



The Geochemical News

Newsletter of the Geochemical Society

Number 78

Fall 1990

Inquiries and announcements regarding *Geochemical News* should be sent to S.B. Shirey, Carnegie Institution of Washington, 5241 Broad Branch Rd., NW, Washington, DC 20015 USA.

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UPCOMING MEETINGS

Oct. 28-Nov. 1, 1990, Geological Society of America Annual Meeting, Dallas, TX, USA. (GSA, P.O. Box 9140, Boulder, CO 80301. Ph: 303-447-2020)

Dec. 3-7, 1990, AGU Fall Meeting, San Francisco, CA USA. (AGU, 200 Florida Ave., NW, Washington, DC 20009. Ph: 202-462-6900)

March 18-22, 1991 22nd Lunar and Planetary Science Conference, Houston, TX USA. (Pam Jones, Lunar and Planetary Institute, Program Services Department, 3303 NASA Road 1, Houston, TX, 77058. Ph: 713-486-2150)

March 24-28, 1991, EUG VI. European Union of Geosciences, Strasbourg, France. Abstracts due November 15, 1990. Special Symposia include: Energy modeling of rock-forming minerals; Diffusion and order-disorder kinetics in minerals: implications for geothermometry, geobarometry and geotachometry; Potassic and ultrapotassic magmas and their origins; Granites and continental growth; Island arcs and marginal basins: ancient examples and modern analogues; High pressure mineralogy: synthesis, spectroscopy and diffractometry; Ore-mineral concentrations in mafic and ultramafic suites; Explosive eruptions: eruptive dynamics and magma composition; Structure and composition of the lower continental crust; Precambrian greenstone belts and associated metallogeny; and Palaeozoic orogenies in Europe: tectonics, magmatism and evolution. For further information, contact EUG VI Organizing Committee Secretariat, via S. Nicolo 14, 34121 Trieste, ITALY

April 14-19, 1991 American Chemical Society National Meeting, Atlanta, GA. (ACS Meetings Department, 1155 16th Street, NW, Washington, DC 20036. Ph: 800-227-5558 or 202-872-6059)

May 27-29, 1991 Geological Association of Canada/ Mineralogical Association of Canada/ Society of Economic Geologists Annual Meetings, Toronto, Ontario. (J. Fawcett, Department of Geology, University of Toronto, Toronto, Ontario Canada M5S 1A1. Ph: 416-978-3027).

May 28-June 1, 1991 AGU Spring Meeting, Baltimore, MD USA (AGU, 200 Florida Ave., NW, Washington, DC 20009. Ph: 202-462-6900)

GEOCHEMICAL SOCIETY SPONSORED LECTURE TOURS

Dr. Ross Taylor, Research School of Earth Sciences, Australian National University will be making his third Geochemical Society sponsored lecture tour this fall. This year, Dr. Taylor will be speaking on the Origin of the Moon and Growth of the Continental Crust at the University of Massachusetts, Amherst (Oct 22); Virginia Polytechnic Institute and State University, Blacksburg Va (Oct 26); and at

the University of New Mexico at Albuquerque (Nov. 8). Students and faculty of near-by institutions are welcome to attend these lectures. Contact the hosting departments for details of time and location. Dr. Stephen Moorbath, Department of Earth Sciences, Oxford University, will undertake a lecture tour in the spring, around the time of the Spring AGU Meeting.

GS OFFICERS NOMINATED FOR 1991

COUNCILORS: John M. Ferry, The Johns Hopkins University; Knut S. Heier, Geological Survey of Norway; Miriam Kastner, Scripps Institution of Oceanography.

CLARKE AWARD COMMITTEE: Rob Berman, Geological Survey of Canada; James L. Munoz, University of Colorado.

GOLDSCHMIDT AWARD COMMITTEE: Carol Frost, University of Wyoming; P. Edgar Hare, Carnegie Institution of Washington.

NOMINATIONS COMMITTEE: Sue Brantley, Pennsylvania State University; Anita Grunder, Oregon State University

PROGRAM COMMITTEE: Brian Popp, University of Wisconsin

NEW GEOCHEMICAL SOCIETY ADMINISTRATIVE OFFICE OPENS

The Geochemical Society has recently opened an Administrative Office located at The Ohio State University in Columbus, Ohio. Thanks are in order to GCA Executive Editor Gunter Faure and Managing Editor Ken Cherry for taking the responsibility to get the office going. The office Administrator, Susan Meyer, has been working since April 1990 to create a computer database of Geochemical Society members and subscribers to *Geochimica et Cosmochimica Acta*. Beginning in January 1991, all membership and subscription matters will be handled through the Columbus office; however, questions concerning individual memberships/subscriptions can be addressed to this office as of September 1, 1990 (075 Pressey Hall, 1070 Carmack Road, The Ohio State University, Columbus, Ohio 43210-1002; Telephone: 614-292-6919; Fax: 614-292-7273). In addition to her role as Subscription Manager, the Administrator will also act as a secretary to members of the Geochemical Society Council.

GEOCHEMICAL SOCIETY AWARDS FOR 1990

The **V.M. Goldschmidt Award** will be given to Edward Anders, Enrico Fermi Institute, University of Chicago, at the Geochemical Society Luncheon during the GSA Meeting, Monday, October 29, 12:00-1:00 at the Hyatt Regency Hotel. In the words of the nomination committee, the award will be made to Anders because of his "work in cosmochemistry including major contributions to our understanding of the age of the solar system, the abundances of the elements, the origin of organic materials in primitive meteorites, the origin of meteorites from the asteroid belt, the bulk compositions of the terrestrial planets, the origins of nuclear isotopic anomalies and the discovery of interstellar pre-solar grains in meteorites and others...". The award citation will be made at the Geochemical Society Luncheon at the GSA Meeting by Michael J. Drake, University of Arizona.

The **F.W. Clarke Award** will be given to Richard J. Walker, Department of Geology, University of Maryland, College Park at the same luncheon. This award will be given for Walker's work in developing resonance ionization mass spectrometry as a technique for Re-Os isotopic analysis and for applying the Re-Os isotopic system to terrestrial and extraterrestrial geochemical problems. The award citation will be made by John W. Morgan, USGS, Reston.

GEOCHEMICAL SOCIETY FALL COUNCIL MEETING

The Fall 1990 Geochemical Society Council Meeting will be held in Dallas, TX on Sunday, October 28, 1990 from 6:00 pm to 10:00 pm in the Sanford Room of the Hyatt Regency Dallas Hotel.

INGERSON LECTURE AT 1990 GSA ANNUAL MEETING

R.K. O'Nions will give the Geochemical Society's Ingerson Lecture at the 1990 GSA Annual Meeting. The talk is entitled "*Fluids in the formation and evolution of the continental crust*". It will be given on Monday, Oct 29, at 10:30 am in the West Ballroom B of the Dallas Convention Center. This immediately precedes the the Geochemical Society Awards Luncheon to be held at the Hyatt Regency Hotel in the Reunion Ballroom E.

