



# GSA news & information

VOLUME 1, NUMBER 7

JULY 1979

## Comments and suggestions invited for revision of American Stratigraphic Code

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The American Commission on Stratigraphic Nomenclature is embarking on a thorough revision of the American Stratigraphic Code. The commission seeks assistance and suggestions from interested geologists throughout North America.

### NEED FOR REVISION

Revision of the American Stratigraphic Code is needed for several reasons. The current Code [American Commission on Stratigraphic Nomenclature (ACSN), 1970] is but a slightly revised version of the code written mostly in 1960 and earlier (ACSN, 1961), incorporating some minor amendments adopted by the commission between 1962 and 1969. Although the present code has served the profession admirably for almost two decades and has been drawn upon heavily for codes prepared in other parts of the world, it reflects the state of science at the time of its preparation. New tools and concepts developed during the past two decades have revolutionized the earth sciences. Seismostratigraphy and magnetostratigraphy, unrecognized then, are helping now to define the geometry and history of earth materials. Improved capability to drill at great water depths is helping to develop the framework of oceanic stratigraphy. The concept of subduction has led to recognition of both the complexity and significance of melanges. Yet the special needs of workers in these various fields are inadequately addressed by the current code.

There are also deficiencies in meeting the changing needs of older specialties. Students of the Precambrian and of the Quaternary consider that the code tends to constrain resolution of their problems. Some geologists

working in high-grade metamorphic, in plutonic, and in some volcanic terranes believe the code hampers definition of rock bodies with important genetic or structural connotations. Paleontologists, too, are concerned that improved biostratigraphic precision and heightened awareness of paleoecology are inadequately served.

Important activities of many international bodies are necessarily unrecognized in a code prepared earlier; updating is desirable. Recent publications by the International Subcommittee on Stratigraphic Classification (ISSC) of the International Stratigraphic Guide (ISSC, 1976) brings to fruition extended but continuing efforts of a group within the Commission on Stratigraphy of the International Union of Geological Sciences (IUGS); greater harmony between the American Stratigraphic Code and the International Stratigraphic Guide seems desirable. Working groups of the IUGS Commission are engaged cooperatively with the UNESCO International Geologic Correlations Program in defining stratotypes for world-wide chronostratigraphic units on the basis of the point-boundary stratotype concept, all unacknowledged in the American Stratigraphic Code. The IUGS Subcommittee on the Precambrian is seeking agreement on Precambrian subdivisions based on factors other than those used for the Phanerozoic; this, too, merits attention.

ACSN responses to the foregoing problems have been varied, as reflected in the numerous Notes of the Commission published during the past decade in the *Bulletin of the American Association of Petroleum Geologists*.

*continued on p. 98...*

\*Chairman, American Commission on Stratigraphic Nomenclature, and one of GSA's nominees to the ACSN.

For example, magnetostratigraphic units were discussed by Oriel and others (1976), plutonic and high-grade metamorphic units by Sohl (1977), and oceanic units by Sohl (1978); point-boundary stratotypes were discussed by Macqueen and Oriel (1977). Other matters considered are mentioned in notes dealing with records of the commission.

Awareness of the significance of international activities is reflected by appointment of a standing ACSN committee for IUGS liaison and by commission representation on ISSC, as well as on other IUGS subcommissions and working groups.

Publication by ISSC of the International Stratigraphic Guide resulted in adoption of the following resolution (Caldwell and Sohl, 1978):

The ASCN hereby endorses the *International Stratigraphic Guide* as the accepted international standard of stratigraphic classification, procedure, and terminology. The concepts and principles embodied therein are endorsed with the recognition that advances in scientific knowledge will lead to their modification.

The *American Code of Stratigraphic Nomenclature* with its amendments will continue as the embodiment of principles and practices developed in North America and as a suitable means of promulgating new concepts, principles, and practices which subsequently may be found worthy of inclusion in the *International Stratigraphic Guide*.

Of relevance here is the resolution adopted at the November 8, 1977, ACSN meeting confirming an earlier ballot by mail "... that the ACSN now proceed to undertake substantial revision of the Code, involving some rewriting and incorporation of Notes, etc., that postdate the 1970 reissue."

## REVISION PLAN

The general plan for revising the code was developed in a report of the ACSN IUGS Liaison Committee, J. D. Aitken, chairman, prepared in 1977 for the commission but not for publication, to preclude its being cast in concrete. The plan recommends appointment and participation of a Code Committee, three principal subcommittees, and several advisory groups.

The responsibilities of the Code Committee are direction and overall coordination as well as ultimate assembly and preparation of an integrated manuscript for the revised code. Principal responsibilities for writing will rest with the three Subcommittees on Lithostratigraphic, Biostratigraphic and Chronostratigraphic Units. Advisory groups established to deal with the implications of specific geologic problems to the code are to be independent of individual subcommittees but to advise all subcommittees and the Code Committee.

The plan recommended a 3-yr timetable involving many specific steps to assure widespread participation. Procedures established for staffing the committees and groups have resulted in the following appointments:

*Code Committee:* Steven S. Oriel (U.S. Geological Survey), chairman, Hubert Gabrielse (Geological Survey

of Canada), William W. Hay (University of Miami), Frank E. Kottowski (New Mexico Bureau of Mines), John B. Patton (Indiana Geological Survey)

*Lithostratigraphic Subcommittee:* James D. Aitken (Geological Survey of Canada), chairman, Mitchell W. Reynolds (U.S. Geological Survey), Bruce V. Sanford (Geological Survey of Canada), Robert J. Weimer (Colorado School of Mines), Malcolm P. Weiss (Northern Illinois University)

*Biostratigraphic Subcommittee:* Allison R. (Pete) Palmer (State University of New York at Stony Brook), chairman, Paul Copper (Laurentian University), Ismael Ferrusquia V. (University of Mexico), Joseph E. Hazel (U.S. Geological Survey), Erle G. Kauffman (University of Colorado), Walter C. Sweet (Ohio State University), Karl M. Waage (Yale University)

*Chronostratigraphic Subcommittee:* Zell E. Peterman (U.S. Geological Survey), chairman, Zoltan de Cserna (Sociedad Geológica Mexicana), Edward H. Schultz (Sun Oil, Calgary), Norman F. Sohl (U.S. Geological Survey), John A. Van Couvering (American Museum of Natural History)

*Plutonic-Metamorphic Advisory Group:* Jack E. Harrison (U.S. Geological Survey), chairman, John B. Henderson (Geological Survey of Canada), Harold L. James (retired), Leon T. Silver (California Institute of Technology)

*Magnetostratigraphic Advisory Group:* Roger W. Macqueen (University of Waterloo), chairman, G. Brent Dalrymple (U.S. Geological Survey), Walter F. Fahrig (Geological Survey of Canada), J. M. Hall (Dalhousie University)

*Tectonostratigraphic Advisory Group:* Darrel S. Cowan (University of Washington), chairman, Thomas W. Donnelly (State University of New York at Binghamton), Michael W. Higgins and David L. Jones (U.S. Geological Survey), Harold Williams (Memorial University, Newfoundland)

*Quaternary Advisory Group:* Norman P. Lasca (University of Wisconsin—Milwaukee), chairman, Mark M. Fenton (Alberta Research Council), David S. Fullerton (U.S. Geological Survey), Robert J. Fulton (Geological Survey of Canada), W. Hilton Johnson (University of Illinois), Paul F. Karrow (University of Waterloo)

Although the IUGS Liaison Committee report noted that "the format, language, and style of the existing Code need not be considered rigidly binding, but should be followed to the greatest extent practicable," an objective of the revision is to make the American code as harmonious as possible with the International Stratigraphic Guide.

