

Nittany Mineralogical Society Bulletin

Nittany Mineralogical Society, Inc., meeting in State College, Pennsylvania
Contact information on back page

November, 2016

Visit our web site: www.nittanymineral.org

Editor (see back page):

David C. Glick

November 16th meeting:

The Rogue Kimberlite Dikes in Indiana County, Pennsylvania

by

Dr. David P. Gold and others (see page 4)

Our November meeting will be held Wednesday the 16th in room 118 (classroom in the left-side hallway), Earth & Engineering Sciences Building on the west side of the Penn State campus in State College, PA. Maps are available on our web site.

6:45 to 7:45 p.m.: Social hour, refreshments in the lobby [if the lobby is available]

7:45 to 8:00 p.m.: announcements, questions, answers about 8:00 p.m.: featured program

*The event has free admission, free parking, and free refreshments, and is open to all; **parents/guardians must provide supervision of minors.** Bring your friends and share an interesting evening!* -Editor

Dr. Gold and others have been investigating igneous intrusions in Indiana County for many years. These kimberlite dikes are found in underground coal mines, but not (at least not yet) at the surface. Why? We'll hear the story of where these and other dikes occur in western Pennsylvania, when they were emplaced during geologic history, and learn about the reasons for the occurrences which we observe.

See page 4 for the complete illustrated article. ✱

Election Results from October

by David Glick, NMS President

At the October 19th Annual Meeting of the Corporation, the following officers were elected:

President	David Glick
Vice President	Bob Altamura
Secretary	John Dziak
Treasurer	Stuart Bingham

The Board truly needs **additional volunteers** to get involved with running the Society, providing **new energy and fresh thinking** and some new names on the ballot. In many cases it would be useful to have newcomers spend some time on committees and attending Board meetings before stepping into elected office. **All members: please consider volunteering!**

December 21st

NMS Holiday Dinner & Sale

On Wednesday, Dec. 21, 6:00 p.m., rather than our usual meeting, we'll have a Holiday Dinner at Quaker Steak & Lube Restaurant, 501 Benner Pike (across Benner Pike from the Nittany Mall), State College PA 16801.

NMS will pay for appetizer plates to be shared by all those present, then attendees would order and pay for their own dinners. If you plan to attend, please **RSVP** to Bob Altamura, raltamura@comcast.net or 814-234-5011.

We are bringing back our tradition from a few years ago: members can have a table at the dinner to sell minerals / fossils/ gems / jewelry / rock crafts. Sellers would need to collect PA sales tax. NMS would charge a commission fee at 10% of the vendor's pre-tax sales. Sellers would be limited to two 6-foot tables or equivalent, or perhaps less depending on the space; we will know the details before the event. Sellers would need to be current NMS members. This would be inside a restaurant so everything would need to be neat and clean. If you are interested in selling, please contact Bob Altamura (see above) by November 30.

Celestine for Pennsylvania State Mineral

Pennsylvania House of Representatives passed Bill 564 on October 18, to adopt celestine as the official state mineral. Its history can be tracked at the Pennsylvania General Assembly's Bill Information page for HB564 (see our web site). The bill next needs to be introduced and passed in the Senate, and signed by the governor.

Society member Mike Dunton alerted us to an article in the Pocono Record published September 24. It describes how members of the Che-Hanna Rock & Mineral Club in Sayre, PA, encouraged their state representative, Tina Pickett, to introduce the bill. This followed activity several years ago which was championed by sixth grader Royce Black; as far as we know, that bill was never brought to a vote. The article also mentions support from Lancaster County Fossil and Mineral Club, and mineral collector and radio personality RJ Harris.

ATTENDING THE NOVEMBER MEETING?

Donations of **a few high quality, labeled door prize specimens** are invited.

Your donated snacks will be welcomed.

Bring a friend!

