Nittany Mineralogical Society Bulletin

Nittany Mineralogical Society, Inc.
P.O. Box 10664
State College PA 16805

October, 2009 **Visit our web site: www.ems.psu.edu/nms/** *Editor (see page 8): David C. Glick*

October 21st meeting:

The Aswan Obelisk Quarry, Aswan, Egypt

by Shelton Alexander
Emeritus Professor of Geophysics
Geosciences Department, Penn State

Our October meeting will be held Wednesday the 21st in the room 114 auditorium of Earth & Engineering Sciences Building on the west side of the Penn State campus in State College, PA. Maps are available through our web site.

6:30 to 7:30 p.m.: Social hour, refreshments in the lobby
7:30 to 8:00 p.m.: announcements, questions, answers; Annual Meeting of the Corporation; 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. ***Bring your friends and share an enjoyable evening!*** *- - Editor*

This presentation summarizes earlier investigations of the Aswan Obelisk Quarry in Aswan, Egypt as well as recent investigations conducted by a multidisciplinary team from Penn State (Alexander, Gold, Parizek, and Walters). This quarry was the only site in Egypt where the large obelisks found throughout Egypt were carved from a massive granite body and transported to various sites. The Unfinished Obelisk is a nearly-completed obelisk (41.8 m long weighing approximately 1168 tons) still in place at the quarry. Excavations have provided important evidence dating back to the 2nd millennium BC of how ancient Egyptians worked and extracted such hard monolithic stone from the site, including obelisks and colossal statues. Among the discoveries were dolerite "hammer" stones from dolerite dykes that were used to chisel out the large obelisks and statues. Ancient graffiti and inscriptions were found that are now exposed on granite work surfaces in the quarry; these are now threatened by moisture-induced weathering of the granite.

The findings of Penn State's geologic, hydrogeologic and geophysical investigation of the site are also presented, including the confirmation of the location of the extension of a canal towards the Nile that is thought to be the mechanism for transporting the very large, monolithic obelisks to the Nile for river transport, a distance of over 1 kilometer. ❄

ATTENDING THE OCTOBER MEETING?
This event is free and open to all - bring a friend!
Donations of door prize specimens are invited.
Your donated snacks will be welcomed.

Junior Rockhounds:

Next Meeting on Nov. 9th

Junior Rockhounds meetings are scheduled for 7:00 p.m. on the second Monday of the month this fall. The remaining meetings will be on November 9 and December 14. The location is room 117 of Earth & Engineering Sciences Building, Penn State's University Park "West Campus." This is the same location as the last couple of years, and the same building as our regular meetings.

Each month's meeting has a new topic or topics with fun, hands-on learning for the kids. We encourage those who attend to become NMS members, but it's not required. Just $7.00 covers a whole year of student membership. Parents may get a lot out of the meetings, too! Check the web site for news, or contact Dr. Andrew Sicree (see page 8). *- Editor*

Annual Meeting of the Corporation and Election of Officers

Election of officers will be held at the October 21st meeting, which is the Annual Meeting of the members of the corporation. The slate of candidates was announced at the September meeting as follows:

President: David Glick
Vice President: Robert Altamura
Treasurer: John Passaneau
Secretary: Ellen Bingham

We also seek volunteers for the appointed positions of Publicity Chair and Refreshments Coordinator, and volunteers to help with a variety of specific duties. *- Editor*

Field Trip News

Nittany Mineralogical Society held a field trip to see and learn about the geology and collect minerals at Curtin Gap Quarry on Saturday, Sept. 26. We appreciate the cooperation of Hanson Aggregates in making this possible.

Every member who is interested in attending field trips should be on the e-mail notification list (or, if you don't have e-mail, we can notify you by telephone) to learn the specifics. Check the appropriate box on your dues form. If you'd like to move on or off the list during the membership year, simply contact Field Trip Chair Ed Echler (see p. 8). *- Editor*

PLEASE PAY DUES BEFORE OCTOBER 31
A form is enclosed if we have not received your payment.

