Meteorite-Times Magazine

Contents
by Editor

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Featured Monthly Articles

Accretion Desk by Martin Horejsi
Jim’s Fragments by Jim Tobin
Meteorite Market Trends by Michael Blood
Bob’s Findings by Robert Verish
IMCA Insights by The IMCA Team
Micro Visions by John Kashuba
Galactic Lore by Mike Gilmer
Meteorite Calendar by Anne Black
Meteorite of the Month by Michael Johnson
Tektite of the Month by Editor

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Novo Urei is truly the stuff of legends. Long before I knew the specific details of its fall and subsequent scientific discoveries about it, I'd heard tales about an amazing meteorite fall full of unforgettable events. Turns out, many of the stories were from the fall and recovery of the Novo Urei meteorite.

As an owner of an important piece of ureilite history, I take the Novo Urei stories personally and want them connected directly to Novo Urei instead of some generic meteorite somewhere.

Meteorites are collected for both their science and their stories so it is a special treat when one of the most interesting meteorites ever also carries with it truly legendary tales surrounding its fall.

I don't use the word “legendary” lightly. As a brief test for the legendary status of a meteorite, I made up this list of required criteria:

1) There can be no living witnesses to the event.

2) Parts of the meteorite’s story are known by many, but not always associated with the particular
fall.

3) The story about the meteorite is regularly exaggerated or embellished.

4) The story about the fall or the science becomes a non-specific generic example of such an event.

5) The meteorite becomes a “type specimen” for a classic story.

6) A nickname, statement or important fact often leads or immediately follows the name of the meteorite when it enters a discussion, or is up for auction or exchange.

Other stones that I believe qualify as Legendary include Ensisheim, Orgueil and Weston. I expect Murchison will become Legendary in 2069, and Park Forest in 2103.

Novo Urei has the classic look of a fresh ureilite. As it should since Novo Urei is the type specimen for the class and thus put the Urei in Ureilite!

Most collectors have heard or read the following about a meteorite that…

- Caused peasants to fall to the ground in fear;
- Thunderbolts were falling from the sky;
- The stone was filled with diamonds;
- The meteorite was eaten right after it fell;
- The stone was smashed and eaten;
- The stone was full of diamonds and was eaten;
- The meteorite landed in a swamp;
- Two of the three fallen stones were lost.
Years ago when I had the opportunity to photograph many of the amazing but undisplayed pieces in the Smithsonian’s collection, Novo Urei was on my list. The image above is the specimen in their collection. I believe this sample weighs more than 50 grams.

According to an 1886 report by a teacher from Kirensk City named P.I. Baryshnikov, the events of the fall of Novo Urei were as follows:

In the morning several peasants plowed their field 3 km from a village.

The day was gloomy, the whole northeastern sky was covered by clouds.

Suddenly a light appeared all around.

In several seconds a strong report was heard, like a cannon or explosion.

Then came a second, louder noise.

With a loud noise a fireball fell to Earth a few meters from the peasants.

Frightened, they did not know what to do.

They fell to the ground and could not move for a long time.

They thought it was a strong thunderstorm, and that thunderbolts were falling from the sky.

Finally, one of them, more brave, came to the place where the thunderbolt had fallen, and to his surprise found only a shallow hole.

In the middle of the hole a black stone lay half-buried in the soil.
The slicing of a ureilite is no simple task. As you know diamonds are hard, and often as hard as the blades used to cut these things. As with most rock cutting, the rock is not really cut per se, but instead a gash is ground into the stone resulting in two or more separate pieces.

Because of the extreme hardness of ureilites, they put up quite a fight with expensive saw blades. Luckily most people never have to cut one.

The image above shows the precision of the cut resulting in a very clean 90 degree corner. Usually once cut, the prep ends since polishing a ureilite does not often bring out much detail and requires another serious effort that is both hard on man and machine.

Harry McSween, in his book *Meteorites and Their Parent Planets (1999)*, wrote the following:

“On a September morning in 1886, several meteorites fell near the village of Novo Urei in the Krasnoslobodsk district of Russia. This was a particularly interesting fall for several reasons. One of the stones was soon recovered by local peasants, where-upon it was broken apart and eaten.

The motivation for this rather unusual action is not known, but this constituted an impressive feat from a dental perspective, because the meteorite contained numerous small diamonds.

The uneaten specimens from this fall proved to be a unique type of achondrite; subsequently recovered meteorites of this class are known as ureilites.”

“The ureilites are arguably the most bizarre and perplexing of all meteorites.”

