The CHIP & LICK newsletter

VOLUME 55, NUMBER 1 **January, 2009**

THE MIAMI VALLEY GEM & MINERAL CLUB

Purpose and Memberships

The objectives of the Miami Valley Mineral and Gem Club are:
To promote interest and increased knowledge in the fields of mineralogy, geology, and the lapidary arts.
To further the art of mounting and setting stones.
To encourage the collecting, identifying and displaying of specimens in these fields.

The annual dues are $10.00 for an individual membership, $15 for a couple, or $17 for a family membership.

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This club is a member of the Midwest Federation of Mineralogical and Geological Societies (MWF), which is a member of The American Federation of Mineralogical Societies (AFMS). **MEETINGS:** Second Sunday of the month except July and August.

PLACE: Small Business Development Center, 300 E. Auburn Ave., Springfield, OH 45505. Phone: 322-7821
TIME: 2:00 P.M.
Editor: Tom Bolka
2275 Capestrano Dr.
Xenia, OH 45385
WEB SITE: www.mvmgc.org

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MIAMI VALLEY MINERAL AND GEM CLUB, INC.

2009 OFFICERS

President	Tim Fosberg	849-4471
Vice President	Andreas Ruben	390-2081
Corresponding Secretary	Katrin Ruben	390-2081
Recording Secretary	Joyce Perry	408-3744
Treasurer	Joyce Perry	372-8228
Editor	Tom Bolka	372-3365
Librarian	Joyce Perry	372-8228
Curator-Historian	Tim Fosberg	849-4471
Trustee (2005)	Marie Shinabarger	426-2289
Trustee (2006)	Becky Dobbs	372-9022
Trustee (2007)	Hugh Fulton	322-1021
Trustee (2008)	Hugh Fulton	322-1021
Trustee (2009)	Udean Babyak	

2009 COMMITTEES

Anti-Litter	All Members
Canceled Stamps	Kay Faux
Chaplain	Udean Babyak
Field Trips/ Safety	Tom Bolka
Field Trips/ Safety	Clyde Spencer
MWF Liaison	Hugh Fulton
Photographer	Andreas Ruben
Program	Andreas Ruben
Refreshment	Joyce Perry
Scholarship	Joyce Perry
Show Chairman	
Spring Banquet	Udean Babyak
Sunshine	Joyce Perry
Swap	Hugh Fulton
Webmaster	Katrin Ruben
Christmas Party	Katrin Ruben

Special club-member news!

January Birthdays

None

January Anniversaries

None

Mineral of the month – Copper

Copper (pronounced /□k□p□/) is a chemical element with the symbol Cu (Latin: cuprum) and atomic number 29. It is a ductile metal with an excellent thermal and electrical conductivity. Copper is rather supple in its pure state and (when fresh) has a pinkish or peachy color, which (besides gold) is unusual for metals, which are usually silvery or grayish. It is used as a thermal conductor, an electrical conductor, a building material, and a constituent of various metal alloys.
Copper is an essential trace nutrient to all high plant and animal life. In animals, including humans, it is found primarily in the bloodstream, as a co-factor in various enzymes and in copper-based pigments. However, in sufficient amounts, copper can be poisonous and even fatal to organisms.
Copper has played a significant part in the history of mankind, which has used the easily accessible uncompounded metal for thousands of years. Evidence has been preserved from several early civilizations of the use of copper. In the Roman era, copper was principally mined on Cyprus, hence the origin of the name of the metal as Cyprium, "metal of Cyprus", later shortened to Cuprum.
A number of countries, such as Chile and the United States, still have sizable reserves of the metal which are extracted through large open pit mines. However, like tin, there may be insufficient reserves to sustain current rates of consumption. High demand relative to supply caused a price spike in the 2000s.
Copper has a significant presence in decorative art. It can also be used as an anti-germ surface that can add to the anti-bacterial and antimicrobial features of buildings such as hospitals.

Copper Age

Copper, as native copper, is one of the few metals to naturally occur as an un-compounded mineral. Copper was known to some of the oldest civilizations on record, and has a history of use that is at least 10,000 years old. No one knows exactly when copper was first discovered, but earliest estimates place this event around 9000 BC in the Middle East. A copper pendant was found in what is now northern Iraq that dates to 8700 BC.[*citation needed*] It is probable that gold and iron were the only metals used by humans before copper. By 5000 BC, there are signs of copper smelting: the refining of copper from simple copper compounds such as malachite or azurite. Among archaeological sites in Anatolia, Çatal Höyük (~6000 BC) features native copper artifacts and smelted lead beads, but no smelted copper. Can Hasan (~5000 BC) had access to smelted copper but the oldest smelted copper artifact found (a copper chisel from the chalcolithic site of Prokuplje in Serbia) has pre-dated Can Hasan by 500 years. The smelting facilities in the Balkans appear to be more advanced than the Turkish forges found at a later date, so it is quite probable that copper smelting originated in the Balkans. Investment casting was realized in 4500-4000 BCE in Southeast Asia.

