

The Lattice

Vol. 6, No. 3, August 1990

International Conference on Applied Mineralogy

The International Conference on Applied Mineralogy will be held in Johannesburg, South Africa, September 2-4, 1991. The conference is being organized by the Mineralogical Association of South Africa in association with the International Council on Applied Mineralogy and the Commission on Applied Mineralogy of the International Mineralogical Association. Conference topics include: Mineralogical/Analytical techniques; Mineral liberation and beneficiation; Environmental and waste management; Medical and biological applications; Mineralogy of metallurgical products; Mineralogy of precious metals; Applications to exploration; Coal energy related research; Applications in materials science; Other related topics. Field trips include the Bushveld Complex, the Witwatersrand gold fields, Phalaborwa, the Barberton mountainland, the Namaqualand metamorphic region, the Kalahari manganese fields, and the Richtersveld. Workshop (September 5-6) topics are: Analytical techniques for the determination of trace amounts of precious metals and Applications of SEM/image analysis in applied mineralogy.

The deadline for abstracts is August 31, 1990. Abstracts, typed in 1 1/2 - spacing, should not exceed 200 words. One original and two photocopies should be submitted. Abstracts and inquiries: The Conference Co-ordinators, C.133, P.O. Box 395, 0001 Pretoria, South Africa (Tel.: +27 12 841-3188/4513).

15th International Meeting on Organic Geochemistry

The 15th International Meeting on Organic Geochemistry will be held at the University of Manchester, September 16-21, 1991. Provisional themes for individual sessions include: Petroleum geochemistry; Rates and mechanisms of (bio)geochemical processes including diagenesis and maturation; Palaeoenvironmental determination, including climate change; Production, deposition and characterization of macromolecular sedimentary organic matter; Organic geochemistry of non-hydrocarbons; Interaction between organic and inorganic geochemical processes; Environmental geochemistry and pollution studies; New technologies and novel analytical schemes applied to the study of sedimentary organic matter.

The deadline for abstracts is November 15, 1990. Details, including an abstract form, may be obtained from: Dr. D.A.C. Manning, Department of Geology, The University, Manchester, United Kingdom, M13 9PL (FAX - (44) 61 275 3947).

NSF Graduate Research Fellowships

The National Science Foundation offers fellowships for graduate studies through the Graduate Fellowships Program, the Minority Graduate Fellowships Program, and Graduate Fellowships for Women in Engineering Program. College and university professors are encouraged to bring these fellowship opportunities to the attention of qualified students. Several fields of specialization within the earth sciences are eligible for support in the fellowship programs.

Program Announcement brochures and application materials for the 1991 NSF Graduate Research Fellowship competition will be available upon request in September 1990 from the Fellowship Office, National Research Council, 2101 Constitution Avenue, Washington, D.C. 20418 (or call 202-334-2872). Deadline for applications is mid-November; awards are announced in mid-March.

SPNHC 6th Annual Meeting

The 6th Annual Meeting of the Society for the Preservation of Natural History Collections will be hosted by the Canadian Museum of Nature in Ottawa, May 6-11, 1991. The program will include: council and committee meetings, technical sessions and tours (May 6), a three-day conference (May 7-9), and a two-day training workshop on "Practical Approaches to Preventative Conservation for Natural History Collections" given by the Canadian Conservation Institute (May 10-11). Information and details: G.R. Fitzgerald, Canadian Museum of Nature, Earth Sciences (Paleobiology), P.O. Box 3443, Station D, Ottawa, Ontario, Canada KIP 6P4.

DID YOU KNOW...

The Proceedings Volume of the Franklin-Ogdensburg Mineralogical Society-Lehigh University Symposium on the origin of the Franklin-Sterling Hill zinc ores of Sussex County, N.J., which was held at Lehigh University on May 19, 1990, is available for \$12.50 plus \$2.50 for postage and handling. This 118-page volume contains all of the papers presented at the Symposium. Requests for the volume, accompanied by a check for \$15 made payable to F.O.M.S., should be sent to: John Cianciulli, Treasurer of F.O.M.S., 60 Alpine Road, Sussex, NJ, 07461.

The first Circular containing information regarding the 29th International Geological Congress to be held in Kyoto, Japan (August 24 - September 3, 1992) was mailed to registrants of the 28th IGC and various earth science organizations. Those who need a copy of the Circular may write to: IGC-92 Office, P.O. Box 65, Tsukuba, 305 Japan.

FROM THE PRESIDENT

It was a relief to get back to Norway on June 1, after ten hectic days in the United States. However, the M.S.A. Council Meeting on May 29 was a busy and fruitful one in which some serious questions for the Society were dealt with intensively and creatively. Two of the six Councillors were unavoidably absent, but in their place we had the spirited input of Gordon Nord, Chair of the Committee on Management.

The stage was set by the new Editors of the American Mineralogist. They had completed a careful appraisal of the needs of the publication in terms of papers handled, staff, and equipment, and on this basis had made budget requests through Treasurer Jim Whitney. Based on these requests and a careful analysis of all costs, including some expenses for moving the business office, Whitney projected a necessary increase in subscription rates, and member and student dues, provided endowment funds were treated very conservatively as in recent years. Nord spoke eloquently on this question, pointing out that modest transfers from endowment had been made to support Society activities in the 70's, much less in the 80's. He felt that the Council should seriously consider returning more towards the policy of the 70's, particularly for important one-time expenses.

The Council reviewed the Editors' proposals in detail, questioning both of them rigorously, and found most requests fully justified. They then went over Whitney's budget and reasoning in detail, and found it fully logical. At this point there was a return to the questions, "What is the purpose of the endowment income?" and "Should it be used to support the activities most important to the goals of the Society?" Soon there was agreement that such is indeed the purpose of this income and that no purpose is closer to the main stream of our effort than the American Mineralogist. In the end it was voted unanimously to support the requests of the Editors and to take these expenses from endowment income rather than make an increase in dues at this time. Thus, an outcome was arrived at that should keep the membership happy. The Editors came away with a strong positive image, a shot in the arm for their activities, and a showing by the Council as to the importance placed in their work. The Council had the satisfaction of making a decision that would seem to promote the best interests of all. None of this would have been possible without Jim Whitney's careful financial analysis and Nord's long-term overview.

