

The official bulletin of the Dothan Gem & Mineral Club, Inc.

# ROCKHOUNDS HERALD

920 Yorktown Road, Dothan, AL 36301-4372

[www.wiregrassrockhounds.com](http://www.wiregrassrockhounds.com)

**October 2015**



## Words from...

### The President

Our September kick off meeting was excellent. We chatted about summer activities for a while, had a great Show & Tell, grabbed something to munch on and had a class on the history and geology of Alabama. Elliot Whitton gave us the condensed version of the classes he teaches in the local schools. It was great. Thanks, Elliot.

We also welcomed two new members, Ron and Kim Patton from Ozark. Nice to have you with us!

Now that cooler weather is here, some of the dig sites in Georgia are announcing open dig days. If you get wind of any, please let the club know. Some of our folks were planning to head to a dig at Graves Mountain for an October 2 – 4 weekend dig. Can't wait to hear about the adventure at the next meeting and see the treasures they found.

Hope to see everyone at the October meeting on the 25<sup>th</sup>.

Pat

## Announcements

Watch this space for information on the upcoming classes planned for this year.

## Upcoming Shows

OCT 24 – 25	St Lucie County Rock and Gem Club	Stuart, FL
OCT 31 – NOV 1	Tampa Bay Mineral & Science Club	Plant City, FL
NOV 8 – 9	Canaveral Mineral and Gem Society	Melbourne, FL
NOV 13 – 15	Mississippi Gulf Coast Gem & Mineral Society	Pascagoula, MS
NOV 20 – 22	Columbia, Gem & Mineral Society	Columbia, SC
NOV 21 – 23	Cobb County Gem & Mineral Society	Marietta, GA
NOV 21 – 22	Gem & Mineral Society of the Palm Beaches	West Palm Beach, FL
NOV 27 – 29	Roanoke Valley Mineral & Gem Society	Salem, VA
NOV 28 – 30	Mobile Rock and Gem Society	Mobile, AL

Source: <http://www.amfed.org/sfms/club-shows-789.html> and <http://www.the-vug.com/educate-and-inform/mineral-shows/>

# Meeting Minutes – September 2015 – by Secretary

The meeting was called to order at 14:12 by president, Pat LeDuc. There were 23 club members in attendance; including 2 new members, Ron and Kim Patton. Happy Birthdays were wished to all our September babies.

CORRESPONDENCE: AMFS Newsletters.

MINUTES & TREASURER'S REPORT: Minutes from the last regular meeting in May were approved and Diane Rodenhizer presented the treasurer's report, which was also approved.

OLD BUSINESS: There were no pending items of Old Business.

SHOW BUSINESS: The "Save the Date" cards will be going out next month to our list of vendors. Diane reminded club members that they need to let Show Chair Jeff DeRoche know the number of tables they expect to book for the 2016 show. Diane also found bookmarks that can be printed up with show dates and used as reminders and promos. She will get us more details.

NEW BUSINESS: Laural Meints will be stepping aside from hostess duties as of this month. She has two separate rounds of surgery pending over the next 6-10 weeks. Shoulder replacement and then back surgery. Total recovery could take up to six months. We all wish Laural the best for successful surgeries and recoveries. For now, club members will step into sharing hostess duties on an ad hoc basis. Pat raised the question of allocating stipends for any speakers we invite to address our meetings. The stipends would be to cover portions of a speaker's travel expenses. No motion was made, but the matter met with general approval, to be discussed as needed. Pat reported on conversations and email she has been having with the Mississippi Gulf Coast Gem & Mineral Society about booking digs together. Maybe tours of the Lambert Museum? A dig at LJ's Rock Pile? A trip to the Hogg Mine later this fall? For now, Pat has asked the club president for info about how many members of the club might be interested in sharing various trips. Pat has not heard back yet. Arnie Lambert mentioned that the president of the Gulf Coast Gem & Mineral Society in Panama City might be a good speaker to have for one of our meetings. Ken Wilson told us that the Panama City club has a new chair, and that they might also wish to do field trips together. Ken will keep us posted. As for other activities for the coming year, Diane volunteered to teach a class in Japanese braiding, known as Kumihimo. JoAn Lambert mentioned she could do a class for those interested in making "Gem Trees" and bracelets.

