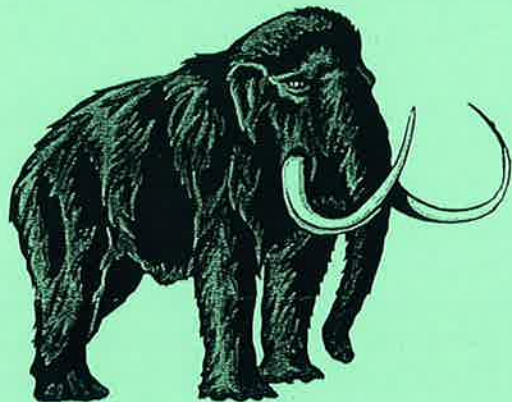


THE ROCKFINDER

Michiana Gem & Mineral Society
Tom Noe, Editor
305 Napoleon Blvd.
South Bend, IN 46617



THE ROCKFINDER

MAY, 2001

MICHIANA GEM & MINERAL SOCIETY

2000 BOARD OF DIRECTORS

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The purpose of the Michiana Gem & Mineral Society is to promote the study and enjoyment of the earth sciences and the lapidary arts, and to share lapidary knowledge and techniques.

General meetings are held the fourth Sunday of each month, 2:00 PM, EST, at Our Redeemer Lutheran Church, 805 S. 29th St., South Bend, IN. Regular exceptions include May (third Sunday), July (no meeting), August (club picnic) and the November/December meeting and Christmas party. Board meetings are held before the general meetings. The annual club show is Labor Day weekend.



Yearly Membership Dues (Payable by January 1)

- _____ Individual \$10.00 per year
- _____ Family \$15.00 per year
- _____ Junior \$1.00 per year
- _____ Subscriber \$7.50 per year

Please indicate areas of special interest.

- General Geology _____ Beads _____
- Gems & Minerals _____ Fossils _____
- Cabochons _____ Field Trips _____
- Faceting _____ Crystals _____
- Carving _____ Micromounts _____
- Other _____ Jewelry Making _____

Name _____

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Please send your dues and this form to
 Michiana Gem & Mineral Society
 c/o Bob Heinek

7091 E. East Park Lane, New Carlisle, IN 46552

HEADS OF COMMITTEES

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- Membership All Members

The Michiana Gem & Mineral Society, a not-for-profit organization, is affiliated with the Midwest Federation of Mineralogical Societies and with the American Federation of Mineralogical Societies.

The Rockfinder is published monthly except July and August. Editor, Tom Noe, 305 Napoleon Blvd., South Bend, IN 46617 (ph. 289-2028). Co-editor, Herb Luckert, 221 Marquette Ave., South Bend, IN 46617 (ph. 282-1354). Reporters, Bob Heinek, Herb Luckert, club members.

Permission is hereby granted to reprint any original *Rockfinder* articles, as long as recognition is given along with the reprint.

Additional names:

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 Birthday _____

Name _____
 Birthday _____

Name _____
 Birthday _____

Name _____
 Birthday _____

Date of Wedding Anniversary _____

Phone _____

PLEASE READ AND SIGN THIS SECTION:

With my signature I hereby release the Michiana Gem and Mineral Society, Inc., and its individual members and the owners of any premises upon which I enter under permit granted to the society, absolutely free of any liability whatsoever, to my person or my property, and further I will respect the equipment and property of the aforesaid owners.

