GSA news & information

VOLUME 2, NUMBER 2

FEBRUARY 1980

GSA publications released in 1979

Because many members of GSA may be unaware of the number and variety of publications produced by their organization, or may have missed publication announcements, we provide this summary of GSA's 1979 publications.

BOOK PUBLICATIONS

Special Paper 180—*Ash-Flow Tuffs,* edited by C. E. Chapin and W. E. Elston, 220 p.

Memoir 152—*Cenozoic Tectonics and Regional Geophysics of the Western Cordillera,* edited by Robert B. Smith and Gordon P. Eaton, 396 p.

Reviews in Engineering Geology, Volume IV—*Geology in the Siting of Nuclear Power Plants,* edited by Allen W. Hatheway and Cole R. McClure, Jr., 264 p.

Microform Publication 9—*Questions on Geologic Principles,* by Eduard Reyer; English Translation by Allen Keller, Werner H. Will, and D. Alan Youel, 136 p. (2 fiche).

Treatise on Invertebrate Paleontology—Part A (Introduction), 596 p.

MAP AND CHART PUBLICATIONS

MC-25—Geophysical atlas of the East and Southeast Asian Seas, by Hayes and others (6 sheets, 8 p. text)

MC-28A—Alaska Peninsula-Kodiak Island-Aleutian Trench, by R. von Huene, G. W. Moore, J. C. Moore (2 sheets, 4 p. text)

MC-28B—Southern part of Northern Coast Ranges and Sacramento Valley, California, by J. Suppe (1 sheet, 8 p. text)

MC-28C—Major tectonic elements and tectonic problems along the line of section from northeastern Oregon to west-central Montana, by Donald W. Hyndman (1 sheet, 12 p. text)

MC-28D—Geologic structure section across southern Klamath Mountains, Coast Ranges, and seaward of Point Delgada, California, by William P. Irwin and Michael D. Dennis (1 sheet, 1 p. text)

MC-28E—Cross section of the Sierra Nevada from Madera to the White Mountains, central California, by Paul C. Bateman (2 sheets, 4 p. text)

MC-28F—Geologic map and cross section, eastern Ouachita Mountains, Arkansas, by George W. Viele (1 sheet, 8 p. text)

MC-28G—Geologic cross section of the continental margin off San Luis Obispo, the southern Coast Ranges, and the San Joaquin Valley from offshore Point Sur to Madera, California, by Donald C. Ross, and David S. McCulloch (1 sheet, 12 p. text)

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

MC-29—Geologic map of the Ronda ultramafic complex, southern Spain, by John S. Dickey, Margaret T. Lundeen, and Masaaki Obata (1 sheet, 4 p. text)

MC-30—Geologic map of Mauna Kea Volcano, Hawaii, by Stephen C. Porter (1 sheet, 4 p. text)

MC-31—Geology and structure of the southern part of the Tobacco Root Mountains, southwestern Montana, by C. J. Vitaliano and William S. Cordua (1 sheet, 12 p. text)

MC-32—Tectonic map of South America, published under the auspices of Ministry of Mines and Energy, DNPM, Brazil (distributed by GSA) (2 sheets, 104 p. text)

MC-33—International atlas of ophiolites, published under the auspices of IUGS, W. P. Irwin and others (distributed by GSA) (4 sheets, 16 p. text)

MC-34—Bathymetry of the Peru-Chile continental margin and trench, by L. D. Kulm and others (10 sheets, 2 p. text)

(continued on next page)

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PERIODICALS

BULLETIN
Articles published (3,043 total p.)
Part I/Part II, 44
Medium length and old format, 85
Discussions, 29
Map Summaries, 6

GEOLOGY
Articles published (624 total p.)
Articles and Penrose Conference Reports, 123
Comments, 29
Book Reviews, 21

OTHER PUBLICATIONS

Abstracts with Programs, annual meeting and six section meetings (559 total p.)
Division newsletters, 11 (82 total p.)
Information for Contributors
Membership Directory, 1979, 178 p.
Memorials, Volume IX, 122 p.
News and Information, 12 issues (192 total p.)
Report of the Committee on Geology and Public Policy, *Geologic information—problems in transfer from scientist to policy maker,* 24 p.
Reprints
Treatise, Parts N^3, O, E, P, and H
Rock Color Chart

UPDATE

Please send your recommendations to the GSA Nominations Committee

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 indeed even the formal nominating, which are done by the Council. However, the committee is charged with the task of recommending several persons, each of whom they consider fully qualified, for each of the elective posts. In fact, the Council has been asked to consider the desirability in the future of submitting a dual list of nominees for each councilor position to the membership for election.

This all emphasizes the importance of suggestions from the membership to assist the committee in their deliberations.

Please send your suggestions to headquarters and they will be forwarded to the committee as soon as its membership is firm.

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 not been set, but it most probably will be late March or early April. All suggestions received at headquarters prior to the meeting will be forwarded to the committee. Nominations received too late for this year's consideration will be retained for attention next year.

Kinney becomes GSA map editorial consultant

Douglas M. Kinney, an Associate Editor of the GSA *Bulletin* for the past seven years, retired from the U.S. Geological Survey early in January 1980. He had served as the Survey's Geologic Map Editor. As an Associate Editor for GSA, Doug served ably on a volunteer basis, providing invaluable advice, reviews, and assistance in the publication of some twenty geologic maps in GSA's Map and Chart series.

Now self-employed, Doug Kinney has consented to provide slightly expanded and more direct assistance to GSA's map publication program as an editorial consultant to the GSA Publication Department, which is under the direction of the Science Editor. With his office in Washington, D.C., Doug's services will be of special value because of his ability to coordinate map production and printing between GSA's Boulder office and Williams and Heintz Map Corporation, GSA's Washington map printers.

During 1979, GSA published twelve maps in its Map and Chart series, which is more than one-third of the entire production in this series since it was inaugurated twenty years ago. The 1979 level of "MC" production is expected to continue for at least the next few years. Doug Kinney's contribution to GSA will thus continue into the future.

GSA News & Information
Vol. 2, no. 2 February 1980
GSA NEWS & INFORMATION (ISSN 0164-5854) is the monthly newsletter of The Geological Society of America, Inc., P.O. Box 9140, Boulder, Colorado 80301. Second-class postage rates paid at Boulder, Colorado, and at additional mailing office.
Prepared from contributions from the staff and membership by John C. Frye, Executive Director; James R. Clark, Publications Manager; and June Thomas, Judy Hall, and Ann Fogel, Production Assistants.