THIRD GOLDSCHMIDT CONFERENCE

Plans are underway to hold a Third Goldschmidt Conference in 1992. The tentative dates are Friday, May 9 to noon on Sunday, May 11. This timing will permit those interested to attend the AGU meeting in Montreal that begins on May 12. The location of the Goldschmidt Conference is not yet firm; however, a site in the Washington, D.C. area is likely. Bruce R. Doe will serve as General Chairman.

The format of the Goldschmidt Conference is well suited to symposia on timely subjects. This announcement solicits suggestions for symposia. Please send ideas to:

Bruce R. Doe
U.S. Geological Survey
923 National Center
Reston, VA 22092
(Tel. 703/648-6205)

The suggestion should include a name for the symposium, a paragraph on the importance of the symposium and some idea of the length of the symposium (half-day, full-day, etc.), and the names of candidate symposium organizers with some preliminary idea of participants. One suggestion already made is for a symposium on *The Origin of Major Geochemical Anomalies*. Decisions on which symposia are selected will be the responsibility of the Program Committee.

The Second Goldschmidt Conference had 440 registrants with 10% more abstracts submitted than at the first Conference. There were eight concurrent symposia. It is the hope that the symposia can be packaged in such a way as to have fewer concurrent symposia for the Third Goldschmidt Conference. Suggestions on how the meeting might be run are welcomed.

CALL FOR NOMINATIONS FOR GEOCHEMICAL SOCIETY AWARDS

This is a reminder that nominations are being accepted for the three awards that the Geochemical Society will confer in 1991: the *V.M. Goldschmidt Award*, the *F.W. Clarke Award* and the *Alfred Treibs Award*. The Goldschmidt Award, consisting of a gold medal and a certificate, shall be made yearly for major achievements in geochemistry or cosmochemistry (nomination deadline: 12/1/90). The Clarke Award, consisting of a medal and a certificate, shall be made yearly to a young scientist for a single outstanding contribution to geochemistry or cosmochemistry, published as either a paper or a series of papers on a single topic. The award must be received no later than the year of the recipient's thirty-fifth birthday (nomination deadline: 11/15/90). The Treibs Award, consisting of a gold-filled medal and a certificate, shall be awarded every odd-numbered year for major achievements, over a period of years, in organic chemistry (nomination deadline: 10/15/90). Those interested in making a nomination for any of these awards should consult April, 1990 *Geochimica et Cosmochimica Acta*, p. 1121 and contact directly the appropriate person listed below:

V.M. Goldschmidt Award: Dr. E.A. Mathez
American Museum of Natural History
Department of Mineral Sciences
New York, New York 10024, USA
Ph: 212-769-5379 Fax: 212-769-5339

F.W. Clarke Award: Dr. G.W. Lugmair
University of California, San Diego
Scripps Inst. of Oceanography
Code A-012-L
La Jolla, CA 92093, USA
Fax: 619-534-0784

Alfred Treibs Award:

Dr. Philip A. Meyers
Department of Atmospheric and Ocean Sciences
University of Michigan
Ann Arbor, MI 48109-2143, USA
Fax: 313-763-4690

GEOCHEMICAL SOCIETY MEMBER HONORED

Dr. Bruce B. Hanshaw, USGS, Reston, was one of several USGS employees to receive the Department of the Interior's highest honor, the Distinguished Service Award on March 8, 1990. He was cited for his significant accomplishments in radioactive waste management and paleoclimatology. He directed critical programs aimed at reorienting the national outlook on protection of the nation's environment, including the USGS response to the then newly enacted National Environmental Policy Act. He was also principal architect of a methodology for conducting environmental impact analyses, a standard which is still in use. Hanshaw was further cited for his leadership and effective management in serving as secretary general of the 28th International Geological Congress held in Washington, DC in July, 1989.

FACULTY POSITION IN ACCELERATOR MASS SPECTROMETRY

Purdue University is setting up a dedicated accelerator mass spectrometry facility for measuring cosmogenic radionuclides. Based on an existing 8 MV tandem accelerator, the facility will be capable of measuring the radionuclides ^{10}Be , ^{14}C , ^{26}Al , ^{36}Cl , ^{41}Ca , ^{129}I ; plans are to begin with measurements of ^{10}Be and ^{36}Cl in early 1991. The research program in Earth, Polar, and Space Sciences will focus on surficial processes (rock exposure dating), ground water (dating, tracing), ice cores (solar variability), and meteorites (terrestrial ages). The facility has been funded by Purdue University and the National Science Foundation so far. AMS will be the primary activity on the accelerator; with additional funding it could become a national facility open to researchers throughout the USA. A faculty position is available for a senior geoscientist who will base a research program on AMS and will play a major role in establishing priorities for the new facility. Contact Mike Lipschutz, Department of Chemistry, Purdue University, W. Lafayette, IN 47907 (317-494-5326) or David Elmore, Department of Physics (317-494-6516) for further information or to be put on a newsletter mailing list.

TWO SYMPOSIA ON METALLIFEROUS BLACK SHALES & RELATED ORE DEPOSITS

These GSA Symposia (detailed titles given on page 5) will bring together an interdisciplinary and international group of investigators. Recent results and reviews will be presented on the inorganic-, organic-, isotope- geochemistry, petrology, microbiology, temporal distribution, and other aspects of Phanerozoic and Precambrian black shales and related ore deposits. The Symposia will be held on Saturday, October 27, 9:00 am - 5:00 pm and Sunday, October 28, 1990, 1:00 pm - 4:00 pm, before the Geological Society of America's Annual Meeting. The Symposia are co-sponsored by IGCP Project #254 and the Organic Geochemistry Division of the Geochemical Society. Organizers for the Symposia are Bartholomew Nagy (Laboratory of Organic Geochemistry, Department of Geosciences, University of Arizona, Tucson, AZ 85721; 602 621-6973); Philip A. Meyers (Department of Geological Sciences, University of Michigan, Ann Arbor, MI 48109-1063; 313 764-3335); Joel S. Leventhal (U.S. Geological Survey, MS 973 Denver Federal Center, Denver, CO 80225; 303 236-1522); and Lisa M. Pratt (Department of Geology, Indiana University, Bloomington, IN 47405; 812 855-9203). Those wishing to receive further information should contact the organizers.

"THEME SESSIONS": AN OPPORTUNITY FOR THE GEOCHEMICAL SOCIETY

Geochemical Society members can have a strong influence the technical content at our annual meeting held each fall with the Geological Society of America through the use of Theme Sessions. The idea behind Theme Sessions is to 1) make the technical sessions more responsive to the desires of individual members and 2) provide numerous important focal points for submitted abstracts without resorting to Symposia, which are usually controlled by one or a small number of individuals. GS members are encouraged to propose possible theme session topics for the 1991 GSA Meeting in San Diego. For further information, please contact the GS Program Committee Chairman: L. Peter Gromet, Department of Geological Sciences, Brown University, Providence, RI 02912 (Ph: 401-863-1920). It is important that suggestions for possible theme sessions be submitted to Gromet before the middle January, 1991.

