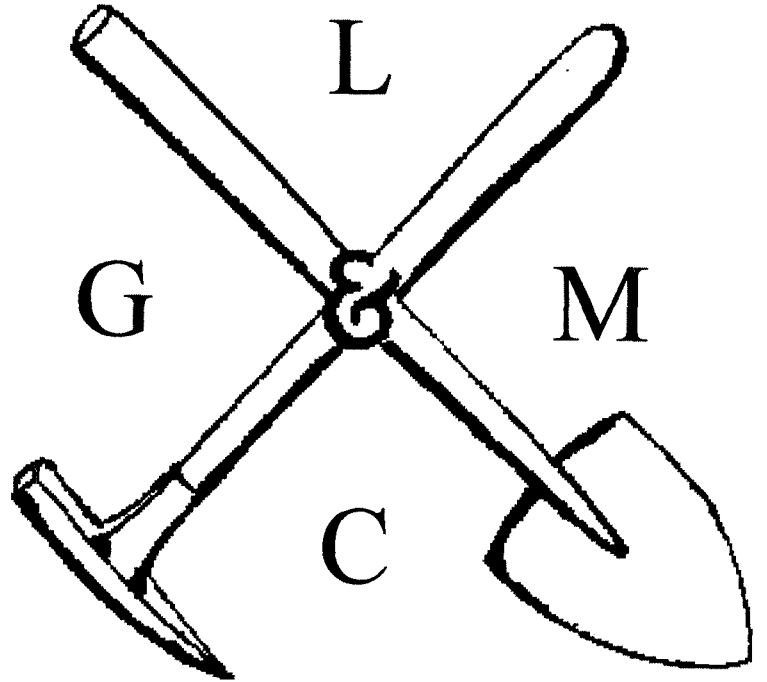


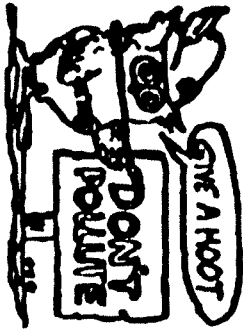
THE PICK & SHOVEL

JANUARY 1998



OFFICIAL PUBLICATION OF
LINCOLN GEM & MINERAL CLUB

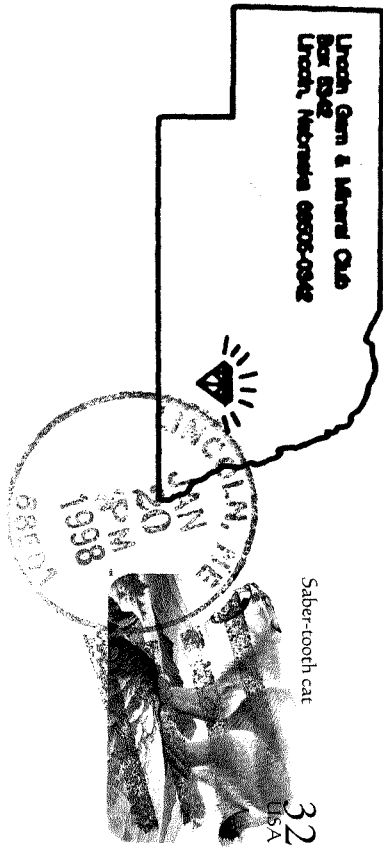
LINCOLN, NEBRASKA



H. E. L. P.
Help Eliminate Litter Please

Mail Exchange Bulletin To:

Lincoln Gem & Mineral Club
Box 8542
Lincoln, Nebraska 68505-0942

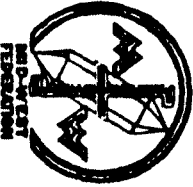


Saber-tooth cat

32
USA

SUSIE McMAHON
5636 GREENWOOD ST,
LINCOLN, NE 68510

Associated with



CALENDAR

Regular Meeting Saturday, January 24, 1998-20th Annual Indoor Swap 1 to 5 PM,
44th Anniversary Meeting 7:30 PM. Cake & Coffee.

20th Annual Swap Chaired by Francis Belohlavy, Scottsbluff Minden Rooms, Nebraska
Center, 33rd & Holdrege Sts. Bring your swapping materials and enjoy
the afternoon. One table per swapper will be available. Swapper Bucks
will be available for those who do not wish to swap. No cash selling
on the premises. Please bring material to donate for the Silent Auction
table.

