

Nittany Mineralogical Society Bulletin

Nittany Mineralogical Society, Inc.

P.O. Box 10664

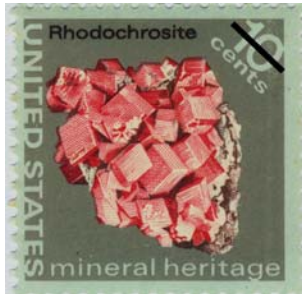
State College PA 16805

May, 2008

www.ems.psu.edu/nms/

Editor: David C. Glick (see p. 8)

May 21st meeting:



MINERALS ON STAMPS

by
Frank Kowalczyk

Our May meeting will be held Wednesday the 21st at 7:30 p.m., in the room 114 auditorium of Earth & Engineering Sciences Building on the west side of Penn State's University Park campus in State College, PA.

6:30 to 7:30 p.m.: Social hour, refreshments in the lobby

7:30 to 8:00 p.m.: announcements; door prize drawings

about 8:00 p.m.: featured program

The event has free admission, free parking, free door prize drawings and free refreshments, and is open to all – please come and share an enjoyable evening! -- Editor

"Minerals on Stamps" pulls together some of the beautiful mineral specimens illustrated on worldwide stamps. These images -- photographs or artistic drawings -- picture minerals mined in a particular issuing country; others illustrate mineral specimens that the issuing country feels will appeal to topical collectors but may have no relationship with that country's geology.

Postage stamps traditionally reflect important events, people, places, natural resources, specific to the issuing country; at other times stamp images are chosen to enhance public interest, in this case, for geology and the mineral industry.

This program will show examples of real mineral specimens - and an affordable way to collect such specimens in a limited amount of space. ✨

ATTENDING THE MAY MEETING?

This event is free and open to all - bring a friend!

Donations of door prize specimens are invited.

Your additional snacks will be welcomed.

Our big event is coming:

NITTANY GEM AND MINERAL SHOW

JUNE 28 - 29, 2008

AT

PARK FOREST MIDDLE SCHOOL

By David Glick, Show Chair

Dealers in minerals, fossils, jewelry, gems, and beads are still needed (as of May 16) for the Show. Anyone who is interested should immediately contact David Glick, Show Chair, (814)237-1094 [days and evenings] or xidg@verizon.net

Our third annual show is set for June 28-29, with set-up all day on Friday the 27th. **Please mark your calendars and tell your friends!** The location this year is Park Forest Middle School, on the north-west edge of State College, once again not hard to find from the 4-lane US Route 322 (future I-99).

Please help by contacting me to volunteer for some aspect of publicity, transport, set-up/ clean-up, or staffing the food service, registration, silent auction, demonstration, or kids' activity areas. It all depends on you. We can use donations of a few good specimens for the silent auction, and displays to be set up inside our display cases. Suggestions of dealers for us to invite are welcomed. See page 2 if you want to participate in the members' consignment sale. ✨

JUNIOR ROCKHOUNDS

by Dr. Andrew Sicree

May Meeting: Wednesday, May 28

Junior Rockhounds will have their final meeting of the spring season in room 117 Earth & Engineering Sciences Building on Wednesday evening, May 28th, at 7:00 p.m. It will be fun and interesting as always! The topic will be announced on the web site. ✨

SUMMER BREAK

May is the last meeting and the last Bulletin until August. Please help with and attend our show during the summer; contact Show Chair David Glick at (814) 237-1094, or xidg@verizon.net, and watch for meeting and picnic news in August. ✨

CONSIGNMENT SALE AT OUR SHOW

Any member who would like to sell a limited number of minerals, fossils, rocks, lapidary, jewelry, equipment, or related items should contact Willard Truckenmiller to make arrangements. Willard will be available after May 22, by e-mail at jowilltruck@aol.com or phone at 814-625-2531. So far, no deadline has been set, but it would be best to contact Willard a few weeks before the show.

NMS will collect sales tax and will charge a commission on each sale. Items will need to be priced (including commission) and properly labeled, and NMS will add and collect sales tax when an item is sold. The commission fee will be used for show advertising and expenses. However, any junior member may sell up to 10 items without paying any commission. This will be in the style of a consignment store, with a clerk to help the customers, not mini-booths staffed by their sellers. *-Editor*

NEWS FROM THE FEDERATIONS

Nittany Mineralogical Society, Inc., is a member of EFMLS, the Eastern Federation of Mineralogical and Lapidary Societies, and therefore an affiliate of AFMS, the American Federation of Mineralogical Societies.