## PARTICIPATION BY PROFESSION

This announcement invites the participation, comments, and discussion of all interested earth scientists, just as was done before the last code was prepared (Frye, 1958). Free exchange of ideas, data, and needs can only improve the ultimate product. Members of the committees and groups are listed above to promote direct communication.

Formal discussions of the current code or of any published notes of the American Commission on Stratigraphic Nomenclature intended for publication should be sent to the chairman of the commission so that the ACSN may consider their approval for publication at its next annual meeting.

Open forums are being scheduled during the annual meetings of both the Geological Society of America (in San Diego on Monday, November 5, 1979) and the American Association of Petroleum Geologists (in Denver, June 1980) to foster informal discussion and comment. Slide and overhead projection facilities will be available for oral presentations; corresponding written submittals should be furnished to the subcommittee chairman concerned 1 mo before the meetings (October 1 for GSA).

Members of the profession will also have ample opportunity to comment on a published draft of the revised code before it is adopted by the commission. Until then, the current code (ACSN, 1970), as amended by subsequent notes approved by the Commission, remains in effect.

## REFERENCES CITED

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- Oriel, S. S., and others, 1976, Note 44—Application for addition to Code concerning magnetostratigraphic units: American Association of Petroleum Geologists Bulletin, v. 60, p. 273-277.
- Sohl, N. F., 1977, Note 45—Application for amendment concerning terminology for igneous and high-grade metamorphic rocks: American Association of Petroleum Geologists Bulletin, v. 61, p. 248-252.
- 1978, Note 48—Application for amendment of Code of Stratigraphic Nomenclature to provide guidelines concerning formal terminology for oceanic rocks: American Association of Petroleum Geologists Bulletin, v. 62, p. 1185-1186.

## ACKNOWLEDGMENT

I thank Steven S. Oriel for his participation in the preparation of this note.

# 1979 Joint Technical Program Committee

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Society of Vertebrate Paleontologists . . . . . Not meeting  
with GSA

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# UPDATE

## Articles in *Bulletin*, Part II, July 1979

Articles in *Bulletin*, Part II are listed below. (Summaries only of these articles are in *Bulletin*, Part I.) Articles in Part II are not on the separate subscription.

Paper copies of Part II in its entirety are available at cost (\$6/month) as a special service to those users (members and nonmember subscribers) who request them. Any such order should be addressed to the Publication Sales Department and be accompanied by advance payment, and no discount can be offered for multiple orders or orders for a sequence of months.

1. Quaternary stratigraphy and chronology of Mauna Kea, Hawaii: A 380,000-yr record of mid-Pacific volcanism and ice-cap glaciation, by Stephen C. Porter. Doc. no. M90701. (On microfiche: 114 p., 25 figs., 5 tables)
2. Patch-reef communities and succession in the Oligocene of Antigua, West Indies, by S. H. Frost and M. P. Weiss. Doc. no. M90702. (On microfiche: 48 p., 10 figs.)
3. A sorting mechanism for a riffle-pool sequence, by Thomas Lisle. Doc. no. M90703. (On microfiche: 16 p., 3 figs.)

## In July *Geology*

1. Classification and nomenclature of volcanic rocks, lamprophyres, carbonatites, and melilitic rocks: Recommendations and suggestions of the IUGS Subcommittee on the Systematics of Igneous Rocks, by Albert Streckeisen
2. Estimating maximum expectable magnitude of earthquakes from fault dimensions, by Max Wyss
3. Late Paleocene demise of the Kula-Pacific spreading center, by Tim Byrne
4. A paleomagnetic pole position from the folded Upper Devonian Catskill red beds, and its tectonic implications, by R. Van der Voo, A. N. French, and R. B. French
5. A minimum age for high-grade metamorphism and granite intrusion in the Piedmont of the Potomac River gorge near Washington, D.C., by K. G. Muth, J. G. Arth, and J. C. Reed, Jr.
6. Zhamanshin crater, a possible source of Australasian tektites?, by B. P. Glass
7. Primary gypsum nodules in a modern sabkha on the Mediterranean coast of Egypt, by I. M. West, Y. A. Ali, and M. E. Hilmy
8. Penrose Conference Report: Geophysics and structure of folded belts, by A. W. Bally, B. C. Burchfiel, and S. Mueller
9. Penrose Conference Report: Siliceous deposits, by J. R. Hein, W. R. Danner, and R. Siever

## Council Approves Dues and Prices for 1980

The GSA Council at its May 1979 meeting in Boulder gave consideration to the membership dues and pricing structure for 1980.

Beginning in 1979 major changes were made in the format of the *Bulletin*. One of the several objectives of these changes was to be able to publish more scientific information, faster, and at reduced cost. At the time of the Council meeting, there had been only four months of experience with the new system; therefore, extrapolation had to be used to arrive at cost estimates for 1980.

As most of the old-format papers will be published by the end of 1979, Part I probably will be slightly shorter in length in 1980, and its price has been reduced accordingly. Part II should be the same size or larger, and its price has been held the same as for 1979.

Basic dues will remain unchanged, whereas *Geology* and meeting books have been adjusted slightly upward to keep pace with inflating costs.

It is interesting to note that the member who pays basic dues, takes both parts of the *Bulletin*, *Geology*, and *Abstracts with Programs* for a section meeting and for the Annual Meeting will pay a total of \$1.50 more in 1980 than in 1979, or a percentage increase of 2.2%.

The comparative rates are shown in the accompanying table.