Fall Shows and Symposia in PA

from their web sites and press releases

South Penn Rock Swap

Saturday, October 31, 2009
8 a.m. to 3 p.m.
South Mountain Fairgrounds
(1.5 miles West of Arendtsville, PA on Route 234)
Northwest of Gettysburg, PA
General Admission $1.00
Tables for swappers $10.00
(Multiple tables allowed for the $10.00 fee)
Sponsored byThe Central Pennsylvania and
Franklin County Rock and Mineral Clubs

Ultraviolation 2009 (20th Anniversary)

by the Rock and Mineral Club of Lower Bucks County
Saturday October 31, 2009
9:00 AM to 4:00 PM
First United Methodist Church
840 Trenton Road, Fairless Hills, PA
$2 **donation - Kids 12 & under free**
Food and Beverages available Door Prizes and Raffles
Halloween fun, and...

Alternating periods of light and dark will allow you to witness fluorescent minerals in both their ordinary daylight state and their majestic colorful state after being excited by ultraviolet light. **Free admission and a fluorescent mineral specimen for each junior mineralogist, 12 years and younger, when accompanied by an adult.** A lucky glow-hound in attendance will also be the winner of a Ralph Kovach classic shadow box containing 42 fluorescent cabochons.
<www.mineralfest.com/flyers/2009ultraviolation.pdf>

Pennsylvania Chapter, Friends of Mineralogy

2009 Fall Symposium

for the Mineral Collecting Community on

"Pennsylvania Minerals"

Saturday November 7th at
Franklin and Marshall College in Lancaster, PA

The symposium is scheduled to include:

Carter Rich -- Bridgewater Titanites
Bill Brice -- Pioneers of Early History of PA Oil History
Ron Sloto -- Classic Chester County Mineral Localities
Dave Glick -- Fluorescent Minerals of PA
Joe Dague -- Minerals of Adams County
Jeri Jones -- Minerals of York County
John Way - The Geology of PA minerals

See the registration form on the web site <www.geocities.com/sajas.geo/FM/> for location, schedule, etc.; please send the form and payment by October 31. On **Sunday** November 8th, there will be a **field trip** for registered attendees only. Field trip space is limited, so pre-registration is required to assure yourself a slot on the field trip.

40th Gemarama

Gem Jewelry and Lapidary Show,
"Gems of Myth, Legend, and Lore"
by Tuscarora Lapidary Society
Saturday, November 7, 2009 - 10am to 6pm
Sunday, November 8, 2009 - 10am to 5pm
Founder's Pavilion,
CFS/The School at Church Farm, Exton, PA

Tuscarora Lapidary Society sponsors an annual gem and mineral show the first weekend in November in the Philadelphia, PA area. Many dealers come from all over the country to display and offer their specialties. Represented are gem and mineral dealers, lapidary suppliers, cut and polished stone dealers, jewelers, bead dealers, and many more. Club members demonstrate various lapidary and jewelry making skills and present numerous displays of their work.

See details, the dealer list, and print a coupon at:
www.lapidary.org/gemarama/gemarama_main.htm

A Note from the President

by David Glick

Elections and the annual meeting of the corporation will be held at the October 21st meeting. That should not take very long; please attend and vote, and enjoy the rest of the program.

I'm pleased to announce that we have a volunteer, Tim Holtz, who will be serving as Door Prize Coordinator. Tim has some ideas about door prizes which the membership and the Board can discuss.

For upcoming programs, we anticipate that November will be our annual Holiday Social and Sale; members with PA sales tax licenses who want to set up and sell there should contact me if they have not already done so. The December program is expected to be on flintknapping. We are working on finalizing arrangements for both meetings.

We have a full slate of candidates for elected office, but could still use volunteers for appointed positions involving publicity, meeting refreshments, and more. Please contact me if you might be interested.

Please pay your dues by October 31; you can bring the form and payment to the October meeting if you'd like. Your prompt payment lessens the work of sending repeated notices. Thank you! ❄

INVITE A FRIEND TO JOIN THE SOCIETY

The Nittany Mineralogical Society prides itself on having among the finest line-up of speakers of any earth sciences club in the nation. Everyone is welcome at our meetings. If you would like to join, dues forms and instructions are available on our web site <www.ems.psu.edu/nms/>.

We want to welcome you!

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. We present brief summaries here in order to encourage readers to see the entire newsletters.

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 October issue begins with last minute updates on the EFMLS Convention, to be held in Bristol, Connecticut, October 16 - 18 (Show on Sat. & Sun., Oct. 17-18). It urges people to display an exhibit, either competitive or non-competitive, at the show. Mary Bateman reviews some of her presidential year and thanks the many volunteers who have been involved with running the Federation. She notes that arrangements are being made for club insurance for the coming year. Jim Doran's safety article points out that each person at a club activity needs to be looking out for the safety of everyone.

