

The Lattice

MSA ARTS COUNCIL PRESENTS 1998 MINERAL CALENDAR

The MSA Arts Council's latest venture is the 1998 MSA Mineral Calendar. This calendar celebrates the aesthetic beauty of minerals as well as the wonders of their creation revealed through scientific studies. In doing so, this calendar is not only a source of beautiful mineral images, but also provides educational information for all mineral enthusiasts about recent advances in mineralogy. Each month you will find a stunning 9" x 11 1/2" photograph of a superlative mineral specimen from one of the participating museums*. In addition, inset in the monthly calendar page is an aesthetic scientific image from the research of mineralogists and petrologists in the MSA. These are accompanied by a short description of the image and its significance.

The MSA Arts Council was formed in March of 1993 to increase revenues and visibility of the society through sales of "artistic items". The MSA necktie, 75 year commemorative T-shirt, and the commemorative 25 and 50 year member pins are just a few of the items that we have designed and produced. Through the interests of its members and of the Society, the Arts Council has developed into an outreach arm of MSA with sales of products geared towards educating and advertising.

MSA members may purchase calendars through the business office using the publications order form which accompanies the American Mineralogist and the Lattice. Calendars will also be available at the MSA booth at this year's GSA and AGU meetings. If successful, we plan to produce a calendar with this format annually. Should this happen, the Arts Council will hold an annual contest for the submission of scientific images from MSA members for inclusion in the calendar.

BUY YOUR CALENDAR NOW!

* The participating museums include: The A. E. Seaman Mineralogical Museum, American Museum of Natural History, Carnegie Museum of Natural History, Denver Museum of Natural History, Houston Museum of Natural Science, Natural History Museum of Los Angeles County and Harold and Erica Van Pelt, National Museum of Natural History, Smithsonian Institute, and the University of Delaware Mineralogical Museum.

John Rakovan
Chair, Arts Council

TEACHING MINERALOGY SOURCEBOOK IS READY

MSA is publishing a new book for mineralogy teachers edited by John B. Brady, David W. Mogk and Dexter Perkins III. This sourcebook of classroom-tested exercises, activities, and teaching methods is a product of the Teaching Mineralogy Workshop held at Smith College in June 1996 with funding from NSF (DUE-9554635). It is packed with great ideas that could transform your mineralogy course. Check out the contents on page 7 of this issue of *The Lattice* and see the Publications Order Form for ordering information.

Also in this issue

From the President.....	2
Notes from Washington.....	3
MSA schedule of events at GSA.....	5
Undergraduate Award.....	6
In Memoriam	6
Teaching Mineralogy - Table of Contents.....	7
Financial Contributors to MSA	8
Financial Advisory Committee Report.....	10
Treasurers Report	12
Report of the Editors of the American Mineralogist.....	14
Meeting Calendar 1997-1998	16
New Members.....	16
Membership Application	18
Publications Forms	19

From the President

In this last of my messages to you, I wish to continue my comments on the role of electron microscopy in mineralogy, geochemistry, and petrology. First, though, I want to join all the members of our society in thanking Rich Reeder and Ted Labotka for their four years of service as Editors of *American Mineralogist*, clearly the most arduous and important task we have to offer. It also gives me great pleasure, however, to announce that Anne Hofmeister and Bob Dymek, both of Washington University in Saint Louis, will be assuming the *American Mineralogist* Editorship. I am delighted that our journal will continue to be edited by such able and conscientious individuals.

But back to electrons. I, like many of you, grew up loving and collecting minerals, rocks, and fossils. Little did I know, as I was picking up everything from agates to basalt, that pioneers in electron physics and crystallography were making the basic contributions that were to lay the foundations for future applications of electron microscopy in the geological sciences. Names like Cowley, Moodie, Hirsch, Howie, and Vainshtein come to mind. As I noted in a previous letter, the transmission electron microscope was invented in the early 1930s, but it wasn't until the 1950s and 60s that the theoretical basis for the interpretation of images from crystals was laid. Gradually, a clear picture of the role of defects in controlling the properties of simple metals emerged, but despite some major contributions, such as Zvyagin's classic book on electron diffraction of clays, work on minerals had to wait until the 1970s to come into full blossom.

Perhaps ironically, return of the lunar samples gave earth-science

electron microscopy a big push, as can be seen by perusing the 1976 book *Electron Microscopy in Mineralogy*, edited by Wenk et al. (I must say that lunar rocks gave us a somewhat warped view of minerals, due to the paucity of hydrogen, which is so important in most terrestrial processes.) I also recall the amazement many of us felt upon the 1974 publication of the *American Mineralogist* paper by Buseck and Iijima, showing that the structures of minerals could be imaged directly using high-resolution TEM. Since then, many wonderful studies have used the powerful combination of electron diffraction, amplitude-contrast imaging, and HRTEM to elucidate the structures of mineral defects and interfaces and, more important, to show us the role that these nonperiodic aspects of mineral structure play in crystal chemistry, crystal growth, and chemical reactions throughout the earth. During the same period, rapid development of analytical electron microscopy (both x-ray emission and electron energy-loss spectroscopy) has allowed us to analyze remarkably small chemical heterogeneities in minerals. Another healthy development has been the increasing number of studies that employ multiple experimental and theoretical approaches; TEM has become an important adjunct for investigations using more traditional analytical procedures, various types of spectroscopy, and high-pressure research using the diamond-anvil cell, to name a few areas. I consider myself lucky indeed to have been scientifically active during this time of rapid discovery over the past twenty years.

Although electron microscopy is now over sixty years old, it is still undergoing surprisingly rapid development, with what to me are truly

awesome capabilities already here or just around the corner. True atomic-resolution microscopy is at hand, and we can obtain electron-diffraction information from structural regions smaller than the unit cells of most minerals. New theoretical tools even allow us to interpret some of this information reliably! In fortuitous cases, single atoms can be imaged, and there are indications that even chemical analysis of individual atoms may be feasible in some circumstances. Energy-filtered imaging and diffraction are in their infancy and show remarkable promise for future mineralogical investigations. Although crystallographers probably shouldn't use crystal balls, I will stick my neck out and say that before I retire it may well be possible to image individual atoms of specific trace elements in crystals, for example. It isn't uncommon these days to hear people say that mineralogy is dead but I don't think so. My own view that electron microscopy and numerous other rapidly developing technologies will make us key players in the future development of geochemistry, petrology, environmental science, and the materials sciences. As pointed out by Gordon Brown in his presidential address last year, our science is changing, but opportunities abound.