FEDERATION NEWS

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.nittanymineral.org, or remind Dave Glick to bring a printed copy to a meeting for you to see. In the November issue, incoming president Dave Korzendorfer introduces himself, and writes with the goal of helping more clubs understand the varied benefits of EFMLS.

The **AFMS Newsletter** is available by the same methods. In the November issue, Jim Brace-Thompson announces the fourth edition of the Future Rockhounds of America Badge Manual. It's 255 pages, with 86 pages revised or entirely new; the program offers 20 badges and 130 activities. Incoming President Ron Carman introduces himself and his plan to visit all the regional conventions in the coming year, and encourages members to volunteer and get involved with their clubs and federations. Club Rockhounds of the Year are introduced, and the calendar for 2017 regional conventions is filled out.

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

Mineral Explorers TV Show now in Season 2

"Mineral Explorers travels to some of the richest and most remote mines on earth, giving viewers a behind-the-scenes look at what it takes to unearth gems, crystals and minerals of all kinds." The show can be found on Create TV, which is channel 3.2 over the air from WPSU, the PBS station from Penn State, or 242 on the Comcast- State College system. It is available as a PBS subchannel in many locations; see the web site <<http://createtv.com/ShowInfo/Mineral+Explorers>>. Current show times are Sunday and Wednesday at 11:00 p.m. and Monday and Thursday at 5:00 a.m.

For more information, including DVDS for sale, see <<http://mineralexplorers.com/>>. *-Editor*

Friends of Mineralogy - Pennsylvania Chapter Symposium

Mineral collecting enthusiasts met on Saturday, November 5, in Lancaster for the annual FM-Pa Chapter Symposium, with the theme *Pennsylvania Mining and Mineralogy*. The heart of the event was several talks by experts on minerals, geology and mining in Pennsylvania and beyond. The organization was grateful for the continued cooperation of Franklin & Marshall College, which provided the venue for the event.

The program included these presentations:

- Robert Kulp: Dunite in the Serpentinites of the Pennsylvania-Maryland Chrome Mining District;
- Ryan Mathur, PhD: Cenozoic mineralization ages for sulfides and calcite in Pennsylvania;
- Stan Mertzman, PhD: Hawaiian minerals and geology (Pennsylvania students' experience);
- Bill Stephens, PG: Lapidary Grade Agate and Other Semi-Precious Gemstones from the Penn-MD Serpentine Quarry, Lancaster County, PA.



A silent auction and socializing were active during breaks between presentations. *D. Glick photo.*

As usual, select mineral dealers were present, and there was a silent auction, give-away table, refreshments, and plenty of opportunity for visiting with fellow enthusiasts.

A Sunday field trip to an interesting location at Cornwall, PA, provided an opportunity for mineral collecting.

Information about FM-Pa Chapter is available on the web site <http://www.raslotto.com/FM/> *-Editor*

Minerals Junior Ed Day Saturday, April 1, 2017 Please Volunteer

Frank Kowalczyk will be coordinating NMS's 22nd Annual Minerals Junior Education Day. It is set for Saturday, April 1, at Central Pennsylvania Institute of Science & Technology at Pleasant Gap, the same location as the last two years. Please save the date and think about how you might help bring this great event to families in our community.

At this event, kids get an empty egg carton when they check in, then go to a series of stations, each concerning a different aspect of mineral properties, rocks, fossils, etc. They learn about the topic from a demonstration or discussion, and receive a properly labeled specimen or educational item related to the topic, so they gather a whole collection in their egg carton. There is also a sales table with kid-friendly prices.

We are starting early to prepare for the 2017 event, seeking **volunteers** to help to present the stations, and ideas for stations which we (or you) might present. We also welcome advance donations of identified minerals, tumble-polished material, fossils, books, etc. which can be sold at child-friendly prices.