Articles in *Bulletin, Part II,* February 1980

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 separates 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. Recent studies in Precambrian geology of the Adirondack Mountains—An introduction, by William D. Romey. Doc. no. M00201. (On microfiche: 16 p., 1 fig.)
2. Structural synthesis of the southern and central Adirondacks as a whole and plate-tectonics interpretations, by James McLelland and Yngvar Isachsen. Doc. no. M00202. (On microfiche: 85 p., 12 figs.)
3. Polyphase Precambrian deformation and stratigraphic relations, central to southeastern Adirondack Mountains, New York: A reinterpretation, by Brian Buddington Turner. Doc. no. M00203. (On microfiche: 33 p., 8 figs.)
4. Fold growth and transposition in metasedimentary rocks of the southeastern Adirondacks, by James W. Granath and Noel Barstow. Doc. no. M00204. (On microfiche: 23 p., 9 figs.)
5. Adirondack mafic granulites and a model lower crust, by Richard O. Sack. Doc. no. M00205. (On microfiche: 94 p., 14 figs., 12 tables)
6. Stark Complex (Dexter Lake area): Petrology, chemistry, structure, and relation to other green rock complexes and layered gneisses, northern Adirondacks, New York, by Brian S. Brock. Doc. no. M00206. (On microfiche: 62 p., 14 figs., 1 table)
7. A structural model for the northwestern Adirondacks based on leucogranitic gneisses near Canton and Pyrites, New York, by William D. Romey, William T. Elberty, Jr., Russell S. Jacoby, Roy Christoffersen, Tracy Shrier, and Douglass Tiebohl. Doc. no. M00207. (On microfiche: 84 p., 13 figs., 2 tables)
8. Metamorphic conditions at the northern end of the northwest Adirondack Lowlands, by Edward F. Stoddard. Doc. no. M00208. (On microfiche: 28 p., 4 figs., 5 tables)
9. Geology and petrogenesis of marbles in the Dekalb area of northern New York, by Gerald M. Ross. Doc. no. M00209. (On microfiche: 42 p., 14 figs., 4 tables)
10. Rare-earth–element geochemistry of anorthosite and related rocks from the Adirondacks, New York, and other massif-type complexes, by Lewis D. Ashwal and Karl E. Seifert. Doc. no. M00210. (On microfiche: 26 p., 4 figs., 2 tables)
11. Evaluation of coexisting garnet-biotite, garnet-clinopyroxene, and other Mg-Fe exchange thermometers in Adirondack granulites, by Steven R. Bohlen and Eric J. Essene. Doc. no. M00211. (On microfiche: 35 p., 6 figs., 5 tables)
12. Calc-silicate reactions in Adirondack marbles: The role of fluids and solid solutions, by J. W. Valley and E. J. Essene. Doc. no. M00212. (On microfiche: 96 p., 14 figs., 6 tables)
13. Paleomagnetic evidence in support of a middle Proterozoic (Helikian) collision between North America and Gondwanaland as a cause of the metamorphism and deformation in the Adirondacks, by Carl K. Seyfert. Doc. no. M00213. (On microfiche: 27 p., 5 figs., 2 tables)

Adirondack Symposium papers in February *Bulletin*

The February 1980 issue of the GSA *Bulletin* is the first of what will be intermittently appearing sets of papers that are products of symposia held at, mainly, GSA meetings. This issue can be used by members as an example of how the wide fexibility of format of the *Bulletin* can provide rapid publication of a coordinated set of major up-to-date contributions on a special topic or a particular area.

The February *Bulletin* consists of 15 articles on the geology of a large classic area in the eastern United States, the Adirondack Mountains. The topics range from detailed structural analyses to plate-tectonics concepts to geothermometry.

William D. Romey was the convener of the Adirondack symposium at the March 1979 Northeastern Section Meeting at Hershey, Pennsylvania. His outstanding effort in soliciting and assembling the manuscripts, overseeing their review, and working with the *Bulletin* editorial staff cannot be overemphasized. The *Bulletin* staff would like to thank Bill Romey, to nominate Carl K. Seyfert as a candidate for the "Longest Title" award (23 words), and to suggest a medal be given to Brian S. Brock for innovation in English spelling in his manuscripts.

In February *Geology* (separates not available)

1. Dissolution of salt deposits by brine density flow, by R. Y. Anderson, D. W. Kirkland
2. Chitinozoanlike microfossils in a late Precambrian dolostone from Saudi Arabia, by P. L. Binda, M. M. Bokhari
3. Paleoseismicity of the Alpine fault seismic gap, New Zealand, by J. Adams
4. Matapan trench (Ionian Sea): Example of trench disorganization?, by J. Mascle, P. Le Quellec
5. Plate settings and provenance of sands in modern ocean basins, by W. R. Dickinson, R. Valloni
6. Petrologic characteristics of mid-Tertiary volcanic suites, Chihuahua, Mexico, by K. L. Cameron, M. Cameron, W. C. Bagby, R. E. Drake, E. J. Moll
7. Radiometric dating of ash partings in Alaskan coal beds and upper Tertiary paleobotanical stages, by D. L. Turner, D. M. Triplehorn, C. W. Naeser, J. A. Wolfe
8. Glacially thrust bed rock—An indication of late Wisconsin climate in western New York State, by D. E. Andrews
9. New radiocarbon dates from the inner Continental Shelf off southeastern Massachusetts and a local sea-level–rise curve for the past 12,000 yr, by R. N. Oldale, C. J. O'Hara
10. Penrose Conference Report: Granite II—Near-surface batholiths, related volcanism, tectonism, sedimentation, and mineral deposition, by D. W. Hyndman, C. J. Vitaliano, L. J. Suttner
11. Gondwanaland reunited, by L. King

UPDATE

Cascadia Conference to be held May 5–8, 1980

- **Juan de Fuca–North American Plate Interactions**
- **May 5–8, 1980**
- **Salishan Lodge, Gleneden Beach, Oregon**

The purpose of the conference is to identify the major scientific problems and experiments related to plate-plate interactions in the Pacific Northwest. Topics include plate motions, ridge processes, ocean-land transition zones, continental geology, arc magmatism, and subduction processes. Conference format: invited review papers; contributed papers on new areas of research; discussion sessions. Indicate research interest and contribution to conference. Send inquiries to Vern Kulm, School of Oceanography, Oregon State University, Corvallis, Oregon 97331. Deadline: February 29, 1980.

Report of the 20th U.S. Symposium on Rock Mechanics

The 20th Symposium on Rock Mechanics was held June 4–6, 1979, in Austin, Texas, under the sponsorship of the University of Texas in cooperation with the U.S. National Committee for Rock Mechanics.

Seventy-eight papers were presented in 16 sessions covering mining and tunneling, fracturing of rock, mathematical modeling, underground storage, slope stability, blasting and blasting vibrations, oil shale applications, field insturmentation and measurement, ground support and reinforcement, and in situ stresses.

The day prior to the symposium, the U.S. National Committee for Rock Mechanics held its annual meeting, at which the following activities were reported:

1. Funding of $170,000 has been requested from the U.S. Geological Survey (50%), Department of Energy (25%), and the National Science Foundation (25%) for the 18-month investigation for the Federal Government by the Panel on Rock Mechanics Research Requirements.
2. A six-member delegation of the committee represented the United States at the council meetings of the International Society for Rock Mechanics and the 4th International Congress on Rock Mechanics in Montreaux, Switzerland, September 2–8. Thomas C. Atchison, a past chairman of the USNC/RM, was elected to a 4-year term as Vice-President for North America and Senior Vice-President, ISRM. A new Commission on Case Histories also was established, prospectively to be chaired by the United States.
3. The National Committee is planning a trial periodic publication soon.

The 21st U.S. Symposium is scheduled to be held at the University of Missouri, Rolla, May 27–30, 1980. Additional details can be obtained from David A. Summers, Rock Mechanics and Explosives Research Center, University of Missouri-Rolla, Rolla, Missouri 65401. The telephone is (314) 341-4365.