1980 prices compared to 1979 prices

	MEMBERS		NON-MEMBERS	
	1979	1980	1979	1980
Basic dues, M/F	\$20.00	\$20.00	—	—
Basic dues, Students	10.00	10.00	—	—
<i>Bulletin</i> , Part I	25.00	22.00	\$84.00	\$55.00
<i>Bulletin</i> , Part II	10.00	10.00	25.00	25.00
10 separates, Part I	5.00	10.00	—	—
<i>Geology</i>	9.00	12.00	25.00	26.00
Section Abstracts with Programs	1.50	2.00	3.00	4.00
Annual Meeting Abstracts with Programs	3.00	4.00	8.00	8.00
Membership Directory	5.00	6.00	—	—

### GSA News & Information

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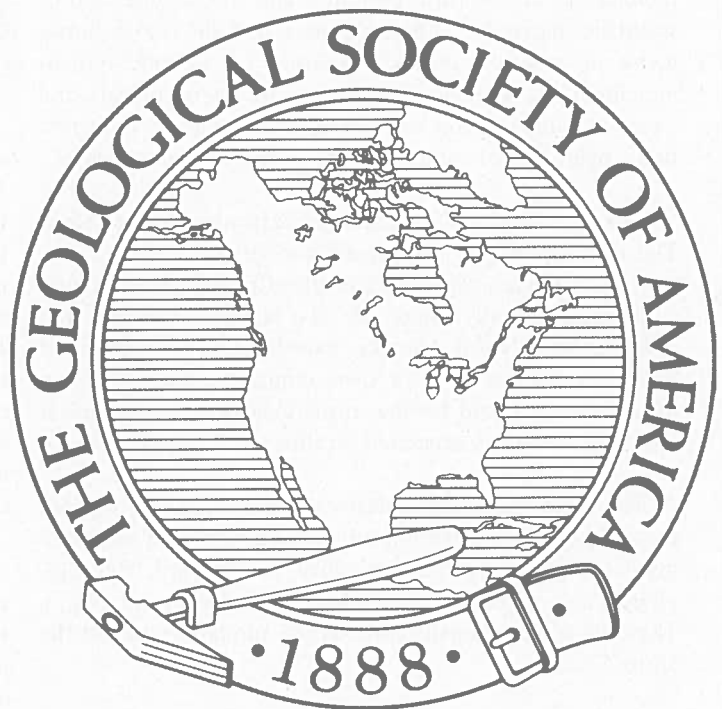
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# THE SCIENTIFIC SOCIETY FOR ALL GEOLOGICAL SCIENTISTS

## GSA Publications

Memoirs  
Special Papers  
Engineering Geology:  
    Reviews & Case Histories  
Map and Chart Series  
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*Treatise on Invertebrate Paleontology*



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3300 Penrose Place  
Boulder, Colorado 80301

## AN INTRODUCTION TO THE GEOLOGICAL SOCIETY OF AMERICA

The Geological Society of America is a not-for-profit organization dedicated to the advancement of the science of geology in North America. The Society was founded in 1888 and is incorporated in the State of New York. Headquarters offices are located in a building specifically built for that purpose in Boulder, Colorado.

GSA is a membership society with more than 12,000 Honorary Fellows, Fellows, Members, and Student Associates presently on the rolls. Its primary activities are the publication of scientific literature and the organization of scientific meetings; other activities include the disbursement of research grants, operation of an employment matching and interview service, awarding of medals and awards in recognition of outstanding scientific contributions, operation of committees, and other special activities.

The organizational structure has expanded through time. The management of the Society's affairs is under the control of its elected officers (Executive Committee and Council). Geographically there are six regional sections that cover most of North America, have their own management boards, and conduct their own annual meetings. One annual meeting is held for the entire Society each year, and it is rotated to widely separated localities in North America.

There are also seven specialty divisions that any member may join (Archaeological Geology, Coal Geology, Engineering Geology, Geophysics, History of Geology, Hydrogeology, and Quaternary Geology and Geomorphology). These divisions generally meet at the annual meeting of the entire Society.

Eight smaller specialized societies, which commonly hold their annual meetings as part of the GSA Annual Meeting, are recognized by mutual agreement as associated societies (Cushman Foundation, Geochemical Society, Geoscience Information Society, Mineralogical Society of America, National Association of Geology Teachers, Paleontological Society, Society of Economic Geologists, Society of Vertebrate Paleontology).

The Geological Society is particularly fortunate in that in 1931 it received a bequest from R.A.F. Penrose, Jr., which since then has been known as the Penrose Endow-

ment Fund. It is the income from this endowment that makes possible the disbursement of research grants and the support of some publications that would not otherwise be self-supporting. Members' dues do not support any of these special activities.

All Fellows, Members, and Student Associates of GSA receive a monthly *GSA News & Information*. This carries announcements of meetings of all six sections as well as the annual meeting, the Annual Report of the Society, reports of committees, reviews of many kinds, and general news. Each of the divisions has its own newsletter issued at irregular intervals.

The scientific publications of GSA were started in 1890 when the first volume of the *Bulletin of the Geological Society of America* was issued. It has been published continuously since then, in recent years as a monthly publication. Starting with the 1979 volume, the *Bulletin* appears in two parts. *Part I* is the continuation of the existing monthly, *Bulletin*, and *Part II* is published on microfiche. The full-length articles appear in *Part II* with summaries of these articles appearing in *Part I*. Any geoscientist is welcome to submit manuscripts for publication in the *Bulletin* or other publications of the Society, and all submitted manuscripts are subject to a standardized peer-review system.

A monthly journal designed for rapid publication of shorter articles, *Geology*, was started in 1973 and continues to grow in popularity. The Society also publishes jointly with the University of Kansas the 24-part *Treatise on Invertebrate Paleontology*. Other publications include a book series of Memoirs and a series of paper-bound, shorter Special Papers. Large maps, both black and white and in color, as well as large charts, commonly accompanied by text, are published in the Map and Chart series.

It was stated in 1901 that "we are only on the threshold of the golden era of geologic development in America." The Geological Society of America today is proud to have been an integral part of that development as it continues to play an active role in the direction of the geologic sciences of the future.

## COMMITTEE ON COMMITTEES SEEKS NOMINATIONS

The Committee on Committees requests help from all members. As is customary, an entirely new committee has been appointed by Vice-President Laurence L. Sloss. 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 do its work late in August and will present at least two nominations for each open position to the Council at its November meeting in San Diego. 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 1979 is made up of the following people: *Robert E. Boyer* (chairman), *W. G. Ernst*, *Bruce B. Hanshaw*, *Frederick T. Mackenzie*, and *Hugh R. Wynne-Edwards*.

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.

Mere listing of names for these positions will be helpful to the committee, *but you can be far more helpful*, and will ensure more thorough consideration of your candidates, *if you will attach a note explaining the special qualifications of your candidates* for particular jobs. Please be sure that your candidates are Members or Fellows of the Society.

If you can think of a better or more democratic process for providing governance of the Society, please let us know. If you think the present system is at least adequate, do your part by suggesting candidates!