If you

- can volunteer to be in charge of a station
- can help with a station or in some other way
- have an idea for a station which teaches about some aspect of minerals, fossils, geology, gemstones, etc.
- have about 200 pieces of minerals, fossils, etc., which might be useful as giveaways at a station
- have items such as mineral specimens, fossils, books, etc., that we might sell at child-friendly prices.

please contact Frank J. Kowalczyk:

frank.j.kowalczyk@gmail.com
or 814- 238-8874



Activity at the second annual Minerals Junior Ed. Day, 1996

Should NMS Join a Community Workspace?

by

David Glick, NMS President

MakeSpace, a community workshop in State College, may rent a large space which they are seeking other organizations to share. They seek to bring together people with a variety of skills in the various aspects of "making," and appropriate machines and equipment. Entrepreneurship is a significant, but not the only, driving force. For information about the group, see: <https://makespace.io/>
<https://www.facebook.com/the.make.space/>

The anticipated rental space includes both unfinished workspace, which could include shared space and areas for specific organizations to house their equipment and storage, and finished space which could be used for moderate-sized meetings such as monthly Junior Rockhounds meetings. Other groups and individuals might be providing electronic, metalworking and woodworking equipment. It is hoped that synergy between groups and individuals with a great variety of skills would have many mutual benefits.

As an NMS member, do you anticipate that you might take advantage of such a space? Would you bring your equipment to a shared space so that it might be used by others with proper training? Would you want NMS to purchase equipment to outfit such a space? Cost of the rental space would not be insignificant, but should be acceptable based on funds we expect to receive in the coming year.

If you have any interest, thoughts or questions, please contact NMS president Dave Glick, xidg@verizon.net or 814-237-1094 or discuss it at the November NMS meeting. *

NMS Display Completed in Penn State EMS Museum

Bob Altamura has recently completed a display entitled **Geological Terrane Model of Pennsylvania & Selected Rock and Mineral Samples** at the Penn State Earth & Mineral Sciences Museum on the ground floor of Deike Building. This continues Bob's and NMS's program to periodically provide a new display. Watch for more information in a future Bulletin issue.

Penn State EMS Museum Open 2 Hours on Home Football Saturdays

As part of expanding its hours, the "Mineral Museum" and Art Gallery on the ground floor of Deike Building will be open 9-11 a.m. November 26 for the final home game of the season, assuming the game is in the afternoon. If it's a night game, please check museum hours before going.

The Rogue Kimberlite Dikes in Indiana County, Pennsylvania

by

David P. Gold, Arnold G. Doden,
Chuma Mbalu-Keswa, Joseph
Tedeski, and Ryan Mathur,
with contributions from
Robert Smith II, Viktoras Skema,
Joseph Dague, Michael Moore,
Charles H. Shultz, Barry Scheetz,
Andrew Sicree, and Charles
Miller.

Group II micaceous kimberlites have been recovered from underground workings in three coal mines in northern Indiana County, Pennsylvania. They occur as thin, relatively long dikes that exhibit a flow fabric, porphyritic texture with large phlogopite, chrome diopside and magnesian ilmenite phenocrysts/megacrysts, and exotic pyrope garnet xenocrysts. The apparent confinement of these intrusions to coal seams may be significant. The collinearity of the locations suggests the intrusions are part of an east-west trending dike system, but their continuity cannot be verified from surface exposures. They are mapped as long and narrow dikes with relatively few breaks along strike, and rarely split into multiple segments. Aberrations include minor bulbous sills, thin stringers and wedge-shaped apophyses, with both horizontal and steeply inclined terminations in the host coal seam. The former are described as oblate cylindrical sills, and the latter as bladed dikes. Clearly, the coal seam has influenced or controlled these bizarre intrusive habits. Samples examined are typical hypabyssal-facies, carbonate-rich kimberlite, with a poly-textured (agglomeratic) fabric. A passive expansion into the coal is apparent without the aggressive stockwork configuration of many intrusive contacts. Thermal metamorphism is restricted to 4-8 inches of coke in the coal, and is minimal in the underclay and overlying siltstone and shale. A high content of volatiles ($\pm 8\%$ H₂O and 17.5% CO₂ in quenched whole rock) dissolved in the magma would promote crystallization and out-gassing at depth.