SCHEDULE OF GEOCHEMICAL SOCIETY EVENTS AND TECHNICAL SESSIONS

(1990 GSA Annual Meeting Dallas, Texas. October 27 - November 1, 1990)

- SAT 9:00-5:00 --SYMPOSIUM, ORGANIC GEOCHEMISTRY DIVISION,
"Biogeochemistry and Sedimentology of Precambrian and Phanerozoic Black Shales, Sedimentary Rocks, and Related Ore Deposits"
(see special announcement on p. 4, this issue)
- SUN PM 1:00-5:00 --SYMPOSIUM, ORGANIC GEOCHEMISTRY DIVISION,
"Geochemistry of Metalliferous Black Shales"
(see special announcement on p. 4, this issue)
6:00-9:00 --GEOCHEMICAL SOCIETY COUNCIL MEETING
- MON AM 8:00-12:00 --THEME SESSION 1: *"Sr Isotopes and Sedimentary Geology"*
8:00-10:30 --TECHNICAL SESSION: *"Igneous Geochemistry"*
10:30-11:30 --INGERSON LECTURE Speaker: KEITH ONIONS
"Fluids in the formation and evolution of the continental crust"
- MON PM 12:00-1:00 --GEOCHEMICAL SOCIETY LUNCHEON and AWARDS
(Hyatt Regency)
1:00-5:00 --THEME SESSION 18: *"Isotope Fractionations in Organic Matter: Biosynthetic and Diagenetic Processes"*
1:00-3:00 --TECHNICAL SESSION: *"Aqueous Geochemistry"*
3:00-5:00 --TECHNICAL SESSION: *"Groundwater-Brine Geochemistry"*
- TUE AM 8:00-12:00 --GEOCHEMICAL SOCIETY SYMPOSIUM
"Oxygen and carbon isotopes in Paleozoic and Early Mesozoic marine sediments: toward a global isotope stratigraphy"
Ethan L. Grossman, convener
8:00-10:30 --TECHNICAL SESSION *"High-grade Metamorphism and Mylonites"*
- TUE PM 1:30-5:30 --TECHNICAL SESSION: *"Hydrothermal Experiments and Modelling"*
2:00-4:00 --GEOCHEMISTRY POSTER SESSION I
5:30-7:30 --MSA-GS RECEPTION (at the Hyatt Regency)
- WED AM 8:00-12:00 --TECHNICAL SESSION: *"Sedimentary Geochemistry"*
- WED PM 1:00-2:30 --TECHNICAL SESSION: *"Fluid Inclusions"*
3:00-5:00 --TECHNICAL SESSION *"Stable Isotopes"*
- THU AM 8:00-10:00 --TECHNICAL SESSION: *"Mineral Dissolution"*
10:00-12:00 --TECHNICAL SESSION: *"Minerals and Mineral Surfaces"*
- THU PM 2:00-4:00 --GEOCHEMISTRY POSTER SESSION II

ADDITIONAL EVENTS OF INTEREST TO GS MEMBERS

(1990 GSA Annual Meeting Dallas, Texas. October 28 - November 1, 1990)

- SUN AM --SEG SYMPOSIUM: *"Seafloor Hydrothermal Mineralization: New Developments"*
PM --SEG SYMPOSIUM *"Geologic Setting and Generation of Very Large Volcanic-Hosted Massive Sulfide Deposits"*
6:00-9:00 GSA WELCOMING RECEPTION
- MON AM --THEME SESSION 31: *"Water and Volcanoes"*
PM --MSA SYMPOSIUM: *"Thermodynamic Mixing Properties of Petrologically Important Minerals"*
--THEME SESSION 9: *"Environmental and Engineering Studies for Radioactive"*

Waste Isolation: Experience Based on the Waste Isolation Pilot Plant (WIPP) Project, SE New Mexico

- THEME SESSION 21: "Application of Organic Matter Biomarkers in Sedimentary Geology"
- TUE AM --THEME SESSION 11: "Amino Acid Geochemistry: Applications in Stratigraphy and Geochronology"
- PM --THEME SESSION 27: "Geochemistry and Global Change"
--THEME SESSION 33: "Opportunities for Scientific Drilling in the Continental Crust: Shallow-to-Intermediate Depth Projects"
- WED AM --THEME SESSION 30a: "Granites/Rhyolites: Interrelations, Processes, Geometries, Geochemistries"
- PM --THEME SESSION 30b: "Granites/Rhyolites: Interrelations, Processes, Geometries, Geochemistries"
--THEME SESSION 4: "Cretaceous/Tertiary Boundary Sections in the Southern United States"
- THU AM --THEME SESSION 16: "Paleosols and Subaerial Exposure Surfaces in Carbonate Sequences"
- PM --THEME SESSION 3: "Problems and Solutions to Monitoring Groundwater in Karst Terranes"

CALL FOR PAPERS

SYMPOSIUM ON MARINE ORGANIC CHEMISTRY

American Chemical Society National Meeting

Atlanta Georgia

April 14th - 19th, 1991

Co-sponsored by: Geochemistry Division, American Chemical Society
and
Organic Geochemistry Division, Geochemical Society

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Prospective topics include (but are not limited to):

- fluxes and early diagenesis of organic matter during sedimentation
- biologically mediated biomarker transformations on modern sediments
- biosynthetic and diagenetic fractionation of C, N, S isotopes of organic matter in aquatic systems
- estuarine sources of organic matter and exchanges across the estuarine-ocean interface
 - metal-organic interactions in aquatic systems
 - organic indicators of paleoenvironmental systems

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For additional information and abstract forms, please contact:

Dr. Stuart Wakeham
Skidaway Institute of Oceanography
P.O. Box 13687
Savannah, GA 31416
(912) 356-2347

Dr. Philip Meyers
Department of Geological Sciences
University of Michigan
1006 C. C. Little Building
Ann Arbor, Michigan 48109
(313) 764-0597

ABSTRACTS (150 WORDS ON ACS FORMS) ARE DUE AT ACS NOVEMBER 1, 1990

Geological Society of America 1990 ANNUAL MEETING



TRANSPORTATION

AIR

**40% off—
Convenience and Discount**

GSA's official travel agent, Cain Travel Group, has negotiated discounted rates of 40% or more with the major Dallas carriers: American, Delta, TWA, USAir, and United. For already discounted fares, Cain will offer 5% off. In addition, Cain will meet or beat any fare offered by another travel agency.

As with all airline reservations, please use caution regarding change and cancellation penalties that accompany low-fare tickets. *This especially applies to field trip participants whose trips may be canceled after the September 28 preregistration deadline.*

Advance bookings with Saturday night stayovers are the best route to lowest fares. So call today for best availability.

To make a reservation:

- Call 1-800-346-4747 (toll-free outside Colorado) or (303) 443-2246 (collect from Colorado or Canada); fax 1-303-443-4485.
- Hours: Monday through Friday 8:00 a.m. to 5:30 p.m., Mountain Daylight Time.
- Identify yourself as a GSA traveler.
- Be sure that you understand the restrictions on the type of ticket you purchase.
- Tickets can be paid for by check (payable to Cain Travel), or major credit card, or be invoiced to your company. Final payment must reach Cain Travel no later than ten days prior to departure, to allow for mailing time.
- All tickets will be mailed via certified mail upon receipt of payment unless requested otherwise.

