

The Lattice

Vol. 5, No. 1, February 1989

MEMBERS NOMINATE OUTSTANDING STUDENTS IN MINERALOGY FOR SOCIETY'S UNDERGRADUATE AWARD

MSA members have again taken advantage of the Society's American Mineralogist Undergraduate (AMU) Award program to recognize 15 outstanding students who have shown an interest and ability in the discipline of mineralogy. Each student was cited by his or her department for outstanding achievement in mineralogy-related courses.

The AMU Awards allow MSA to join with individual professors to formally recognize outstanding students. Each student is presented a certificate at an awards ceremony at his or her university or college. In addition, each recipient receives a complimentary student membership, including the journal, for 1989.

MSA members, who are on the permanent (or tenure-track) faculty and whose department offers one or more courses in crystallography, mineralogy, or petrology, may nominate a student. One student may be nominated per department per year. The department must also be able to present the certificate during a departmental or university award program. MSA encourages, but does not require, departments to nominate juniors who will be seniors during the year that they receive the award.

The deadline for nominating students for 1990 is December 1. Please mark your calendars now so you can be watching for that exceptional student. To nominate a student, send a letter on departmental letterhead giving the student's full name (for the certificate), departmental address, year in school, interest area, MSA sponsor name, and the date and brief description of the award ceremony at which the certificate will be presented. The letter must be signed by the department chair. Send the letter to the MSA Business Office, 1625 I Street N.W., Suite 414, Washington, D.C. 20006.

In its fifth year, the AMU Awards have recognized 94 exceptional students in mineralogy programs throughout the U.S. and Canada. Many of these students have maintained a relationship with MSA as current members or participants in its educational short courses.

The Society welcomes these exceptional students to the program's honor roll and wishes to thank the sponsors for enabling MSA to recognize these outstanding individuals.

Ms. Kate Edgar
Western Michigan University
Sponsored by Ron B. Chase and John D. Grace

Mr. Gabriel Viehweger
The University of Calgary
Sponsored by P. Bayliss

Mr. Kurt Friehauf
Colorado State University
Sponsored by M. E. McCallum

Ms. Melissa Wilson
Pomona College
Sponsored by Jill S. Schneiderman

Mr. David C. Noe
Virginia Polytechnic Institute and State University
Sponsored by F. Donald Bloss

Ms. Kathleen Andrea Ward
Wellesley College
Sponsored by Timothy W. Grover and James R. Besancon

Ms. Stephany Ann Fine
West Georgia College
Sponsored by Curtis L. Hollabaugh

Ms. Carrie Duncan
The University of Manitoba
Sponsored by P. Cerny and F. C. Hawthorne

Mr. William Alexander Lumsden
North Carolina State University
Sponsored by J. Alexander Speer

Ms. Jill Christine Roberts
University of Nevada, Las Vegas
Sponsored by Anne F. Wyman

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Hamilton College
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SUNY Geneseo
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Mr. Colin Sumerall
Arizona State University
Sponsored by Peter R. Buseck

FROM THE PRESIDENT

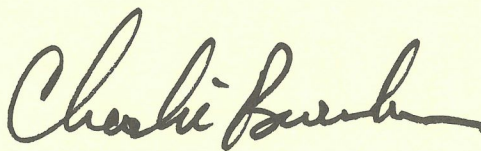
Shortly after receiving the gavel from Dave Stewart in Denver last fall, I was struck with two immediate impressions of the Society today. The first is that there is an impressively large number of members working in many capacities to ensure that the Society's programs always strive for highest quality and that they're carried out effectively. The second is that those volunteers who have managed the Society's financial affairs have succeeded well; the Society presently has financial strength to embark on important new initiatives. I want to highlight two new activities here.

In response to Council's vote last October, a new MSA Lecture Program — announced in the last issue of *The Lattice* — is being organized. The objective is to provide opportunities for students, particularly undergraduates, to witness first hand the excitement of current research in mineralogy, crystallography, and petrology, and to appreciate how such research relates to the broad research goals of earth and planetary sciences. A specific goal of this program is to bring lectures on research at the forefront of these fields to a wider spectrum of earth science departments, including smaller ones, whose size or location or both tend to preclude ready access to such activity. Our intention is to sponsor travel of two lecturers to a total of approximately eight to ten colleges or universities during the 1989-90 academic year. As this program is just now evolving through an embryonic state, many of you may not yet be aware that it exists. I urge members interested in having an MSA Lecturer visit their institution next academic year to contact the Chairman of the Lecture Committee, Peter Buseck, at Arizona State University as soon as possible. Materials inviting participation in this program will be sent out later this spring.

