GSA news & information

SUPPLEMENT TO GEOLOGY MAGAZINE

OCTOBER 1978

Frequently asked questions on the new 1979 *Bulletin*

What are the differences between *Part I* and *Part II*?

Part I will be in almost the same format as the present *Bulletin*. It will be edited by GSA staff editors and proofread by the authors. *Part I* will consist of a series of two- or three-page summary articles, and, only in 1979, some longer articles that remain in the old backlog of pre-1978 manuscripts.

The *Part I* summary article will be a synopsis of a long article appearing in *Part II*. This two-page summary will contain factual information, major interpretations and conclusions, selected references, and, if desired, one or two illustrations; a third page will be allowed if a page-size geologic or geophysical map is an essential part of the article.

Part II will consist of microfiche in a 10.5 x 15.5-cm envelope. The *Part II* article, summarized in *Part I*, can consist of as many as 98 single-spaced pages, which will be photographically reduced to microfiche frames. The article can contain as many illustrations and tables of data the author desires, within the 98-page limit. The *Part II* article will be subject to review but will not be edited by GSA; after review and acceptance by GSA, the author will be urged to have his article edited before he has the final camera-ready copy prepared for *Part II*.

Can I subscribe to *Part I* only?

Yes. *Parts I* and *II* are on separate subscriptions. They also will be mailed separately.

How much is a subscription for a member?

The member price for 1979 for *Part I* is $25, for *Part II*, $10.

How many *Part II* microfiche will we receive per month?

This will vary. We expect from three to six per month in the beginning, at 98 "pages" per microfiche.

How will *Part II* be numbered?

Part II microfiche will be numbered consecutively throughout the year (1979, v. 90, pt. 2, p. 1 . . .). *Part II* microfiche articles will appear in the same order as the *Part I* summary articles; that is, the first summary article in *Part I* will correspond with the first microfiche article in *Part II*. The table of contents on the second frame of the first *Part II* fiche (card) of each issue also will help the reader find the specific article.

What about page charges?

There will be no page charges paid to GSA by the author or his institution for publication in the *Bulletin*. Twenty-five offprints of each *Part I* article will be provided at no charge to the senior author of that article; one set of microfiche will be provided to each author of that article.

How do I get paper copies of a specific article in *Part II*?

Paper copies of *Part II* articles can be ordered directly from University Microfilms International, 300 N. Zeeb Road, Ann Arbor, MI 48106. The person requesting paper copies shall bear the modest cost and deal directly with University Microfilms International.

What is the archival quality of *Part II*?

The *Bulletin, Part II* will be microfilmed on silver polyester base microfiche with a lifetime of more than 100 years if stored under proper conditions. The silver polyester base microfiche should be stored in the pH neutral envelope supplied, kept away from direct sunlight and heat, and stored at relatively constant temperature (21°C/70°F) and humidity (30 to 50%).

Do I have to buy a microfiche reader?

No. You can read the summaries in *Part II* and order paper copies of the *Part II* articles that you want, or make copies of the pages that you need on a reader-printer from the microfiche in the library.

How can I find out about the microfiche readers?

Several dealers will be sending advertising brochures to the members.

GSA Council actions taken at Spring Meeting, 1978

The following actions were taken by the GSA Council at its meeting in Boulder, May 9–10, 1978:

1. Appointed Vernon E. Swanson as Science Editor.
2. Adopted a 1979 dues structure and various member and non-member subscription prices.
3. Discussed the 1977 audit report and accompanying management letter.
4. Ratified the actions of the Investments Committee taken during its 2-3-78 meeting in Boulder, CO, involving the various funds in the portfolio of the Society.
5. Approved the Toronto Annual Meeting budget, including the supporting registration fees.
6. Approved certain financial resolutions.
7. Approved the following annual meeting dates:

   San Diego ..... November 5–8, 1979
   Atlanta ..... November 17–20, 1980
   Cincinnati ..... November 2–5, 1981
   New Orleans ..... October 25–28, 1982; authorized the inspection of two possible future annual meeting sites

8. Selected a slate of nominees for officers and councilors for 1979; selected a firm of certified public accountants to be presented by ballot to the membership in October for election to perform an audit for the year ending 12-31-78.
9. Rescinded an earlier motion to merge the Nominations Committee and the Committee on Committees.
10. Selected Penrose and Day medalists; approved the award winners from one division; selected three nominees for the 1978 National Medal of Science and one for the 9th Chrestien Mica Gondwanaland Medal.
11. Ratified the South-Central Section and Southeastern Section bylaw amendments.
12. Ratified the Geophysics Division's assessment of $2 annual dues to its affiliates; deferred action on the division name change until a division poll has been taken.
13. Approved 124 research grants totaling $85,000 for 1978; voted to recommend to the Budget Committee that the funding level of the GSA Research Grant Program for 1979 be at least $100,000; named the recipient of the 4th Stearns Fellowship; noted the contributions received from oil companies and past grant recipients.
14. Advanced 39 Members to Fellowship; ratified the election of 253 candidates to Membership; approved certain bylaw changes concerning exempt categories; rescinded an earlier motion that considered automatic advancement to Fellowship of Penrose Conference conveners who were not already Fellows in the Society.
15. Changed the name of the Committee on Environment and Public Policy to Committee on Geology and Public Policy; asked the Executive Committee to explore an association with AGI for the purposes of developing a congressional internship program, and to explore costs of other mechanisms through the Committee on Geology and Public Policy.
16. Approved the amended Penrose Conference Guidelines; approved two Penrose Conferences.
17. Accepted reports from standing committees, sections, divisions, and representatives to non-GSA groups.
18. Established criteria for evaluating requests from organizations to become associated societies of GSA; declined the requests from two organizations.
19. Appointed an ad hoc Committee on Honors and Awards to examine the current policies and procedures pertaining to honors, awards, medals, Honorary Fellowships, and to report to the Council in October.
20. Appointed a GSA Centennial Planning Committee; received its progress report.
21. Established a committee to review the annual meeting program.
22. Constituted a committee to advise the GSA Executive Committee on future cooperation with AGI concerning the *Bibliography and Index of Geology*.
23. Appointed a GSA committee to assist in the review of draft stratigraphic correlation charts of North America as they are submitted by the regional coordinators of the program.
24. Named a representative to the GSA-AEG-ASCE Joint Committee on Engineering Geology for the term July 1, 1978–June 30, 1981.
25. Appointed two representatives to the 14th Pacific Science Congress in Khabarovsk in August 1979.
26. Discussed the new *Bulletin* format, pricing, and member education.
27. Accepted the bid from University Microfilms for *Part II* of the *Bulletin* on a two-year contract.
28. Accepted the proposal from AGU regarding publication of the International Geodynamics Program final report.
29. Accepted the recommendation that after July 1, 1978, the 20 percent discount on the *Treatise on Invertebrate Paleontology* will be extended only to GSA members.
30. Approved the revised GSA Employee Retirement Plan, dated 5-10-78.
31. Reviewed the GSA History manuscript received to date from Edwin B. Eckel.
32. Set October 22 and 24, 1978, for the fall Council meetings in Toronto, Ontario; set October 24, 1978, 8:00–8:30 a.m. for the corporate meeting in Toronto.
33. Designated three proxy holders and three tellers and inspectors of election for the October corporate meeting.
34. Took other minor actions, records of which are on file at headquarters.