Bob Livingston reports on important changes to the AFMS Scholarship Fund because of reduced income from the principal. There will be a temporary 50% reduction in the scholarship amounts for 2010; they will go back to normal in 2011 if enough unrestricted funds can be raised to make up the difference. Please see the article for details.

An article on Wildacres, the Federation's week-long teaching workshops for lapidary and mineral topics, includes many color photos (in the on-line version) of the place, people, and lapidary work. It reviews the events and fun at the September session of Wildacres. Also, the Wildacres Appreciation Award was presented to Ginger Posthumus, who teaches and has served as director and in other positions for Wildacres.

The **AFMS Newsletter** is available by the same methods. The October issue was not yet available at time of this writing. However, in the past we may have neglected to mention an interesting booklet available on the AFMS web site. ***Lewis and Clark: Rockhounding on the Way to the Pacific*** can be downloaded from <www.amfed.org/lewisclark.htm>. It's fun, illustrated, and easy to read, so it should be great for children and families traveling Lewis & Clark's route.

Please see the web sites for the complete Newsletters. There's a lot there! *- Editor*

NMS Booth at
Spring Creek Family Festival

Bob Altamura and Gary Mitchell, with help from "Ben" Benford, John Passaneau, Dave Glick and others, presented an NMS educational exhibit on "Historical Ironmaking and Iron-ore Minerals" at the 2009 Spring Creek Family Festival. It showed iron ores and how historical iron furnaces operated. Souvenir iron-ore samples from the Scotia area near State College, hematite ore from near Huntingdon, and furnace slag from an iron furnace were given away to visitors. See photos below. ❄

J. Passaneau photo

D. Glick photo

Popular Mineralogy

Interesting mineralogy and earth science for the amateur mineralogist and serious collector - #28

The Key to Common Igneous Rocks

by Andrew A. Sicree

What is the matrix, anyway?

An honest mineral collector might admit that, although he or she is good at sight-identifying many minerals, rocks are a little more mystifying. Rock is just the matrix upon which good crystals sit. But any collector can learn to identify the most common rocks. A good basic geology lab manual, such as those used in introductory "rocks for jocks" geology courses, can be quite helpful in learning to ID basic rocks.

Rocks can be igneous, sedimentary, or metamorphic in origin. The common igneous rocks found on the Earth's surface include basalt, granite, gabbro, rhyolite, andesite, diorite, obsidian, and pumice. Basalt is the most plentiful rock on the Earth's surface. The oceans cover more than 70% of the planet's surface and basalt underlies most of the muck on the bottom of the oceans. On the continents, the story is a bit different, depending upon where you live. Granites are plentiful – indeed, they make up much of the continental crust. But if you live in Ohio or Indiana, you'll find mostly limestones, which are sedimentary, while gneisses, schists, and other metamorphic rocks underlie portions of New York State.

Intrusive vs. extrusive

Two broad classes of igneous rocks exist. We divide the igneous world into the intrusive rocks, also known as plutonic rocks, and the extrusive or volcanic rocks. All igneous rocks start off as melted rock, or magma. When it comes to naming igneous rocks, where the magma cools and solidifies is just as important as what minerals it produces. The words plutonic and volcanic refer to the Roman gods Pluto, the god of the underworld, and Vulcan, the smith of the gods and the god of fire.

Gabbro, diorite, and granite are intrusive plutonic rocks. As magma is forced upward from lower in the crust, it intrudes into the surrounding "country rock." The magma body cools slowly (it can take many thousands of years to cool completely) and solidifies into rocks that are made up of coarse grains of minerals such as quartz, potassium feldspar (microcline or orthoclase), muscovite and biotite micas, plagioclase, amphiboles (such as hornblende), pyroxenes (augite is one), and olivine. Typically, the mineral grains in plutonic rocks are big enough that you can distinguish the individual crystal grains.

Basalt, andesite, and rhyolite are extrusive igneous rocks. Volcanoes or volcanic vent or fissure eruptions produce them. Magma vents to the surface as lava and solidifies quickly (usually in a matter of hours or days). The minerals that form volcanic rocks are the same minerals that form plutonic rocks, but their grain size is much finer. Most of the mineral grains in volcanic rocks are too small for the unaided eye to distinguish their boundaries. Thus, the rock looks like it is made of a single material even though it may be composed of four or more different minerals.