Signed _____ Date _____

THE ROCKFINDER

Newsletter of the Michiana Gem & Mineral Society

Volume 41, Number 5

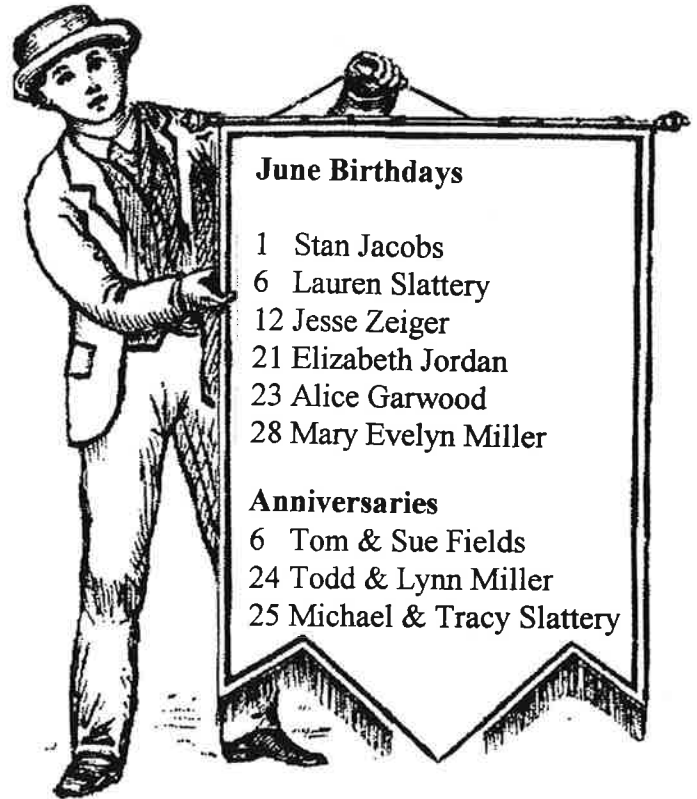
May, 2001

Meeting: Sunday, May 20th
Doors open 1:30 p.m.
Meeting at 2:00 p.m.
Guests are always welcome.

Place: Our Redeemer Lutheran Church
805 S. 29th St. (29th & Wall)
South Bend, IN

Program: Trilobites: Sam Shapiro
Everyone is encouraged to bring
examples of trilobites.

Hosts: Bob and Kathy Miller



June Birthdays

1 Stan Jacobs
6 Lauren Slattery
12 Jesse Zeiger
21 Elizabeth Jordan
23 Alice Garwood
28 Mary Evelyn Miller

Anniversaries

6 Tom & Sue Fields
24 Todd & Lynn Miller
25 Michael & Tracy Slattery

UP AND COMING

May 26-28: Chicagoland Gem & Mineral Association, DuPage County Fairground, Wheaton, IL.

June 1-3: Dearborn Club show, Allen Park Civic Arena, Allen Park, MI.

June 8-10: Rocky Mountain Federation show, New Mexico.

June 11-17: AFMS/South Central Federation show, Texas.

June 16-17: Michigan Geology & Gemcraft Society Rockhound Seminar, Carter Middle School, Clio, MI.

June 22-24: California Federation show, California.

June 22-24: Bloomington Rock Swap, Monroe County Fairgrounds, Bloomington, IN.

July 13-15: Eastern Federation show, New York.

Aug. 5-12: Keweenaw Week, field trips, swaps, auctions, shows in Copper Country, Portage Township School Gym, Calumet, MI. (Show is August 10-12.)

Aug. 17-20: Faceting Seminar 2001, Midwest Faceter's Guild, Mott College, Flint, MI.

Aug. 20-Sep. 1: Northwest Federation show, Washington.

Aug. 31- Sep. 2: Michiana Gem & Mineral Society show, Century Center, South Bend.

Sep. 7 - 9: Midwest Federation show, Wisconsin.

Sep. 7-9: Greater Indianapolis Gem, Mineral & Fossil Show, Hancock County Fairgrounds, Greenfield, IN.

Oct. 7: Club field trip to collect Mazon Creek fossils.

Nov. 2-4: Southeast Federation show, Mississippi.

RISING FROM THE BOGS: PREHISTORIC LIFE IN NORTHERN INDIANA

This will be the subject of a lecture by Dr. Anthony Swinehart, who has done research on the role of wetlands in preserving ancient life. Discover what kinds of prehistoric life inhabited our area in days long gone.