Smithsonian announces opportunities in Earth sciences

The Smithsonian Institution announces its program of higher education and research training in the Earth sciences for 1979–1980. Smithsonian Fellowships are awarded to support independent research using Smithsonian Institution collections, facilities, and laboratories and pertaining to research interests of the Smithsonian research staff. Proposals for research may be offered in fields in which the Institution has research strength: sedimentology and paleobiology, mineralogy, petrology, meteoritics, and volcanology.

Smithsonian Fellowships, supported by a stipend of $12,000 per annum and research allowances, may be granted to postdoctoral scientists to pursue further training in research. Smithsonian Predoctoral Fellowships, supported by a stipend of $7,000 per annum and research allowances, may be granted to doctoral candidates to conduct research for their dissertations with the approval of their university departments. Applications are due January 15, 1979.

In selecting individuals for participation in academic programs, the Smithsonian Institution does not discriminate on grounds of race, creed, color, sex, age, or national origin of any applicant. For more information and application forms, please write to Office of Fellowships and Grants, Smithsonian Institution, Washington, D.C. 20560. Please indicate the particular area in which you propose to conduct research and give the dates of degrees received or expected.

Ninth International Congress of Carboniferous Stratigraphy and Geology sets January 1, 1979, abstracts deadline

The third circular for the Ninth International Congress of Carboniferous Stratigraphy and Geology (IX-ICC), to be held in 1979, is now available. The Geological Society of America is one of the cosponsoring organizations. If you have not received a copy of this circular, write to IX-ICC, 1979, c/o Museum of Natural History, Washington, D.C. 20560.

Pre- and post-Congress trips are separated by the May 21–May 25 technical sessions in Urbana. One may attend trips or technical sessions independently. The technical sessions consist of three major concurrent symposia of broad interest during each of the mornings and a variety of specialized topics and contributed paper sessions in the afternoons.

This is the first time that the Carboniferous Congress has met in North America and it may be decades before this event occurs again. The Congress is conveniently located about one day's automobile drive from thousands of members of the U.S. geological community. Dormitory housing and meals combined at a price of about $15.00 per day will be available. Thus, IX-ICC will be an economical and convenient international meeting.

Payment of registration fee may be at any time, but the **deadline for abstracts is January 1, 1979.**

GSA announces medal and award winners—1978

The 1978 medalists and award winners announced by the Council at its May 1978 meeting are as follows:

PENROSE MEDAL: *Robert M. Garrels,* Department of Geological Sciences, Northwestern University, Evanston, IL 60201.

DAY MEDAL: *Samuel Epstein,* Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, CA 91125.

KIRK BRYAN AWARD: *Richard L. Hay,* Department of Geology and Geophysics, University of California, Berkeley, CA 94720.

MEINZER AWARD: *R. William Nelson,* Scientific Systems Department, BSC Richland, Inc., Richland, WA 99352.

BURWELL AWARD: *Nicholas R. Barton,* Norwegian Geotechnical Institute, Sognsveieno 72, P.O. Box 40, Tåsen, Oslo 8, Norway.

CADY AWARD: No award given in 1978.

NATIONAL MEDAL OF SCIENCE: The Council named *Philip H. Abelson, M. King Hubbert,* and *Frank Press* as the Society's nominees for the National Medal of Science.

Northeastern Illinois Soil-Geomorphology Tour, December 2-3, 1978

A field trip of one and one-half days will be held in conjunction with the Soil Science Society of America annual meeting in Chicago from December 3 to 8, 1978. The trip has been arranged by the GSA Representatives to the GSA-SSSA Interdisciplinary Committee. The tour will begin Saturday morning in Rockford and end Sunday noon in Chicago. The focus is on soil-geomorphology, the relation of soils to geomorphology and parent material stratigraphy.

Genesis, classification, and distribution of soils developed in till, outwash, dune sand, loess, and lacustrine deposits will be reviewed. Old, eroded landscapes with rarely preserved paleosols will be compared to younger constructional landscapes. Lake Michigan bluff erosion problems will be included.

An orientation meeting will be held at Rockford on Friday evening, December 1. The route of the trip is being planned to allow for bad weather. Soil profiles will be examined, weather permitting. The costs will include registration, bus transportation, Saturday meals and lodging, and Sunday breakfast. For more information write to Leon R. Follmer, Illinois State Geological Survey, Urbana, Illinois 61801.

Necrology

Notice has been received of the following deaths: Roland T. Bird, Homestead, Florida; Margaret Fuller Boos, Denver, Colorado; Kirtley F. Mather, Albuquerque, New Mexico; Peter Sylvester-Bradley, Leicester, England; James T. Wilson, Ann Arbor, Michigan.

PRELIMINARY ANNOUNCEMENT AND CALL FOR PAPERS

SOUTHEASTERN SECTION, GSA, 28th Annual Meeting Blacksburg, Virginia, April 26–27, 1979

The Department of Geological Sciences, Virginia Polytechnic Institute and State University, will host the 28th Annual Meeting of the **Southeastern Section** of the Geological Society of America at Blacksburg, Virginia, April 26–27, 1979.