Copper smelting appears to have been developed independently in several parts of the world. In addition to its development in the Balkans by 5500 BC, it was developed in China before 2800 BC, in the Andes around 2000 BC, in Central America around 600 AD, and in West Africa around 900 AD. Copper is found extensively in the Indus Valley Civilization by the 3rd millennium BC. In Europe, Ötzi the Iceman, a well-preserved male dated to 3300-3200 BC, was found with an axe with a copper head 99.7% pure. High levels of arsenic in his hair suggest he was involved in copper smelting. Over the course of centuries, experience with copper has assisted the development of other metals; for example, knowledge of copper smelting led to the discovery of iron smelting.
In the Americas production in the Old Copper Complex, located in present day Michigan and Wisconsin, was dated back to between 6000 to 3000 BC.

Color

Copper just above its melting point keeps its pink luster color when enough light outshines the orange incandescence color.
Copper has a reddish, orangish, or brownish color because a thin layer of tarnish (including oxides) gradually forms on its surface when gases (especially oxygen) in the air react with it. But pure copper, when fresh, is actually a pinkish or peachy metal. Copper and gold are the only two elemental metals with a natural color other than gray or silver. The usual gray color of metals depends on their "electron sea" that is capable of absorbing and re-emitting photons over a wide range of frequencies. Copper has its characteristic color because of its band structure. In its liquified state, a pure copper surface without ambient light appears somewhat greenish, a characteristic shared with gold. When liquid copper is in bright ambient light, it retains some of its pinkish luster

Copper occupies the same family of the periodic table as silver and gold, since they each have one s-orbital electron on top of a filled electron shell. This similarity in electron structure makes them similar in many characteristics. All have very high thermal and electrical conductivity, and all are malleable metals. Among pure metals at room temperature, copper has the second highest electrical and thermal conductivity, after silver.

Copper can be found as native copper in mineral form (for example, in Michigan's Keewenaw Peninsula). Minerals such as the sulfides: chalcopyrite ($CuFeS_2$), bornite (Cu_5FeS_4), covellite (CuS), chalcocite (Cu_2S) are sources of copper, as are the carbonates: azurite ($Cu_3(CO_3)_2(OH)_2$) and malachite ($Cu_2CO_3(OH)_2$) and the oxide: cuprite (Cu_2O).

Mechanical properties

A single crystal copper consists of a few micrometres of small crystals. In this form of crystal (c), the yield stress is high and crystal undergoes a large amount of elastic deformation before going into the plastic deformation region. The plastic deformation region has an unpredictable outcome. The stress level decreases significantly as necking begins to occur.
Polycrystal copper has many crystal of different geometries combined. The plastic deformation of polycrystal is similar to mild steel. Copper has a high ductility and will continue to elongate as stress is applied. It is very useful in copper wire drawing.
Numerous copper alloys exist, many with important historical and contemporary uses. Speculum metal and bronze are alloys of copper and tin. Brass is an alloy of copper and zinc. Monel metal, also called cupronickel, is an alloy of copper and nickel. While the metal "bronze" usually refers to copper-tin alloys, it also is a generic term for any alloy of copper, such as aluminium bronze, silicon bronze, and manganese bronze.

Electrical properties

At 60 mmhos/m copper has the second highest electrical conductivity of any element after silver. This high value is due to virtually all the valence electrons (one per atom) taking part in conduction. The resulting free electrons in the copper amounting to a huge charge density of 13.6×10^9 C/m^3. This high charge density is responsible for the rather slow drift velocity of currents in copper cable (drift velocity may be calculated as the ratio of current density to charge density). For instance, at a current density of 5×10^6 A/m^2 (typically, the maximum current density present in household wiring and grid distribution) the drift velocity is just a little over ⅓ mm/s.

Corrosion

Pure water and air

Copper is a metal that does not react with water (H_2O), but the oxygen of the air will react slowly at room temperature to form a layer of brown-black copper oxide on copper metal.
The Pourbaix diagram for copper in pure water, perchloric acid or sodium It can be seen that copper in "pure" water is more noble than hydrogen. As a result it does not corrode in oxygen free water and the corrosion rate in oxygenated water is low. hydroxide
It is important to note that in contrast to the oxidation of iron by wet air that the layer formed by the reaction of air with copper has a protective effect against further corrosion. On old copper roofs a green layer of copper carbonate, called verdigris, can often be seen. Another notable example of this is on the Statue of Liberty.