This year has whizzed by, and it's hard to believe this is my last letter to you. I've enjoyed working with so many of you, and it's good to know the MSA will be in the capable hands of Bruce Watson, not to mention all the other members who work so hard to keep the society moving ahead.

Thanks for listening! With best regards,

David Veblen



President

Notes from Washington

At its Spring, 1997 Meeting, MSA Council voted to keep 1998 member dues at the 1997 cost of \$40. Student dues will also remain unchanged at \$30, as does the cost of a member subscription to *American Mineralogist* at \$30. Institutional subscriptions to the journal are increased to \$350 for subscribers with U.S. address and to \$360 for subscribers with non-U.S. addresses. MSA membership renewals will be mailed in October, 1997. You can save your Society money by renewing early. If you reside overseas and are interested in faster delivery of the *American Mineralogist*, consider ordering International Surface Airlift service (ISAL) for the journal when you renew your member subscription. It costs \$30 additional and will reduce shipping time from several months to 2-3 weeks, depending on your location.

In addition to the renewal notice, you will receive in October a copy of all information contained in your membership record with a request for you to update and return it. 1998 is the year a new MSA Membership Directory will be produced. At the moment it appears that there will be both a paper and electronic version of the Directory. The electronic version will be accessible through the MSA Home Page. If you have any comments about the new Directory, share them with an MSA officer or Council member.

MSA will again have a booth at the Fall AGU Meeting in San Francisco December 8-12, 1997. If you are attending the meeting, please stop by. If you have the time, consider volunteering to help with the booth.

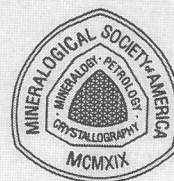
The schedule for MSA's events before and at the Salt Lake City GSA Meeting, October 17-23, 1997 is given in the accompanying table. The joint MSA-Geochemical Society Reception will again be a ticketed function. Tickets are sold by GSA and can be bought either when you register for the meeting or up to 24 hours before the event in the meeting registration area. Cost is \$10 for professionals and \$5 for students.

MSA is tentatively scheduled to have a booth at five meetings in 1998: Tucson Gem and Mineral Show, Tucson, AZ, February 12-15; AGU Spring Meeting in its new location in Boston, MA, May 26-29; 17th General Meeting of the International Mineralogical Association, Toronto, ON, August 9-14; GSA Meeting, Toronto, ON, October 26-29; Fall AGU Meeting, San Francisco, CA, December.

A book review of *Crystal Structures I: Patterns and Symmetry* by M. O'Keefe and B. G. Hyde appeared in the *Journal of the American Chemical Society*, v.119, pp. 3851-3852. A review of *Chemical Weathering of Silicate Minerals*, Reviews in Mineralogy volume 31, edited by A. F. White and S. L. Brantley appeared in *Catena*, volume 29, p. 85. If these reviews convince you to buy copies, use the Publication Order Form that appears elsewhere in this newsletter.

Remember, MSA reached an agreement with the Clay Mineral Society (CMS) wherein the members of either Society can purchase the publications of both Societies at member discount prices. CMS publication descriptions and order form can be obtained from the CMS Home Page: <http://shadow.agry.purdue.edu/clay/claymin/claymins.html>. When ordering, indicate that you are an MSA member entitled to a 25% discount.

(continued on next page)



The *Lattice* is published quarterly (February, May, August, November) by the Mineralogical Society of America. It 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: *American Mineralogist*, published bi-monthly; 25% 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 1997 are \$70 for professional members who elect to receive *American Mineralogist* and \$40 for those who elect not to receive the journal, but who do receive all other membership benefits; membership is \$30 for students. Membership is on a calendar year basis. Individuals who join after January 1, 1997 will be sent all back issues of the journal for volume 82, 1997.

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 1997 volume of *American Mineralogist* for the annual rate of \$320 in the US, \$325 in Canada and Mexico and \$330 in all other countries. 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.

1997 President: David R. Veblen

The Johns Hopkins University

Past-President: Gordon E. Brown, Jr.

Stanford University

Vice President: E. Bruce Watson

Rensselaer Polytechnic Institute

Secretary: Barbara L. Dutrow

Louisiana State University

Treasurer: R. Brooks Hanson

Science Magazine

Editor of *The Lattice*: Darrell J. Henry

Louisiana State University

MSA Administrator: J. Alexander Speer

Mineralogical Society of America

1015 Eighteenth Street N.W., Suite 601

Washington, D.C. 20036-5203

Telephone: (202) 775-4344

FAX: (202) 775-0018

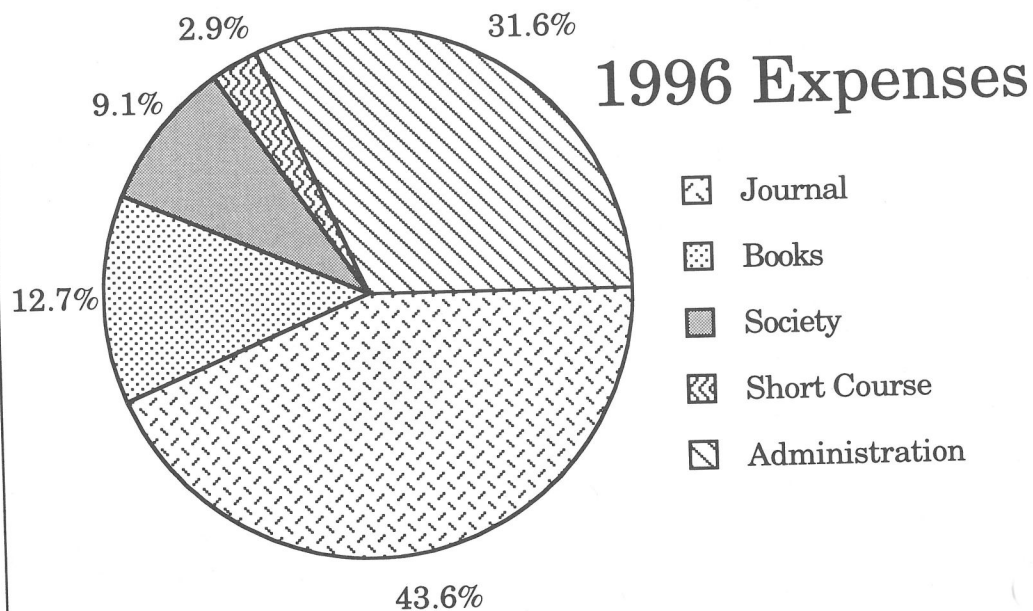
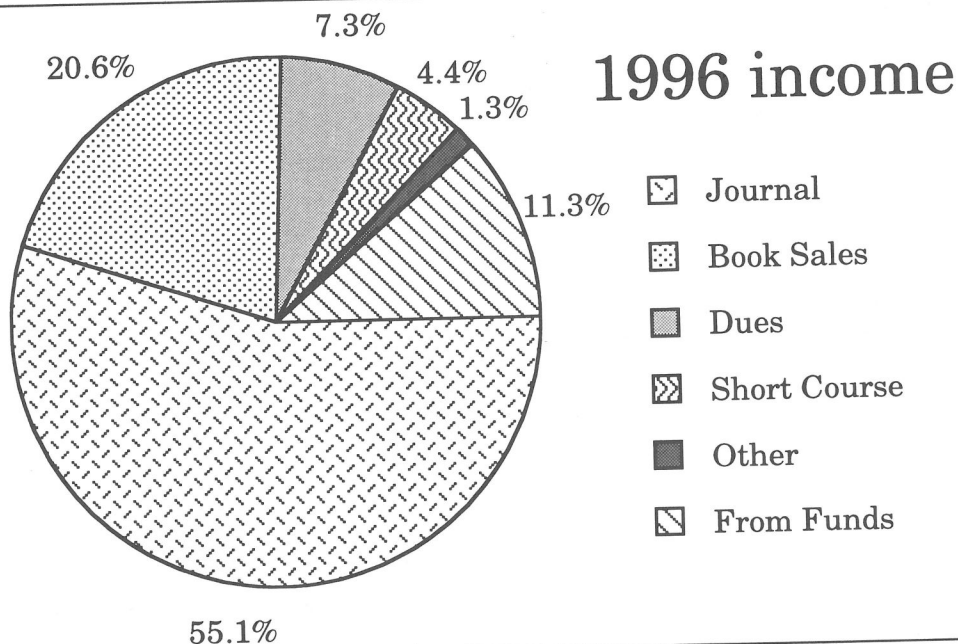
Notes from Washington (continued)