“It seems likely that the ureilite parent body had a carbonaceous chondrite composition. The addition of a small amount of basalt (presumably extracted from these residues) to ureilites can produce a rock with the composition of carbonaceous chondrite.”
“One of the most interesting characteristics of ureilites (aside from their possible tastiness) is that they have experienced variable but typically intense shock metamorphism. In many specimens, graphite, the original carbon mineral, has been partly transformed by shock into its polymorphs, diamond and londsdalite (polymorphs have the same composition but different crystal structures).

Shock has also disturbed the isotopic clocks in ureilites. The olivine and pyroxene assemblage appears to have formed 4.5 billion years ago, but some some radiogenic isotopes were redistributed at 4.0 billion years ago.”

My Muffin Hypothesis assumes that the individual of Novo Urei that was broken apart and eaten was actually a small highly oriented individual that not only resembled a muffin or cupcake, but also, due to its carbonaceous chondrite ancestry, offered the finders a peasant or familiar aroma of some sort.

Over the years, when contemplating why anyone would eat a freshly fallen meteorite, let alone a one filled with diamonds it has been speculated that the meteorite may have smelled good, or was shaped like a loaf of bread. When I first read those suppositions I joked in my mind that if the peasants could mistake a cinder-black diamond-hard rock that fell from the sky for a loaf of bread, then there are big problems with either the local baker or the peasant’s drinking water.

Imagine the dialog:

Nikita: Hey Vladimir, check out this delicious looking piece of bread that just fell from the sky.

Vladimir: Looks a little well-done for my tastes. But it smells good like Grandpa’s vodka.

Nikita: Drat! My knife blade broke.

Vladimir: Maybe we can smash the bread apart on this rock.

Nikita: Or take it to the blacksmith. He has a big hammer.
CRASH!

Vladimir: Mmmm. It’s still warm in the middle.

Nikita: I think it’s kind of dry. Maybe needs some butter?

Vladimir: Tastes moist and salty to me.

Anastasiya: What are you idiots eating? You look like vampires with blood dripping out of your mouths!

But in the interest of science, I pursued it in my mind during a long trail run. My conclusion snapped into focus when I considered the 158g difference between the listed TKWs of Novo Urei by the Russian Academy of Science and the Catalogue of Meteorites.

A 158g meteorite is not very large, golf ball sized maybe?. Just by considering a small sized individual made consuming the stone a more palatable thought. Then I added to the mix that Goalpara was a highly oriented stone so it is conceivable that an oriented stone with an exaggerated rollback rim, distinct clean lipping, thick frosting-like flowlines, and a trailing face with a flat surface could make stone meteorite mimic a muffin’s look quite well.

Smells are often associated with freshly fallen meteorites, from sweet to sulfurous. The carbonaceous chondrite named Murchison is the poster child for stinky meteorites having offended the olfactory senses of many residents of the small Australian town in which it fell. Ureilites are related to carbonaceous chondrites so a smelly, possibly pleasantly so, muffin-like small black stone is actually a reasonable possibility.

So how would such a muffin fall from the sky? It’s a stretch, but imagine a bakery exploding. I’m not sure what the bakers in the Respublika Mordoviya of Russia used to heat their ovens in 1886, presumably wood, but a vat of something or other could blowup.

Or more reasonably, imagine a disgruntled shopper with freshly broken tooth throwing the stone-like muffin in a fit of rage where it landed at the feet of hungry field workers.

Formally, The Muffin Hypothesis states that one individual of the Novo Urei meteorite was exceptionally oriented resembling a pastry like a muffin, it emitted an odor adding to the disguise, and was small enough (~158g) when broken apart, the “crumbs” could be easily eaten without the dental damage imagined if the peasants bit into the meteorite as if it were an apple.

My conclusion, therefore, supports the need to dredge the contents of those outhouses nearby the fall site that were active during the few days after the fall. Unless it was common for the local residents to eat rocks, the stratigraphic layer under the outhouse corresponding to the appropriate timeframe should be relatively free from rocks except for those of interest.
Pictured above is the polished face of a sample of Goalpara, a ureilite that was discovered (fell?) in 1868 in India. While I certainly enjoy the polished face and appreciate the work that went into such prep, this really is not, in my opinion, a dramatic improvement over a rough cut face. However, under magnification, it is a different story altogether.

Novo Urei was the first meteorite in which diamonds were found. The discovery of diamonds was made by the Russian scientists Erofeev and Lachinov in 1888, only two years after its fall. Although Novo Urei, and all other fresh ureilites require a learned appreciation for their surface features, in thin section, they are an entirely different world. To quote Norton and Chitwood (2008):

"Under room lighting, cut slabs appear dark and opaque and just plain uninteresting. Thin sections of ureilites seen in cross-polarized light, however, show a spectacular color field of olivine and pigeonite in various crystal orientations.