CALL FOR PAPERS. Papers are invited for presentation at the symposia and technical sessions. Speakers will be allowed 15 minutes for presentation and 5 minutes for discussion. **Deadline for receipt of abstracts is December 7, 1978.**

SYMPOSIA:

(1) Fault Systems and Faulting Mechanisms in the Piedmont.
(2) Geology of the Continental Margin of the Southeastern United States.
(3) Symposium in Commemoration of the 100th Anniversary of the United States Geological Survey: Current USGS Research in the Southeastern United States.
(4) Carolina Slate Belt: Origin and Evolution of the Ancient Volcanic Arc.

TECHNICAL SESSIONS. Coal and Petroleum Geology; Environmental and Engineering Geology; Marine Geology; Economic Geology; Geomorphology; Paleontology; Stratigraphy and Sedimentation; Regional Geology; Structural Geology; Tectonics; Geophysics; Mineralogy; Geochemistry and Geochronology; Petrology; Geological Education.

SHORT COURSE. Paleogeographic Reconstructions: The Current State of the Art (R. K. Bambach, Convener).

FIELD TRIPS:

(1) Geology of the Overthrust Belt near Blacksburg, Virginia.
(2) Lower Paleozoic Platform and Basinal Carbonate Facies and Biostratigraphy, Virginia Appalachians.
(3) Depositional Environments of Late Paleozoic Coal-Bearing Strata, Southern Appalachians.
(4) Virginia Piedmont, James River Traverse.

L. Glover and J. F. Read, Field Trip Cochairmen
Department of Geological Sciences
Virginia Polytechnic Institute & State University
Blacksburg, Virginia 24061
Glover: (703) 961-6213; Read: (703) 961-5124

ABSTRACTS. Abstracts are limited to 250 words and must be submitted ready for photographic reproduction on official abstract forms. Forms are available from

D. R. Wones
Program Committee Chairman
Department of Geological Sciences
V.P.I. & S.U.
Blacksburg, VA 24061
(703) 961-5980

Abstracts Coordinator
Geological Society of America
3300 Penrose Place
Boulder, CO 80301
(303) 447-2020

ABSTRACTS MUST BE RECEIVED BY DECEMBER 7, 1978.

Send one original and four copies to

D. R. Wones
Program Committee Chairman
Department of Geological Sciences
V.P.I. & S.U.
Blacksburg, VA 24061
(703) 961-5980

ONE PROJECTOR for 2" x 2" slides will be provided for each technical session. Additional projection equipment may be available upon written request prior to the meeting.

SOCIAL EVENTS. A welcoming party will be held on Wednesday evening, April 25, and the annual banquet will be held on Thursday evening, April 26. A ladies' program is being organized.

ADDITIONAL INFORMATION concerning registration, the short course, transportation, housing, field trips, and social events will appear in a later issue of *GSA News & Information* and as a part of the *Abstracts with Programs* for 1979.

ADDITIONAL INQUIRIES SHOULD BE ADDRESSED TO

D. A. Hewitt, Local Committee Chairman
Department of Geological Sciences
V.P.I. & S.U.
Blacksburg, Virginia 24061
(703) 961-6356

PRELIMINARY ANNOUNCEMENT AND CALL FOR PAPERS

NORTH-CENTRAL SECTION, GSA, 13th Annual Meeting
Duluth, Minnesota, May 10–11, 1979

The Department of Geology of the University of Minnesota-Duluth will host the 13th Annual Meeting of the North-Central Section of the Geological Society of America concurrently with the meeting of the Institute of Lake Superior Geology on May 10 and 11, 1979.

TECHNICAL SESSIONS on Thursday (May 10) and Friday (May 11) will include the following: Mineralogy and geochemistry, petrology, structural geology, geophysics, sedimentology, paleontology, stratigraphy, economic geology, geomorphology, environmental and engineering geology, hydrogeology, Quaternary geology, and general geology. Papers on these and other areas are solicited. Other sessions may be arranged after abstracts have been received by the Program Committee.

TENTATIVE SYMPOSIA (May 10, 11):

(1) Current Research by the U.S. Geological Survey in the North Central United States (Ellis L. Yochelson)
(2) Midcontinent Gravity High (John C. Green)
(3) Archean Sedimentation (Richard W. Ojakangas)
(4) Middle Ordovician of the Upper Mississippi Valley Robert E. Sloan)
(5) Late Cretaceous (Robert E. Sloan)

TENTATIVE FIELD TRIPS: Some trips will be scheduled for Tuesday and Wednesday, May 8 and 9; other field trips will take place on Saturday and Sunday, May 12 and 13.

(1) Middle Precambrian, Volcanic, and Plutonic Rocks of Northern Wisconsin (Gene LaBerge, Michael Mudrey, Jr.)
(2) Geology of East Central Minnesota (G. B. Morey, D. M. Davidson)
(3) Geology of the Duluth Area (C. L. Matsch)
(4) Geology of the Mesabi Range (R. W. Marsden)
(5) Geology and Engineering Geology of the South Shore of Lake Superior (J. T. Mengel, P. C. Tychsen)
(6) Cambrian and Ordovician Stratigraphy and Paleontology of Southeastern Minnesota (David G. Darby, Gerald F. Webers)
(7) Keweenawan (Upper Precambrian) North Shore Volcanic Group (John C. Green)
(8) Archean Volcanism and Sedimentation of the Western Vermilion District (Richard W. Ojakangas)

ABSTRACTS. Abstracts, which are limited to 250 words, **must** be submitted camera-ready on official abstract forms available from:

Paul C. Tychsen
Program Committee Chairman
Department of Geosciences
University of Wisconsin-Superior
Superior, Wisconsin 54880
(715) 392-8101, Ext. 261

or

Abstracts Coordinator
Geological Society of America
3300 Penrose Place
Boulder, Colorado 80301
(303) 447-2020

Abstracts are due December 21, 1978. Acceptance or rejection of an abstract will be based on the abstract as submitted by the author.

Send one original and four copies to

Paul C. Tychsen
Program Committee Chairman
Department of Geosciences
University of Wisconsin-Superior
Superior, Wisconsin 54880
(715) 392-8101, Ext. 261

PROJECTION EQUIPMENT. All slides must be 2" x 2" and fit a standard 35-mm carousel projector.