Youth: Meet at the swap and help tend your table. Pizza Supper to follow!

:

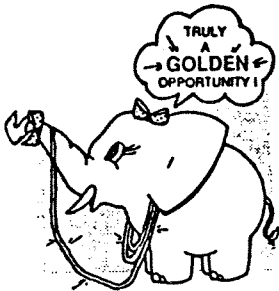
GEOLOGY DAY Sunday, February 15, 1998, 12:30 to 4:30 PM, Pioneer Park

February Meeting: Saturday the 28th, Annual Scholarship Presentations, Nebr.Center

NEXT LGMC SHOW - MARCH 21-22, 1998, Pershing Auditorium
(Our 40th Annual Show)
Hosting 1998 Nebraska State Show

Nearby Shows to Visit

Jan. 15 thru Feb. 15, 1998	SHOWS	Quartzsite, Arizona Area
Feb. 2 to 15, 1998	SHOW	Gem, Mineral, Fossil & Jewelry Show, Tuscon, Arizona
March 13-15, 1998	SHOW	Kansas City, Missouri, 37th Annual



DUES will be delinquent if not paid before January 31st, 1998 and your name will be taken off the mailing list for Pick & Shovel and will not appear in our 1998 Who's Who. Make your checks payable to LGMC, PO Box 5342, Lincoln, NE 68505. Dues are \$10.00 per adult member, \$2.00 per youth or \$22.00 for a family including all youth under 16 years of age. New memberships only require an additional \$5.00 per family as a registration fee. (Any member not paying 1998 dues before January 31st will be assessed the \$5.00 reinstatement fee.)

If you wish to receive the Nebraska State Association publication "The Gem Palette" please add \$3.25 to your dues -once for each family- and we will submit your names and addresses to the NAOESCI Treasurer for 1998.

If you would like your E-Mail and/or Web Page addresses in your 1998 Who's Who please get them to Vera or Phyllis before January 31.

*
**YOUR
DUES
ARE
Past DUE!**

YOUTH NOTES

Your Leader, Kay Jurgens has had illness at home this past week and asked that we tell you to come Saturday afternoon, January 24th with rocks to swap or put on the wheel and she hopes to provide you with a Pizza supper. We are including this puzzle for your attention.

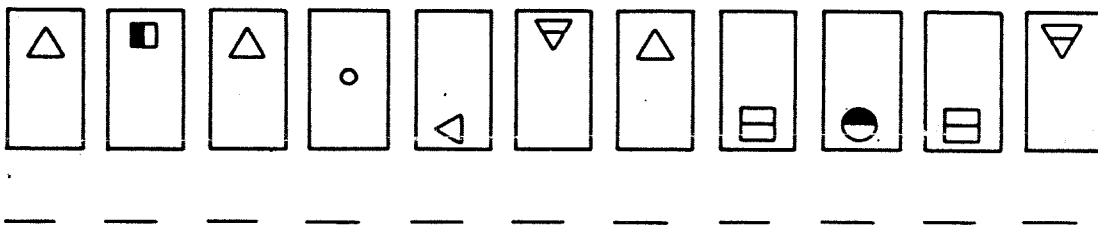
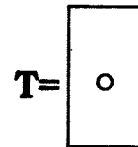
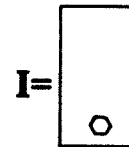
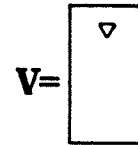
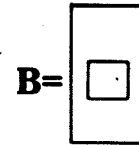
Brontosaurus is also known by another name.

Solve the code to find out what it is.

△	■	▽
□	●	○
○	▷	▢
◡	◯	▽
▲	◐	◻
■	▷	⊖
●	◻	◐
▽	●	△
○	◐	○

A	J	S
B	K	T
C	L	U
D	M	V
E	N	W
F	O	X
G	P	Y
H	Q	Z
I	R	

Examples



From your Editor:

Thanks so much for all of the contributions this month!! Roger Pabian for the three pages of great print ready copy, Vera Lyman for the club minutes and news, Francis Belohlavy for the camera ready copy and especially for the computer disk which allowed me to have my computer teacher add the excellent book review to page 3 where I had room for copy at the last minute.

Also THANKS to Kitty Starbuck's MWF Newsletter with just the right copy for this space!!!