Joe Smyth, our representative on the AGU Program Committee, reported on our successful participation in the meeting, including a well attended symposium on mantle eclogites and related rocks, and agreed to carry on his task once more next

year. The low attendance at this year's meeting was commented upon, and it was pointed out that a part of this could have been due to the Geochemical Society's completely separate Goldschmidt Conference in the spring. It was suggested that the Geochemical Society be urged to move its program to closer coordination with AGU as well as with us. Perhaps members can urge this privately at our joint reception with the Geochemical Society to be held in Dallas!

In further action on Short Courses, one on High Resolution Electron Microscopy organized by Peter Buseck was approved for the Fall GSA Meeting in Cincinnati in 1992 and one on the Physical Properties of Minerals organized by Subrata Ghose was approved for the Spring AGU Meeting in Montreal in 1992. Guidelines for convenors of short courses, prepared by Susan Myers and Paul Ribbe were approved with suggestions for minor changes, and are available for prospective convenors through Susan.

One of the most important activities of the Council Meeting was receipt and review of the Report of the Committee on Committees from Vice-President Ross. The recommendations in this report will lead to firm new appointments at the Fall Council Meeting, and promote strong continuity in our many activities.

In case you haven't found out yet, the Society headquarters have just moved to the Coal Building, 1130 Seventeenth Street, Suite 330, N.W., Washington, DC 20036. The details leading to this, including sudden last-minute changes, were described to Council by Office Manager Susan Myers. The new location appears to be highly stable and more convenient to our operations than the previous one.

As of June 1 Dave Stewart stepped down with thanks as our representative to the American Geological Institute and this task was taken over by Charles Gilbert. Earlier at St. Louis, Gilbert had substituted in this job and gave a superb oral summary of our activities to the AGI Member Society Council. Stewart's term included a period in which AGI was restructuring its governance to be more responsive to the voices of member societies.

At the Council's request Susan Myers summarized the cost advantages that there might be if MSA took over North American distribution of Mineralogical Abstracts. There were none and Editor R. A. Howie was so informed. The selection of an "understudy" for Prof. Howie's role as Editor of Mineralogical Abstracts was also approved by Council.

Some time was spent discussing our relations with the Clay Minerals Society based on information from our Representative to that Society, Dave Bish. It was agreed to advertise CMS

publications in *The Lattice*, but not to be a co-sponsor for a separate CMS meeting. CMS was urged to consider joint activities at a large meeting such as GSA, where many members of both Societies would be in attendance. In response to our Representative to the Friends of Mineralogy, Gene Foord, MSA will consider leasing a booth at the Annual Tucson Gem and Mineral Show.

One of the Council's tasks was to review design concepts for the new Public Service Medal. This was done and drawings are now in the hands of the Medallic Art Company. You can see the final results if you attend the Annual Luncheon in Dallas and see the first award of the medal to Malcolm Ross for contributing "correct mineralogical understanding and good scientific rationale to the 'asbestos' problem."

A new development at AGU this year was an invitation to the President to attend the AGU Council Meeting and following dinner. Although conducted with an attempt at clockwork pace, there was still ample time at the meeting for some vigorous discussion of controversial matters. A final decision was made to hold the 1993 AGU Meeting in Nashville. At the dinner I was able to congratulate and explore mutual interests with our *new member*, Bruce Marsh, who also serves as an officer of the VGP section of AGU.

Several weeks ago, as a result of my note in the February *Lattice*, I did in fact meet Knut Heier, our only member in Trondheim, and the day after had a few pleasant moments with Past President Brian Mason, who was here to work on a biography of V. M. Goldschmidt.

The month of June here was full of activity, including an extended field trip in superb weather to the northernmost reaches of Norway, where, for example, we looked at outcrops of coarse nepheline syenite gneiss from 10:30 P.M. to 1:30 A.M. and then parked in bright sunlight on the north side of the hut before going to bed!

When you receive this issue of *The Lattice* the program for the Dallas Meeting will be set and preparations for Council Meetings will be underway. If there are matters you want to call attention to or feel the Council should take up, try to make contact with me (back in Massachusetts, August 31) or another officer by mid-September. We look forward to seeing many of you in Dallas. Because this is my last opportunity to communicate through this column before Malcolm Ross takes over, let me extend my thanks to the members, officers, and staff who have made this year enjoyable and satisfying, and especially to Maryellen Cameron and Susan Myers, my keys to communication with the Society through the FAX line.

Peter Robinson

FOREIGN CORNER

International Mineralogical Association 15th General Meeting, Beijing 1990

A successful meeting of the International Mineralogical Association was held in Beijing, China, June – July 1990. Of the total registration 295 persons were from outside China, 264 were from the host country and 55 accompanying persons were all non-Chinese. Excluding Chinese participants, 168 persons took part in the pre- and post-conference excursions. Altogether representatives from 33 Countries attended the meeting. The largest non-Chinese delegation was from Italy with 58 persons, followed by USSR (46), Japan (33) and USA (25).

The Organizing Committee and many Chinese mineralogists went out of their way to ensure all visitors had an enjoyable and pleasant stay. The opening ceremony in the Great Hall of the People was attended by the Premier, Li Peng, who addressed the participants and welcomed them to China. President P.J. Wyllie in his reply noted the absence of some usual attendees as a consequence of the events of June 1989. Nevertheless, mineralogy being an international science would benefit from the presence of all participants who were able to attend.

The organizers of the field excursions cancelled few trips and even held one for two participants. One complaint of pre-conference trips was the lack of opportunity to sample localities visited. This problem was solved on the post-conference excursions. One pre-conference excursion was abandoned during the trip but all participants were to receive a full refund.

As with any meeting, the quality of the oral and poster presentations varied but overall the meeting was considered to be a success. Unfortunately, the Program Committee assigned some talks to incorrect sessions and problems were also encountered when the attendance overflowed the capacity of the room (shades of some US national meetings!).

A change in Constitution of the IMA was proposed and accepted. The change is that individual mineralogists from any Country can now become personal members of IMA by payment of an annual fee of about \$10 or \$40 for 5 years. Students pay half. Reduction in registration for future meetings and field excursions is contemplated for personal members.

The contacts made between individual Chinese mineralogists and foreign participants was probably the most appreciated aspect of the Conference by the Chinese hosts. If only a quarter of the proposed joint collaborations survive then international mineralogy will have been well served by this IMA meeting.