PROGRAM: Elliott Whitton presented today's program. This was an abbreviated version of classes he has been teaching to high school students in the area. The classes cover basics in minerals and some gemstones and fossils. The classes fit these pieces into the time-line of geological history. Alabama is blessed with having a greater number of geological "zones" than most states. Alabama is a popular state for geologists to visit in order to study these zones.

SHOW AND TELL: The usual dazzling array of pieces! Arnie and JoAn had some new pieces they bought at the Jacksonville Show just last Friday. Arnie showed the wire-wrapped pendant he got as a door prize and some pieces from Graves Mountain. Also, some new photos of tiny crystals he had mounted on cat whiskers!

New members, Kim and Ron brought some interesting pieces from their recent collecting trips that they wanted to have ID'ed.

The meeting wrapped up with food and the presentation of door prizes. Our door prize went to Kim Patton, our new member! How about that!!

Respectfully submitted by B. Fizzell

## Mineral Resources – Region 1, con't.

### Cambrian-Ordovician Sediment

#### Mineral Deposit Processes

No significant mineralization appears to be associated with the Cambrian-Ordovician sediment deposition that occurred between mountain building events, but hydrothermal fluids moved through some of these rocks during subsequent mountain building events (and in some cases the hydrothermal fluids migrated as far as the Mississippi Embayment). The fluids followed units of permeable rock, but also migrated along fractures and especially thrust faults.

#### Metallic Mineral Deposits

Minor occurrences of zinc and lead sulfides are present in the Cambrian-Ordovician passive margin sediments in the Blue Ridge, but there are several large barite ( $\text{BaSO}_4$ ) deposits formed along thrust faults. A good example is the barite deposits of the Hot Springs District in Madison County, North Carolina.

#### Non-metallic Mineral Deposits

Talc ( $\text{Mg}_3\text{Si}_4\text{O}_{10}(\text{OH})_2$ ) deposits are associated with the Murphy Marble in a belt extending through Cherokee and Swain counties, North Carolina. These deposits were mined as early as 1859 and well into the 1980s, but are currently inactive. The district produced over 200,000 tons of high-grade talc. The talc formed through tectonic-metamorphic alteration of the silty dolomite or associated sediments during one of the Paleozoic orogenic events.

#### Why is Talc Associated with Marble?

Talc is  $\text{Mg}_3(\text{OH})_2[\text{Si}_4\text{O}_{10}]$ , a hydrated magnesium silicate. Marbles such as the Murphy Marble of western North Carolina and Georgia are not pure calcite ( $\text{CaCO}_3$ ) marbles, but rather dolomitic ( $\text{MgCO}_3$ ) and slightly silty with detrital quartz grains. During hydrothermal alteration accompanying metamorphism, the calcite, dolomite, and silica react to form talc. Talc is also formed from the alteration of ultramafic rocks, rich in olivine (Mg silicate), but may also contain asbestiform minerals and iron minerals. The talc formed from dolomitic marbles tends to be cleaner and more pure, which made the Murphy deposits economic.

### Inner Piedmont Rocks

#### Mineral Deposit Processes

The volcanic rocks of the Inner Piedmont host numerous sulfide and gold deposits, although most were relatively small and largely mined out in the 19th Century. The gold and sulfide deposits occur generally through hydrothermal processes. Many of the high grade gold deposits

occur concentrated within quartz veins. Subsequent weathering and erosion formed rich placer and residual gold deposits that were the initial target of mining in the Piedmont. Alluvial mining gave way to lode mining as the placer deposits were exhausted and the gold was traced to its source in the bedrock.

Metamorphism and igneous intrusions into the Inner Piedmont rocks during the Paleozoic mountain building events also produced numerous small pegmatite deposits (through magmatic processes), and concentrations of aluminum silicates of the kyanite group.

#### Metallic Mineral Deposits



Figure 5.7: The Virginia Gold-Pyrite Belt.

There are over 300 known gold, silver, and base metal mines and prospects in Virginia, but the most important cluster is in a narrow zone of volcanic rocks called the Virginia Gold-Pyrite (FeS) Belt that extends for about 100 miles (Figure 5.7). At least 100 old gold mines are present along this trend, opened along veins and sulfide deposits of hydrothermal origin. Total gold production from Virginia from 1804 through 1947 was 300,000 troy ounces. Copper, zinc, and lead from sulfide deposits also were mined in this area.



Figure 5.8: North Georgia's Dahlonega Belt.

