

## GSA NEWS & INFORMATION

Monthly Newsletter of  
The Geological Society of America

VOLUME 9 NUMBER 2

February 1987

### New GSA Warehouse Now Operational

by Jim Clark  
GSA Production Manager

GSA's new publications warehouse and shipping facility has ended the Society's dependence on other firms for warehousing of our publications and for packing and shipping of orders. When GSA headquarters was in New York (1889-1967), these services were provided by the firm in Burlington, Vermont, which printed GSA's journals and books. Then in 1981, fourteen years after the move of headquarters operations to Boulder, the warehouse inventory and shipping operations were brought here but were still handled by a local contractor.

As GSA's publication lineup and sales grew in the early 1980s, the cost of contractual warehouse space and order fulfillment labor also grew. By late 1984 it was apparent that it would be more economical for the Society to build and operate its own facility. Executive Director F. Michael Wahl assumed responsibility for the task personally, and in 1985 he obtained Executive Committee and

Council approval to build the facility in an industrial park less than five miles from headquarters. Work began immediately under Wahl's direction and in February 1986 the handsome 9,200-square-foot structure went into service.

The warehouse is built of "tilt-up" cement panels poured in place and designed to match the exterior of GSA headquarters. A large bronzed reproduction of the GSA seal adorns one corner of the building. Inside, steel racks hold four levels of pallets, each pallet containing up to five levels of cartons of books and journal back-issues. A considerable amount of display materials and other items used by the staff only occasionally also are stored in the warehouse, including shipping crates and archive files.

A large mail room on one side, used for pick-and-pack order preparation and shipping, is equipped with mail handling and processing equipment. Other equipment includes a gas-operated

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**Books and other publications ordered from GSA are shipped from the new warehouse.**

### GSA Warehouse (continued from p. 29)

fork-lift truck, two small hand-operated pallet lifts, and roll-away ladders. The Society's mail processing operation was recently moved here from the headquarters building to be combined with warehouse operations. Jon Olsen, who came to GSA from our last warehouse contractor, handles the warehouse, mail operations, and order fulfillment.



GSA Executive Director F. Michael Wahl surveys stock of *Memoirs* in warehouse.

### Prize Winners at San Antonio

Congratulations to the lucky people below, whose names were drawn as prize winners at the GSA Bookstore and DNAG booths at the 1986 GSA Annual Meeting, in San Antonio, Texas.

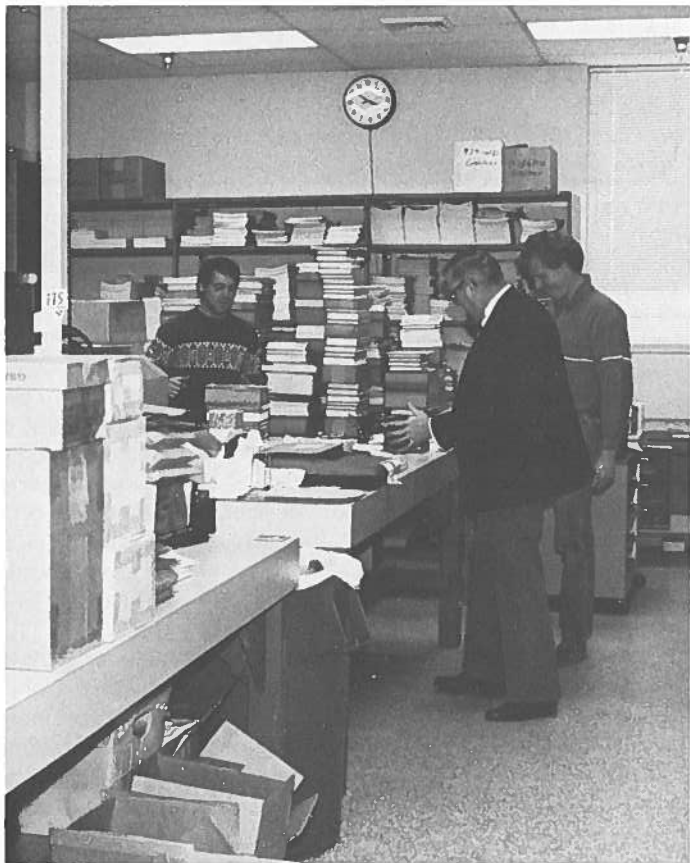
GSA bronze belt buckle: Gary Hemming, Stony Brook, New York; James L. Harding, Richmond Hill, Georgia; Vic Baker, Tucson, Arizona; Neil Petersen, Houston, Texas.

GSA Special Paper 208, *Extensional Tectonics of the Southwestern United States: A Perspective on Processes and Kinematics*, edited by Larry Mayer: Cynthia Collier, East Grand Forks, Minnesota; Ronald Teseneer, Anchorage, Alaska; Simon Poulson, State College, Pennsylvania; Mark Gonzalez, Madison, Wisconsin.

DNAG Volume M, *Geology of North America, The Western North Atlantic Region*, edited by P. R. Vogt and B. E. Tucholke: Dave Brice, Berkeley, California; Don Medwedeff, Princeton, New Jersey; Clay Newton, Tucson, Arizona; Helmut Will, South San Francisco, California.

DNAG Centennial Field Guide 6, *Southeastern Section*, edited by T. L. Neathery: Jacqueline Lambricuts, Houston, Texas; Gwen Luttrell, Reston, Virginia; Hughbert Collier, Abilene, Texas; Roger Brewer, Tuscaloosa, Alabama.

Barbara Getman, a 7-year member of the GSA staff, now has an office adjacent to the mail room where she handles order entry and processing. That operation is scheduled to be computerized in 1987, at which time the warehouse will be linked by direct line with the headquarters computer systems. The new facility and computerized systems will greatly speed processing and fulfillment of orders for books and other GSA products.



Mike Wahl has suggestions for warehouseman Jon Olsen (right) and temporary helper Chris Lobo (left).

### Quaternary Geology and Geomorphology Division Honors Goldthwait with New Career Award

GSA's Quaternary Geology and Geomorphology Division has established a Distinguished Career Award, and the first recipient is Richard P. Goldthwait.

Goldthwait, professor emeritus of Ohio State University, Columbus, accepted the award at the 1986 GSA Annual Meeting in San Antonio, Texas. The division cited Goldthwait's contributions to knowledge of glaciers and glacial deposits and his influence on the direction of research in that field.

#### Vol. 9, no. 2 GSA News & Information February 1987

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 additional mailing office.

Prepared from contributions from the staff and membership. Executive Director: F. Michael Wahl; Managing Editor: Faith Rogers; Associate Editor: Lee Gladish; Director of Communications: Nancy A. Reed; Production and Advertising Manager: James R. Clark; Marketing/Advertising Assistant: Ann H. Fogel; Assistant Production Manager: Meredith L. Larson; Production Assistants: Mona T. Gonzales and Joan E. Manly.

\*Advertising: Contact James R. Clark or Ann H. Fogel (303) 447-2020.



# CENTENNIAL NEWS

by Allison (Pete) Palmer

## Some More Kudos

By the time you receive this, two more DNAG books should be at the printer: *Centennial Field Guide: Northeastern Section*, and *Geomorphic Systems of North America*. The authors and editors have done all of their work, and thus

acknowledgments of work successfully completed are in order. Listed below are your colleagues who have made those two books possible. Special thanks to editors Dave Roy and Will Graf for doing outstanding jobs with their books.

### *Centennial Field Guide: Northeastern Section*

Editor: David C. Roy, Department of Geology and Geophysics, Boston College, Boston, Massachusetts

J. N. Aleinikoff  
M. M. Anderson  
N. T. Arndt  
D. Bahat  
R. H. Bailey  
B. Baldwin  
J. R. Bartlett  
C. A. Baskerville  
J. Beland  
J. F. Bender  
T. M. Berg  
M. P. Billings  
P. A. Borque  
W. Bosworth  
W. A. Bothner  
E. L. Boudette  
C. E. Brett  
E. Brick  
I. A. Brookes  
R. J. Burks  
D. W. Caldwell  
P. E. Calkin  
T. R. Carter  
S. Chisick  
M. L. Crawford  
J. W. Creasy  
K. L. Currie  
A. Dreimanis  
G. R. Dunning  
R. M. Easton  
J. Edwards, Jr.

W. T. Elberty, Jr.  
T. Engelder  
R. Eshelman  
R. T. Fail  
D. W. Fisher  
J. J. Fisher  
M. F. Fitzpatrick  
L. R. Fyffe  
N. R. Gadd  
O. Gates  
P. Geiser  
A. R. Geyer  
P. E. Giblin  
M. R. Gibling  
J. D. Glaser  
R. Goldsmith  
R. P. Goldthwait  
D. R. Grant  
N. H. Gray  
J. W. Green  
K. Hafner-Douglass  
L. S. Hanson  
N. L. Hatch  
O. D. Hermes  
J. Hibbard  
A. V. Hiller  
R. Hon  
D. M. Hoskins  
A. M. Hussey III  
J. D. Inners  
R. S. Jacoby

C. E. Jahrling II  
K. G. Johnson  
J. D. Keppie  
J. C. Kraft  
G. G. Lash  
R. Laurent  
S. P. Leatherman  
J. R. Levine  
D. F. Logue  
M. C. Loiselle  
A. Ludman  
J. Malpas  
S. Marshak  
R. Marquis  
S. R. McCutcheon  
J. G. McHone  
C. J. Mehrtens  
C. Merguerian  
R. H. Moench  
S. Mosher  
J. B. Murphy  
D. P. Murray  
A. J. Naldrett  
R. S. Naylor  
A. E. Nelson  
R. B. Neuman  
R. P. Nickelsen  
R. N. Oldale  
R. K. Olsson  
P. H. Osberg  
A. A. Petryk

R. K. Pickerill  
T. E. Pickett  
J. H. Puffer  
A. R. Pyke  
A. V. Raiford  
D. W. Rankin  
N. M. Ratcliffe  
B. H. Reck  
D. Reusch  
D. A. Richter  
J. Riva  
W. D. Romey  
D. C. Roy  
W. D. Sevon  
D. R. Sharpe  
J. W. Skehan  
R. Slingerland  
L. A. Srogi  
C. St. Peter  
R. S. Stanley  
G. R. Stevens  
P. G. Telford  
R. J. Tracy  
W. E. Trzcienski, Jr.  
F. B. Van Houten  
P. R. Vogt  
M. E. Wagner  
M. J. Webster  
K. J. White  
D. A. Williams  
R. P. Wintsch

### *Geomorphic Systems of North America*

(Centennial contribution from the Quaternary Geology and Geomorphology Division of GSA)

Editor: William L. Graf, Department of Geography, Arizona State University, Tempe, Arizona

M. Aylsworth  
W. Back  
V. R. Baker  
M. J. Bovis  
W. C. Bradley  
G. R. Brakenridge  
T. F. Bullard  
L. D. Carter  
J. J. Clague  
J. M. Coleman  
J. C. Dohrenwend  
M. M. Fenton  
T. W. Gardner  
W. L. Graf  
R. Greeley

T. C. Gustafson  
R. F. Hadley  
P. W. Hare  
J. A. Heginbottom  
R. Hereford  
V. T. Holliday  
R. B. Jacobson  
C. A. Kaszycki  
H. M. Kelsey  
R. H. Kesel  
R. A. Klassen  
P. D. Komar  
J. Laity  
D. S. Loewenherz  
D. R. Lowe

R. F. Madole  
W. H. Mathews  
P. F. McDowell  
C. M. Menges  
D. M. Mickelson  
H. H. Mills  
S. C. Mora  
R. B. Morrison  
D. R. Muhs  
W. L. Newell  
W. R. Osterkamp  
M. Pavich  
F. J. Pazzaglia  
J. S. Pomeroy  
D. F. Ritter

N. W. Rutter  
I. D. Sasowsky  
W. W. Shilts  
D. A. Swanson  
C. E. Thorn  
T. J. Toy  
J. W. Troester  
R. B. Waite, Jr.  
H. J. Walker  
S. W. Wells  
M.-K. Woo  
R. A. Young

Final Announcement

## CORDILLERAN SECTION, GSA, 83rd Annual Meeting

Hilo, Hawaii  
May 20-22, 1987

HOUSING DEADLINE: APRIL 6

PREREGISTRATION DEADLINE: APRIL 20

The Cordilleran Section of the Geological Society of America will meet at and be hosted by the University of Hawaii, Hilo, May 20-22, 1987. The meeting will be hosted by the Division of Natural Sciences, and will be held jointly with the Paleontological Society, Pacific Coast Section. Local Committee: All located at the University of Hawaii at Hilo, Hilo, Hawaii, 96720. General Chairmen: Richard Hazlett and Joseph Halbig, Division of Natural Sciences, (808) 961-9302 (direct to office, hours irregular) or 961-9383 (secretary—call between 8:30 a.m. and 4:30 p.m. PST); Audiovisual Aids: Robert Fox, (808) 961-9379 or 961-9383 (hours as above); Treasurer: Judith Hora (808) 961-9456.

### REGISTRATION INFORMATION

*For your convenience, general information and registration for the meeting (including field trips) are being handled by the Meetings Department, GSA headquarters, P.O. Box 9140, Boulder, Colorado 80301. Send preregistration forms to the Boulder office. For information: Kathy Ohmie, Registration Manager (303) 447-2020 (call between 8:30 a.m. and 4:30 p.m. MST).*

### GENERAL INFORMATION

The Big Island of Hawaii, largest and youngest island in the Hawaiian Archipelago, has an area of approximately 4,038 square miles and is 120 miles southeast of Honolulu, on the Island of Oahu. In addition to the active volcanoes, there are acres of tropical flowers, large sugar-cane plantations, waterfalls, jungle gorges, and macadamia nut and papaya farms. You can golf, swim, fish, hike, and visit many historical sites on the island. Shopping in Hilo, the state's second largest city and county seat of the Big Island, is an adventure in itself; the choice ranges from modern shopping complexes to exotic out-of-the-way shops and craft centers. Weather is always mild, but showers are common, so you should come prepared with rain gear. If you have plans to visit locations at higher elevations, such as Hawaii Volcanoes National Park, bring along a sweater or light jacket. Life is casual in Hawaii, and dress is generally informal; suits and ties are seldom worn.

### TECHNICAL PROGRAM

The technical program consists of volunteered papers that are presented in oral or poster session and invited papers presented in symposia.

#### Symposia

1. **Evolution of the Brooks Range Orogen: Collisional Collapse of a Continental Margin?** Wesley K. Wallace, University of Alaska; Thomas E. Moore, U.S. Geological Survey, Menlo Park.
2. **Crustal Seismic Profiling in the Southwestern United States I; Results of CALCRUST Investigations.** Eric Frost, University of California at Santa Barbara; David Okaya, Lawrence Livermore Laboratory.
3. **Crustal Seismic Profiling in the Southwestern United States II; Results of Industry Investigations, Implications for Basin Formation and Hydrocarbon Formation.** Geoffrey Galvan, Phillips Petroleum; Larry Garmezny, Shell Petroleum.
4. **Seismotectonics of the Central California Coast Ranges; Offshore and Onshore Neotectonic Relations from Monterey Bay to Transverse Ranges.** D. Burton Slemmons, University of Nevada-Mackay School of Mines; Mike Lloyd Cluff, Pacific Gas & Electric; Robert Brown, U.S. Geological

Survey, Menlo Park; Dick McMullen, U.S. Nuclear Regulatory Commission.

5. **Effective Discovery of Gold Deposits.** Marshall A. Koval, Rockwell International; Roland H. Ridler, Derry, Michener, Booth, and Wall, Inc.
6. **Nature and Origin of Cordilleran Magmatism.** J. Lawford Anderson, University of Southern California.
7. **The Fourth Columbia River Basalt Symposium.** James L. Anderson, Pomona College; Peter R. Hooper, Washington State University; Steven P. Reidel, Rockwell International.
8. **Hawaiian Petrology.** Michael O. Garcia, Hawaii Institute of Geophysics; David A. Clague, U.S. Geological Survey, Menlo Park.
9. **Volcanic Islands and Seamounts of the Pacific Ocean Basin.** James N. Kellogg and George P.L. Walker, University of Hawaii.
10. **The Pacific Hot Spots: Seasat, Magnetism and Volcanism.** Robert C. Bostrum, University of Washington; David A. Clague, U.S. Geological Survey, Menlo Park.
11. **Adaptation and Maladaptation in the Fossil Record** (sponsored by the Paleontological Society, Pacific Coast Section). Gregory J. Retallack, University of Oregon.
12. **Geological Hazards and Monitoring.** Robert I. Tilling, U.S. Geological Survey, Reston; Bruce A. Bolt, University of California at Berkeley.
13. **Earth Science Education, Society, and Technology.** Bernard W. Pipkin, University of Southern California; Andrew J. Verdon, American Geological Institute.

### PROJECTION EQUIPMENT

One projector for standard 2" x 2" slides will be in each meeting room. In addition, a limited number of overhead projectors will be available for informal and postpresentation discussions. *Speakers are expected to bring their own preloaded slide carousels.* A preview room on campus will be open beginning on Wednesday morning.

### FIELD TRIPS

**Registration.** Field trip registrants are required to be registered  
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### **Cordilleran Section Meeting** (continued from p. 32)

for the meeting. If you do not plan to attend the meeting but do plan to participate in a field trip, you may register using the one-day registration fee. This will entitle you to a one-day badge for the day of your choice.

Because of unavoidable constraints concerning transportation and local logistics, only a limited number of participants can be allowed to attend each field trip. Attendance will be determined on a first-come, first-served basis.

Registration procedures, deadlines, and form are provided in this announcement. Preregistration is required for all premeeting trips. Registration for postmeeting field trips after the preregistration deadline may be possible if trip logistics and space permit.

All trips originate and end in Hilo, unless otherwise specified. Information on specific departure points and times will be sent to participants three to four weeks in advance of each trip. Trips are technical in nature and can be physically rigorous.

**Cancellation deadline** is April 27, 1987. All refund requests must be made in writing and postmarked by this date. No refunds will be given for cancellations after this date.

If the Cordilleran Section is forced to cancel a trip after April 27 because of logistical problems or registration requirements, full refunds will be given to registrants. Please be aware of cancellation deadlines and penalties imposed by airlines if you wish to change your flight arrangements because a field trip you registered for is canceled. It is a good idea to plan alternatives ahead of time.

The Field Trip Chairman is Richard Hazlett, (808) 961-9302 (office) or (808) 961-9383 (secretary).

*General field trip information and registration are being handled by the GSA Registration Manager, Kathy Ohmie, GSA headquarters, (303) 447-2020.*

**Guidebooks.** Field trip guidebooks may be purchased on-site in the registration area. After the meeting, contact Richard Hazlett, Department of Geology, Division of Natural Sciences, University of Hawaii, Hilo, Hawaii 92720.