Cordilleran '78 guidebooks still available

The guidebook for the 1978 Cordilleran GSA Meeting held in Tempe, Arizona, is still available. It was prepared for 13 field trips:

1. Terraces of the Lower Salt River Valley in relation to the late Cenozoic history of the Phoenix Basin, Arizona.
2. Geology of the Pinacate volcanic field.
3. Lithium pegmatites of the White Picacho district, Maricopa and Yavapai Counties, Arizona.
4. Precambrian Pike's Peak iron-formation, central Arizona.
5. The Sacaton porphyry copper deposit.
6. The Supersitition cauldron complex.
7. Groundwater recharge with sewage effluent.
8. Precambrian metavolcanic rocks of the Squaw Peak area, Maricopa County, Arizona.
9. Earth fissures and land subsidence, eastern Maricopa and northern Pinal Counties, Arizona.
10. Geology of the Palo Verde nuclear generating station and adjacent areas, Maricopa County, Arizona.
11. Paleozoic biostratigraphy and paleontology along the Mogollon Rim, Arizona.
12. Barringer meteorite crater, Coconino County, Arizona.
13. The eruptive mechanism of the Peridot Mesa Vent, San Carlos, Arizona.

Of particular importance are the papers dealing with the terraces on the Salt River which involve a study of the caliche as well as the tectonic movements in the Mazatal Mountains and the possible subsidence of the Phoenix Basin. The guidebook contains many photographs, several dealing with the article about development of earth cracks in the valley with excessive withdrawal of ground water.

The guidebook contains 176 pages, has an 8½ x 11 format, and can be obtained at a cost of $6.60, including postage and mailing from the Arizona Bureau of Geology and Mineral Technology, 845 N. Park Avenue, Tucson, AZ 85719.

Thanks to volunteers for committee work

The GSA Council has expressed its appreciation to the many members who have volunteered for committee work of the Society during the past year. Volunteers are considered and selected by the Committee on Committees. Each year there are only a relatively few slots to be filled; therefore only a small fraction of those volunteering have been given committee assignments. GSA members are strongly encouraged to continue volunteering for these important assignments. The roster of volunteers is the prime source of candidates for consideration by the Committee on Committees and the Council.

COUNCIL ACTIONS, FALL 1979

Fall Meeting, November 4 and 7, 1979, San Diego, California

1. Adopted the *Annual Report of 1978* as the report of the Council.

2. Approved the 1980 operating budget.

3. Approved certain financial resolutions.

4. Named the President of GSA as its delegate to the 1980 International Geological Congress in Paris.

5. Ratified the 1979 award winners selected by the Engineering Geology Division and the Hydrogeology Division.

6. Adopted a resolution of thanks to outgoing officers, councilors, committee people, and all those responsible for the successful San Diego Annual Meeting.

7. Selected members for the 1980 committees and to be Society designees/representatives to non-GSA groups.

8. Ratified the slate for the 1980 Committee on Committees.

9. Appointed the 1980 GSA Auditing Committee; approved the revised statement of purpose and procedures of the Auditing Committee.

10. Assigned corporate officers to attend the 1980 section annual meetings.

11. Ruled that for purposes of the annual and sectional meetings, scientific field trips must be of a demonstrable scientific character and of geological interest.

12. Discussed ways and means of preparing for GSA's centennial in 1988; approved the draft Centennial Program Statement entitled "The Decade of North American Geology"; ratified the selection of a development consulting firm in connection with GSA's fund-raising program.

13. Confirmed the following persons as members of the local committee for the 1982 Annual Meeting in New Orleans: Alan F. Thomson, Vice-Chairman; William W. Craig, JTPC Chairman; and Charles G. Groat, Field Trip Chairman. Jules Braunstein was previously approved as General Chairman.

14. Ratified the procedural change in the Hydrogeology Division bylaws regarding the O. E. Meinzer Award.

15. Accepted the principle of the report of the Program Review Committee entitled "GSA Council Policy for Annual Meeting Planning" and looked forward to its early implementation.

16. Approved two Penrose Conference proposals; instructed the committee to inform conference proposers that the budget for a conference must be constructed not to exceed $325 for a five-day conference and that economies be instituted wherever possible; requested the committee to prepare guidelines on finances and site selection.

17. Advanced 30 Members to Fellowship and ratified the election of 136 candidates to Membership in the Society.

18. Modified the existing rules by setting no limit on the number of volunteered abstracts on which an individual's name may appear; retained the rule that an individual may present orally only one volunteered paper at a GSA annual meeting.

19. Voted that articles of up to 10 printed pages (35 manuscript pages) can be accepted with the approval of the Science Editor for publication in the *Bulletin, Part I* medium-length format.

20. Instructed that citations and acceptance speeches of medalists and division award winners be published in *Bulletin, Part I.*

21. Received the report of a University Microfilms International representative concerning the present status of microfiche publication.

22. Ratified the actions of the Investments Committee taken during its September 27–28, 1979, meeting in New York City involving the various funds in the portfolio of the Society.

23. Agreed to support the *Treatise on Invertebrate Paleontology* for 1980 by a contribution of $20,000.

24. Approved the policy of the publication of all reports, notes, and discussions of North American Commission on Stratigraphic Nomenclature in the GSA *Bulletin.*

25. Appointed specific councilors to serve as liaison between the divisions and the Council in order to improve communications.

26. Accepted reports from standing committees, sections, divisions, and designees/representatives to non-GSA groups.

27. Named Leon T. Silver as GSA's Member on the AGI Governing Board for 1980; cast GSA's vote as approving the proposed amendment to the AGI constitution regarding terms on the Governing Board.

28. Set January 30–February 1, 1980, for the Executive Committee, Investments Committee, and Associated Society Presidents/GSA Executive Committee meetings in Boulder, Colorado.

29. Selected May 13–14, 1980, for the spring meeting of the Council in Boulder, Colorado.

30. Took other minor actions, records of which are on file at headquarters.

★ ★

SLIDES LOST IN SAN DIEGO?

Call GSA Meetings Department (303) 447-2020

UPDATE

Mineralogical Association of South Africa (MASA)

The Mineralogical Association of South Africa held its inaugural meeting at Geokongres 79 at the University of Port Elizabeth on September 26, 1979. The aims of the association are (1) to promote the study and application of mineralogy in the minerals industry and related fields, (2) to coordinate mineralogical studies in South Africa, and (3) to promote liaison of South African mineralogists with their colleagues locally and in other countries.

At present MASA has approximately 120 members in South Africa, and would like to extend its membership overseas.

Members are accommodated on the following basis:

1. Corporate members of the Geological Society of South Africa (GSSA) are eligible for Ordinary Membership of MASA and will be admitted on application.
2. A Student Member of GSSA shall be eligible to become a Student Member of MASA on application.
3. Any person with a real interest in the aims of MASA may become an Associate Member on application and approval by the Executive Committee.

For further information, please contact the Secretary-Treasurer at MASA, c/o The Geological Society of S.A., P.O. Box 61019, Marshalltown 2107, Republic of South Africa.

Annual Report for 1978 available on request

Librarians who wish to receive a copy of the GSA Annual Report for 1978 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)

New mailing wrappers for *Bulletin, Part I* and *Geology*

Starting with the January 1980 issues, *Bulletin, Part I* and *Geology* are being mailed in heavy kraft paper wrappers which offer extra protection at a significantly lower cost.

Similar wrappers are used widely by magazine publishers because of the low cost and the lower number of claims which result. Because the wrappers fit tightly around the publication and keep the pages closed in the mails, copies generally arrive in better condition than is the case with envelopes.

Packaging costs on *Bulletin, Part I* will be reduced by about 57% compared to the cost of the envelope previously used; savings will be about 8% on *Geology*, which had been mailed with an "extra" kraft loose cover. GSA's printer only recently installed the automated high-speed equipment necessary for this type of wrapper.