These ugly ducklings of the achondrites are some of the most beautiful of the asteroidal achondrites."
Due to the dark matrix of a ureilite, the fusion crust is generally more apparent though its texture than its contrast. The above image shows the briefest appearance of crust on my slice of Novo Urei.

The photograph below shows the wonderful, very durable crust on my end section of Goalpara,
Novo-Urei has been on my wish list for as long as I’ve had a wish list. I guess you could say Novo Urei was my wish list.

I remember once seeing a tiny piece of Novo Urei on eBay. It was about half a gram in mass and the bidding started at $250. I hesitated and lost it. Figuring that more would show up, I first contacted the seller only to learn that there was no more available.

That loss never left me. I knew there was a gaping hole in my collection that only Novo Urei could fill.
As they say (and who is ‘they’ anyway?) beauty is in the eye of the beholder. Such is true for the Ureilites and in this case, Novo Urei is a world class supermodel at whom I cannot stop gawking.

There is nothing about this meteorite that is average. There is nothing mundane, and there is nothing ordinary. Novo Urei is exceptional across the board from any direction, from any perspective. It is an amazing sample of our solar system, of our interaction with such material, and of how the field of science and folklore can change forever due to one specific thunderstone.

While Novo Urei was not the first ureilite to fall (or I guess it was due to semantics), it is the type specimen for the class called ureilites. Way back last century when I first learned about ureilites, I, like many, assumed the class was named for Harold Urey, a famous American cosmochemist. It was a understandable mistake given that howardites are named for Edward Howard, a British chemist, and diogenites were named after the ancient Greek philosopher Diogenes of Apollonia. I wrote an Accretion Desk column about Harold Urey and ureilites back in 2004.

The Meteoritical Bulletin lists the total known weight of Novo Urei as 1900g, while the Russian Laboratory of Meteoritics lists the total mass of the three stones as 2058g. Regardless of the 158g difference, it is the fall date, class, type specimen, diamonds, and TKW that makes Novo Urei one of the most difficult stones of any flavor to add to one’s collection.

The worldwide distribution of Novo Urei, according to the Catalogue of Meteorites, is as follows:

- The main mass is listed as in Museum Mining Institute in Leningrad.

- The world’s second largest piece, listed at 481.3 grams, is in the Academy of Sciences in Moscow. Their 460 piece is pictured here.

- The Smithsonian’s USNM holds 83g, and 55g are in the Natural History Museum in Vienna. The Field Museum in Chicago claims 36g, and 34g are in the Museum of Natural History in Paris. The American AMNH in New York holds 10g, Berlin claims 4.1g, and the last entry over one gram is 1.9g in the Vatican Collection.

- There are only six ureilites witnessed to fall. The first was Dyalpur, a single 280g stone that arrived 14 years before Novo Urei. The remaining four are Lahrauli, a 900g stone that landed in India in 1955; Haverö, a 1971 Finnish fall of 1544g; Jalanash, a 700g stone that dropped in
Mongolia in 1990; and Almahata Sitta, a 2008 heavily witnessed fall of 3.95kg of fragments.

Even including the recent fall of the anomalous ureilite Almahata Sitta, the global total weight of all witnessed falls of ureilites totals only about 9.6kg. Still short of an arbitrary 10kg threshold. Compare that to the rare aubrites of which there are nine witnessed falls and of those, four have personal TKWs greater than the combined sum of all ureilite falls (with one aubrite fall alone 100 times as much), and only two of the nine aubrite falls have TKWs less than the ureilite heavyweight Novo Urei.

It's obvious that the collecting air is quite rarified when playing with these stones, and the prices and trade values match. In my opinion, witnessed fall ureilites rub shoulders in collecting circles with the SNC namesakes and carbonaceous chondrite falls of the 1800s.

Not all specimen cards are created equally. When it comes to clout, authenticity and importance, few can challenge the Russian Academy of Sciences cards.

This card chaperoned Novo Urei into my collection and is what should be expected when such material changes hands.

Although the card's text is a little thin compared to my other Academy cards (Pesyanoe, Chervony Kút), and the handwriting is not as elegant, this card is many decades younger than my others and is more utilitarian in its use.

As most obsessive and compulsive collectors of meteorites know, the thrill of the hunt and the gamble of negotiation that hopefully leads to capture generates the personal stories that fuel the collecting drive.

When the DHL man handed me the package that had been keeping me up at night, it was a bittersweet moment. The excitement of a very long sought after Novo Urei specimen was tempered by an empty wish list. Sure, there are other specimens I want, but the quest for Novo Urei literally defined my collection wish list, and I had never really thought much beyond it. For a while it even felt that Novo Urei was an unintentional capstone of my collection.
But there is always more. Soon my hunting instincts were back at work, the glow of Novo Urei fading away. And there was another legendary small stone that fell in 1812 clamoring for attention. An even older and smaller TKW meteorite whose journey was deeply entwined in conflict, music, and national pride. But that’s another September story.