### **Premeeting Trips**

#### **1. Mauna Loa Summit Backpacking Excursion.** May 17-19.

This 3-day, 45-km, high-altitude hike over recent aa and pahoehoe flows will take participants across the stark summit of the world's largest volcano, Mauna Loa, along the rim of its 200-m-deep summit caldera, Mokuaweoweo, and down the upper northeast rift zone to Puu Ulaula (Red Hill), near the site of the 1984 Mauna Loa flank eruption that threatened the city of Hilo. Views of diverse volcanic geomorphology are outstanding.

Persons wishing to participate in this hike *must be in excellent physical condition* and prepared for potential cold-weather camping conditions. A night of altitude acclimitization at 6500 feet will be arranged prior to departure for the 13,600 foot summit.

Leaders: John P. Lockwood, U.S. Geological Survey, Hawaii Volcanoes National Park, HI 96718; Dan Miller, University of Hawaii. Contact Richard Hazlett, (808) 961-9302, for further information.

Limit: 30; Cost: \$60

#### **2. Kilauea Volcano Tour.** May 19.

This bus trip will allow participants to examine some of the easily accessible geologic highlights of Kilauea Volcano, including the summit caldera, the upper east rift zone, Chain of Craters Road, and the lower east rift zone. The trip may include a stop

to take a walk of moderate length (4 miles) along a National Park Service trail.

Leaders: Richard B. Moore and Tina Neal, (808) 967-7982, U.S. Geological Survey, Hawaii Volcanoes National Park, HI 96718. Limit: 98; Cost: \$30

#### **3. Geology of Maui.** May 18-19.

This overnight tour begins in west Maui. Day One is a survey of cones and flows of the Wailuku, Honuaula, and Lahaina Volcanics, ranging in composition from tholeiitic basalts to trachytes and hawaiites. Outstanding views of island geomorphology, from Iao Valley to the coral beaches of the southwestern coast, lie along the way. Day Two is a fairly arduous 11-mile hike through Haleakala Crater. The route descends from 10,500 feet elevation to the crater floor at 7000 feet, and then back out at 8000 feet. Scenery is spectacular, including Kula Volcanic Series flows and dikes, posterosional cones and flows, fissures, and craters. Time permitting, a lava tube will be explored. Reasonable physical fitness is a must.

Leader: John Sinton, (808) 948-7751, Dept. Geology and Geophysics, University of Hawaii, Honolulu, HI 96822. Limit: 50; Cost: \$130 (air transportation to Maui and evening meals not included)

#### **4. Alternate Energy Resources, Island of Hawaii.** May 18.

This bus excursion visits the sites of several state-of-the-art energy development projects, including the Puna geothermal plant, Kilauea east rift zone, and the Ocean Thermal Energy Facility, Keahole Point, Kona. The wind farm at Kohala will also be examined. Local facility experts will provide on-site tours.

For further information, contact Joseph Halbig, (808) 961-9302, Dept. of Geology, University of Hawaii, Hilo, HI 96720. Limit: 90; Cost: \$40 (lunch included)

### **Postmeeting Trips**

#### **5. Geology of Koolau Volcano and the Honolulu Volcanics, Oahu, Hawaii.** May 23-24.

This overnight trip explores results of recent studies on the structure of the Koolau dike complex and the petrology and geochemistry of the Koolau tholeiites and overlying Honolulu nephelinites. Participants will explore much of the geology of southeastern Oahu. Accommodations have been arranged at the Travel Lodge at Waikiki. (Cost does not include air ticket to Honolulu from Hilo.)

Leaders: Michael O. Garcia and George P.L. Walker, (808) 948-7640, Dept. Geology and Geophysics, University of Hawaii, Honolulu, HI 96822

Limit: 50; Cost: \$85 (air transportation to Honolulu not included)

#### **6. Volcanoes of the Island of Hawaii.** May 23-24.

This circle-island trip will explore the five volcanoes of the Big Island. Transportation is by school bus, with an overnight stop at the Kona Hukilau Hotel in Kailua. Highlights include a visit to the Hawaiian Volcano Observatory; South Point, including an opportunity to visit a littoral cone and olivine sand beach; the trachyte pumice cone at Puu Waawaa on Hualalai with its associated obsidian inclusions; and a cinder cone at 9000 feet on Mauna Kea, containing cored bombs with ultramafic inclusions. Cost does not include breakfasts or dinner on May 23.

Leaders: William Ebersole, (808) 966-9216, and Scott Rowland, Division of Natural Sciences, University of Hawaii, Hilo, HI 96720. Limit: 90; Cost: \$55 (breakfasts and dinners not included)

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## **Cordilleran Section Meeting** (continued from p. 33)

### **7. Summit Geology of Mauna Kea, and Mauna Kea Astronomical Complex. May 23.**

Mauna Kea, the tallest peak in the Hawaiian chain, rises to 13,796 feet above sea level. Repeated glaciations were interspersed with volcanic eruptions during the past 150,000 years. The trip includes a tour of the astronomical observatories at the summit and a downhill hike from near the summit (with a vertical descent of about 0.5 mile) for examination of glacial and volcanic features and stratigraphy.

Leaders: Edward W. Wolfe, (808) 967-8276, U.S. Geological Survey, Hawaii Volcanoes National Park, HI 96718; David P. Cruikshank, Institute for Astronomy, University of Hawaii  
Limit: 40; Cost: \$40

### **8. Day Hike to Pu'u O'o, Kilauea East Rift Zone. May 24.**

The current eruption series at Kilauea began in January 1983, and produced Pu'u O'o, a cinder/spatter cone that is now 255 m high. As of this writing, the eruption has shifted to a vent downrift of Pu'u O'o, which may or may not be accessible on foot at the time of the meeting. The hike will start at the Mauna Ulu trailhead, in Hawaii Volcanoes National Park, and follow the east rift zone for eight miles, to the base of Pu'u O'o. The first 4 miles of the trail leads around the Mauna Ulu shield on pahoehoe flows from that eruption. The trail then proceeds past a large prehistoric pit crater and through a stretch of rain forest. The last 2 miles cross tephra deposited during the past 3 years by high lava fountains from the Pu'u O'o vent. The trip will reach the site of a fissure eruption that occurred on the west side of Pu'u O'o in July 1986. This eruptive episode produced ground fissures, spatter cones, pahoehoe flows, and giant lava tree casts that are readily accessible. Participants should be in good physical condition for this 16-mile round-trip hike and should come equipped with hiking boots (not running shoes) and good rain gear.

Leaders: Ron Hanatani and Christina Helicker, (808) 967-7328, U.S. Geological Survey, Hawaiian Volcano Observatory, HI 96718

Limit: 45; Cost: \$15

## **ERUPTIVE ACTIVITY**

Should a volcanic eruption occur during the meeting, an evening shuttle-bus service will be provided for participants interested in viewing the volcano, depending on conditions of visibility.

## **PUBLICATIONS**

*Abstracts with Programs* may be reserved for on-site pick-up by ordering copies on the registration form. Both *Abstracts with Programs* and the field trip guidebooks may be purchased at the registration desk on-site.

## **EXHIBITS**

Exhibits of educational and commercial organizations will be on display at the university. Exhibit space must be reserved by April 6. Contact Joseph Halbig, (808) 961-9383.

## **SPECIAL EVENTS**

### **Opening Reception**

An opening reception will be held beginning at 7:00 p.m. on the evening of Tuesday, May 19, in the banquet room of the Hilo Hawaiian Hotel. Join with other meeting participants for complimentary pupus (appetizers). Drinks will be available for purchase at a cash bar at reasonable rates.

## **Luau**

A traditional Hawaiian luau is planned for the evening of Thursday, May 21, at 7:30 p.m. in the banquet room of the Hilo Hawaiian Hotel. Receive a beautiful flower lei, and have an evening of fun with Hawaiian food and entertainment featuring Polynesian song and dance. Tickets are required at a cost of \$17 each, and should be purchased at the time of registration. Guests of the meeting are welcome to attend at the same ticket price. A cash bar will be available. Preregistration is suggested. Tickets on-site will be limited.

## **Business Meeting Luncheon**

The Cordilleran Section Business Meeting Luncheon will be held at 12:00 noon on May 22. Cost is \$12. Tickets may be purchased at the on-site registration desk located under the covered lanai of the University of Hawaii at Hilo (UHH) Library. Preregistration is suggested. Tickets on-site will be limited.

## **HOUSING**

Rooms have been blocked at two adjacent hotels on Hilo Bay that are offering special convention rates to the meeting attendees. In addition, apartment and dormitory facilities will be available on the UHH campus, site of the technical program. The campus is not within easy walking distance to restaurants or other commercial establishments. Free ground transportation will be provided to meeting participants between the hotels and the campus throughout the meeting.

## **Reservations**

Complete IN FULL the Housing Request Form and return it as soon as possible. The Housing Bureau will accept reservations submitted on this form ONLY. Your request must be postmarked NO LATER THAN APRIL 6, 1987. Requests received after the deadline will be processed if rooms remain available.

## **Assignment**

Rooms will be assigned on a first-come, first-served basis as they are received by the Housing Bureau. Persons indicating preference of hotel accommodations will be assigned the hotel of their first choice whenever possible, but the Housing Bureau reserves the right of making assignment to either hotel. Preference for UHH dormitory facilities will be given to students. Confirmation will be sent to you within three weeks after your request form is received.

## **Payment**

FULL PAYMENT is required at the time of your request. All hotel rooms are subject to 9.43% Hawaii tax, which is to be paid to the hotel after check-in; the rate given for UHH accommodations is not taxed. Make payment for your housing accommodations by check or money order; credit card charges will not be accepted by the Housing Bureau. Please make remittance payable to: 1987 Cordilleran Meeting.

## **Changes and Cancellations**

If you must CHANGE or CANCEL your room reservations, write or phone the Housing Bureau at (808) 961-9302, or (808) 961-9383 to leave a message. Your notice of cancellation must be received prior to 48 hours of your scheduled arrival, or the amount of the first night's deposit may be subtracted from your refund. If you wish to make changes in room accommodations after your arrival, do so with the respective hotels or with the UHH Housing Office.

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**Cordilleran Section Meeting** (continued from p. 34)

**Available Accommodations**

1. Hilo Hawaiian Hotel Single: \$48; Double: \$51; Triple: \$58  
71 Banyan Drive Suites: \$66, \$107, and \$126  
Hilo, HI 96720  
Check-in: 12:00 noon; Check-out: 12:00 noon  
All major credit cards accepted.  
Suites are one-bedroom with a double pull-out bed in the living-room area; the two higher priced suites have kitchenettes.
2. Naniloa Hotel Single: \$48; Double: \$51; Triple: \$58  
93 Banyan Drive Suites: \$73 and \$95.  
Hilo, HI 96720  
Check-in: 2:00 p.m.; Check-out: 12:00 noon

All major credit cards accepted.

Suites are one-bedroom with a double pull-out bed in the living-room area.

3. UHH Housing Office Dormitory: Single: \$17; Double: \$17  
University of Hawaii Apartment: Single: \$22; Double: \$22  
Hilo, HI 96720-4091  
Check-in: 12:00 noon; Check-out: 12:00 noon  
Rates include only linen service. Dormitory configuration has two twin beds per room with dormitory bath facilities. Apartments are two bedrooms (two twins each) with shared baths and living room/kitchen facilities. **CAMPUS HOUSING FACILITIES ARE AVAILABLE FOR OCCUPATION ONLY DURING THE PERIOD MAY 18 THROUGH MAY 26.**

(continued on p. 36)

**HOUSING REQUEST FORM**

**1987 Cordilleran Section Meeting**

**DEADLINE: April 6, 1987**

Please print or type all items to assure accuracy.  
Complete each part below in detail.  
If more than one room is needed, attach additional completed copies of this form.  
Confirmation will be sent to the individual making the request.

Mail to: GSA Housing Bureau  
Natural Sciences Division  
University of Hawaii at Hilo  
Hilo, HI 96720-4091

**Choice of Housing**

List at least two choices of housing, from top to bottom in decreasing priority.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Check one**

Single \_\_\_\_\_ Double \_\_\_\_\_ Triple \_\_\_\_\_

**Special requests:** Indicate below any special needs, such as bed size, or need for suite accommodations.

Arrival date: \_\_\_\_\_ Departure date: \_\_\_\_\_

Person requesting housing—type or print

Last name \_\_\_\_\_ First \_\_\_\_\_

Name of institution or firm \_\_\_\_\_

Street address or P.O. Box number \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP code \_\_\_\_\_

( ) \_\_\_\_\_ ( ) \_\_\_\_\_  
phone day evening

Guest name(s): Print last name first

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

Total remitted: \$ \_\_\_\_\_  
Check or money order payable to: 1987 Cordilleran Meeting

**Saga Foods Meal Plan Order—University of Hawaii at Hilo**

**1987 Cordilleran Section Meeting**

**DEADLINE: April 6, 1987**

Name \_\_\_\_\_ (One name per form, please)  
Last First

	Tues., May 19	Wed., May 20	Thur., May 21	Fri., May 22	Sat., May 23	Qty	Total	
	circle meals requested							
Breakfast \$2.80	B	B	B	B	B	_____	× \$ 2.80 = \$ _____	
Lunch \$4.10	L	L	L	L	L	_____	× \$ 4.10 = \$ _____	
Dinner \$4.90	D	D	D	D	D	_____	× \$ 4.90 = \$ _____	
Daily Meal Plan \$10.65	3 Meals	3 Meals	3 Meals	3 Meals	3 Meals	_____	× \$10.65 = \$ _____	

Total remitted \$ \_\_\_\_\_

**SEND THIS FORM IN WITH YOUR HOUSING REQUEST**

Check or money order payable to: **Saga Foods**

**Cordilleran Section Meeting** (continued from p. 35)

**MEAL PLAN**

The campus food services will provide a meal plan for participants and guests at the UHH cafeteria. The rate for all three meals on any one day is \$10.65 total. If you elect only one or two meals on a day the rates are \$2.80 for breakfast; \$4.10 for lunch; \$4.90 for dinner. Door (walk-in) rates will be approximately 10% higher than the costs given above for individual meals. These costs cover your meals on an "all you can eat" basis.

All persons who plan to be housed on campus should seriously consider subscribing to the meal plan; there are no restaurants or food stores near the campus. The convenience of the bus shuttle to the hotels until 6:20 p.m. each evening will also allow persons housed off-campus to fully participate in the food service.

Please indicate the meal plan of your choice by circling the meals (B = breakfast, etc.) for the days May 19 through May 23. Indicate your choices on the housing and food request form. *Make separate payment for the meal plan by check or money order to Saga Foods. Submit a separate copy for each person requesting a meal plan. You will not receive a meal card, but will be identified at meals by your badge or other identification, such as a student I.D. or driver's license.*

**AIR TRANSPORTATION**

International Travel Service (ITS) of Hilo, the official travel agent for the meeting, will make and coordinate travel arrangements for meeting participants and guests at their request. Reduced fare

rates have been negotiated with airlines for flights and flight connections out of several major U.S. cities to Hawaii. The dates for which you may make most flight arrangements are convenient.

Prior to this announcement, brochures and other information on flight arrangements were mailed by ITS to a large percentage of the Cordilleran Section membership and to interested organizations. If you have not received this information and are interested in arranging for travel through ITS, write to International Travel Service, re: 1987 Cordilleran Meeting, 106 Kamehameha Avenue, Hilo, HI 96720, or call 1-800-542-0422.

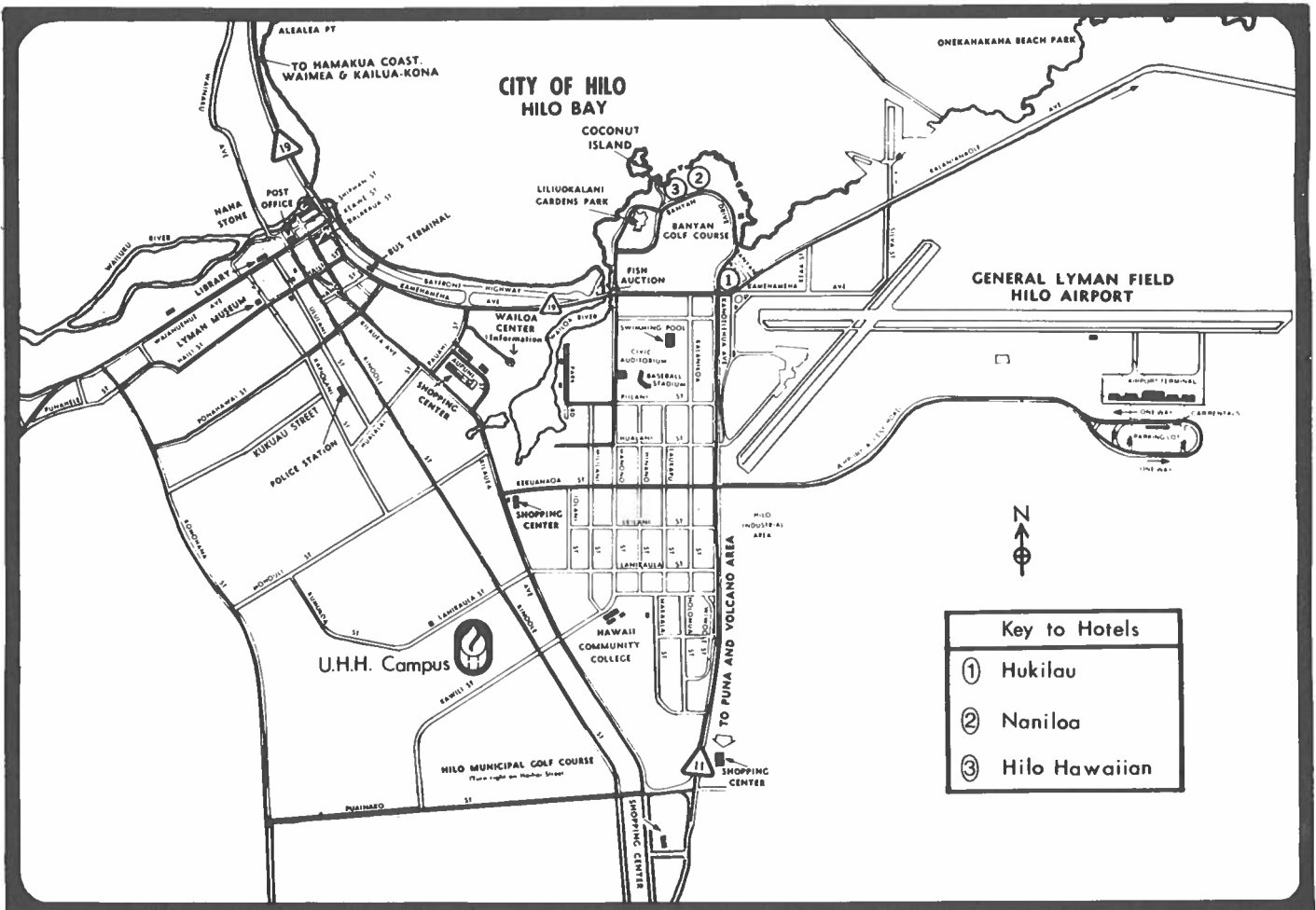
During the days of the meeting (May 20-22), ITS will have a representative present in the meeting headquarters office to assist in your travel planning. During your stay, over any premeeting and postmeeting dates, ITS may be contacted at (808) 935-1131.