The presentation will be at the Elkhart County Historical Museum, located in the Rush Memorial Center, 304 W. Vistula, Bristol, IN on Sunday, June 24, at 2:00-3:00 p.m. The phone number there is 219-848-5703.

61st ANNUAL MIDWEST FEDERATION SHOW hosted by NORTHWEST WISCONSIN GEM & MINERAL SOCIETY

Barron County Fairgrounds
Rice Lake, Wisconsin

September 7 - 8 - 9, 2001

Friday 1 pm to 9 pm, Saturday 10 am to 6
pm, Sunday 10 am to 5 pm



AMERICA'S MOUNTAIN

By Richard Pearl

Pikes Peak is not a volcano and never has been one. Its geologic story is just as interesting, however, and covers a far longer span of time than that of any volcano.

The minerals of the Pikes Peak granite show that it is an igneous rock, having been cooled from a molten condition while far underground. This happened at least 500 million years ago during the Cambrian time, when only the lowest forms of life are known to have existed. A considerable thickness of

other rocks still lay above the Pikes Peak granite when it solidified. These rocks were later eroded away and the granite has alternately been exposed to the air and covered by the sea several times during the long ages since then.

The summit of the present Pikes Peak represents an "erosion remnant," a very resistant mass of hard rock that remained standing while the softer rocks surrounding it were being worn down to a plain not much above sea level. To produce this extensive flat surface, called a "peneplain," required an enormous length of time, estimated at millions of years. A second such peneplain, though lower and less extensive than the first, was cut at a later date after the region rose once again. Pikes Peak stands nearly 5,000 feet above it now, just as it stood above the former plain a long while ago.

These surfaces can be seen from the east side of Colorado Springs. The upper surface is at an altitude of 13,000 feet and is named the Flattop peneplain because it is the summit of Flattop Mountain in Rocky Mountain National Park. The lower surface forms the area below the summit of Mount Manitou and is called the Rocky Mountain peneplain.

The impressive ruggedness of Pikes Peak originated rather recently during the Ice Age. The slopes of the "peak" are not the same everywhere and this is caused by the movement of the huge glaciers that existed on the shaded north and east side of the mountain, which lasted a million years. Acting like gigantic cookie cutters, the powerful bodies of ice gouged out the rock, leaving deep straight-walled basins called cirques, such as the Bottomless Pit. This glacial erosion changed the once domed-shaped mountain into its present distinctively sculptured form.

Earth Science Magazine (no date)

Did you know that Ohio once had volcanoes? The area now known as Ohio, Indiana and Illinois once had sharp mountains with volcanoes. Where are they now? The fierce landscape of old is only two miles below the surface.

From *Fascinating Fact* by L. M. Boyd

MINUTES OF THE APRIL 22 MEETING

President Don Church called the meeting to order at 2:00 p.m. Thirty members were present (no junior members, no guests). Sister M. Jeanne Finske agreed to serve as secretary since Gladys Pacholke, the elected secretary, has moved to Valparaiso, IN.

A card for former member Bill Crull, who will have surgery this week, was circulated for signatures.

The minutes of the March meeting were approved as printed in the *Rockfinder*. The treasurer's report indicated that the silent auction at the South Bend show netted \$578.70.

The Mazon Creek field trip sign-up sheet was passed around for additional signatures. Kathy Miller gave a report on the American Federation of Mineralogical Societies, of which the Michiana Gem & Mineral Society is affiliated as a dues-paying member in the Midwest region. She reminded the members that it was necessary to elect a delegate to the 2001 Midwest Federation show at Rice Lake, Wisconsin, September 7 to 9. David Peltz moved that the club allocate \$100 toward the expenses of the MGM delegate. It was seconded by Jeanne Finske.

New member Bill Haselton gave a report on his rock-collecting activities. Bill is a retired New Prairie teacher. Martha Perry, also a new member, introduced herself.

Door prizes were won by Yvonne Church, David Peltz, Edward Enos, Martha Perry and Pat McLaughlin.