Until next time….

The Accretion Desk welcomes all comments and feedback.

accretiondesk@gmail.com

Please Share and Enjoy:
As we near the end of summer it is always time for Paul and I to plan the first trip to the cooler autumn desert. And we have begun that process. We do not know where we are going but we have picked the date and put in for the time off from work. We have spent big portions of most of our vacation in October doing meteorite hunting for many years. This year we are thinking about more astronomy and astrophotography and some meteorite hunting.

So I have to get my telescope out and get it ready to go. I have a new camera adapter made for it so I can do some lunar photography. I have been itching to do a good batch of digital photos of the moon for years and have never hauled the scope to the back yard, so with no excuses on vacation I think this is the time. We can not get a time window of moonless sky this year so deep sky is out during most of the nights, making moon and planet photography our best choices.

We have to figure out where to go still and that is a multifaceted problem. We need it to be dark, it would be great if is was a strewnfield or at least a good searching surface where we go. And if we could have power at a campsite that would be really good since running the generator is not what we like to do for hours and hours.

On a different topic but not a new one. I have gotten another scale. In my ongoing quest to have precision lab scales for every weight range I have ended up with many in every weight range. But, I found one last month at the swap meet that was very nice and not like most of my others. It is a fairly typical Mettler design, but somewhat different. It is also in the 0.01 – 800 gram range. It needed a little work. I was confident that I could fix it however, since it had a calibration sticker on it from only a year and a half ago. The illuminator bulb was not aligned properly as a result nothing showed on the front screen. That took some careful adjusting to get just right. And it needed a new power cord. Of course the calibrated weights were laying all over the bottom and needed to be retrieved. But, in about and hour the $15 scale was up and working and it is as the accompanying photo shows very accurate. It has about 0.05 grams of error at the top of any range and is accurate beyond my ability to see at the bottom end of each 100 gram range. For those not familiar with these type of laboratory scales they have internal calibrated weights that are lifted and dropped by the turning of a knob connected to cams and levers inside the scale. It acts just the same as you would with external precision weight place on one side of a balance scale. But, you never have to handle the weights since they are selectable and inside.
I did not need another scale but for $15 what am I going to do. I can't just pass it by. I had way more than $15 worth of fun fixing it and learning about how it worked. I have been a tinker most of my life. Watches, clocks, now scales, anything that is complicated and made with small precision parts has always fascinated me.

The great side benefit of my scale collecting is that I can get truly close weights on all my meteorites using some really cool old and antique scales. I carry a digital scale around with me at Tucson and it is a fine way to know what I am paying for NWA meteorites. But, it lacks any kind of
charm or style to me, it is just a device. I have come to really like a few of my lab scales. I have sold a few as well. Not because they did not work or I did not like them. They were too sensitive. One, a Mettler that came out of NASA was so sensitive that I could not get readings from it in the house with people walking. It needed a stone table in direct contact with the ground to keep it steady. That was a commitment I was not willing to make. And the Christian Becker scales went away right after I repaired them. I thought I was getting old watching and waiting for them to settle out and give me a reading.

I know I have written some of this before, but a phase of my life is coming to an end. The technology swap meet that I go to once a month is going to be at a time that I will be working soon. My schedule at work is changing and I will not be able to go and see if there are scales or other cool things to buy. For over twenty years I have gone on the last Saturday to that swap meet and now I can not. So this Mettle will probably be the last scale I will get for maybe forever.

As meteorites become more valuable and exotic types available and collectable knowing the weight to great accuracy will remain very important to both meteorite dealers and collectors. A tenth of a gram just is not going to cut it as it did with chondrites thirty years ago.

Now for my advertisement. My book on Meteor Crater is always available at http://www.meteorites-for-sale.com/catalog/meteorite-books.html in fact some copies of the older book are also there for sale. And my book on lapidary work “The Cutting and Preparing of Meteorites” is always available from me at jim@meteorite.com

Till next month, Jim

Please Share and Enjoy:
Meteorite Market Trends
by Michael Blood

This Month’s Meteorite Market Trends

by Michael Blood

Please Share and Enjoy:
Planetary Body Odors

A smell emanating from a Norton County meteorite gives this author some idea how an asteroid would smell if it had an atmosphere.

This has to be one of my more unusual “Findings”!
This “finding” involves the smell of a meteorite, which I’m discovering is a very difficult subject to write about and explain. Certainly can’t rely on images to help explain how my meteorite smells. But, if I am right, this “meteorite-smell” is what I believe an asteroid would smell like, if you were able to envelope the parent-body in an oxygen atmosphere.
The image above depicts one of my specimens of the Norton County (Aubrite), a fragmental impact-brecciated enstatite achondrite. This image also depicts the plastic bag which contained this meteorite specimen ever since it was first extracted from one of the large masses of Norton County by researchers at University of New Mexico (UNM).
All of the following images are of this same specimen.