- After tickets are issued, you are protected from fare *increases*; if a fare decreases, call Cain Travel for an adjustment.
- Cain Travel will have an on-site Customer Service Desk at the Dallas Convention Center.

GROUND

GSA Shuttle

GSA will operate a free shuttle service between the downtown GSA hotels and the Dallas Convention Center during meeting hours. (Reminder: the shuttle will not be serving the student housing motels outside of the downtown area.) Shuttle service will be provided at frequent intervals each day (Sunday, October 28, through Thursday, November 1). The service will continue into the evening for the special events. Shuttle schedules will be posted in GSA hotel lobbies and in all registration packets.

The Dallas—Fort Worth International Airport is 17 miles from the Dallas Convention Center and the downtown area (an approximately 30-minute ride).

SuperShuttle

Airport to hotel. Operates 24 hours a day, seven days a week. Call SuperShuttle from the Ground Transportation Board in the baggage claim area. A reservation agent will then give you instructions on where to board SuperShuttle. Look for the blue and yellow signs and vans.

Hotel to airport. Call 24 hours in advance for reservations, (817) 329-2000. For your convenience, a SuperShuttle booth is located (1) in the

Registration Area at the Dallas Convention Center, and (2) in the lobby of the Hyatt Regency Hotel. SuperShuttle picks up at all hotels, but a reservation is necessary. Cost: \$8 to/from the Hyatt, \$10 to/from other downtown hotels.

Taxicabs

Sixteen taxicab companies service the Dallas—Fort Worth International Airport. All vehicles are metered and regulated. Charges are \$2.30 for the first mile and \$1.00 for each additional mile. Approximate cost from the airport to downtown is \$20. Our advice: share a cab.

Dallas Area Rapid Transit (DART)

Take the Dallas—Fort Worth Airport Terminal Shuttle Bus to the South Shuttle Parking Lot and board the DART bus #9 (King Center). Disembark at Parkland Hospital, and wait to board any bus going downtown. Approximate cost from the airport to downtown is \$1.50.

DART's distinctive yellow and white buses serve the Dallas metropolitan area. DART's inexpensive Hop-A-Bus offers convenient downtown service with stops at the West End Historic District, Dallas City Hall, and The Dallas Museum of Art. For general information, call DART at 979-1111.

Car Rental

Alamo is the official car rental agency for the meeting. Identify yourself as a GSA delegate by giving Group Identification #63641 and Plan Code G5, to get guaranteed, discounted, daily/weekly rates as follows: economy \$24/\$75; compact \$25/\$99; midsize \$27/\$119; standard \$29/\$149; luxury \$34/\$179. Unlimited mileage. Add \$3 per day for four-door models. Advance reservations are recommended. Call Alamo at 1-800-732-3232.



FOR INFORMATION: GSA MEETINGS DEPT. (303) 447-2020



REGISTRATION

PREREGISTER TODAY!

PREREGISTRATION DEADLINE: SEPTEMBER 28

1. There is a 15% savings in registration fees if you register before the preregistration deadline! Advance registration is suggested for many of the special activities because of participation limits. Use the preregistration form provided in this announcement.
2. Badges must be worn for access to ALL activities and shuttle 10:00 a.m., Sunday through 5:00 p.m. Thursday.
3. Registration discounts are given to GSA or Associated Society members. Associated Societies that qualify for this discount are indicated on the registration form. Please indicate your affiliation(s) and member number and register using the member rates.
4. Full payment MUST accompany registration. Unpaid purchase orders are NOT accepted as valid registration. Charge cards are accepted as indicated on the preregistration form. If using a charge card, please recheck the card number given—errors will delay your registration. The confirmation card will be your receipt for charge card payments. No other receipt will be sent.
5. Register one professional or student per form. Copy the form for your records.
6. Guest registration is required for guests attending guest activities, to attend technical sessions, or to visit the exhibit hall. Guest registrants MUST be accompanied by either a registered professional or student.

7. CURRENT student ID is required to obtain student rates at both the on-site and preregistration counters. Students not carrying a current student ID when they arrive to pick up registration materials will be required to pay the professional fee.

CANCELLATIONS, CHANGES, AND REFUNDS

All requests for registration additions, changes, and cancellations must be made

in writing and received by October 5. GSA will refund advance registration fees for cancellations received in writing by OCTOBER 5. NO REFUNDS WILL BE MADE ON CANCELLATION NOTICES RECEIVED AFTER THIS DATE. Refunds will be mailed from GSA after the meeting. Refunds for fees paid by credit card will be credited according to the card number on the preregistration form. NO refunds for on-site registration and ticket sales.

REGISTRATION FEES

	Advance (by Sept. 28)	On-Site	One-Day
Professional—Member	\$130	\$150	\$ 75
Professional—Nonmember	\$170	\$190	\$ 95
Student—Member	\$ 50	\$ 60	\$ 30
Student—Nonmember	\$ 70	\$ 80	\$ 40
Guest	\$ 55	\$ 65	N/A

ON-SITE REGISTRATION SCHEDULE DALLAS CONVENTION CENTER, LEVEL II

*Friday, October 26	2:00 p.m. to 6:00 p.m.
*Saturday, October 27	7:30 a.m. to 2:30 p.m.
Sunday, October 28	10:00 a.m. to 7:00 p.m.
Monday, October 29	7:30 a.m. to 5:00 p.m.
Tuesday, October 30	7:30 a.m. to 5:00 p.m.
Wednesday, October 31	7:30 a.m. to 2:00 p.m.
Thursday, November 1	7:30 a.m. to 12:00 p.m.

*PREREGISTRANTS ONLY!

JOIN GSA NOW AND SAVE!

If you're planning to attend this year's Annual Meeting, but are not yet a GSA member, now is the time to join! When you do, the \$40 basic dues you pay will equal the \$40 you'll save on the member registration fee for the meeting. It's like joining GSA for free. Even professional registrants who pay the nonmember registration fee and apply for membership by March 31, 1991 can take advantage of this opportunity. Simply attach a copy of your meeting registration form to your membership application and submit it to GSA headquarters.

Likewise, students who pay the basic membership dues of \$15 to become a Student Associate will receive a \$15 discount on their Annual Meeting registration. It's almost like becoming a new GSA Student Associate for free!

The \$40 registration discount for members, mentioned above, applies to professional members of GSA. Save time by joining before the meeting; membership applications are available prior to the meeting from GSA headquarters. During the meeting, they can be picked up at the Membership Booth in the Registration Area of the Dallas Convention Center.

FOR INFORMATION: GSA MEETINGS DEPT. (303) 447-2020
GSA, P.O. BOX 9140, BOULDER, CO 80301

Save \$ - Preregister by September 28.

1990 GSA
Annual Meeting
October 29-
November 1

PREREGISTRATION FORM

Preregistration must be RECEIVED by September 28. Payment and form MUST accompany each pre-registration request. Unpaid purchase orders NOT accepted as valid registration. One form per registrant. Cancellation deadline: October 5. No refunds on cancellations received after this date.