When identifying an igneous rock, first examine the texture – looking at a freshly broken surface is best. If you can see all of the individual grain boundaries, you're looking at a plutonic rock. If the grains are too small to see and the rock looks like it is made of a single material, you have a volcanic rock. (If the rock looks glassy, see "pumice and obsidian" below.) Once you've made the plutonic/volcanic distinction, you need to examine the mineral make-up of the rock.

Felsic vs. mafic

Of the four thousand or so known minerals, only about two hundred are common enough to show up as a major constituent of rocks. And the six most common igneous rocks found on most the Earth's surface are made up of an even smaller handful of minerals. The minerals of concern to us here are quartz, potassium feldspar, micas such as muscovite and biotite, sodium and calcium plagioclase minerals (albite, etc.), amphiboles (e.g., hornblende), pyroxenes (e.g., augite), and olivine. The difference between granite and gabbro is primarily one of composition so if we know the minerals that occur in our rock sample, we can distinguish gabbro from granite, or basalt from rhyolite.

Quartz and mica are pretty easy for even beginners to identify, but it can be tough to distinguish very small crystals of amphiboles and pyroxenes from each other. Basic geology lab manuals give details on how to identify these minerals, but for our purposes here we can use a simpler approach.

Geologists use the terms felsic and mafic to describe the general mineral composition of igneous rocks. Felsic, derived from the words feldspar and silica, is used to describe rock in which quartz and feldspars are dominant. Mafic, derived from magnesium and ferric, describes rocks in which magnesium- and iron-rich minerals predominate. These mafic minerals include the amphiboles, pyroxenes, and olivine. Color is actually a helpful clue to differentiating mafic from felsic compositions. Felsic minerals tend to be white, gray, or pink, while mafic minerals tend to be black or dark green.

Thus, the combination of texture (fine- vs. coarse-grained) and color (light vs. dark) can be used to divvy up the igneous rocks. A mafic volcanic rock will be dark in color and fine-grained in texture while a felsic plutonic rock might be mostly white or gray with a coarse-grained texture. This chart summarizes the common igneous rocks and their respective compositions.

Intrusive	Extrusive	Mineral Composition
Granite	Rhyolite	Felsic (light)
Diorite	Andesite	Intermediate
Gabbro	Basalt	Mafic (dark)

Note that diorite and andesite are intermediate in composition between the felsic granite and rhyolite and the mafic gabbro and basalt. Rocks with intermediate mineral compositions are generally intermediate in color (gray rather than white or dark green).

Volcanic equivalents

Magmas that are felsic in composition cool out underground to produce granites. If a felsic magma escapes onto the surface, it gives us a rhyolitic lava, which solidifies to rhyolite. Mafic magmas produce gabbro when they cool out underground. On the surface, those same magmas yield basaltic lavas, which cool off to produce basalt.

Pumice and obsidian

There are, of course, more than the six igneous rocks described above. Two common volcanic rocks that do not fit into the above framework are obsidian and pumice. Obsidian is volcanic glass. Mostly rhyolitic in composition (i.e., high in silica), obsidian cooled out too quickly for mineral crystals to grow. The melt froze out into a glassy state. Glasses differ from minerals in that glasses are not crystalline, that is they have no long-range repeating, orderly arrangement of atoms. Pumice is essentially the same as obsidian, except that hot gases, escaping from the molten rock, whipped portions of the melt into a froth. Pumice is this frozen froth. While obsidian is typically black or dark brown, pumice is white or tan because of the presence of a multitude of "cells" – the former gas bubbles. Blocks of pumice may contain so many cells that they are light enough to float in water.

Trade Names vs. Geological Names

Expensive kitchen countertops of "granite" have become fashionable. They're colorful, sturdy, and resist heat, scratches, and stains. Vendors sell an assortment of "granites" under a variety of trade names such as "Black Galaxy Granite" or "Indian Red Granite." These are not geological names. For instance, most of what vendors call "Black Granite" would be termed a gabbro by geologists. The term "granite" is applied to a wide variety of silicate rocks. Sometimes, even slabs of metamorphic rocks such as gneiss are sold as "granites." The tombstone industry also uses trade names rather than the more exact geological names. Salesmanship trumps science.