STUDENT AWARDS. Student papers are encouraged, and awards will be made to students presenting the most outstanding papers. Student papers should be clearly identified as such and should be authored exclusively by students. Prizes awarded for student papers with more than one author will be divided among the authors.

DETAILED INFORMATION concerning registration, motel and hotel accommodations, and other activities will appear in a later issue of *GSA News & Information* and as a part of the *Abstracts with Programs* for 1979.

ADDITIONAL INFORMATION, REQUESTS, OR SUGGESTIONS SHOULD BE DIRECTED TO:

Richard W. Ojakangas, Local Committee Chairman
Department of Geology
University of Minnesota-Duluth
Duluth, Minnesota 55812
(218) 726-7237

New Members, Fellows, and Students elected

New Members. The following 198 persons have been elected to Membership by Council action during the period from December 1, 1977, through April 30, 1978:

Mark S. Abashian
Roger L. Ames
James P. Anderson
Crispin P. Andrews-Speed

Thomas A. Baillieul
Rodney R. Baird
John J. Balco
Konrad J. Banaszak
William J.M. Bazeley
Mary P. Bee
Matthew R. Beebe, Jr.
William W. Black
Richard G. Blank
Leo J. Boberschmidt
David G. Bond
Reinhard K. Bortfeld
Dane A. Bridge
James L. Bruce
Dennis B. Burke

Keith J. Carlson
Michael A. Chaney
James Essex T. Channell
Donn Charnley
Michael A. Church
Anthony G. Coates
Kenneth A. Cole
Charles J. Collins
Donna B. Collins
Robert A. Cook
Winston Crausaz
Ronald A. Crowson
James C. Currens

Anthony Del Prete
Joseph J. D'Lugosz
Greta J. Dockum
Ronald Doig
Ann T. Donnelly
Michael J. Draikiwicz
Edward A. Du Bray

Dennis S. Edwards

Marvin I. Ehrlich
Elise L. Erler

Gregory T. Farrand
Dennis W. Fischer
Steven J. Fritz
Joseph W. Fusso, Jr.

Susan J. Gaffey
Dennis P. Gagne
Terrence M. Gerlach
Kenneth L. Gill
Thomas H. Giordano
Serge S. Gofas
Robert R. Goldwin
Arthur J. Gordon
Paulette K. Gornes
David L. Graham
Terry A. Grant
Gerald E. Grisak

Donald D. Hall
Christopher R. Halladay
Robert C. Handfield
Robert H. Hansman
David R. Hanson
Ben D. Hare
Stephen C. Harner
Howard Harper, Jr.
Paul M. Harris
Rand S. Harrison
Fekri A. Hassan
Charles W. Hede
Richard E. Heffner
John O. Heggeness
Leslie P. Hellen, Jr.
Walter R. Helmick
Curtis E. Hendrick
Ernest A. Hetherington, Jr.
Jeffrey F. Heyer
Paul R. Hildenbrand
William A. Holskey
Samuel A. Hotchkiss
Travis H. Hughes

Susan J. Hunt

Phillip M. Ingram

Larry A. Jackson
Steven E. Jakatt
David M. Jedlicka
Robert L. Johnson
Wayne E. Jones

Raymond W. Knapp
Eugene Kojan
Alfred Kroner
Lawrence H. Kumamoto

Gary F. Land
James E. Lawler
Florence J. Lee
Richard A. Leveque
Kees Linthout
David A. Lipton

John R. Macmillan
Jordan Makower
Carlos D. Mancini
Kim L. Marcus
James E. Mattingly
Irvin L. Maurer
James A. McBane
Bruce S. McClellan
Donald F. McLeroy
Harry Y. McSween, Jr.
Philip A. Meyers
James R. Miller
Jill Miller
Paul Morgan
Rodney K. Morrison
Janet L. Morton
David J. Mossman
Alvaro Murillo-Rodriguez

Thomas G. Naymik
Kerry D. Newell
Wayne L. Newell

Mark C. Newman
John W. Norris

Edward H. Oakes
James V. O'Connor
Eric V. Olausson
William J. Oliver
Terry L. Olmsted
Edward J. Osterwald
Edward H. Owens

Boyd K. Parker
Ronnie Parker
Kerry K. Parkinson
Harold M. Parsons, Jr.
Eric M. Peterson
Stephen L. Peterson
Antonino N. Petracca
Roland A. Pettitt
William J. Pincus
Debra A. Pogue
Alan W. Popp
Carla J. Potter
Frederick H. Pough
Thomas R. Pratt, Jr.
Christopher C. Puchner
Daniel J. Purvance

Harold L. Reade, Jr.
Donald L. Reed
Roger J. Reede
Judith A. Rehmer
Samuel Reich
Douglas J. Riddle
Richard M. Ritland
Kathleen A. Robertson
Ronald W. Rogers
Ralph A. Root
Mary E. Russell
Orville R. Russell

William J. Samford
Robert L. Sayre
Leon J. Schoen

Ed L. Schrader
James F. Schwendeman
Martin E. Schwenk, Jr.
Christopher M. Secrist
Stephen Self
Robert Lee Shoemaker
Jean W. Sidar
Lucy K. Sidoric Wilkerson
Paul P. Sipiera, Jr.
Terry L. Sole
Sherwood M. Spencer, Jr.
Walter J. Spink
Michael F. Stephen
Michael H. Stewart
David B. Stone
Edward Sturm
Samuel Sublett
Ronald C. Surdam
Douglas W. Swain

Steven A. Tedesco
Darcy G. Temple
Bruce H. Tiffney
Dennis L. Tom

Earl P. Updike

Lambertus M. Van Straaten
Ellen L. Vollmer

Kim A. Walbe
Peter B. Whiteway
James D. Williams
Timothy A. Williams
William F. Wilson
Candace L. Wood
William R. Woodard
Jean A. Wosinski
John F. Wosinski

Yan Yip
Grant M. Young

Gregory J. Zerrahn
Louise S. Zipp

New Fellows. The following candidates were elected to Fellowship by Council action, at the May 1978 Council meeting:

James D. Aitken
K. L. Birkenmajer
Kevin Burke
John G. Cabrera
Douglas R. Callier
John E. Damuth
George H. Davis
Elizabeth A. Elliott

Rodger T. Faill
A. Eugene Fritsche
Gary B. Griggs
Hilary J. Harrington
J. Henning Illies
Robert W. Kay
Stephen E. Kesler
Rodney V. Kirkham

Fred H. Kulhawy
Xavier Le Pichon
Tosimatu Matumoto
Ian McDougall
Donald E. McGannon, Jr.
Andrew H. Merritt
Robert W. Nesbitt
Stanislaw Poborski

Malcolm Ross
Guillermo A. Salas
Frank W. Schwartz
Deskin H. Shurbet, Jr.
Bernard K. Sporli
D. F. Strong
Paul A. Thayer
William B. Travers

Alec F. Trendall
A. C. Turnock
C. R. Twidale
Barry Voight
Joel S. Watkins.