The publications department will welcome comments from members regarding the condition of *News & Information* upon receipt.

North-Central Section officers for 1980–1981

The new officers for the North-Central Section for 1980–81 are as follows:

Chairman:	Donald L. Biggs	
Vice-Chairman:	Carl F. Vondra	
Secretary:	Kenneth G. Brill, Jr.	
Members-at-large:	J. Campbell Craddock	(1978–1981)
	George R. Hallberg	(1979–1982)
	Kenneth O. Stanley	(1980–1983)

Southeastern Section officers for 1980–1981

The new officers for the Southeastern Section for 1980–81 are *Robert C. Milici,* Chairman; *Daniel A. Sundeen,* Vice-Chairman; and *Stephen H. Stow,* Secretary-Treasurer.

GSA OFFICERS AND COUNCILORS FOR 1980

Laurence L. Sloss, *President*
Evanston, Illinois

Howard R. Gould, *Vice-President*
Houston, Texas

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

Leon T. Silver, *Past President*
Pasadena, California

1978–1980 COUNCILORS	1979–1981 COUNCILORS	1980–1982 COUNCILORS
William C. Bradley	Helen Tappan Loeblich	Robert E. Boyer
William R. Dickinson	John D. Moody	Frank E. Kottlowski
Robert N. Ginsburg	Raymond A. Price	Dallas L. Peck
James B. Thompson, Jr.	Jack A. Simon	Peter R. Vail

PRICE REDUCTION ANNOUNCEMENT . . .

MEMOIR 131

ANNOTATED BIBLIOGRAPHIES OF MINERAL DEPOSITS IN THE WESTERN HEMISPHERE. John Drew Ridge. 1972, reprinted 1974 with 4-page update. xii + 682 pages, 15 maps.

ORIGINALLY PUBLISHED AT $28.00

PERMANENTLY REDUCED TO $14.00

This volume, supplemented by five indices and two appendices, should be a well-used supplement to textbooks on economic geology. A bibliography of each ore deposit in the western hemisphere formed by magmatic or hydrothermal processes is accompanied by a note section which is an excellent resume of the deposit. The notes contain a brief description of the location, size, and geology of each deposit as well as a list of the principal minerals, a classification of the deposit according to the modified Lindgren classification, and other pertinent data. Of the 238 deposits listed, 216 are in North America and 22 are in South America.

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- Denver metro residents—add 3½% sales tax; Boulder residents—add 5½% sales tax; Colorado residents—add 3% sales tax.

NEW FELLOWS, MEMBERS, AND . . . .

New Members. The following 136 Members have been elected to Membership by Council action during the period from April 1, 1979, through September 30, 1979 (* indicates a transfer from Student Associate to Member status.)

Donald H. Alexander*
Ali A. Al-Rashed

Warren S. Baldridge*
Rachel A. Barari
Gilbert L. Bertoldi
Frederick L. Beyer, Jr.
Cheryl P. Birkhimer
Katsumi Biyajima
Dennis L. Bomke
Craig S. Bow
Joysan M. Bradley
Paul Larry Brown
Richard L. Brown
Milena F. Bucek
H. Paul Buchheim*
David W. Buckley
Bruce H. Burton
Louise A. Butenas

Frank W. Campbell
Phillip K. Carter
John A. Caudron
David M. Clark
Nicholas W. Coffey
Charles H. Combs
William S. Condit
Kevin M. Cooke
Brett F. Cox
Thomas J. Crowley
William P. Cutrone*

John F. Dablow, III
Casey D. Danielson
Arthur C. Darrow
William D. Davison, Jr.
James W. Dawson
Thomas L. De Keyser
L. Louise Delano
Frank Dellechaie
Albert S. Depetris
Martin J. Deuth
Susan I. Douglas
Jeremy D. Dunning

Lina M. Echeverria*
Yoram Eckstein
Daniel T. Elliott
Trevor R. Ellis

Martin R. Fisk
Edward B. Flaherty
Alan C. Funk

Angelo I. George
Richard R. Gottschalk
Richard L. Graham

David R. Haddock
Robert E. Harpster
Robert L. Harrison*
Douglas R. Hartzell
Edward L. Heffern
Paul A. Hilbelink
Albert C. Hine
Ralph L. Horak
Jeanna S. Hudson

Joseph G. Jacquot*
William C. James
Bruce L. Jernigan*
Donald L. Johnson
Meridee Jones
Charles F. Julian*

Jon E. Kalb
Mark Kautsky
Peggy J. Keller
Francis T. Khoo
Jennifer A. Kitchell
Herbert C. Klinger
Ellis Koch
Stephen R. Korbay
Alan J. Krause*

Mark L. Labovitz*
Barbara K. Lenivson
Paul G. Lillis*
Marilyn M. Lindstrom

Susan M. Marcus
Peter R. Margolin
Timothy D. Master
Charles F. Mayfield
David H. McCarren
Douglas A. McGookey
Lynn E. McLane
Charlotte J. Mehrtens*
Douglas E. Moran

Frederick G. Moss
Stefun L. Myslicki

Arthur S. Nagel
Rose Marie Nagel
Willard T. Nelson
Marc D. Norman
Richard E. Nosker

Robert S. Osinski

Pamela Palmer
William C. Paris, Jr.
Daniel J. Ponti
Jane Porter*
Laura J. Powers
Chadderdon Price*
Bruce L. Prichard

Mary Ann Rafle*
Enagala P. Reddy
Thomas K. Reeves, Jr.
Gregory J. Retallack
Santiago M. Reynolds
James E. Roche
Kurt Rottmann
Edward J. Rozmyn
Barbara J. Ryan
Ann E. St. Clair
Austin A. Sartin
Elizabeth P. Sohoeberlein
James W. Sears
William C. Shafer, Jr.
William T. Shefchik
Carl W. Sherman
David B. Simon
David R. Smith
Frank W. Smith
James W. Smith
Kathleen S. Smith
Stephen A. Soeller
J. Carl Stepp
Bill Strowd
Thomas H. Swanson
Robert C. Sykes, Jr.

Tore Torske

Rolland L. Voit
James W. Voorhees, Jr.

Michael A. Waldman
Carol J. Wallace
D. Mark Witt

Gian Gaspare Zuffa

New Fellows. The following candidates were elected to Fellowship by Council action at the November 1979 meeting.

Patrick L. Abbott
Richard B. Baker
Walther M. Barnard
Chester Beaty
A. L. Boettcher
Robin Brett
Robert C. Bucknam
Robert J. Carson, III
Darrel S. Cowan
Dennis A. Darby

Richard A. Davis, Jr.
Burton J. Devere, Jr.
Renaud M. B. Du Dresnay
Jose M. Fontbote
R. Allan Freeze
William K. Gealey
Randall Lee Gresens
Jose M. Guerrero
James R. Hinthorne
W.G.Q. Johnston

J. G. Liou
Bruce T. Malfait
R. David Matthews
T. N. Narasimhan
Amos Nur
John H. Stewart
Brian E. Tucholke
Anthony W. Walton
George Ellis Williams
Warren W. Wood

. . . . STUDENTS

New Student Members. Listed below are 170 Student Associates who became affiliated with the Society during the period from April 1, 1979, through September 30, 1979.