Some stone quarries produce "trap rock," crushed stone for use in road building. The famous Patterson, New Jersey, prehnites are found in vugs within trap rock. Trap rock is a generic term; it refers to any fine-grained dark igneous rock. Typically, trap rock is basalt or diabase. Diabase is an intrusive igneous rock composed of plagioclase and pyroxene that formed at relatively shallow depths – thus cooling more quickly than gabbro and having a finer-grained texture. The name trap rock comes from *trappa*, the Swedish word for stair or step, and it refers to the step-like appearance of the ends of basaltic lava flows.

Dr. Andrew A. Sicree is a professional mineralogist and geochemist residing in Boalsburg, PA.

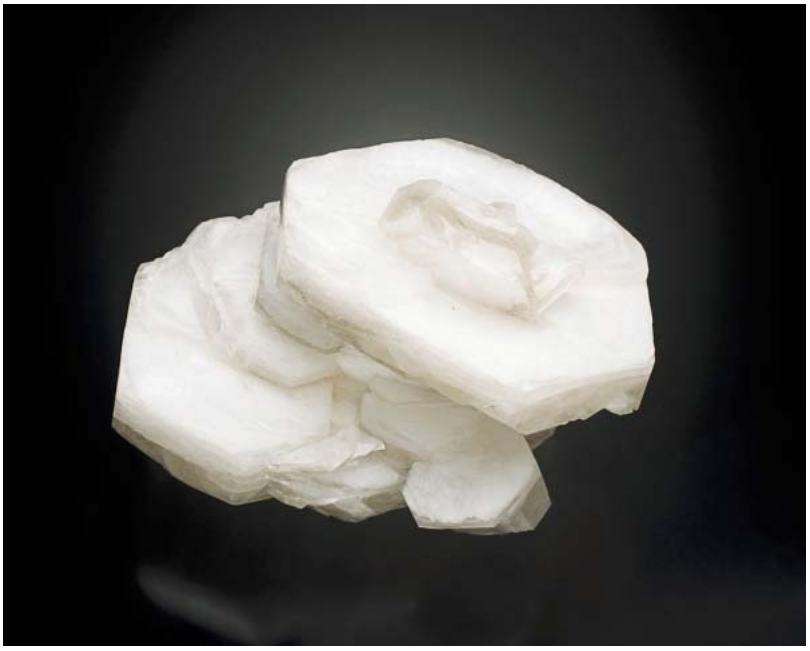
Minerals with Polyatomic Anions

Minerals such as halite (NaCl, cubic) are composed of positively-charged cations (the Na+ ions in halite) and negatively-charged anions (the Cl- ions) arraigned in a cubic crystal lattice. Each of these ions is monatomic – that is, it is composed of only one atom. In some minerals, however, the anions are made up of two, three, four, or even more atoms. Within the mineral's crystal structure, these polyatomic anions behave as though they are a single unit.

Some very common and important minerals have polyatomic anions. The most obvious example is calcite. Calcite's formula is written as $CaCO_3$, which is read as "calcium carbonate." The calcium cation (Ca^{2+}) has a +2 charge. The remainder of the formula is the polyatomic carbonate anion, $(CO_3)^{2-}$, and these four atoms act as a single unit that bears a -2 charge. The carbon atom doesn't occupy a spot within the crystal structure by itself, nor do the oxygen atoms. They behave chemically and mineralogically as a group, the carbonate ion. This holds true for siderite ($FeCO_3$, trigonal), rhodochrosite ($MnCO_3$, trigonal), and all of the carbonate minerals.

It is possible for a mineral's chemical formula to contain more than one species of cation or anion. Examine malachite ($Cu_2(CO_3)(OH)_2$, monoclinic) and azurite ($Cu_3(CO_3)_2(OH)_2$, monoclinic). Note that malachite's chemical formula has the carbonate anion, but also includes two hydroxide ions, (OH)-, each with a -1 charge. Azurite has two carbonate anions and two hydroxide anions.