“Click” the above image to ENLARGE!!

It is this specimen, as well as, other similar-looking samples that are contained in similar sample bags, that appear to be giving off a peculiar odor. These plastic sample bags seem to have preserved whatever is producing the smell emanating from the meteorite specimens. This odor has been accumulating in these plastic bags undisturbed for what I have been told is “many years”!
Although the genealogy is still somewhat sketchy for this fragment, it is clear that this sample was bagged & tagged by UNM Institute of Meteoritics personnel immediately after it was extracted from a large mass of the Norton County meteorite. They labeled the bag with a “Norton County N.15969” catalog number, which can be found on-line on the UNM website for "Institute of Meteoritics (IOM) Meteorite Catalog – Specimen Query Results for NORTON COUNTY (Found 18 February 1948) Kansas, USA.

“Click” the above image to ENLARGE!!

The smell that is being given off by this meteorite is hard to describe. When I first smell it, I tried to think of the proper words to describe the odor. I tried to think of things that had a similar smell: like hot metal, or like a cast-iron skillet that has over-heated, or like the metal filaments when you first turn on an electric heater. Also, a lot like when you make sparks by striking two flint-rocks against each other. Maybe a little like ozone, but with a more smoky, sulfurous aroma.

That’s when the phrase “burnt gunpowder” came into my mind.

And that’s when I remembered reading that the Apollo astronauts reported that moondust had the strong smell of “spent gunpowder”. They would notice this after conducting EVA and after returning to the Lunar Lander where the moondust that clung to their space-suits had apparently reacted with the oxygen and moisture in the pressurized cabin to produce this odor. I say “apparently” because to this day NASA still does not have an adequate explanation for this phenomenon. But to this very day, astronauts and cosmonauts still remark about the ozone-like smell that lingers on their space-suits after returning from a space-walk outside the ISS.

In fact, an Iranian woman cosmonaut said that “space smells like a burnt almond cookie”!

(Probably each person would have their own, personal description of this odor.)

And NASA is actually trying to recreate this odor in order to train and prepare their future lunar astronauts for when they return to the Moon!

“Click” the above image to ENLARGE!!

Although NASA has yet to provide a proven explanation for how moondust generated this “burnt gunpowder” smell, they have proposed a couple interesting theories:

One explanation is that the Lunar Lander’s oxygen atmosphere literally “burns” the moondust. Because oxygen is very reactive it could actually chemically bond with the moondust. This process is nothing more than oxidation, and is the same thing as “burning”, but it happens too slowly for smoke or flames to be produced, yet the oxidation of moondust might produce an aroma like
Another explanation involves how moondust is actually formed. When meteoroids hit the moon, they reduce rocks to jagged dust. This is a process of constant hammering and smashing (see image below). Over time, molecular bonds in the moondust are broken, producing “dangling bonds” – which are unsatisfied electrical connections that need atomic partners. When astronauts inhaled moondust, what happened was those dangling bonds sought “partners” in the moist membranes of the nose. When this happened, the astronaut’s sense of smell would respond by registering this “chemical reaction” to the brain as being “a strange odor”.

Moondust is formed by pounding; the “hammers” are meteoroids. Image credit: Prof. Larry Taylor, University of Tennessee.

What all of this has to do with why there is an odor emanating from my Norton County specimens is this: I see a connection between – how the pulverizing of moonrock by meteoroids produces this odor in moondust – with the brecciation and production of impact melt in the parent body of the Norton County meteorite. I found that this odor was only prevalent in the most brecciated specimens where dark-colored impact melt had infused with the light-colored breccia clasts of the enstatite achondrite.

What this means is that this odor (along with the brecciation) is an ancient record of the impact event that occurred on that planetary body. This means that these meteorite specimens are also samples of the same odors from space that, up until now, only astronauts were able to smell.

This is all made possible because of: the large size of the individual masses from the Norton County fall, as well as the prompt recovery of these masses from this fall, and more importantly the prompt placement of the brecciated specimens into plastic bags. All of this served to protect this “odor” and to minimize its contact with atmospheric moisture and oxygen.