Also announced in the last issue of *The Lattice* was MSA's new association with the American Geophysical Union, under which, similar to our association with GSA, we will sponsor or co-sponsor sessions at AGU Spring Meetings on subjects of mutual interest to MSA and AGU members. Joe Smyth, University of Colorado, is MSA's representative to the AGU Program Committee, and he is organizing four sessions for the upcoming spring meeting in May. A session on Mineralogy of Planetary Surfaces and Interiors will be co-sponsored with the Planetology Section of AGU; a symposium on Mantle Petrology, Petrogenesis, and Silicate Melts, in honor of Chris Scarfe, will be co-sponsored with the VGP Section of AGU. MSA will sponsor

two additional sessions, on Computer Modeling of Crystal Structures and Mineral Spectroscopy. By now all MSA members should have received detailed information about the Spring meeting directly from AGU. These sessions provide an excellent opportunity for the intellectual gaps between mineralogists, mineral physicists, petrologists, and geophysicists to be proved mythical.

To foster more specialized communication between members with similar detailed interests, the Council in 1988 discussed the notion of specialized working groups being organized within MSA, somewhat analogous to the Special Interest Groups of the American Crystallographic Association and the commissions and working groups of the IMA. The Council agrees with the suggestion that the formal existence of such groups can catalyze better interaction, and it envisions that Society support for such groups might involve sponsoring symposiums related to a group's special interests, providing clerical support through our administrative office in Washington, and publishing notices in *The Lattice* regarding a group's activities. The Council voted unanimously to "recognize and encourage the development of scientific specialty working groups." We anticipate that the impetus for creating any specific group will emerge spontaneously from a nucleus of members with a common interest; the Council does not envision creating any such groups itself. At this time a few preliminary suggestions have been made, but no groups have been formed and no fixed organizational procedures have been devised. I would very much like to hear from any member or group of members who might wish to pursue development of a scientific specialty working group. I look forward to working with many members during the coming months toward successful implementation of these new initiatives. And I hope to see many of you at the AGU Spring Meeting in Baltimore.



Charles W. Burnham
1989 President



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 for MSA's spring meeting with the American Geophysical Union; participation in a Society that supports the many facets of mineralogy.

Dues for 1989 are \$40 for professional members; \$20 for students. Membership is on a calendar year basis. Individuals who join after January 1, 1989 will be sent all back issues of the journal for volume 74, 1989.

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 1989 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.

1989 President: C.W. Burnham,
Harvard University
Past-President: D.B. Stewart,
U.S. Geological Survey
Secretary: Maryellen Cameron, Miami
University of Ohio
Treasurer: James A. Whitney, University
of Georgia
Office Manager/Accountant: Susan L.
Myers

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REGISTRATIONS BEING ACCEPTED FOR FALL SHORT COURSE

The Mineralogical Society of America is sponsoring a short course on Advanced Powder Diffraction Techniques to be held November 4 and 5, the weekend prior to the annual MSA/GSA meeting in St. Louis, MO. This course is being organized by Dr. David Bish of the Los Alamos National Laboratory and Dr. Jeffrey Post of the Smithsonian Institution. Specific topics and speakers include:

Principles of Powder Diffraction, R. Reynolds; Instrumentation, R. Jenkins; Experimental Procedures, R. Jenkins; Sample Preparation, R. Reynolds and D. Bish; Quantitative Analysis, R. Snyder and D. Bish; Determinative Techniques: Composition and Ordering, J. Post and D. Bish; Diffraction Applied to Clays and Glasses: Non-Bragg Diffraction, R. Reynolds; Powder Diffraction Software, D.

Smith; Structure Refinement and Analysis, D. Bish and J. Post; Synchrotron Powder Diffraction, L. Finger; Neutron Powder Diffraction, R. VonDreele; Other Techniques and Methods, H. King. The course will begin with a welcoming reception Friday evening, November 3. Sessions will begin Saturday morning, November 4 and end Sunday, November 5. 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.

Registration fees are as follows:
MSA Member Professionals \$125
Non-member Professionals \$165*
MSA Member Students \$25
Non-member Students \$45*
*includes membership dues for 1990.