Listed below are all GSA committees and organizations to which GSA has representatives or designees. Appointments to fill vacancies will be made by the Council at its fall meeting. (Duties of the committee members are described in the manual *Council Rules, Policies, and Procedures*.)

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CUT HERE

*Extended To August 15, 1979*

PLEASE RETURN THIS FORM TO HEADQUARTERS BY ~~AUGUST 1, 1979~~

**GSA Committees  
for 1980**

**Members suggested to  
serve on committees**

**GSA Representatives  
or Designees for 1980**

**Members suggested to serve as  
GSA Representatives or Designees**

Day Medal \_\_\_\_\_

ACSN \_\_\_\_\_

Geology & Public Policy \_\_\_\_\_

GSA-AEG-ASCE Joint Comm.  
on Engineering Geology \_\_\_\_\_

Headquarters Advisory \_\_\_\_\_

U.S. Natl. Comm.  
on Rock Mechanics \_\_\_\_\_

Honorary Fellows \_\_\_\_\_

U.S. Natl. Comm. on  
Tunneling Technology \_\_\_\_\_

Investments \_\_\_\_\_

Remarks: \_\_\_\_\_

Membership \_\_\_\_\_

National Medal of Science \_\_\_\_\_

Nominations \_\_\_\_\_

Penrose Conferences \_\_\_\_\_

Penrose Medal \_\_\_\_\_

Publications \_\_\_\_\_

Research Grants \_\_\_\_\_

Signature (optional) \_\_\_\_\_

# ANNOUNCEMENTS FOR 1980

Papers for all section meetings of the Geological Society of America are invited from GSA Fellows, Members, Student Associates, and nonmembers. Accepted abstracts will be published in the appropriate issue of *Abstracts with Programs*, which will be distributed as a formal publication prior to the section meeting. Depending on limitations set by the individual sections, any author may submit as many abstracts as he or she wishes; however, no more than two from any author or coauthor will be accepted for publication.

Abstracts will be selected on the basis of geologic significance, amount of new information, broad interest, and relevance to the section's geographic coverage.

GSA members are encouraged to order their section meeting book(s) on their dues statement at the member price of \$2. Nonmember price is \$4.

Abstracts, which are limited to 250 words, must be submitted camera-ready on official GSA forms that may be obtained from the local committee officers listed on the facing page or from the

Abstracts Coordinator  
Geological Society of America  
3300 Penrose Place  
Boulder, Colorado 80301

If the typing of the original copy will not reproduce satisfactorily, accepted abstracts will be retyped at GSA headquarters; the senior author will be charged \$15. There will be no opportunity for authors to review or revise the retyped material. *Abstracts submitted on other than the GSA form will be returned without consideration for the meeting.*

**PLEASE NOTE ABSTRACT DEADLINES.** Acceptance or rejection of abstracts will be based on the abstracts as submitted by the author. There will be no opportunity to revise or withdraw them. Final decisions on

acceptance or rejection of abstracts are the responsibility of the Program Committee.

**POSTER SESSIONS.** Some sections will have space for poster sessions during their 1980 meetings. It will be necessary to submit the usual 250-word abstract explaining the material on display. Even though a formal paper is not read, the abstract is printed in *Abstracts with Programs*. Decisions on whether papers are accepted for oral presentations or poster sessions will be made by the Program Committee. The authors, however, may indicate their preference if they so desire.

**STUDENT PAPERS** are welcomed and encouraged. Some sections give a Best Student Paper award. To be considered for the award, the paper must be by an individual student author, and it must be identified as being a student paper.

**ALL SLIDES** must be 2" x 2" and of a thickness that will fit comfortably in a standard carousel projection magazine. Slides should be designed for easy reading on 10-foot-wide screens by viewers who are as far away as 70 feet. Overhead projectors and chalkboards will be available on request.

**DETAILED INFORMATION** for registration, housing, field trips, short courses, guest activities, welcoming parties, business meetings and luncheons, and annual dinners, and the like, will be announced in future issues of *GSA News & Information*, as well as being included in the appropriate issues of *Abstracts with Programs*.

**EXHIBIT SPACE** may be made available at some section meetings. For information, please write or call the local committee officers listed on the facing page.

## SPECIAL NOTE TO MEMBERS LIVING OUTSIDE CONTERMINOUS UNITED STATES

Those who live outside the conterminous United States may receive copies of the 1980 *Abstracts with Programs* for the section meetings too late to take advantage of the preregistration and housing forms.

Therefore, those who are planning to attend any of the section meetings are urged to write to the appropriate local committee officers listed on the facing page for copies of the preregistration forms, housing applications, and field trip information.



# GSA SECTION MEETINGS

## South-Central

Wichita, Kansas  
March 3-4, 1980

**ABSTRACT DEADLINE: October 12, 1979**

Please submit completed abstracts to:

Program Committee Chairman, David E. Smith  
Department of Geology and Geography  
Wichita State University  
Wichita, KS 67208  
(316) 689-3140

## Southeastern

Birmingham Hyatt House  
Birmingham, Alabama  
March 27-28, 1980

**ABSTRACT DEADLINE: October 26, 1979**

Please submit completed abstracts to:

Program Committee Chairman, Michael J. Neilson  
Department of Earth Science  
University of Alabama  
Birmingham, AL 35294  
(205) 934-2243

## Northeastern

Benjamin Franklin Hotel  
Philadelphia, Pennsylvania  
March 13-15, 1980

**ABSTRACT DEADLINE: October 31, 1979**

Please submit completed abstracts to:

Program Committee Chairman, Lucian B. Platt  
Department of Geology  
Bryn Mawr College  
Bryn Mawr, PA 19010  
(215) 525-1000, ext. 353

## North-Central

Indiana University  
Bloomington, Indiana  
April 10-11, 1980

**ABSTRACT DEADLINE: November 23, 1979**

Please submit completed abstracts to:

Program Committee Chairman, Donald E. Hattin  
Department of Geology  
Indiana University  
Bloomington, IN 47401  
(812) 337-8232

## Cordilleran

Oregon State University  
Corvallis, Oregon  
March 19-21, 1980

**ABSTRACT DEADLINE: October 12, 1979**

Please submit completed abstracts to:

Program Committee Chairmen, E. J. Dasch  
Department of Geology  
Oregon State University  
Corvallis, OR 97331  
(503) 754-2484

or

E. Suess  
School of Oceanography  
Oregon State University  
Corvallis, OR 97331  
(503) 754-2296

## Rocky Mountain

Weber State College  
Ogden, Utah  
May 16-17, 1980

**ABSTRACT DEADLINE: December 21, 1979**

Please submit completed abstracts to:

Program Committee Chairman, Richard W. Moyle  
Department of Geology and Geography  
Weber State College  
Ogden, UT 84408  
(801) 626-6942

# Report of the Committee on Investments

To the Council and Membership of The Geological Society of America, Inc.:

The purpose of the Committee on Investments is to advise the Council about investment and reinvestment of the funds, securities, and other capital of the Society. The committee comprises four members and the Treasurer of the Society. In addition, there is one conferee, and the Budget Committee Member of the Executive Committee serves as a nonvoting ex officio member of this committee.