The EFMLS Newsletter is available through the link on our web site www.ems.psu.edu/nms/ or remind Dave Glick to bring a printed copy to a meeting for you to see.

The May-June issue announces clubs which won awards for increasing their membership (including the Berks Mineralogical Society, in Pennsylvania), and another Pennsylvania club that just joined EFMLS (Monroe County Earth Science Association, which meets in Stroudsburg). President Ellery Borow's column discusses representation of individual clubs at the EFMLS convention and through our Regional Vice Presidents. He asks that every club do what they can to participate in the Federation, and notes the new EFMLS motto from past President (and Pennsylvanian) Fran Sick: "Communication and Involvement are the Keys to Our Success." Each One Teach One and the All American Notebook competition programs, and junior activities, are covered. Some of the prizes for the AFMS Endowment drawing are illustrated.

The AFMS Newsletter is available by the same methods. In the May issue, Bill Livingston concludes his three-part series on ideas to rejuvenate a club. Shirley Leeson's column honors contributions of federation webmasters, and addresses the Juniors program and the ad-hoc committee on contests; Joy Bourne's column discusses club newsletters, their distribution, and their editors. The online newsletter has color photos of several of the AFMS Endowment drawing prizes. Junior activities, proposed new Bureau of Land Management "National Landscape Conservation System" legislation, maturing attitudes toward safety, and All American Club entries are all covered. Schedules, registration forms, and display forms for the AFMS Convention and Show in Humble, Texas, are provided. The Convention activities start on Sept. 24, and the Show is Friday through Sunday, Sept. 26-28.

Please see the web sites for the rest of these articles and many others in both Newsletters. There's a lot there! *-Editor*

Our Show Is Almost Here

President's message from Dave Glick

NMS volunteers and the Board are deep into the preparations for the third annual Nittany Gem and Mineral Show, to be held this year at Park Forest Middle School in State College, June 28 - 29. Although this show is our third, it's our first without professional assistance to organize the show, particularly the dealers' section, so there's a lot to be done. **Dealers are still needed;** please have them contact me, or tell me how to contact them, absolutely as soon as possible. Classes by jewelry maker Rosita Pisarchick and possibly others are also being planned.

Volunteers are needed for children's activities; the silent auction, which is an important fundraiser for NMS; admissions desk; demonstrations (it would be great to have someone demonstrate faceting this year); and setup (Friday) and clean-up (Sunday evening). Volunteers who are already organizing activities include Willard Truckenmiller (consignment sale), Ellen Bingham (food booth), and Bob Altamura and John Passaneau (expert talks). John is also working on a beautiful mineral specimen poster which we expect to have for sale at the Show.

Silent auction contributions are invited; contact Dave Glick. Pickup may be possible if arrangements are made early. It would be a great help if I had the items, or specific information about the items you will contribute, by June 16.

To volunteer or find out more, please contact Dave Glick at 814-237-1094 or xidg@verizon.net and see our web site at www.ems.psu.edu/nms Thank you! ✨

Thomas J. Confer, 1948 - 2008

With great sadness, we report that long-time local mineral enthusiast and Nittany Mineralogical Society member Tom Confer died on January 16, 2008. Tom ran a part-time mineral shop in Howard, PA, and was supportive of NMS membership and activities. His good humor and enthusiasm for minerals will be missed. An obituary was printed in the Centre Daily Times newspaper (State College, PA) January 18, 2008, and will be available for one year by searching their web site <www.legacy.com/centredaily/Obituaries.asp>.

50th Mineralfest Show at Macungie

The Pennsylvania Earth Sciences Association will celebrate its 50th semi-annual Mineralfest show at Macungie on Saturday, June 7. The show is indoors at the Macungie Memorial Park, 8 miles southwest of Allentown, PA; from Route 100, turn onto Poplar Street across from the Bear Swamp Diner.

As usual, there will be over 100 tables of minerals, fossils, gems, geodes, and crystals, plus fluorescent displays, gold panning, food, and free specimens and special activities for children. See their new illustrated web site at www.mineralfest.com *-Editor*

Pegmatite Exhibit by NMS Opens at the Penn State EMS Museum

By Robert Altamura

As a part of our collaboration with the Earth & Mineral Sciences Museum, the Mineral Society has prepared a museum exhibit for the Penn State community. The new exhibit is titled: *Major Pegmatite Districts in the Eastern United States with a Special Emphasis on Rare-metal Pegmatite Minerals*. The exhibit was prepared by NMS members Steve Poterala and Robert Altamura. Julianne Snider, Assistant Director of the EMS Museum, assisted with the final copies of the graphics.