Rafael Alexandri-Rionda
Calvin E. Allison
Richard B. Aram

Barbara M. Bakken
Hyram R. Ballard
Jeanie Barnett
Peter S. Barrows
Roger G. Bates
Gary M. Beckerman
Kenneth R. Bishop
James R. Boden
William L. Bourcier
Michael D. Bradley
Elissa J. Brown
Alvin L. Burch

Jeri Lynn Cameron
Wayne K. Camp
Richard C. Casias
Wen-An Chiou
Diane K. Coker
James M. Connor
Timothy D. Cook
Susan P. Coughlin
Robert I. Coward
Adam A. Crist

Riki Darling
John W. Deck, Jr.
David J. Delgado
James J. Dexter
Eric J. Di Esposti
Patrick K. Donihoo
Steven G. Driese
Edward L. Dromgcole

Christopher D. Elvidge
Ahmed O. Enbaya
Michael F. Erpenbeck
Cynthia A. Evans

Kathleen B. Faris
Steven A. Fechner
Juliane M. Fenner
Martha R. Fletcher
Mark A. Foster
Lawrence K. Freeman
William B. French

David R. Gaylord
Robert G. Goodwin
Brenda J. Greenlee
Margaret J. Guccione
Howard C. Gustafson, Jr.

Susan L. Hallam
Mary Jo Healy
J. Stuart Heath
Henry P. Heim
Michael M. Herron
Susan L. Herron
Ezatollah Heydari L.
Derrick D. Hirsch
Sarah E. Hoffman
Gunther Hofmann
David S. Hoover
John W. Hopper
Louise D. Hose
Fernando Huertas
Chih-An Huh
Peter J. Hutchinson

Robert A. Ibison

Jack M. Jackson
Gary K. Jacobs
Robert B. Jacobson
Stephen L. Jacobson
Robert B. Johnson, Jr.

Mary E. Kacergis
Russell A. Kari
Patricia H. Kelley
George C. Kendrick, III
Melissa B. Kirkley
Beth Ann Kline
Scott L. Kunkel

James H. Landrum
Richard A. Larson
David K. Larue
William M. Last
Charles G. Law
David B. Leslie
Richard A. Levinson
Ann K. Linville
Linda D. Locke
Paul W. Loubere
Thomas V. Lowell
Spencer G. Lucas

Scott L. Manske
Richard F. Marcell
Etta G. McGary
Gail G. McNulty
Laurence F. Meier
Peter J. Michael
Paul R. Miller
Alan C. Mix
Garry E. Moore
Michael M. Morris

Grant E. Nelson
Peter C. Neumann
Karen M. Newdale
Carol A. Newell
Mark R. Noll

Richard D. Olver
Lloyd K. Oshiro

Michael Palin
William C. Parker
John E. Parry
Wallace H. Partridge
Carl A. Pearson*
James D. Pile
Gary M. Pischke
Michael T. Plouff
Ross D. Powell
Sheila R. Priestley

Anne L. Raymond
James B. Reed
Lawrence E. Resch
Stephen H. Richardson
John C. Ridge
Peter T. Rihn
Bob R. Robinson
Sara L. Ross

Napolean O. San Vicente
Paul A. Schiffelbein
Mary E. Schlemmer
Paula R. Schlessel
James Schmitt
Sue A. Schreiber
Jaye Schulman
Michael K. Seil
Robert E. Sewell
Charles D. Sheldon
Christopher R. Sherwood
Sarah J. Shomo
Barry L. Sidwell
Paul A. Sivon
Gerard T. Smith
Peggy L. Smith
Lawrence W. Snee
Mark R. Sorensen
Daniel T. Spencer
Peter L. Sudano
John M. Susko
Paul J. Sylvester

Aavo Taal
Cindy Tanner
Steve D. Teller
John A. Thompson
Theodoros Toskos
Frank J. Trunk
Robert S. Tucker
Stephen M. Tur

Bruce J. Vesterby
Frederick W. Vollmer

Gail L. Waggoner
Paul D. Wagner
John D. Watson
Deborah J. Wechsler
Ray J. Weldon
Jill M. Whitman
Mark A. Wilson
Gary L. Wood
Nicholas B. Woodward

Jesse D. Yeakel
James S. Young

Elizabeth A. Zbinden
Stephanie E. Zurenko

ROCKY MOUNTAIN SECTION, GSA, MAY 16–17, 1980 . . . .

The 33rd Annual Meeting of the Rocky Mountain Section of the Geological Society of America will be held at Weber State College, Ogden, Utah, May 16 and 17, 1980. The meeting is hosted by the Department of Geology-Geography, Weber State College.

PREREGISTRATION FORM

33rd Annual Meeting, Rocky Mountain Section
Geological Society of America
May 16–17, 1980

PREREGISTER BEFORE MAY 1, 1980

Name _____

Address _____

City, State, Zip _____

Affiliation (for badge) _____

GSA Member: yes ☐ no ☐ Speaker: yes ☐ no ☐

REGISTRATION FEES

	Before May 1	After May 1	
Professional	$20.00	$25.00	$ _____
Student with verification	7.00	10.00	_____
Spouse or guest	3.00	5.00	_____
GSA Centennial Committee luncheon	4.00	4.00	_____
Buffet banquet	9.00	9.00	_____
Annual meeting luncheon	6.00	6.00	_____
Field trip 1	25.00	25.00	_____
Field trip 2	22.00	22.00	_____
Field trip 3	62.00	62.00	_____
Field trip 4	16.00	16.00	_____
Field trip 5	16.00	16.00	_____
Field trip 6	16.00	16.00	_____
Field trip 7	15.00	15.00	_____
		TOTAL	**$** _____

Make check payable to Weber State College and send **before May 1 to:**
Jay G. Bachman, Continuing Education Division
Weber State College
Ogden, Utah 84408

Students who wish to take advantage of the student discount should have the following statement signed by their chairman.
This is to verify that the person listed above is a student in residence at

_____ University/College.

_____
Signature

REGISTRATION

Registration is required for all those attending the meeting, field trips, and social events, and official registration badges will be required for admission to all these activities. Student registrants must present proper verification or identification to be eligible for student discount.

So that the local Committee can plan efficiently, you are urged to **register in advance**. You may do so by mailing the Advance Registration form and a check (made payable to Weber State College) to:

Jay G. Bachman
Continuing Education Division
Weber State College, Ogden, Utah 84408.

Registration will be held from 1800 to 2200 hours, Thursday, May 15, in the Holiday Inn, Ogden, Utah. During the meetings, registration will be held from 0800 to 1600 hours in the Science Center at Weber State College.

Advance registrants may pick up badges and banquet, luncheon, and field trip tickets at the registration tables.

Requests for advance registration refunds will be honored in full up to May 5, 1980. After May 5, 25% of the total will be deducted from all refunds. An exception to this rule will be made for oversubscribed or cancelled field trips which will be refunded in full regardless of the date.

TECHNICAL PROGRAM

Two days of technical sessions will be held in the Science Center at Weber State College on May 16 and 17. Depending upon the abstracts submitted, there will be sessions on tectonics, structural geology, geomorphology, paleontology, stratigraphy, economic geology, environmental geology, engineering geology, mineralogy, geochemistry, hydrogeology, and general geology.

SYMPOSIA (organizers in parentheses)

(1) Phosphate Mining in the Arid West—An Environmental Geologic Appraisal (Dick Van Horn).
(2) Precambrian of Northern Utah (Max Crittenden).
(3) Paleoecology of Continental Formations of the Western United States (Lee Stokes).
(4) Interactions of Landsliding and Land Uses (Jerome V. DeGraff).