**GROUND TRANSPORTATION**

Shuttle transportation from the Hilo airport to the housing areas will be available beginning at 7:00 a.m. on Monday and Tuesday, May 18 and 19, and continuing until approximately 8:00 p.m. The shuttle stop will be located outside the interisland luggage return area, near the taxi stand.

On meeting days, shuttle buses will operate between the hotel area and campus at 20-minute intervals. The campus bus stop will be located in the parking area adjacent to the Student Center, and each hotel will have a bus stop located at their covered entrance areas.

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**PREREGISTRATION FORM**

GSA Cordilleran Section, 83rd Annual Meeting, May 20-22, 1987, Hilo, Hawaii  
held jointly with the Paleontological Society, Pacific Coast Section

Preregistration **MUST BE POSTMARKED BY NO LATER THAN April 20, 1987**. FULL payment and form **MUST** accompany all preregistration requests. Unpaid purchase orders are **NOT** accepted as valid registration. One form per registrant, please. All field trip registrants must register for the meeting. **CANCELLATION** deadline: April 27. No refunds on cancellations received after this date. A confirmation card will be your receipt.

**REGISTRATION INFORMATION: GSA HEADQUARTERS (303) 447-2020**

Type or print—Copy for your records

Name (Last)	(First)	Nickname for badge
Institution/Employer		
Mailing Address		
City	State	Zip code
Country	Business phone	Home phone
Guest/Spouse Name (Last)	(First)	
City	State/Country	

Member Affiliation: (1) GSA \_\_\_\_\_ (2) PS \_\_\_\_\_

**PREREGISTRATION FEES**

		Fee	Qty	Amount
Professional Member (member affiliation checked above) .....	(1)	\$ 40	1	\$ _____
Member, one-day (circle day: W T F ) .....	(2)	\$ 25	1	\$ _____
Professional Nonmember .....	(3)	\$ 55	1	\$ _____
Nonmember, one-day (circle day: W T F ) .....	(4)	\$ 33	1	\$ _____
Student Member (member affiliation checked above) .....	(5)	\$ 10	1	\$ _____
Member, one-day (circle day: W T F ) .....	(6)	\$ 8	1	\$ _____
Student Nonmember .....	(7)	\$ 20	1	\$ _____
Nonmember, one-day (circle day: W T F ) .....	(8)	\$ 13	1	\$ _____
Guest (fill in name above for badge) .....	(9)	\$ 0		
 Abstracts with Programs—reserved (on-site pick-up) .....	(62)	\$ 6		\$ _____

**SPECIAL EVENTS**

Luau .....	May 21	(14)	\$ 17	\$ _____
Business Meeting Luncheon .....	May 22	(15)	\$ 12	\$ _____

**FIELD TRIPS (meeting registration required)**

<b>Premeeting</b>				
1. Mauna Loa Summit Backpacking .....	May 17-19	(31)	\$ 60	\$ _____
2. Kilauea Volcano Tour .....	May 19	(32)	\$ 30	\$ _____
3. Geology of Maui .....	May 18-19	(33)	\$ 130	\$ _____
4. Alternate Energy Resources/Hawaii .....	May 18	(34)	\$ 40	\$ _____
<b>Postmeeting</b>				
5. Koolau Volcano/Honolulu Volcanics .....	May 23-24	(35)	\$ 85	\$ _____
6. Volcanoes of Island of Hawaii .....	May 23-24	(36)	\$ 55	\$ _____
7. Mauna Kea Summit .....	May 23	(37)	\$ 40	\$ _____
8. Pu'u O'o/Kilauea East Rift Zone .....	May 24	(38)	\$ 15	\$ _____
			Total:	\$ _____

Remit in U.S. funds, payable to: 1987 CORDILLERAN MEETING

or charge:  American Express    Choice    VISA  
 Diners Club/Carte Blanche    MasterCard

Card expires: \_\_\_\_/\_\_\_\_/\_\_\_\_ card number \_\_\_\_\_

Signature \_\_\_\_\_

Mail to: 1987 GSA CORDILLERAN MEETING, GSA HEADQUARTERS,  
P.O. BOX 9140, BOULDER, CO 80301

FOR OFFICE USE ONLY	
Deposit date _____	Comment _____
Balance Due \$ _____	_____
Refund \$ _____	_____
Refund Ck # _____	_____
Refund date _____	_____

### **Cordilleran Section Meeting** (continued from p. 36)

On Saturday and Sunday, May 23 and 24, shuttle service will again be available to the Hilo airport for departure, beginning at 6:00 a.m. and continuing until approximately 6:30 p.m.

### **INFORMATION**

A meeting headquarters office will be open during the days of the meeting to serve as an organizational and informational center. It will be in the EKH classroom complex on campus, in the same general area where most of the meeting and preview rooms are located. In addition, general information can be obtained by calling 961-9383 during business hours. This telephone number is also available for use premeeting and postmeeting. *General information and preregistration are being handled at GSA headquarters, Boulder, Colorado (303) 447-2020.*

A message board will be located under the covered lanai of the UHH library. The poster sessions and on-site registration table will also be at this location.

### **GUEST ACTIVITIES**

The Naniloa Hotel has arranged an activity schedule for guests which will consist of tours that highlight the unique attractions in the Hilo area. Registrants are encouraged to bring their families to share this part of the meeting experience.

Registration for the tours can be made after arrival, at the activities desk in the lobby of the Naniloa Hotel. Preregistration and other information may be obtained by calling the hotel's toll-free number: 1-800-367-5360, or locally (808) 935-0831. All tours will depart from and return to the Naniloa Hotel.

### **Hilo City/Akaka Falls Tour**

May 20 or May 22

Departs: 9:00 a.m.; returns: 3:00 p.m.

Tour the beautiful Hilo Tropical Gardens, featuring hundreds of exotic plants and flowers displayed around ocean tidal pools. The tour continues to the Lyman Mission House and Museum, built in 1839, and is followed by a walking tour through downtown Hilo, where you'll see a local adaptation of renaissance revival architecture from the early 1900s, along with interesting shops. The final stop is the breathtaking Akaka Falls, over 420 feet high. Cost: \$19 (lunch not included)

### **Volcano/Black Sand Beach Tour**

May 21 or May 22

Departs: 9:00 a.m.; returns: 4:00 p.m.

The first stop on this tour is Hawaii Volcanoes National Park. Kilauea and Mauna Loa are among the world's most active volcanoes and can often be seen in eruption. Don't miss viewing the video of an active volcano in its eruption phase. The tour will include Kilauea's firepit, Thurston Lava Tube, a fern forest, and Devastation Trail, a boardwalk through a lava-torn forest. Driving along the Chain of Craters road, you will be surrounded by incredible sights. Lunch will be at the Wahaula Visitor Center, followed by a tour of its historic Hawaiian village and temples. Other stops will include the geothermal visitor center, Lava Tree State Park, and an orchid nursery. Cost: \$29 (lunch included)

### **Waipio Valley Adventure**

May 21 or May 22

Departs: 8:30 a.m.; returns: 2:30 p.m.

A 4-wheel drive takes you into lush, unspoiled Waipio Valley (Waipio means "land of curving water"). The air-conditioned ride travels through riverways and across a shimmering black sand

beach. This tour takes you back to Hawaii as it was long ago. Waipio was once the bustling vacationland of three Hawaiian kings. This breathtaking valley is rich with folklore and serene scenic beauty, with twin 1200-foot waterfalls. Residents of today still assume the ancient task of taro planting and the rural way of life. Setting for a picnic basket lunch will be the beautiful Waipio beach. Cost: \$37 (lunch included)

### **Ho'ololi Tour** (shopping tour)

May 20 or May 21

Departs: 9:45 a.m.; returns: 3:00 p.m.

The shopping day begins at Hilo Hattie's Fashion Center, filled with colorful island fabrics fashioned into a mix of muumuus, pareaus, aloha shirts, swimsuits, and more. The next stop will be Prince Kuhio Plaza, with more than 40 stores and eateries for your shopping pleasure. The schedule continues to the Hilo Shopping Center, featuring a Hawaiian craft shop and many other good and unusual buys. Cost: \$15 (lunch not included)

### **Holoholo Keiki Tour** (children's tour)

May 20 or May 21

Departs: 9:30 a.m.; returns: 3:15 p.m.

The first stop on this tour for children is the Panaewa Rainforest Zoo, the only one in the United States, with its tropical setting, excellent picnic area, and animals from around the world. The Mauna Loa Macadamia Nut Visitor Center is the next destination. Tour the factory and macadamia nut grove, and sample some of their delightful goodies. We will visit a private farm where we will be able to pick our own papayas. We will lunch, participate in Hawaiian crafts and games, and have a refreshing swim at Onekahakaha Beach Park. The beach is protected by a boulder breakwater, which offers one of the safest swimming areas, and includes county lifeguard service and picnic facilities. Bring swimsuits and towels. Cost: \$25 (lunch included)

### **Pu'u O'o and Puna Coast Helicopter Tour**

Daily at your leisure (length of tour: 45 minutes to 1 hour)

From majestic Hilo to the active volcanic area of the Pu'u O'o cone, along the Chain of Craters, down over the cliff following the course of recent lava flows through Kapa'ahu and Royal Gardens Housing Estate, along Puna's beautiful rugged coast, soaring over Queen's Bath, Kalapana Black Sand Beach, Kapoho, and the warm springs of Opihikao. If you really want to see the volcanoes and the scenic beauty of Hawaii, don't miss this aero-dynamic experience. Cost: \$100

### **REGISTRATION**

*Preregistration Deadline:* Must be postmarked no later than **April 20, 1987.**

**REGISTRATION INFORMATION:** GSA headquarters, (303) 447-2020.

1. There is a 20% savings in registration fees if you register before April 20, 1987. Advance registration is suggested because of possible participation limits on the special activities. There will be no charge for spouse or guest registrants. Use the preregistration form provided in this announcement.
2. Registration is required for all attendees, including field trip participants.
3. Registration discounts are given to GSA and Paleontological Society members.

(continued on p. 39)

### **Cordilleran Section Meeting** (continued from p. 38)

4. Full payment **MUST** accompany all registrations. Unpaid purchase orders are not accepted as valid registration. Credit cards are accepted as indicated on the preregistration form. If using a credit card, please recheck the card number given—error will delay your registration.

5. Register one professional or student per form. Copy the form for your records. One day registrants **MUST** indicate the day they plan to attend on the the registration form.

6. Current student ID is required to obtain student rates at both the on-site and preregistration counters.

### **SUPPORT FOR STUDENTS**

Funds are available to assist GSA Student Associates planning to travel to Hawaii to present a paper at this meeting. The deadline for receipt of requests has been extended to February 28, 1987. Contact: Bruce Blackerby, GSA Student Support, Dept. of Geology, California State University, Fresno, CA 93740.

### **CANCELLATIONS AND REFUNDS**

GSA will refund advance registration fees for cancellations received in writing by April 27, 1987. **NO** refunds will be made on

cancellation notices received after this date. Refunds will be mailed from GSA after the meeting; a \$10 processing fee will be charged. Refunds for fees paid by credit card will be credited according to the card number on the preregistration form. **NO** refunds will be made on-site for registration or ticket sales.

### **REGISTRATION FEES**

	Advance	On-Site	One-Day
Professional:			
GSA/Paleo Society Member	\$40.00	\$50.00	\$25.00
Nonmember	55.00	65.00	33.00
Student:			
GSA/Paleo Society Member	10.00	15.00	8.00
Nonmember	20.00	25.00	13.00

### **ON-SITE REGISTRATION SCHEDULE**

On-site registration will be in the lanai of the Library, University of Hawaii, Hilo

Wednesday, May 20—7:00 a.m. to 5:00 p.m.

Thursday, May 21—7:30 a.m. to 5:00 p.m.

Friday, May 22—7:30 a.m. to 1:00 p.m.

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## **Final Announcement** **NORTH-CENTRAL SECTION, GSA, 21st Annual Meeting** St. Paul, Minnesota, April 30–May 1, 1987

The North-Central Section of the Geological Society of America, hosted by the School of Earth Sciences, University of Minnesota, Minneapolis, and neighboring geology departments, will meet concurrently with the North-Central Section of the Paleontological Society, the Great Lakes Section of the Society of Economic Paleontologists and Mineralogists, the Association for Women Geoscientists, and the National Association of Geology Teachers. For further information on general arrangements and the program, write or call Local Committee Chairman Peter Hudleston, or Program Chairman Robert E. Sloan, Department of Geology and Geophysics, University of Minnesota, Minneapolis, MN 55455, (612) 624-1333. For field trip information, contact David L. Southwick, Minnesota Geological Survey, 2642 University Ave., St. Paul, MN 55114, (612) 627-4780.

### **REGISTRATION**

Registration is required for all those participating in any event, including technical sessions, exhibits, planned social events, and field trips. A discount is offered for those who use the forms accompanying this notice *before March 25, 1987*. Student registrants must present proper identification or verification to be eligible for student discounts. In-service K-12 earth science teachers will be permitted free on-site registration with a letter from their supervisor, on school district letterhead.

**Preregistration.** You are requested to register in advance so that the local committee can plan more efficiently. Your registration form and payment must be postmarked no later than Wednesday, March 25, 1987, to qualify for the reduced preregistration fees. Please complete the accompanying registration form and return it to Registrar, 338 Nolte Center, 315 Pillsbury Drive S.E., Minneapolis, MN 55455-0118, with a check or money order payable to University of Minnesota.

**On-Site Registration.** Registration will take place on Wednesday, April 29, from 7 to 9 a.m. and 5 to 9 p.m., and on Thursday, April 30, and Friday, May 1, from 7 a.m. to 4:30 p.m. in the lobby of the St. Paul Hotel. Preregistrants may pick up their folders and tickets at the registration desk. A limited number of tickets for special events will be available for those who did not preregister.

Requests for advance registration refunds will be honored until

April 15, 1987, for all but field trip fees, which will be refunded only if the space can be resold.

### **TECHNICAL PROGRAM**

Technical sessions and symposia will be held in the St. Paul Hotel and the adjacent Landmark Center in downtown St. Paul. Depending on the abstracts submitted, there will be sessions on paleontology, stratigraphy, sedimentology, economic geology, geomorphology, hydrogeology, Quaternary geology, mineralogy, petrology, geochemistry, geophysics, structural geology and tectonics, engineering and environmental geology, and general geology.

### **Symposia**

- 1. Quaternary Paleoecology and Glacial Geology of the North American Midcontinent.** Robert Baker, University of Wisconsin, River Falls; Edward J. Cushing, University of Minnesota.
- 2. Ordovician Lithostratigraphy and Biostratigraphy.** Robert E. Sloan, University of Minnesota; Dennis R. Kolata, Illinois Geological Survey. Sponsored by the Society of Economic Paleontologists and Mineralogists.
- 3. Ordovician Radiations and Faunal Gradients.** Robert L. Anstey, Michigan State University. Sponsored by the Paleontological Society.

(continued on p. 40)

### North-Central Section Meeting (continued from p. 39)

4. **Tectonics of Precambrian Terrane Boundaries.** Peter J. Hudleston, University of Minnesota; Robert L. Bauer, University of Missouri, Columbia; and David L. Southwick, Minnesota Geological Survey.
5. **Eastern Side of the Cretaceous Seaway.** George W. Shurr, St. Cloud State University; James B. Van Alstine, University of Minnesota, Morris; Dale R. Setterholm, Minnesota Geological Survey.
6. **Upper Mississippi Valley Karst: Genesis and Environmental Consequences.** E. Calvin Alexander, University of Minnesota.
7. **Petrogenesis and Metallogenesis of Keweenaw Rocks.** Paul W. Weiblen, University of Minnesota; James D. Miller, Minnesota Geological Survey.
8. **The Hydrogeology of Glacial Terranes.** Hans Olaf Pfannkuch, University of Minnesota; Lon C. Ruedisili, University of Toledo, Ohio.
9. **Undergraduate Research in Geological Education.** James H. Shea, University of Wisconsin, Parkside; Richard Stenstrom, Beloit College. Sponsored by the National Association of Geology Teachers.

### PROJECTION EQUIPMENT

All slides must be 2" by 2" and fit a standard 35-mm carousel projector. Two projectors will be available in each meeting room. Please bring your own loaded carousel trays.

### EXHIBITS

Space will be available for educational, research, and commercial exhibits. Exhibits will be held in the St. Paul Hotel, where most of the technical program will be held. A single 8' by 10' booth costs \$100 for the duration of the meeting. For additional information, contact William F. Rice, Department of Geology and Geophysics, University of Minnesota, Minneapolis, MN 55455, (612) 624-1333.

### SPECIAL EVENTS

**Welcoming Party:** in the Casino Ballroom of the St. Paul Hotel, from 7 to 9 p.m. on Wednesday evening, April 29.

**Annual Banquet:** GSA North-Central Section, in the Casino Ballroom of the St. Paul Hotel at 7 p.m. on Thursday, April 30. Cost: \$22 including tax and gratuity. A brief business meeting of the North-Central Section, to be conducted immediately after the banquet, will be followed by a lecture by Priscilla Grew, Director of the Minnesota Geological Survey, "The Pork Barrel, the Bandwagon, and the Ivory Tower."

**SEPM Great Lakes Section Luncheon:** Society of Economic Paleontologists and Mineralogists, in The Bar in the St. Paul Hotel at noon on Thursday, April 30. The luncheon will be followed by the SEPM business meeting. Cost: \$13 including tax and gratuity.

**Paleontological Society Luncheon:** in The Bar of the St. Paul Hotel at noon on Friday, May 1. The luncheon will be followed by the PS business meeting. Cost: \$11 including tax and gratuity.