Please print ** Make a copy for your records

Name (Last) _____ (First) _____

Institution/Employer _____

Mailing Address _____

City _____ State _____ ZIP code _____

Country _____ Business phone _____ Home phone _____

Guest/Spouse Name (Last) _____ (First) _____

City _____ State/Country _____

Circle Member Affiliations: (A) GSA (Member # _____) (B) CF (C) GS (D) GIS (E) MSA (F) NAGT (G) PS (H) SEG (I) AWG (J) SGE (K) AGID (L) SVP (M) NESTA

PREREGISTRATION FEES	Price (Check One)		Column A	
	Full	or One	Registration	Day City Amount
Professional Member	(1) \$130	(2) \$75	□ 1	\$
Professional Nonmember	(3) \$170	(4) \$95	□ 1	\$
Student Member	(5) \$ 50	(6) \$30	□ 1	\$
Student Nonmember	(7) \$ 70	(8) \$40	□ 1	\$
Guest (fill in name above for badge)	(9) \$ 55	N/A	□	\$

GUEST ACTIVITIES	Price (Check One)		Column A	
	Full	or One	Registration	Day City Amount
Las Colinas	Oct. 28	(20) \$ 15	□	\$
Discover Dallas	Oct. 29	(21) \$ 20	□	\$
Waxahachie Gingerbread Trail	Oct. 30	(22) \$ 35	□	\$
Autumn at the Arboretum	Oct. 30	(23) \$ 25	□	\$
Fort Worth	Oct. 31	(24) \$ 30	□	\$
Aerobics Center	Oct. 31	(25) \$ 25	□	\$
Date with Dallas	Oct. 31	(26) \$ 15	□	\$
Tennis Tournament	Oct. 28	(40) \$ 15	□	\$
5K Run (check T-shirt size - S - M - L - XL)	Oct. 31	(41) \$ 17	□	\$
10K Run (check T-shirt size - S - M - L - XL)	Oct. 31	(42) \$ 17	□	\$
*Wild West Barbecue and Dance	Oct. 31	(43) \$ 15	□	\$
Total Column A				\$

Remit in U.S. funds, payable to 1990 GSA Annual Meeting, or charge:

American Express Diners Club/Carte Blanche MasterCard VISA

Card expires: mo. / yr. _____ card number _____

Signature _____

MAIL TO: GSA ANNUAL MEETING, P.O. BOX 9140, BOULDER, CO 80301

TICKETED MEAL FUNCTIONS

Engineering Geology Division Luncheon	Oct. 29	(60)	\$ 19	\$
Geochemical Society Luncheon	Oct. 29	(61)	\$ 19	\$
Sedimentary Geology Division Breakfast	Oct. 30	(62)	\$ 13	\$
Association for Women Geoscientists Breakfast	Oct. 30	(63)	\$ 13	\$
Geophysics Division Luncheon	Oct. 30	(64)	\$ 19	\$
History of Geology Division Luncheon	Oct. 30	(65)	\$ 19	\$
Hydrogeology Division Luncheon	Oct. 30	(66)	\$ 19	\$
Mineralogical Society of America Luncheon	Oct. 30	(67)	\$ 19	\$
Paleontological Society Luncheon	Oct. 30	(68)	\$ 19	\$
Geoscience Information Society Dinner	Oct. 30	(69)	\$ 30	\$
Coal Geology Division Luncheon	Oct. 31	(70)	\$ 19	\$
National Association of Geology Teachers Luncheon	Oct. 31	(71)	\$ 19	\$
Society of Economic Geologists Luncheon	Oct. 31	(72)	\$ 19	\$

1 Sedimentation and Diagenesis, E-Central Mexico	Oct. 24-28	(100)	\$725	\$
2 Hydrogeology of Trans-Pecos, Texas w/o Air	Oct. 25-28	(101)	\$305	\$
2a Hydrogeology of Trans-Pecos, Texas w/o Air	Oct. 25-28	(102)	\$235	\$
3 Petrologic Evolution, SE San Juan w/o Air	Oct. 25-28	(103)	\$265	\$
3a Petrologic Evolution, SE San Juan w/o Air	Oct. 25-28	(104)	\$220	\$
4 Remote Sensing Techniques, S-Central OK	Oct. 25-28	(105)	\$240	\$
5 Geology, Geochron., Structure, Wichita Mtns	Oct. 25-28	(106)	\$235	\$
6 Coal Geology, Western Region KS, MO, OK	Oct. 25-28	(107)	\$210	\$
7 Carbonate and Siliclastic, N-Central TX	Oct. 27-28	(108)	\$115	\$
8 Nearshore Classic-Carbonate Facies, Central TX	Oct. 27	(109)	\$ 35	\$
9 Dinosaur Tracks, Central Texas	Oct. 28	(110)	\$ 35	\$
9a Dinosaur Tracks (accompanying guest/child)	Oct. 28	(111)	\$ 25	\$
10 Super Collider Geol., Hydrol., Engineering	Oct. 28	(112)	\$ 35	\$
11 Archaeological Geology, Upper Trinity River	Oct. 28	(113)	\$ 35	\$
12 Clastic and Carbonate Shelf Deposition, N TX	Oct. 28	(114)	\$ 42	\$
13 Structure and Stratig., Big Bend Area w/o Air	Nov 1-4	(115)	\$385	\$
13a Structure and Stratig., Big Bend w/o Air	Nov 1-4	(116)	\$320	\$
14 WIPP Site Geology and Hydrology w/o Air	Nov 1-4	(117)	\$310	\$
14a WIPP Site Geology and Hydrology w/o Air	Nov 1-4	(118)	\$245	\$
15 Hydrogeology, Blaine Gypsum-Dolomite, SW OK	Nov 1-3	(119)	\$160	\$
16 Structure and Stratigraphy, Arbuckle Mtns, OK	Nov 1-3	(120)	\$140	\$
17 NOAM-CARIB Plate Boundary, Guatemala	Nov 2-7	(121)	\$750	\$
18 Reefal Development, Terrigenous Prov., Mexico	Nov 2-6	(122)	\$720	\$
19 Lampasas Cut Plain Cyclic Evolution, Central TX	Nov 2-3	(123)	\$120	\$
20 Carboniferous Geol., Tectonic Hist., Ft Worth	Nov 2-3	(124)	\$120	\$
21 Engineering Urban Geology, Dallas-Ft Worth	Nov 2	(125)	\$ 40	\$
22 Hydrogeology, Jewett Lignite Mine, East Texas	Nov 2	(126)	\$ 40	\$
23 Lower Cretaceous Vertebrates, Central Texas	Nov 2	(127)	\$ 40	\$
24 Four Mobil Research Laboratory	Oct. 29	(128)	\$ 10	\$
25 Information Resources at Mobil Research Lab	Oct. 31	(129)	\$ 10	\$