On December 31, 1978, the market value of the combined investment accounts of the Society was \$7,879,359. Adjusting for transfers to Boulder during 1978 of \$500,000, this year-end value was \$8,379,359. The corresponding value on December 31, 1977, was \$7,928,913, indicating an appreciation of 5.7% during 1978. During this same time period, the Standard & Poor's 500 Industrials Index with income increased 6.4%. The equity portion of the portfolio increased in value 16% during 1978.

At the end of 1978, the investment accounts were 57% in debt and money market instruments and 43% in equities. The income yield of the portfolio at year-end was 6.1%, while the corresponding yield a year earlier was 5.4% when the percentage of debt and money market instruments was 58%. This is the result of higher interest rates now being realized on the Society's large cash position.

The program of writing covered call options on certain securities in the portfolio continued to function during 1978. However, a rapidly rising stock market and low premium values made this activity unprofitable, and a loss of \$26,545 was realized for the year. Overall gain since inception in late 1976 has amounted to \$41,292. The committee is monitoring this activity closely to determine whether option writing should continue to be a part of the Society's investment program.

Money managers for the portfolio continue to be the Irving Trust Company and Reich & Tang, Inc., both located in New York City. The former also functions as custodian of the Society's securities. Based upon superior performance by Reich & Tang during 1978, an additional

\$1 million was transferred to that firm's management from Irving Trust Company. At December 31, 1978, Reich & Tang was managing approximately 25% of the portfolio.

Respectfully submitted,

R. L. FUCHS, Chairman;  
C. HARRY BURGESS, AUGUST GOLDSTEIN, JR.,  
DONALD A. PARKS, Members;  
WILLIAM B. HEROY, JR., Treasurer;  
M. GORDON WOLMAN, Ex Officio;  
ROBERT E. KING, Conferee

## THE GEOLOGICAL SOCIETY OF AMERICA, INC. INVESTMENTS SUMMARY December 31, 1978

Description	Book Value	Market Value
PENROSE ENDOWMENT FUND		
Cash Equivalents	\$2,100,838	\$2,100,838
Fixed Income Investments	1,686,628	1,486,021
Equities	<u>3,110,385</u>	<u>3,026,874</u>
	6,897,851	6,613,733
COMBINED RESERVE FUND		
Cash Equivalents	479,000	479,000
Fixed Income Investments	398,753	331,134
Equities	<u>377,292</u>	<u>351,811</u>
	1,255,045	1,161,945
COMBINED AWARDS FUND		
Cash Equivalents	30,000	30,000
Fixed Income Investments	68,563	57,899
Equities	<u>21,885</u>	<u>15,782</u>
	120,448	103,681
<b>TOTAL INVESTMENTS</b>	<b><u>\$8,273,344</u></b>	<b><u>\$7,879,359</u></b>

# Annual Report for 1978 The Geological Society of America

## GSA research grants awarded to 154 applicants

### GSA Research Grants awarded to 154 applicants

At its April 6 and 7 meeting, the 1979 Committee on Research Grants reviewed 254 applications and recommended 154 of them to the Council for financial support. Fifty-three grants were awarded to M.S. student applicants and 101 to students working toward Ph.D. degrees. The total amount awarded was \$84,868, with grants ranging from \$200 to \$1,500 each. Funds provided by the Society were augmented by donations from industry, former grant recipients, and GSA members, in addition to the interest from the Harold T. Stearns fund.

### Harold T. Stearns Fellowship Award

This year two recipients were chosen for the 1979 Harold T. Stearns Fellowship Award for research on one or more aspects of the geology of the circum-Pacific region. They are:

*Philip W. Signor III*, The Johns Hopkins University, Baltimore, Maryland: Shell form and function in turritelliform gastropods.

*Doris Sloan*, University of California, Berkeley: Late Quaternary-Recent environmental changes in central San Francisco Bay.

### Donation Received from Mobil Oil Corporation

A contribution of \$2,000 was received from Mobil Oil Corporation in support of the research grants program. Four promising young earth scientists were chosen as recipients of these funds, as follows:

*Joseph Anthony Curiale*, University of Oklahoma, Norman: Source rock geochemistry of the Ouachita Mountains, Oklahoma.

*Neil D. Skilton*, University of Missouri, Columbia: The temporal and spatial evolution of pore-fluid pressure in the Ouachita Basin, Arkansas and Oklahoma.

*Stephen W. Snyder*, University of North Carolina, Chapel Hill: Late Holocene infilling of a microtidal lagoon: Core Sound, N.C.

*Loretta Ann Williams*, Princeton University, Princeton, New Jersey: Sedimentary environments and diagenesis of the Bear Gulch Limestone (mid-Carboniferous, central Montana).

### Outstanding Mention

The committee singled out nine young scientists and their proposals for special mention in the belief that they should be brought to the attention of the Council and to the membership of the Society. These persons are:

*Stuart William Fagin*, University of Texas, Austin: Geology and paleogeography of the upper Paleozoic sequence in the Redding area, Klamath Mountains, California.

*Allen F. Glazner*, University of California, Los Angeles: Geology and geochemistry of the Sleeping Beauty volcanic area, central Mojave Desert, California.

*Judith Louise Hannah*, University of California, Davis: Stable isotopes and elemental mobility in a metamorphosed volcanic terrane, northern Sierra Nevada, California.

*Allan G. Krill*, Yale University, New Haven, Connecticut: Tectonics of Eastern Dovrefjell, Norway.

*Helen M. Lang*, University of Oregon, Eugene: Metamorphism of the pelitic rocks of the St. Joe-Clearwater region, northern Idaho.

*Ross David Powell*, Ohio State University, Columbus: The origin and nature of glaciomarine sediments in the Glacier Bay area, Alaska.

*Jeanine M. Schmidt*, Stanford University, Stanford, California: Mineralization and ore genesis at Kennecott, Alaska.

*Neil D. Skilton*, University of Missouri, Columbia: The temporal and spatial evolution of pore-fluid pressure in the Ouachita Basin, Arkansas and Oklahoma.