The 16th General Meeting of IMA will be held in Pisa, Italy, from 4 to 8 September, 1994. Field excursions to the Alpine regions as well as Sicily, Sardinia and several other places are proposed. Details will be provided in the *Lattice* during 1991.

Henry O. A. Meyer

Descriptive Mineralogist Mentors

Cognizant that descriptive mineralogy is seldom included in contemporary university curricula, a group of professional mineralogists (listed below) is offering a mentorship effort in which they will take interested, dedicated, prospective, descriptive mineralogists into their labs for a few days to learn more about the practices, methods, and techniques of this part of mineralogy. Persons will be chosen on the basis of information they provide upon request, and recommendations. Interested persons should send a letter of inquiry to: Dr. Pete J. Dunn, Department of Mineral Sciences, Smithsonian Institution, Washington, DC 20560.

Dr. Russell Boggs, Eastern Washington University, Washington

Dr. Pete J. Dunn, Smithsonian Institution, Washington, D.C.

Mr. Richard Erd, U.S. Geological Survey, California

Dr. Robert Gait, Royal Ontario Museum, Ontario

Dr. Joel Grice, National Museum of Natural Sciences, Ontario

Dr. Joseph Mandarino, Royal Ontario Museum, Ontario

Mr. Andrew Roberts, Geological Survey of Canada, Ontario

Dr. George Robinson, National Museum of Natural Sciences, Ontario

Dr. William Simmons, University of New Orleans, Louisiana

Mr. B. Darko Sturman, Royal Ontario Museum, Ontario

The Lattice is published quarterly (February, May, August, November) by the Mineralogical Society of America. This newsletter is distributed to MSA members as a service. Articles and letters from readers are welcome.

The Mineralogical Society of America is composed of individuals interested in mineralogy, crystallography, and petrology. Founded in 1919, the Society promotes, through education and research, the understanding and application of mineralogy by industry, universities, government and the public.

Membership benefits include: the *American Mineralogist*, published bi-monthly; 30% discount on volumes in the *Reviews in Mineralogy* series; The *Lattice*; Membership Directory; special subscription rates for *Mineralogical Abstracts*, *Physics and Chemistry of Minerals*, *Journal of Petrology*, and *Journal of Metamorphic Geology*; reduced registration fees at MSA short courses; member rates for the MSA/Geological Society of America annual meeting and member rates at MSA's spring meeting with the American Geophysical Union; participation in a Society that supports the many facets of mineralogy.

Dues for 1990 are \$40 for professional members; \$20 for students. Membership is on a calendar year basis. Individuals who join after January 1, 1990 will be sent all back issues of the journal for volume 75, 1990.

For additional membership information and an application, and/or to receive a price list of the Society's publications, contact the Business Office.

Institutions may subscribe to the 1990 volume of the *American Mineralogist* for the annual rate of \$150. The subscription price includes any new volumes of the *Reviews in Mineralogy* series published during the calendar year of the subscription. Payment must be received in full before a subscription will be started.

1990 President: Peter Robinson, University of Massachusetts

Past-President: C.W. Burnham, Harvard University

Secretary: Maryellen Cameron, Miami University of Ohio

Treasurer: James A. Whitney, University of Georgia

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Registration Form

Modern Methods of Igneous Petrology

December 1-2, 1990

Return this registration form, completed, to the MSA Business Office, 1130 Seventeenth Street N.W., Suite 330, Washington, D.C. 20036. FAX: (202)775-0018. Payment must accompany this form. Registration is limited to 115 individuals on a first-come, first-served basis.

Please type or print.

Name _____
(first) (middle initial) (last)

Address _____

(city) (state) (zip/postal code) (province) (country)

Telephone numbers _____ (_____) _____ (_____) _____
(office) (home)

Please check appropriate registration category

	Member	Non-Member
Professional:	<input type="checkbox"/> \$420	<input type="checkbox"/> \$460*
Student:	<input type="checkbox"/> \$ 85	<input type="checkbox"/> \$105*

*includes MSA dues for 1991.

Please check method of payment:

____ Enclosed is a check or money order in the amount of \$ _____ .
____ Please charge my ____ Visa ____ Mastercard ____ Diner's Club ____ American Express card in the amount of \$ _____

(Your credit card will be charged when the registration form is received. Should a refund be required, a credit will be applied to your charge card.)

(card number)

(name on card-please print)

(exp. date)

(signature)

Please list any special meal requirements.

Modern Methods of Igneous Petrology - Understanding Magmatic Processes The Mineralogical Society of America Short Course

San Francisco
December 1 - December 2, 1990

This two day course on Modern Methods of Igneous Petrology will be held in conjunction with the Fall AGU Meeting in San Francisco. The course will be held at the Cathedral Hill Hotel, Van Ness & Geary, San Francisco. The course will begin with a welcoming reception Friday evening, November 30. Sessions begin Saturday morning and continue through Sunday evening. The registration fee includes the short course program and accompanying volume of the *Reviews in Mineralogy* series, lunch on Saturday and Sunday, daily coffee breaks, and the welcoming reception on Friday. Individual participants are responsible for making their own sleeping room arrangements. The short course, convened by J. Nicholls (University of Calgary) and J.K. Russell (University of British Columbia), with speakers from the US, France and Canada, will address fundamental and advanced topics: thermodynamic modeling and computer simulation of igneous processes (I.S.E. Carmichael, M.S. Ghiorso, J. Nicholls, R.L. Nielsen, J.K. Russell), a review of physical-chemical properties of melts and solids (R.L. Lange, E.M. Stolper), modern petrographic techniques for studying igneous rocks (K.V. Cashman), and transport processes in magmatic systems (G. Bergantz, K.V. Cashman, C. Jaupart, S. Tait). Applications of these methods to problems in magma generation, transport and crystallization will be explored.

Registration fees must accompany the registration form. Please send to the MSA Business Office 1130 Seventeenth Street, N.W., Suite 330, Washington, D.C. 20036.

MSA ACTIVITIES AT GSA

MSA Members Are Invited to Participate in Society Activities

Each year MSA and the other associated societies of the Geological Society of America (GSA) work together prior to the annual meeting to review and select abstracts and schedule symposia and poster sessions. It is the combined efforts of these individuals that consistently produce a quality meeting. Special thanks are due this year to MSA representative Robert J. Tracy, VPI, conferee Mark S. Ghiorso, University of Washington and abstractor David L. Bish, Los Alamos National Labs.