In contact with other metals

Copper should not be in only mechanical contact with metals of different electropotential (for example, a copper pipe joined to an iron pipe), especially in the presence of moisture, as the completion of an electrical circuit (as through the common earth ground) will cause the juncture to act as an electrochemical cell (as is a single cell of a battery). The weak electrical currents themselves are harmless but the electrochemical reaction will cause the conversion of the iron to other compounds, eventually destroying the functionality of the union. This problem is usually solved in plumbing by separating copper pipe from iron pipe with some non-conducting segment (usually plastic or rubber).

(From Wikipedia)

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New Dop Glue

There's a new glue called Zap-Agap, and the accelerant called Zip Kicker. It's awesome stuff and really works. You spray the Zip Kicker on the back of the stone and then put a little drop of the ZapAgap on the dop stick. Stick the dop stick on to the rock and hold for a few seconds and viola they are stuck together. What's nice about this is you don't have to work with hot wax and it doesn't get all over the piece you're working on so you can work on very small cabs without a mess around the edges and all you need to do to separate the rock from the dop stick is pop it off with a finger nail.
You can find more information at: http//zap.supergluecorp.com/pt04.html.

(Source: Strata Gem – Dec. 2007 / / Rock Chips)

Household Products That Can Be Used As Rock Cleaners - by Betsy Martin

Safety: Always use plastic containers, rubber or nitrite gloves, eye protection, good ventilation, and great care when using these products.

1. Zud or Barkeeper's Friend cleansers (contains oxalic acid) - warm or hot solutions will remove iron stains and are helpful with clay deposits. These cleaners can be used with a toothbrush on sturdy surfaces.

2. Toilet Cleaner (the hydrochloric acid type) – dissolves calcite rapidly. After treating anything with an acid, rinse very carefully and soak in ample fresh or distilled water for a while to leach out any acid remaining in crystal seams and fractures. You can then follow up with a final soak in dilute Windex to neutralize remaining traces of acid.

3. Lime Away (dilute hydrochloric acid) - dissolves calcite more slowly. Rinse as you would for other acid treatments (see above).

4. Calgon - dissolve this powdered water softener in water. Use for clay removal.

5. Vinegar (Acetic acid), soda water, colas (carbonic and phosphoric acids) - will slowly etch out very delicate fossils in limestone. Rinse as you would for other acids.
(Submitted by Judy Maury, via: Rock Skippers Review – Nov. 2007 / / Rock Chips)

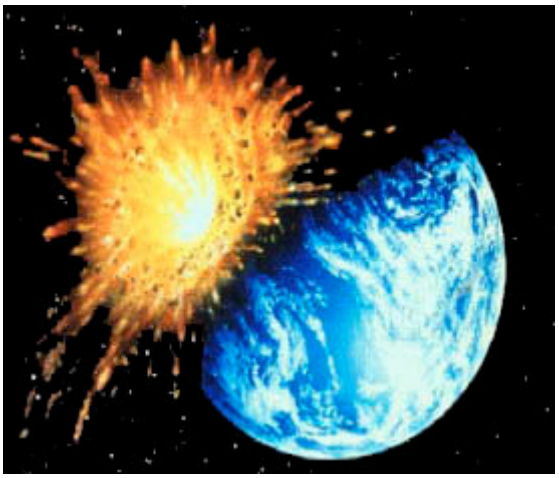
An Ideal Club Member's Alphabet

A - Always: attend meeting
B - Bring: someone with you
C - Communicate: with others
D - Develop: mutual understanding and respect
E - Enjoy: the hobby and have fun
F - Friendship: cherish and nurture the valuable commodity
G - Generosity, Goals, Gentleness: use when needed
H - Honesty: use it regularly
I - Ideas: Share with other members
J - Jealousy: avoid like the plague
K - Knowledge: help promote it
L - Labor: donate when and where needed
M - Mistakes: correct yours and overlook others
N - Nonsense: use frequently - breaks monotony
O - Order: help maintain at all meetings
P - Patience: develop as much as possible
Q - Quarrels: never indulge. They serve no good purpose
R - Rocks: study, hunt, collect, work, polish, build with them
S - Share: your talents, energy and knowledge with others
T - Talent: use and improve as much as possible
U - United: help the club stay that way
V - Value: friends, members, yourself and the organization
W - Work: an important ingredient, be willing to help carry the load
X - X-rate: gossip, malice, petty peeves, negative attitudes
Y - Yesterday: leave it where it belongs - in the past
Z - Zeal: be generous with it, encourage others to do likewise

(Source of both articles: Strata Gem 4/08 / Rock Chips)

A little Humor!!!

(From Rd.com)



Meteorites

A meteorite is a meteor that survives its entry into the Earth's atmosphere and comes to rest on the ground. These bodies are usually quite a bit larger than the dust particles discussed above. They have to be, because the intense heat created by their entry into the atmosphere melts and vaporizes much of their mass! Thus smaller particles are vaporized completely, while only a larger meteoroid will be able to retain some of what it started with.