1 Site Selection for Critical Facilities	Oct. 27	(150)	\$110	\$
2 Coastal Land Loss	Oct. 27-28	(151)	\$170	\$
3 Contaminant Hydrogeology	Oct. 27-28	(152)	\$195	\$
4 Geological Applications, Macintosh Hypercard	Oct. 27-28	(153)	\$195	\$
5 Metamorphic Pressure-Temperature-Time Paths	Oct. 27-28	(154)	\$225	\$
6 Phanerozoic Plate-Tectonic Reconstructions	Oct. 27-28	(155)	\$195	\$
7 Seismic Expression of Structural Styles	Oct. 27-28	(156)	\$145	\$
8 Computer Modeling of Cyclic Carbonate Sequences	Oct. 28	(157)	\$140	\$
9 Practical Tracing of Ground-Water, Karst Terranes	Oct. 28	(158)	\$130	\$
10 Recent Sediments, Northwest Gulf Coast	Oct. 28	(159)	\$ 80	\$

*Meeting registration not required

Total Column B \$ _____
Total Column A \$ _____

Column A + B = Total Remittance (full payment must be enclosed) \$ _____

FOR OFFICE USE ONLY

Deposit Date _____ AX/DC 1006 \$ _____
 Balance Due A/R 1233 \$ _____
 Refund A/P 2006 \$ _____
 Refund Ck # _____
 Refund Date _____



HOUSING

GSA has blocked rooms at seven downtown hotels that are offering special convention rates to GSA meeting attendees. GSA endorses these hotels for quality, safety, cleanliness, and service. The GSA shuttle will service all seven downtown hotels.

For student housing, GSA has also blocked rooms at five metro-area motels. These motels are out of the downtown area, and *will not be serviced by the GSA shuttle service*. You must have your own transportation.

TO MAKE YOUR HOTEL RESERVATION

There are three possible ways to make your housing reservation: (1) mail, (2) fax, or (3) phone. Please refer to the address and phone numbers shown on the Housing Request Form. All reservations must be **RECEIVED BY FRIDAY, OCTOBER 5**. For phone calls, please call between 8:00 a.m. and 5:00 p.m. Central Standard Time. *Do NOT send your Housing Form in after you call. This will result in a duplicate reservation.*

AFTER FRIDAY, OCTOBER 5, you can try to go through the Dallas Housing

Bureau. They will do what they can or explain the best option. Note that many hotels will be filled at this time, and hotels will only be able to offer the special GSA rate on an as-available basis.

ASSIGNMENT

Hotel rooms will be assigned on a first-come, first-served basis as they are received by the Housing Bureau. Once your request is received, the Bureau will send an acknowledgment to you and your assigned hotel.

You will then receive a confirmation from the hotel. This is a notice that the hotel received the information from the Housing Bureau and that the reservation has been entered into their system. Please check it carefully.

ROOM DEPOSITS/GUARANTEES

All GSA hotels require a first night's room deposit. Deposits can be made by (1) providing a credit card number and expiration date on the housing form, or (2) sending payment directly to the hotel once you have received your confirmation from the hotel. The deposit amount should be the cost of one night's stay at your assigned hotel. Note that the Housing Bureau will **ONLY** accept credit cards, *not checks or cash. When making payment directly to the hotel, be sure to give your confirmed reservation number.*

Once the hotel receives your deposit, it automatically guarantees your reservation. The guarantee assures you that no matter

what time you arrive on your scheduled arrival day, your room will be held until at least midnight.

CHANGES AND CANCELLATIONS

Changes and cancellations **BEFORE** and **AFTER** the **OCTOBER 5** deadline should be communicated to the Housing Bureau, either by phone, fax, or mail. Supply your confirmed hotel reservation number for any change or cancellation.

Within 72 hours of your scheduled arrival, please contact the hotel directly with any changes. A cancellation notice must be received **AT LEAST 48 HOURS** in advance to receive a full refund on your first night's room deposit. Please show courtesy as a professional geologist by notifying the hotel if your plans change.

NOTE: All rooms are subject to 13% tax.

STUDENT HOUSING

GSA has negotiated convention rates with five motels outside of the downtown area. These motels are less expensive than the downtown hotels. They will not be serviced by the GSA shuttle. Please provide your own transportation.



GSA OFFICIAL HOUSING REQUEST FORM

Your Housing Request Form must be received BY OCTOBER 5. Please complete and either

1. Mail to: GSA Housing
1201 Elm Street, Suite 2000
Dallas, TX 75270
2. Fax to: Dallas Convention & Visitors Bureau/GSA Housing
1-214-746-6799
3. Call: Dallas Housing Bureau
Hours: Monday — Friday, 8 a.m. — 5 p.m., CST
(214) 746-6681 or 1-800-972-1029

HOTEL PREFERENCE: (Please print or type all information below)

1. _____
2. _____
3. _____
4. _____

Rate requested \$ _____ (NOTE: All rooms are subject to a 13% tax)

TYPE OF ACCOMMODATION NEEDED:

- | | |
|--|---|
| <input type="checkbox"/> Single (1 bed, 1 person) | <input type="checkbox"/> 1-Bedroom Suite |
| <input type="checkbox"/> Double (1 bed, 2 persons) | <input type="checkbox"/> 2-Bedroom Suite |
| <input type="checkbox"/> Dbl/Dbi (2 beds, 2-4 persons) | <input type="checkbox"/> Add rollaway to room |

ARRIVAL DAY/DATE _____ TIME _____ a.m./p.m.

DEPARTURE DAY/DATE _____ TIME _____ a.m./p.m.

NAMES OF OCCUPANTS:

1. _____
2. _____
3. _____
4. _____

MAIL CONFIRMATION TO:

Name _____ Telephone () _____
Address _____ City _____
State _____ ZIP _____ Country _____

GUARANTEED ROOM RESERVATION AUTHORIZATION:

All GSA hotels require a first night's deposit to make a reservation. I understand that the hotel may bill me for one night's housing if I fail to properly cancel a guaranteed reservation. Please check one:

- Credit card information provided below to guarantee my reservation.
 My guarantee will be made directly to the hotel after I have received my hotel confirmation.

Please guarantee my room reservation with the following:

American Express MasterCard VISA

NAME (as listed on credit card) _____

SIGNATURE _____

CARD NUMBER _____ EXP. DATE _____

*** DO NOT SEND CASH OR CHECKS WITH THIS FORM ***



Please make your reservation with the Dallas Housing Bureau.
Note: All rooms are subject to 13% occupancy tax.
All hotels require a first night's deposit.

1 THE ADOLPHUS

1321 Commerce Street, Dallas, TX 75202
(214) 742-8200 (250-room block)
4 blocks from the Dallas Convention Center

Single: \$110 Double: \$125

Dallas's only five-diamond hotel offers 78 years of elegant tradition. The hotel features three restaurants, including a five-star gourmet French restaurant. Enjoy one of four lounges, daily afternoon tea, or the relaxing lobby entertainment. Laundry and valet service, gift shop, beauty shop, and barber shop. Indoor parking at \$10 per day. The first night's deposit is \$100. This is payable by check after you receive your confirmation from the hotel.