In addition to handling the review of abstracts and scheduling technical sessions, the MSA representative coordinates with the Business Office to schedule the Society's social activities. This cooperation, in conjunction with GSA staff, keeps Society activities from overlapping technical sessions and attempts to put these activities in conveniently located meeting rooms.

While this scheduling involves many individuals, its purpose is to benefit the members of MSA. To this end, you are encouraged to participate in the MSA sponsored activities and to express your suggestions and needs to the Business Office and GSA.

Third Meeting of the 1990 Council

Sunday, October 28
Hyatt Regency Dallas
Room: Brisbane A
7:30 a.m. – 5:30 p.m.

The 1990 Council will act on recommendations from the Nominating Committee for Officers, the Nominating Committee for Fellows, the Roebling Medal Committee, the MSA Award Committee, and the Research Grant (Mineralogy/Petrology) Committee at its final meeting. The report of the Tellers Committee will also be certified. Council actions will be announced at the Business Meeting on Tuesday, October 30.

MSA - Symposium

Thermodynamic Mixing Properties of Petrologically Important Minerals

Monday, October 29
Hyatt Regency Dallas
Room: W. Ballroom B
1:30 – 5:00 p.m.

Convenors: Robert C. Newton, University of Chicago and Mark S. Ghiorso, University of Washington

MSA Reception

Tuesday, October 30
Hyatt Regency Dallas
Room: Reunion Ballroom F
5:30 – 7:30 p.m.

All MSA members and scientists interested in mineralogy, petrology, and

crystallography are invited to attend and enjoy a drink with colleagues. This year the reception is being held jointly with the Geochemical Society.

First Meeting, 1991 Council

Tuesday, October 30
Hyatt Regency Dallas
Room: Cotton Bowl
7:45 – 11:00 p.m.

Members of the 1991 Council will hold a dinner meeting to set goals and priorities for the coming year. This is the first opportunity for new Council members to participate in the ongoing activities of Council.

MSA Booth, #728-730

Monday, October 29
9:00 a.m. – 5:00 p.m.
Tuesday, October 30
9:00 a.m. – 5:00 p.m.
Wednesday, October 31
8:00 a.m. – 4:00 p.m.

Be sure you visit the MSA booth at the Dallas Convention Center. The newest volume in the *Reviews in Mineralogy* series, *Mineral-Water Interface Geochemistry*, will be available, as will the other books in this series. Stop by and talk to other members, meet Society officers, the MSA Business Office staff and the managing editor of the *American Mineralogist*. Bring a friend who should be a member of the Society and we'll help you sign up him or her!

Metamorphic Pressure - Temperature-Time Paths Short Course

Saturday, October 27, 8 a.m. to 5 p.m.,
Sunday, October 28, 8 a.m. to p.m.
Sheraton Dallas Hotel. Co-sponsor:
Mineralogical Society of America.

Aimed at the first-year graduate student, this introductory course is designed to be practical, using hands-on applications. Both petrologists and structural geologists will be introduced to the techniques used in the determination and interpretation of metamorphic pressure (P)-temperature (T)-time paths. These techniques require relatively sophisticated mathematics and cannot be accomplished without the use of computer programs. The course will make extensive use of computer applications that have been developed by the authors. In addition to the theoretically oriented course notes, each participant will be supplied with software and exercises describing its application. More than half of the course will be spent doing these exercises and examining the results of calculations. Topics covered:

- theoretical description of petrologic systems

Presidential Address Annual Business Meeting

Tuesday, October 30
Dallas Convention Center
Room: 100-103
10:45 a.m. – Noon

MSA President Peter Robinson will give his presidential address, "The Eye of the Petrographer, the Mind of the Petrologist", beginning at 10:45 a.m. The address will be followed by an open business meeting. MSA bylaws require that such a meeting be held annually whereby the membership is provided reports by the officers to familiarize themselves with Society activities. All members are encouraged to attend.

Annual Awards Luncheon

Tuesday, October 30
Hyatt Regency Dallas
Room: Reunion Ballroom F
12:15 p.m. – 2:00 p.m.

Sturges W. Bailey, recipient of the 1990 Roebling Medal, Russell J. Hemley, recipient of the MSA Award for 1990, and Malcolm Ross, recipient of the first Public Service Medal, will be honored at this annual luncheon. Following these presentations, 1990 President Peter Robinson will pass the gavel to the 1991 President and a new Council will take office. The Annual Luncheon provides members with an opportunity to meet colleagues and to recognize outstanding contributors to the science.

- geothermometry and geobarometry: theory and application to P-T path calculations
- differential thermodynamics (the Gibbs method): Applications to P-T-X-M phase equilibria and P-T path calculations
- pitfalls in P-T path calculations: diffusion, closure temperature, chemical zoning, garnet consumption, plagioclase textures
- heat flow: theory, analytical solutions, and numerical methods
- thermal aspects of contact metamorphism
- thermal models and P-T paths of crustal thickening and thinning
- subduction zone metamorphism

Convenors: Frank S. Spear, Rensselaer Polytechnic Institute and Simon M. Peacock, Arizona State University

The Macintosh computers used in this course are provided by Apple Computer, Inc. Limit: 60, Fee: \$225; includes course manual, computer disks, and lunch both days.

TECHNICAL PROGRAM

Technical sessions consist of both invited and volunteered papers organized in one of three presentation formats: symposia, theme sessions, and discipline sessions. Abstracts were due on July 11, and will be selected and organized into sessions on August 10 and 11 by the Joint Technical Program Committee. The JTPC consists of 38 geoscientists representing each of the GSA associated societies and divisions participating in the technical program. The JTPC chairmen, nominated by the Dallas Local Committee and approved by GSA's Council, also serve on the GSA Program Committee, which oversees all technical program activities.

Speaker notices will be mailed by August 24. The final technical program schedule will appear in the September issue of *GSA News & Information*.

INVITED PAPERS (SYMPOSIA)

This format includes only abstracts that have been invited by the convener of a symposium. The dates indicated are tentative and may be changed by the JTPC.