The course will be held at the Radisson Hotel Saint Louis, 9th Street & Convention Plaza Boulevard, St. Louis, MO 63101. This is convenient to Cervantes Convention Center, the site of the 1989 GSA Meetings. Course participants should make their sleeping room reservations directly with the hotel by calling (314) 421-4000 or by writing to the address above. When you make your reservations, please be sure to tell the hotel that you are attending the MSA Short Course to insure that you receive the special room rate. The cost of the room will be \$55 for a single and \$65 for doubles.

Registration fees must accompany the registration form. Please send this form directly to the MSA Business Office. Space is limited to the first 125 registrants on a first-come, first-served basis. Participants are responsible for making their own hotel reservations and the payment of same directly with the hotel.

If you have additional questions, please contact the MSA Business Office at (202) 775-4344.

MEETING CALENDAR 1989

February

- 12 The Tenth Symposium sponsored by the Friends of Mineralogy, the Tucson Gem and Mineral Society, and MSA, Tucson, AZ. Details: Henry Truebe, FM-TGMS-MSA Symposium, c/o Dallhold Resources, 2002 N. Forbes Blvd, Tucson, AZ 85745.

April

- 24-29 The annual spring meeting of the Materials Research Society will be held in San Diego, California. A call for papers is expected to be issued July 22, 1988. Details: Merry Geil, Director of Meeting Activities, 9800 McKnight Road, Suite 327, Pittsburgh, PA 15237 (412)367-3003.

May

- 13-14 MAC Short Course: Diagenesis; Montreal, Quebec, Canada. Details: MAC, Royal Ontario Museum, 100 Queen's Park, Toronto, Ontario, Canada M5S 2C6.
15-17 Mineralogical Association of Canada Annual Meeting, Montreal, Quebec, Canada. Details: GAC/MAC Montreal 89, Room 238, 3450 University Street, Montreal, Quebec, Canada H3A 2A7 (514)398-4082.

July

- 9-19 28th International Geological Congress, Washington, D.C. Details: Dr. Bruce B. Hanshaw, Secretary General, P.O. Box 1001, Herndon, VA 22070-1001; (703)648-6053.
19 Abstract deadline for 1989 GSA meeting.

November

- 4-5 MSA 1989 Fall Short Course on Advanced Powder Diffraction Techniques, St. Louis, MO.

December

- 1-3 MSA 1989 Short Course on Rare Earth Elements, prior to AGU annual meeting in San Francisco, CA.
18-20 Mineralogical Society of Great Britain's 1989 Winter Meeting on Stability of Minerals. Details: G.D. Price, Dept. of Geological Sciences, Univ. College London, Gower Street, London, UK WC1E 6BT.

DID YOU KNOW...

The 8th Symposium of IAGOD (International Association on the Genesis of Ore Deposits) will be held in Ottawa, Canada, August 12-18, 1990. In conjunction with it, there will be an International Conference on Mineral Deposit Modeling. Topics for the Symposium are: isotope geochemistry of mineral deposits, hydrothermal activity on Juan de Fuca Ridge, genetic relations of mineral deposits in sedimentary rocks, genesis of vein and lode gold deposits, and distribution of metallogenic provinces and epochs. Suggestions for additional topics are welcome. Abstracts are due January 1, 1990. Field trips to mineral belts in eastern, central, western, and northern Canada will be arranged. Address all correspondence, including your request for the Second Circular, to: L.M. Cumming, Secretary, 8th IAGOD Symposiums, Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario, Canada K1A 0E8.

IN MEMORIAM

We regret to announce the passing of the following MSA members and fellows. The Society extends its condolences to the families and friends of these scientists.

Campbell, Charles D. Life Fellow, 1932
Joliffe, Alfred W. Life Fellow, 1934
Johnston, Thomas F. Member, 1969
Stevenson, John S. Life Fellow, 1931

WELCOME!

The following new members and students have joined MSA effective January 1, 1989. Welcome! Applications for membership may be obtained from the Business Office, 1625 I Street N.W., Suite 414, Washington, D.C. 20006; (202) 775-4344. Membership applications received October 1 through December 31, 1989 will be made effective January 1, 1990 unless otherwise requested.

Abercrombie, Hugh J., Department of Geology and Geophysics, University of Calgary, Calgary, Alberta, Canada. O:(403)220-6140. H:(403)288-3857. (ST-89) Sponsor: MSA.

Almendinger, Peter, US Army Corp of Engineers, P.O. Box 37, Sausalito, CA 94966. O:(415)332-3374. (M-89) Sponsor: MSA.