Three coal mines in Indiana County, PA, were studied.



Dolomitic xenolith (white) in kimberlite agglomerate (Tedeski, 2002)

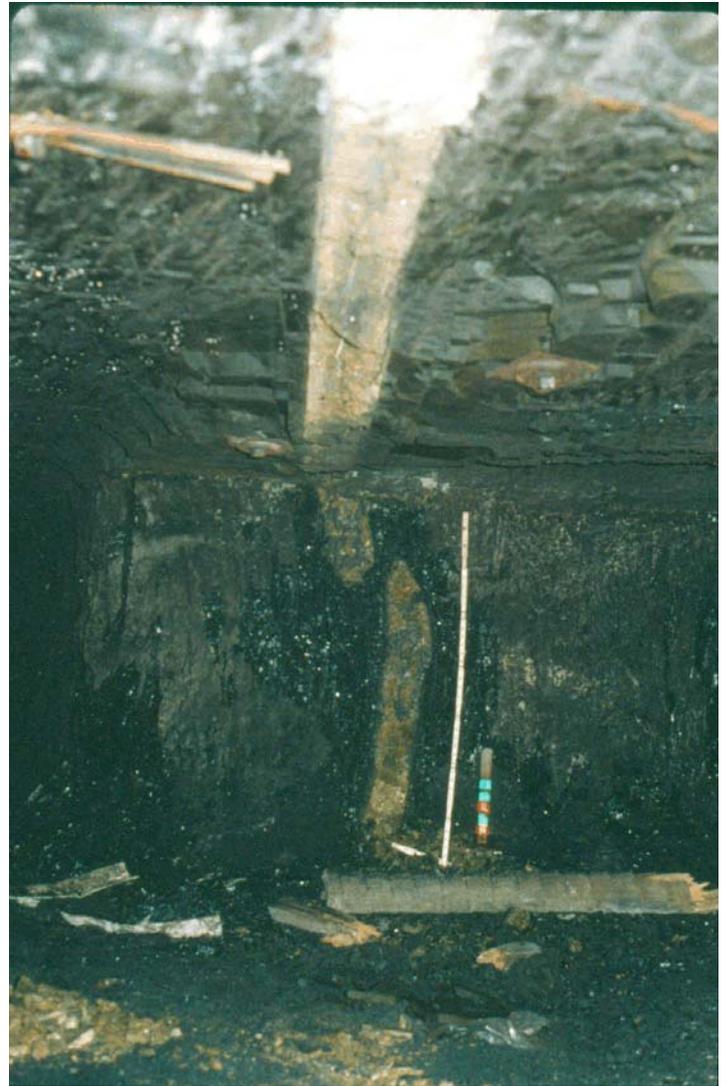


Garnet megacrysts can be freed from decomposed kimberlite (Tedeski, 2002)

The emplacement age of the dikes is clearly post Pennsylvanian, with a range in radiometric crystallization ages from 147 to 167 Ma. The burial history of the Kittanning Coal seam across Pennsylvania, deduced from vitrinite reflectance data, yields a maximum burial depth of 3 km assuming a thermal gradient of 30°C/km. The necessary correction for unroofing at the time of kimberlite emplacement basin, determined from fission track ages and annealing temperatures of apatites (Blackmer, 1992) reduces the depth of emplacement estimated to 2.3 km. We conclude that the Dixonville dike is an upper hypabyssal facies carbonated type II kimberlite that did not vent to the surface, and whose emplacement in the Appalachian foreland basin was facilitated by tectonic tension associated with the opening of the Atlantic Ocean during the middle Jurassic.