- S1. **Seafloor Hydrothermal Mineralization: New Developments.** *Society of Economic Geologists.* Peter Rona, NOAA, Miami; Steven D. Scott, University of Toronto. Sunday, October 28, morning.
- S2. **Geologic Setting and Generation of Very Large Volcanic-hosted Massive Sulfide Deposits.** *Society of Economic Geologists.* Frederick J. Sawkins, University of Minnesota. Sunday, October 28, afternoon.
- S3. **The Origin of Animals.** *Paleontological Society.* Philip W. Signor, University of California, Davis; Stanley M. Awramik, University of California, Santa Barbara. Tuesday, October 30, morning.
- S4. **Active Tectonics in the Mid-Continent.** *Engineering Geology Division.* Norman R. Tilford, Texas A&M University. Monday, October 29, morning.
- S5. **Extinction and Recovery of Plankton from the K/T Boundary Event.** *Cushman Foundation for Foraminiferal Research and North American Micropaleontological Section of SEPM.* Richard K. Olsson, Rutgers University; William A. Berggren, Woods Hole Oceanographic Institution. Tuesday, October 30, morning.
- S6. **Thermodynamic Mixing Properties of Petrologically Important Minerals.** *Mineralogical Society of America.* Mark S. Ghiorso, University of Washington; Robert C. Newton, University of Chicago. Monday, October 29, afternoon.
- S7. **Geoscience Organizations: Their Efforts and Impact on Geoscience Education.** *National Association of Geology Teachers.* Dorothy L. Stout, Cypress College, California. Monday, October 29, afternoon.
- S8. **Geochemistry of Metalliferous Black Shales.** *Organic Geochemistry Division of the Geochemical Society and IGCP Working Group 254.* Philip A. Meyers, University of Michigan; Lisa M. Pratt, Indiana University. Sunday, October 28, afternoon.
- S9. **Transient Responses to Global Change: The Geomorphic and Hydrologic Record.** *Hydrogeology and Quaternary Geology and Geomorphology Divisions.* Steven Wells, University of New Mexico; Jack Hess, Desert Research Institute; Richard Craig, Kent State University. Wednesday, October 31, all day.
- S10. **Oxygen and Carbon Isotopes in Paleozoic and Early Mesozoic Marine Sediments: Toward a Global Isotope Stratigraphy.** *Geochemical Society.* Ethan L. Grossman, Texas A&M University. Tuesday, October 30, morning.
- S11. **Geology of Venus.** *Planetary Geology Division.* Ted A. Maxwell, NASA, Washington; Baerbel K. Lucchitta, USGS, Flagstaff. Tuesday, October 30, morning.
- S12. **The Effects of Scale on Archaeological and Geological Perspectives.** *Archaeological Geology Division.* Julie K. Stein, University of Washington; Angela R. Linse, University of Washington. Tuesday, October 30, afternoon.
- S13. **Geological Societies and Information Transfer in the Electronic Age.** *Geoscience Information Society.* Marie Dvorzak, University of Wisconsin—Madison. Monday, October 29, morning.
- S14. **Salt Tectonics.** *Structural Geology and Tectonics Division.* Mark Cloos, University of Texas, Austin; Martin Jackson, University of Texas, Austin. Monday, October 29, morning.
- S15. **The Effects of Past Global Change on Life.** *1990 Annual Meeting Committee and National Academy of Sciences—National Research Council.* Thomas M. Usselman, National Academy of Sciences—National Research Council. Monday, October 29, afternoon.
- S16. **Eustasy: The Ups and Downs of a Major Concept.** *History of Geology Division.* Robert H. Dott, Jr., University of Wisconsin—Madison. Monday, October 29, morning.
- S17. **Practical Applications of Coal Geology.** *Coal Geology Division.* Robert B. Finkelman, USGS, Reston; Douglas S. Peters, U.S. Bureau of Mines, Denver. Monday, October 29, morning.
- S18. **Structure, Tectonics, and Geophysics of the Southern Margin of North America.** *Geophysics Division.* G. Randy Keller, University of Texas at El Paso; Richard T. Buffler, University of Texas, Austin. Tuesday, October 30, morning.

VOLUNTEERED PAPERS

This format includes all abstracts that are not specifically invited for a symposium. Two types of sessions are available:

1. Discipline sessions.

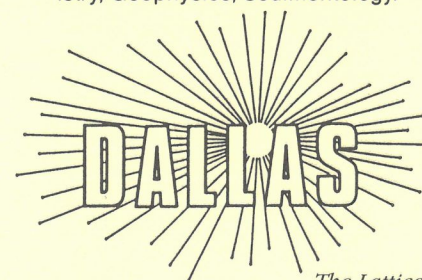
The Joint Technical Program Committee selects and organizes papers in sessions that focus on one scientific discipline, e.g., hydrogeology or structural geology. Each paper receives three reviews. The papers are organized with topical coherence whenever possible, and sessions may be given an appropriate title by the JTPC representative.

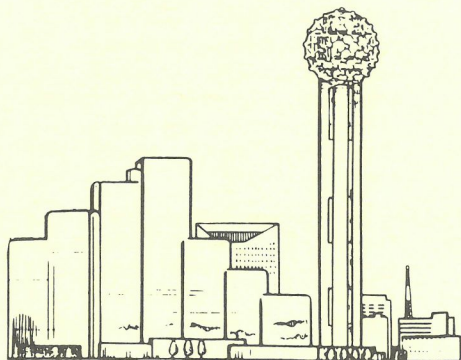
2. Theme sessions.

Papers are submitted to a specific, pre-announced topic and to one scientific category. Theme sessions are interdisciplinary; each theme may have as many as three disciplines (categories) associated with it. Each theme has one or more advocates who proposed the idea as well as encouraged submission of papers. The advocates, however, are not able to guarantee acceptance of papers, since this is the responsibility of the reviewers and the JTPC representatives. Full theme descriptions appeared in the April issue of *GSA News & Information*.

- T1. **Strontium Isotopes and Sedimentary Geology.** Richard Koepnick, Mobil Research & Development Corp., Dallas, Texas. Geochemistry, Global Geoscience, Paleogeography/Paleoclimatology.
- T2. **Mesozoic Tectonic Evolution of Mexico and the Gulf of Mexico.** José Longoria, University of Texas at Dallas; Richard Buffler, University of Texas, Austin. Geophysics, Stratigraphy, Tectonics.
- T3. **Problems and Solutions to Monitoring Ground Water in Karst Terranes.** *Hydrogeology Division.* Ralph O. Ewers, Eastern Kentucky University. Environmental Geology, Hydrogeology, Petrology/Sedimentary.