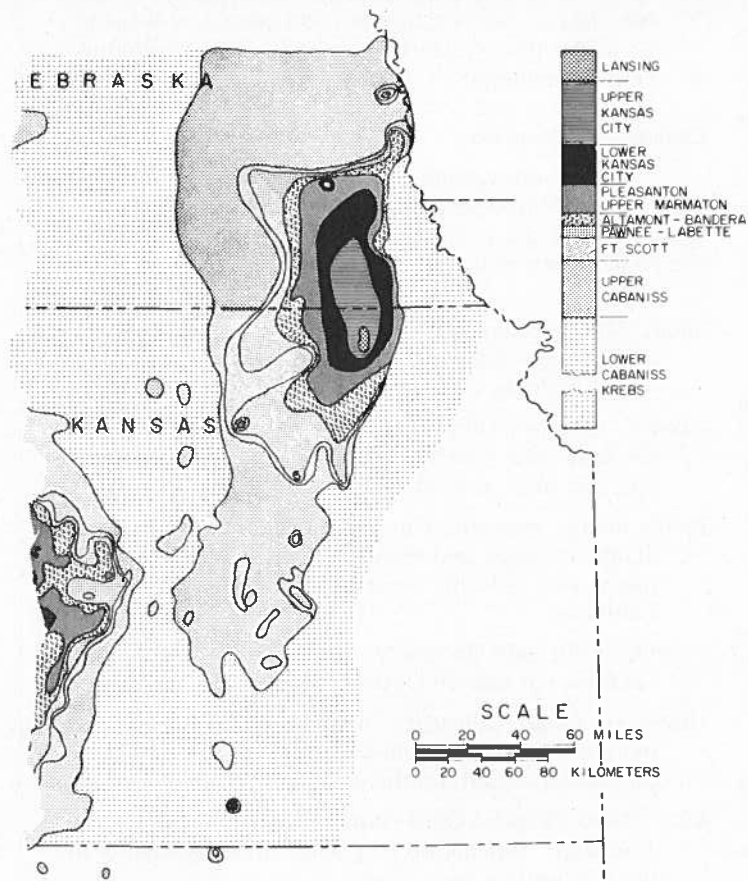
*Stephen W. Snyder*, University of North Carolina, Chapel Hill: Late Holocene infilling of a microtidal lagoon: Core Sound, N.C.

### Applications for 1980 Grants

Application forms and detailed instructions for 1980 grants will be sent, upon request, by the Executive Director, Geological Society of America, 3300 Penrose Place, Boulder, Colorado 80301. **PLEASE WRITE FOR NEW FORMS.** The deadline for filing applications is **FEBRUARY 15, 1980.**

# Pennsylvanian Paleoenvironments

**MC-23**



## PALEOENVIRONMENTAL MAPS OF PENNSYLVANIAN ROCKS, ILLINOIS BASIN AND NORTHERN MIDCONTINENT REGION

By Harold R. Wanless and Cynthia R. Wright. 1978. 160 black and white patterned maps (uniform scale about 73 mi to 1 in.), and 5 additional figures, with 32-page text. The maps are printed on one side, on 8½" x 11" sheets, and are packaged loose in an envelope. Any 2 or more maps may be super-imposed or placed side by side for examination and study . . . . . \$26.00

The environments of deposition of Pennsylvanian rocks in the Illinois basin and in the northern mid-continent region are shown in extraordinary detail on 160 sequential page-size maps of selected stratigraphic sequences, lithologic units, and environments of deposition. Lithologic and environmental units include coal swamps, underclays, shale above coal, and marine limestone beds. Pennsylvanian stratigraphers and coal and petroleum geologists will find these maps of interest.

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- GSA member discount (see reverse side of membership card) allowed when claimed.

- Orders in excess of \$25 will be accepted on open account only when originating within North America or a U.S. possession. The Society reserves the right to limit credit to organizations and individuals with established lines of credit.
- Denver metro residents—add 3½% sales tax; Boulder residents—add 5½% sales tax; Colorado residents—add 3% sales tax.

# GSA PUBLICATIONS

## Paleoenvironmental maps of Pennsylvanian rocks, Illinois basin and northern midcontinent region

MC-23 — By Harold R. Wanless and Cynthia R. Wright, 1978. In black and white, 160 patterned maps (uniform scale about 1:4,625,280) and five additional figures, on individual 8½" × 11" sheets. Thirty-two-page text. Flat in envelope: \$26.00.

The environments of deposition of Pennsylvanian rocks in the Illinois basin (Illinois, Indiana, and western Kentucky) and in the northern midcontinent region (Iowa, Nebraska, Kansas, Missouri, and northern Oklahoma) are shown in extraordinary detail on 160 sequential page-sized maps of cyclothems and other thin stratigraphic sequences.

The maps show the areal extent of selected stratigraphic sequences, the lithologic units within these sequences, and the environments of deposition of the lithologic units. Some of the more important lithologic and environmental units are coal swamps, underclays, shale that typically overlies

coal, and limestone beds that represent periods of marine incursions. The distribution and lithology of units shown on the maps permit determination of factors such as changes in land or sea level, warping of underlying rocks, sources of sedimentary material, and positions of Pennsylvanian drainage channels.

The maps are printed on one side of heavy, slick paper, and are packaged in a 9" × 12" accordion-pleated envelope. Thus, any two or more maps may be superimposed or placed side by side.

This encyclopedic study is a summary and synthesis of information accumulated by Harold R. Wanless (1898–1970) and by co-author Cynthia R. Wright, who started work on the project with Wanless in 1965 and assumed responsibility for its completion after his death.

This massive amount of geologic data, assembled in a convenient package, will be of interest to students of Pennsylvanian stratigraphy, to coal geologists, and to coal mining engineers.

## JULY BULLETIN SEPARATES

### Summaries

*At the request of members, the Summaries section may be ordered as one separate by those who have purchased the separates option. To order, write "July Summaries" on coupon.*

• S90701—Quaternary stratigraphy and chronology of Mauna Kea, Hawaii: A 380,000-yr record of mid-Pacific volcanism and ice-cap glaciation: Summary.

*Stephen C. Porter, Department of Geological Sciences and Quaternary Research Center, University of Washington, Seattle, Washington 98195.*

• S90702—Patch-reef communities and succession in the Oligocene of Antigua, West Indies: Summary.

*S. H. Frost, M. P. Weiss, Department of Geology, Northern Illinois University, DeKalb, Illinois 60115 (present*

*address, Frost: Gulf Research & Development Company, Houston Technical Services Center, P.O. Box 36506, Houston, Texas 77036).*

• S90703—A sorting mechanism for a riffle-pool sequence: Summary.

*Thomas Lisle, Pacific Southwest Forest and Range Experiment Station, Forest Service, U.S. Department of Agriculture, Berkeley, California, stationed at Arcata, California 95521.*

### Bulletin Briefs

*Titles and abstracts of conventional articles in the July 1979 GSA Bulletin, Part I are provided on the following pages to aid members who have purchased the separates option to select Bulletin, Part I separates of their choice. See instructions for ordering on page 111.*

• 90704—Quaternary peat deposits on the Atlantic inner shelf of the United States.