The exhibit is comprised of a display case (photo, below) filled with selected minerals from the Middletown (CT) Pegmatite District, the Paris-Rumford (ME) Pegmatite District, and the Spruce Pine (NC) Pegmatite District (see photo below), and wall graphics and text. Mineral samples from the Middletown District that are on display include **beryl** (aquamarine grading into pink in a fragment of a single large crystal), **columbite**, **spodumene**, **lepidolite**, and **torbernite**. Paris-Rumford mineral samples include **beryl**, **tourmaline**, **spodumene**, and **thulite**. Spruce Pine samples include **beryl**, **apatite**, **schorl**, **uraninite**, **monazite**, **samarskite**, and **zircon**. A featured mineral sample is a **muscovite** megacryst that is approximately 18 inches across, by far the largest crystal in the exhibit.

Graphics for the exhibit include a new poster-size full-color GIS map showing geological terranes of the east coast and the pegmatite districts. The map was specifically created for this exhibit. Some rare field photographs of the historical Strickland Pegmatite Quarry in the Middletown District are also displayed. The exhibit will be available until the end of the fall 2008 semester. The EMS Museum is on the ground floor of Deike Building on Penn State's University Park campus. The NMS exhibit is located in the Gallery Room of the museum. ❄



Display case of pegmatite mineral specimens from three districts: Spruce Pine, North Carolina, at left; Paris-Rumford, Maine, in center; Middletown, Connecticut, at right. D. Glick photo composite.

Major Pegmatite Districts in the Eastern United States With a Special Emphasis on Rare-metal Pegmatite Minerals

by

Robert Altamura and Stephen Poterala

Pegmatite rocks can provide impressively large crystals of rare, colorful and interesting minerals. They can also be important economically because they provide large pieces and large quantities of relatively pure minerals. Pegmatites are masses of very coarsely crystalline rocks of magmatic origin that occur as tabular or lenticular bodies that were intruded into a host rock. Pegmatite is a texture term referring to a very coarsely crystalline (~1 cm or greater) igneous rock. Pegmatites may be of varying petrochemical compositions – but perhaps of greatest interest to mineralogists are the granitic pegmatites, those which must contain the felsic rock-forming minerals: quartz, potassium feldspar, and plagioclase feldspar.

Pegmatites are considered the last gasp of magmatic crystallization. After most of an underground body of molten rock has cooled enough to crystallize into common minerals, a residual melt, from which a pegmatite may crystallize, remains. That melt is enriched in silica, volatiles, and “incompatible elements.” The “incompatible elements” have unusually large or small ionic diameters, so they do not snugly fit into the crystal structures of the common-rock forming minerals that formed earlier at higher temperatures. These elements include uranium, thorium, potassium, sodium, boron, lithium, beryllium, cesium, niobium, tantalum, manganese, and others. However as cooling proceeds, the residual melt, regardless of incompatible elements, must crystallize. Hence it is possible to find minerals containing these very large and small diameter ions in some pegmatites – which we refer to as **rare-metal pegmatites**. Such minerals are relatively rare and prized by collectors.

Numerous rare-metal pegmatites occur within the major pegmatite districts and are famous among collectors for their mineral specimens and gems. The Spruce Pine District alone contains over 700 individual mines and prospects (Lesure, 1968). Many minerals from these districts are beautifully colored, such as **garnet** (deep red), **aquamarine** (blue-green), **tourmaline** (green, pink, or blue),

kunzite (pink to lavender), **torbernite** (green), and **lepidolite** (lavender).

Pegmatites have been and will continue to be the major source for feldspar and mica. Minerals of value in rare-metal pegmatites include **beryl**, **tourmaline**, **spodumene**, **lepidolite**, **columbite-tantalite**, **quartz**, **amblygonite**, **wolframite**, **petalite**, **ferberite**, **pollucite**, **scheelite**, **bertrandite**, **molybdenite**, **corundum**, **uraninite**, and many others. Some of these minerals are exhibited in the new NMS display (see page 3).