Other polyatomic ions can be found in common minerals. For instance, the common mineral barite ($BaSO_4$, monoclinic) is built of barium (Ba^{2+}) cations, each with a +2 charge, and sulfate (SO_4^{2-}) anions, each of which has a -2 charge. Sulfate is a polyatomic anion composed of one sulfur atom and four oxygens. Other sulfates include anhydrite ($CaSO_4$, orthorhombic), celestine or celestite ($SrSO_4$, orthorhombic), gypsum ($CaSO_4 \cdot 5H_2O$, monoclinic), and chalcanthite ($CuSO_4 \cdot 5H_2O$, triclinic). Note that the latter two minerals also include five "waters of hydration" – these are neutral water molecules within the crystal structure – they are not polyatomic ions.



"Poker Chip" calcite crystals, Naca, Chihuahua, Mexico. 6" x 4" x 4". J. Passaneau photo.

Geo-Sudoku

by David Glick

This puzzle contains the letters CILNOPSTU , and one row or column spells out a term for igneous rocks which solidified without erupting. Each block of 9 squares, each row, and each column must contain each of the nine letters exactly once. The solution is on page 8.

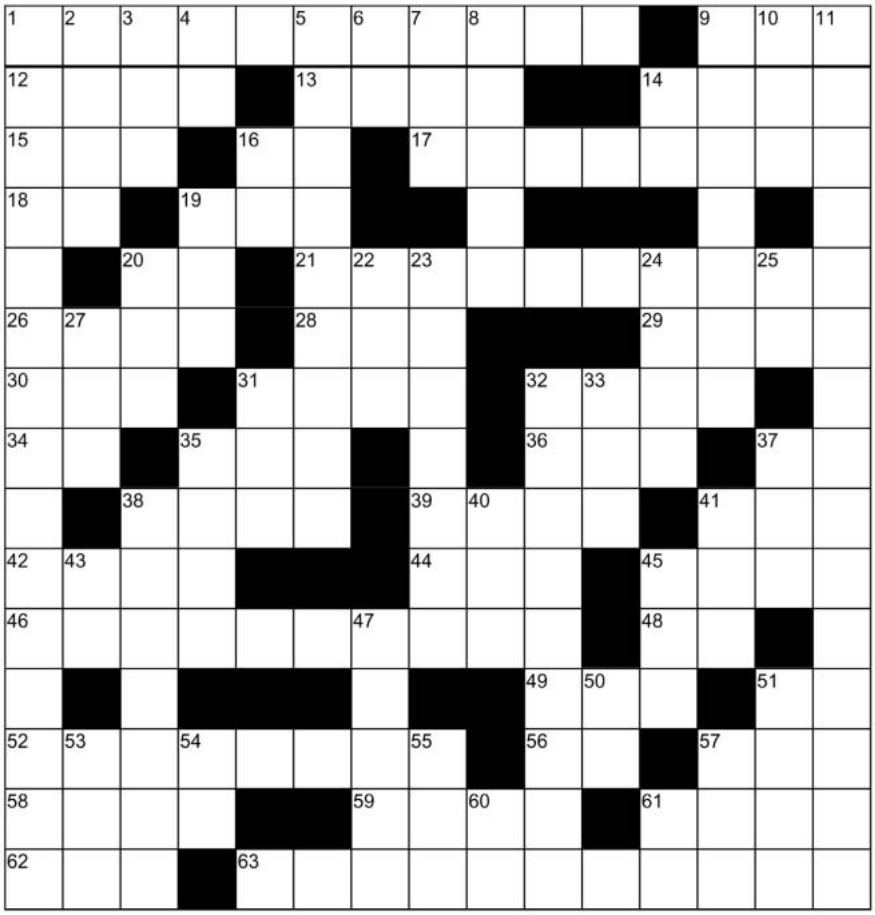
O					I			N
	S				L	P	O	T
	L				N		C	S
			N			T	S	
								O
C	O			S	U			
	U	P	O					
		N			C		T	P
		O	P		T	S	I	

Earth Science Week

Earth Science Week, organized by the American Geological Institute and supported by many earth science organizations, will be concluding just as readers receive this Bulletin. The theme this year is Understanding Climate. See the web site <www.earthsciweek.org> for many items of interest on that topic and others. *- Editor*