*Michael E. Field, U.S. Geological Survey, 345 Middlefield Road, Menlo Park, California 94025; Edward P. Meisburger, U.S. Army Coastal Engineering Research Center, Ft. Belvoir, Virginia 22060; Edward A. Stanley, Graduate School, Indiana University of Pennsylvania, Indiana, Pennsylvania 15701; S. Jeffress Williams, U.S. Army Coastal Engineering Research Center, Ft. Belvoir, Virginia 22060 (11 p., 5 figs., 2 tbls.)*

Twenty-one upper Quaternary peat samples have been obtained from vibracores collected along the inner continental shelf of the Atlantic coast of the United States. Radiocarbon ages and pollen identifications from the peats, coupled with those from onshore borings and published data, provide additional information on the latest history of the Atlantic shelf. The radiocarbon ages cluster in two groups: early and middle Holocene time (10,000 to 5,000 B.P.) and late Pleistocene time (35,000 to 20,000 B.P.). Although ages and depths of the upper Pleistocene peats show some agreement

with published graphs of changes in sea level, pollen data indicate that most of the peats formed in terrestrial environments and therefore may be unreliable as indicators of sea level. The Holocene peats were deposited in both marine and terrestrial environments.

Correlation of the stratigraphic sequences in the cores containing peat with high-resolution seismic reflection profiles indicates a history of transgressive erosion on the inner shelf. Only remnants of carbonaceous sediments originally deposited in bogs, ponds, estuaries, and salt-marsh lagoons are present in the shallow subsurface on the inner shelf. These remnants, which are discontinuous and usually associated with erosional unconformities, provide evidence of regional marine planation of the shelf by the rising Holocene sea.

- 
- 90705—Ages of deposition, deformation, and intrusion of Cretaceous rocks, eastern St. Croix, Virgin Islands.

*R. C. Speed, Department of Geological Sciences, Northwestern University, Evanston, Illinois 60201; Lee C. Gerhard, North Dakota Geological Survey, Grand Forks, North Dakota 58202; E. H. McKee, U.S. Geological Survey, Menlo Park, California 94025. (4 p., 1 fig., 1 tbl.)*

The island of St. Croix is a pinnacle on an east-trending submarine ridge, the St. Croix platform, which is separated from the Puerto Rico–Virgin Islands platform to the north by the Virgin Islands basin. To the southwest, the St. Croix platform is flanked by the Caribbean ocean basin, and to the southeast, by the Aves Ridge. Because St. Croix is the only exposure above sea level of the St. Croix platform, the geology of the island provides the only glimpse of the detailed constitution of the platform. Whetten (1966) showed that St. Croix is almost entirely underlain by deformed layered rocks of known and presumed Late Cretaceous age. The uniformity and extent of the Cretaceous basement of St. Croix allow the proposition that such rocks compose the bulk of the platform and that a detailed knowledge of their history is crucial to theories of the evolution of the Greater Antilles. This study presents evidence on ages of deposition, deformation, and intrusion in the East End district of St. Croix, the eastern third of the island.

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- 90706—Emplacement temperatures of unsorted and unstratified deposits of volcanic rock debris as determined by paleomagnetic techniques.

*Richard P. Hoblitt, Karl S. Kellogg, U.S. Geological Survey, Federal Center, Denver, Colorado 80225. (10 p., 15 figs.)*

Unsorted and unstratified deposits of volcanic rock debris typically flank recently active stratovolcanoes. It is often difficult, using standard geologic procedures, to establish whether a particular deposit was emplaced by a pyroclastic flow, lahar, rock avalanche, or glacier. Determination of the emplacement temperatures of clasts contained in the deposit aids in discriminating among some of these possibilities. The emplacement temperature of a clast can be estimated by

analyzing its thermoremanent magnetization. To do this, oriented samples of the clasts are submitted to progressive thermal demagnetization; the directions and magnitudes of the resulting residual remanent vectors provide the information necessary to estimate the temperatures at which the clasts were emplaced. Studies of samples that were given artificial emplacement temperatures reveal that estimates are within  $\pm 25$  °C of the actual values. The temperature range within which estimates are possible depends on the thermoremanent magnetization acquisition curve of a clast. Data obtained from deposits of volcanic rock debris from Mount St. Helens, Washington, indicate that for andesitic and dacitic rocks, the range is roughly 100 to 550 °C. The procedure probably can be applied to other geologic problems that require temperature information.

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- 90707—Middle Eocene pelagic microfossils from the Nazca Plate.

*William T. Coulbourn, Johanna M. Resig, Hawaii Institute of Geophysics, University of Hawaii, Honolulu, Hawaii 96822 (present address, Coulbourn: Geological Research Division, Scripps Institution of Oceanography, La Jolla, California 92093). (8 p., 7 figs., 3 tbls.)*

A piston core of the oldest sediment yet recovered from the Nazca Plate was retrieved from the outer ridge of the Peru-Chile Trench, below the present calcite compensation level (CCD). The core, PCOD-19, contains assemblages of nanofossils of the upper middle Eocene *Discoaster saipanensis* Subzone, whereas the foraminifera are assigned to earlier zones of the middle Eocene, suggesting reworking. We suggest that these fossils, as well as basalt pebbles in the core, indicate that normal pelagic sedimentation was interrupted and that tectonic events on the sea floor are in part responsible for the disturbances in obducted stratigraphic sequences.

- 
- 90708—Mamonia Complex, southwest Cyprus: Evolution and emplacement of a Mesozoic continental margin.

*A.H.F. Robertson, Grant Institute of Geology, West Mains Road, Edinburgh EH9 3JW, United Kingdom; N. H. Woodcock, Department of Geology, Downing Street, Cambridge CB2 3EQ, United Kingdom. (15 p., 8 figs.)*

The Mamonia Complex in southwest Cyprus comprises an assemblage of Upper Triassic to Lower Cretaceous sedimentary rocks, Upper Triassic mafic igneous rocks, and subordinate metamorphic rocks, which together lie adjacent to the southwest margin of the Troodos ophiolitic complex and its Upper Cretaceous sedimentary cover.