HAPPY NEW YEAR

RESOLVE....to attend ALL MEETINGS

RESOLVE....to go on ALL FIELD TRIPS

RESOLVE....to INTRODUCE SOMEONE to the hobby

RESOLVE....to WRITE AN ARTICLE for the newsletter

RESOLVE....to MAKE GUESTS FEEL WELCOME

RESOLVE....to GIVE PROGRAMS AT SCHOOLS

RESOLVE....TO GET MORE INVOLVED

Help with more activities

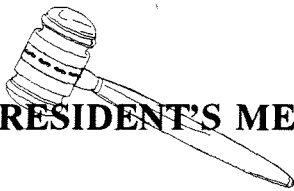
RESOLVE...to REACH IN YOUR COMMUNITY

RESOLVE....TO donate to the specimen table and the auction

RESOLVE....TO DISPLAY AT THE SHOW

RESOLVE....to SAY "YES" IF ASKED TO BE an officer or chairperson

RESOLVE....to BE A BETTER MEMBER!!!!



THE PRESIDENT'S MESSAGE

LGMC Members:

As I take over the duties of President I'd like to say "THANK YOU!" to each and every club member who has been assisting in some way to preserve the activities and traditions of our club. I especially wish to thank those who have already signified a willingness to carry on in much the same capacity for the coming year. A few of you have not been contacted yet but we hope you will be willing to continue when we reach you. Please get behind your leaders and keep on making this the best Gem & Mineral Club.

I hope to see each and everyone of you on January 24 at the Swap and Meeting.

Sincerely, Jerry Moore

The Rockhound's Guide to New Mexico

by Melinda Crow; Falcon Press Publishing Co, Inc.
Helena, Montana, 1995, ISBN- 1-566044-340-5

Review by Francis Belohlavy

This book is very well assembled and the arrangement helps in using the book to plan and carry out an enjoyable collecting trip. An overview map of the sites covered in the book gives a birds-eye view of where sites are located in the state. Almost all of the sites are relatively close to major roads, although some back-roading is necessary. A chapter introduces those collectors who are unfamiliar with New Mexico to some of the wealth of collectables available. Rockhounding tips are very helpful in planning a collecting trip. Descriptions of the wildlife to be encountered should help prevent any surprises. Some general information on collecting rules for sites, especially government controlled areas is included. It is still a good idea to check ahead as these can change with very little notice. Good sources are listed in the appendix.

The site listings give an idea of general terrain, elevation, land management agency (at publication) and accomodations that are located near the sites. Special attractions are also noted for additional enjoyment or as a break from the collecting and for those in a group not as interested in lapidary. Best collecting seasons are noted as well as vehicle needs and tools that will be required. The material is described and some black/white pictures are provided. The difficulty of collecting is also included, which is inportant to inexperienced or physically challanged collectors. A contact (at publication) is given for sites but these can change and it is best to check ahead for site closings, road conditions or other changes before making a trip to the collecting site. The directions to the sites are straight forward and should not be hard to follow to the collecting sites. A glossary is also a nice addition so terms are defined for clarification. The index seems to cover most things that would be needed.

Overall, I would say the book would be very useful in planning and carrying out a collecting trip to New Mexico. It also could provide some great ideas for a sidetrip when travelling through the state. The sites described cover almost all parts of the lapidary field. Sites for minerals, fossils, jasper, agate, petrified wood, obsidian, alabaster and mnay others are included.

Decembers Exhibits

Thanks to those who chose to exhibit along our Christmas Party theme, red and green materials. Charles Woodlridge provided a cluster of green diopside with a synthetic ruby pendant. Eddie Ridge also showed diopside and various kinds of agates and petrified woods that were shades of red and green. Kenny Kramer furnished a small emerald crystal, and Grant Bennett furnished a red Dulcote Agate from Great Britain. Jim and Phyllis Parks showed green variscite from Fairfield, Utah, and Roger Pabian displayed malachite, rhodochrosite and red and green tourmalines.

January's Exhibits

Garnet will be the topic for January's displays. If you have rough or finished garnets of any of the varieties listed in the column on garnets, please bring them along. Cases will be furnished.

Show News

The featured exhibit for the 1998 show will be furnished by Jim Hurlbut of the Denver Museum of Natural History. The display will include minerals from Colorado and a display on the Colorado diamond district. Jim will also provide a couple of programs, one on the micro-minerals of the Denver Museum and one on the Colorado diamond district.