**Association for Women Geoscientists Breakfast:** at 7:30 a.m. Thursday, April 30, in The Bar of the St. Paul Hotel. The breakfast will be followed by a talk by Priscilla Grew, Director of the Minnesota Geological Survey, "We Never Promised You a Rock Garden." Cost: \$10.50 including tax and gratuity.

**GSA Campus Representatives Breakfast:** a brief review of activities during breakfast at 7 a.m. in The Bar of the St. Paul Hotel on Friday, May 1.

**GSA Structural Geology and Tectonics Division:** a "kegger" beer party on Thursday, April 30, in the Musser Cortile of the Landmark Center from 5 to 7 p.m.

### SPOUSE/GUEST PROGRAM

Special guest activities will include visits to the Science Museum of Minnesota (which has an excellent new dinosaur exhibit), the Minnesota Museum of Art, concerts at the Ordway Music Theater, and the Landmark Center. Other suggestions on activities are available at the hospitality suite in the St. Paul Hotel. Those wishing to obtain tickets to the Prairie Home Companion radio show on Saturday evening, May 2, at 5 p.m. should phone or mail ticket orders to The World Theater, 10 E. Exchange St., St. Paul, MN 55101, (612) 298-1222, between March 15 and April 1, 1987.

Please indicate on the registration form the trips in which you have an interest. We reserve the right to cancel any trips for which there is insufficient interest.

### MEALS

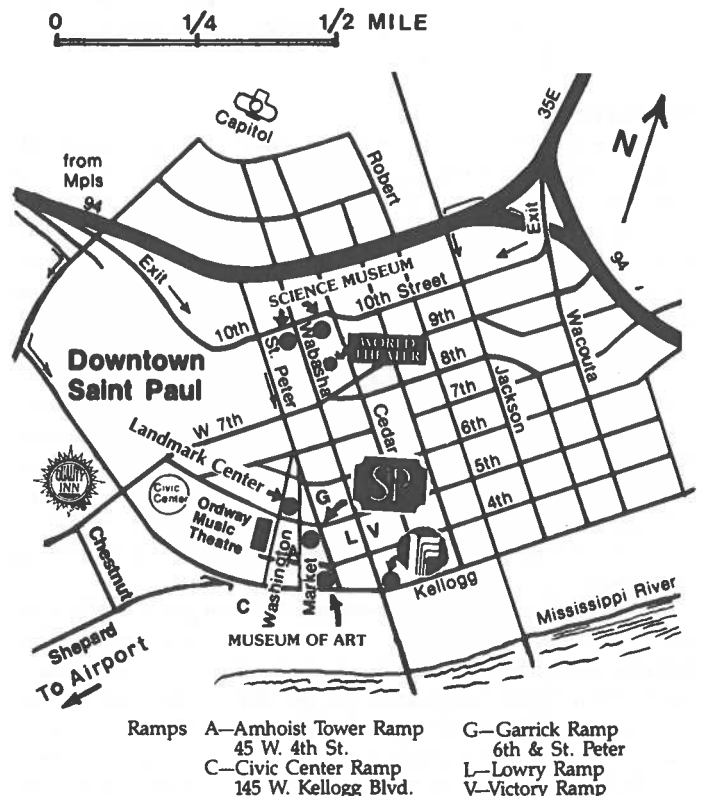
There are restaurants in all hotels and the Landmark Center as well as many others within a few blocks of the convention. (One is a classic 1930s street car diner, listed in the National Historic Register.) The St. Paul Hotel will provide a breakfast bar from 6:30 to 8 a.m. on Thursday and Friday. A list of local restaurants will be included in the registration packet.

### STUDENT AWARDS

The North-Central Section will award \$100 each for a maximum of four of the best papers written and delivered exclusively by students. Prizes awarded for student papers with more than one author will be divided among the authors.

### TRAVEL

St. Paul is served by many airlines, and the St. Paul airport Limousine Service provides fast and inexpensive service for the 7-mile trip from Minneapolis-St. Paul International Airport to the (continued on p. 41)



**North-Central Section Meeting** (continued from p. 40)  
hotels (cost: \$4.50). St. Paul Downtown (Holman Field) is a General Aviation airport just 1.5 miles from the hotels. By car, the area is served by Interstates 94 and 35. There is ample ramp parking available for those who prefer to drive (see map).

## HOUSING

We have reserved blocks of rooms at the St. Paul Hotel (headquarters hotel) and at the nearby Radisson Hotel St. Paul and the Quality Inn Civic Center. To make reservations and to obtain the reduced rates indicated below, contact the hotel directly and indicate you will be attending the GSA convention at the St. Paul Hotel. Rooms not reserved by April 10 will be released. A special student rate of \$60 per night for four students per room is available at the St. Paul and Radisson hotels, with student ID. Luggage can be stored free during field trips.

**St. Paul Hotel**  
330 Market Street  
St. Paul, MN 55102  
(612) 292-9292  
800-457-9292  
Rate: \$65 + tax single  
\$75 + tax double

**Radisson Hotel St. Paul**  
11 East Kellogg Boulevard  
St. Paul, MN 55101  
(612) 292-1900  
800-228-9822  
Rate: \$63 + tax single  
\$73 + tax double

**Quality Inn Civic Center**  
175 West 7th Street (= Fort Road)  
St. Paul, MN 55102  
(612) 292-8929  
800-228-5151  
(smoking-free floor available)  
Rate: \$41 + tax single  
\$47 + tax double

## FIELD TRIPS

All field trip participants must preregister and must also register for the meeting. **Preregistration deadline is March 25, 1987.** Trips may be canceled if registration is insufficient. No refunds will be made after April 15, 1987. All trips will depart at 8 a.m. (except as noted below) from and return to the St. Paul Hotel. All postmeeting trips will stop at the Minneapolis-St. Paul International Airport en route to downtown St. Paul for the convenience of those with early-evening outbound flights on May 2 or May 3.

### Premeeting Trips

**1. Geomorphology and Pleistocene Glacial History of Central Minnesota.** Barry Goldstein. Tuesday and Wednesday, April 28 and 29.

Deposits of the Wadena, Superior, Rainy, and Des Moines ice lobes (Wisconsinan) will be examined. The genesis and relative age of a broad range of glaciogenic features will be considered; major focus will be on the Wadena drumlin field. In addition, the evidence for glaciation in central Minnesota prior to the advance of the Wadena lobe will be examined. Overnight stay in Alexandria, Minnesota.

Limit: 40; cost: \$95, including transportation, 2 lunches, snacks, lodging (double occupancy, 1 night), and guidebook.

**2. St. Anthony Falls Hydraulic Laboratory.** Staff of the laboratory. Wednesday, April 29.

Tour of the laboratory facilities; demonstrations of hydraulic models. The laboratory is involved in many types of modeling of river and hydraulic flow. Fully 10% of the flow of the Mississippi, with a drop of 25 m, can be diverted for large-scale model studies.

Limit: 40; cost: \$16, including transportation and guidebook.

**3. Karst Hydrogeology of Southeastern Minnesota.** E. Calvin Alexander, Jr. Wednesday, April 29. Trip will leave the St. Paul Hotel at 7 a.m. and return between 10 p.m. and midnight the same day.

The trip will focus on the well-developed fluvial karst of the Upper Ordovician carbonates of Fillmore County, south of Rochester, Minnesota. Interactions between karst topography and domestic, agricultural, and industrial pollutants have produced pervasive water-quality problems in southeastern Minnesota. Examples of each of the three major classes of pollutants will be examined. The trip will feature the real-world "solutions" that are being adopted to deal with the various types of pollution problems. We will, of course, see sinkholes, blind valleys, disappearing rivers, caves, and big springs—the classic karst topographic features. Limit: 40; cost: \$40, including guidebook, lunch, supper, and transportation.

**4. Middle Ordovician Stratigraphy and Paleontology of the Twin Cities.** Robert E. Sloan and Dennis R. Kolata. Wednesday, April 29.

Examination of type St. Peter Sandstone, fossil collecting, and stratigraphy of the Shadow Falls section of the Platteville Limestone and the richly fossiliferous St. Paul Brickyard section (28 m thick) of the Decorah Shale.

Limit: 40; cost: \$16, including transportation and guidebook.

**5. Geology of the St. Croix Valley.** Mark E. Cavaleri and Gerald F. Webers. Wednesday, April 29.

Keweenaw (1.1 Ga) crustal extension produced several basins that were filled by thick accumulations of flood basalt. About 0.5 b.y. later, sandstones and beach conglomerates of Late Cambrian age were deposited around islands of the basalt. After another 0.5 b.y., the region was glaciated, and postglacial streams formed giant potholes in the flood basalt. The Keweenaw flows (Chengwatana Volcanic Group), the overlying Upper Cambrian sediments, and the features of glacial erosion will be examined in the picturesque Dalles of the St. Croix.

Limit: 40; cost: \$25, including transportation, park entry fee, lunch, and guidebook.

### Postmeeting Trips

**6. Middle and Late Ordovician Lithostratigraphy and Biostratigraphy of the Upper Mississippi Valley.** Robert E. Sloan and Dennis R. Kolata. Saturday and Sunday, May 1 and 2.

Facies changes and fossil collecting in the St. Peter Sandstone through Maquoketa Shale of southeastern Minnesota and north-eastern Iowa. We will visit three complete sections of Blackriveran to Maysvillian rocks, including the Cummingsville and Rifle Hill sections that are in Sweet's 1984 CSS. Hardhats are required; bring a spare soft pack for your fossils. Trip will end at Guttenberg, Iowa, at 2 p.m., May 3. A limited number of private cars may accompany the buses and depart independently from Guttenberg. Buses will return to the Minneapolis-St. Paul airport at about 6 p.m. and then return to the St. Paul Hotel. No discount for riding in cars.

Limit: 80; cost: \$83, including guidebook, meals, lodging (double occupancy, 1 night), and transportation.

**7. Cretaceous Rocks of Eastern South Dakota and Western Minnesota.** George Shurr, Jay Gilbertson, Richard Hammond, Dale R. Setterholm, and Peter Whelan. May 2 and 3. Bus departs the St. Paul Hotel at 4:30 p.m. Friday, May 1.

The easternmost occurrences of classic marine Upper Cretaceous units (Greenhorn through Pierre) and equivalent near-shore facies will be examined in core and in outcrops near Milbank, South Dakota, and Browns Valley, Minnesota. Overnight stays in Morris, Minnesota (May 1), and Milbank (May 2).

(continued on p. 43)

**PREREGISTRATION FORM**

North-Central Section, GSA, Annual Meeting  
April 30-May 1, 1987, St. Paul, Minnesota

**Please print or type**  
Copy for your records

Name \_\_\_\_\_

Nickname for badge \_\_\_\_\_

Spouse/Guest name for badge \_\_\_\_\_

Affiliation (abbreviate for badge) \_\_\_\_\_

Professional address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

Phone: Business (     ) \_\_\_\_\_ Home (     ) \_\_\_\_\_

GSA Member \_\_\_\_\_ Student Associate \_\_\_\_\_ Speaker \_\_\_\_\_

**Preregistration (postmarked March 25, 1987 or earlier)**

Professional .....	\$ 25.00	\$ _____	QS1
Student .....	\$ 7.00	\$ _____	QS4
<b>Registration (after March 25, 1987)</b>			
Professional .....	\$ 30.00	\$ _____	QS2
Student .....	\$ 9.00	\$ _____	QS3
Spouse/guest registration .....	\$ 8.00	\$ _____	QS6
Annual banquet, April 30 .....	\$ 22.00	\$ _____	Q1
SEPM Great Lakes Section lunch, April 30 .....	\$ 13.00	\$ _____	L1
Paleontological Society luncheon, May 1 .....	\$ 11.00	\$ _____	L2
Association for Women Geoscientists breakfast .....	\$ 10.50	\$ _____	B1
GSA Campus Representatives breakfast, May 1 .....	(NC)		B2
(indicate the department you officially represent) _____			
Science Museum of Minnesota visit .....			_____ L
Minnesota Museum of Art visit .....			_____ M
Ordway Musical Theater visit .....			_____ N

**Field Trips Registration deadline: March 25, 1987**

**ALL FIELD TRIP REGISTRANTS MUST ALSO PREREGISTER FOR THE MEETING**

1. Pleistocene, Central Minnesota, April 28, 29 .....	\$ 95.00	\$ _____	A
2. St. Anthony Falls Hydraulic Lab, April 29 .....	\$ 13.00	\$ _____	B
3. Karst of SE Minnesota, April 29 .....	\$ 40.00	\$ _____	C
4. Twin Cities Middle Ordovician, April 29 .....	\$ 16.00	\$ _____	D
5. St. Croix Valley, April 29 .....	\$ 25.00	\$ _____	E
6. Ordovician of Upper Mississippi Valley, May 2, 3 .....	\$ 83.00	\$ _____	F
7. Cretaceous of Minnesota, May 2, 3 .....	\$123.00	\$ _____	G
8. Pleistocene of SE Minnesota, May 2, 3 .....	\$ 60.00	\$ _____	H
9. Precambrian Terranes, May 2, 3 .....	\$103.00	\$ _____	I
10. Beaver Bay Complex, May 2, 3 .....	\$106.00	\$ _____	J
11. Rock Elm Structure, May 2 .....	\$ 26.00	\$ _____	K

**Total Fees.** Make check or money order (U.S. funds) payable to University of Minnesota ..... \$ \_\_\_\_\_

For registration discounts, mail this Preregistration Form by **March 25, 1987**, to  
Registrar  
338 Nolte Center  
315 Pillsbury Drive S.E.  
Minneapolis, MN 55455-0118

**North-Central Section Meeting** (continued from p. 41)

Limit: 40; cost: \$123, including transportation, 2 lunches, 1 very fancy breakfast, lodging (double occupancy, 2 nights), and guidebook.

**8. Pleistocene Geology of Southeastern Minnesota.** Howard Hobbs. Saturday and Sunday, May 2 and 3.

Features to be seen will include a possible preglacial residuum, pre-Illinoian tills and melt-water deposits, an Iowan erosion surface truncating a paleosol, and loess, slope debris, and fluvial deposits of late Wisconsinan age. Overnight stay in Rochester, Minnesota.

Limit: 40; cost: \$60, including transportation, 2 lunches, lodging (double occupancy, 1 night), and guidebook.

**9. Structure of the Boundary between Archean Terranes of Low-grade and High-grade Rocks, Northern Minnesota.** Peter Hudleston, Dan Schultz-Ela, David L. Southwick, and Robert L. Bauer. Saturday and Sunday, May 2 and 3. Bus departs the St. Paul Hotel at 4 p.m. Friday, May 1.

The boundary zone between the low-grade rocks of the Vermilion district (Shebandowan belt equivalent) and the high-grade rocks of the Vermilion Granitic Complex (Quetico belt equivalent) will be examined. Evidence will be seen for two major deformations. The earlier of these produced isoclinal folds, possibly nappe-like, apparently with neither clast strain nor cleavage development in low-grade rocks. The second deformational event was a strong transpression of varying intensity and style. Ductile shear is most intense along the now-faulted boundary between the

terranes. Overnight stays in Eveleth (May 1) and Ely (May 2), Minnesota.

Limit: 40; cost: \$103, including transportation, 2 lunches, lodging (double occupancy, 2 nights), and guidebook.

**10. Geology of the Beaver Bay Complex and Related Keweenaw Intrusions.** James D. Miller and Paul W. Weiblen. Saturday and Sunday, May 2 and 3. Bus departs the St. Paul Hotel 4 p.m. Friday, May 1.

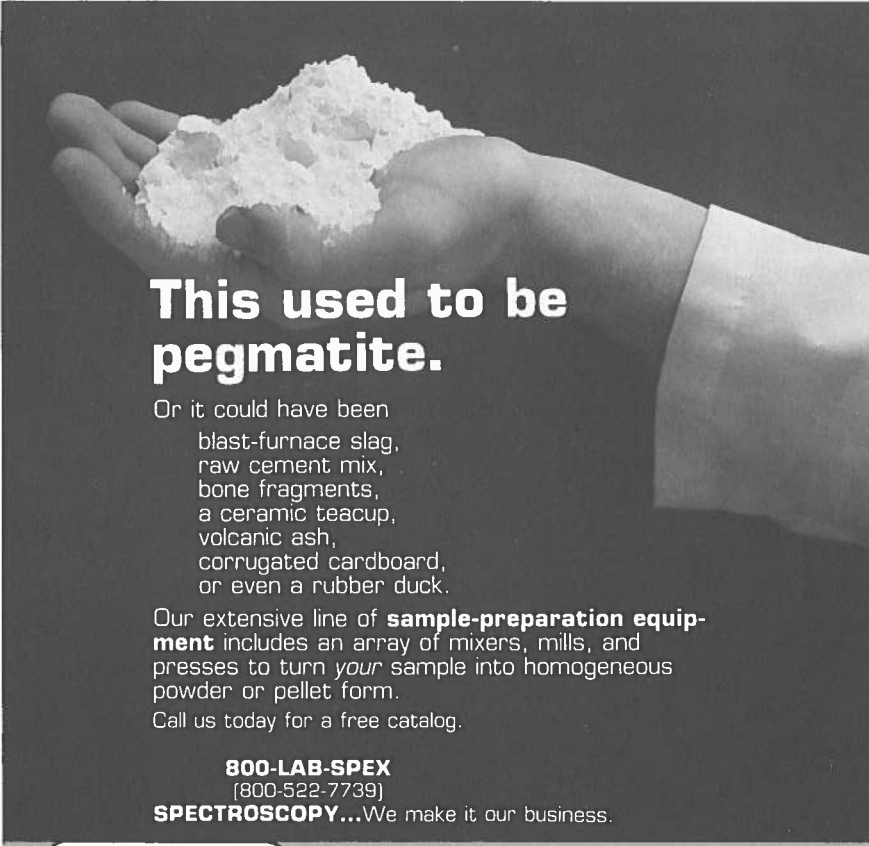
Plutonic and hypabyssal rocks were emplaced in at least four discrete episodes to form the Keweenaw (1.1 Ga) Beaver Bay Complex. Evidence for this intrusive history will be developed, and the compositional and textural diversity and structural evolution of the complex will be documented. Some exposures of volcanic country rocks also will be studied. Overnight stays in Duluth (May 1) and Silver Bay (May 2), Minnesota.

Limit: 30; cost: \$106, including transportation, 2 lunches, lodging (double occupancy, 2 nights), and guidebook.

**11. Geology of the Rock Elm Disturbance, Pierce County, Wisconsin.** William S. Cordua. Saturday, May 2.

A recently described "crypto-explosion" structure will be examined. This circular feature, about 6.5 km in diameter, has disrupted Cambrian and Ordovician strata and produced breccias, folds, faults, a central dome, and a ring basin. Alluvial gold and diamonds have been found nearby. Is this an astrobleme or an endogenous structure? Decide for yourself!