A dike coming **down** into the coal seam in the Tanoma mine. (Gold et al., 2016)



Dike in coal and fractures adjacent to strike-slip fault in hanging wall shales & siltstones. (Tedeski, 2002)



Dike from roof, to a sill in the coal, and wedging out in the floor. The white coating (top left) is rock grout (Gold, 1994)

We speculate that highly porous coal seams may have acted as a catalyst triggering crystallization, as well as a sink for outgassing phases, and is a likely scenario for hydraulic fracturing the favorable thicker coal seams. Unresolved questions include (a) whether their apparent confinement to coal seams is real, or is simply a sampling artifact linked to anthropogenic activity, (b) is there a tectonic significance to their off-craton setting in the Appalachian foreland basin, and (c) what is their potential to carry diamonds?

A full article (Gold, 2016) with more photographs and more detailed captions can be found in the Guidebook for the 2016 Field Conference of Pennsylvania Geologists, *Energy & Environments: Geology in the "Nether World" of Indiana County, Pennsylvania*. It and other Guidebooks can be found at <http://fcopg.org/>

REFERENCES

Blackmer, G.C., 1992, Post-Alleghanian thermal and unroofing history of the Appalachian Basin, Pennsylvania: University Park, Pa., The Pennsylvania State University, Ph.D. thesis, p. 172.

Gold, D.P., 1994, The Nature of Kimberlite Intrusions in the Appalachian Foreland Basins: Lecture, and Abstracts with Program, Pittsburgh Geological Society, v. XLVII, no. 2, Oct. 19, 1994.

Gold, D.P., David P. Gold, Arnold G. Doden, Chuma Mbalu-Keswa, Joseph R. Tedeski, and Ryan Mathur, 2016, The Rogue Kimberlite Dikes in Indiana County, Pennsylvania, in: *Energy & Environments: Geology in the "Nether World" of Indiana County, Pennsylvania*, 81st, Indiana PA., Guidebook, p. 121-150.

Tedeski, Joseph R., 2002, Tanoma/Dixonville Kimberlite Dike and other Geologic Features found in the Tanoma Coal Mine: CD Pennsylvania Geological Survey, Pittsburgh office.

Same location as slide 1 looking West the two veins going up into the roof are more apparent and take note of a smaller vein in the roof toward the right side of the sill, note that it's source has moved away from it. The hammer is 13 inches tall.