The date for the summer picnic was set at Sunday, August 19; 12:30 to ? It will be at Pam Rubenstein's house. Directions will be included in the *Rockfinder*.

The May meeting will be on the THIRD Sunday instead of the fourth (Memorial Day). Bob and Kathy Miller will provide refreshments, which will include Sam Shapiro's trilobite cookies!

The program for the remainder of the meeting consisted of making wire-wrapped butterflies under the direction of member LuEllen Brown. An enjoyable time was had by all who were able to develop a new skill.

The meeting adjourned at 3:30 p.m.

M. Jeanne Finske, CSC, Secretary

NATIONAL GEOGRAPHIC EXPLAINS

In the October issue, the editors of NG (*National Geographic*) explained how the Archaeoraptor fiasco happened. The publishing about this new animal in November, 1999, caused a stir of excitement because of its implications for the bird dino story. However, very quickly it was apparent that there was a major problem with the fossil itself. Usually the NG will not publish an article about new finds until they have been published in a suitable peer-reviewed technical journal. In this case, things were moving so fast and communication was so incomplete that publication came before enough research had been done. Although submitted for publication in both *Science* and *Nature*, it was not accepted because of questions about its facts. One major problem with the fossil is that it had been found and purchased at the Tucson fossil show by Stephen and Sylvia Czerkas (collectors and artists). They asked Phil Currie of Canada and Xu Xian from China to collaborate on the study and paper of the fossil, and they promised to return the original to its rightful home in China after the study (it was considered smuggled because farmers in China were selling them to anyone who would pay). Unfortunately, Currie's busy schedule did not allow him to study the fossil as closely as he should have and he did not express any doubts to NG. He did notice that the fossil was glued from two pieces and that the side with the legs and tail had bones from both the part and counterpart. Timothy Rowe from the University of Texas scanned the fossil and found 88 breaks and that some of the pieces did not appear to match. So there were many red flags, but they were ignored in the rush to publish. Then in December Xu sent word from China that he had found the counterslab for the lower half of the fossil and it was joined to a dinosaur upper body. This seemed to be the final proof. It has proved to be an embarrassing incident for many: the Czerkases, Phil Currie and NG. One can hope that a lesson has been learned and there will be more care to be sure that there is solid proof before publication.

FLINTKNAPPING

By Margaret Heinek

I came across an article entitled "Flintknapping," written in 1979, which I found interesting.

"Flintknapping" is an old English term used to describe artisans who made flints for flintlock guns. It's the casual term used today to describe anyone who makes stone-age tools. In scientific circles people who work with flint and study Stone Age toolmaking are now called "lithic technologists" in the United States.

Flintknappers are not primarily interested in finding stone tools of ancient men. Instead, they are deeply interested in the methods used in manufacturing those flint arrowheads, projectile points, scrapers and drills.

They also seek insight on how many of the stone tools were used. Basically it is a study of history; ninety-nine percent of our human history is in the Stone Age.

One flintknapper, John Sinclair, one of the best, was in an area of the state looking for the Attica chert quarry. He did not find the "mother lode" where Indians mined this chert, a form of flint, to make their tools, but did find other examples of chert in locations where they had made tools.

Several years ago, Sinclair spent time on Indian reservations in Wisconsin, and reported that modern native Americans know less about stone toolmaking than many people. Many Indians believe the fiction that stone implements were made by heating the stone and dropping water on the flint to chip it away, which proves how quickly man can lose knowledge about an art.

Did you know Indians baked some kinds of flint before working with it? Three things are achieved by baking: it makes the flint more colorful, makes it easier to chip, and makes it possible to achieve sharper cutting edges.

Indians laid the flint on the ground, covered it with a thin layer of gravel, then built a big fire over it. It takes about a day of baking to get flint in good working condition.

Ancient man used deer and elk antler, bone

and wood in the process of making flint tools. Woods hard enough to chip flint include osage orange and iron wood.

