environment, extraterrestrial cause?). Drowning controlled by regional tectonics prevailed in the Jurassic and Early Cretaceous of the Tethyan realm, and the drowning of Mesozoic platforms in the western North Atlantic seems to have been dictated by plate-tectonic drift to higher latitudes.

- Folds in firn.

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Folds in firn on glaciers of the Gilkey Trench, Alaska, have been observed during years of heavy snowfall and reduced

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ablation. The firm folds were formed by upbuckling and decollement resulting from intense lateral shortening within the underlying glacier ice. Trends of the firm fold axes were normal to the shortening direction ( $\delta_1$ ) and subparallel to foliations in the glacier ice and the ice-flow direction ( $\sigma_3$ ). Extension crevasses normal to the fold trends were also common in the area of the firm folds. Peculiar parallelogram patterns formed by recrystallization of the lowermost centimetre of firm were exposed in the ablated cores of some folds. The patterns were consistently oriented with respect to the firm fold axes and englacial structures, and they seem to reflect the same stress field.

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- Comparison of sediment sound-velocity functions from conjugate margins.

*Robert E. Houtz, Lamont-Doherty Geological Observatory of Columbia University, Palisades, New York 10964. (2 figs., 1 table)*

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A comparison of velocity functions from 15 regions within the conjugate margins of the Norwegian-Greenland Sea, Southeast Indian Ocean, North Atlantic, and South Atlantic

Ocean shows that velocity functions are not significantly different across most conjugate margins. One major exception is the segment from the Blake Plateau to New England in the western North Atlantic, and its counterpart in north-west Africa. Here the velocity gradients are consistently steeper on the African side compared with those on the North American side. The reason for this unexpected difference was sought in the geologic literature of the two margins. Published studies of these two margins show that although total subsidence and sediment thickness of each of the margins are about equal, the older beds (pre-Cenozoic) are much thicker on the African side. This fundamental difference in depositional history seems to be the major cause of the difference in velocity profiles. Possible differences in the distribution of salt along the margins of Africa and North America are not considered a likely source for the trans-Atlantic differences in the velocity functions. The North Atlantic data therefore illustrate that velocity increases more rapidly with depth in sections biased toward greater proportions of older beds; that is, sedimentation rates decrease as the basin ages. These studies also reveal that sound-velocity profiles are sensitive to the early conditions of deposition on passive margins.



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