Baur, Gretta S., U.S. Bureau of Mines, 729 Arapen Drive, Salt Lake City, UT 84124. O:(801)524-6125. H:(801)227-4720. (M-89) Sponsor: MSA.

Bershov, Leonid, Leninsky Prospekt 85/6/53, Moscow 107216, USSR. O:(095)231-72-70. H:(095)134-37-60. (M-89)MI Sponsors: Dr. S. Hafner and Dr. I. Petrov.

Bloch, John D., Department of Geology & Geophysics, The University of Calgary, Calgary, Alberta, Canada T2N 1N4. O:(403)220-6140. H:(403)286-8209. (ST-89) Sponsor: MSA.

Brownlow, Darrell T., Department of Geosciences, Texas Tech University, P.O. Box 4109, Lubbock, TX 79409. O:(806)742-3110. H:(806)796-1108. (ST-89) Sponsor: MSA.

Chadima, Sarah A., South Dakota Geological Survey, USD Akeley Science, Vermillion, SD 57069. O:(605)677-5227. H:(605)624-6745. (M-89) Sponsor: MSA.

Chermak, John, VPI, Department of Geological Sciences, Blacksburg, VA 24060. H:(703)751-4020. (ST-89) Sponsor: MSA.

Christy, Andrew G., Department of Earth Sciences, Downing Street, Cambridge, England CB2 3EQ. O:(223)333474. H:(223)247838. (M-89)MI Sponsors: M.A. Carpenter and M.J.L. Percival.

Cook, Glen B., Department of Materials Science and Engineering, University of Wisconsin, Madison, 1509 University Avenue, Madison, WI 53706. O:(608)262-6798. H:(608)271-9115. (ST-89) Sponsor: MSA.

Creaser, R. A., Department of Geology, La Trobe University, Bundoora, Vic. Australia 3083. O:(03)479-2630. (ST-89)MI Sponsor: MSA.

Davis, Andrew N., 2001 W. Main Street, Stamford, CT 06902. O:(203)348-5252. (M-89)IP Sponsor: MSA.

Deike, Ruth, U.S. Geological Survey, National Center, MS 432, Reston, VA 22092. (M-89) Sponsor: MSA.

Diamond, Judith, 1069 N. 13th Street, Laramie, WY 82070. O:(307)721-2255. H:(307)742-7173. (ST-89)IP Sponsor: MSA.

Eberl, Dennis D., U.S.G.S., MS 404, Federal Center, Denver, CO 80225. O:(303)236-5042. H:(303)674-5033. (M-89) Sponsor: MSA.

Faircloth, Susan, 516 St. James Street, Apt#1, Rapid City, SD 57701. O:(605)394-2496. H:(605)342-3235. (ST-89)MP Sponsor: MSA.

Fisher, R. Stephen, Bureau of Economic Geology, The University of Texas at Austin, University Station, Box X, Austin, TX 78713-7508. O:(512)471-1534. H:(512)928-2991. (M-89) Sponsor: MSA.

Gonzalez, Isabel, Department of Geologia, Facultad de Quimica, Apt. #553, Sevilla, Spain 41071. O:(954)625060. H:(954)627546. (M-89) Sponsor: MSA.

Gundersen, James N., Department of Geology, Wichita State University, Wichita, KS 67208. O:(316)689-3141. H:(316)682-1313. (M-89) Sponsor: MSA.

Gustin, Mae S., Department of Geology, Indiana University - Purdue University, 425 Agnes Street, Indianapolis, IN 46254. O:(317)293-2371. H:(317)274-7484. (M-89) Sponsor: MSA.

Harris, Kenneth L., 1606 W. Davies Avenue, Littleton, CO 80120. O:(303)792-9102. H:(303)795-9524. (M-89) Sponsor: MSA.

Hirt, Warren, 895 Autumn Lane, Mill Valley, CA 94941. H:(415)381-4720. (ST-89)CC Sponsor: MSA.

Holmes, Mary Anne, 321 Bessey Hall, Geology Department - UNL, Lincoln, NE 68588-0340. O:(402)472-2647. H:(402)421-1763. (M-89) Sponsor: MSA.

Hopkins, Kevin, 1704 Raquel Road, Edmond, OK 73034. O:(405)528-7016. H:(405)341-8237. (M-89)MI Sponsor: MSA.

Idlefonse, Philippe, Universite Paris 7, UER Sciences Phy de la Terre, 2 Place Jussieu, Paris Cedex 05, France 75251. (M-89) Sponsor: MSA.