Limit: 40; cost: \$26, including transportation, lunch, and guidebook.



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# SPECIAL FOR EMPLOYERS

## A Free Want-Ad Listing in the May '87 Issue of GSA News & Information



GSA is concerned about the number of geologists who are unemployed because of today's tight job market. So, we're making the May, 1987 issue of our membership newsletter, *GSA News & Information*, a special issue of job opportunities for geologists.

We are offering a **FREE \$80-value want ad listing** in this issue to any employer who has a job opening for a geologist.

This free listing has no strings attached. You don't have to buy anything or contract for anything! This is strictly a service for our readers, many of whom need employment opportunities now.

The only limitations are: (1) Your ad must describe a real job opening for a geologist; (2) your ad may not exceed 175 words, including headlines; and (3) your typed ad copy must reach GSA no later than March 1, 1987. We'll do the rest.

If you want your ad to run for more than the single month—for three months, for example—GSA's regular low classified rates will prevail for the added months. However, you may count your free ad toward earning "frequency discount." For example, if you run a free ad and two paid insertions, you'll qualify for the three-time rate on the two paid insertions.

But no extra insertions are necessary! We invite your free ad with or without additional months. So plan now to put your message in front of the 20,000 or so readers of this special issue of *GSA News & Information*. These include highly qualified earth scientists in every discipline.

For this special offer only, we cannot accept copy by telephone. Send your typed ad copy in time to arrive at the address below before March 1, 1987. Be sure to include your organization name, address, and telephone number and the name of a contact person in case questions arise.

GSA Classified Advertising • P.O. Box 9140 • Boulder, CO 80301

### GSA NEWS & INFORMATION

The monthly news magazine of The Geological Society of America publishes news items about the Society's activities and the geologic community at large. Includes formal announcements of the 6 or 7 annual scientific meetings sponsored by the Society and its Sections each year. Edited for professional geologists in academia, government, industry, and business, including (but not limited to) all active members of the Geological Society of America.



Classified advertising must be relevant to the earth sciences and must qualify for one of the following categories:

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Services & Supplies	3.20	2.81	2.43	2.17	1.92

## THE GEOLOGICAL SOCIETY OF AMERICA



**Final Announcement**  
**ROCKY MOUNTAIN SECTION, GSA, Annual Meeting**  
Boulder, Colorado  
May 2-4, 1987

The Department of Geological Sciences of the University of Colorado at Boulder will host the 40th Annual Meeting of the Rocky Mountain Section of the Geological Society of America on Saturday, Sunday, and Monday, May 2, 3, and 4, 1987. The meetings will be held at the University of Colorado.

**Local Committee:** Chairman—Mary Kraus, Department of Geological Sciences, University of Colorado, Boulder, CO 80309-0250, (303) 492-7251; Vice-Chairman—Peter Birkeland, (303) 492-6985; Technical Program and Symposia—William Bradley, (303) 492-6188, and Edwin Larson, (303) 492-6172; Field Trip Coordinator—William Atkinson, (303) 492-6103; Exhibits—Peter Birkeland, (303) 492-6985.

### REGISTRATION

All persons participating in any event of the meeting must be registered.

**Preregistration:** You are urged to preregister at the reduced rate to aid the local committee in making final plans. Preregistration forms with payment must be postmarked no later than **Friday, April 3, 1987**. Complete the registration form and return it with a check or money order in U.S. currency to University of Colorado, Office of Conference Services, Campus Box 153, Boulder, CO 80309.

Those planning to attend field trips must preregister. Refunds for canceled preregistration will be made in full until April 17, 1987. After this date no refunds will be made except for field trips that are canceled or oversubscribed.

**On-Site Registration:** The registration and information desk will be located in the University Memorial Center at the University of Colorado. Badges and other meeting materials may be picked up from 7:30 a.m. to 4 p.m. on Friday, May 1, and from 8 a.m. to 4 p.m. on Saturday, Sunday, and Monday, May 2-4. One-day registrations are available at the registration desk.

### TECHNICAL PROGRAM

Technical sessions will be scheduled as oral presentations and poster sessions on Saturday, Sunday, and Monday, May 2-4.

### SYMPOSIA

- 1. Dawn of the Age of Mammals in the Northern Rocky Mountain Region.** Thomas M. Bown, U.S. Geological Survey, Branch of Paleontology and Stratigraphy, M.S. 919, Box 25046, Federal Center, Denver, CO 80225, (303) 236-5665, and Kenneth D. Rose. Cosponsored by the Rocky Mountain Section of the Paleontological Society.
- 2. Cenozoic Volcanism in and around Colorado.** Edwin E. Larson, Dept. of Geological Sciences, University of Colorado, Boulder, CO 80309-0250, (303) 492-6172, and John W. Drexler.
- 3. Nonmarine Depositional Systems and Paleobiotas: Advances in Paleoenvironmental Synthesis.** Emmett Evanoff, Dept. of Geological Sciences, University of Colorado, Boulder, CO 80309-0250, (303) 492-8069, and Steven C. Good.
- 4. Engineering Geological and Hydrological Problems in Mountainous Terrain.** A. Keith Turner, Dept. of Geology, Colorado School of Mines, Golden, CO 80401, (303) 273-3802, and Kenneth E. Kolm.
- 5. Cretaceous Event Stratigraphy; Western Interior Basin.** Erle G. Kauffman, Dept. of Geological Sciences, University of

Colorado, Boulder, CO 80309-0250, (303) 492-6629, Bradley B. Sageman, and James I. Kirkland.

- 6. Rocky Mountain Tectonics.** Thomas L. Davis, Dept. of Geophysics, Colorado School of Mines, Golden, CO 80401, (303) 273-3938, and Thomas L.T. Grose.
- 7. Volcanism and Fossil Biotas; Implications for Preservation, Evolution, and Extinction.** Martin G. Lockley, Dept. of Geology, University of Colorado at Denver, 1100 14th St., Denver, CO 80202, (303) 556-2688, Robert H. Chesson, and Alan Rice. Cosponsored by the Rocky Mountain Section of the Paleontological Society.
- 8. San Juan Volcanic Field: Volcanology, Petrology, Geophysics, and Ore Deposits: A Symposium in Honor of Thomas A. Steven.** Peter W. Lipman, U.S. Geological Survey, M.S. 913, Box 25046, Federal Center, Denver, CO 80225, (303) 236-1020, and Philip M. Bethke.

### FIELD TRIPS

Field trip chairman is William Atkinson, Department of Geological Sciences, University of Colorado, Boulder, CO 80309, (303) 492-6103. *Field trip registrants must also register for the meeting.* Field trip registration is on a first-come basis. If a trip is oversubscribed or canceled, the field trip fee will be refunded. *Preregistration for field trips must be received by April 3, 1987, accompanied by full payment.* Trips may be canceled if registration is insufficient or for reasons beyond our control. No trip refunds will be made after April 17, 1987. All field trips will depart from the University Memorial Center, University of Colorado. Please be prepared for inclement weather. A single-volume guidebook will include site descriptions for all the scheduled field trips.

### Premeeting Trips

- 1. Field Relations of the Cretaceous-Tertiary Boundary, Raton Basin, New Mexico and Colorado.** Charles L. Pillmore and Glen Izett.

The east-central part of the Raton basin contains 15 known sites where the Ir-rich K-T boundary impact clay layer can be observed, probably more than any other equivalent area on Earth. The boundary, which is defined by the abrupt disappearance of *Aquilapollenites* and several other fossil pollen taxa, occurs at the top of a kaolinitic clay bed 1-2 cm thick. This K-T pollen break is coincident with the impact clay layer (0.5 cm thick) that contains abundant shock-metamorphosed mineral grains and the Ir abundance anomaly. The K-T boundary impact layer is preserved in a carbonaceous sequence of rocks in the continental lower Raton Formation; it has been found mostly in roadcuts, but in many natural exposures as well.

This trip will visit six representative sites between Ludlow, Colorado, and Raton, New Mexico, west of and along Interstate 25. The field characteristics of the K-T boundary interval will be discussed at the various stops, and opportunities will be provided for detailed study of the impact layer. Leave early

*(continued on p. 46)*

**Rocky Mountain Section Meeting** (continued on p. 45)

Thursday, April 30; overnight in Raton; return to Boulder late Friday, May 1.

Limit: 40; cost: \$105, meals, lodging, and guidebook included.

**2. Engineering Geology and Hydrology of Central Colorado.** Kenneth E. Kolm and A. Keith Turner.

Highlights include Muddy Creek landslide near Paonia, Vail/Eagle landslide; highway siting, design, and construction in Glenwood Canyon, a billion-dollar project; water supply and contamination problems in the Eagle River basin, and the hot pools of Glenwood. Leave early Saturday, May 2, return late Sunday, May 3 (during meeting, because construction work is suspended only on weekends).

Limit: none; cost: \$40, lunch Saturday and guidebook included. Lodging and meals available at Hotel Glenwood (\$40 double room), not included in cost.

**3. Sedimentology of Lawn Lake Flood Deposits and Geomorphic Processes at Fall River, Rocky Mountain National Park, Colorado.** John Pitlick, Terence C. Blair, Deborah J. Anthony and Michael D. Harvey.

Will examine (1) sedimentary features produced by the Lawn Lake flood, July 15, 1982, and (2) postflood modifications of Fall River, a meandering, gravel-bedded stream. The entire day will be spent within the valley of Fall River in an area known as Horseshoe Park; all of the field trip stops are within walking distance of each other. Topics to be discussed include sedimentology and depositional processes of alluvial fans, geomorphic response to catastrophic floods, sediment transport processes in gravel-bed rivers, and flow and sediment transport dynamics in meander bends. Leave Boulder early Friday, May 1, drive to Estes Park area, return late.

Limit: 30; cost \$25, lunch and guidebook included.

**4. Epithermal Mineral Deposits of Boulder County, Colorado.** Jeffrey P. Kurtz, W. W. Atkinson, Jr.

Examination of gold telluride veins in Fourmile Canyon and Gold Hill, a tungsten vein in Boulder Canyon, and a visit to the Caribou silver district. Underground equipment will be provided. Leave early Friday, May 1, return late.

Limit: 20; cost: \$30, lunch and guidebook included.

**5. Stratigraphy and Depositional Environments of the Muddy Sandstone, Northeast Wyoming.** Edmund R. Gustason and Thomas A. Ryer.

Will visit outcrops at Clifton Terrace, Newcastle, Osage, and Upton to examine fluvial architecture and estuarine deposits of Muddy valley-fill deposits. Second day, will examine stratigraphic relationships between older Rozet member and younger Recluse and Cyclone valley-fill deposits, unconformity between Muddy Sandstone and underlying Skull Creek shale as well as intraformational unconformity between Rozet and upper Muddy members along the Little Missouri River. Leave Boulder afternoon Wednesday, April 29; return late Friday, May 1.

Limit: 35; cost: \$83, lunch Thursday and guidebook included. Lodging April 29 at Best Western Fountain Motel, Newcastle, Wyoming; lodging April 30 at Bear Lodge Motel, Sundance, Wyoming.

**Postmeeting Trips**

**6. Urban Geological Hazards of the Boulder Area.** James A. Pendleton, W. C. Bradley, Bruce K. Stover.

Will examine geologic hazards throughout the Boulder urban area. Stops include debris flow, mudslide, flood recurrence and control, swelling and hydrocompactible soils, and mine

subsidence. Discussion will include consideration of geotechnical, public utilities engineering, and urban planning aspects. Leave 8:30 a.m., return 4 p.m., May 5.

Limit: 40; cost: \$21, lunch and guidebook included.

**7. Geology of Precambrian Rocks of the Central Front Range, Laramide and Cenozoic Structure and Ore Deposits of the Tenmile-Mosquito Ranges, and Late Paleozoic Rocks of the Eagle River Valley, Central Colorado.** Sponsored jointly with the Colorado Scientific Society. Mitchell Reynolds, coordinator.

Leave early Tuesday, May 5, and return late Wednesday, May 6.

Limit: 45; cost: \$40, lunch and guidebook included. Lodging to be arranged for the group at Dillon. (Cost does not include lodging.)

**8. Florissant Fossil Beds.** F. Martin Brown.

Two-day dig, slide presentation of fossil insects. Bring own equipment. Leave early Tuesday, May 5, return morning of Thursday, May 7.

Limit: 30; cost \$172, including guidebook and lodging and meals at Colorado Outdoor Education Center.

**9. Cretaceous High-Resolution Event Stratigraphy: Offshore-Onshore Correlations of the Greenhorn Marine Cyclothem (Albian-Turonian), Colorado-Utah.** Erle G. Kauffman, Bradley B. Sageman, Edmund R. Gustason, William P. Elder, James I. Kirkland.

Examination of physical, chemical, and biological tools of high-resolution event stratigraphy and their application to regional offshore to onshore correlations, within 100 ka or less time intervals, of the late Albian cycle, at ten localities between central Colorado and southern Utah. Special emphasis will be on event deposits of Milankovitch climate cycles, small-scale eustatic sequences, volcanic explosions, anoxic events, rapid water-mass fluctuations and biogeographic response, ecostratigraphy, and stepwise mass extinction events. Departs Boulder, Colorado at 8 a.m., May 5, and terminates in Cedar City and Salt Lake City, Utah, for outgoing flights in late afternoon, May 8.

Limit: 35; cost: \$105. Participants are responsible for food and motel costs and flight reservations, or may return with vans to Boulder on May 9.

Itinerary: *Tuesday, May 5:* Depart Boulder, 8 a.m.; stops at Pueblo (Rock Canyon anticline) and eastern Huerfano Park, Colorado (mid-basinal settings), continuing to Alamosa, Colorado for the night. *Wednesday, May 6:* Examine west-central basinal sequences near Pagosa Springs, at Mesa Verde National Park, and in the Four Corners Area; overnight at Page, Utah. *Thursday, May 7:* Page to the Kaiparowitz Plateau area of Utah (shoreface and proximal offshore marine facies) to examine Nipple Butte, Paria River sections, and then Orderville, Utah, sequence; evening at Kanab, Utah. *Friday, May 8:* Kanab to Orderville Gulch and Virgin River areas of Zion National Park; terminate trip with examination of stacked shoreface and marginal marine sequences in Cedar Canyon, Utah. Evening in Cedar City, Utah, for flights out on following day, or optional drive to Las Vegas, Nevada, airport in late afternoon of May 8.

**EXHIBITS**

Exhibits will be adjacent to technical session rooms. For further information, contact Peter Birkeland, Department of Geological Sciences, University of Colorado, Boulder, CO 80309; (303) 492-6985.

(continued on p. 47)

## Rocky Mountain Section Meeting

(continued from p. 46)

### SPECIAL EVENTS

**Welcoming Party:** from 6:30 to 7:30 p.m., May 1, 1987, in the Glenn Miller Lounge at the University Memorial Center, University of Colorado.

**Annual Banquet:** May 2, 1987, at 7 p.m. A cash bar will be available at 6 p.m.

**Annual Campus Representatives Meeting:** from 7 to 8 a.m., May 3, 1987, in the College Inn. Tickets for breakfast can be purchased at the front desk of the College Inn.

**Annual Section Officers Meeting:** from 7 to 8 a.m. on May 4, 1987, in the College Inn. Tickets for breakfast can be purchased at the front desk of the College Inn.

**Annual Business Meeting:** at noon on May 4, 1987, in the Aspen Room at the University Memorial Center, University of Colorado. Election of officers for 1987-1988, selection of future meeting sites, and other section business will be on the agenda.

**Paleontological Society, Rocky Mountain Section:** second annual meeting and a social function. For information, please contact Martin Lockley (303) 556-2688, Richard Moyle (801) 626-6207, or Ernest Gilmour (509) 359-2286.

### PUBLICATIONS

A copy of the Rocky Mountain Section *Abstracts with Programs* will be mailed to each member who has paid 1987 GSA dues and selected and paid for the Rocky Mountain Section *Abstracts with Programs* on the dues statement. Please bring this copy of the abstracts volume to the meeting. Additional copies will be available for purchase at the meeting.

Each field trip participant will receive a guidebook. Additional guidebooks will be for sale at the meeting and will be available after the meeting from the University of Colorado Geology Department.

### STUDENT FINANCIAL ASSISTANCE

Limited funds are available from the Rocky Mountain Section to help GSA Student Associates participate in this meeting. Student Associates planning to attend the meeting should apply by *March 20, 1987*, to Kenneth E. Kolm, Secretary, Rocky Mountain Section, GSA, Department of Geology, Colorado School of Mines, Golden, CO 80401. *Preregistration for the meeting is required for a student to be eligible.* Preference will be given to students presenting technical papers. Awards may be picked up at the registration desk.

### PALEONTOLOGICAL SOCIETY— ROCKY MOUNTAIN SECTION

The Paleontological Society is cosponsoring two symposia: (1) Dawn of the Age of Mammals in the Northern Rocky Mountain Region, organized by Thomas Bown (USGS) and Kenneth Rose (John Hopkins), and (2) Volcanism and Fossil Biotas: Implications for Preservation, Evolution, and Extinction, organized by Robert Chesson, Martin Lockley, and Alan Rice (CU Denver); and a one-day field trip to the famous Oligocene fossil beds of Florissant, Colorado. The Paleontological Society also plans to institute an award for best single-author student paper. For information, suggestions, and volunteers, please contact Martin Lockley (303) 556-2688, Richard Moyle (801) 626-6207, or Ernest Gilmour (509) 359-2286.

### TRAVEL

See the accompanying maps for travel from Stapleton International Airport (in Denver) to Boulder.

## HOUSING

Rooms for participants are available at the College Inn Conference Center, the headquarters hotel. The College Inn Conference Center is a residential conference facility adjacent to the University of Colorado Boulder campus. The inn offers single and double rooms with private bath, color television, telephone, and

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### BOULDER HOTEL & MOTEL ASSOCIATION

P.O. Box 2249 Boulder, Colorado (303) 443-5892

Following are the low single and high double rates in effect as of August, 1986. They are subject to change without notice.