New Student Associates. Listed below are 309 Student Associates who have become affiliated with the Society during the period from December 1, 1977, through April 30, 1978:

Imelda G. Academia
Abdulkader M. Afifi
Felicita C. Alberch
Holly M. Ambrose
James G. Ambrose
George M. Anderson II
Kenneth C. Angebrandt
David M. Angstadt
Nicholas P. Arcaro
Robert H. Ardrey
Edward C. Arruda
Tak-Choi Au
Katherine L. Avary

Richard C. Bain
Charles A. Baker
Melanie A.W. Barnes
Thomas H. Barnes
Wolfgang Baum
Josh M. Been
Steven R. Bell
Henry G. Bienkowski
Terence C. Blair
Donald D. Blankenship
John Boast
Dave R. Boden
Michel Boily
James K. Boling, Jr.
Scott G. Borg
Richard H. Brainard
John W. Breen
Jonathan A. Brewer
Christine B. Brewster
Nancy J. Butkovich
Kim R. Butler

Suellen Cabe
Paula A. Cammarata
Regina M. Capuano
Robert C. Carne
John R. Carpenter
Michael C. Carpenter
Richard S. Carr III
Eugene O. Carter
Meg Chaloupka
Marjorie A. Chan
David J. Christiansen
Eric H. Christiansen
Peter H. Chu
Jeffrey M. Citrone
Jeffrey C. Clark
David R. Clupper
Thomas F. Coe
Stephen V. Collamer
Donley S. Collins
Edward W. Collins
Kelly A. Collins
Donald L. Colson
Carol L. Colwell
Walter K. Conrad
Stephen J. Cook
Randall D. Cooper
Robert V. Corwin
Patricia E. Cowan
Kent J. Crispin
Kevin D. Crowley
Gil W. Cumbee

Kenneth E. Czoer

M. Dewitt Daggett
Julie F. D'Andrea
David W. Darby
Carolyn S. De Vine
Janet L. De Vries
Jeanette M. Dixon
John C. Dixon
Ellen T. Drake
Richard E. Drumheller
Donald C. Dutton

Garth R. Edwards
William C. Ehler
Peggy A. Eisenberg
Richard J. Erdlac, Jr.
Ruth E. Erlick
Eric A. Erslev
Mark A. Evans

Philip T. Farquharson
Alan N. Federman
John C. Ferguson
Jewel E. Fernandez
Patricia A. Fink
Mark A. Finnegan
John C. Fitzmaurice
Julianne F. Fliegner
Richard J. Flores
Steven V. Fogarty

Joseph G. Franzone
Frederic I. Frasse
Joseph P. Frizado
Kenneth R. Frost
Francis C. Furman
John A. Fyon

Mark A. Gage
Larry D. Galbiati
David C. Gerlach
Philip S. Getty
Patricia L. Goddard
Alfonso Gonzalez-Serrano
Judith A. Gospodarec
Efford W. Greer
James W. Griffin
Earl F. Griffith
Michael Grossberg
Carl F. Gullixson

Gary H. Haag
Kenneth R. Hahn
William W. Haible
Marty J. Hall
John E. Hamak
Deborah S. Hamel
Catherine L. Hanks
Bettye L. Harless
Philip E. Harrold
Randolph L. Hartley
David J. Hartmann
James N. Hartwell
Raymond K. Hatley
William D. Haworth
Paul R. Haydon

Mark R. Hempton
Harold F. Hennigar, Jr.
Stephen H. Hickman
George K. Hickox, Jr.
Louis W. Hinshaw
Sharon M. Hirt
Ron N. Hoffer
Michael D. Hogg
Lorraine M. Holloway
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October BULLETIN briefs

Brief summaries of articles in the October 1978 GSA Bulletin *are provided on the following pages to aid members who chose the lower dues option to select* Bulletin *separates of their choice. The document number of each article is repeated on the coupon and mailing label in this section.*

• 81001—Comparative mineralogy of nearshore and offshore lacustrine lithofacies, Parachute Creek Member of the Green River Formation Piceance Creek Basin, Colorado, and eastern Uinta Basin, Utah.

Rex D. Cole, Department of Geology, Southern Illinois University at Carbondale, Carbondale, Illinois 62901 (present address: Bendix Field Engineering Corporation, Grand Junction, Colorado 81501); M. Dane Picard, Department of Geology and Geophysics, University of Utah, Salt Lake City, Utah 84112. (14 p., 8 figs., 3 tbls.)

A comparative study of the relative distribution of analcime, quartz, K-feldspar, Na-plagioclase, calcite, dolomite, and ankerite shows variable partitioning of these minerals between the marginal-lacustrine and open-lacustrine lithofacies of the Parachute Creek Member of the Green River Formation in the southern and western Piceance Creek Basin, Colorado, and the eastern Uinta Basin, Utah. The variations correlate with changes in the depositional environments of ancient Lake Uinta.

Four individual, but gradational, environments of deposition are recognized in the Parachute Creek Member: (1) deltaic lacustrine, (2) carbonate flat, (3) proximal open lacustrine, and (4) distal open lacustrine. Rocks from these depositional facies range from sandstone and algal limestone in the first two marginal-lacustrine environments to oil shale, tuff, and saline-mineral beds in the latter two open-lacustrine environments.

Detrital quartz, K-feldspar, and Na-plagioclase are most abundant in channel-form sandstone beds in the deltaic-lacustrine facies. In the open-lacustrine facies where oil shale is dominant, these silicates are still abundant but are authigenic or diagenetic in origin. Analcime is found in fine-grained rocks in all environments but is least abundant in oil shale of the distal open-lacustrine environment where saline minerals such as nahcolite and halite are present.