Lithic technologists still are baffled about some of ancient man's toolmaking techniques. Somewhere along the line there was something used that was not copper or metal but was tough enough to use to chip flint.

Scientists have found flint tools with edges too fine to have been made with wood, bone or antler. Some of the finest examples of stone toolmaking were not turned out by recent Indians, but by ancient men who lived in family groups and followed the big animals in the wake of the receding glaciers. The Folsom and Clovis points, all beautifully formed, were made 20,000 years or more ago. The real mystery is what some of these tools were used for. Archeologists have discovered a whole series of stone tools called "burins" (a prehistoric chisel-like flint tool) that in structure are similar to tool bits used today with metal lathes. No one can guess their exact purpose.

It's one thing to make a small arrowhead and another barrel of fish to make a big one. A lot of people who dabble in flintknapping can make a little arrowhead, but few can really make a big projectile point. There is an art in taking a big chunk of flint and being able to reduce it to workable pieces of various sizes. This calls for something like the initial strokes in diamond cutting.

Some of the most expert flintknappers today live in the Ozark Mountains and manufacture phony arrowheads for sale to unsuspecting amateurs. There are so many fakes at shows nowadays it's really discouraging. Recently an expert looked at a collection of points for which a man paid \$7,000. Every one of the points was a fake!

So, buyer beware!

From an article by Jack Alkire, Lafayette, IN (Sep. 30, 1979)

A TRUE STORY OF BOTANICAL FRAUD, OR, GEOLOGY SAVES THE DAY

By Sam Shapiro

John Heslop-Harrison (1881-1967), professor at the University of Durham, Fellow of the Royal Society, author of a long string of papers on genetics, entomology and botany, was one of Great Britain's leading natural scientists. His knowledge of plants, animals and insects was all-encompassing.

Every year he led a group of students on a botanizing expedition to the island of Rum, in the Inner Hebrides, and every year he announced the triumphant discovery of a previously undiscovered sedge or beetle or butterfly, to be described in a prestigious publication or in his own journal, *Vasculum*. His authority was unquestioned, his prestige in the academic community immense.

And yet . . . by the late 1940s there was growing amazement at the finding of so many plants in the Hebrides--where none of them had been seen before--and growing suspicion at the lengthening list of rarities. Some of his articles were rejected for publication, and others were sprinkled with the editorial equivalent of raised eyebrows and parenthetical comments that nobody else had seen these novelties.

The island of Rum, Heslop-Harrison's special bailiwick and the site of his most remarkable discoveries, was closed to outsiders. The 40-square-mile island had been cleared of its settlers in the late 19th century to make way for sheep and a deer park. Its entire population consisted of employees of the wealthy industrialist Bullough family of Lancashire. The family came out to the island every summer to hunt deer in the park and to reside in Kinloch Castle. Heslop-Harrison had permission to lead his expeditions, but other outsiders were forbidden to set foot on the island. Thus, nobody could verify the long list of botanical discoveries the professor claimed to have made.

Alone among geologists and biologists, he had come to believe that the last Ice Age, which covered all of the British Isles and northern Europe with a sheet of ice a mile thick, had somehow missed the Hebrides. He was also convinced that the dozens of

plants and insects he claimed to have found on Rum and elsewhere were ancient survivals, unique specimens that had survived at the site during the entire Pleistocene.

Heslop-Harrison replied to his many critics with arrogant scorn: "It seems incredible," he wrote, "that anyone should appeal to postglacial and recent dispersal of accidental nature." He ridiculed his opponents as "armchair naturalists," their papers as "a farrago of nonsense." He had few friends and many enemies in the profession but people were reluctant to challenge such a belligerent and academically powerful man, and while Rum was barred to outsiders there was no way to challenge the Grand Panjandrum and his unusual theories.

The great man's downfall came from an unlikely source: John Raven, an amateur botanist with no scientific training or standing. In fact, he was a professor of Greek at King's College, Cambridge. In 1948, when Raven politely asked permission to visit Rum, the unsuspecting Heslop-Harrison gave his permission and even showed the 33-year-old amateur some of his favored sites.