The committee hopes that you are planning your exhibits and what you will wish to do to help out before, during, and after the show is over. We need labor for all of those areas.

Francis Belohlavy is working up an internet display and we can use the help of a few people who are computer literate and know how to surf the net.

We also need the help of several people who can work as demonstrators in cabochon cutting, and various kinds of lapidary such as carving and faceting.

Several nice displays of mineral crystals would also be a good addition to the show. If you can provide something in this area, it would be most helpful.

New Publication at CSD

Geology of Niobrara State Park, Knox County, Nebraska, and Adjacent Areas---with a brief History of the Park, Gavins Point Dam, and Lewis and Clark Lake. Conservation and Survey Division, University of Nebraska, Lincoln, NE 68588-0517. Educational Circular 13, 28 pages. \$5.00 plus \$1.50 postage and handling.

Charles A. Flowerday and R. F. Diffendal, Jr., Editors. With sections by R. F. Diffendal, Jr., R. L. Skelly, F. G. Etheridge, D. A. Eversoll, D. K. Watkins, B. E. Bailey, and C. A. Flowerday.

This document covers the geology of an area of Nebraska that has not had too much attention from hobbyists. The general geology is treated in some detail and there are sections dealing with microfossils, invertebrate, and vertebrate fossils. The circular gives an essentially first hand report of the excavation of a large Mosasaur from the park, and detailed explanations of the geologic hazards in the area.

The text is interspersed with many color and black and white illustrations and aerial photographs as well as maps, charts, graphs, and diagrams that help explain material in the text. This volume should be in the library of every Nebraska club. RKP

LINCOLN GEM & MINERA: CLUB, INC. - BOARD OF DIRECTORS - Dec. 2, 1997
7:00 P.M. Kinkos, 48th & Vine - Conference Rm

Combined Meeting of 1997 & 1998 Board Members

Meeting called to order by President Wooldridge.

Minutes approved with motion by Jerry M., 2nd by Francis B. Carried.
Treasurer's report approved with motion by Francis B., 2nd by Kay J. Carried.

BILLS: Three late Show bills and Club bills approved for payment with motion by Kay J., 2nd by Jerry M. Carried.

OLD BUSINESS: Re: Nebraska Academy of Sciences Scholarships: Academy advertises and chooses recipient. Last recipient from Club funds awarded approximately 2 years ago. would like to have them notify the Club when an award has been made.

NEW BUSINESS:

Three Door Prizes to be awarded at our Dec. Christmas Party. We will also have a Silent Auction, play Rock Bingo, and have gift exchange for those who wish to participate.

Proceeds from Silent Auction - Motion by Roger Pabian that proceeds from Christmas Party Silent Auction go to Scholarship Fund in memory of Helena Baegl. (one time award) 2nd by Phyllis Parks. Carried.

Motion by Phyllis P. that \$ 25.00 memorial from Club given in memory of Helena. (added to Silent Auction fund) 2nd by Francis B. Carried.

ANNUAL SWAP: Jan 24, 1998 - To include Silent Auction. Auction donations solicited from swappers.

ORGANIZATION MEMBERSHIPS:

NAOESCI - Motion to maintain membership by Roger P. 2nd by Vera L. Carried.

Friends of Museum - Motion to maintain & donate \$ 50. for 1998. 2nd by Kay J. Carried.

Prior motion amended by Francis B. to include \$ 5. each for Ashfall and Trailside. 2nd by Kay J. Carried. (Total of \$ 60.)

ROCKHOUND OF YEAR: Adeline Nolde - (Pres. will ask Irl Everett to make presentation at Christmas Party)

40th ANNIVERSARY SHOW: Roger Pabian, Chairman

Reported on progress thus far and also mentioned Committee Chairpersons that have accepted.

FUTURE MEETINGS: Jan. 24, 1998 Annual Swap and Silent Auction with Meeting at 7:30 P.M. (Scottsbluff-Minden Rms)

February 28, 1998 - Meeting at 7:30 with Scholarship presentations. (Beatrice Rm) Both dates at NCCE.

Board Meeting with new Board - Jan 7, 1998 @ 7:00 P.M.