The Dahlonega Belt of volcanic rocks in northern Georgia produced over 500,000 ounces of gold between 1838 and 1941 from mining of gold-bearing quartz veins and sulfide deposits (Figure 5.8). These deposits occurred through hydrothermal processes. There were dozens of small mines, and several large mines including the Battle Branch, Calhoun, and Findley. The Creighton (Franklin) Mine in Cherokee County was active between 1840 and 1909, and produced almost 50,000 ounces of gold. A branch of the U. S. Mint operated in Dahlonega between 1838 and 1861, striking United States coins from Dahlonega gold. The state of Georgia has produced between 1 and 1.5 million ounces of gold since 1828.

## Dahlonega and the Trail of Tears

The 'official' discovery of gold in Georgia was made by Frank Logan in present day White County in 1828, well within the territory of the Cherokee Nation. The Cherokee were aware of the presence of gold on their lands, and gold mines were operated illegally in Cherokee Territory as early as 1819. As word of the discovery spread, a systematic campaign to remove the Cherokee and open the area to gold mining was crafted in Georgia and Washington, D.C. In 1830 Congress quickly passed the Indian Removal Act. In December 1835, the U.S. government signed a treaty with a small group of disaffected Cherokee, none elected officials of the Cherokee Nation. Twenty signed the treaty, ceding all Cherokee territory east of the Mississippi to the U.S., in exchange for \$5 million and new homelands in the Indian Territory (Oklahoma). More than 15,000 Cherokees protested the illegal treaty, but it was ratified by the U.S. Senate by one vote in 1836. Most of the Cherokee people were forced to leave their ancestral home in Northern Georgia and adjacent states, and relocate to the Indian Territory in the winter of 1838-1839. Over 4000 Cherokee died as a result of the removal, nearly a fifth of the Cherokee population. Their journey is called 'The Trail of Tears.'

There is also a wide variety of metallic mineral deposits scattered throughout the Inner Piedmont outside the belts of volcanic rocks associated with the Taconic mountain building event, although few have been large producers. Several small deposits of copper and zinc sulfides are known, and extensive though not economical occurrences of tin (Sn) and zinc were explored as recently as the late 1990s.

Residual weathering and stream action formed numerous deposits of heavy mineral concentrates in the Inner Piedmont. Heavy minerals include monazite ((Ce,La,Y,Th)PO<sub>4</sub>), a major source of thorium (Th), and rutile and ilmenite, important ores of titanium. These minerals are hard, resistant to weathering and erosion, and are concentrated and segregated by stream flow due to their high density. They originated in lower grade concentrations from high temperature metamorphic rocks and granite intrusions from the Taconic mountain building event. Almost all monazite production in the United States from 1880 to 1918 came from the Western Monazite Belt in the Inner Piedmont of North and South Carolina (Figure 5.9).

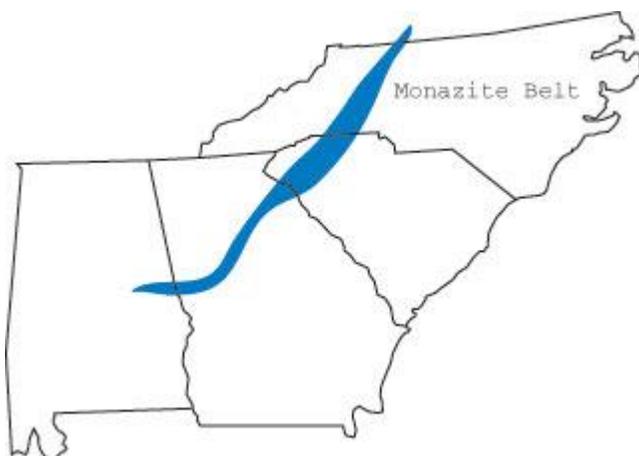


Figure 5.9: The Monazite Belt of the Inner Piedmont.

## Non-metallic Mineral Deposits

Pegmatites are widespread in the Inner Piedmont, although generally no longer mined. An unusual group of lithium-bearing pegmatites in Alexander County, North Carolina produces gem quality emeralds and hiddenite, a gem form of spodumene. Lithium (Li) is produced in North Carolina from a series of large lithium-rich pegmatite deposits extending into South Carolina. The lithium occurs in the mineral spodumene ( $\text{LiAlSi}_2\text{O}_6$ ), and these deposits represent one of the largest concentrations of silicate lithium in the world. The pegmatites contain approximately 20 percent spodumene.