Jepson, Wayne, University of Montana, 304 South 3rd West, Apt. #302, Missoula, MT 59801. (ST-89) Sponsor: MSA.

Kakegawa, Takeshi, 236 Deike Building University Park, PA 16801. O:(814)865-1215. H:(814)234-6685. (ST-89)GE Sponsor: MSA.

Keppler, Hans, CALTECH, Geology 170-25, Pasadena, CA 91125. O:(818)356-6239. H:(818)568-8502. (M-89)GE Sponsors: M. Baker and G. Rossman.

Kingston, Marguerite J., Mail Stop 927, U.S. Geological Survey, Reston, VA 22092. O:(703)648-6369. H:(301)657-8818. (M-89) Sponsor: MSA.

Kralik, Martin, U.S. Geological Survey, Box 25046, MS 404, Denver, CO 80225. O:(303)233-4749. (M-89) Sponsor: MSA.

Lake, John H., 27 Armstrong Crescent, S.E., Calgary, Alberta, Canada T2J 0X2. O:(403)260-4490. H:(403)258-2643. (M-89)MI Sponsor: MSA.

Larsen, R. Al, 5225-1 Verona Road, Madison, WI 53711. O:(608)271-3333 ext. 2781. H:(608)845-9879. (M-89)GE Sponsors: S.W. Bailey and C. Bowser.

Lira, Raul, Dante Alighieri 471, 5174 Huerta Grande, Cordoba, Argentina. O:(51)22284. H:(548)21661. (M-89)MI Sponsor: MSA.

MacLean, Wallace, McGill University, Department of Geological Sciences, Montreal, Quebec, Canada H3A 2A7. (M-89) Sponsor: MSA.

Madore, Catherine, 314 3rd Street East, Saskatoon, Saskatchewan, Canada S7H 1L5. (ST-89) Sponsor: MSA.

McCurry, Michael, Box 3AB, Department of Earth Sciences, New Mexico State University, Las Cruces, NM 88003. O:(505)646-1842. H:(505)525-9658. (M-89)IP Sponsor: MSA.

Miller, Stephen, Department of Geological Sciences, VPI & SU, Blacksburg, VA 24060. H:(703)951-3572. (ST-89)MP Sponsors: R. Tracy and P. Ribbe.

Muller, Jean-Pierre, Laboratoire de Mineralogie - Cristallographie, Universites Paris VI et VII, 4 Place Jussieu, Paris France 75252. O:(16)43-36-25-25 (M-89) Sponsor: MSA.

Nabnybida, Cynthia G., Department of Geology & Geophysics, The University of Calgary, Calgary, Alberta, Canada T2N 1N4. O:(403)220-7404. H:(403)252-9219. (M-89) Sponsor: MSA.

Ou, Chachi, C., W. R. Grace & Co., 62 Whittemore Avenue, Cambridge, MA 02140. O:(617)876-1400 ext. 3832. H:(617)861-7125. (M-89) Sponsor: MSA.

Paris, Eleonora, Dipartimento di Scienze delle Terra-Universita Di Camerino, Camerino, Italy 62032. O:(737)40831. H:(6)9324049. (M-89)CC Sponsors: M. Carroll and A. Durazzo.

Peterson, Jonathan, 5734 S. Ellis Avenue, University of Chicago, Chicago, IL 60637. O:(312)702-8137. H:(312)702-8137. (ST-89)MP Sponsor: MSA.

Phillips, David, Geology Department, Princeton University, Princeton, NJ 08544. O:(609)683-1583. (ST-89)MI Sponsor: MSA.

Razakamanana, Theodore, DPO Minesup, BP 3163, Antananarivo, Madagascar 101. (ST-89)MP Sponsor: John C. Schumacher.

Rothbard, David R., BP America, Research & Development, 4440 Warrensville Center Road, Cleveland, OH 44128. O:(216)581-5172. (M-89) Sponsor: MSA.

Ryan, Peter E., University of Montana, 304 South 3rd. West, Apt. #302, Missoula, MT 59801. O:(406)549-1867. (ST-89) Sponsor: MSA.

Shafiqullab, Mubammad, Department of Geosciences, University of Arizona, Tucson, AZ 85721. O:(602)621-6001. (M-89) Sponsor: MSA.

Sharma, Anurag, Department of Geological Sciences, SUNY-Binghamton, Binghamton, NY 13901. H:(607)797-4368 (ST-89)MP Sponsors: D. Jenkins and D. Brabander.