Check-in: 3 p.m. Check-out: 1 p.m. CC: AX, CB, D, DC, MC, V

2 ARISTOCRAT CLARION

1933 Main Street, Dallas, TX 75201
(214) 741-7700 (85-room block)
8 blocks from the Dallas Convention Center

Single: \$85 Double: \$95 Jr. Suite: \$109

European style hotel that is also an historical landmark. Recently renovated, well-appointed property. All guests receive complimentary continental breakfast, newspaper, and parking. The hotel bar/restaurant offers casual dining for breakfast, lunch, and dinner. Many of the sleeping rooms are junior suites.

Check-in: 3 p.m. Check-out: 1 p.m. CC: AX, CB, D, DC, MC, V, E

3 DALLAS PARK PLAZA

1914 Commerce Street, Dallas, TX 75201
(214) 747-7000 (600-room block)
8 blocks from the Dallas Convention Center

Single: \$49 Double: \$61

20-story hotel just one block from the original Neiman Marcus store. Two restaurants, lounge, roof-top jacuzzis, exercise equipment, barber shop, and gift shop. Indoor parking with in/out privileges for \$5. 205 double rooms offer two full bathrooms.

Check-in: 3 p.m. Check-out: 1 p.m. CC: AX, DC, MC, V

4 DAYS HOTEL

1011 South Akard, Dallas, TX 75215
(214) 421-1083 (150-room block)
2 blocks from the Dallas Convention Center

Single: \$60 Double: \$68

Recently renovated 240-room property boasting that it is only 366 steps from the Convention Center. Heated indoor pool, sauna, and exercise equipment. Hair dryer in each room. Restaurant and lounge offer a skyline view of Dallas. Free parking for hotel guests.

Check-in: 2 p.m. Check-out: 12 noon CC: AX, MC, V

5 HOLIDAY INN—DOWNTOWN

1015 Elm Street, Dallas, TX 75202
(214) 748-9951 (200-room block)
6 blocks from the Dallas Convention Center

Single: \$60 Double: \$65

300-room property located within easy walking distance to the West End Historical District. This area offers a variety of restaurants, night clubs, entertainment, and shops. The Holiday Inn has one restaurant, which serves breakfast, lunch, and dinner at reasonable prices. Cocktail lounge on the ninth floor. Rooftop pool. All parking is indoors for \$5.40.

Check-in: 3 p.m. Check-out: 12 noon CC: AX, CB, D, DC, MC, V

6 HYATT REGENCY DALLAS—HEADQUARTERS

300 Reunion Boulevard, Dallas, TX 75207
(214) 651-1234 (650-room block)
7 blocks from the Dallas Convention Center

Single: \$90 Double: \$98

One of Dallas's finest full service hotels with three restaurants for casual to elegant dining, two lounges, and 24-hour room service. Located next to Reunion Tower and Union Station, the 1914 vintage train station. Sleeping and meeting rooms surround an 18-story atrium. Complete fitness center with outdoor swimming pool, jacuzzi, saunas, outdoor running track, lighted tennis courts and exercise equipment. Self-parking \$2-\$6 per day or valet parking \$8 per day. Concierge, laundry, valet service, and gift shop. In-room video check-out and breakfast ordering.

Check-in: 3 p.m. Check-out: 12 noon CC: AX, CB, D, DC, MC, V

7 SHERATON DALLAS HOTEL

400 North Olive Street, Dallas, TX 75201
(214) 922-8000 (400-room block)
12 blocks from the Dallas Convention Center

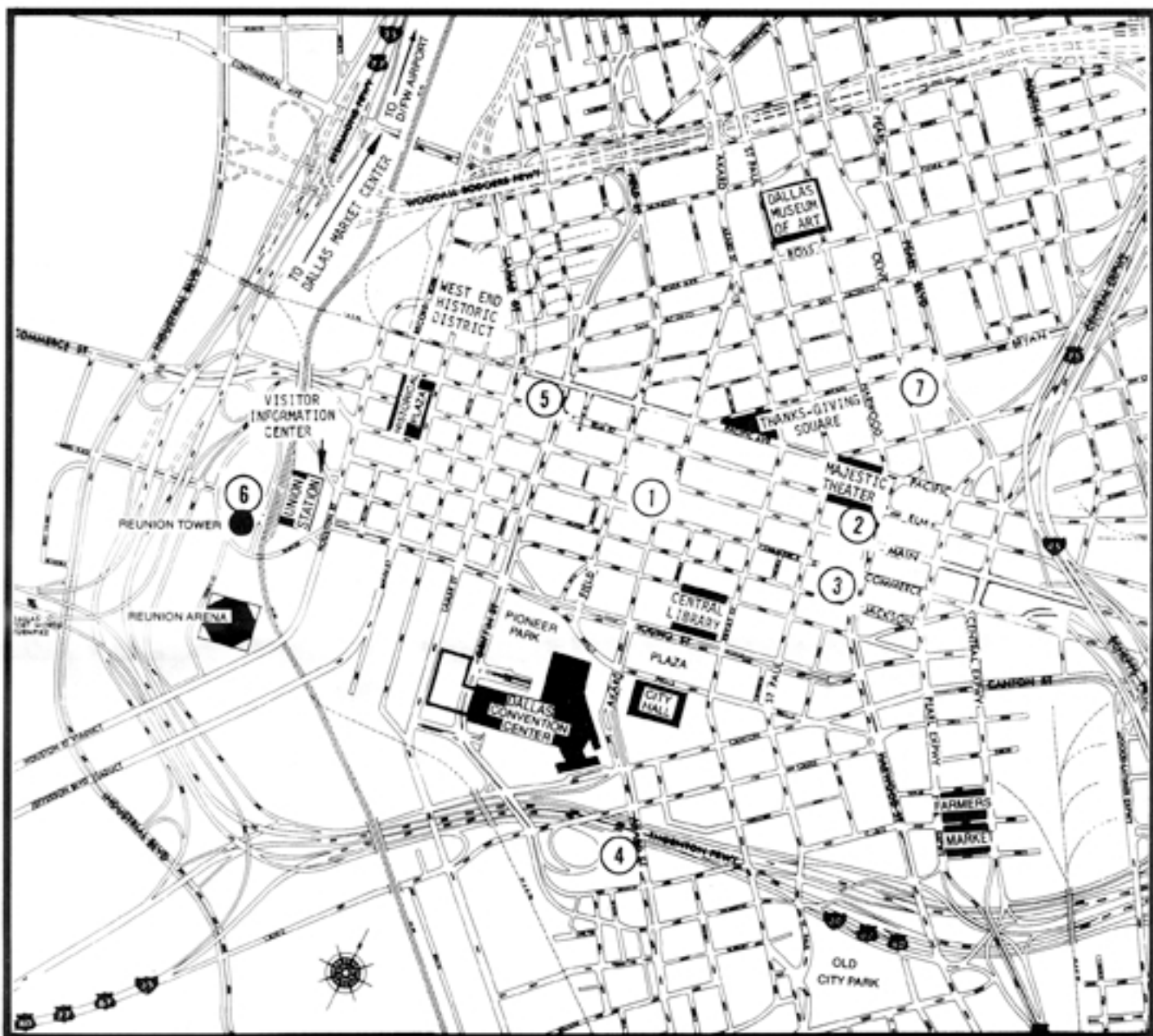
Single: \$72 Double: \$82

500-room attractive, comfortable hotel in the downtown Arts District. Connecting skywalk to shopping and dining. Restaurant, cocktail lounge, 24-hour room service, valet laundry. Public parking directly across the street begins at \$4.50. Sheraton valet parking is \$11. Executive club floors, full-service concierge, and complimentary health facility. Newspaper and gift shop.