When a large meteoroid streaks through the sky towards earth, it creates a fireball that can be seen for hundreds of miles, even in the middle of the day. While the rock may be only one or two feet in diameter when it enters the atmosphere, the intense heat might produce a fireball hundreds of feet in diameter!

In addition, the shock waves generated by the intense speed of the body (up to 26 miles per second) create a type of sonic boom. Sometimes the sound of the meteorite -- which can be much like an explosion (or a series of explosions if the meteorite breaks apart as it falls to earth) -- isn't heard until a minute or two after the fireball has passed overhead.

One of the largest fireballs in recorded history was created by the Sikhote-Alin meteorite, which fell in 1947 in Siberia. Witnesses said the fireball was as big as the sun, and was so bright that it produced moving shadows as it passed overhead. The meteorite's fall

resulted in no fewer than 122 craters, the largest of which was 85 feet in diameter and almost 20 feet deep.

The Sikhote-Alin meteorite gave scientists a perfect opportunity to study crater formation, among other things. They discovered that most meteorites large enough to create a crater were also too large to withstand their impact with the earth -- they shattered and/or vaporized into many smaller pieces.

A crater much closer to home -- Meteor Crater -- is a fine example of this phenomenon. At 4150 feet in diameter, 2.4 miles in circumference, and 550 feet deep, it makes even the largest Sikhote-Alin crater seem little more than a puddle. (By the way, scientists theorize that the meteorite that formed this huge crater was all of 100 feet in diameter!) Most of the meteorites found there have been found at the perimeter of the crater and up to seven miles away.

In 1902, Daniel Barringer, the first person to suggest that Meteor Crater might be linked to the fall of a meteorite, took an interest in it because of the bits of nickel iron that had been found in its vicinity. He imagined he would make his fortune by mining nickel. Alas, he spent many years drilling in Meteor Crater, trying to find the main body of the meteorite that he was sure must be there, to no avail. We now know, of course, that the meteorite that formed that crater was far too large to have possibly survived the impact.

While Daniel Barringer ended up spending a fortune trying to mine in Meteor Crater, he was not quite as foolish one might think. Until he theorized a link between the crater and a meteorite fall, such a circumstance was thought to be impossible; it was generally thought that craters on earth could only be the result of volcanic activity. Largely because of the research carried out at Meteor Crater and in the Sikhote-Alin mountains of Siberia, there are now more than 150 recognized impact craters throughout the world.

Three Types of Meteorites

There are basically three main kinds of meteorites: stony meteorites, iron meteorites, and stony-iron meteorites. Stony meteorites (chondrites and achondrites) are by far the most common, making up 85-90% of all known meteorites. They can be composed of olivine, pyroxene, magnetite, serpentine, troilite, pyroxenes, and/or feldspar. They also contain a small but significant amount of nickel-iron alloy. Numerous stony meteorites (Correo meteorites) have been found in Valencia County, New Mexico.

Iron meteorites are probably the best known to the layperson; both the Meteor Crater and Sikhote-Alin meteorites are irons. These are composed mostly of nickel-iron alloys, hence their classification. Stony-iron meteorites (pallasites, mesosiderites, and lodranites are the least common, accounting for less than 2% of known meteorites, and arguably the most spectacular. In these meteorites, areas of iron-nickel alloy contrast sharply with portions of olivine, eucrite, diogenite, troilite, bronzite, and feldspar. The meteorite that fell outside of Portales, New Mexico in 1998 is likely a stony-iron.

Tektites are also thought to be meteorites -- but that's another article altogether!
(from Mamma's Mineral's)

Fieldtrip Report(s)

There has not been any field trip activity reported for this newsletter period.

Meeting minutes

MIAMI VALLEY MINERAL & GEM CLUB MINUTES

There were not any minutes taken last meeting. The last meeting was the annual Christmas party.

Regional Events

JANUARY:
24: LINCOLN, NE. Lincoln Gem and Mineral Club ANNUAL INDOOR SWAP. Bethany Park Shelter House, 6500 Vine Street (65th and Vine Streets). Sat 1:00-5:00. CONTACT: Pat Akins, Jr., 5017 NW 6th Street, Lincoln, NE 68521, (402) 477-1322.

JANUARY-FEBRUARY:
MOUNT CLEMENS, MI. Macomb County Gem and Lapidary Society 3RD ANNUAL ROCK AND MINERAL WORKSHOP. Classes to assist students, grades 3-6, in Science Olympiad Competition. CONTACT: Richard Brzozowski, 40217 Spitz Drive, Sterling Heights, MI 48313, (586) 264-5576.