The 50- and 25-year MSA membership pins were mailed to members in the early summer. There were 88 (16 overseas) members receiving 50-year pins, and 612 (218 overseas) members receiving 25-year pins. If you have received a pin, and believe that you are entitled to one, please contact the MSA Business Office.

1997 is the 60-year anniversary of the incorporation of the Society. It was incorporated under the laws of the District of Columbia. The paper work was submitted on June 17, 1937 by MSA members and District residents Norman L. Bowen, John F. Schairer, and Waldemar T. Schaller. This followed a Council decision to incorporate on December 28, 1936, but no reason was recorded for why this was done. The only immediate practical effect of incorporation was the suggestion to have a corporate seal. A seal committee was formed and the forerunner of the present MSA logo first appeared in 1946.

This issue of the *Lattice* contains reports by the MSA Treasurer and Financial Advisory Committee. These reports contain all the financial details,

but you may be interested in a graphical summary of MSA income and expenses for 1996 by program. These are given in the two pie diagrams accompanying this column. Some explanation is required: Journal income includes member and institutional subscriptions, page charges, offprint sales, and author alteration charges. Books include MSA Reviews in Mineralogy, MSA Monographs, and the Mineralogical Society Series. Society expenses include the cost of MSA Council and the Committees, research grants, lectureship program, awards, the *Lattice*, balloting, renewal notices, and dues to the IMA and AGI. Administration expenses are the costs of arranging for the production and delivery of the journal, books, ballots, and newsletter; renewing members and subscribers; processing book orders and short course registration; answering inquiries; keeping the accounts; attending meetings; and organizing Society events and short courses. The administration costs are the organizational expenses of all other MSA programs.



1997 Mineralogical Society of America Annual Meeting Program Schedule

Alta and Salt Lake City, Utah - October 17-23, 1997

	Friday October 17	Saturday October 18	Sunday October 19	Monday October 20	Tuesday October 21	Wednesday October 22
<i>Breakfast</i>		<i>MSA Short Course Breakfast Alta Vista Lodge, Alta, Utah</i>	<i>MSA Short Course Breakfast MSA Council Break- fast 7:30-8:00 a.m.</i>	<i>MSA Presidents' Breakfast 7:30-9:30 a.m.</i>		
<i>Morning Sessions 8:00 am to Noon</i>		<i>MSA Short Course on Geomicrobiol- ogy: Interactions between Microbes and Man, Alta Vista Lodge, Alta, Utah</i>	<i>3rd 1997 MSA Council Meeting 8:30 am-12:30 pm MSA Short Course on Geomicrobiology: Interactions between Microbes and Man, Alta Vista Lodge, Alta, Utah</i>	<i>S5 MSA Symposium Geomicrobiology: Interactions between Microbes and Man 8:00 am - 12:00 pm</i>	<i>MSA-reviewed Oral Session on Mineral- ogy - Crystallogra- phy includes the MSA Presidential Address @ 10:30-11:15 am and Business Meeting @ 11:15-11:45 am</i>	
<i>Lunch</i>		<i>MSA Short Course Lunch Alta Vista Lodge, Alta, Utah</i>	<i>MSA Council Lunch 12:30 - 1:30 pm</i>	<i>Am. Min. Associate Editors' Lunch 12:15 - 2:00 pm</i>	<i>MSA Awards Luncheon 12:15 - 2:00 pm</i>	
<i>Afternoon Sessions 1:30 to 5:30 pm</i>		<i>MSA Short Course on Geomicrobiol- ogy: continues Alta Vista Lodge, Alta, Utah MSA Management Committee Meeting</i>	<i>3rd 1997 MSA Council Meeting (continues) 1:00 - 5:00 pm MSA Short Course on Geomicrobiology: continues</i>	<i>MSA Theme Session: Geomicrobiology: Interactions between Microbes and Man 1:30 - 5:30 pm</i>	<i>MSA-Reviewed Poster Session 2:30 - 4:30 pm</i>	<i>S28 MSA-Clay Mineral Society Joint Symposium Environmental Mineralogy 1:30 - 5:00 pm</i>
<i>Receptions or Dinners</i>	<i>MSA Short Course Reception Alta Vista Lodge, Alta, Utah</i>	<i>MSA Short Course Banquet Alta Vista Lodge, Alta, Utah</i>	<i>MSA Council Dinner 5:30 - 6:30 pm</i>		<i>MSA-Geochemical Society Joint Re- ception 5:30 - 7:30 pm</i>	
<i>Evening Ses- sions</i>			<i>1st 1998 MSA Coun- cil Meeting 7:00 - 11:00 pm</i>			

No official MSA events are scheduled for Thursday, October 23.