Calcite, dolomite, and ankerite show the most complex facies distribution. Calcite is apparently most abundant in the fine-grained calcareous rocks intercalated with sandstone and algal limestone in the marginal-lacustrine facies, and it is least abundant in the distal oil shale. Dolomite is abundant throughout the Parachute Creek Member but is most abundant in the distal oil shale. Ankerite is also most abundant in the distal oil shale but is rare in marginal-lacustrine rocks. The overall zonation of the carbonate suggests that the more chemically complex types are found in the more basinward environments. Thus, the pattern for the carbonate distribution is a reflection of local biogeochemical and geochemical conditions and not the result of transportation of carbonate phases from a fringing mud-flat (playa fringe) environment.

• 81002—Australasian microtektites and the stratigraphic age of the australites.

B. P. Glass, Geology Department, University of Delaware, Newark, Delaware 19711. (4 p.)

The study of age relations among the Australian tektites (australites) has led to a paradox. On the one hand, K-Ar and fission-track studies give an age of 700,000 yr. On the other hand, stratigraphic studies in Australia indicate that the australites fell between 7,000 and 20,000 yr ago. Age, chemical, petrographic, morphological, and geographical studies link the australites to tektites found in Indonesia, Southeast Asia, and the Philippines. These tektites have stratigraphic ages consistent with their K-Ar and fission-track ages of 700,000 yr. The discovery of microtektites in deep-sea sediments adjacent to Australia that have a stratigraphic age of 700,000 (based on their association with the Brunhes-Matuyama reversal boundary) indicates that the australites also fell 700,000 yr ago. However, Chalmers and others (1976) have recently questioned the relationship between the microtektites and australites and have reaffirmed the low stratigraphic age of the australites. This paper reviews the evidence and concludes that the microtektites are indeed part of the Australasian strewn field and that the occurrence of australites in what are apparently late Pleistocene to post-Pleistocene deposits indicates that they were probably eroded and redeposited at this time.

• 81003—Twin Sisters dunite: Petrology and mineral chemistry.

A. C. Onyeagocha, Department of Geology, University of Nigeria, Nsukka, Nigeria. (16 p., 19 figs.)

Petrologic study of the Twin Sisters dunite, an alpine-type ultramafic body about 90 km^2, has led to the establishment of three broad stages in the recrystallization of the body. The first stage is represented by "primary," now highly strained, large olivine crystals, which were subsequently partly recrystallized and/or mylonitized in the upper mantle. The development of chromite pods and lenses occurred in this first stage. The second stage, separated from the first by deformation, is manifest by the segregation, probably also in the upper mantle, of at least two generations of olivine-bearing orthopyroxenite and clinopyroxenite veins. The third stage is represented

by the generation of metamorphic minerals exemplified by the following reactions: enstatite + diopside + H_2O = forsterite + tremolite; enstatite + H_2O = talc + forsterite; chromite + forsterite + enstatite + H_2O = ferritchromite + chlorite.

Electron microprobe study of coexisting minerals indicates that olivine, orthopyroxenes, and clinopyroxenes are remarkably homogeneous. Minor but systematic variations in mineral compositions do exist. Olivine in chromite pods and lenses is more forsteritic and contains nearly twice as much NiO than olivine in the main dunite and pyroxenite veins. Chromite compositions show two distinct but parallel trends—one for chromite present in the main dunite and in veins and the other for chromite in pods and lenses. As in olivine, X_{Mg} in chromite pods and lenses is higher than that in chromite from the main dunite. Unlike the trends for the Kilauean chromites, total Fe increases with increasing Cr_2O_3 content, whereas Al_2O_3 and MgO decrease. Calcic amphiboles are heterogeneous, and important end members in different samples are pargasite, edenite, and tremolite. Anthophyllite coexists with calciferous amphiboles. Magnesian cummingtonite was also found.

A consistent apparent equilibration temperature of 1100 to 1200 °C, derived from the olivine-chromite geothermometer, is 138 to 333 °C higher than that derived from the Ca content of orthopyroxene and clinopyroxene pairs. Temperature of unmixing in pyroxenes is about 115 °C lower than that indicated by their bulk composition.

• 81004—Caledonian nappe correlation and orogenic history in Scandinavia north of lat 67°N.

Richard E. Binns, Institute of Biology and Geology, University of Tromsö, P.B. 790, 9001 Tromsö, Norway. (16 p., 3 figs., 1 tbl.)

A comprehensive correlation of the Caledonian nappe pile in northern Scandinavia is attempted for the first time. The geology of a traverse through the nappes in a part of Tromsö, Norway, where the structural succession is more complete than elsewhere, forms the main basis for correlations to the northeast and southwest. Seven nappes or nappe complexes (designated 1 through 7, from bottom to top) are distinguished regionally from lat 67°N northward, and probable correlations to central Scandinavian nappes are mentioned. Stratigraphic and structural correlation criteria are emphasized. The nappe pile is shown to contain rock bodies of Ordovician-Silurian age interleaved with older ones that have at least partly undergone pre-Silurian Caledonian deformation and metamorphism; Precambrian units, some of which appear to be at least partially unaffected by Caledonian deformation and metamorphism, are also involved. The interleaving is mainly attributed to nappe tectonics. Most nappes were translated at least 200 to 400 km toward the east or southeast. Most independent movement of nappes 4 through 7 took place synmetamorphically during and shortly after the Middle to Late Silurian metamorphic peak. Major translation of nappe 3 occurred as a late-orogenic event. Nappes 1 and 2 were apparently emplaced before nappe 3, after Ordovician time.

• 81005—Fluvian adjustments to the spread of tamarisk in the Colorado Plateau region.

William L. Graf, Department of Geography, University of Iowa, Iowa City, Iowa 52242. (11 p., 13 figs., 4 tbls.)