I feel very fortunate to have had this opportunity to “smell space”! I found it difficult, but I’ve tried to convey in words what it is that I am personally experiencing when I smell my specimens. But this experience would be unique for each person, and probably would be described differently and uniquely by each person. Although this smell emanating from my Norton County specimens is the result of the brecciation of an enstatite achondrite, I doubt that the pulverized anorthosite on the moon has a much different smell. So, I feel that I now have something in common with the NASA astronauts and can better appreciate, if not their visual and aural, at least their nasal experiences while they were on the moon and while traveling thru space.
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1. **The Mysterious Smell of Moondust – NASA Science**
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2. The Smell of Moondust | Universe Today

Jan 30, 2006 ... Apollo astronauts were specific. Moondust smells like burnt gunpowder.) Curiously, back on Earth, moondust has no smell, ... www.universetoday.com/11314/the-smell-of-moondust/ – Cached

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Schmitt says, “All of the Apollo astronauts were used to handling guns. ... It’s nothing like gunpowder. So why the smell? No one knows. ISS astronaut Don ... www.ufodigest.com/moondust.html – Cached – Similar

4. Moon Dust Smells Like Spent Gunpowder

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7. Space, the final frontier of smells! | Ask MetaFilter

Jan 28, 2004 ... I've read that the Apollo astronauts smelled something from moondust: ... the initial smell, was a smell like gunpowder a little bit, .... ask.metafilter.com/4967/Space-the-final-frontier-of-smells – Cached

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8. Moondust Smells Like

Jan 22, 2009 ... Sniff it—"it smells like spent gunpowder," says Cernan. How do you sniff
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9. Smell of Gunpowder

I happen to be in the group liking the smell of burnt gunpowder…. where the author stated that the Apollo 11 astronauts were armed.…

lofi.forum.physorg.com/Smell-of-Gunpowder_4813.html – Cached

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Oct 3, 2006 ... Almost 34 years ago, Apollo 17 astronaut Gene Cernan succinctly summed up the scent of moondust: "It smells like spent gunpowder." It turns out that the …

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www.retrothing.com/space/page/2/ – Cached

12. Astronaut describes what space smells like – Boing Boing

Feb 20, 2008 ... The smell is probably a combination of stuff that has been outgassed by … One of the Apollo astronauts (I forget which one) said that when the … told is sort of like a mix of gunpowder and alcohol or maybe gasoline…. 

boingboing.net/2008/02/20/astronaut-describes.html – Cached – Similar

13. New Mars • View topic – Mars Smells?

PS: Actually, I always sort of liked the smell of “spent gunpowder” from a shotgun; it’s a very unique odor (I used to accompany my father…


Get more discussion results

14. Three Squirrels in a Pressure Cooker » The Smell of our Moon

Feb 6, 2006 ... “It is really a strong smell,” radioed Apollo 16 pilot Charlie Duke. “It has that taste — to me, [of] gunpowder — and the smell of gunpowder, too. … Schmitt says, “All of the Apollo astronauts were used to handling …

www.threesquirrels.com/?p=203 – Cached – Similar

15. Althouse: “Space smells like a ‘burned almond cookie.’”

Sep 28, 2006 ... I was thrown for a minute, because A. Space would have no smell, at least not one that the human nose could detect and B. If it … Well, the Apollo astronauts reported that fresh moon dust smells like burned gunpowder. …

althouse.blogspot.com/…/space-smells-like-burned-almond-cookie.html – Cached

16. Sulfur Deposits May Make Mars Stink
While it gives off an unpleasant odor and can stir up a headache, ... several Apollo astronauts noticed they had tracked back into their ... the smell was likened to wet ashes in a fireplace, even spent gunpowder from a just fired ...

17. Astronaut Says He Wasn't Prepared for Smell of Space

31 posts - 6 authors - Last post: Sep 6, 2009
Re: Astronaut Says He Wasn't Prepared for Smell of Space, Quote. The Apollo crews spoke of the Moon smelling like gunpowder. Gunpowder is a ...

18. United States Astronaut Hall of Fame, Titusville, Florida

It is a hall of fame PLUS an extensive collection of Astronaut ...(carried back on Apollo 15); and some unappetizing examples of Soviet space food. ... "Moon Smell" display, which attempts to recreate the gunpowder odor of moon dust. ...

19. Artworks to Show – Page 15 – All Metal Forums

Aug 29, 2010 ... "It has that taste — to me, [of] gunpowder — and the smell of ... Schmitt says, "All of the Apollo astronauts were used to handling guns. ...

20. Apollo: The Right Stuff

OTHERWORLDLY ODOR. When the astronauts took off their helmets inside the LM ... in a fireplace" and Buzz as "spent gunpowder". It was the smell of moon dust. ...

21. Fogonazos: Top 10 coolest facts about space missions

All of the Apollo astronauts said moon dust smell like burnt gunpowder. Curiously, back on Earth, moon dust has no smell. There are hundreds of pounds of ...