The history of commercial granitic pegmatite mining in the United States goes back to 1825 - a time when inter-city travel was by stagecoach and the Erie Canal first opened. The economics of pegmatite mining were tied to the use of feldspar in ceramics and porcelain, and mica for use as isinglass. More recently, mica has been important in electrical resistors and to aid in lubrication in well-drilling muds. Pegmatite mining in the U.S. began in the states along the east coast, and principal pegmatite districts stand out for their economic importance: the **Middletown Pegmatite District in Connecticut**, and the **Paris-Rumford Pegmatite District in Maine**, and the **Spruce Pine Pegmatite District in North Carolina**. Pegmatites in several other eastern states including New Hampshire, Pennsylvania, Virginia, South Carolina, and Georgia also have been mined and produced specimens for collectors.

Mining of feldspar and mica in North America is much older than the United States. The first evidence of mining in these districts dates to about 2,000 years ago, during the "Woodland age." During this time, Native Americans mined relatively large amounts of sheet mica, which was used to decorate burial sites and as a currency. This mica was traded as far away as the Ohio River valley, but originated in what is now western North Carolina (Grover, 2004).

In addition, pre-historical pottery shards made using feldspar from these districts are widely distributed in both space and time. Study of such shards has led to an interpretation that aboriginal potters used feldspar to provide temper for the clays they used to make vessels (Potter, 1980). Feldspar obtained by natives is said to have been shipped to Europe in 1744, during colonial times. The feldspar also was from the western part of what is now North Carolina. This area was to become, 172 years later, the principal region of the country's feldspar industry. But no significant shipments from North Carolina were reported until 1911 (Potter, 1980). The feldspar industry of the United States is therefore considered to date to the start of commercial production in Connecticut during 1825 (Altamura, 1988). Connecticut continued to lead the country in feldspar production until 1909, when Maine took the lead, which was later to go to North Carolina in 1916 (Potter, 1980). Since then North Carolina has consistently and by far led in both value and tonnages of feldspar produced.

During and after WWII, sheet mica had a high strategic value, as it was crucial as an electrical insulator in vacuum tubes. During this time, the U.S. government purchased large quantities of mica from the Spruce Pine district. Sheet mica prices ranged from \$1.10 to 8.00 per pound during the war. During later years, prices reached as high as \$70 per pound for top quality material. After the end of the government purchasing program during 1962, mica prices fell sharply and commercial production shifted to feldspar (Lesure, 1968).

During 1997 North Carolina produced approximately 500,000 metric tons of commercial feldspar – valued at approximately 22 million dollars (Potter, 1998). Most recently, Spruce Pine has become the sole commercial producer in this country of ultra-pure quartz, the raw material for silicon used worldwide in computers and modern electronics (Carpenter, 1995).

Currently there is no commercial feldspar, mica, or quartz production in the Connecticut or Maine districts. However Maine does have active pegmatite mines that produce precious gemstones with an estimated value of 1 million dollars per year. Specimen quality gemstones and minerals from all of the districts are actively sought and highly valued by collectors.

If you have any questions, please contact the authors: R.J. Altamura <raltamur@fccj.edu> and S.F. Poterala <sfp908@psu.edu>.

References cited

- Altamura, R. J., 1988, Connecticut's mineral resources: The Connecticut Department of Environmental Protection Citizen's Bulletin, 13, 5, p. 3-6.
- Carpenter III, P.A., Reid, J.C., Gardner, C.F., 1995, North Carolina U.S.A.: An Industrial Minerals Storehouse, Proceedings 28th Forum on the Geology of Industrial Minerals, Martinsburg, WV: WV Geological and Economic Survey, Circular C-46.
- Grover, A., 2004, The Spruce Pine Mining District: A Brief Review of the History, Geology, and Modern Uses of the Minerals Mined in the Spruce Pine Mining District, retrieved from <http://www.mitchell-county.com/festival/sprminingdistrict.html>, on February 22, 2008.
- Hibbard, J.P., van Staal, C.R., Rankin D.W, and Williams H., 2006, Lithotectonic Map of the Appalachian Orogen: Canada – United States of America, Geological Survey of Canada, map in digital format.
- Lesure, F. G., 1968, Mica Deposits of The Blue Ridge in North Carolina, USGS Professional Paper 577, Washington, D.C., 124 p.
- Potter, M.J., 1980, Feldspar: *in* Mineral Facts & Problems, United States Bureau of Mines Bulletin 671, Washington, D.C., p. 279-291.
- Potter, M.J., 1998, Feldspar: *in* U.S. Geological Survey, Mineral Commodity Summaries, January 1998, retrieved from <http://minerals.usgs.gov/minerals/pubs/commodity/feldspar/260398.pdf>, on February 21, 2008. ✱