Crystal Matrix Crossword

Blue, Green and Gray



ACROSS

1 blue amphibole
9 said when hit in gut
12 molten rock
13 country in Africa
14 bad word
15 honest president
16 precious native element
17 dark blue copper sulfide mineral
18 not them
19 Portuguese India
20 element in blue barite
21 blue green mica mineral
26 precious blue/green amorphous
28 Office of Physical Plant (ab)
29 less than twos
30 up high and bright blue
31 engineer (ab)
32 what everyone should do
34 Professional Geologist
35 drug enforcers
36 tree huggers
37 noble gas
38 to congeal
39 a woodwind
41 dinosaur chest bone
42 shrinking Russian sea
44 measure of radiation
45 formed in limestone
46 blue gray inosilicate
48 yes
49 silica (ab)
51 element in spodumene
52 tantalum oxide mineral
56 infrared
57 a flat of minerals
58 Yugoslavian dictator
59 high European mountains
61 toughest rock
62 first lady
63 purple flower / red stone

DOWN

1 green Cu Ni carbonate
2 where science is done
3 hail
4 University of Arizona
5 cleavage of fluorite
6 measure of acidity
7 formerly owned
8 good bye ("to God")
9 green magnesium silicate
10 not at home
11 a gray silver lead sulfide
14 tin
16 polonium
19 girl
20 inward curved shoreline
22 liquified petroleum gas
23 from first principles
24 Portuguese new
25 tellurium
27 package (ab)
31 skinny fish
32 measures the Earth
33 cold blue mineral
35 sells sandwiches
37 fourteen
38 one jade mineral
40 used in cricket
41 X-___ diffraction
43 ruthenium
45 California (ab)
47 malleable
50 iridium
51 source of gold
53 fourteen
54 exclamation
55 man's name
57 flat polishing surface
60 polonium
61 girl's name

LAST MONTH'S SOLUTION:
Fossillike

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

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. See page 2.

Oct. 31, 2009: South Penn Rock Swap, by Central Penn. and Franklin Cty. Rock & Mineral Clubs. South Mountain Fairgrounds, on Rt 234, 1.5 mi W of Arendtsville PA.

Oct. 31, 2009: 20th annual "Ultraviolation" fluorescent mineral show by the Rock and Mineral Club of Lower Bucks County, Pennsylvania. First United Methodist Church, 840 Trenton Rd, Fairless Hills PA. "If your rocks don't glow, you're at the wrong show." 9:00 - 5:00.

Nov. 7 - 8, 2009: Friends of Mineralogy - PA Chapter Symposium at Franklin & Marshall College, Lancaster, PA, on Saturday, field trip (registered attendees only; pre-register to reserve a space.) Sunday. www.geocities.com/sajas.geo/FM/

Nov. 7 - 8, 2009: 40th Gemarama Gem Jewelry and Lapidary Show, "Gems of Myth, Legend, and Lore," by Tuscarora Lapidary Society. Founder's Pavilion, CFS/The School at Church Farm, Exton, PA

March 6 - 7, 2010: EFMLS Convention & Delaware Mineralogical Society Show, Stanton, DE. ❄

For sale / trade: Equipment & Materials

For sale or trade for non-PA minerals: Alaska Gold Survey book, the 18th Annual Report of Dept. of Interior Vol. 3 1897, with 390 pages including illustrations on Alaska gold prospecting, mining & geology, plus more. E-mail Tim at <stamprockcoin314@hotmail.com>

For sale: Large mineral collection; will sell all or part. Tumble polisher with three 12-lb. And one 6-lb. Drum plus grits, polishes and pellets. My phone number is (570) 672-2325. Leave a message if I'm not in.

For sale: Very nice rock and mineral collection along with four display cases. Call Dale at 717-252-1363.

For sale: 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 570 726-8091 after lunch every day, or e-mail: dreinhold1@comcast.net (note new contact information). ❄

Geo-Sudoku solution from page 6:

O	T	C	S	P	I	U	L	N
N	S	I	C	U	L	P	O	T
P	**L**	**U**	**T**	**O**	**N**	**I**	**C**	**S**
U	P	L	N	C	O	T	S	I
I	N	S	L	T	P	C	U	O
C	O	T	I	S	U	N	P	L
T	U	P	O	I	S	L	N	C
S	I	N	U	L	C	O	T	P
L	C	O	P	N	T	S	I	U

SOCIETY OFFICERS

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Frank Kowalczyk (Secretary) 238-8874 (h, 8-9 p.m.)
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Publicity: *Volunteer 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:

David Glick E-mail: xidg@verizon.net
209 Spring Lea Dr. phone: (814) 237-1094 (h)
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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.