. . . . . PREREGISTRATION DEADLINE, MAY 1, 1980

SPECIAL EVENTS

Welcoming Party. There will be a no-host cocktail party from 1900 to 2030 hours, Thursday, May 15. The party will be held near the Early Registration desk at the Holiday Inn. Registration badges will be required.

Buffet Banquet. A buffet banquet will be held in the Old Timers Hall at the Ogden Union Station, Friday, May 16. Mixed drinks, beer, and soft drinks will be available on a cash basis from 1830 to 1930 hours. The banquet will begin at 1900 hours. Entertainment will be provided. Tickets **must** be purchased at the time of registration. The cost of the event is $9.

Luncheon and Annual Section Business Meeting. The luncheon and business meeting will be held in the Skyroom in the Weber State College Student Union Building, Saturday, May 17, at 1200 hours. Tickets **must** be purchased at the time of registration. The luncheon will cost $6 and will feature a western style barbecue.

Management Board Meeting. The Management Board will have a breakfast meeting at 0700 hours in the El Matador Room at the Holiday Inn to discuss the 1981 section meetings.

GSA Centennial Committee Meeting. Representatives of universities and colleges in the Rocky Mountain Section, the U.S. Geological Survey, and other interested parties will hold a luncheon to discuss an appropriate contribution of our section to the celebration of the Centennial of the Geological Society of America in 1988. The luncheon will cost $4.50 and will be held in the Skyroom in the Weber State College Student Union Building, Friday, May 16, at 1200 hours.

GENERAL TRAVEL INFORMATION

Ogden is approximately 35 miles north of Salt Lake City. Travel time by car from Salt Lake's International Airport is about 40 minutes via Interstate 15. Weber State College is located in the southeastern part of the city of Ogden.

Rental car agencies are located at the airport. Shuttle-bus service is also available from the airport to Ogden by Key Limousine Service at 0730, 1030, 1230, 1430, 1700, 1930, and 2100 hours on weekdays, and 0730, 1200, 1530, 1900, and 2130 hours on Saturday. The fare is approximately $10 one way, and travel time is about 40 minutes. Reservations are strongly recommended and may be made by calling (801) 394-7743 or by writing to Key Limousine Service, 3909 South Airport Road, Ogden, Utah 84403. Arrangements for return service to the airport from Ogden should be made after your arrival.

Bus transportation is available from the downtown area of Ogden to the Campus of Weber State College.

ACCOMMODATIONS

A limited amount of housing is available on campus and may be reserved by using the accompanying housing form. Rooms will be allocated on a first-come, first-served basis.

Adequate motel accommodations are available in Ogden, **but reservations are the responsibility of the individual and are not to be made with the housing form.** A list of some of the motels in Ogden is given below. Please note that Early Registration and a welcoming party will be held on Thursday, May 15, at the Holiday Inn.

Name	Telephone (801)	Approx. Dist. from Campus
Inexpensive		
Best Western	621-8350	3 miles
Imperial 400	393-8667	3 miles
Motel 6	399-9261	3½ miles
Moderate		
Holiday Inn	399-5671	2 miles
Ramada Inn	394-4503	2½ miles
Travelodge	394-4563	3 miles

HOUSING FORM

For on Campus Housing Only

ROCKY MOUNTAIN SECTION, GEOLOGICAL SOCIETY OF AMERICA
May 16-17, 1980

Name _____

Address _____

City, State, Zip _____

Circle dates for which **On Campus** housing is required. Include all nights necessary to cover attendance on field trips.

Thursday, 15 **Friday, 16** **Saturday, 17** **Sunday, 18**

Please reserve: Double: $4.50/person/night
Please indicate with whom you would prefer to share a room.

_____

Send with preregistration form to:
Jay G. Bachman, Continuing Education Division
Weber State College
Ogden, Utah 84408

FIELD TRIP INFORMATION . . . . .

(Note: All field trip registrants MUST ALSO REGISTER IN ADVANCE for the meeting.) The deadline for Advance Registration is **May 1, 1980.** All trips, except No. 3, will depart from and return to the east side of the Weber State College Science Center. Trips may be cancelled owing to low number of registrants or for reasons beyond our control.

Premeeting

1. Field Aspects of the Great Diamond Swindle (May 15). Leader: Lowell S. Hilpert. In 1872, the announced discovery of diamond fields at an undisclosed site in the western United States caused international excitement until Clarence King, of the 40th Parallel Survey, found the site (in northwestern Colorado) and exposed it as a "salting" and a fraud. This tour will visit the site, where a description will be given explaining how the salting was accomplished, describe the geologic relations, and explain why the fraud succeeded. While enroute, the case will be reviewed. A description of the terrain and how it relates to the site selection and the operations of the field parties will be discussed. Trip involves a 3-mile hike at an altitude of 7,500 feet. Includes lunch and bus transportation. Leave 0600 hours; return 2400 hours. Limit 45, $25.

2. Mining of the Phosphoria Formation in Southeastern Idaho, the Old and the New (May 15). Leaders: Edwin K. Maughan and Larry C. Raymond. The stratigraphy of the Meade Peak Member will be examined at an old strip mine in Georgetown Canyon, and a visit to a more recent mine near Soda Springs will produce a contrast to illustrate current land reclamation practices. Geological emphasis will be given to the regional setting of the economic phosphorite resources and the source of the petroleum in these strata; also the engineering and geological engineering aspects of old and new mining practices. Travel from Ogden will be via Logan Canyon and Bear Lake, and return via Grace and Preston to provide an opportunity to view a wealth of Paleozoic stratigraphy, Sevier, Laramide, Basin and Range structures, and Pleistocene Lake Bonneville features. Includes lunch and bus transportation. Leave 0800 hours; return 1800 hours. Limit 36, $22.

3. Geology of the Albion, Raft River, and Grouse Creek Mountains Area, Northwestern Utah and Southern Idaho (May 14–15). Leaders: D. M. Miller, V. R. Todd, R. L. Armstrong, and R. R. Compton. Lithologic units including Miocene sedimentary and volcanic rocks, unmetamorphosed and metamorphosed upper Paleozoic strata, lower Paleozoic and Precambrian(?) metasedimentary rocks, and Archean gneiss and schist will be studied. Structures such as low-angle faults and polyphase folds and lineations in several tectonic settings within the metamorphic terrane will be emphasized, and their relations to regional tectonics will be discussed. Includes 2 lunches, transportation from Burley, Idaho, in vans, and lodging in Burley the night of May 14. Leave from Burley, Idaho, in the morning on May 14 and 15. Participants may obtain a ride from Salt Lake City on May 13 and to Ogden on May 15. Limit 44, $62.

4. Late Quaternary Lacustrine Geology and Geologic Hazards along the Wasatch Front (May 15). Leaders: Donald R. Currey, William E. Scott, Frank H. Swan III, and Richard Van Horn. Examination of geomorphic and stratigraphic features associated with Lake Bonneville and Great Salt Lake. Examination of tectonic and stratigraphic features associated with recurrent displacement in the Wasatch Fault zone. Examination of nearby slope movements, including exceptionally large lateral spreads. Includes lunch, guidebook, and bus transportation. Leave 0830 hours; return 1700 hours. Limit 34, $16.

Postmeeting

5. Surficial and Structural Geology of Wellsville Mountain and Southern Cache Valley, Utah (May 18). Leaders: Robert Q. Oaks and Clyde T. Hardy. Morphology and deposits of Lake Bonneville in Cache Valley, the Bear River Narrows, and western Wellsville Mountain; glacial and interglacial alluvial deposits in Logan Canyon, in Wellsville Canyon, and at the famous Willard mud-rock debris flow; structural and stratigraphic setting of Paleozoic and Precambrian bedrock. Includes lunch and bus transportation. Leave 0800 hours; return 1700 hours. Limit 36, $16.