Theme session whose scheduled time is presently unknown: "Volatiles in Planetary Mantles and Basalts"

The MSA Booth in the Exhibit Hall is open 5-7:30 pm Sunday, October 19, and 9 am-5 pm; Monday-Wednesday, October 20-22, 1997.

Related MSA Theme Sessions and symposia at GSA

MSA will sponsor symposia and theme sessions on three differing topics at the 1997 GSA meeting in Denver, Colorado. The MSA Symposium and an associated Theme Session are on the topic of the MSA Short Course: Geomicrobiology: interactions between microbes and minerals on Monday, October 20, 1996. In addition, there

will be symposia and theme sessions on Environmental Mineralogy, jointly sponsored with the Clay Mineral Society, and Volatiles in Planetary Mantles and Basalts as a result of efforts by MSA's Planetary Materials interest group.

Members Nominate Outstanding Students in Mineralogy For Society's Undergraduate Award

MSA members have taken advantage of the Society's American Mineralogist Undergraduate (AMU) Award program to recognize 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 the individual faculty 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 *American Mineralogist*, for 1997.

Deadlines for nominating students are January 1 and July 1 of each year. Mark these dates on your calendars and let us know about your exceptional student. If you are interested in presenting the award at a particular ceremony, please remember that time is required to produce certificates. To nominate a student, send a letter on departmental letterhead to Dr. J. Alexander Speer, MSA Business Office, 1015 Eighteenth St. NW Ste. 601, Washington, DC 20036-5274, USA. With the nomination, please include the student's full name that would be suitable for the certificate, the student's address that will be current at the time the award will be made (we receive returned mail from AMU awardees who have moved on), year in school, the MSA sponsor's name, and the date and brief description of the award ceremony at which the certificate will be presented. The letter must be signed or co-signed by the department chair.

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

Megan L. Buchholz
Bryn Mawr College
Sponsored by Dr. William A. Crawford

Kim E. Gerke
University of Missouri - Rolla
Sponsored by Dr. Richard D. Hagni

Nathan P. Mellott
Michigan State University
Sponsored by Dr. Michael A. Velbel

Sarah K. Carmichael
Smith College
Sponsored by Dr. John B. Brady

Karen Lister
Acadia University
Sponsored by Dr. Sandra M. Barr

Romy D. Schneider
The University of Texas at Austin
Sponsored by Dr. Douglas Smith

Erika Engstrom-Johnson
Arizona State University
Sponsored by Dr. Peter R. Buseck

In Memoriam

We regret to announce the passing of the following MSA Members. The Society extends its condolences to the family and friends of these scientists.

John C. Griffiths, Life Fellow (1945)
Lincoln Page, Life Member (1938)

New addresses

The MSA web site has a new location:
<http://www.minsocam.org>

The new e-mail address for Darrell Henry, *The Lattice* Editor, is glhenr@unix1.sncc.slu.edu. The new MSA Business Office e-mail address is: business@minsocam.org and for J. Alex Speer, j_a_speer@minsocam.org. Watch for additional changes in *The Lattice* and MSA web sites.

Advertisements in The Lattice

The Lattice accepts paid advertisements. Rates:

Ad frequency:	1 time	4 times
<u>Ad type</u>		(per insertion)
Full page:	\$500	\$400
Half page:	\$250	\$200
Quarter page:	\$125	\$100
Eighth page:	\$75	\$50

Details may be obtained from the MSA Business Office: J. Alex Speer, Mineralogical Society of America, 1015 Eighteenth Street, N. W., Suite 601, Washington D. C. 20036, Telephone: 202-775-4344, Fax: 202-775-0018, E-mail: business@minsocam.org. Only camera-ready copy of advertisements can be accepted and should be sent directly to the MSA Business Office.

Teaching Mineralogy

A new workbook with classroom-tested exercises, activities and teaching methods

Edited by John B. Brady, David W. Mogk, and Dexter Perkins III

TABLE OF CONTENTS

LeeAnn Srogi & Lynda Baloch.....	Using Cooperative Learning to Teach Mineralogy (and Other Courses, Too!)
Ken Bladh.....	Physical Properties of Minerals and Determinative Techniques, An Introduction to Cooperative Learning
David W. Mogk.....	Mineral Classification—What's in a Name?
Kurt Hollocher.....	A Term-Long Mineralogy Lab Practical Exam
David W. Mogk.....	Field Notes
Francis Ö. Dudás.....	Exercises with Mineral Names, Literature and History
Kurt Hollocher.....	Short Readings from the <i>American Mineralogist</i> : Sneaky Tools for Teaching Scientific Reading Comprehension and Mineralogical Concepts
Philip E. Brown.....	Wondering, Wandering and Wining: The WWW and Mineralogy
Peter J. Heaney.....	Crystal Growth Fast and Slow
Paul Sorensen & Dexter Perkins.....	Growing Crystals on a Microscope Stage
Dexter Perkins & Paul Sorensen.....	Mineral Synthesis and X-ray Diffraction Experiments
John B. Brady.....	Making Solid Solutions with Alkali Halides (and Breaking Them)
Guy L. Hovis.....	Phase Fun with Feldspars: Simple Experiments to Change the Chemical Composition, State of Order, and Crystal System
Guy L. Hovis.....	Determination of Chemical Composition, State of Order, Molar Volume, and Density of a Monoclinic Alkali Feldspar using X-ray Diffraction
Michael A. Velbel.....	Exercises in the Geochemical Kinetics of Mineral-Water Reactions: The Rate Law and Rate-Determining Step in the Dissolution of Halite
David G. Bailey.....	Heat Capacity of Minerals: A Hands-on Introduction to Chemical Thermodynamics
Mich U. Petersen.....	Phase Diagrams in Vivo
John D. Winter.....	Experiments on Simple Binary Mineral Systems
Kenneth J. Brock.....	Computer Generated Crystals with <i>SHAPE</i>
Michael A. Velbel.....	Miller Indices and Symmetry Content: A Demonstration Using <i>SHAPE</i> , A Computer Program for Drawing Crystals
George R. McCormick.....	Crystal Measurement and Axial Ratio Laboratory
Roger T. Steinberg.....	The Use of Natural Crystals in the Study of Crystallography
Gerald V. Gibbs.....	The Metrical Matrix in Teaching Mineralogy
Peter R. Buseck.....	From 2D to 3D: I. Escher Drawings, Crystallography, Crystal Chemistry, and Crystal "Defects"
Peter R. Buseck.....	From 2D to 3D: II. TEM and AFM Images
Dexter Perkins.....	A Fun and Effective Exercise for Understanding Lattices and Space Groups
Francis Ö. Dudás.....	Construction of Crystal Models and Their Graphic Equivalents
Kurt Hollocher.....	Building Crystal Structure Ball Models Using Pre-drilled Templates: Sheet Structures, Tridymite, and Cristobalite
David W. Mogk.....	Directed-Discovery of Crystal Structures Using Ball and Stick Models
Edward F. Stoddard.....	Minerals and Light
Hans Dieter Zimmermann.....	Experiments in Crystal Optics
Mickey E. Gunter.....	Laboratory Exercises and Demonstration with the Spindle Stage
John T. Cheney & Peter D. Crowley.....	Introduction to the SEM/EDS or "Every composition Tells a Story"
M. Darby Dyar.....	Color in Minerals
Barb Dutrow.....	Better Living through Minerals: X-ray Diffraction of Household Products
Helen M. Lang & Sid P. Halsor.....	Asbestos: Mineralogy, Health Hazards and Public Policy
Stephen Guggenheim.....	Introduction to the Properties of Clay Minerals
Mary Roden-Tice.....	Mineral Separation and Provenance Lab Exercise
Selected References for Teachers of Mineralogy	