Figure 5.10: The Sillimanite Belt of the Inner Piedmont.

Sillimanite ( $\text{Al}_2\text{SiO}_5$ ) and kyanite in the Inner Piedmont, formed through recrystallization of aluminum rich sedimentary or volcanic rocks during metamorphism. Extensive deposits of varying grade (10-20%) formed in rock formations in the Blue Ridge and Inner Piedmont. Because they are hard and chemically non-reactive, kyanite and sillimanite may become concentrated by residual weathering. Kyanite deposits are more common in the Blue Ridge, and sillimanite-rich schist form a broad belt in the Inner Piedmont from North Carolina to Georgia (Figure 5.10). Although there has been minor production in the past, kyanite and sillimanite deposits of the Blue Ridge and Inner Piedmont are not economic concentrations.

Alteration of ultramafic rocks in the Inner Piedmont during the Paleozoic mountain building events has formed deposits of vermiculite, used in lightweight concrete aggregates, insulation, agriculture, and other products. The United States is one of the two largest producers of vermiculite in the world. All U.S. production comes from deposits in the Inner Piedmont of Virginia and South Carolina.

Sources: <http://geology.teacherfriendlyguide.org/index.php/minerals-se>  
<http://geology.teacherfriendlyguide.org/index.php/minerals-se/region-1-blue-ridge>

Picconi, J. E. 2003. The Teacher-Friendly Guide to the Geology of the Southeastern U.S. Paleontological Research Institution, Ithaca, NY.

# Club Meeting – September 2015

Photos by Pat & Bruce



We welcomed two new members and took a look at a few of their recent finds.

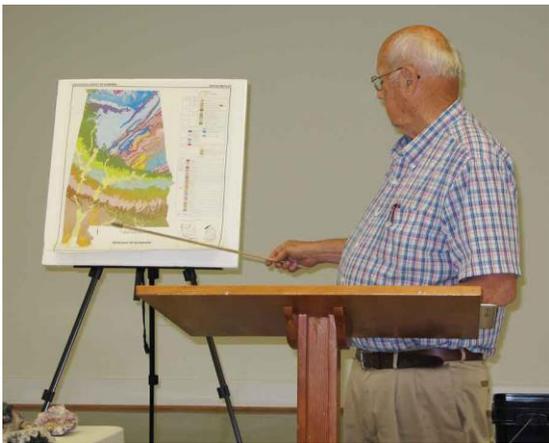


# Club Meeting – September 2015

Photos by Pat & Bruce



**Club Member, Elliott Whitton, gave a talk on the history and geology of Alabama.**





## A Geologist's Lifetime Field List

- **An erupting volcano.** Possible locations include Hawaii, Italy, or Iceland. "The man who feels smug in an orderly world has never looked down a volcano"
- **A glacier**, preferably continental
- **An active geyser**, such as those in Yellowstone or the type locality of Iceland
- **The Cretaceous/Tertiary (KT) boundary.** Possible locations include Gubbio, Italy, Stevns Klint, Denmark, the Red Deer River Valley near Drumheller, Alberta
- **A river whose discharge is above bankful stage, or a catastrophic flash flood.** [See Cincinnati Flood photos](#)
- **A limestone cave.** Try Carlsbad Caverns in New Mexico, Lehman Caves in Great Basin National Park, or the caves of Kentucky or TAG (Tennessee, Alabama, and Georgia)
- **An open pit mine**, such as those in Butte, Montana, Bingham Canyon, Utah, Summitville, Colorado, Globe or Morenci, Arizona, or Chuquibambilla, Peru
- **A subsurface mine**
- **An ophiolite**, such as the ophiolite complex in Oman or the Troodos complex on the Island of Cyprus
- **An anorthosite complex**, such as those in Labrador, the Adirondacks, and Niger
- **A slot canyon.** Many of these amazing canyons are less than 3 feet wide and over 100 feet deep. They reside on the Colorado Plateau. Among the best are Antelope Canyon, Brimstone Canyon, Spooky Gulch and the Round Valley Draw
- **Antelope Canyon.** This excellent photograph of Antelope Canyon was taken by Jonathan Jasper, a graduate student in Karst studies at Western Kentucky University (he's the guy standing in the canyon!)
- **Varves**, whether you see the type section in Sweden or examples elsewhere
- **An exfoliation dome**, such as those in the Sierra Nevada
- **A layered igneous intrusion**, such as the Stillwater complex in Montana or the Skaergaard Complex in Eastern Greenland
- **Coastlines along the leading and trailing edge of a tectonic plate**
- **A ginkgo tree**, which is the lone survivor of an ancient group of softwoods that covered much of the Northern Hemisphere in the Mesozoic