The sedimentary facies of the Mamonia Complex record the progressive development of a Mesozoic passive continental margin. Initial crustal subsidence associated with deltaic and turbiditic terrigenous clastic sedimentation was followed by continental rifting and then the genesis of marginal oceanic crust in Late Triassic time. Subsequent pelagic and hemipelagic deposition during Jurassic and Early Cretaceous time reflects passive continental margin subsidence. Shallow-water calcareous material derived from an

adjacent carbonate platform, probably now located in southern Turkey, was deposited on the margin by gravity flows. After initial rifting, coarse terrigenous clastic input was minimal until a major influx of terrigenous material in Early Cretaceous time, possibly contemporaneous with an episode of renewed ocean-floor spreading in the area. Allowing for the 90° Tertiary rotation of Cyprus, the Mamonia rocks formed part of the northern margin of a small ocean basin during Jurassic and Cretaceous time. The Troodos Complex is likely to represent a younger surviving fragment of the same basin. By Late Cretaceous time, ocean-floor spreading had ended, followed in the Maastrichtian by disruption, folding, and emplacement of the Mamonia sedimentary sequences onto the Troodos ophiolitic rocks. The Mamonia sedimentary rocks are now arranged in subhorizontal sheets which, on the basis of fold vergence and facing directions, were emplaced toward the present northeast—that is, prior to paleorotation, toward the original southeast. The displaced sheets probably represent down-margin gravity slides. The evidence is compatible with both the Mamonia and Troodos Complexes having a local (“external”) origin in contrast to the currently favored “internalist” hypothesis involving long-distance transport.

• 90709—Saline water in the foothill suture zone, Sierra Nevada Range, California.

*Seymour Mack, Lorraine M. Ferrell, School of Natural Sciences, Department of Geology, California State University, Fresno, California 93740. (10 p., 7 figs., 2 tbls.)*

Thirty-one wells yielding sodium chloride water and dissolved solids averaging 1,300 mg per liter have been drilled into granitic rocks of the western Sierra Nevada foothills of Fresno and Madera Counties, California. Their chemistry contrasts sharply with that of thousands of other wells tapping granitic rocks in the area which yield good quality bicarbonate water that is low in dissolved solids. The sodium chloride wells are along a N30°W, 85-km-long trend, herein referred to as the “foothill lineament.” The foothill lineament appears to be an extension of the foothill suture into the intervening granitic terrane between the Melones Fault on the north and the Kings-Kaweah suture on the south. Based on various chemical parameters such as B/Cl and Br/Cl, the sodium chloride waters appear to be marine carbonate in origin, albeit strongly diluted with meteoric water. Several hypotheses are advanced to explain why saline waters are concentrated along the foothill lineament, although all

arguments have serious drawbacks. No matter how the sodium chloride waters have originated, the foothill lineament is believed to define a profound structural element, possibly contiguous with the early Mesozoic foothill subduction complex, along which these waters have migrated toward the surface.

• 90710—Geology and petrology of the McMurdo Volcanic Group at Rainbow Ridge, Brown Peninsula, Antarctica.

*Philip R. Kyle, Institute of Polar Studies, Ohio State University, Columbus, Ohio 43210; John Adams, Department of Geology, Victoria University, Wellington, New Zealand; Peter C. Rankin, Soil Bureau, Department of Scientific and Industrial Research, Lower Hutt, New Zealand. (13 p., 9 figs., 8 tbls.)*

Strongly undersaturated rocks of the McMurdo Volcanic Group of late Cenozoic age at Brown Peninsula form three eruptive cycles of basaltic to salic lavas. Two cycles at Rainbow Ridge show a basanite to nepheline-hawaiite to nepheline-benmoreite and a basanite to nepheline-benmoreite eruptive sequence. Fractional crystallization processes for the sequence have been modeled using major-element least squares mass-balance models. Two models can explain the basanite to nepheline-hawaiite transition. Model 1 involves fractionation of olivine, clinopyroxene, plagioclase, opaque oxides, and apatite; model 2 is similar, but also includes kaersutite. The nepheline-hawaiite to nepheline-benmoreite transition involves fractionation of clinopyroxene, kaersutite, plagioclase, opaque oxides, and apatite. Trace-element (including rare-earth element) contents calculated using solutions from the mass-balance models are compatible with both models for the formation of nepheline-hawaiite. Excellent agreement is shown between calculated and observed trace-element data for the nepheline-benmoreite. Small pods of basanite, derived from a garnet peridotite mantle by a low degree of partial melting, have been intruded into the crust where subsequent fractional crystallization formed the intermediate and salic rocks. This process has apparently occurred repeatedly at many eruptive centers in the McMurdo Sound area.

• 90711—Relict oysters on the United States Atlantic continental shelf: A reconsideration of their usefulness in under-

## ORDERING SEPARATES FOR 1979

The system for ordering separates has changed. Those members who have purchased separates of conventional articles for 1979 have received, or will receive in the near future, 10 or 20 coupons and instructions for ordering separates in 1979.

It is not too late to purchase separates for 1979. The

price to members having paid their basic membership dues is \$5 for 10 separates and \$10 for 20 separates. All orders and inquiries should be addressed to Bulletin Separates Division, Geological Society of America, 3300 Penrose Place, Boulder, Colorado 80301.

standing late Quaternary sea-level history: Discussion and reply. (6 p., 3 figs.)

Discussion: *K. O. Emery, Woods Hole Oceanographic Institution, Woods Hole, Massachusetts 02543; A. S. Merrill, National Marine Fisheries Service, Woods Hole, Massachusetts 02543.*

Reply: *Ian G. Macintyre, Department of Paleobiology, Smithsonian Institution, Washington, D.C. 20560; Orrin H. Pilkey, Department of Geology and Marine Laboratory, Duke University, Durham, North Carolina 27706; Robert Stuckenrath, Radiation Biology Laboratory, Smithsonian Institution, Washington, D.C. 20560.*

• 90712—The Selkirk fan structure of the southeastern Canadian Cordillera: Discussion and reply. (4 p.)

Discussion: *Raymond A. Price, Department of Geological Sciences, Queen's University, Kingston, Ontario, K7L 3N6 Canada.*

Reply: *Richard L. Brown, Department of Geology, Carleton University, Ottawa, Ontario K1S 5B6 Canada; Clinton R. Tippett, Department of Geological Sciences, Queen's University, Kingston, Ontario, K7L 3N6 Canada.*

• 90713—Subduction of the Kula Ridge at the Aleutian Trench: Discussion and reply. (4 p., 1 fig.)

Discussion: *Edward Farrar, John M. Dixon, Department of Geological Sciences, Queen's University, Kingston, Ontario K7L 3N6 Canada.*

Reply: *Stephen E. DeLong, Paul J. Fox, Department of Geological Sciences, State University of New York at Albany, New York 12222; Fred W. McDowell, Department of Geological Sciences, University of Texas at Austin, Austin, Texas 78712.*

• 90714—Volcanic structure of the crest of the Puna Ridge, Hawaii: Geophysical implications of submarine volcanic terrain: Discussion and reply. (2 p.)

Discussion: *Raymond J. Goldie, 9 Palmerston Gardens, Toronto, Ontario M6G 1V8 Canada.*

Reply: *Daniel J. Fornari, Lamont-Doherty Geological Observatory and Department of Geological Sciences, Columbia University, Palisades, New York 10964; Alexander Malahoff, National Ocean Survey, National Oceanic and Atmospheric Administration, Rockville, Maryland 20852.*



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