Financial Contributors to MSA

Many members contribute to the MSA Endowment, MSA Mineralogy/Petrology, and the Edward H. Kraus Crystallographic Research Funds each year by including a contribution along with their dues payments. The MSA Benefactor Committee, chaired by Donald Peacor, has also been soliciting contributions for the newer Outreach Fund. These four Funds support MSA's research grants in crystallography, mineralogy, and petrology; publishing of the *American Mineralogist*; the *American Mineralogist* Undergraduate Awards; the Mineralogical Society of America Award; the Public Service Award, the Roebling Medal; and the lectureship program. These Funds are described in more detail in the Financial Advisory Committee Report which appears in this issue. The contributions range from modest to generous. But they are effective. The Fund with

the largest number of contributors is the Mineralogy/Petrology Fund and the persistence of these contributors' generosity has permitted the Fund to reach the point where a \$3500 student research grant is given each year.

In 1996, \$8717 was contributed to your Society: Endowment (\$3451), Kraus (\$1066), and Mineralogy/Petrology Fund (\$4200). In 1997, \$4117 has been contributed as of July 1: Endowment (\$1074), Kraus (\$682), and Mineralogy/Petrology Fund (\$2362). As part of the MSA's Benefactor Program, \$4106 was contributed to the Outreach Fund in 1996-7. If you have not done so previously, you might want to consider contributing at the next opportunity. Here we want to extend our gratitude to the following individuals:

MSA Endowment Fund

Orson L. Anderson	Samuel S. Goldich	John Mc Andrew	Richard A. Robie
Virgil E. Barnes	H. Stanton Hill	Richard C. Mielenz	Eric Seedorff
William A. Bassett	Anne M. Hofmeister	Akiho Miyashiro	E. Volkmar Trommsdorff
Peter R. Buseck	Michael J. Holdaway	Tadato Mizota	Stephen Van Horn
Claudio Cernignani	Hidemichi Hori	Duane M. Moore	David Walker
Roy S. Clarke Jr.	Horst H. Kedesdy	Louis Moyd	John H. Weitz
Francois Delbove	Michael Kokinos	Thea Welsh Phinney	Peter J. Wyllie
Bernard W. Evans	Robert Kuehn	Allan Pring	Masaru H. Yamaguchi
Rodney C. Ewing	Benjamin F. Leonard	Douglas W. Rankin	Eiju Yatsu
Marta J.K. Flohr	Steve Ludington	Eugene C. Robertson	

Edward H. Kraus Crystallographic Research Fund

Georges Calas	Jurgen Glinnemann	Louise Levien	Thomas G. Sharp
Joan R. Clark	Elihu Goldish	Richard T. Liddicoat	Peter Susse
Michael Czank	Richard Gottfried	Ian D.R. Mac Kinnon	Michael A. Velbel
Kenneth J. De Nault	Stefan Graeser	Thomas P. Mitchell	Richard Wirth
Frantisek Eichler	Stephen J. Guggenheim	Izumi Nakai	Hans Wondratschek
Alfred J. Frueh	Theo Hahn	Juan C. Porto	Shu-cheng Yu
S. Geller	Masayuki Kawasaki	Charles T. Prewitt	

Mineralogy/Petrology Fund

Reijo Alviola	Eugene N. Cameron	Francis O. Dudás	Charles V. Guidotti
Barbara J. Anderson	William Carlson	Steven R. Dunn	P. Fenoll Hach-ali
Daniel S. Barker	Michael R. Carroll	Robert F. Dymek	Alain R.D. Hanson
Richard A. Beach	Douglas S. Coombs	W. G. Ernst	C. L. Hayward
Adrian J. Brearley	Brian J. Cooper	Anne Feenstra	B. Carter Hearn Jr.
Donald A. Brobst	William A. Crawford	John M. Ferry	David Carl Hedlund
Maarten A.T.M. Brockmans	R. V. Dietrich	M. Charles Gilbert	Rosalind T. Helz
Ernst A.J. Burke	H. Roberta Dixon	Carlos A.a.L. Gomes	Alexander R. Hoelzel
C. Wayne Burnham	Jacqueline Eaby Dixon	Harry W. Green II	John R. Holloway

Michiya Inomata
Toshiro Isobe
Odette B. James
J. Ben H. Jansen
Satoshi Kanisawa
Shimpei Kano
Mitsuyoshi Kimata
Andrea Koziol
Erling J. Krogh Ravna
Rebecca A. Lange
Dominique Lattard
Michael J. Le Bas
David London
Frank R. Luther
William S. Mackenzie
Suzanne E. Mahlborg Kay
Stefano Merlino
Calvin F. Miller
David W. Mogk
Kiguma J. Murata
Ki Chang Na
Peter I. Nabelek
Tadao Nishiyama
Yasuko Okuyama-kusunose
Yazuhito Ozawa
William A. Ranson
A. Bhaskara Rao

John L. Rosenfeld
Douglas Rumble
Hiroaki Sato
John C. Schumacher
Renate Schumacher
Michel P. Semet
Masahiro Shimizu
Hironao Shinjoe
Virginia B. Sisson
Frank S. Spear
Leeann Srogi
Helge Stanjek
Heinz G. Stosch
Lawrence A. Taylor
Priestley Toulmin III
Peter Ulmer
Josef Vajdak
Richard D. Warner
W. Arthur White
Ray E. Wilcox
K. E. Windom
William S. Wise
Eduard Woermann
Alan Woodland
Kenzo Yagi
Takeru Yanagi
Hatten S. Yoder Jr.