- T4. **Cretaceous/Tertiary Boundary Sections in the Southern United States.** Gerta Keller, Princeton University; Stefan Gartner, Texas A&M University. Geochemistry, Global Geoscience, Paleontology.
- T5. **Hydrogeology of Arid Regions.** *Hydrogeology Division.* Bridget Scanlon, University of Texas, Austin. Hydrogeology.
- T6. **Erosional Landscapes of the South-Central United States.** David L. Amsbury, NASA, Houston; O. T. Hayward, Baylor University. Geomorphology, Paleoclimatology, Remote Sensing.
- T7. **Oxygen and Carbon Isotopes in Paleozoic and Early Mesozoic Marine Sediments: Toward a Global Isotope Stratigraphy.** *Geochemical Society.* Ethan L. Grossman, Texas A&M University. Geochemistry, Global Geoscience, Stratigraphy.
- T8. **Geologic Effects of Hurricane Hugo.** Nicholas K. Coch, Queens College; Paul Gayes, Coastal Carolina College. Environmental Geology, Remote Sensing, Sedimentology.
- T9. **Environmental and Engineering Studies for Radioactive Waste Isolation: Experience Based on the Waste Isolation Pilot Plant (WIPP) Project, SE New Mexico.** *Engineering Geology Division.* William M. Roggenthen, South Dakota School of Mines and Technology; Dwight Deal, International Technology Corp., Carlsbad, New Mexico; A. L. Lappin, Sandia National Laboratories. Engineering Geology, Environmental Geology, Hydrogeology.
- T10. **Effects of the Loma Prieta Earthquake.** *Engineering Geology Division.* Perry Rahn, South Dakota School of Mines and Technology. Engineering Geology, Environmental Geology, Geophysics.
- T11. **Amino Acid Geochemistry: Applications in Stratigraphy and Geochronology.** John F. Wehmiller, University of Delaware. Geochemistry, Quaternary Geology, Stratigraphy.
- T12. **Metageology: Expanding Geologic Awareness.** Raymond Pestrong, San Francisco State University; Garry McKenzie, Ohio State University. Environmental Geology, Geology Education, Other.
- T13. **The Late Proterozoic Evolution of Organisms and Environments.** Andrew H. Knoll, Harvard University; David DesMarais, NASA, Ames Research Center; Robert J. Stern, University of Texas at Dallas. Global Geoscience, Paleontology, Precambrian Geology.
- T14. **Regulatory Geology: Site and Performance Evaluations in the Face of Geological Uncertainty.** Philip S. Justus, U.S. Nuclear Regulatory Commission. Engineering Geology, Environmental Geology, Hydrogeology.
- T15. **Salt Domes: Geotechnology, Energy, and Economic Significance.** James T. Neal, Sandia National Laboratories; Steven J. Seni, University of Texas, Austin. Economic Geology, Engineering Geology, Environmental Geology.
- T16. **Paleosols and Subaerial Exposure Surfaces in Carbonate Sequences.** Annabelle Foos, University of Akron. Geochemistry, Petrology/Sedimentary, Stratigraphy.
- T17. **Upper Cretaceous Stratigraphy and Paleontology, U.S. Gulf Coastal Plain and Adjacent Regions.** David T. King, Jr., Auburn University. Paleontology/Paleobotany, Sedimentology, Stratigraphy.
- T18. **Isotope Fractionations in Organic Matter: Biosynthetic and Diagenetic Processes.** Stephen A. Macko, Memorial University; Michael H. Engel, University of Oklahoma. Geochemistry, Paleoceanography, Sedimentology.
- T19. **Calibration of Controls on Stratigraphic Sequences.** *Sedimentary Geology Division.* John P. Grotzinger, Massachusetts Institute of Technology. Global Geoscience, Sedimentology, Stratigraphy.
- T20. **Geoscience Transects (POSTER MODE ONLY).** *Geophysics Division.* W. R. Van Schmus, University of Kansas; Walter Mooney, USGS, Menlo Park. Geophysics, Structural Geology, Tectonics.
- T21. **Applications of Organic Matter Biomarkers in Sedimentary Geology.** Michael A. Kruge, Southern Illinois University. Geochemistry, Paleoceanography, Sedimentology.
- T22. **Salt Tectonics.** *Structural Geology and Tectonics Division.* Mark Cloos, University of Texas, Austin; Martin Jackson, University of Texas, Austin. Structural Geology, Tectonics.
- T23. **Tectonostratigraphic Correlation of Late Cretaceous-Early Tertiary Island-Arc Rocks in the Caribbean Region.** *International Division.* Paul Mann, University of Texas, Austin; Burke Burkart, University of Texas, Arlington. Geochemistry, Structural Geology, Tectonics.
- T24. **Geological Resources, Hazards, and Population.** Garry D. McKenzie, Ohio State University. Engineering Geology, Environmental Geology, Geomorphology.
- T25. **Friction Melting Processes and Products in Geologic Materials.** Jerry F. Magloughlin, University of Minnesota; John G. Spray, University of New Brunswick. Engineering Geology, Petrology/Igneous, Structural Geology.
- T26. **Writing Assignments: A Tool for Teaching and Learning Geology.** *National Association of Geology Teachers.* R. Heather Macdonald, College of William and Mary; Susan H. Conrad, Vassar College. Geology Education.
- T27. **Geochemistry and Global Change.** Keith A. Kvenvolden, USGS, Menlo Park. Geochemistry, Global Geoscience, Paleoceanography/Paleoclimatology.
- T28. **Microcomputer Management of Databases in Petrology and Geochemistry.** Joseph Frizado, Bowling Green State University. Computers, Geochemistry, Petrology/Igneous.
- T29. **Practical Applications of Coal Geology.** *Coal Geology Division.* Robert B. Finkelman, USGS, Reston; Douglas C. Peters, U.S. Bureau of Mines, Denver. Coal Geology, Environmental Geology, Hydrogeology.
- T30. **Granites/Rhyolites: Interrelations, Processes, Geometries, Geochemistries.** M. Charles Gilbert, Texas A&M University. Geochemistry, Petrology/Experimental, Petrology/Igneous.
- T31. **Water and Volcanoes (BOTH POSTER AND ORAL MODE).** Grant Heiken, Los Alamos National Laboratory; Marshall Moss, USGS, Tucson. Geochemistry, Hydrogeology, Volcanology.
- T32. **Transient Responses to Global Change: The Geomorphic and Hydrologic Record (POSTER MODE ONLY).** *Quaternary Geology and Geomorphology Division.* Steven Wells, University of New Mexico; Jack Hess, Desert Research Institute; Richard Craig, Kent State University. Environmental Geology, Geomorphology, Hydrogeology.
- T33. **Opportunities for Scientific Drilling in the Continental Crust: Shallow- to Intermediate-Depth Projects.** Earl Hoskins, Texas A&M University; James J. Papike, South Dakota School of Mines and Technology. Geochemistry, Geophysics, Sedimentology.