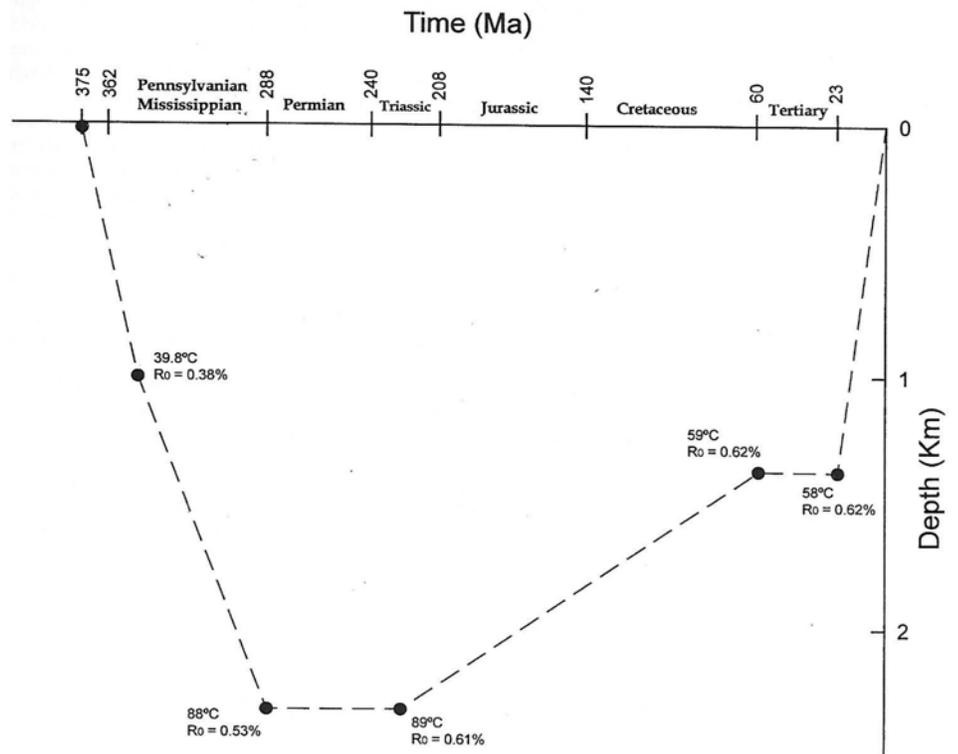
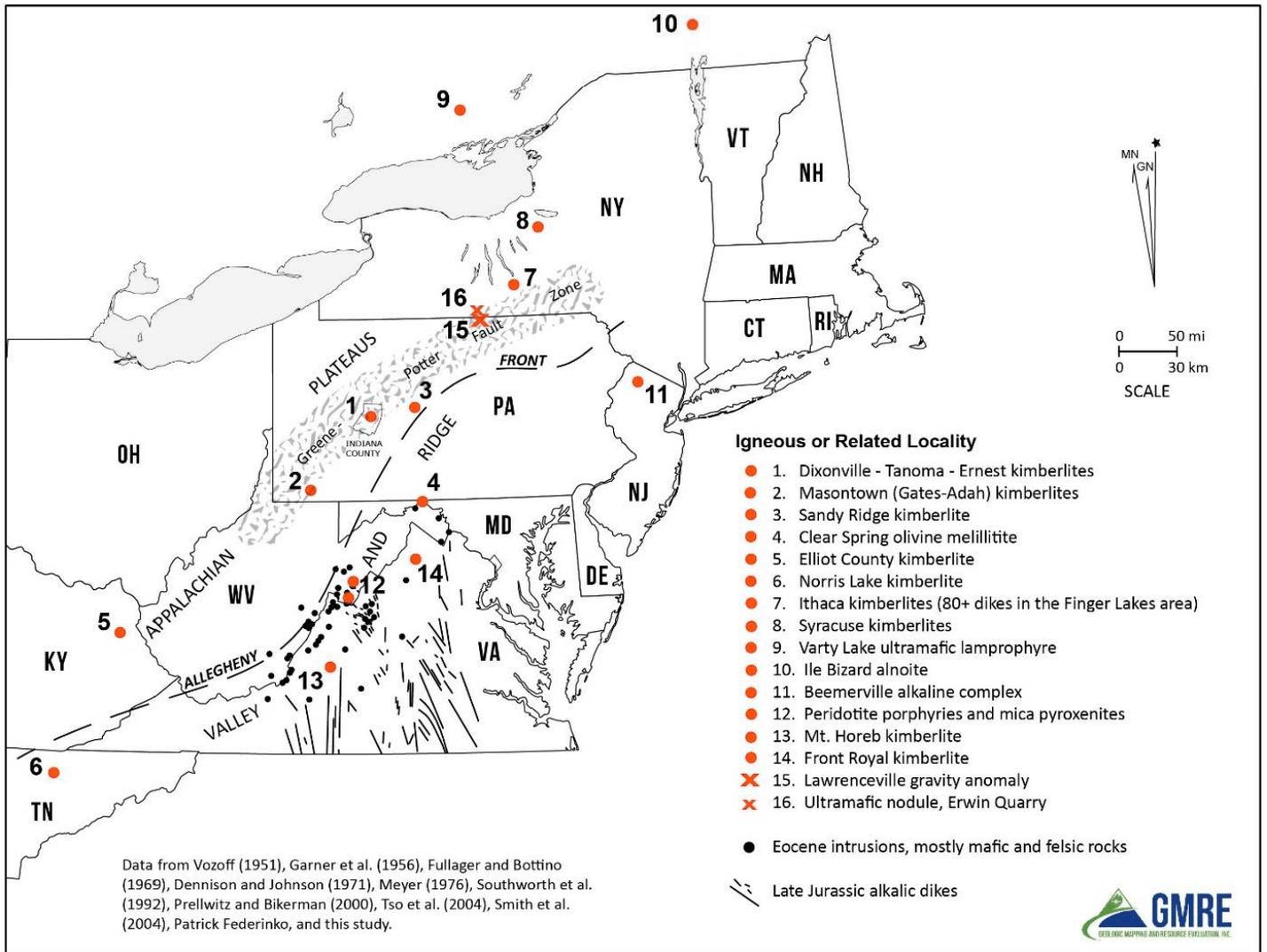