Contributors to two or more Funds

Charles E.S. Arps	Lambis Papelis
Raymond A. Donelick	Peter Robinson
Edward S. Grew	Philip G. Rust, Jr.
George E. Harlow	Leon T. Silver
John M. Hughes	Joseph V. Smith
David M. Jenkins	Thomas W. Stern
Mary L. Johnson	David B. Stewart
Ritsuro Miyawaki	James A. Tyburczy
Henry C. Mullner	Joe L. White
Masaaki Ohmasa	David J. Zobkiw

**THE DEADLINE FOR THE NOVEMBER ISSUE
OF THE LATTICE IS OCTOBER 30**

Contributions to *The Lattice* may be sent to Darrell Henry via surface mail at Department of Geology and Geophysics, Louisiana State University, Baton Rouge, LA 70803 or via E-mail at glhenr@unix1.sncc.lsu.edu. If there are questions concerning the nature and pertinence of a contribution, call Darrell Henry at (504) 388-2693.



**Handbook of
MINERALOGY**
Anthony • Bideaux • Bladh • Nichols

AVAILABLE IN OCTOBER

**Vol. III – Halides, Hydroxides,
Oxides – 628 p., 1997**
US\$100.00 + \$6.00 S+H
(ISBN 0-9622097-2-4)

**Vol. II – Silica, Silicates
904 p. in 2 books, 1995**
US\$135.00 + \$7.50 S+H
(ISBN 0-9622097-1-6)

**Vol. I – Elements, Sulfides,
Sulfosalts – 588 p., 1990**
US\$90.00 + \$6.00 S+H
(ISBN 0-9622097-0-8)

From the *Mineralogical Magazine*

“This work is thus an extremely comprehensive data source....The typography is clear, the data are up-to-date and there appear to be almost no errors....it will surely be an indispensable work for all mineralogists to have available. The price is very reasonable for the size and for the standard of the production and this should help make it available in all earth science libraries and on the personal shelves of working mineralogists.”

**MINERAL DATA PUBLISHING
FULFILLMENT SERVICES INC**
1955 West Grant Road, Suite 230
Tucson, Arizona 85745 USA
Tel: (520) 798-1513 FAX: (520) 798-1514

VISA/MASTERCARD ACCEPTED

Annual Report of the Financial Advisory Committee for 1996

As we reported last year the MSA Council approved a restructuring of the MSA Endowment at its Spring 1996 Meeting. As a result of that restructuring and the Council's need for current information on the unrestricted balances in the various Funds in order to prepare their budget for the following year, the financial status of the MSA Funds is now being reported for a fiscal year ending on June 30th.

Table 1 shows the balance in each of the MSA Funds as of June 30, 1997. Because of the outstanding performance of the equity markets over the last year, each of the Funds has grown substantially despite some large withdrawals from the Roebling Fund to support the operation of the Society. The individual Funds are invested as follows;

Edward H. Kraus Crystallography Fund

Fidelity Equity-Income Fund

Mineralogy and Petrology Fund

Fidelity Equity-Income Fund

MSA Endowment Fund

Brandywine Blue Fund

Roebling Fund

Brandywine Fund

Fidelity Equity-Income II Fund

Reich & Tang Equity Fund

Fidelity Magellan Fund

Lindner Dividend Fund

Money Market Account

Table 1: The MSA Funds

	June 30, 1996	June 30, 1997
Edward H. Kraus Crystallography Fund	\$99,329	\$125,935
<i>Permanently Restricted</i>	\$85,536	\$88,567
<i>Temporarily Restricted</i>	\$13,793	\$37,367
Mineralogy and Petrology Fund	\$150,503	\$200,395
<i>Permanently Restricted</i>	\$56,704	\$62,207
<i>Temporarily Restricted</i>	\$93,799	\$138,188
MSA Endowment Fund	\$124,110	\$145,036
<i>Permanently Restricted</i>	\$124,110	\$130,719
<i>Temporarily Restricted</i>	\$0	\$14,317
Roebling Fund	\$1,261,393	\$1,375,771
<i>Board Restricted</i>	\$867,720	\$887,655
<i>Unrestricted</i>	\$393,673	\$488,116
Outreach Fund (not yet established)	\$0	\$0

The MSA Endowment Description of the MSA Funds

1. Edward H. Kraus Crystallography Fund

- Fund Purpose: *To provide financial assistance toward future research in the field of crystallography*
- All past and future contributions to this Fund plus an inflation adjustment are permanently restricted.
- All accumulated income to the Fund in excess of contributions and an inflation adjustment is temporarily restricted until March 31, 2016.

2. Mineralogy and Petrology Fund

- Fund Purpose: *To provide financial assistance toward future research in the fields of mineralogy and petrology*
- All past and future contributions to this Fund plus an inflation adjustment are permanently restricted.

- All accumulated income to the Fund in excess of contributions and the inflation adjustment is temporarily restricted until January 1, 2030.

3. MSA Endowment Fund

- Fund Purpose: *To provide support for the publication of the American Mineralogist and for the advancement of the mineralogical sciences*
- This Fund is composed of the inflation adjusted sum of all past documented contributions to the old Endowment Fund, except for the original contributions from Col. Roebling. The 12/31/95 balance and all future contributions to this Fund, adjusted for inflation, are permanently restricted.
- The Fund balance will be calculated annually. If that balance shows an excess over the previous balance plus all contributions and an inflation adjustment, the excess is to be transferred to the
(continued next page)

unrestricted Roebling Fund. If in any year, or series of years, the adjusted balance of the MSA Endowment Fund should decrease, no money shall be transferred until such time as the balance of the Fund reaches or exceeds the balance that existed at the most recent transfer of funds to the Roebling Fund plus the accumulated contributions and the inflation adjustment since that time.

4. Roebling Fund

- a. Fund Purpose: *To provide support for the publication of the American Mineralogist and for the advancement of the mineralogical sciences*
- b. This new Fund is composed of all unrestricted funds that have accumulated in the old Endowment Fund since its inception. Because the major source of those funds was the \$45,100 donated by Col. Roebling in 1925 and 1926 this new fund shall be named the "Roebling Fund".
- c. A substantial portion of the Roebling Fund has been "Board Restricted" by the MSA Council and will thereby be treated as permanently restricted by the Society. The "Board Restricted" portion of the Roebling Fund will be calculated annually. If that balance shows an excess over the previous balance plus an inflation adjustment, the excess is to be transferred to the unrestricted portion of the Roebling Fund.