6. Precambrian Rocks of the Northern Wasatch (May 18). Leaders: Bruce Bryant, Max D. Crittenden, Jr., and Nicholas Christie-Blick. Examination of autochthonous Farmington Canyon complex and its contact with platform Paleozoic cover in Weber and Ogden Canyons. Walk over most important parts of allochthonous late Proterozoic Z rocks of Huntsville sequence, including glacially derived deposits and associated pillow basalts. Includes lunch and bus transportation. Leave 0800 hours; return 1800 hours. Limit 35, $16.

7. Bingham Mining District, Economic Geology, and Pre-erosional Geometry (May 18). Leaders: L. P. James, A. J. Swensen, W. J. Garmore, W. J. Moore, and E. J. Tooker. Emphasis on the geology of the varied types of economic sulfide mineralization in one of the very largest base and precious metal districts of the world, and the overall geometry of the ore-intrusive rock system prior to late Tertiary–Quaternary uplift and erosion. Regional geology will be discussed at a stop at the front of the Oquirrh Mountains. Buses will enter the Bingham (Utah Copper) pit, largest man-made excavation, where geology and geometry of the porphyry copper and adjacent contact metasomatic deposits at Carr Fork will be discussed. Walking to exposures will be minimal. Includes lunch and bus transportation. Leave 0800 hours; return 1800 hours. Limit 45, $15.

GSA PUBLICATIONS

Geology in the Siting of Nuclear Power Plants

ENGINEERING GEOLOGY VOLUME IV — Edited by Allen W. Hatheway and Cole R. McClure, Jr. 1979. viii + 256 pages, 90 figures, 27 tables. ISBN: 0-8137-4104-1 $41.00

The expanded role of geology in the selection of sites for nuclear power plants is discussed in detail. The 16 papers in the book are divided into 3 parts. Part 1 describes Federal nuclear power plant licensing procedures, methods of screening potential sites on a best-risk basis, preparation of the Preliminary and Final Safety Analysis Reports, management pitfalls, the effect of inadequate submittals, and the role of State Agencies in the regulatory process. Part 2 discusses the seismic history of the central and western parts of the United States and the meaning and application of seismic data. Suggested methods are given for redetermining hypocenters of pre-1954 earthquakes where the accuracy of older determinations could be questioned. Part 3 describes various kinds of remote-sensing and down-hole and other geophysical techniques used in determining stratigraphic and geologic continuity and properties of rock underlying a proposed site. It also describes methods of determining date of last movement on faults, use of exploratory trenching to examine otherwise unobservable subsurface rock features, and methods used to determine the ground-water regime of a proposed site.

CONTENTS: Preface. PART 1. The Regulatory Process. An overview of nuclear power plant siting and licensing: Cole R. McClure, Jr., and Allen W. Hatheway. A three-phase program of investigation for site selection and development: J. A. Caggiano, Jr. Geologic evaluation of a site for a nuclear power plant: Merlyn J. Adair. Geologic reports used in evaluation of nuclear reactor sites: Robert H. Morris. The State-Federal partnership in siting of nuclear power plants: James F. Davis, James E. Slosson, and Robert H. Fakundiny. PART 2. Seismicity. Seismicity of the central United States: Otto W. Nuttli. Seismicity of the western United States: Bruce A. Bolt. A consumer's guide to instrumental methods for determination of hypocenters: James W. Dewey. PART 3. Techniques. Application of remote-sensing data to nuclear power plant site investigations: Roland C. McEldowney and Richard F. Pascucci. Application of microfacies analysis to the identification of stratigraphic marker beds in the Tertiary strata of northern Puerto Rico: Robert H. Osborne, Walter R. Junge, and George A. Seiglie. Dating techniques in fault investigations: Philip J. Murphy, John Briedis, and John H. Peck. Trenching as an exploratory method: Allen W. Hatheway and F. Beach Leighton. Geophysics as related to siting of nuclear power plants: V. J. Murphy, T. F. Sexton, and E. N. Levine. Measurement of in situ dynamic properties in relation to geologic conditions: T. L. Dobecki. Borehole geophysics in nuclear power plant siting: James W. Crosby III and John D. Scott. Groundwater studies for nuclear power plant siting: Clifford R. Farrell and John W. Harshbarger. Glossary of terms and abbreviations. Index.

Geologic Map of Southern Tobacco Root Mountains, Madison County, Montana

MC-31 — By Charles J. Vitaliano and William S. Cordua. 1979. One sheet, 32″ × 45″, in color; scale, 1:62,500; with 8-page text. Folded: $7.00; rolled: $8.50

The Tobacco Root Mountains are a domal uplift in the southwestern corner of Montana. A thick sequence of regionally metamorphosed Archean rocks is exposed in the core of the dome. These metamorphosed rocks exhibit two distinct mineralogic facies. One is a sequence composed of marble, sillimanite schist, iron formation, and quartzite, with lesser amounts of amphibolite and quartzofeldspathic gneiss. This sequence is exposed in the western part of the map area. The second sequence, composed almost entirely of quartzofeldspathic gneiss and amphibolite, is exposed in the eastern part of the map area. Metamorphosed basaltic rocks of Archean age, unmetamorphosed diabase dikes of late Precambrian age, and igneous intrusives of late Mesozoic and Cenozoic ages are associated with both sequences.

The most conspicuous features of the map area are the Tobacco Root batholith, a complex silicic pluton, of Paleozoic to Mesozoic age, in the north-central and northeast parts of the map; and the Mill Creek antiform, which strikes about 20°NE in the area south of the batholith.

The Mill Creek antiform is composed of refolded, tightly folded, and recumbent folds in rocks of Archean age. It is flanked on the east and west by a series of subisoclinal folds of nearly parallel trend. The complexity of structures in the Archean rocks is shown in detail on a geologic cross section drawn normal to the strike of the Mill Creek antiform.

Books and maps may be purchased through the Publication Sales Department, Geological Society of America, P.O. Box 9140, Boulder, CO 80301. Please remember that

- **member orders must be on GSA order blank or personal stationery with member number listed,**
- **member purchase privilege is not transferable,**
- **orders on corporate forms or stationery will be considered corporate orders and filled without discount allowance.**

You should refer to the "GSA Member Discount and Purchase Procedures" printed on the back of your membership card for other details of your member purchase privileges.

NEW IN 1980:

You will need to have your membership card with you in order to earn the member discount on orders placed at GSA Section meetings and at annual meetings of GSA and AAPG.

FEBRUARY BULLETIN SEPARATES

Special Issue—Adirondack Symposium

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 "February Summaries" on coupon.

• S00201—Recent studies in Precambrian geology of the Adirondack Mountains—An introduction: Summary.

William D. Romey, Department of Geology and Geography, St. Lawrence University, Canton, New York 13617. (4 p., 1 fig.)

• S00202—Structural synthesis of the southern and central Adirondacks: A model for the Adirondacks as a whole and plate-tectonics interpretations: Summary.

James McLelland, Department of Geology, Colgate University, Hamilton, New York 13346; Yngvar Isachsen, Geological Survey, New York State Museum, The State Education Department, Albany, New York 12230. (5 p., 2 figs.)

• S00203—Polyphase Precambrian deformation and stratigraphic relations, central to southeastern Adirondack Mountains, New York: A reinterpretation: Summary.