Respectfully,

Vera Mae Lyman

Vera Lyman, Secretary

LINCOLN GEM & MINERAL CLUB, INC. - GENERAL MEETING (CHRISTMAS PARTY)
Dec. 14, 1997 @ 6:00 p.m. @ Antelope Shelter House.

Everyone enjoyed a "Pot Luck" supper along with a number of exciting "Silent Auctions"!

After mealtime, "Rock Bingo" was enjoyed with all those present by the close of the evening receiving a "prize".

Those who participated, also enjoyed a gift exchange.

Much to her surprise, Adeline Nolde was awarded the "Rockhound of the Year" award.

And as a fitting climax, the new President, Jerry Moore was presented the gavel by Charles Wooldridge.

President Moore then presented Wooly with a beautiful plaque on behalf of the Club for his outstanding service as President during the last 4 years. "THANKS" Wooly from all of us for a job-well-done!

The evening closed with Best Wishes for all.

Respectfully,

Vera Mae Lyman
Vera Lyman, Secretary

L.G.M.C. Treasurer's Report December 1997

NBC Checking Balance 11/30/97 \$559.28

Receipts:

1998 Membership Dues	114.00	
Suspense Gem Palette Subs	3.25	
Silent Auction Proceeds, chances & Donation	162.00	
(Scholarship Memory Helena Baegl)		
Suspense-Sale extra Christmas meats	6.00	
'98 Show Dealer Fees	<u>1050.00</u>	1335.25

Payments:

P & S Dec. Printing	35.41	
Rockhound Year & President Trophies	102.72	
Christmas Buffet Meats/Decor.	109.70	
November Meeting Room	85.00	
Secretaries's Copy & Misc. Exp. '97	38.30	
Treasurer's Copy & Exp.	28.42	
December Board Meeting Room	20.00	
December Bingo Prizes	37.91	
Prepaid '98 Show Expense-flyers	5.11	
Rent Post Office Box 5342	<u>58.00</u>	<u>520.57</u>

NBC Checking Balance 12/18/97 1373.96

Garnets, January's Birthstone

Roger K. Pabian

Garnet is a rather complex mineral that has a general chemical formula of $R_3M_2(SiO_4)_3$, where **R** is a **bivalent** (gives up two electrons) metal and **M** is a **trivalent** (gives up three electrons) when forming a chemical bond. The metal **R** may be Calcium (Ca^{++}), Magnesium (Mg), ferrous Iron (Fe^{++}), or Manganese (Mn^{++}), and the metal **M** may be Aluminum (Al^{+++}), ferric iron (Fe^{+++}), or Chromium (Cr^{+++}). With so much substitution possible, the single garnet crystal may include a hodge-podge of elements, and garnets may be a multitude of colors; natural garnets are known in every color but blue.

Garnet crystallizes in the **isometric** system; the crystals have three axes that are all equal length and are perpendicular to one another. Garnet favors the **dodecahedral** (12 faces) crystal habit, but another common habit is a **trapezohedron** (24 faces). The dodecahedral crystal can be modified by the trapezohedron producing many smaller crystal faces. **Hexoctahedral** (48 faces) crystals are sometimes observed as are many other modifications of the basic isometric crystal plan. Garnet may also be found in **massive** forms and this was the foundation of a large abrasive industry in the United States. Much of the garnet abrasive has been replaced by manufactured silicon carbide but garnet paper is still available.

Because of the variation in chemical composition, bonds between some ions are stronger than those between other ions and the **hardness** may vary from about 6 ½ to 7 ½ on the MOHS scale, and the **specific gravity** (S.G.; heft) may vary from about 3.5 to 4.3. The luster of garnets ranges from vitreous to resinous to subadamantine. Colors can be red, brown, yellow, orange, white, green, or black or shades in between.

Because garnet crystallizes in the isometric system, it is **isotropic** (has only one

refractive index); that is, a beam of light passing through a garnet travels at the same velocity regardless of the direction of travel. The **refractive index** of a substance is defined as the velocity of light traveling through air divided by the velocity of light traveling through a substance and is given by the formula:

$$R. I. = V_{air} / V_{substance}$$

The refractive index of garnet can vary somewhat. These variations are helpful in determining the varieties of garnet but there can be some overlapping so other phenomena must be taken into account when working with garnet.