22. Smell of space is funny, say Discovery pilots | TopNews

Mar 29, 2009 ... Buy Apollo Tyres With Target Of Rs 81 · Sensex Gains 116 Pts In Noon ... According to ex-NASA astronaut Thomas Jones, a veteran of three ... adding that the smell is also similar to burnt gunpowder or the ozone smell of electrical equipment. ... The suit smells like plastic inside,” he added. ...

23. Dust-busting, Lunar Style

Mar 26, 2007 ... Apollo astronaut Eugene Cerman, after an encounter with lunar dust. ... Some astronauts reported smells of caldron, a gunpowder sort of smell, as soon as they went ... they started smelling these oxidation type smells. ...

24. Apollo 11 Moon landing: ten facts about Armstrong, Aldrin and ...

Jul 18, 2009 ... When the astronauts took off their helmets after their moonwalk, they noticed a strong smell, which Armstrong described as "wet ashes in a ...

25. SpikedHumor.com » Space Smells Like Fried Steak & Hot Metal ...

Oct 18, 2008 ... “We have a few clues as to what space smells like. ... The moon also had a smell, as reported by the Apollo astronauts ...like spent ...

26. Houghton Mifflin Science: Cricket Connections

No, Apollo astronauts used special rakes to collect Moon dirt. ... And it has a smell very few
people, if any, have smelled on the Earth. It smells something like spent gunpowder, like you've just fired a shotgun or something and you...


27. Review: Moonbase Alpha

Jul 11, 2010 … All that’s missing from this lunar experience is that gunpowder-smell of regolith the Apollo astronauts reported when they returned to their …

www.pars3c.com/2010/07/11/review-moonbase-alpha/ – Cached

28. Conspiracy Journal #456

Feb 15, 2008 … (Note: Burnt and unburnt gunpowder do not smell the same. Apollo astronauts were specific. Moondust smells like burnt gunpowder.) …

www.ufoview.tripod.com/conspiracyjournal456.html – Cached

29. What does the moon smell like? – Ask Jeeves Search

According to Apollo astronauts, it smells a lot like gunpowder. … Once their helmets and gloves … Natural Gas Odor Smell. Popular Question Categories …

uk.ask.com/qotd?…– United Kingdom – Cached

30. 77 Out-of-This-World Facts about the Moon

Jun 5, 2010 … Moon dust is said to smell like spent gunpowder. … Only 12 people have been on the moon: the astronauts on the Apollo missions from 1969 to 1972. … g “The Mysterious Smell of Moondust.” NASA. January 30, 2006. …

Search Results – for “odor from meteorites”

1. ‘Meteorite Man’ Wants Chunk of Canada Meteorite | World | Epoch Times

Dec 2, 2008 … Most meteorites smell like sulphur, says Haag, but there are some that have the odor of starter fluid. These are extremely rare and provide …

www.theepochtimes.com › World › International – Cached – Similar

2. Cosmic Log – Sparks fly over meteorite

Oct 10, 2007 … Michael Farmer Meteorite hunter Michael Farmer kneels at the rim of a … “I’m sure there was a heavy sulfur smell. That is not abnormal. …

cosmiclog.msnbc.msn.com/archive/2007/10/…/406411.aspx – Cached – Similar

3. The Comics Curmudgeon » I love the smell of meteorite strikes in …

I love the smell of meteorite strikes in the morning. Gasoline Alley, 7/27/07. For the last several years — or, oh, let’s say decades — Gasoline Alley has …

joshreads.com/?p=1179 – Cached

4. Re: [meteorite-list] Carancas: Arsenic smell ?


www.mail-archive.com/…/msg72338.html – Cached – Similar

5. Re: [meteorite-list] Carancas: Arsenic smell ?

Re: [meteorite-list] Carancas: Arsenic smell ? Jeff Kuyken Thu, 19 Mar 2009 23:12:12 -0700. Hi Dave, I believe fusion crust is created not only by the heat …

www.mail-archive.com/…/msg72344.html – Cached – Similar

Show more results from www.mail-archive.com

6. Blackholes and astrostuff: The Saskatchewan (Buzzard Coulee) Meteorite

Jan 22, 2009 … The meteor has a smell? Really? “I’m about to smell it again, excuse me………………., okay I’m back, awesome.” – LOL LOL LOL awesome! …

blackholesandastrostuff.blogspot.com/…/saskatchewan-buzzard-coulee-meteorite.html – Cached – Similar


Meteorites is a nice, even if simple and somewhat linear, scent of powdered iris and violets – or to be more precise, the smell of the face powder in a …

www.fragrantica.com/perfume/…/Meteorites-4045.html – Cached – Similar

8. Meteorite crash landing causes a stir in Peru – Travel – LATimes.com

Sep 21, 2007 … Peru investigates meteorite said to be causing sickness · Arizona’s Meteor Crater: A … “But there was this terrible smell, really strong, …
9. **Boy Hit by Meteorite Traveling at 30000 MPH (I smell conspiracy ...**