Brian Buddington Turner, Department of Chemistry, George Mason University, Fairfax, Virginia 22030. (3 p., 1 fig.)

• S00204—Fold growth and transposition in metasedimentary rocks of the southeastern Adirondacks: Summary.

James W. Granath, Noel Barstow, Department of Earth and Space Sciences, State University of New York, Stony Brook, New York 11794. (3 p., 1 fig.)

• S00206—Adirondack mafic granulites and a model lower crust: Summary.

Richard O. Sack, Department of Geological Sciences, Harvard University, Cambridge, Massachusetts 02138. (5 p., 2 figs.)

• S00207—Stark Complex (Dexter Lake area): Petrology, chemistry, structure, and relation to other green rock complexes and layered gneisses, northern Adirondacks, New York: Summary.

Brian S. Brock, Department of Geology and Geography, St. Lawrence University, Canton, New York 13617. (5 p., 1 fig.)

• S00208—A structural model for the northwestern Adirondacks based on leucogranitic gneisses near Canton and Pyrites, New York: Summary.

William D. Romey, William T. Elberty, Jr., Russell S. Jacoby, Department of Geology and Geography, St. Lawrence University, Canton, New York 13617; Roy Christoffersen, Department of Geology, Brown University, Providence, Rhode Island 02912; Tracy Shrier, Department of Geology, University of Utah, Salt Lake City, Utah 84112; Douglass Tietbohl, Department of Geology, The Pennsylvania State University, University Park, Pennsylvania 16802. (4 p., 2 figs.)

• S00209—Metamorphic conditions at the northern end of the northwest Adirondack Lowlands: Summary.

Edward F. Stoddard, Department of Earth and Space Sciences, University of California, Los Angeles, California 90024. (present address: Department of Geosciences, North Carolina State University, Raleigh, North Carolina 27650). (3 p., 2 figs., 1 tbl.)

• S00210—Geology and petrogenesis of marbles in the Dekalb area of northern New York: Summary.

Gerald M. Ross, Department of Geology, Carleton University, Ottawa, Ontario K1S 5B6, Canada. (3 p., 1 fig.)

• S00211—Rare-earth–element geochemistry of anorthosite and related rocks from the Adirondacks, New York, and other massif-type complexes: Summary.

Lewis D. Ashwal, SN6/Geology Branch, NASA Johnson Space Center, Houston, Texas 77058; Karl E. Seifert, Department of Earth Sciences, Iowa State University, Ames, Iowa 50011. (3 p., 1 fig.)

• S00212—Evaluation of coexisting garnet-biotite, garnet-clinopyroxene, and other Mg-Fe exchange thermometers in Adirondack granulites: Summary.

Steven R. Bohlen, Eric J. Essene, Department of Geology and Mineralogy, University of Michigan, Ann Arbor, Michigan 48190 (present address, Bohlen: Institute of Geophysics and Planetary Physics, University of California, Los Angeles, California 90024). (3 p., 2 figs.)

• S00214—Calc-silicate reactions in Adirondack marbles: The role of fluids and solid solutions: Summary.

J. W. Valley, Eric J. Essene, Department of Geology and Mineralogy, The University of Michigan, Ann Arbor, Michigan 48109. (4 p., 1 fig.)

• S00215—Paleomagnetic evidence in support of a middle Proterozoic (Helikian) collision between North America and Gondwanaland as a cause of the metamorphism and deformation in the Adirondacks: Summary.

Carl K. Seyfert, Department of Geosciences, Buffalo State University College, 1300 Elmwood Avenue, Buffalo, New York 14222. (3 p., 3 figs.)

Bulletin Briefs . . . . . .

Titles and abstracts of conventional articles in the February 1980 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 below.*

• 00205—Geology of the Precambrian rocks between Elizabethtown and Mineville, eastern Adirondacks, New York.

Tibor Gasparik, Department of Earth and Space Sciences, State University of New York, Stony Brook, New York 11794. (11 p., 7 figs., 1 tbl.)

The northern part of the Elizabethtown and Port Henry quadrangles, which includes the largest surficial exposure of olivine metagabbro in the Adirondack Precambrian rocks, was mapped at a scale of 1:15,840. The area is dominated by meta-igneous rocks of four types, which probably intruded in the following sequence (from earliest to latest): granitic gneiss, anorthosite, garnet-pyroxene gneiss, and metagabbro. The metagabbroic complex is a multiple intrusion forming a basinlike structure, with the central part still covered by a roof complex of granitic gneisses. The limited scale of the in situ differentiation could not produce the observed range of compositions; therefore, differentiation prior to intrusion is postulated. The observed differentiation trend toward lower silica content can be explained by pyroxene fractionation. Intrusive relationships are evident from locally preserved chilled margins in gabbros and from the development of hybrid zones in the surrounding granitic gneisses; these zones are especially common in the roof complex. Granulite facies metamorphism produced garnet-bearing mineral assemblages, but igneous assemblages and textures are still well preserved.

The garnet-pyroxene gneiss is characterized by the metamorphic assemblage plagioclase + garnet + clinopyroxene and by the presence of blue plagioclase megacrysts. The gneiss forms intrusive sill-like bodies, usually in contact with anorthosite. In some places, the contact is transitional, suggesting a possible comagmatic origin.

• 00213—Update on feldspar and oxide thermometry in the Adirondack Mountains, New York.

Steven R. Bohlen, Eric J. Essene, Karen S. Hoffman, Department of Geology and Mineralogy, University of Michigan, Ann Arbor, Michigan 48109 (present address, Bohlen: Institute of Geophysics and Planetary Physics, University of California, Los Angeles, Los Angeles, California 90024). (4 p., 2 figs., 3 tbls.)

Recently obtained feldspar and oxide temperature data for orthogneiss and paragneiss in the Adirondack Mountains, New York, further constrain and generally support the regional thermometry previously established. Peak metamorphic temperatures were 700 to 750 °C throughout most of the Adirondack Highlands and 750 to 800 °C in the High Peaks region during the Grenville metamorphic event.

• 00216—The post-orogenic history of the Adirondack Mountain region: A review.

Bruce W. Selleck, Department of Geology, Colgate University, Hamilton, New York 13346. (5 p., 1 fig.)

A number of episodes in the post-orogenic history of the Adirondack Mountains and adjacent Paleozoic Lowlands are recognized. A late Hadrynian–early Cambrian tensional episode is suggested by the presence of nonmarine graben facies and extrusive volcanics. The Ottawa-Bonnechere graben was active at the initiation of Paleozoic deposition in the region. Subdued topography of the Adirondack massif had generally minor but locally important influence on early Paleozoic depositional patterns, as did minor basement faulting. Stratigraphic evidence suggests that the entire massif was covered by Cambrian-Ordovician cratonic sedimentary rocks. Following Cambrian-Ordovician sedimentation, a number of minor tectonic events can be recognized. These include renewed block faulting in the Ottawa-Bonnechere trend, normal faulting of pre-Silurian age on the southern Adirondack flank, post-Ordovician lead-zinc mineralization in Cambrian-Ordovician cover rocks, and intrusive activity of Jurassic-Cretaceous age. These later events may be related to either Taconian or Acadian orogenies. There is little evidence to suggest any major shortening of either basement or Paleozoic cover by post-Grenville tectonism in the region. Recent earthquake activity and Tertiary block faulting on the eastern Adirondack flank may be related to renewed uplift in the region.

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