Svalingam, Sivagnanam, Texas Tech University, Geoscience Department, P.O. Box 4109, Lubbock, TX 79409. O:(806)742-3110. H:(806)741-0192. (ST-89) Sponsor: MSA.

Weidner, Donald J., Department ESS, SUNY, Stony Brook, NY 11794. O:(516)632-8241. H:(516)689-9180. (M-89)CC Sponsor: MSA.

Young, Thomas E., Geology Department, University of California, Davis, CA 95616. O:(916)752-4664. H:(916)393-3984. (ST-89)CC Sponsors: P. Burnley and A. Hofmeister.

Zanazzi, Pierfrancesco, Dipartimento Scienze della Terra, Piazza Universita, Perugia, Italy 06100. O:(75)4693212. H:(75)41718. (M-89) Sponsor: MSA.

Zinge, Thomas P., 9164 N. Francis Place, Lakewood, CO 80215. O:(303)792-9102. H:(303)238-0092. (M-89) Sponsor: MSA.

AGI Conference on Precollege Education Stresses Urgency of Unified Effort

The urgency of unifying efforts and coordinating activities in precollege earth-science education was the theme January 8, 1989, of a conference organized by the American Geological Institute. Twenty-three representatives of organizations with a serious interest in and commitment to science education, particularly in the earth sciences, took part in the discussions and working group sessions. Dr. E-an Zen, U.S. Geological Survey in Reston, acted as the official representative of MSA. AGI aims to provide the common direction and unity of purpose for these organizations that have been lacking until now.

"We at AGI accept the challenge of leadership in earth-science education," Marvin E. Kauffman, AGI's executive director, said in his opening remarks to the group. "This meeting will allow each of us to learn about one another's plans and coordinate these activities in such a way as to complement each other and not work in competition. We expect this to be the first of many such meetings," Kauffman said.

The group heard reports on the activities and projects of each of the organizations represented. Andrew J. Verdon Jr., AGI's Director of Education, stressed the need for

improved communication among organizations with similar interests and projects. He noted that AGI plans to produce a newsletter for key geoscientists, teachers, and administrators interested in improving earth-science education.

Verdon also encouraged the group to draw on the experience and energy of members of professional societies as a valuable resource. "Who knows better than these people who work day in and day out with the Earth," Verdon added.

Participants discussed the most pressing current issues in earth-science education. Those issues became the focus for the formation of three working groups. The groups identified problems, set objectives and made recommendations in these areas: Instructional aids; communication among groups working in earth-science education; and philosophy, K-6 education, teacher training, and the professional status of earth-science teacher trainers.

Members of the group were enthusiastic and unanimous in their recommendations that AGI continue its work in this field and that regular meetings on the topic be scheduled immediately.

Mineralogical Society of Great Britain's 1989 Winter Meeting

The 1989 Winter Meeting of the Mineralogical Society of Great Britain on "Stability of Minerals" will be held December 18-20, 1989 at University College London. The meeting will focus on the factors that determine the stability of minerals and related systems, including the quantum mechanical and atomic basis of structural stability, the thermodynamic and thermochemical properties of minerals and mineral assemblages, and the chemical and physical limits of mineral stability.

The 1989 Hallimond Lecture will be given by Professor John M. Thomas, F.R.S. (Royal Institution). Keynote speakers include J.K. Burdett (Chicago), F.C. Hawthorne (Manitoba), N.L. Ross (Univ. College London), M.A. Carpenter (Cambridge), D.K. Bird (Stanford), B. Velde (Paris) and J.D.C. McConnell (Oxford). The keynote lectures are scheduled for the first day of the meeting and will be tutorial in nature. On the following days, there will be contributions from groups of the Society and from the

Physics Group of the British Crystallographic Association. Group topics include low-temperature mineral geochemistry (Convener: P. Henderson, British Museum), geothermometry and geobarometry (Conveners: B.W.D. Yardley, Leeds and J.C. Schumacher, Kiel), the stability of sulphides and sulpho-salts (Convener: R.A. Patrick, Manchester), the stability of clays (Convener: P. Hall, Schlumberger), and minerals and related phases at extremes of pressure and temperature (Convener: M.J. Mendolsohn, Univ. College London). Those interested in submitting papers should contact the convener of the appropriate group.

Registration forms will be published in the March edition of the Mineralogical Society Bulletin and are also available upon request. For more information, contact G.D. Price, Department of Geological Sciences, University College London, Gower Street, London, UK WC1E 6BT; (0)1-387-7050; Electronic Mail: UCCG04P@UK.AC.UCL.EUCLID.