	UNITS	RATE SPAN	RESTAURANT	BAR	SWIMMING POOL	HOT TUBS	TENNIS COURTS	NEAR U of C
ARAPAHOE LODGE 2020 Arapahoe Avenue (303) 449-7550	70	\$45 - \$75	NO	NO	YES	YES	NO	YES
BEST WESTERN BOULDER INN 770 28th Street (303) 449-3800/(800) 525-1234	98	\$40 - \$75	YES	YES	YES	YES	NO	YES
BEST WESTERN GOLDEN BUFF LODGE 1725 28th Street (303) 442-7450/(800) 525-1234	112	\$45 - \$75	YES	NO	YES	YES	NO	YES
BRIAR ROSE BED & BREAKFAST 2151 Arapahoe (303) 442-3007	11	\$49 - \$95	By Request	NO	NO	NO	NO	YES
BROKER INN 555 30th Street (303) 444-3330 (800) 441-3330	115	\$67 - \$77	YES	YES	YES	YES	NO	YES
FOOT OF THE MOUNTAIN 200 Arapahoe Avenue (303) 442-5688	16	\$39 - \$45	NO	NO	NO	NO	NO	YES
HIGHLANDER INN 970 28th Street (303) 443-7800 (800) 525-2149	71	\$33 - \$66	NO	NO	YES	NO	NO	YES
HILTON HARVEST HOUSE 1345 28th Street (303) 443-3850	270	\$53 - \$112	YES	YES	YES	YES	YES	YES
HOLIDAY INN HOLIDOME 800 28th Street (303) 443-3322	165	\$47 - \$70	YES	YES	YES	YES	NO	YES
HOTEL BOULDERADO 2115 13th Street (303) 442-4344 (800) 433-4344	103	\$59 - \$109	YES	YES	NO	NO	NO	YES
LAZY L MOTEL 1000 28th Street (303) 442-7525 (800) 424-1115	53	\$36 - \$74	NO	NO	YES	NO	NO	YES
PEARL STREET INN BED & BREAKFAST 1820 Pearl Street (303) 444-5584	7	\$55 - \$95	By Request	YES	NO	NO	NO	YES
RESIDENCE INN BOULDER 3030 Center Green Drive (303) 449-5545 (800) 331-3131	96	\$45 - \$64	NO	NO	YES	YES	YES	YES
RODEWAY INN 5397 South Boulder Road (303) 499-4422	72	\$48 - \$55	YES	YES	YES	YES	NO	YES
SANDY POINTE INN 6485 Twin Lakes Road (Gunbarrel Area) (303) 530-2939	30	\$39 - \$49	By Request	NO	NO	NO	NO	NO
SILVER SADDLE MOTEL 90 Arapahoe Avenue (303) 442-8022	32	\$30 - \$68	NO	NO	NO	NO	NO	YES
UNIVERSITY INN 1632 Broadway (303) 442-3830	40	\$36 - \$50	NO	NO	YES	NO	NO	YES
WAGON WHEEL MOTEL/CAMPGROUND Four Mile Canyon Road (303) 444-0882	23	\$32 - \$40	NO	NO	YES	YES	NO	YES

**Rocky Mountain Section Meeting**

(continued from p. 47)

study desk. Other features include wake-up service, free parking, and fine meals served cafeteria style on a fixed schedule. Space is limited.

Rates at the College Inn Conference Center will be approximately \$150 for a single and \$100 per person for a double for the meeting. Double rooms include two double beds. These rates include lodging Friday through Sunday nights and all breakfasts Saturday, Sunday, and Monday.

The housing payment is due at check-out and *should not be*

made in advance. Cash, check, VISA, and Mastercard will be accepted. Participants may check in any time after noon on Friday.

Reservations may be made by calling the Inn at (303) 444-2676. Reservations will be taken on a first-come basis.

Other motels and hotels are situated within walking or short driving distance of the University Memorial Center. The local committee *will not* coordinate housing reservations. The name, telephone number, and current rates of other motels and hotels are given for your convenience. You must contact them directly for reservations.

**PREREGISTRATION FORM**

Rocky Mountain Section, GSA, 40th Annual Meeting  
 May 2, 3, 4, 1987  
 Boulder, Colorado

**IMPORTANT**

1. Full payment must accompany registration.
2. Your check is your receipt. Copy this form for your records.
3. Preregistration deadline: *Must be postmarked no later than April 3, 1987.*
4. No refunds after April 17, 1987.

Name \_\_\_\_\_  
Last First Preferred Name for Badge

Affiliation (abbreviate for badge) \_\_\_\_\_

Professional address \_\_\_\_\_  
city state ZIP

Phone: business ( ) \_\_\_\_\_ residence ( ) \_\_\_\_\_

**Fees**

**Preregistration (must be postmarked by April 3, 1987)**

Professional .....	\$ 40	\$ _____
Student .....	\$ 10	\$ _____

**Registration (after April 3, 1987)**

Professional .....	\$ 45	\$ _____
Student .....	\$ 15	\$ _____

Annual Banquet .....	\$ 45	\$ _____
Business Lunch .....	\$ 8	\$ _____

**Field Trip Preregistration**

All field trip participants must also preregister for the meeting.

*Premeeting Field Trips*

1. Field Relations, Cretaceous-Tertiary Boundary, Raton Basin, New Mexico and Colorado, April 30-May 1, 1987. ....	\$105	\$ _____
2. Engineering Geology and Hydrology, Central Colorado, May 2-3, 1987. ....	\$ 40	\$ _____
3. Sedimentology of Lawn Lake Flood Deposits and Geomorphic Processes at Fall River, Rocky Mountain National Park, May 1, 1987. ....	\$ 25	\$ _____
4. Epithermal Mineral Deposits of Boulder County, Colorado, May 1, 1987. ....	\$ 30	\$ _____
5. Stratigraphy and Depositional Environments of Muddy Sandstone, Northeast Wyoming, April 29-May 1, 1987. ....	\$ 83	\$ _____

*Postmeeting Field Trips*

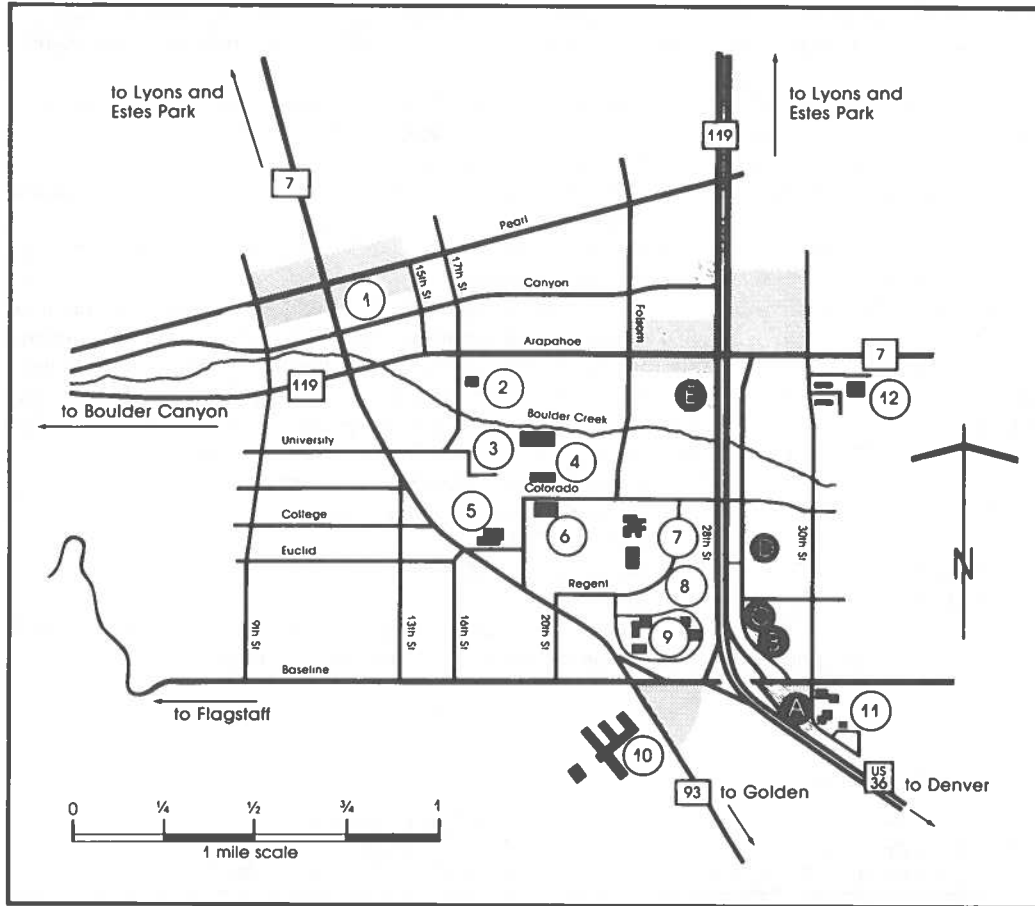
6. Urban Geological Hazards of the Boulder Area, May 5, 1987. ....	\$ 21	\$ _____
7. Precambrian Rocks of Central Front Range Laramide and Cenozoic Structure and Ore Deposits of Tenmile-Mosquito Ranges, and Late Paleozoic Rocks of Eagle River Valley, Central Colorado, May 5-6, 1987. ....	\$ 40	\$ _____
8. Florissant Fossil Beds, May 5-7, 1987. ....	\$172	\$ _____
9. Cretaceous High-Resolution Event Stratigraphy: Offshore-Onshore Correlations of Greenhorn Marine Cyclothem, Colorado-Utah, May 5-8, 1987. ....	\$105	\$ _____

**TOTAL FEES** Enclose check or money order, in U.S. funds, made payable to University of Colorado ..... \$ \_\_\_\_\_

Your canceled check is your receipt.

Mail completed registration form and payment to  
 Office of Conference Services  
 Campus Box 153  
 University of Colorado  
 Boulder, CO 80309  
**Deadline for preregistration is April 3, 1987**

# Outline Map of Boulder and the University of Colorado



- Boulder RTD Bus Terminal—1
  - College Inn Conference Center—2
  - Duane Physics—6
  - East Campus—12
  - Engineering and Business—7
  - Events/Conference Center—8
  - Kittredge Complex—9
  - Muenzinger Psychology—4
  - National Bureau of Standards—10
  - Recreation Center—3
  - University Memorial Center—5
  - Williams Village—11
- Boulder Hotels**
- Broker Inn—A
  - Boulder Inn—B
  - Holiday Inn—C
  - Highlander Inn—D
  - Hilton Harvest House—E

Transportation from Denver's Stapleton International Airport is available via the Airporter Limousine, RTD Bus service, or rental car. These services are located in the baggage claim area.

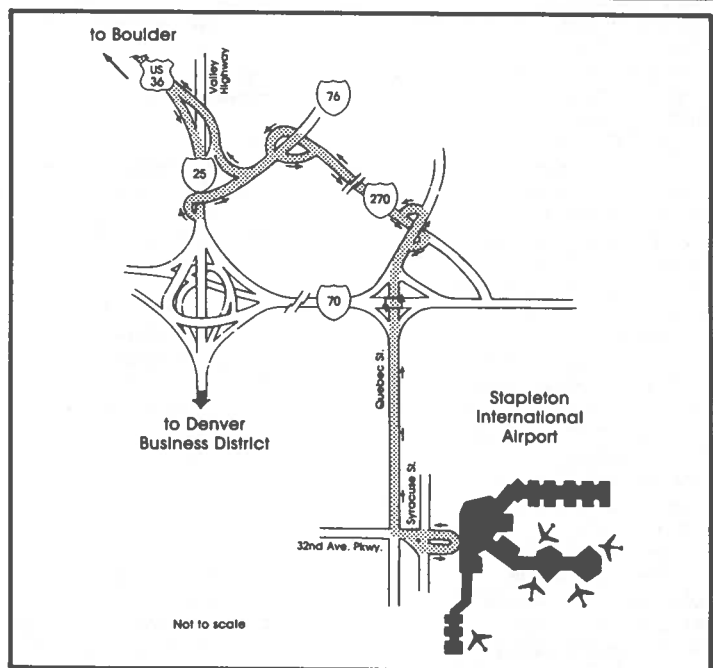
RTD bus service involves a transfer in downtown Denver and a short taxi ride from the Boulder terminal. Some participants walk from demand stops along Broadway at Baseline, 16th, and Arapahoe.

The Airporter Limousine offers direct service to the Broker Inn/Williams Village and to the Hilton Harvest House. Stops on demand include the College Inn and Kittredge, as well as local motels.

Rental cars should be reserved well in advance of your program. Taxi service is not recommended unless fares are agreed upon in advance.

Current information on rates and schedules is included in your confirmation packet.

## Boulder — Stapleton International Airport



## If Your Campus Is Listed Here, You Need a GSA Rep

Every college and university that has a geology program needs a GSA campus representative who can provide information about GSA services to students.

The Campus Representative Program began in 1979 in GSA's Southeastern Section. Active GSA members in the section were recruited to serve as campus representatives, establishing a communications link between GSA headquarters and present and prospective Student Associates.

Campus representatives, with the aid of a notebook of information provided by GSA's Membership Department, explain to interested students the benefits of being a GSA Student Associate:

- *Bulletin, Geology, and News & Information* every month
- 20% discount on GSA books, maps, and charts
- \$25 discount for GSA's Employment Service (applicants)
- \$10 discount for registration fees for Penrose Conferences
- \$20 reduction in student registration fees for GSA's Annual Meeting
- Reduced registration fees for many GSA section meetings
- Reduced dues for spouse member
- 25% discount on Member Standing Order Plan
- Special discounts on Decade of North American Geology publications
- Opportunity to participate in GSA's specialized divisions and to receive their newsletters

- Group term life insurance plan at reduced member rates
- Opportunity to apply for student grants-in-aid in the South-eastern Section
- Discount for subscriptions to *Engineering Geology Abstracts* for Engineering Geology Division affiliates
- Discount for National car rentals
- 25% discount on many Geological Society of London publications
- Reduced subscription rate for publications of the American Institute of Physics

All GSA sections participate in the program, and there are now 434 active campus representatives. We thank the current campus representatives now serving to keep the program growing. However, we need more volunteers. If you are a Member or Fellow (not Student Associate) and are interested in serving GSA as a campus representative for your college or university, please contact

Clara Hodgson, Membership Coordinator  
Geological Society of America  
P.O. Box 9140  
Boulder, Colorado 80301  
(303) 447-2020

The following campuses need a GSA campus representative. If yours is on the list, won't you consider serving?

### Campuses that do not have GSA Campus Representatives:

#### **Cordilleran Section**

##### *Arizona*

Central Arizona College  
Mesa Community College  
Phoenix College  
Prescott College

##### *California*

Antelope Valley College  
Bakersfield College  
California Polytechnic State University—  
San Luis Obispo  
California State University—Stanislaus  
Cerritos College  
Chaffey College  
Chapman College  
Contra Costa Community College  
College of the Desert  
Diablo Valley College  
East Los Angeles College  
Fresno City College  
Glendale Community College  
Golden West College  
Los Angeles City College  
Los Angeles Harbor College  
Los Angeles Pierce College  
Los Angeles Valley College  
Marin Community College  
Merced College  
Napa Valley College  
Naval Postgraduate School  
Ohlone College  
Orange Coast College  
Pasadena City College  
College of the Redwoods  
Riverside City College  
Sacramento City College  
Saddleback Community College  
San Joaquin Delta College

San Jose City College  
Santa Ana College  
Santa Barbara City College  
Shasta Community College  
Southwestern College  
Ventura College  
West Valley College  
Yuba Community College

##### *Hawaii*

University of Hawaii at Hilo

##### *Nevada*

Wassuk College

##### *Oregon*

Central Oregon Community College  
Clatsop Community College  
George Fox College  
Willamette University

##### *Washington*

Lower Columbia College  
Olympic College  
Tacoma Community College  
Whitworth College  
Yakima Valley College

##### *British Columbia*

Capilano College  
Cariboo College  
Douglas College

#### **Rocky Mountain Section**

*Colorado*  
Colorado Mountain College  
Colorado Northwestern Community College  
University of Denver  
Metropolitan State College

Pikes Peak Community College  
United States Air Force Academy  
Western State College of Colorado

##### *Idaho*

Lewis-Clark State College  
Ricks College  
College of Southern Idaho

##### *Montana*

Eastern Montana College  
Flathead Valley Community College  
Northern Montana College  
Rocky Mountain College

##### *New Mexico*

New Mexico Highlands University  
Western New Mexico University

##### *North Dakota*

Dickinson State College

##### *South Dakota*

Augustana College

##### *Utah*

Snow College  
Southern Utah State College

##### *Wyoming*

Casper College

##### *Alberta*

University of Lethbridge  
Mount Royal College  
Northern Alberta Institute of Tech

(continued)

**Campuses Not Having GSA Representatives** (continued)

*Saskatchewan*  
University of Regina  
University of Saskatchewan

**North-Central Section**

*Illinois*  
Argonne National Laboratory—  
University of Chicago  
Bradley University  
University of Chicago  
Columbia University  
Concordia College  
Elgin Community College  
Field Museum of Natural History  
University of Illinois—Chicago  
Illinois Central College  
Knox College  
College of Lake County  
Lincoln Land Community College  
Monmouth College  
Northwestern University  
Oakton Community College  
Principia College  
Southern Illinois University—Edwardsville  
Wabash Valley College  
Wheaton College  
William Rainey Harper Community College

*Indiana*

Earlham College  
Hanover College  
Holy Cross Junior College  
Indiana University/Purdue University—Fort  
Wayne  
Indiana University at Kokomo  
Indiana University Northwest  
University of Notre Dame  
Vincennes University Junior College

*Iowa*

Cornell College  
Drake University  
Grinnell College

*Michigan*

Adrian College  
Central Michigan University  
Charles Stewart Mott Community College  
Concordia College  
Gogebic Community College  
Grand Valley State Colleges  
Henry Ford Community College  
Hope College  
Muskegon Community College  
Northern Michigan University  
Schoolcraft College  
St. Clair County Community College  
Washtenaw Community College  
Wayne State University

*Minnesota*

Anoka-Ramsey Community College  
Carleton College  
Concordia College  
Gustavus Adolphus College  
Itasca Community College  
Macalester College  
Mesabi Community College  
Southwest State University  
St. Cloud State University  
College of St. Thomas  
Willmar Community College  
Winona State University

*Missouri*

Central Methodist College  
Meramec Community College  
University of Missouri—Kansas City  
Missouri Western State College  
Northeast Missouri State University  
St. Louis Community College at Florissant  
Valley  
St. Louis Community College at Forest Park  
St. Louis University  
Stephens College  
Washington University  
William Jewell College

*Nebraska*

Doane College  
Kearney State College

*Ohio*

Ashland College  
Central State University  
University of Cincinnati  
Cleveland State University  
University of Dayton  
Kent State University—Stark Campus  
Marietta College  
Miami University  
Mount Union College  
Muskingum College  
Oberlin College  
Ohio State University—Mansfield  
Ohio University—Lancaster  
Ohio Wesleyan University

*Wisconsin*

Milwaukee Area Technical College  
Mount Senario College  
Northland College  
University of Wisconsin—Extension—Madison  
University of Wisconsin—Green Bay  
University of Wisconsin—Marathon County  
University of Wisconsin—Platteville  
University of Wisconsin—Stevens Point