Pyrope, a magnesium-aluminum garnet is probably the most common gem variety. It is usually a dark red to black and is usually transparent only in fairly small stones. Much of the garnet of antiquity was probably pyrope and fine stones came from Czechoslovakia. Many tiny stones were drilled and the Czechs developed very fine beadwork with these. Its' R.I. ranges from about 1.72 to 1.75 and its' S.G. ranges from about 3.6 to 3.9 and is usually about 3.8. Pyrope may contain needle-like inclusions.

Almandite may be deep red or brownish red. Magnesium has replaced ferrous iron and ferric iron has replaced aluminum. The S.G. ranges from about 3.9 to 4.2 and is normally about 4.05. The refractive index is normally around 1.79 and varies only slightly above or below this parameter. Almandite may have enough oriented needle like crystals to produce **asteriated** (starred) stones of normally 4 rays. Other inclusions are zircon crystals that are frequently surrounded by dark haloes that are caused by damage from subatomic particles emitted by radioactivity in the zircon. Star garnets have been reported from only India and Idaho, the latter source being the more prolific.

Rhodolite garnets are rose red to purple and in composition are about 2 parts pyrope to one part almandite. Rhodolites often contain snowflake like inclusions and some stones I have observed give almost the appearance of an internal blizzard.

Spessartite is a manganese-aluminum garnet. It is usually brownish to red but some sources have yielded orange stones. It is not commonly seen in the gem trade and was almost unknown until the end of the 19th Century. Its' R.I. is about 1.81 and its' S.G. about 4.2. It may have wavy feather-like inclusions that are formed by minute liquid droplets.

Grossular garnet derives its' name from the color of the common gooseberry. A massive form of such color is often marketed under the name of *Oregon Jade* although the gem industry frowns upon such mislabeling. It is a calcium-aluminum garnet. Grossular garnets also come in shades of orange, red, and yellow. The term *hessonite* is applied to orange to yellow grossular; these stones have a syrupy or heat-wave effect and have rounded inclusions that resemble vitamin capsules. The S.G. of grossular ranges from about 3.58 to 3.73 and is normally around 3.61. Its' R.I. is in the range of 1.72 to 1.75, with the greens being in the lower range and the oranges in the higher range. *Tsavorite* (=Tsavorite) is an emerald green variety of grossular that has been known only since about 1970. It has been found only in Tanzania and derives its name from its source near Tsavo National Park.

Andradite is a calcium-iron garnet and it comes in shades of yellow, green, brown, and black. Its' S.G. is normally 3.84 to 3.85 and its' R.I. ranges from about 1.77 to 1.81, and is commonly about 1.79. **Demantoid** (diamond-like) is a Dutch term that is applied to transparent andradite that has a R.I. near 1.81 and has a very high **dispersion** (the ability of a stone to break white light up into its component colors). A fine demantoid may

cast the appearance of a yellow or light green diamond. Demantoids are usually characterized by horse-tail like inclusions of the amphibole mineral, byssolite.

Uvarovite is a calcium-chromium garnet that shares the emerald-green distinction of Tsavorite. Uvarovite is usually found only as very tiny drusy crystals and pieces large enough for faceting are virtually unknown. With the increase in popularity of jewelry using small plates of drusy crystals, uvarovite that was formerly confined to the mineral collector's cabinets has found its niche in the gem world.

Garnets may be confused with or spinel which has lower physical and optical properties and corundum which is doubly refractive. Glass has bubbles and swirl lines that are easily seen under magnification

YAG(yttrium-aluminum garnets) and **GGG**(gadolinium-gallium-garnets) have been manufactured in the laboratory and they have been sold under such trade names as Trifari Stone (r).

Garnet glass doublets were once a common stone but they are not much used with the variety of synthetic and manufactured stones that are available to the jewelry trade. These were made by fusing a layer of garnet to a layer of glass and faceting a stone with the former as the crown. The garnet-glass doublet was a much utilized substitute for many gems because the stone took the color of the glass body.

References

- Hurlbut, C., 1963. Dana's Manual of Mineralogy, 17th Ed., John Wiley & sons, New York, 609 p.
- Rouse, J. D., 1986. Garnets. Butterworth's, London. 134 p. (In club library).
- Schumann, W., 1977. Gemstones of the World. NAG Press, Ipswich, 256 p.
- Zeitner, J. C., 1996. Gem and Lapidary Materials. Geoscience Press, Inc., Tucson, Arizona, 347 p.