A FAREWELL TO OBSOLETE PYROXENES

Robert M. Hazen

Geophysical Laboratory, Carnegie Institution of Washington
2801 Upton Street NW, Washington, DC 20008-3898, USA

"The names of 105 pyroxenes or altered pyroxenes have been formally discarded by the CNMMN and are therefore obsolete."

Morimoto et al. (1988)

A part of my past is gone: jeffersonite, bronzite, ureyite, and fassaite are no longer mineral species.

The Subcommittee on Pyroxenes (Morimoto et al, 1988), under the authority of the International Mineralogical Association's Commission on New Minerals and Mineral Names (CNMMN), has brought order to the chaos of pyroxene nomenclature. Of 125 historic pyroxene names only 20 remain. Old friends enstatite, diopside, and augite are safe. Jadeite, pigeonite, and spodumene survived, along with recently-coined esseneite, jervisite, and petedunnite. But more than 100 names are banished - officially obsolete.

We needed the taxonomic housecleaning, yet I can't help feeling a bit sad. Mineral names, like those of old friends, can trigger vivid memories of faces and places. Certain species' names evoke images of a day 20 or 30 years ago - images as sharp and clear as a black-and-white photograph.

*

I was no more than ten years old when I unearthed my first specimen of jeffersonite, now prosaically denoted "zincian manganian diopside." My passion for minerals began in the late 1950s when my family moved to Ridgewood in northern New Jersey. I had always collected something - stamps or bottle caps or baseball cards - but the minerals of north Jersey were special. So many beautiful species, every specimen unique, just waiting to be found. And of all the New Jersey localities Franklin was the best.

My Dad and I made the hour drive two or three times a year. We'd leave in early afternoon and collect for a few daylight hours at the dump. Dinner at a local cafe occupied the twilight hours, and then back to the dump for a light show. Dad used his electrical engineering skills to perfect a powerful, compact ultraviolet light. We'd punish the trunk of our '55 Buick with blocks and boulders of calcite and willemite for indoor display and an outside fluorescent rock garden. The journey home was always a wild affair, with our exhaust pipe periodically scraping bottom and headlights pointed crazily up, blinding oncoming drivers on the winding Sussex County roads.

My collection of Franklin species included several matrix-bound coarse black crystals of jeffersonite, the rare zinc- and manganese-bearing pyroxene and one of the first all-

American minerals. Discovered by Philadelphia mineralogists Lardner Vanuxem and William Keating (1822), it was named for the great aging statesman and devoted amateur naturalist, Thomas Jefferson. I thought it wonderful that a locality so close to home should have its own historic and rare - even unique - minerals. I treasured my small chunks of franklinite, willemite, zincite, and jeffersonite.

*

Wilfred Welsh introduced me to bronzite, the distinctive bronzy-lustered pyroxene variety now renamed "ferroan enstatite." I was an eighth grader at Benjamin Franklin Junior High School when Bill became my science teacher. Our classroom, with its massive black benches and wooden cabinets filled with chemicals, glassware, and other educational paraphernalia, might have been a typical all-purpose lab. But Bill transformed that room into something extraordinary by filling all the glass display cases on the right side of the room with fine mineral specimens from his magnificent private collection.

Seeing my unabashed interest in his treasures, Bill Welsh soon took me under his guidance, helping to focus my undisciplined collecting enthusiasm into a more analytical study of rocks and minerals. He recommended books and periodicals, directed me to nearby collecting localities and museums, and welcomed me into his home to study his collection (and enjoy Mary's cooking). And over the course of that pivotal year Bill Welsh gave me more than 100 fine specimens that he had collected himself: chabazite and heulandite from Nova Scotia, galena and chalcopyrite from Joplin, beryl and tourmaline from Maine. And there was a chunk of bronzite, I forget from where. It was by no means a great display piece, neither colorful nor euhedral. But the specimen had character - an honest, sturdy rock-forming mineral with a strong, purposeful name. Bill Welsh taught me the importance of the everyday minerals that form our planet, so when I think of bronzite I remember Bill.

*

The late Dave Wones, my freshman geology professor at MIT, dispelled any doubts I might have had about mineralogy as a career. What a teacher! Always animated and enthusiastic, strict and demanding but fair, he captivated us with stories of the genesis of different minerals, the atomic origins of distinctive mineral properties, and

the then incomprehensible power of the earth to transform one mineral into another by squeezing and baking. I was hooked.