*Manitoba*

Brandon University

**South-Central Section**

*Arkansas*  
University of Arkansas—Fayetteville  
University of Arkansas—Monticello  
Arkansas Tech University  
University of Central Arkansas  
College of the Ozarks  
Southern Arkansas University

*Kansas*

Cowley County Community College  
St. John's College

*Oklahoma*

Northeastern State University  
Phillips University

*Texas*

Abilene Christian University  
Amarillo Junior College  
Angelo State University  
Brookhaven College  
Del Mar College  
Hardin-Simmons University  
University of Houston Downtown  
Kilgore College  
Lee College  
Midwestern State University

North Texas State University  
Odessa College  
Pan American University  
San Antonio College  
South Plains College  
Tarleton State University  
Tarrant County Junior College  
University of Texas of the Permian Basin

**Northeastern Section**

*Connecticut*  
Central Connecticut State University  
Eastern Connecticut State University  
Southern Connecticut State College  
United States Coast Guard Academy

*Delaware*

University of Delaware—College of Marine  
Studies

*District of Columbia*

University of the District of Columbia—  
Van Ness Campus

*Maine*

Bowdoin College  
Colby College  
University of Maine—Orono at Walpole

*Maryland*

Catonsville Community College  
Montgomery College  
Towson State University  
United States Naval Academy

*Massachusetts*

Berkshire Community College  
Fitchburg State College  
Greenfield Community College  
Hampshire College  
Harvard University  
University of Massachusetts at Boston/Harbor  
Campus  
Massachusetts Institute of Technology  
North Adams State College  
Woods Hole Oceanographic Institution  
Worcester State College

*New Hampshire*

Keene State College  
New England College  
Plymouth State College

*New Jersey*

Fairleigh Dickinson University  
Glassboro State College  
Stockton State College  
Trenton State College  
Union County College  
Upsala College  
William Paterson College

*New York*

Adirondack Community College  
Brooklyn College (CUNY)  
Broome Community College  
City College (CUNY)  
Columbia University, Teachers College  
Graduate School of the City University of New  
York  
Hamilton College  
Hudson Valley Community College  
Hunter College (CUNY)  
Jefferson Community College  
Lehman College (CUNY)

(continued on p. 52)

## Campuses Not Having GSA Representatives (continued from p. 51)

Long Island University, Brooklyn Center  
Long Island University, C. W. Post College  
Manhattan College  
Molloy College  
Nassau Community College  
Onondaga Community College  
Pace University—New York Campus  
Roberts Wesleyan College  
College of Staten Island  
SUNY, College at Purchase  
SUNY, Maritime College  
SUNY at Albany  
SUNY at Binghamton  
United States Military Academy  
Utica College of Syracuse University

### Pennsylvania

Clarion University  
Drexel University  
Elizabethtown College  
Gannon University  
Juniata College  
Lock Haven University  
Lycoming College  
Mercyhurst College  
Montgomery County Community College  
Moravian College  
Muhlenberg College  
Pennsylvania State University—Erie  
Pennsylvania State University—Monaca  
Susquehanna University  
Thiel College  
Waynesburg College  
Wilkes College  
York College of Pennsylvania

### Rhode Island

Community College of Rhode Island  
Providence College  
Rhode Island College  
Roger Williams College

### Vermont

Castleton State College  
Middlebury College  
Norwich University  
University of Vermont

### New Brunswick

University of New Brunswick—Saint John

### Newfoundland

Sir Wilfred Grenfell College

### Nova Scotia

St. Mary's University  
University College of Cape Breton

### Ontario

Cambrian College of Applied Arts & Technology  
University of Guelph  
Laurentian University  
University of Ottawa  
Sir Sandford Fleming College  
University of Waterloo  
University of Western Ontario  
University of Windsor

### Province Quebec

Concordia University  
Ecole Polytechnique  
Université du Quebec à Montreal  
Université du Quebec à Rimouski  
Université du Quebec—Ste-Foy  
Université du Quebec à Trois Rivières

### Southeastern Section

#### Alabama

University of Alabama—Dauphin Island  
Livingston University  
University of Montevallo

#### Florida

Broward Community College  
University of Central Florida  
Edison Community College  
Florida Atlantic University  
Florida Institute of Technology  
Florida Keys Community College  
Gulf Coast Community College  
Miami-Dade Community College (New World Center)  
Nova University  
Okaloosa-Walton Junior College  
Pensacola Junior College  
St. Petersburg Junior College  
St. Petersburg Junior College—Clearwater  
Stetson University  
Tallahassee Community College

### Georgia

Emory University—Oxford College  
Gainesville Junior College  
Georgia Southwestern College  
Kennesaw College  
Mercer University  
Shorter College  
Valdosta State College

### Kentucky

Berea College  
Henderson Community College  
Morehead State University  
Northern Kentucky University

### Louisiana

Northwestern State University

### North Carolina

Catawba College  
Elizabeth City State University  
University of North Carolina—Greensboro  
North Carolina Agricultural & Tech State University

### South Carolina

Benedict College  
Coker College  
Winthrop College

### Tennessee

Rhodes College  
University of the South

### Virginia

Emory & Henry College  
Hampton Institute  
J. Sargeant Reynolds Community College  
Lynchburg College  
Mary Washington College  
Northern Virginia Community College  
Tidewater Community College  
Virginia Commonwealth University  
Virginia State University  
Virginia Western Community College

### West Virginia

Glennville State College  
Parkersburg Community College  
Potomac State College

## AGI Publishes Field Trip Guidebook List

Due to problems in obtaining guidebooks prepared for the field trips held at geology meetings each year, the Geoscience Information Society (GIS) has over the years given high priority to production of the *Union List of Geologic Field Trip Guidebooks of North America*. A union list is both a bibliography and a finding tool. This is particularly important for guidebooks, because so few are available for purchase after the field trips have taken place. This new edition of the *Union List*, compiled and edited by the GIS Guidebooks Committee, headed by Beatrice Lukens, includes the holdings of 134 libraries in Canada and the United States that have strong geoscience collections. A user can quickly determine which libraries own a copy of any guidebook cited, as well as the lending policies of those libraries.

The fourth edition of the *Union List* cumulates guidebooks for field trips held from the 5th International Geological Congress in 1891 through the end of 1979. This edition lists 566 guidebook

series, as compared to 354 in the third edition, and its Geographic Index has been greatly expanded.

The 200-page book is available from Customer Services, American Geological Institute, 4220 King Street, Alexandria, VA 22302, for \$47.50.

*Note from Sue Beggs, GSA Meetings Manager*

### 1986 Annual Meeting, San Antonio, Attendance Correction

As a result of final adjustments, the numbers reported in the January 1987 issue of *News & Information* should be changed as follows:

Total registration: 4504      Preregistered: 72%

Professionals: 3033

Students: 1126

Guests: 345



## Penrose Conference: Exposed Cross Sections through the Continental Crust

September 27–October 2, 1987

Killarney Mountain Lodge  
Killarney, Ontario, Canada

Recently, many earth scientists have come to suspect that crystalline terranes such as the Ivrea Zone in Italy and the Kapuskasing Zone in western Ontario constitute nearly complete sections through the continental crust now exposed at Earth's surface. Because of the increased interest in these unusual terranes and their potential role in understanding the nature and evolution of the crust, a Penrose Conference devoted to the subject will be held at Killarney Mountain Lodge, Ontario, from September 27 to October 2, 1987.

The purpose of this conference is to bring together a wide spectrum of earth scientists currently studying various aspects of these cross sections to examine their geological and geophysical field relations and the implications of such complexes regarding the structure, composition, and evolution of the continental crust. We will examine the latest research on individual sections with a view to identifying their similarities and differences. Discussions will also address the tectonic modification of the proposed sections during and after emplacement. There will be an intensive critique of the various lines of geologic and geophysical evidence that these terranes actually represent these cross sections. Finally, the impact of crustal cross section research on the directions of large-scale

continental research programs (such as drilling and reflection studies) will be examined.

The conference will be organized around a series of indoor "field trips" in which currently active investigators will take the participants on tours through key cross sections using their latest field, geophysical, and laboratory data, plus samples and thin sections. Liberal time will be allowed for discussion and comparison of the sections. In addition, a two-day field trip through the Kapuskasing Zone will be conducted by John Percival and Ken Card, Geological Survey of Canada, at the beginning of the conference.

Participation will be limited to approximately 60–70 people. Those wishing to participate should contact

David M. Fountain  
Dept. of Geology  
& Geophysics  
University of Wyoming  
P.O. Box 3006  
University Station  
Laramie, WY 82071

or  
Matthew H. Salisbury  
Centre of Marine Geology  
Dept. of Geology  
Dalhousie University  
Halifax, B3H 3J5  
Nova Scotia, Canada

Deadline for application is **May 1, 1987**.

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## CALL FOR APPLICATIONS & NOMINATIONS

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### FOR GEOLOGY CO-EDITOR

GSA solicits applications and nominations for the position of co-editor of **Geology**, to serve with outgoing editor E. M. Moores for the remainder of 1987 and to continue for a full three-year term, with option for one renewal, as one of a two-editor team. Desirable characteristics for the successful candidate include:

1. Broad interest and experience in geology
2. Iconoclastic
3. International stature
4. Willing to take risks and try innovations
5. Sense of humor
6. Sense of perspective
7. Organized and productive
8. No "ego-trip"
9. Willing to work closely with GSA headquarters staff.

This is not a salaried position, but GSA pays the expenses for secretarial assistance, mail, telephone, and travel to GSA headquarters.

If you wish to be considered, please submit a resume and a brief letter describing why you should be chosen. If you wish to nominate another, submit a letter of nomination and the individual's written permission and resume. Send nominations and applications to F. Michael Wahl, Executive Director, Geological Society of America, P.O. Box 9140, Boulder, CO 80301, **by February 28, 1987**. For more information call Eldridge Moores, (916) 752-0352.

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## THE GEOLOGICAL SOCIETY OF AMERICA

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## Call for 1988 Field Trips

### GSA Centennial Celebration • Denver, Colorado, October 31–November 3, 1988

Field trips for the **GSA Centennial Celebration 1988** should have a flavor different from field trips for our regular annual meetings. Not only are the paradigms for interpretation of geologic data in all parts of earth science largely different, but many have been replaced. Looking back to the past to see how our thought processes have changed can help prepare us for the similar changes that no doubt will take place in the next 100 years.

In keeping with the GSA Centennial theme, the focus of the trips should be on geologic problems or areas of classic geology about which our understanding now is much different from what it was 100 years ago. Flamboyant notions such as "Along Part of the 40th Parallel with King" would be welcome.

The following guidelines should be followed:

- Eighteen to perhaps as many as 24 field trips, about evenly divided before and after the meeting, will be selected from those offered.

- Pre-Centennial trips may start and end at any point of convenient access, but travel to Denver at the conclusion of the trip should be arranged.

- Post-Centennial trips should start in Denver; travel to initial point should be part of the field trip. The trip may end at any convenient point for dispersal.

- Length should be 1–3 days for most trips, but longer ones are possible.

- Although the trips will have a topical or areal orientation, as much information as possible should be included on development of geologic knowledge and changes in concepts as our science has matured in the past 100 years.

It will be helpful if all proposals can be in the same format, and a form has been prepared for your use. In order for the summer of 1987 to be available to field trip leaders for work on the trip, as needed, please respond by **April 30, 1987**. Write or call one of the addresses or phone numbers below, and the form will be sent to you along with a brief statement of duties and responsibilities of field trip leaders.

1988 Field Trip Chairman  
Gregory S. Holden  
Geology Department  
Colorado School of Mines  
Golden, CO 80401  
Phone: (303) 273-3800

or  
GSA Headquarters  
Meetings Department  
P.O. Box 9140  
Boulder, Colorado 80301  
(303) 447-2020

*Note:* Gregory Holden replaces Harry Tourtelot, who had to withdraw from the field trip chairmanship due to other overlapping professional commitments. We have appreciated his work to date on behalf of the 1988 program and wish him well. Tourtelot is Assistant Chief Geologist, U.S. Geological Survey, Denver.

### 1987–1988 Fulbright Grants in Geology Still Available

The Council for International Exchange of Scholars (CIES) has announced that some 1987–1988 Fulbright Lecturing Grants remain available to U.S. faculty in the field of geology. There are specific openings in Austria, Colombia, Egypt, Pakistan, Romania, Turkey, the U.S.S.R., and Yemen. In addition, other countries are open to applications in any discipline, and geology is among their preferred fields.

Scholars in all academic ranks, including emeritus, are eligible to apply. It is expected that applicants will have a Ph.D., college or university teaching experience, and evidence of scholarly productivity. U.S. citizenship is required. In a few countries (of Central and South America and Francophone Africa) knowledge of the host-country language is required.

For information, call or write CIES, Eleven Dupont Circle NW, Suite 300, Washington, DC 20036, or telephone (202) 939-5401. When inquiring, indicate countries of interest.

### Foundation for Field Research Offers Financial Support

Financial support for researchers is available from the Foundation for Field Research for projects that can be appropriately funded and assisted by volunteer teams in the field. Funding is not limited by geographical area or discipline, although the project must consist of basic field research. Proposals must be submitted at least a year in advance of the project dates, and should follow the requirements outlined in "Guidelines for Field Research Funding," available upon request from the Foundation.

For additional information about the Foundation and about funding, call (619) 445-9264, or write to Foundation for Field Research, 787 South Grade Rd., Alpine, CA 92001.

## NASA PLANETARY BIOLOGY SUMMER INTERNSHIPS

The Marine Biological Laboratory, Woods Hole, Massachusetts, invites applications from graduate students and seniors accepted in graduate programs for \$1,800 awards to participate in research at NASA centers and collaborating institutions during the summer. Application deadline: 1 April 1987. For information and applications, contact: Michael Enzien, Planetary Biology Intern Program, Department of Biology, Boston University, 2 Cummington Street, Boston, Mass. 02215. An Equal Opportunity/Affirmative Action Institution.

**Geological Society of America**



# **CONGRESSIONAL SCIENCE FELLOWSHIP 1987-1988**

The Geological Society of America invites applications for the 1987-1988 Congressional Science Fellowship. The Fellow selected will spend a year (September 1987-August 1988) on the staff of a member of Congress or a congressional committee advising on a wide range of scientific issues as they pertain to public questions. Guided by the American Association for the Advancement of Science, the Fellow selects a congressional staff position in which he or she can work on major legislative issues.

## **CRITERIA**

Requirements for the Fellowship should include a Ph.D. and exceptional competence in some area of the earth sciences, cognizance of a broad range of matters outside the Fellow's particular area, and a strong interest in working on a range of public policy problems.

## **AWARD**

The GSA Congressional Science Fellowship carries with it a \$25,000 stipend and a limited relocation and travel allowance.

## **TO APPLY**

Procedures for application and detailed requirements are available in the geology departments of most colleges and universities in the United States or upon request from

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



**Deadline for receipt of all application materials is March 31, 1987**

# MEETINGS

(Asterisk indicates new or changed information)

1987

**Sinkholes and the Environmental Impacts of Karst—2nd Multidisciplinary Conference**, February 9–11, 1987, Orlando, Florida. Information: Barry F. Beck, College of Engineering, University of Central Florida, Orlando, FL 32816.

**6th Annual Symposium on Caribbean Geology**, February 11–15, 1987, Mayaguez, Puerto Rico. Information: James Joyce, Dept. Geology, University of Puerto Rico, Mayaguez, PR 00708; (809) 834-4040, ext. 3452.

**Energy-sources Technology Conference**, February 15–19, 1987, Dallas, Texas. Information: American Society of Mechanical Engineers, Meetings Dept., 345 E. 47th St., New York, NY 10017; (212) 705-7057.

**Prospectors and Developers Association of Canada 55th Annual Convention**, March 8–11, 1987, Toronto, Ontario. Information: Susan Sikala, Prospectors and Developers Association, Suite 420, 74 Victoria St., Toronto, Ontario M5C 2A5, Canada; (416) 362-1969.

**U.S. Geological Survey Third Annual McKelvey Forum**, on all aspects of mineral resources research in the U.S. Geological Survey, March 11–12, 1987, Denver, Colorado. Information: Buhler and Abraham, Inc. (Forum organizers), (301) 681-3980.

**18th Annual Lunar and Planetary Science Conference**, March 16–20, 1987, Houston, Texas. Information: Pamela Jones, 3303 NASA Rd. 1, Houston, TX 77058; (713) 486-2150.

**Ninth Geophysical Convention of Turkey**, March 23–27, 1987, Ankara, Turkey. Information: TMMOB Jeofizik Mühendisleri Odası, Türkiye Jeofizik Bilimsel ve Teknik Kurultayı, Yürütme Kurulu, Bayindir Sok. 7/14. P.K. 255, Kizilay-Ankara, Turkey.

**Seismological Society of America Annual Meeting**, March 25–27, 1987, Santa Barbara, California. Information: SSA Headquarters, 6431 Fairmount Ave., Suite 7, El Cerrito, CA 94350; (415) 525-5474.

**Workshop to Develop Scientific Drilling Initiatives in the South Atlantic and Adjacent Southern Ocean**, April 6–8, 1987, Woods Hole, Massachusetts. Information: J. A. Austin, Jr., Inst. for Geophysics, University of Texas, 4920 North I.H. 35, Austin, TX 78751.

**23rd Annual Symposium on Engineering Geology and Soils Engineering**, April 6–9, 1987, Logan, Utah. Information: James McCaLpin, Department of Geology, Utah State University, Logan, UT 84322-0705; (801) 750-1273.

**7th Biannual Petroleum Conference of Turkey**, April 6–10, 1987, Ankara, Turkey. Information: Necdet Pamir Türkiye, Petrolleri A.O. Üretim Grubu Müdafaa Cad. No: 22 Bakanlıklar, Ankara, Turkey; telephone 17 91 60/453-553.

**Phanerozoic Ironstones and Related Deposits**, April 7–8, 1987, Sheffield, England. Information: Gordon Taylor, Dept. of Science, Luton CHE, Park Square, Luton LU1 3JU, England.

**Mathematical Geologists of the United States 1987 Conference**, Emerging Concepts, April 13–15, 1987, Redwood City, California. Information: Harry M. Parker, Fluor Engineering, Inc., 10 Twin Dolphin Dr., Redwood City, CA 94065.

**\*Geologic Causes of Natural Radionuclide Anomalies**, April 21–22, 1987, St. Louis, Missouri. Information: GEORAD Conference,

Missouri Dept. of Natural Resources, P.O. Box 250, Rolla, MO 65401; (314) 364-1752.