POPULAR MINERALOGY

Mineralogy and earth science for the amateur mineralogist and serious collector - #12

Pegmatites: The Mineralogical Mother Lode

by Andrew A. Sicree

Pegmatites and the collector

The mineral collector often hears the term pegmatite, and a novice may mistakenly think that pegmatite is a species of mineral to be collected. However, pegmatite is a type of rock, not a single mineral. Feldspars, quartz, and micas are the major mineral constituents, thus pegmatites are compositionally similar to granites. Pegmatites are coarse-grained igneous rocks. Mineral grains in a pegmatite are typically about one-half inch (about 1 cm) across or much larger. Coarseness of the crystal grains in a pegmatite is a major distinguishing characteristic. One can think of them as very coarse-grained granites.

Mineralogically, pegmatites are the mother lode of interesting minerals, especially silicates. In addition to a variety of feldspars (such as albite, amazonite, etc.), there are micas (muscovite, phlogopite, biotite, lepidolite), and quartz varieties (smoky and rose quartz). Garnets, particularly grossular and almandine, occur, as do spodumene, beryl, topaz, and tourmaline. And, depending upon the type of pegmatite, a host of other unusual minerals such as columbite, tantalite, niobite, and uraninite may also be found.

The world's largest crystals

Pegmatites have produced the world's largest crystals. For instance, the largest crystal on record is an immense crystal of microcline feldspar encountered at the Devils Hole Beryl Mine in Fremont County, Colorado. This microcline was about 162 feet long by 118 feet high and 45 feet deep (49m x 36m x 14m) weighing an estimated 17,500 tons (15,900 metric tons). Another large crystal was a phlogopite mica from the Lacy Mine in Ontario, Canada, that was 33 feet long (1000 cm) and 14 feet (430 cm) in diameter.

Large crystals form in pegmatites because of low rates of nucleation (meaning that only a few crystals start to grow rather than many crystals at once) and high rates of diffusivity (meaning that the elements needed to keep a crystal growing can rapidly move through the fluid phase to the crystal).

Origins of pegmatites

The origins of pegmatites are a topic of continued debate. Some pegmatites appear to have formed from the partial melting of rocks subjected to intense metamorphism. Many pegmatites are associated with large intrusions of granite and may have formed when the granitic magma cooled to the point at which it became saturated with water. Then, under high temperatures and pressures, pegmatite minerals grew from a fluid consisting of silica, water, and other dissolved elements. Other pegmatites probably are not produced during water-saturated granite crystallization.

Pegmatites occur as dikes or lens-shaped bodies that appear to have been injected into the surrounding rocks. Typically, pegmatites are zoned. Minerals nearest the exterior of the pegmatite are smallest while those in the interior get progressively larger as one approaches the center. The largest crystals are found near the center of a pegmatite (a useful bit of knowledge if one is searching for large crystalline specimens).

In addition to the more common elements silicon, aluminum, oxygen, sodium, potassium, etc., which make up feldspar, micas, and quartz, pegmatites can carry a host of other less common, even rare, elements. Beryllium, lithium, boron, zirconium, tantalum, niobium, tin, tungsten, cesium, cerium, thorium, and uranium are found in pegmatites. As a pegmatite cools, rare elements tend to become concentrated in the fluid phase and precipitate out late in the cooling history. Thus, unusual minerals, such as those containing uranium, tantalum, or the rare earth elements, may form in pegmatites.

No two pegmatites are exactly alike, but it is possible to group various pegmatites according to shared characteristics. Several classification schemes exist. One way to classify pegmatites is by their elemental assemblages. Thus, we recognize niobium-yttrium-fluorine and lithium-cesium-tantalum families of pegmatites. These families are thought to combine groups of pegmatites with similar origins.

Economic importance

Some pegmatites can be exploited commercially. As noted above, large, even huge, feldspars are common in pegmatites. Feldspar finds use, for instance, in ceramics, dentistry, and as a scouring agent. Large sheets of mica or

isinglass can be culled from some pegmatites, and large amounts of quartz are produced, especially smoky quartz and rose quartz.

Pegmatites are an important source of the rare earth elements and niobium and tantalum. Most of the world's beryllium comes from pegmatite beryls. They are also the most important source of lithium, which is found in the minerals lepidolite (the lithium mica), lithiophyllite, or spodumene.