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.

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.

CANCELLATIONS, CHANGES, AND REFUNDS

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

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.

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.

PREREGISTRATION FORM

1990 GSA
Annual Meeting
October 29-
November 1

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

(Registration required for technical sessions)		Price (Check One)	Column A
		Full or One Day	Qty. Amount
Professional Member	.....	(1) \$130 <input type="checkbox"/> (2) \$75 <input type="checkbox"/> 1	\$
Professional Nonmember	.....	(3) \$170 <input type="checkbox"/> (4) \$95 <input type="checkbox"/> 1	\$
Student Member	.....	(5) \$ 50 <input type="checkbox"/> (6) \$30 <input type="checkbox"/> 1	\$
Student Nonmember	.....	(7) \$ 70 <input type="checkbox"/> (8) \$40 <input type="checkbox"/> 1	\$
Guest (fill in name above for badge)	.....	(9) \$ 55 <input type="checkbox"/> N/A	\$

GUEST ACTIVITIES

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	\$

SPECIAL EVENTS

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 8

*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

*FIELD TRIPS

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, Geochem., Structure, Wichita Mtns	.....	Oct 25-28	(106)	\$235
6 Coal Geology, Western Region KS, MO, OK	.....	Oct 25-28	(107)	\$210
7 Carbonate and Siliciclastic, N-Central TX	.....	Oct 27-28	(108)	\$115
8 Nearshore Clastic-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., Hydro., 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 Lampass 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 Tour 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

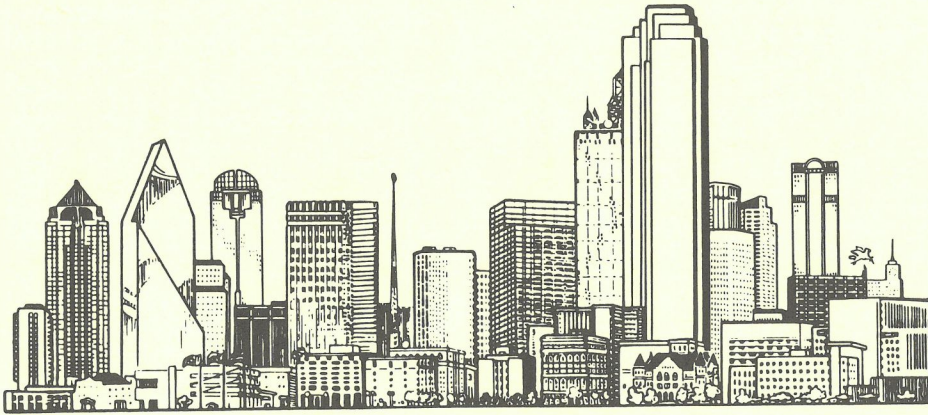
*Meeting registration not required

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

Total Column B \$
Total Column A \$

FOR OFFICE USE ONLY

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



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

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.

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

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.

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.*

CONVENIENCE INFORMATION

GSA information and message desks will be located at both the Dallas Convention Center and the Hyatt Regency Hotel, Friday, October 26, through Thursday, November 1.

Dallas Convention Center
Information (214) 658-7219
Messages (214) 658-7218
Hyatt Regency (214) 651-1234

Provide the above telephone numbers, as well as your hotel telephone number to both home and office. In this way, messages will be taken and received in the most efficient way.

CHILD CARE

GSA will offer a cooperative child-care service. UNTIL OCTOBER 12, the GSA Meetings Coordinator will accept names, addresses, and phone numbers of interested participants. You may also include information on your children and where you will be staying. ON OCTOBER 16, the information will be mailed to everyone who has responded. Participants are responsible for contacting one another.

Dallas has several private child-care agencies. Although GSA cannot endorse any of these agencies, we are happy to give the names and phone numbers to you. Call the Meetings Coordinator. You may also call your hotel for local child-care services.

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.

NEWS ROOM

Sunday-Thursday, October 28-November 1
Dallas Convention Center

The News Room provides information on many topics for release to the news media. Please come in to let us know of material that is noteworthy for the science or general press. Also, members of the press may receive complimentary registration with appropriate press credentials. In advance of the meeting, contact Sandra Rush, (303) 443-8489, c/o Communications Dept., GSA headquarters.

WEATHER

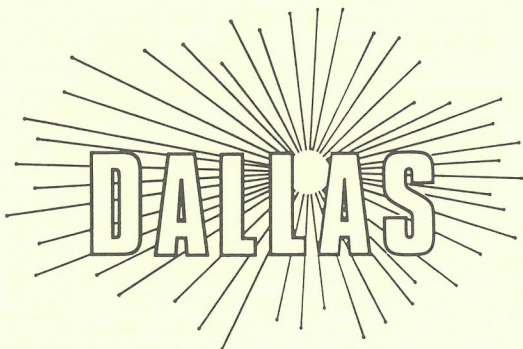
The average daytime temperatures for late October in Dallas are about 75 high and 55 low. Light-weight clothing with a sweater or jacket is recommended for evening. Rainwear may be needed.