Pride goeth before a fall. After his brief but productive visit to the islands, John Raven wrote a 12,000-word report suggesting that Heslop-Harrison was "the victim of a practical joke" or that "as Dr. Jekyll he plants the specimen that as Mr. Hyde he later discovers or that the Professor is deliberately indulging in the most culpable dishonesty."

One item of his proof was geological: in a pellet of soil taken from around the roots of *Carex bicolor*, he found the mineral olivine, reflecting the underlying rock of the area, and the mineral quartz, which was not native. Clearly, the quartz had been carried in when the plant was brought from its original location to the island.

Heslop-Harrison replied with bluster and threats of a libel suit. However, his fellow faculty members, his journal editors and even his own botanist son-in-law sided with Raven. All handbooks of Hebridean flora published since 1950 quietly discard H-H's fraudulent discoveries. These plants had been planted.

(Ref. Karl Sabbagh, *A Rum Affair: A True Story of Botanical Fraud*, 1999)

MAZON CREEK FIELD TRIP**Braidwood, Illinois**

A field trip has been arranged for October 7, 2001, for fossils. Fossils of the Mazon Creek Area are contained in round or oval smooth rock bodies known as concretions. They range in size from less than an inch to a foot or more in diameter and have a gray, brown or rusty color. When split open, they reveal a fossil, though some may be barren. Concretions may be split with a hammer and chisel or by immersing them in water and alternately freezing and thawing them.

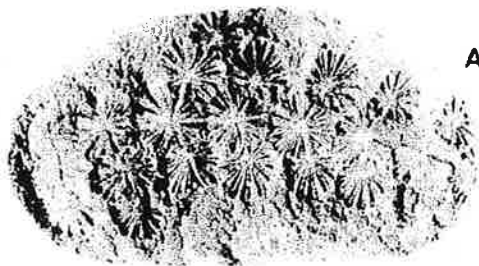
We will board the Cardinal Bus on Sunday, October 7, at 7:45 a.m., departing promptly at 8:00 a.m., from the K-Mart parking lot at Ireland Road and 31 South. The bus is scheduled to return at 6:00 p.m. that same day.

WHAT TO BRING:

- A sack lunch, snacks and something to drink
- The usual rock hammer, a chisel, rake, etc.
- A collecting container (pail, sack, backpack, etc.)
- A box for under the bus to carry home your finds (hopefully everyone will be lucky)
- Ticks and mosquitoes may still be around, bring a repellent!
- An extra pair of shoes. One for collecting and one for the bus.

We will have the sign up sheet at March, April and May meetings, "let's fill the bus!"

Kathy Miller, Dennis & Jan Horral

MAZON CREEK FLORA

Annularia

THE WORLD'S BIGGEST TRILOBITE

A team of Canadian paleontologists working along Hudson Bay in northern Manitoba has discovered the world's largest recorded complete fossil of a trilobite, a many-legged, sea-dwelling animal that lived 445 million years ago. The giant creature is more than 70 centimeters long (about 28 inches), 70% larger than the previous record-holder. "This is an important and amazing find," says Bob Elias, a professor in the Department of Geological Sciences at the University of Manitoba. "It looks like a huge bug!" Trilobites are an extinct group of arthropods with hard, jointed external skeletons, distantly related to crabs, scorpions and insects. They are among the most familiar fossils of the Paleozoic Era, about 545-250 million years ago. "The majority of trilobites were between three and ten centimeters long," notes Dave Rudkin, assistant curator of paleobiology at the Royal Ontario Museum in Toronto. "Their fossil remains are eagerly sought by amateur and professional paleontologists alike."

The record-setting trilobite was found and recovered during a long-term field project investigating fossils along an ancient marine coast of Late Ordovician age exposed near Churchill, Manitoba. "Four hundred and forty-five million years ago, this now frozen and windswept area was a thriving tropical haven for life along what was then the Earth's equator," says Graham Young, associate curator of geology at the Manitoba Museum of Man and Nature and an adjunct professor at the University of Manitoba.