Check-in: 3 p.m. Check-out: 1 p.m. CC: AX, CB, D, DC, MC, V

Credit Card (CC) Codes: AX = American Express, V = Visa, M = MasterCard, C = Carte Blanche, DC = Diners Club, D = Discovery, E = Enroute.

DOWNTOWN DALLAS



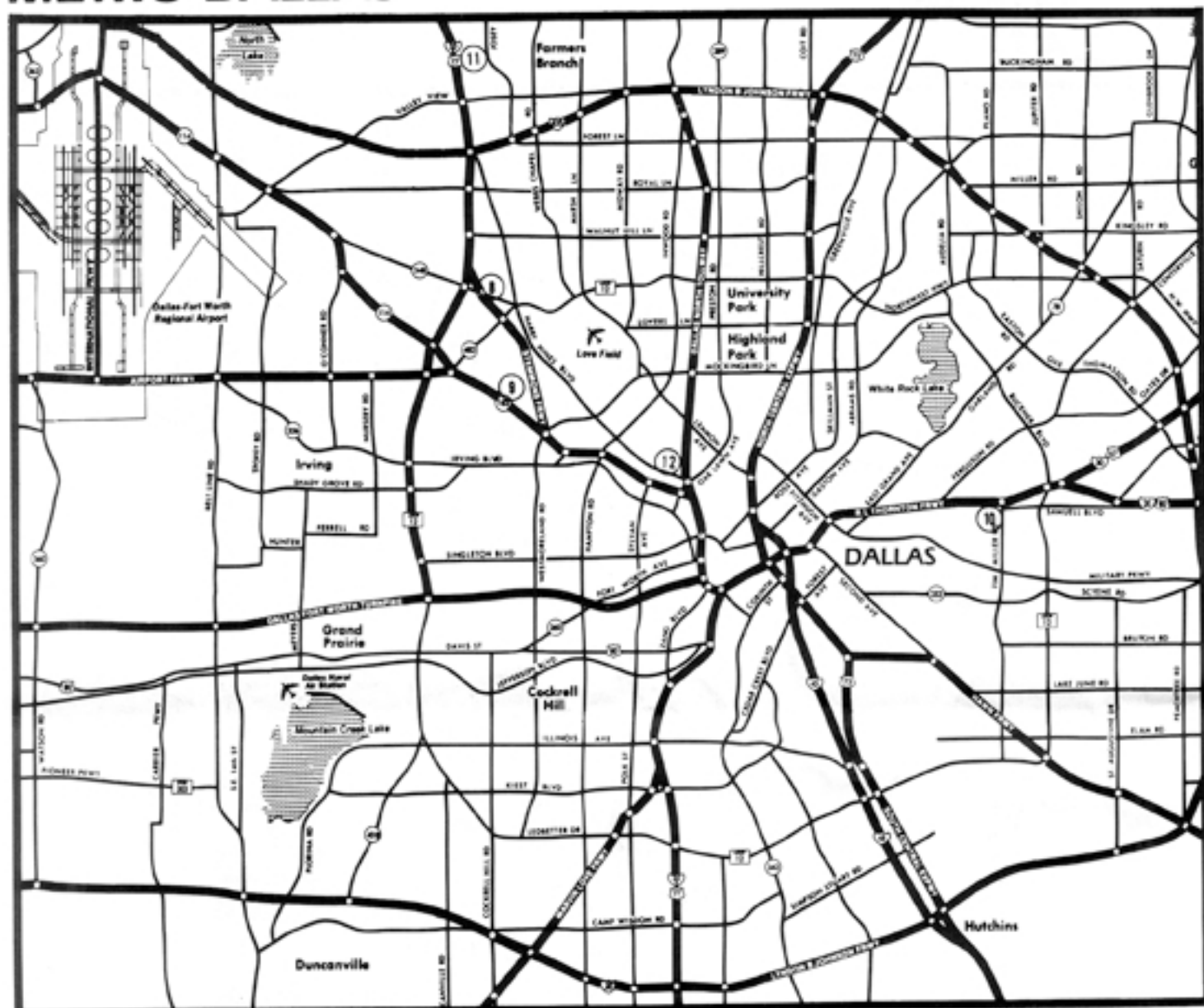
HOTELS

1. ADOLPHUS HOTEL
2. ARISTOCRAT CLARION HOTEL
3. DALLAS PARK PLAZA
4. DAYS HOTEL
5. HOLIDAY INN DOWNTOWN
6. HYATT REGENCY
7. SHERATON DALLAS HOTEL

Dallas Convention Center public parking is readily available in the underground garage entering off Griffin Street. The Convention Center also offers public parking at the intersection of Griffin and Young Streets, and on Lamar Street. All Dallas Convention Center parking is \$4 per day, with no in and out privileges. In addition, there are other public parking lots in the vicinity.



METRO DALLAS



Red Roof Inns

Four student motels are Red Roof Inns. They offer free parking, morning coffee, newspaper, in-room movies, and restaurant service within walking distance. Single or Double: \$39.95 flat (1-4 people). Check-in: 1:00 p.m., Check-out: 12 noon, CC: AX, CB, DC, MC, V, D.

GSA has a block of 50 rooms at each of the following Red Roof Inns.

8. **Red Roof Inn—Dallas Northwest**
10335 Gardner Road
Dallas, TX 75220
(214) 506-8100
9 miles from Dallas Convention Center
9. **Red Roof Inn—Dallas Market Center**
1550 Empire Central Drive
Dallas, TX 75235
(214) 638-5151
7 miles from Dallas Convention Center
10. **Red Roof Inn—Dallas East**
8108 E.R.L. Thornton Freeway
Dallas, TX 75228
(214) 388-8741
5 miles from Dallas Convention Center
11. **Red Roof Inn—Dallas Carrollton**
1720 South Broadway
Carrollton, TX 75006
(214) 245-1700
11 miles from Dallas Convention Center

Travelodge

Offering an outdoor pool, casual restaurant, and lounge. Complimentary parking, coffee, and newspaper. Single or Double: \$50 flat (1-4 people). Check-in: open, Check-out: open, CC: AX, CB, DC, MC, V, D.

GSA has a block of 100 rooms at the following hotel:

12. **Dallas Market Center Travelodge Hotel**
4500 Harry Hines Blvd.
Dallas, TX 75219
(214) 522-6650
3 miles from Dallas Convention Center

THE GEOCHEMICAL SOCIETY

Special Publication No. 2

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