Gemstones are also found in pegmatites. Large tourmalines, topazes, and gemmy beryls occur near the centers of some pegmatites. Single gem-quality topaz crystals more than two feet (60 cm) long and one foot (30 cm) in diameter can be found. Beryls may occur as the morganite or aquamarine varieties. Gem-quality apatites, fluorites, and smoky quartzes are recovered from pegmatites, too.

Ref.: Rickwood, Peter C., 1981, "The Largest Crystals," *American Mineralogist*, V. 66, pp. 885-907.

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The Color of the Rose

Rose quartz is pink, but its pink color is distinctively different than that of other pink minerals (such as morganite or rhodonite). In addition to its delicate pink color, rose quartz displays a definitive hazy translucence. While gemmy pieces can be cabbed or even faceted occur, it is impossible to find one that is completely transparent.

If you take rose quartz, and etch it with HF (hydrofluoric acid, a very nasty chemical that attacks and dissolves glass and quartz), you will find that when the quartz is dissolved away a mat of fine pink fibers remains behind. These fibers are fine enough (about 0.1 to 0.5 microns in diameter) to qualify as "nano-fibers." The color of these fibers is the color of rose quartz – so it appears most likely that they are the source of both the pink color and the characteristic translucence.

Analysis of these fibers shows them to be an aluminum borosilicate mineral that is very similar to *dumortierite*. Dumortierite ($Al_7(BO_3)(SiO_4)_3O_3$, orthorhombic) is an aluminum borosilicate that occurs in fibrous to columnar aggregates and is usually blue to purple in color. Pink dumortierite also occurs. The color may be determined by traces of titanium or iron.

When we note that the fibers are "similar" to dumortierite, we are saying that although they are close to dumortierite in both composition and structure, they aren't exactly the same. The major difference appears to be the fact that iron substitutes for some of the aluminum atoms. Thus, although it might be a separate mineral, whether or not the difference is sufficient enough to qualify as a new mineral with its own name is a matter yet to be decided by the experts.

Rose quartz is found at many locations throughout the world. For instance, in the Black Hills of South Dakota, it occurs in pegmatites.

Refs: Applin, Kenneth and Brian Hicks, 1987, "Fibers of dumortierite in quartz," *American Mineralogist*, v. 72, p. 170-172. Goreva, Julia, Chi Ma and George Rossman, 2001, "Fibrous nano-inclusions in massive rose quartz: the origin of rose coloration," *American Mineralogist*, v. 86, p. 466-472.

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Down the Amazon

Amazonite is a beautiful blue-green variety of feldspar and an excellent example of what mineralogists call a *perthite*.

The feldspars are a group of related aluminosilicate minerals, most of which contain sodium, potassium, or calcium. The sodium-calcium feldspars are called *plagioclase* and they range from the pure sodium feldspar (*albite*) to the pure calcium feldspar (*anorthite*). In between these two end-members we find the minerals *oligoclase*, *andesine*, *labradorite*, and *bytownite*. Above about 700°C, there likewise is a continuous series between the sodium and potassium end-members, that is, between albite and "K-spar" ("K-spar" stands for "potassium feldspar" which is typically *orthoclase* or *microcline*). At lower temperatures, there exists a "miscibility gap," such that the series is not continuous.

What this means is that, if one starts out above 700°C with a single feldspar crystal that is intermediate between albite and K-spar, and then cools the crystal slowly, you will find that your nice single crystal segregates itself into two minerals. One will be albite and the other will be K-spar. The term *perthite* is used to describe the result. Perthite is an intergrowth of albite and K-spar. Typically, one gets a host grain of K-spar with irregular or thin plates (or *lamellae*) of albite slicing through it.

Amazonite is a perthite. Careful examination reveals that the green feldspar is cut through by thin sheets of fine white material. This white mineral is the sodium-rich feldspar, albite. The green feldspar is the potassium-rich K-spar.

The color of amazonite was once attributed to copper, but more recent studies indicate that it is due to traces of lead and water absorbed into the structure of the K-spar.

Ref.: Hoffmeister, Anne M., and Rossman, George R., 1985, "A spectroscopic study of irradiation coloring of amazonite: structurally hydrous, Pb-bearing feldspar," *American Mineralogist*, v. 70, p. 794-804.
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Dr. Andrew A. Sicree is a professional mineralogist and geochemist residing in Boalsburg, PA. **Popular Mineralogy** provides technical answers to your general mineral questions. If you have a question you'd like to have answered, please send email to sicree@verizon.net. This newsletter supplement may not be copied in part or full without express permission of Andrew Sicree. Write P. O. Box 10664, State College PA 16805 or call (814) 867-6263 for more information.