The giant trilobite represents a new species of the genus *Isotelus*. Elias notes: "This remarkable discovery adds to our knowledge of biodiversity following the Ordovician evolutionary radiation, one of the greatest diversifications in the history of life. The huge species existed just before the end of the Ordovician Period, when *Isotelus* and many other trilobites disappeared in a great mass extinction. Studies of these events help us understand more about global environmental changes and their effects on the biosphere."

No Author, *Fulton County Rock Hounders*, (Oct., 2000)

IRON — “FROM HEAVEN AND EARTH”

Stars fell from heaven and provided early man with iron. This was probably the only iron known to man for countless years. Iron, unlike copper, gold and silver, is rarely found in nature as a metal, usually being combined with one or more other elements in the form of ore. Its occurrence in metallic form is entirely restricted to meteorites.

Meteoritic iron frequently contains a small amount of nickel, which preserves it from corrosion. It is often malleable and can be cut and pounded into shape with the crudest tools. This was done in prehistoric America, where the inhabitants had no knowledge of the smelting of iron ore. Ancient mounds unearthed in Ohio contained masses of meteoric iron together with various implements and ornaments made from the metal.

In the earliest civilizations of the Mediterranean basin and Near East, evidence indicates that the first iron used was of meteoric origin. Not only were there occurrences of iron among the most ancient remains of these people, but they also consisted of articles of the highest value.

The oldest iron artifacts unearthed in Egypt are the rusted remains of beads found in a cemetery that dates back to 4000 B. C. These were discovered on a string around the neck of a skeleton and were mixed with crude beads of gold, carnelian and agate. The ancient Greeks knew the metal and considered it rare and precious. In early Rome the wedding ring, the most prized of all forms of jewelry, was made of iron. The ancient Egyptian name for iron, be-en-pet, means “metal from heaven.”

No one knows when primitive man first

learned to smelt iron and extract it from ore. Until the 15th century the smelting methods in Europe were so crude that the iron never completely melted. Only a few pounds a day came from the forge.

Later, the blast furnace was invented and then coke was substituted for charcoal as fuel. In the nineteenth century modern methods had been discovered and rapid improvements made.

Today iron is one of the world's most important metals and modern smelters and mills use tremendous amounts of iron ore yearly. Iron is essential for manufacturing, transportation, housing and communications.

The Northwest Newsletter (no date available)

THE EISENHOWER SAPPHIRE

A 2,097-carat black star sapphire, found at Anake, Queensland, Australia, was carved into a bust of Dwight D. Eisenhower. The finished carving weighs 144 carats and measures 2 1/2 inches deep and wide. A star is visible at the base of the neck. The sculptor was Harry Derian and the technical advisor was Lincoln Borglum. This carving, together with those of Presidents Lincoln, Washington and Jefferson, and the Black Star of Queensland, were presented as a gift to the American people by the Kazanjian Foundation of Pasadena, California. The Eisenhower Sapphire is presently on display at the Smithsonian Institution.

Cross Timbers Talk (Oct. 20, 2000)

2001 REGIONAL SHOW SCHEDULE

EASTERN FEDERATION

July 13-15

Syracuse, New York

CALIFORNIA FEDERATION

June 22-24

Paso Robles, California

AFMS/SOUTH CENTRAL

FEDERATION

June 11-17

Arlington, Texas

NORTHWEST FEDERATION

August 20-Sept. 1
Enumclaw, Washington

SOUTHEAST FEDERATION

To be announced

ROCKY MOUNTAIN FEDERATION

June 8-10

Rosewell, New Mexico

MIDWEST FEDERATION

Sept. 7-9

Rice Lake, Wisconsin

HOW HOLLOW IS YOUR GEODE?