- d. All remaining money in the Roebling Fund is unrestricted for use by vote of Council with the following specific expenses to be charged to the Roebling Fund annually.

1. American Mineralogist Undergraduate Awards
2. Life Memberships
3. Roebling Medal Awards
4. MSA Awards
5. MSA Public Service Awards
6. The MSA Lecture Series and the MSA Web Site expenses until such time as these can be funded by the Outreach Fund

5. Outreach Fund

- a. Fund Purpose: *To support the Society's public service activities*
- b. The principal and all contributions plus an inflation adjustment are permanently restricted. The Fund will be totally restricted until the balance reaches \$100,000. Once this balance has been reached all accumulated income to the Fund in excess of the contributions and an inflation adjustment is temporarily restricted until January 1, 2050 to provide financial assistance for the Society's public service activities

Policies and Definitions Relating to the MSA Funds

1. Unless otherwise specified, all contributions to the Society will be treated as permanently restricted and placed in the MSA Endowment Fund. All contributions designated for the MSA Endowment, Kraus Crystallography, Mineralogy and Petrology, and Outreach Funds will be placed in the permanently restricted portions of those Funds. Contributions made specifically to the Roebling Fund will be treated as unrestricted.

2. Definitions

- a. Permanently Restricted; funds are part of the permanent endowment and are totally unavailable for spending.

- b. Temporarily Restricted; funds are restricted from being spent for purposes other than the prescribed purpose of the Fund until the date specified.
- c. Unrestricted; funds may be spent by vote of the MSA Council.

Respectfully submitted,

D. Hewitt, Chairman

T. Grove, Chairman of the Management Committee

B. Hanson, Treasurer

C. Guidotti

D. Rumble

Mineralogical Society of America Membership Application

To join the MSA, please send a completed copy of the application below, along with the required payments in U.S. funds, to the Mineralogical Society of America, 1015 Eighteenth St., NW, Suite 601, Washington, DC 20036-5203

Preferred Mailing address:

Name: _____ Telephone: _____
First Middle Last
☐ Dr. _____ Fax: _____
☐ Prof. _____ First Line of Address
☐ Mr. _____ E-mail: _____
☐ Ms. _____ Second Line of Address
☐ Other: Specify _____ Birth Date: _____
Third Line of Address

Membership Category: ☐ Member ☐ Life Member ☐ Student Member _____

Areas of Interest: (Circle main, check secondary)

☐ Mineralogy (MI), ☐ Crystallography/Crystal Chemistry (CC), ☐ Material Properties (PP), ☐ Igneous Petrology (IP), ☐ Metamorphic Petrology (MP), ☐ Sedimentary Petrology (SP), ☐ Geochemistry (GE), ☐ Phase Equilibria (PE), ☐ Economic Geology (EG), ☐ Clay Mineralogy (CM), ☐ Industrial Mineralogy (IM), ☐ Environmental Mineralogy (EM), ☐ Gems GM, ☐ Planetary Materials (PM), ☐ Teaching (TC), ☐ Topologic Mineralogy (TP), ☐ Others (Please indicate) _____

Education Information:

Highest Degree earned: ☐ Doctorate ☐ Masters ☐ Bachelors ☐ No College Degree

Institution at which Highest Degree was earned _____ Year _____

Employer _____ Job Title _____

Job Function(s): _____

Student Certification: (Applicants for student membership must supply the following certification of status.)

The applicant is known to me and is a bona fide student at (Name of School): _____

Address of School (Please Print): _____

Faculty Member (Please print): _____

Signature (you need not be a member of the Society): _____

Payment:

\$ _____ enclosed (money order, check in US dollars drawn on _____ Card # _____
a US bank and payable to the Mineralogical Society of America)

Please charge my: ☐ Mastercard ☐ Visa Exp. Date: _____

\$ _____ ☐ Diners Club ☐ American Express Cardholder: _____

Signature: _____

1998 Fee Schedule

Memberships are entered and renewed on a calendar basis. You will receive all publications for the year you join. Membership applications received after October 1 will be made effective January 1 of the following year unless otherwise requested. Members will receive the newsletter, *The Lattice*, as part of their dues. As an additional benefit, members may elect to receive the *American Mineralogist*, as well as some related publications, at substantially reduced rates. Please indicate all options that apply in the box to the right. Members are entitled to a 25% discount on other MSA publications given on our Publication List.

Member Dues	\$40.00
<i>American Mineralogist</i> (price to members)	\$30.00
International surface airlift service for above	\$30.00
Life Membership Dues (with journal)	\$1750
Student Member Dues (includes <i>American Mineralogist</i>)	\$30.00
<i>Mineralogical Abstracts</i> , published quarterly by the Mineralogical Society of Great Britain & Ireland	\$40.00
<i>Physics and Chemistry of Minerals</i> , published eight times a year by Springer-Verlag*	
<i>Journal of Petrology</i> , published twelve times a year by Oxford University Press *	*
* 1998 prices not yet available. Please contact the MSA Business Office for pricing information	
TOTAL	

Mineralogical Society of America

Publications Price List and Order Form

Reviews in Mineralogy (25% member discount)

- ___ v. 8: Kinetics of Geochemical Processes **\$15**
- ___ v. 9A: Amphiboles and Other Hydrous Pyriboles - Mineralogy **\$18**
- ___ v. 9B: Amphiboles: Petrology and Experimental - Phase Relations **\$18**
- ___ v. 10: Characterization of Metamorphism through Mineral Equilibria **\$18**
- ___ v. 11: Carbonates: Mineralogy & Chemistry **\$18**
- ___ v. 12: Fluid Inclusions **\$24**
- ___ v. 13: Micas **\$22**
- ___ v. 14: Microscopic to Macroscopic: Atomic Environments to Mineral Thermodynamics **\$20**
- ___ v. 15: Mathematical Crystallography (rev.) **\$22**
- ___ v. 16: Stable Isotopes in High Temperature Geological Processes **\$24**
- ___ v. 17: Thermodynamic Modeling of Geological Materials: Minerals, Fluids, Melts **\$25**
- ___ v. 18: Spectroscopic Methods in Mineralogy and Geology **\$25**
- ___ v. 19: Hydrous Phyllosilicates (Exclusive of Micas) **\$25**
- ___ v. 20: Modern Powder Diffraction **\$24**
- ___ v. 21: Geochemistry and Mineralogy of Rare Earth Elements **\$24**
- ___ v. 22: The Al₂SiO₅ Polymorphs **\$24**
- ___ v. 23: Mineral-Water Interface Geochemistry **\$25**
- ___ v. 24: Modern Methods of Igneous Petrology: Understanding Magmatic Processes **\$24**
- ___ v. 25: Oxide Minerals: Petrologic and Magnetic Significance **\$28**
- ___ v. 26: Contact Metamorphism **\$30**
- ___ v. 27: Minerals and Reactions at the Atomic Scale: Transmission Electron Microscopy **\$28**
- ___ v. 28: Health Effects of Mineral Dusts **\$28**
- ___ v. 29: Silica: Physical Behavior, Geochemistry and Materials Applications **\$28**
- ___ v. 30: Volatiles in Magmas **\$28**
- ___ v. 31: Chemical Weathering Silicate Minerals **\$28**
- ___ v. 32: Structure, Dynamics, and Properties of Silicate Melts **\$28**