Dave emphasized rock-forming minerals: blue-collar phases like feldspars, micas, amphiboles, and pyroxenes that do most of the geological work. We had to memorize the names and formulas of dozens of species. They were, he assured us, the essential vocabulary of the working mineralogist. As if to emphasize the dynamic nature of that vocabulary Dave one day came to class with the story of an exciting discovery - a new pyroxene had been found as an accessory mineral in iron meteorites. Clifford Frondel and Cornelis Klein (1965), two mineralogists working just up the Charles River at Harvard, had made the find. The new pyroxene, named ureyite in honor of the Nobel Laureate Harold Clayton Urey, possessed a striking emerald green color and a distinctive composition rich in sodium and chromium. Dave Wones made his class feel part of the ureyite discovery; mineralogy was no static thing when presented by such a man. To me ureyite epitomized that excitement.

The name ureyite didn't last long. Frondel and Klein acknowledged that the new species was in some respects similar to the mineral kosmochlor, a meteoritic phase incompletely described seventy years earlier. The authors argued (and at the time CNMMN agreed) that kosmochlor was poorly named and, at best, a fortuitous match with the distinctive chromium pyroxene. Ureyite was approved. Unfortunately for Harold Urey, the CNMMN has now changed its mind: ureyite is out and kosmochlor is in.

*

My first real job as a mineralogist began in 1976 when I came to the Geophysical Laboratory. I planned to work on high-pressure minerals as a postdoctoral fellow with staff crystallographer Larry Finger. Larry is a whiz at working with computers and designing automated experiments and for two decades he has applied his expertise to intriguing geological puzzles. I thought myself well trained in mineralogy, but in our first joint study, completed just a few months after my arrival, Larry taught me things about minerals I had never even imagined. He showed me how a few single mineral grains might reveal the existence of ancient cataclysms that altered the entire solar system. The object of his lesson was the rare pyroxene fassaite (now called ferrian aluminian diopside), the major mineral component of the Angra dos Reis meteorite.

Pyroxenes have a memory. The everyday elements magnesium and iron can reside in either one of two different pyroxene structural sites, denoted M1 or M2. Given sufficient time and suitable temperature history, the magnesium atoms will favor M1 while iron will concentrate in M2. Such "ordered" pyroxenes are usually found in slowly-cooled rocks. But at high temperatures - above 1000 degrees C - the iron and magnesium atoms won't settle down; they fill both M1 and M2 in a random pattern. Rapid-chilling may "freeze in" this disordered arrangement. X-ray diffraction experiments, if carefully performed, can locate magnesium and iron atoms, and thus provide a clue about pyroxene cooling history. By studying Angra dos Reis fassaite Larry and I hoped to deduce if the meteorite was once hot and, if so, how quickly it had cooled.

Larry worked his crystallographic magic on a microscopic fassaite chip smaller than a grain of salt. A computer precisely oriented the tiny crystal in an x-ray beam and supervised data collection, a process that took several days. The tens of thousands of numbers that constitute the nuts and bolts of an x-ray experiment were stored on magnetic tape. It took Larry less than one afternoon to analyze those data, and the answer was unambiguous: iron and magnesium were

largely disordered. Angra dos Reis fassaite must have come to equilibrium at a temperature in excess of 1000 degrees, typical of the hot interior of a small planet. But the crystal had cooled so rapidly - probably in a matter of hours - that reordering of the elements could not proceed. One possible conclusion (in our minds the most compelling) was that we had found direct evidence for the breakup of a planet that generated the asteroid belt, as well as many of the meteorites that grace museum collections.

That pyroxene specimen was special. One tiny grain brought home the power of mineralogy to reveal the existence and character of entire worlds, as well as their destruction. Special minerals deserve special names, so I will miss fassaite and all the word now conjures for me.

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Mineralogists possess the power to create mineral names - names that honor friends and colleagues, commemorate places and events, and acknowledge distinctive chemical or physical properties. I'm especially delighted with welshite, wonesite, and fingerite - all named for my friends and teachers of the past two decades. It is also fitting that mineralogists should have the means to strike

down names that no longer serve a purpose. Science must move on, unswayed by sentiment. But the acts of creation and destruction are not symmetrical. A new name fills a void - something where nothing existed before. A name rendered obsolete, however, does not disappear; it lives on in the collective memories of those who knew it. Though they no longer exist in the lexicon of the mineral sciences, I will remember jeffersonite, bronzite, ureyite, and fassaite, along with those who introduced them to me.

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