**\*Association for Women Geoscientists 10th Anniversary Conference**, April 23–26, 1987, San Francisco, California. Information: Association for Women Geoscientists, Resource Center for Associations, 10200 W. 44th Ave., 304, Wheat Ridge, CO 80033; (303) 422-2615.

**Society of Economic Paleontologists and Mineralogists Permian Basin Section Spring Field Conference**, April 29–May 2, 1987. Information: Chris Chandler, P.O. Box 2990, Midland, TX 79702; (915) 675-0575.

**\*National Association of Geology Teachers Eastern Section Annual Meeting and Field Trips**, May 1–3, 1987, Stone Ridge, New York. Information: Lawrence R. Matson, Dept. of Geology, Ulster County Community College, Stone Ridge, NY 12484; (914) 687-7621, ext. 371.

**\*Canadian Institute of Mining and Metallurgy 89th Annual Meeting**, May 3–7, 1987, Toronto, Ontario. Information: Ivana Savic, CIM, 1130 Sherbrooke St. W., Suite 400, Montreal, Quebec H3A 2M8, Canada; (514) 842-3461.

**Analysis of Naturally Fractured Reservoirs**, May 4–8, 1987, Snowbird, Utah. Information: Jane Rider, AAPG Education Dept., P.O. Box 979, Tulsa, OK 74101-0979; (918) 584-2555.

**10th Annual Spring Systematics Symposium**, Evolutionary Ideas of Progress, May 9, 1987, Chicago, Illinois. Information: Matthew H. Nitecki, Field Museum of Natural History, Roosevelt Rd. at Lakeshore Dr., Chicago, IL 60605-2496; telephone (312) 922-9410.

**Institute on Lake Superior Geology Annual Meeting**, May 11–14, 1987, Wawa, Ontario. Information: E. D. Frey, P.O. Box 57, Wawa, Ontario P0S 1K0, Canada; (705) 856-4883.

**\*Geology of Industrial Minerals, 23rd Annual Forum**, May 11–15, 1987, North Aurora, Illinois. Information: James W. Baxter, Illinois State Geological Survey, 615 E. Peabody Dr., Champaign, IL 61820; (217) 333-5107.

**Coastal Sediments '87**, May 12–14, 1987, New Orleans, Louisiana. Information: Nicholas C. Kraus, USAE Waterways Experiment Station, Coastal Engineering Research Center, P.O. Box 631, Attn. WESCR-P, Vicksburg, MS 39180-0631.

**\*Geologic Hazards Symposium**, May 12–17, Anchorage, Alaska. Information: William Pyle, 1987 Geologic Hazards Symposium, P.O. Box 101288, Anchorage, AK 99510.

**Midwest Friends of the Pleistocene Annual Meeting**, May 15–17, 1987, Mansfield, Ohio. Information: John P. Szabo, Dept. of Geology, University of Akron, Akron, OH 44325; (216) 375-7630.

**International Geoscience and Remote Sensing Symposium**, May 18–21, 1987, Ann Arbor, Michigan. Information: Joan Eadie, Secretariat, University of Michigan Extension Service, Dept. of Conferences and Institutes, 200 Hill St., Ann Arbor, MI 48104-3297.

**Coastal Lowlands Symposium: Geology and Geotechnology**, May 25–27, 1987, The Hague, Netherlands. Information: Coastal Lowlands Symposium, c/o CONGREX, Keizersgracht 610, 1017 EP Amsterdam, The Netherlands; Telex NL-14527.

(continued on p. 57)

## Meetings

(continued from p. 56)

**Geological Association of Canada-Mineralogical Association of Canada Annual Meeting**, May 25-27, 1987, Saskatoon, Saskatchewan. Information: W. O. Kupsch, Dept. of Geological Sciences, University of Saskatchewan, Saskatoon, Saskatchewan S7N 0W0, Canada; (306) 966-5696.

**28th U.S. Symposium on Rock Mechanics**, June 29-July 1, 1987, Tucson, Arizona. Information: 28th U.S. Symposium on Rock Mechanics, Special Professional Education, Box 9, Harvill Bldg., University of Arizona, Tucson, AZ 85721; (602) 621-5104 or 621-3054.

**First International Congress, Geochemistry and Cosmochemistry**, June 30-July 6, 1987, Paris, France. Information: C. J. Allegre, Lab. de Géochimie et Cosmochimie, 4 place Jussieu, Tour 14, 3 étage, 75252 Paris Cedex, France; telephone 43.54.84.63.

**Growth of Continental Crust workshop**, July 13-17, 1987, Oxford, England. Information: Pamela Jones, Lunar and Planetary Institute, 3303 NASA Road 1, Houston, TX 77058.

**Second Symposium on the South Atlantic Evolution**, July 23-25, 1987, Rio de Janeiro, Brazil. Information: Dimas Dias-Brito, Ilha do Fundão, Quadra 7, Rio de Janeiro - 21.910 - Brazil; and P. Y. Berthou, Lab. de Géologie des Bassins Sédimentaires, Tour 14-15, 4 étage, 4 place Jussieu, 75252 Paris Cedex 05, France.

**Tectonic Setting of Layered Intrusives**, July 27-28, 1987, Pretoria, South Africa. Information: Secretary, Indaba Organising Committee, Dept. of Geology, University of Pretoria, Pretoria, South Africa.

**4th International Congress of the Regional Committee on Pacific Neogene Stratigraphy** (affiliated with IUGS) and joint meeting of IGCP Project 246, July 29-31, 1987, Berkeley, California. Information: Charlotte Brunner, Chairperson of Organizing Committee, Dept. of Paleontology, University of California, Berkeley, CA 94720.

**5th Magmatic Sulphide Field Conference**, August 3-13, 1987, Zimbabwe. Information: A. Martin, Geological Society of Zimbabwe, P.O. Box 8427, Causeway, Harare, Zimbabwe.

**International Symposium on Erosion and Sedimentation in the Pacific Rim**, August 3-7, 1987, Corvallis, Oregon. Information: 1987 Corvallis Symposium, Conference Coordinator, College of Forestry, Oregon State University, Corvallis, OR 97331; (503) 754-2004.

**\*Devonian System 2nd International Symposium**, August 17-20, 1987, Calgary, Alberta. Information: Second International Symposium Devonian System, c/o Canadian Society of Petroleum Geologists, 505, 206 - 7 Ave. S.W., Calgary, Alberta T2P 0W7, Canada; (403) 264-5610.

**7th International Conference on Basement Tectonics**, August 17-21, 1987, Kingston, Ontario, Canada. Information: Bob Mason, c/o Events Management Inc., 4 Catarauqui St., Suite 209, Kingston, Ontario K7K 1Z7, Canada; (613) 547-5093.

**Society of Economic Paleontologists and Mineralogists Fourth Annual Midyear Meeting**, August 20-23, 1987, Austin, Texas. Information: SEPM, P.O. Box 4756, Tulsa, OK 74159; (918) 743-9765.

**XVI Pacific Science Congress**, August 20-30, 1987, Seoul, Korea. Information: Choon Ho Park, XVI Pacific Science Congress,

K.P.O. Box 1008, Seoul 110, Korea; telephone (2) 733-4478; Telex ILSKOR 23881.

**International Symposium on Nonmarine Cretaceous Correlations**, August 25-30, 1987, Urumqi, China. Information: Shen Yanbin, Nanjing Institute of Geology & Paleontology, Nanjing, People's Republic of China; or Niall J. Mateer, 1467 N. 17th, Laramie, WY 82070.

**International Congress on Geology, Structure, Mineralization, and Economics of the Pacific Rim**, August 26-29, 1987, Queensland, Australia. Information: C/-Aus. IMM Congress Secretariat, P.O. Box 731, Toowong 4066, Queensland, Australia.

**Sixth International Congress on Rock Mechanics**, August 31-September 3, 1987, Montreal, Quebec, Canada. Information: J. Franklin, Dept. of Earth Sciences, University of Waterloo, Waterloo, Ontario N2L 3G1, Canada.

**XI International Congress of Carboniferous Stratigraphy and Geology**, September 7-11, 1987, Beijing, China. Information: Yang Jingzhi, Nanjing Institute of Geology and Paleontology, Academia Sinica, Nanjing, China.

**International Workshop on Computerized Basin Analysis**, September 7-12, 1987, Szeged, Hungary. Information: Laszlo Somos, Geological Survey of Hungary, Pf. 106, H-1442, Budapest, Hungary; telephone (36-1) 634 431; Telex 225 220 mafi h.

**\*American Association of Petroleum Geologists Rocky Mountain Section meeting**, September 13-16, 1987, Boise, Idaho. Information: David H. Hawk, J.R. Simplot Co., 999 Main St., Boise, ID 83707; (208) 336-2110.

**18th Annual Geomorphology Symposium on Catastrophic Flooding**, September 26-28, 1987, Oxford, Ohio. Information: Larry Mayer, Dept. of Geology, Miami University, Oxford, OH 45056; (513) 529-3218.

**International Conference on Geophysical and Geochemical Exploration for Minerals and Groundwater**, September 27-October 1, 1987, Toronto, Ontario. Information: Exploration '87, c/o 222 Snidercroft Rd., Concord, Ontario L4K 1B5, Canada; (416) 669-2280; Telex 06-964570.

**Fifth International Flint Symposium**, September 27-October 2, 1987, Bordeaux, France. Information: 5th International Flint Symposium, Secrétaire General, c/o Michel Lenoir, Institut du Quaternaire, Batiment de Géologie, Avenue des Facultés, Université de Bordeaux I, 33405 Talence Cedex, France.

**Troodos 87: Ophiolites and Oceanic Lithosphere**, October 5-10, 1987, Nicosia, Cyprus. Information: Troodos 87 Symposium, Geological Survey Dept., Nicosia, Cyprus.

**\*Geothermal Resources Council Annual Meeting**, October 12-16, 1987, Sparks, Nevada. Information: Geothermal Resources Council, P.O. Box 1350, Davis, CA 95617-1350; (916) 758-2360.

**Mathematical Methods in Geology**, 16th Annual Geochautauqua, October 12-16, 1987, Pribiam, Czechoslovakia. Information: V. Nemeč, Geoindustria, Geologická 2, 152 00 Praha 5, Barrandov, Czechoslovakia; telephone (42-2) 590228 or (42-2) 7811801.

**Society of Economic Paleontologists and Mineralogists Gulf Coast Section 8th Annual Research Conference**, Paleontological Applications in Petroleum Exploration, December 6-9, 1987, Houston, Texas. Information: Charles L. McNulty, Dept. of Geology, University of Texas, UTA Box 19049, Arlington, TX 76019; (817) 273-2979.

(continued on p. 58)

Meetings (continued from p. 57)

## GSA 1987

### Section Meetings

Northeastern Section, March 4-7, 1987, Pittsburgh, Pennsylvania

Southeastern Section, March 26-27, 1987, Norfolk, Virginia

South-Central Section, March 30-31, 1987, Waco, Texas

North-Central Section, April 30-May 1, 1987, St. Paul, Minnesota

Rocky Mountain Section, May 2-4, 1987, Boulder, Colorado

Cordilleran Section, May 20-22, 1987, Hilo, Hawaii

Annual Meeting, October 26-29, Phoenix, Arizona

### Penrose Conferences

**Geochemistry of Waters in Deep Sedimentary Basins**, March 16-20, 1987, Oxnard, California. Information: Yousif K. Kharaka, U.S. Geological Survey, Water Resources Division, M.S. 427, 345 Middlefield Rd., Menlo Park, CA 94025; (415) 323-8111, ext. 2523.

**Late Quaternary Sea Level: The Marine and Terrestrial Record**, April 6-12, 1987, Ferry Reach, Bermuda. Information: James L. Carew, Dept. of Geology, College of Charleston, Charleston, SC 29424; (803) 792-5589.

**The Construction of Geological Cross Sections: Techniques, Assumptions, and Methods**, May 3-8, 1987, Rosendale, New York. Information: Peter A. Geiser, Dept. of Geology and Geophysics, University of Connecticut, Storrs, CT 06268; (203) 486-4432 or 4433.

**Glacial Facies Models**, May 3-8, 1987, Manitoulin Island, Ontario. Information: Nicholas Eyles, Dept. of Geology, Scarborough Campus, University of Toronto, Scarborough, Ontario M1C 1A4, Canada; (416) 284-3336.

**Geological Decisions for the 21st Century**, July 12-17, 1987, Steamboat Springs, Colorado. Information: David A. Stephenson, Dames & Moore, Pointe Corporate Centre, 7500 North Dreamy Draw Dr., Suite 145, Phoenix, AZ 85020; (602) 371-1110.

**\*Paleoenvironmental Interpretation of Paleosols**, September 11-17, 1987, Warm Springs Indian Reservation, Oregon. Information: Greg Retallack, Dept. of Geology, University of Oregon, Eugene, OR 97403-1272.

**Cordilleran Metamorphic Core Complexes, Revisited: Implications for Crustal Extension and Shortening in the North American Cordillera**, September 13-18, 1987, Elko, Nevada. Information: Arthur W. Snoke, Dept. of Geology and Geophysics, P.O. Box 3006, University of Wyoming, Laramie, WY 82071; (307) 766-5457.

## 1988

**\*Bicentennial Gold 88**, May 16-20, 1988, Melbourne, Australia. Information: R. R. Keays, Dept. of Geology, University of Melbourne, Parkville, Victoria 3052, Australia; telephone (03) 345 1844; Telex AA35185. (Abstracts due September 30, 1987.)

**\*Geological Association of Canada-Mineralogical Association of Canada-Canadian Society of Petroleum Geologists Joint Annual Meeting**, May 22-25, 1988, St. John's, Newfoundland. Information: John Fleming, Newfoundland Dept. of Mines and Energy, P.O. Box 4750, St. John's, Newfoundland A1C 5T7, Canada; (709) 576-2768.

**\*Case Histories in Geotechnical Engineering 2nd International Conference**, June 1-5, 1988, St. Louis, Missouri. Information: Shamsher Prakash, Room 308, Dept. of Civil

Engineering, University of Missouri, Rolla, MO 65401; (314) 341-4461. (Abstracts due March 31, 1987.)

**\*Seismic Probing of the Continents and Their Margins International Symposium**, July 6-8, 1988, Canberra, Australia. Information: Jim Leven, Bureau of Mineral Resources, P.O. Box 378, Canberra, ACT 2601, Australia; telephone (062) 499111; Telex AA62109.

**\*Permafrost 5th International Conference**, August 2-5, 1988, Trondheim, Norway. Information: V International Conference on Permafrost, Norwegian Institute of Technology, Studies Administration, N-7034 Trondheim-NTH, Norway.

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## FUTURE GSA ANNUAL MEETING DATES

1987	Phoenix	October 26-29
1988	Denver	October 31-November 3
1989	St. Louis	November 6-9
1990	Dallas	October 29-November 1
1991	San Diego	October 21-24
1992	Cincinnati	October 26-29
1993	Boston	October 25-28

## In Memoriam

James E. Denmark  
Mobile, Alabama  
May 28, 1986

Robert H. Tschudy  
Jamestown, Colorado  
October 31, 1986

Richard B. McConnell  
Sussex, England  
August 1986

Setaro Tsuboi  
Tokyo, Japan  
September 22, 1986

P.G.K. Ramdohr  
Heidelberg, West Germany  
March 8, 1986

## PEOPLE

GSA Fellow **Bruce R. Doe** has been named assistant director for research of the U.S. Geological Survey at its National Center in Reston, Virginia.

Fellow **Robert Fickies**, Averill Park, New York, has been appointed Assistant Chief of the New York State Geological Survey.

Honorary Fellow **Kenneth J. Hsü**, Zurich, Switzerland, has been elected a Foreign Associate of the U.S. National Academy of Sciences. He is also the first geologist elected (in July 1986) to the Third World Academy of Sciences.

Fellow **Lincoln Page**, Melvin Village, New Hampshire, has been awarded a Centennial Medal by the Geological Survey of Finland.

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The department has 12 faculty members and is well equipped for research in sedimentology. In addition to standard sample preparation and

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A Ph.D. is required for the position. Applicants should send a resume, official transcripts, names of three persons who can be contacted for letters of recommendation, and a brief statement of research interests to Charles M. Onasch, Chairman of Search Committee, Department of Geology, Bowling Green State University, Bowling Green, OH 43403. Closing date for applications is February 27, 1987. B.G.S.U. is an equal-opportunity/affirmative action employer.

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Search and selection procedures will be closed when a sufficient number of qualified applicants have been identified, but not before March 31, 1987. The position will be available July 1, 1987, or as soon thereafter as a suitable candidate can be selected. Salary is negotiable.

Applications, nominations, and requests for additional information should be directed to: Dean Sheldon A. Vincenti, Chairman, Dean's Search Committee for the College of Mines and Earth Resources, University of Idaho College of Law, Moscow, ID 83843.

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The Department of Geology at Texas A&M University anticipates filling two vacancies contingent upon budgetary approval. The positions are tenure track at the level of Assistant Professor and would start September 1, 1987. Successful candidates will be from two of the following areas: 1) Low-temperature aqueous or solid state geochemist with interests in carbonate or silicate systems. 2) Igneous or metamorphic petrologist with a strong theoretical/analytical background combined with field interests. 3) Carbonate petrologist with interests in diagenesis/geochemistry and sedimentation. 4) Engineering Geology.

A Ph.D. in geology or related fields is required, but professional experience is not necessary. Candidates should send letters of application, resume, transcripts and names of three referees to Dr. John H. Spang, Head, Department of Geology, Texas A&M University, College Station, Texas, 77843. Closing date for applications is February 16, 1987.

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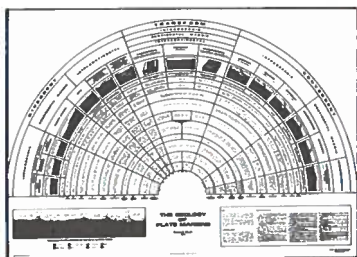
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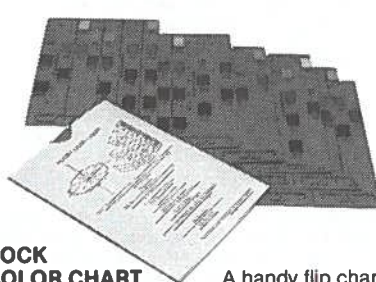
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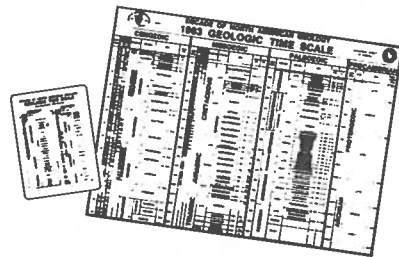
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