By John Washburn

Have you ever cut open a Mexican coconut geode or chiseled open a Keokuk geode with hopes of finding a beautiful crystal-lined cavity inside, only to find instead a solid mass of nondescript rock? Although there is no certain method of identifying the kind, size or color of crystals before a geode is opened, the following table will be helpful in estimating the approximate size of the cavity by merely measuring the outside diameter and weighing the geode. Instructions for use are on the table, but a few words of explanation may be helpful.

The table will give accurate results if the geode and the cavity are perfect spheres, and if the entire geode is composed of quartz weighing 165 pounds per cubic foot (1.5277 ounces per cubic inch). This ideal situation never exists in nature, but fair approximations can be made with the chart if measurements are carefully made. If the geode is egg-shaped, the average diameter can be found by adding the largest diameter to the smallest diameter and then dividing the two. The use of calipers to measure diameters is most accurate, but fair accuracy is possible with a ruler if the geode is placed on a flat surface against the vertical side of a box or wall, and a book or other rectangular object is placed against the wall and the top of the geode. The ruler is then used to measure the distance from the flat surface to the edge of the book that is in contact with the top of the geode.

Be sure to weigh the geode to the nearest ounce, or closer, if possible. Most rock shops have scales that read in pounds and ounces, and many household scales can also be used. The accuracy of the table increases with larger geodes, because a one-inch sphere of quartz weighs only 0.8 ounces. The difference in weight, however, between a 4" geode with a 2" cavity (1/2 hollow) and a 4" geode with a 3" cavity (1/4 hollow), for example, is approximately one pound. Don't expect perfect results with the table, but it is far better than the usual method of hefting the geode in your hand and saying, "Well, I think this one may be fairly hollow."

Geode Measuring Chart

Data Needed: Volume of a sphere, and weight of quartz per cubic inch

Volume (of sphere) = diameter cubed X .5236 X 1.5277 oz. per cu. in. = weight of solid concretion (non geode)

Diam.	Diam. ³	X.5236	=Vol. X 1.5277	Solid weight/2 = 1/2 hollow	Solid weight X .75= 1/4 hollow
1"	1"	.5236	.79 oz.	.39 oz.	.59oz
1.25"	1.95"	1.022	1.56oz.	.78 oz.	1.17oz
1.5"	3.37"	1.767	2.96oz.	1.35oz.	2.02oz.
1.75"	5.36"	2.806	4.28 oz.	2.14oz.	3.21oz.
2.0"	8.0"	4.188	6.39oz.	3.20oz.	4.80oz.
2.25"	11.39"	5.964	9.11oz.	4.55oz.	6.83oz.
2.5"	15.62"	8.181	12.49oz.	6.25oz.	9.36oz.
2.75"	20.79"	10.889	16.63oz.	8.32oz.	12.47oz
3.0"	27.0"	14.137	1lb 6.0oz	10.79oz.	1lb 0oz.
3.25"	34.32"	17.974	1lb 11.5oz.	13.72oz.	1lb 4.58oz.
3.5"	42.87"	22.449	2lb 2.30oz.	1lb 1.15oz.	1lb 9.72oz.
3.75"	52.73"	27.612	2lb 10.2oz.	1lb 5.1oz.	1lb 15.6oz.

Midwest Federation Newsletter (Feb., 2001)

HUGE NATURAL CRYSTALS FOUND IN CAVE

By Michael Ray Taylor, Discovery News

Feb. 8, 2001 - The largest natural crystals on Earth have been discovered in two caves within a silver and zinc mine near Naica, in Chihuahua, Mexico, according to mine officials.

Reaching lengths of over 20 feet, the clear, faceted crystals are composed of selenite, a crystalline form of the mineral gypsum.

"Walking into either of these caves is like stepping into a gigantic geode," said Richard D. Fisher, an American consultant with the mining company to develop the discoveries as tourist attractions.

Balance of the story is here:

<http://dsc.discovery.com/news/briefs/20010205/crystals.html>

Discover (April, 2001)

[Another story with photos is in *Rock & Gem* (May, 2001.)]