- ___ v. 33: Boron: Mineralogy, Petrology and Geochemistry .. **\$32**
- ___ v. 34: Reactive Transport in Porous Media **\$28**

Monographs (25% member discount, except on shipping)

- ___ *Metamorphic Phase Equilibria and Pressure-Temperature-Time-Paths*, Spear **\$48 + \$5 shipping**
- ___ *Crystallography and Crystal Chemistry*, by F. D. Bloss (1971, reprinted 1994) **\$30**
- ___ *Crystal Structures, Volume I, Patterns and Symmetry*, by M. O'Keeffe & B.G. Hyde **\$36**
- ___ *Teaching Mineralogy* **\$28**

Mineralogical Society Series (25% member discount)

- ___ v. 1: Deformation Processes in Minerals... **\$133.95**
- ___ v. 2: High-Temp. Metamorphism... **\$115.50**
- ___ v. 3: Stability of Minerals **\$182.95**
- ___ v. 4: Clay-Pore Fluid Interactions **\$165.95**
- ___ v. 5: Mineral Surfaces **\$46.95**
- ___ v. 6: Microanalytical Techniques in the Geosciences ... **\$52.50**
- ___ v. 7: Rare Earth Minerals **\$55.00**

CD-ROM

___ **MinSource.** I have been an MSA member for 3 years. Please request Chapman & Hall to send me [] demonstration [] subscription materials and information. I [] do [] do not now subscribe to *Mineralogical Abstracts*.

Other Publications (no member discount)

- ___ *Fifth International Kimberlite Conference Proceedings* (two volume set) **\$45 + postage:**
U.S. **\$3.75/set**, Canada and Mexico **\$6/set**, Other **\$6.75/set**.

American Mineralogist - back issues

Vol.	Member	Nonmember
1-64	Contact Periodicals Service Company, 11 Main St., Germantown, NY 12526 (518)537-4700	
66-74	\$3/issue, \$18 vol.	\$3/issue, \$18/vol.
75-80	\$5/issue, \$30 vol.	\$250 volume

___ copies of v. ____, issue ____/____, at \$ ____
use back of form to list more issues if necessary

Miscellaneous (no member discount)

- ___ *MSA Garnet Crystal Design Tie* **\$12**
coral on blue
- ___ *MSA 1998 Mineral Calendar* **\$16**
(includes \$4 postage & Handling)

To Order: Indicate quantity, shipping, and cost information. Only MSA Members may take the 25% discount where noted. Prepay orders under \$300. Publications may not be returned for refund or credit. Send entire form to: Mineralogical Society of America, 1015 18th Street, NW, Suite 601, Washington, DC 20036-5274. Phone: (202) 775-4344; Fax: (202) 775-0018

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Country: _____ Postal Code: _____

Payment: check in U.S. funds drawn on a U.S. bank, money order, or credit card:

☐ Visa ☐ MasterCard ☐ Diners Club ☐ American Express

Card #: _____ Exp Date: _____

Signature: _____

Print name as it appears on card: _____

A. Total for member discount books	
B. less 25% member discount (A x 0.25)	
C. Total non-discounted items	
D. Shipping (no charge for surface mail/library rate except as noted) For airmail, UPS, or invoiced orders, contact MSA	
Total (A-B+C+D)	

August

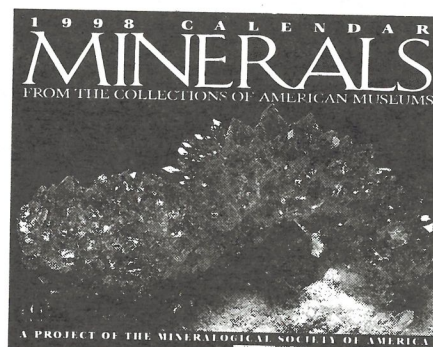
10-16 International Ophiolite Symposium and Field Excursion: "Generation and Emplacement of Ophiolites through Time". Oulo, Finland. *Details:* J. Vuollo, Dept. of Geology, University of Oulu, FIN-90570 Oulu, Finland. Fax: 358-81-5531484; E-mail: vuollo@sveka.oulu.fi or E. Hanski, Geol. Survey of Finland, P.O. Box 77, FIN-96101 Rovaniemi, Finland. Fax: 358-60-3297289; E-mail: eero.hanski@gsf.fi.

October

26-29 Geological Society of America Annual Meeting. Toronto, Canada. *Details:* Geological Society of America, 3300 Penrose Place, Boulder, CO 80301. Tel.: (303)-447-2020, Fax: (303)-447-1133, WWW: <http://geosociety.org/meetings/index.htm>.

1998 MINERAL CALENDAR

Beautiful mineral specimens from many of the great American Museums. All proceeds will be used in support of MSA educational programs.

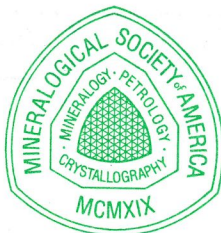


MSA Mineral Calendar:

Order from:

Mineralogical Society of America
1015 Eighteenth Street, NW, Suite 601
Washington, DC 20036-5274 USA
Phone: (202) 775-4344
Fax: (202) 775-0018

10" x 12¹/₄" closed, twelve 9" x 11¹/₄" color photos, twelve 2¹/₂" x 3¹/₂" color and B/W images. \$12.00 + \$4.00 shipping.



1015 Eighteenth Street, N. W.
Suite 601
Washington, D. C. 20036

NON-PROFIT ORG.
U.S. POSTAGE
PAID
PERMIT NO. 4450
DAMASCUS, MD