### Other Suggestions

- Living and fossilized stromatolites (Glacier National Park is a great place to see fossil stromatolites)
- A field of glacial erratics
- A large catastrophic mass-wasting event
- A sand dune more than 200 feet high
- A fjord
- A caldera
- A recently formed fault scarp
- Sizable breccias
- An actively accreting river delta (scenic photos)
- A natural bridge
- A large sinkhole

- A glacial outwash plain
- A sea stack
- A house-sized glacial erratic
- An underground lake or river
- The continental divide
- Fluorescent and phosphorescent minerals
- Petrified trees
- Lava tubes
- "Booming" sands...

### **The Best of the Rest:**

#### **other natural phenomena to see or experience**

- **Totality!! A total solar eclipse** is claimed to be the single most spectacular phenomenon in all of nature. They occur somewhere on this planet at a rate of approximately one every 1.5 years (world map of total eclipse paths from 1997 to 2020). The next total solar eclipse paths to cross the North American continent will occur in the year 2017 and again in the year 2024 (map of total eclipse paths in North America for years 2001-2050). Also, a path of totality passes thru major population centers in Europe on August 11, 1999
- **Witness a tornado, firsthand.** (important rules of this game)
- **Witness a meteor storm**, a term used to describe a particularly intense (1000+ per minute) meteor shower . Meteor storms are extremely rare and hard to predict. The 1998 or 1999 Leonid showers are possibilities
- **View Saturn and its moons** through a respectable telescope
- **View a great naked-eye comet**, an opportunity which occurs only a few times per century (see "Great Comets in History" at this website). Both Comet Hale-Bopp (1997) and Comet Hyakutake (1996) fell into this category, two great comets in two years. For a brief time, Comet Hyakutake had a spectacular tail over 70 degrees long (only visible from dark skies). The only way to fully appreciate a bright comet is to get far away from the light pollution of the cities and suburbs.

#### **Other Suggestions**

- See a lunar eclipse
- View a distant galaxy through a large telescope
- Experience a hurricane
- See noctilucent clouds
- Walk through an ancient redwood grove
- See the green flash
- Witness a supernova
- Witness hail 3 inches or larger falling from the sky
- Ball lightning...

Source: [http://www.artsci.uc.edu/departments/geology/discover-cinti--geology/field\\_list.html](http://www.artsci.uc.edu/departments/geology/discover-cinti--geology/field_list.html)

# Who What Where When Why How

## October Birthdays

**OCT 2 Pat LeDuc**  
**OCT 8 Maxine Johnson**  
**OCT 17 Gary Meints**  
**OCT 19 Anne Trice**

## Random Rock Facts

October is another month with two birthstone choices – Tourmaline and Opal. The name *opal* derives from the Greek *Opallos*, meaning "to see a change (of color)." Opals range in color from milky white to black with flashes of yellow, orange, green, red, and blue. An opal's beauty is the product of contrast between its color play and its background. Opal is a formation of non-crystalline silica gel that seeped into crevices in the sedimentary strata. Through time and nature's heating and molding processes, the gel hardened into the form of opals. The opal is composed of particles closely packed in spherical arrangements. When packed together in a regular pattern, a three-dimensional array of spaces are created that give opal its radiance.