Tamarisk, a shrub or low tree that was artificially introduced into the American Southwest in the late 1800s, has spread throughout the Colorado Plateau region by occupying islands, sand bars, and beaches along streams. Historical photographs show that tamarisk spread from northern Arizona to the upper reaches of the Colorado and Green Rivers at a rate of about 20 km/yr. Detailed studies on the Green River in Canyonlands National Park, Utah, show that the plant has trapped and stabilized sediment, causing an average reduction in channel width of 27%. Photogrammetric analysis of historical ground photography, including photos from John Wesley Powell's 1871 expedition, and recent aerial photographs supplemented by field surveys provided quantitative data. Expanded islands and channel-side bars exhibit allometric relationships as they change, apparently maintaining a balance between turbulence and friction. Overbank flooding is common on the tamarisk-stabilized features.

• 81006—Precambrian salic intrusive rocks of the Reading Prong.

Davis A. Young, Department of Earth Sciences, University of North Carolina at Wilmington, Wilmington, North Carolina 28401. (13 p., 4 figs.)

Approximately one-half of the Reading Prong consists of Precambrian salic intrusive igneous rocks, most of which are now metamorphosed. The intrusive rocks of the western Reading Prong and of the southeastern massif consist predominantly of gneissoid hornblende granite or hornblende granite gneiss. The rocks are relatively poor in clinopyroxene and mesoperthite content and relatively quartz-rich. In the northwestern massif, hornblende and clinopyroxene granite is common, but hornblende- or clinopyroxene-bearing syenitic and monzonitic rocks and their variants are equally abundant. These intrusive rocks are relatively enriched in clinopyroxene and mesoperthite and rather poor in quartz.

Reconstruction of the geology of the Reading Prong suggests that the western Reading Prong and the southeastern massif were on strike prior to Paleozoic time. This reconstruction indicates the existence of two parallel intrusive rock belts during Precambrian time—a northwestern syenitic belt and a southeastern granitic belt.

It is concluded that the syenitic and monzonitic rocks were generated mainly by very deep-level partial melting of quartzofeldspathic and anorthositic rocks in a high-temperature, relatively anhydrous environment. A somewhat steeper geothermal gradient in the northwestern Reading Prong might account for the regional differences in intrusive rock distribution.

• 81007—Western limit of Taconic allochthons in Pennsylvania.

Samuel I. Root, David B. MacLachlan, Pennsylvania

Geological Survey, P.O. Box 2357, Harrisburg, Pennsylvania 17120. (14 p., 11 figs.)

Middle and Upper Ordovician pelitic distal turbidite rocks of the Great Valley in Pennsylvania southwestward from Carlisle are autochthonous and compose the Martinsburg Formation. From Carlisle northeastward to the Lehigh River the Martinsburg Formation is supplanted by lithic units including coarse graywackes, limestone conglomerates, maroon and green mudstones, and cherts that are older than the Martinsburg. These constitute Taconic allochthons introduced as lithified masses from the east by gravity gliding and actual thrusting. Detailed mapping between the Susquehanna River and Carlisle reveals several distinct allochthons and an associated wildflysch of gravitational slide origin. Here, distinctive structures of Taconic, early Alleghanian, and late Alleghanian deformations are recognizable in allochthonous rocks, whereas only a single early Alleghanian deformation significantly affects autochthonous rocks west of Carlisle. Locally, Mesozoic normal faulting also affects the rocks.

Taconic-type allochthons in the Great Valley of Pennsylvania are restricted to within and in advance of the Lebanon Valley nappe, which is the farthest traveled among the Reading Prong system of nappes. Emplacement of allochthons into the envelope of the Lebanon Valley nappe was essentially classical Taconic in time and style. Continuing Taconic deformation redeposited some of the Taconic-type material from the envelope into the bathymetrically deepest part of the Martinsburg depositional basin situated in advance of the Lebanon Valley nappe. Regionally, these nappes, which involve shelf-facies rocks cored by continental basement, demonstrate increasing displacement progressively southeast of the type Taconic area.

• 81008—Diatremes and shock features in Precambrian rocks of the Slate Islands, northeastern Lake Superior.

R. P. Sage, Geological Branch, Ontario Ministry of Natural Resources, Toronto, Onatrio, M5S 1B3 Canada. (12 p., 12 figs., 1tbl.)

The Precambrian rocks of the Slate Islands exhibit shock features that have been attributed to meteorite impact. The islands occur at the intersection of two major regional faults, one of which controls the location of late Precambrian alkalic magmatism. Alkalic intrusive events north of Lake Superior occurred on the Slate Islands. These alkalic intrusions are represented by a carbonatite dike in the southeast corner of the island and a set of alkalic diabase dikes exposed at several locations on the island. Diatreme breccias cut these alkalic rocks and are interpreted to be late-stage phases of this volatile-rich alkalic magmatism. Shatter cones appear spatially related to the diatremes, and quartz grains displaying deformation lamellae are present in the matrix of the breccias. Shatter-cone structures and deformation lamellae are considered to be indicative of shock events. On the basis of field observations and data, the shock and diatreme events can be correlated and related to volcanism or alkalic magmatic processes associated with major regional fractures and not to meteorite impact.

• 81009—Seasonal variation in beach erosion and sedimentation on the Oregon coast.

William T. Fox, Department of Geology, Williams College, Williamstown, Massachusetts 01267; Richard A. Davis, Jr., Department of Geology, University of South Florida, Tampa, Florida 33620. (9 p., 13 figs., 1 tbl.)

A study of the relationship between climate and beach erosion was conducted on the Oregon coast from June 1973 through May 1974. The climatic year on the Oregon coast can be divided into two major seasons, the summer upwelling season, extending from early April through late September, and the winter storm season, from October through March. The summer upwelling season, dominated by the North Pacific high, is characterized by north winds, coastal upwelling, frequent fog, and low waves. The winter storm season is marked by strong southwest winds, heavy rain, and high waves.

During the upwelling season, north winds were 0 to 15 m/s, and waves were 1 to 3 m high. Two sets of sand bars formed in the intertidal zone and advanced up the beach at 1 to 5 m/day and expanded to the south at 5 to 15 m/day. Topographic maps of the beach and intertidal zone were surveyed at low spring tides at South Beach, Oregon. There was a net deposition of 15,100 m^3 of sand on the beach from July 4 through August 12, 1973.

In the winter storm season, the wind shifted to the southwest and increased to 22 m/s, and waves reached more than 5 m in height. Sand was stripped from the beach by longshore currents and backwash from waves during storms and returned to the beach in large bars between storms. The total volume of sand involved in the exchange was about 54,000 m^3 or 110 m^3 per linear metre of beach.