Crystal Matrix Crossword

A Variety of Minerals

ACROSS

- 1 wood tin
- 10 recommended daily allowance
- 13 hydrochloric acid will _____ with calcite in limestone
- 14 Spanish I
- 15 either _____
- 16 not in a party
- 17 a natural bridge
- 18 Earth or _____ sciences
- 20 Dr. _____
- 21 International mineral group
- 22 a long, long way to run
- 23 arsenic
- 24 a little bullet
- 26 rock that is full of iron sulfide
- 31 horizontal entrance to a mine
- 33 a creepy crawly
- 35 wood for crystal models

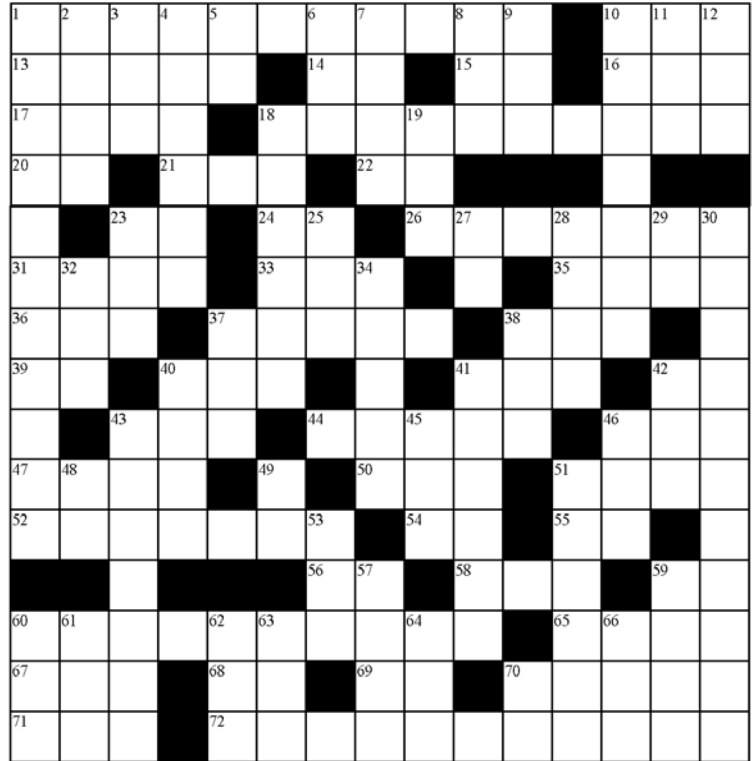
- 36 on the _____
- 37 crystals have _____
- 38 Israel (ab.)
- 39 large
- 40 professional
- 41 chief operator
- 42 ___ You Like It
- 43 a white ball
- 44 what gems do
- 46 a little spot
- 47 root for the home _____
- 50 time period
- 51 brown liquid
- 52 tourmaline
- 54 extraterrestrial
- 55 element found in Sun
- 56 arsenic
- 58 French yes
- 59 slang (ab.)
- 60 round rock
- 65 _____ anthracite
- 67 Scooby Do where _ you?
- 68 east-west
- 69 audiovisual
- 70 to make another joke
- 71 a little kid
- 72 popcorn mica

DOWN

- 1 a phosphate mineral
- 2 to do with air
- 3 Strategic Air Command
- 4 metamorphic rock
- 5 The ___ Girl
- 6 Keep your ___ on the ball

- 7 Fiddler on the _____
- 8 also
- 9 unit of work
- 10 scale for quakes
- 11 stuff of life
- 13 Anti-Defamation League
- 18 black igneous rock
- 19 used to polish gems
- 23 to align
- 25 unopened flower
- 27 ytterbium
- 28 _____ facto
- 29 Iowa
- 30 the state of minerals
- 32 Dagwood
- 34 hollow rock
- 37 source of metal
- 38 charged atom
- 40 mountain lion
- 41 old part of continent
- 42 America On Line
- 43 place to store minerals
- 45 economic rock
- 46 Dept. of Energy
- 48 elevated (ab.)
- 49 mountain
- 51 used to break rock
- 53 Don't ___ the Daisies!
- 57 Anna and the King of _____

- 59 bad writing
- 60 The ___ in the Hat
- 61 gold
- 62 revolution
- 63 lady sheep
- 64 of eggs
- 66 by surface
- 70 ruthenium



LAST MONTH'S SOLUTION:

Mineral Properties



Some Upcoming SHOWS AND MEETINGS

Our web site <http://www.ems.psu.edu/nms/>
has links to more complete lists and details on
mineral shows and meetings around the country.