Reprinted with permission from the American Gem Society  
Source: <http://www.americangemsociety.org/october-birthstones>



## Meeting Information

**Time:** 2:00 PM  
**Date:** Fourth Sunday of each month (except June, July and August)  
**Place:** Fellowship Hall – Tabernacle United Methodist Church  
4205 S. Brannon Stand Road  
Dothan, AL

## Officers

**President – Pat LeDuc**  
334-806-5626

**Vice President – Garry Shirah**  
334-671-4192

**Secretary – Bruce Fizzell**  
334-577-4353

**Treasurer – Diane Rodenhizer**  
334-447-3610

**Bulletin Editor – Joan Blackwell**  
334-503-0308  
Tfavorite7@aol.com

**Webmaster – Pat LeDuc**  
334-806-5626

**Membership Chair – Diane Rodenhizer**  
334-447-3610

**Show Chair – Jeff DeRoche**  
334-673-3554

**Field Trips Chair – Bruce Fizzell**  
334-577-4353

**Hospitality Chair – Vacant**

**Club Hostess – Laural Meints**  
334-723-8019

**Club Liaison – Garry Shirah**  
334-671-4192

**Website:** [www.wiregrassrockhounds.com](http://www.wiregrassrockhounds.com)

## Objectives

To stimulate interest in lapidary, earth science and, when necessary, other related fields.

To sponsor an educational program within the membership to increase the knowledge of its members in the properties, identifications and evaluations of rocks, minerals, fossils and other related subjects.

To cooperate and aid in the solution of its members' problems encountered in the Club's objectives.

To cooperate with other mineralogical and geological clubs and societies.

To arrange and conduct field trips to facilitate the collection of minerals.

To provide opportunity for exchange and exhibition of specimens and materials.

To conduct its affairs without profit and to refrain from using its assets for pecuniary benefit of any individual or group.

## Classified Ads

**Looking for an item to round out your rock collection?**

**Got a specimen, tool or handicraft for sale or trade?**

**Submit the pertinent details to me by the 10<sup>th</sup> of each month and your inclinations will be made known to the membership in the next bulletin.**

**N. J. Blackwell**  
28 Lakeview Trail, Apt. C  
Daleville, AL 36322  
Phone: 334-503-0308  
Email: Tfavorite7@aol.com

## Annual Dues

Single \$15  
Family \$20

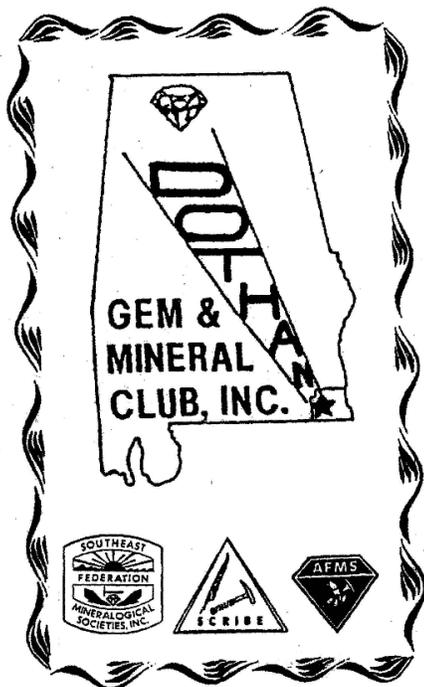
## Refreshments

**OCT 25 – Potluck Refreshments**

# ROCKHOUNDS HERALD

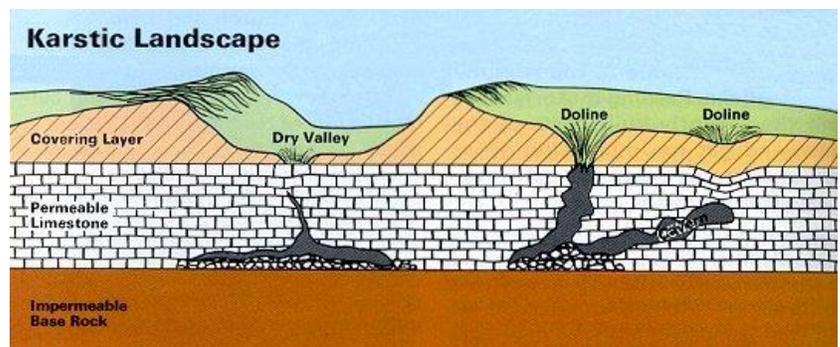
Editor – N. J. Blackwell  
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[www.wiregrassrockhounds.com](http://www.wiregrassrockhounds.com)



## Where you might hear...

**Karst** – a distinctive landscape (topography) that can develop where the underlying bedrock, often limestone or marble, is partially dissolved by surface or ground water.



Source: <http://www.istrianet.org/istria/geosciences/geology/karst-description.htm>

**Member of**  
**Southeast Federation of Mineralogical Societies, Inc.**  
**American Federation of Mineralogical Societies**