• 81010—Olistostrome in the Tesnus Formation (Mississippian-Pennsylvanian), Payne Hills, Marathon region, Texas.

Earle F. McBride, Department of Geological Sciences, University of Texas at Austin, Austin, Texas 78712. (9 p., 9 figs., 1 tbl.)

Scattered boulders of sedimentary rock rest on the Tesnus Formation in the Payne Hills, which are the surface expression of a series of imbricate thrust slices that are floored by the Dugout Creek overthrust. Evidence that the boulders belong to a sedimentary unit within the Tesnus rather than being klippen of klippen lag boulders includes the facts that (1) most boulders are unlike rocks cut by local thrusts, (2) boulders are not brecciated, (3) several boulders demonstrably occur within Tesnus shale, (4) ignoring float, boulders occur within the same 13-m-thick lithosome in the Tesnus, and (5) most boulders do not occur along the surface trace of thrust faults.

The boulders were deposited as submarine rock falls or as clasts (olistoliths) in debris flow during one or possibly several separate events. Boulders were derived from a positive element that probably was at least 12 km

to the northwest of the site of deposition. About 49% of the boulders are exotic shelf carbonate rocks of Cambrian-Ordovician age, 10% are identical to indigenous basinal rocks, and 41% are probably facies equivalents of indigenous basinal rocks. Although this western source area contributed much detritus (largely carbonate) before and after Tesnus deposition, the olistostrome is the only record of a western source in the Tesnus Formation; previous work shows that most detritus in the Tesnus came from a source area to the east.

• 81011—Late Middle and early Late Ordovician history of the Cincinnati arch province, central Kentucky to central Tennessee.

Peter E. Borella, Physical Sciences Department, Riverside City College, Riverside, California 92506; Robert H. Osborne, Department of Geological Sciences, University of Southern California, Los Angeles, California 90007. (15 p., 10 figs., 1 tbl.)

Six limestone classes occur in the Ordovician strata from Lexington, Kentucky, to Nashville, Tennessee. Sediments that make up classes 1 through 4 were deposited in "open" epicontinental marine environments, whereas classes 5 and 6 reflect more "restricted" environments. These classes were used to calculate relative mechanical energy and depth indices for a defined time-stratigraphic interval. The base of this interval is a bentonite bed that occurs near the base of the Brannon Member of the Lexington Limestone, and the top is defined by a major change in the relative abundance of platform conodonts. Relative mechanical energy and depth contours intersect the present axis of the Cincinnati arch at a high angle, which suggests that a continuous arch was not present. Shoal environments existed in the Lexington area and northeast of the present Nashville dome. These shoals correspond to the positions of the Lexington and Nashville domes or precursors to these domes which were present during the defined time interval. Paleobathymetric contours parallel east- and south-trending normal faults that are present in and south of the Lexington, Kentucky, area. This suggests that these faults were active during late Middle Ordovician time and were partly responsible for creating the bathymetric relief necessary for higher-energy carbonate sediments to accumulate. Deeper-water environments between the two shoal areas reflect the presence of the Rome trough. The general bathymetric trend for these strata is one of submergence.

• 81012—Structure and petrology of the Lanzo peridotite massif (Piedmont Alps).

Françoise Boudier, Laboratoire de Techonophysique, Université de Nantes, BP 1044 Nantes 44037, France. (18 p., 17 figs., 5 tbls.)

The Lanzomassif consists of a 150 km² body of plagioclase lherzolite, situated along the inner arc of the Alps, at the triple junction of the Ivrea zone, the Sesia-Lanzo zone, and the Pennine zone. Geophysical models show that the massif is probably still rooted in the mantle.

A reliable study of field structures, rock structures, and mineral preferred orientations is interpreted in terms of plastic flow during the solid-state emplacement of the peridotite. The kinematics of the massif are related to the relative displacement of the South Alpine and European plates during Cretaceous time. During its solid-state emplacement, the peridotite underwent a gabbroic partial melting episode that produced dikes and lenses whose orientations are related to the flow structures. The petrology of the lherzolite and gabbros indicates that the peridotite mass originated as deep as 100 km in the mantle and crossed the lherzolite solidus at about 15 to 20 km and 1250 °C during its ascent. The pyroxenitic layering is considered from a structural and petrological point of view. The observed clinopyroxene preferred orientation is assumed to be of magmatic origin and not transposed by plastic flow.

• 81013—Late Holocene history of the central Texas coast from Galveston Island to Pass Cavallo.

Bruce H. Wilkinson, Department of Geology and Mineralogy, University of Michigan, Ann Arbor, Michigan 48109; Robert A. Basse, Department of Geology, Stanford University, Stanford, California 94305. (9 p., 9 figs.)

Mid-Holocene facies underlying Matagorda Peninsula and Galveston Island record a complex history of transgressive and regressive fluvial, deltaic, and esturaine sedimentation along the central Texas coast. Data from 80 borings and jet-down holes reveal a dissimilar sequence of depositional events for northeastern and southwestern Matagorda Peninsula. Along northeastern Matagorda Peninsula and the area now occupied by the Colorado-Brazos delta plain, all major river valleys were flooded during the Holocene transgression; gulfward, a barrier system developed and was driven landward by rising sea level. As the rate of sea-level rise decreased, the Colorado and Brazos Rivers completely filled their common estuary and prograded across ancestral Matagorda and West Bays. Deltaic progradation terminated after the landward-migrating barrier system overrode the delta front; at that time, sediment was delivered directly to the Gulf of Mexico. Shortly thereafter, beach and shoreface progradation began along barrier island systems lateral to the now rapidly eroding deltaic headland. This was accompanied by renewed deposition of estuarine mud in Matagorda and West Bays.

Facies underlying southwestern Matagorda Peninsula indicate Pass Cavallo was initially established over the axis of the Lavaca River valley. Southwestward migration of the pass accompanied by landward migration of the barrier peninsula has resulted in a well-preserved facies tract of bay, distal and proximal flood tidal delta, and spit-related sediments now underlying this coastal segment.

Modern physiographic features, as well as rates of shoreline erosion and recession, are directly related to these middle and late Holocene depositional events.

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