TEXAS INFORMATION

Abundant information and friendly service are available at the following contact numbers:

Texas Department of Commerce
Tourism Division
P.O. Box 12008
Austin, TX 78711
(512) 320-9419

Dallas Convention & Visitors Bureau
1201 Elm Street, Suite 2000
Dallas, TX 75270
(214) 746-6677



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

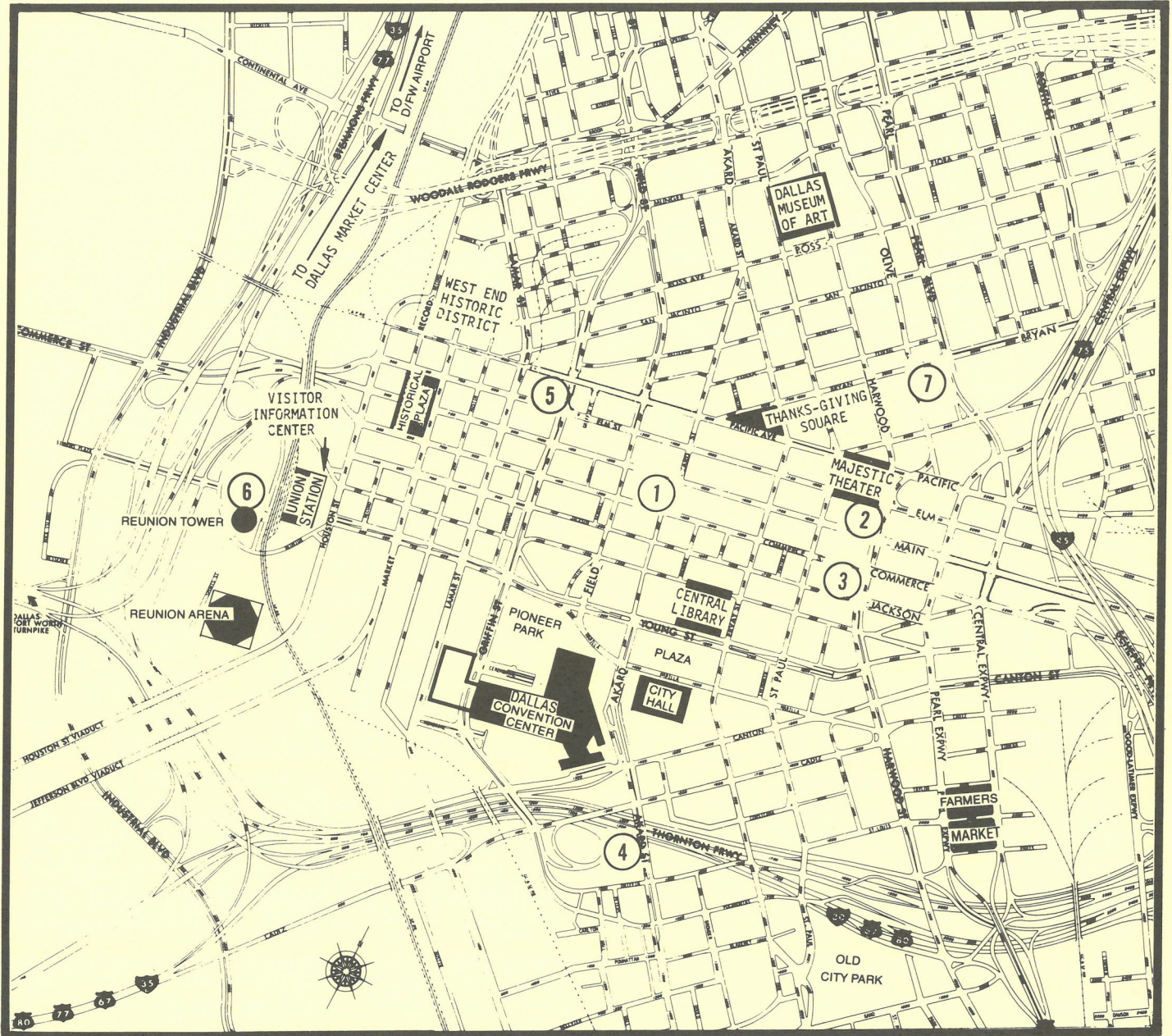
Single: \$72 Double: \$82

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.



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:

- | | |
|-------------------------------------|----------------------------|
| _____ Single (1 bed, 1 person) | _____ 1-Bedroom Suite |
| _____ Double (1 bed, 2 persons) | _____ 2-Bedroom Suite |
| _____ Dbl/Dbi (2 beds, 2-4 persons) | _____ 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:

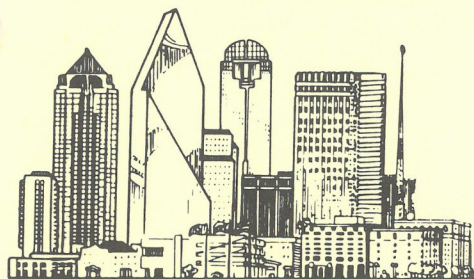
_____ American Express _____ MasterCard _____ VISA

NAME (as listed on credit card) _____

SIGNATURE _____

CARD NUMBER _____ EXP. DATE _____

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



ABSTRACTS WITH PROGRAMS

Volume 22, Number 7

1990 Annual Meeting

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Only members and nonmembers residing in the U.S., Canada, and Mexico may take advantage of GSA's advance copy purchase option of the Annual Meeting issue of *Abstracts with Programs*. These advance copies will be mailed about three weeks prior to the meeting via first-class mail. The price includes first-class postage.

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Meeting attendees may also purchase copies of *Abstracts with Programs* on-site in the registration area of the Dallas Convention Center. Price: \$20.00, while limited supply lasts.

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MEETING CALENDAR 1990

September

17-19 International Conference on Electronic Materials
in Newark, New Jersey. Details: MRS Headquarters,
9800 McKnight Road, Pittsburgh, PA 15237.
ATTN: ICEM-90.
Telephone: (412)367-3003. FAX: (412)367-4373.

October

6-11 Clay Minerals Society 27th Annual Meeting in
Columbia, Missouri. Details: Professor W.D. Johns,
Department of Geology, University of Missouri,
Columbia, MO 65211. Telephone: (314)882-3785.

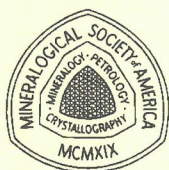
26-28 MSA 1990 Short Course on Mineral-Water Interface
Geochemistry in Pottsboro, Texas.

October/November

29- 1 MSA/GSA Annual Meeting in Dallas, Texas.
Details and registration form in this newsletter

December

1- 2 MSA Short Course on Modern Methods of Igneous Petrology in San
Francisco, California.
See article and registration form in this newsletter.



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