May 17 - 18, 2008: 40th annual "World of Gems and Minerals" Gemstone, Jewelry, Bead, Mineral & Fossil Show; by Berks Mineralogical Society. Leesport, PA, Farmers Market Banquet Hall, Route 61. Sat. 10-5, Sun. 10-4. See <http://www.geocities.com/berksmineralsociety/Shows.html>

May 21 - 26, 2008: Tri-Federation Rockhound Rendezvous, Texas Springs, Nevada. 4 to 6 different sites: pink limb casts, small limb casts and bogwood, snakeskin agate, jasp/agate limb casts, geodes, and more. Daily collecting trips, potluck dinners, daily Happy Hours, evening campfires, map exchange and tailgate displays. All AFMS members welcome. See Nov. AFMS News, www.amfed.org

June 7, 2008: Spring Mineralfest, Mineral, Fossil and Gem Show, by PA Earth Science Assn. Macungie Memorial Park, Macungie, PA, 8 mi SW of Allentown. 8:30 a.m. to 3:00 p.m. Their 50th! See p. 2 & www.mineralfest.com

June 7 - 8, 2008: Orange County Mineral Society Annual Swap & Sell, outdoors on the Village Green at Monroe, NY. Admission includes living history museum with mastodon skeleton. 10:00 a.m. - 4:00 p.m. both days.

June 27 - 28: NITTANY GEM AND MINERAL SHOW, Park Forest Middle School, State College, PA. Sat. 10-6, Sun. 11-5. See **page 1** and www.ems.psu.edu/nms

Aug. 8 - 10, 2008: East Coast Gem, Mineral & Fossil Show, Better Living Ctr. at Eastern States Expo., West Springfield, Mass. Fri-Sat 10-7, Sun. 10-5. <http://www.mzexpos.com/eastcoast.htm>

Sept. 24 - 28, 2008: AFMS and South Central Federation Convention and Show, Humble, TX. Show on Fri-Sun. www.amfed.org/show2008.htm

Nov. 1 - 2, 2008: Gemarama, by Tuscarora Lapidary Society. The School at Church Farm, Exton, PA. *

INVITE A FRIEND TO JOIN THE SOCIETY

The Nittany Mineralogical Society prides itself on having the finest line-up of speakers of any earth sciences club in the nation. If you'd like to be part of our Society, dues are \$20 (regular member), \$7 (student rate), \$15 (seniors), \$30 (family of two or more members, names listed). Your dues are used for programs and speakers, refreshments, educational activities, Bulletins, and mailing expenses.

Please fill out a membership form, make checks payable to "Nittany Mineralogical Society, Inc." and send them to

Nittany Mineralogical Society, Inc.

P.O. Box 10664

State College, PA 16805

or bring your dues to the next meeting.

We want to welcome you!

For sale / trade: Equipment & Materials

TRADE for ROCK/MINERAL SPECIMENS (or free if you ask nicely ahead of time!): 35 mm film canisters, clear or black and great for storing small stuff. E-mail with the color and quantity you'd like (I've got 3 buckets full) and I'll bring them to the next meeting. Tim Holtz, stamprockcoin314@hotmail.com

Mineral Business and personal collection for sale (hundreds of specimens plus supplies and equipment included). Call Terry at 570-672-2325 Mon. - Sat. 9:00 a.m. - 11:00 p.m. If I'm not there, leave a message.

For sale: Very large collection of gemstone material, prefer to sell as one lot; including much jade in various types & colors; mostly rough, plus some slabs; some fine Coober Pedy opal. Also equipment and jewelry making supplies from jewelry studio and production shop. Contact Daniel G. Reinhold in Mill Hall, PA; phone 570 748-3201 after lunch every day, or e-mail: dreinhold@suscom.net *

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Publicity: Volunteers needed

The Bulletin Editor will welcome your submissions of articles, photos, drawings, cartoons, etc., on minerals, fossils, collecting, lapidary, and club activity topics of interest to the members. Please contact:

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Newsletter submissions are appreciated by the first Wednesday of the month. If you include photographs or graphics, please do not embed them in word processor files; send them as separate graphics files (TIF, or good to highest quality JPEG files, about 1050 pixels wide, are preferred). Please provide captions and the name of the photographer or artist.