Figure 4. Pressure-Temperature-Time path deduced from coal reflection and fission track data.



Geo-Sudoku

by David Glick

This puzzle contains the letters ACEGMRSTY. One row or column spells something that might be found in a kimberlite. As usual, if you've read this issue, you've seen the word. 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.

A			S	M	Y	C	E	
		Y		G	T		R	A
		G	A	C				
E	A		Y		G			R
		S			E	A	Y	
				A	C			E
		A		R				
	S	E			A		T	
T	Y			E		G		

COLLECTION FOR SALE

Wide-ranging, good-sized collection; concentration on a nice variety of mineral crystals but also metallic specimens, several types of hematite, some gemstones and rough for cabbing or faceting, volcanic material, fossils. Most fairly small, most purchased from dealers through the years. Prefer to sell the collection as a whole, although sale of certain subsets (hematite, quartz, gemstones, or fossils) is possible. Located in Burnham, PA. Contact Mike, <mikerockcutter@aol.com> or 814-571-9672.

Some Upcoming Shows and Meetings

Our web site <http://www.nittanymineral.org> has links to more complete lists and details on mineral shows and meetings around the country. See www.mineralevents.com for more.

November 19-20, 2016: Northern Virginia Mineral Club 25th Annual Show, Fairfax, VA. Student Union II Bldg., George Mason Univ.; Adults \$6, Seniors \$4, Teens (13-17) \$3, Children 12 & under FREE; Dealers, Exhibits, Door Prizes, Silent Auction. Sat. 10-6, Sun. 10-4; <http://www.novamineralclub.org/events/2016-show>

March 4-5, 2017: Earth Science, Gem and Mineral Show by Delaware Mineralogical Society. NEW LOCATION: U. Del. Wilmington campus, Arsht Conference Center, 2800 Pennsylvania Ave (Rt. 52), Wilmington DE 19806. Sat 10-5, Sun. 11-5. Info and coupons at www.delminsociety.org

--- **AND A Symposium** with a variety of topics and speakers; watch for details.

October 21-22, 2017: EFMLS Convention & Show, Bristol, Connecticut.

Geo-Sudoku Solution

A	R	T	S	M	Y	C	E	G
S	C	Y	E	G	T	M	R	A
M	E	G	A	C	R	Y	S	T
E	A	C	Y	S	G	T	M	R
R	G	S	M	T	E	A	Y	C
Y	T	M	R	A	C	S	G	E
G	M	A	T	R	S	E	C	Y
C	S	E	G	Y	A	R	T	M
T	Y	R	C	E	M	G	A	S

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'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). Those joining in March or later may request pro-rated dues. Your dues are used for programs and speakers, refreshments, educational activities, Bulletins, and mailing expenses. Please fill out a membership form (available at www.nittanymineral.org), make checks payable to "Nittany Mineralogical Society, Inc." and send them in as directed, or bring your dues to the next meeting.

We want to welcome you!

CONTACT INFORMATION

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 e-mail: gold@ems.psu.edu

Door Prizes: Dr. Bob Altamura (see above)

Facebook & Publicity: John Dziak: jjd264@psu.edu

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)
 State College, PA 16801-7226

Newsletter submissions are appreciated by the first Wednesday of the month. Photographs or graphics are encouraged, but 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 name of photographer or artist.

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