This thread has been pulled. Okay.
www.freerepublic.com/focus/f-news/2270494/posts – Cached – Similar

10. **Has the meteorite brought new disease to Earth? | Opinion ...**

Sep 24, 2007 ... He said it’s highly unlikely for a meteorite to smell like lead or silver. These substances exist in meteorites in negligible amounts, ... en.rn.ru/analysis/20070924/80570359.html – Cached

11. **Peruvian Meteorite Still Puzzling Scientists – Science News ...**

Sep 24, 2007 ... But Ishitsuka said he doubts reports of a sulfurous smell. Meteor expert Ursula Marvin said that if people were sickened, “it wouldn’t be ... www.foxnews.com/story/0,2933,297610,00.html – Cached – Similar

12. **Black helicopters circle 'Welsh Roswell'• The Register Forums**

Aug 23, 2010 ... Yep, I've played with meteorites of all types and whilst they are insanely cool, they don't smell of sulfur. In fact they don't smell at all ... forums.theregister.co.uk/forum/1/2010/08/23/welsh_roswell/ – Cached

13. **Murchison Meteorite- What A Fireball Over Australia Might Tell Us ...**

Apr 2, 2009... stones were found they were still warm and had a smoky, aromatic smell. ... The smoky aroma hinted that there was more to this meteorite ... www.science20.com/.../murchison_meteorite ...what_fireball_over_australia_might_tell_us_about_origin_life – Cached

14. **Meteorite Mayhem Part II: Maybe Missile Mayhem? | Bad Astronomy ...**

Sep 20, 2007 ... I said it didn’t sound like a meteorite; in fact, the impacts reported ... That would explain the foul smell and the release of methane and ... blogs.discovermagazine.com/.../meteorite-mayhem-part-ii-maybe-missile-mayhem/ – Cached – Similar

15. **PSRD: Interstellar Organic Matter in Meteorites**

May 26, 2006 ... Gunky Meteorites. Some carbonaceous chondrites smell. They contain volatile compounds that slowly give off chemicals with a distinctive ... www.psrd.hawaii.edu/May06/.../meteortimes.html – Cached – Similar

16. **The Accretion Desk – Meteorite Times Magazine Articles ...**

By any other word would smell as sweet.” Romeo and Juliet (II, ii, 1-2). Had the Rose City meteorite fallen 16 years earlier, its name could have been much ... www.meteorite-times.com/Back_Links/.../Accretion_Desk.htm – Cached – Similar

17. **HowStuffWorks “Meteor Strike in Peru”**

Sep 25, 2007 ... A meteor strike in Peru may have made up to 600 people sick, ... for several minutes after impact and that a smell of sulfur filled the air... science.howstuffworks.com .../Astronomy .../The_Solar_System – Cached – Similar

18. **Meteorites Petrified Wood Roadside Attraction in Arizona**

Sep 22, 2009 ... I want to smell that smell, you know, that smell from the pine trees,” ... 3 User Submitted Responses to “Meteorite Hunters and Desert Rats”... www.vagabondjourney.com/... /meteortimes.html – Cached – Similar

19. **Contagious Fear: Mass Sociogenic Smell Weapon | Danger Room ...**

Jan 28, 2008 ... However, US meteorite hunter Michael Farmer soon arrived on the scene and confirmed ... “The smell was caused by triolite, an iron sulphide, ... www.wired.com/dangerroom/2008/01/contagious-fe-1/ – Cached – Similar

20. **What to do if you find a meteorite? [Archive] – Bad Astronomy and ...**

Sep 29, 2003 ... If you find a rock you think might be a meteorite, there are several places to get ... I smell a hoax! It was their grandpa’s Model T Ford, ... www.bautforum.com .../ Science and Space .../Astronomy – Cached – Similar

21. **Is The Abee Meteorite A Remnant From Mercury? | Life Info Zone.com**

Sep 3, 2009 ... In fact, if you were to cut open a piece of Abee meteorite, you would like encounter a smell that is like discharged gun powder; ... www.lifeinfozone.com .../Is-the-abee-meteorite-a-remnant-from-mercury/ – Cached
22. Guerlain Meteorites Giant Butterfly Pearls – W 2008 reviews...

Guerlain Meteorites Giant Butterfly Pearls – W 2008 was rated 4.7 out of 5. I love the smell and I think the container is pretty when sitting on my vanity. ... www.makeupalley.com/product/.../ Meteorites .../Highlighters

23. Brazil Meteor Fireball Produces Meteorites — Signs of the Times News

He commented that the air had a "strong smell of iron". The meteorite appears to be an ordinary chondrite with both primary and secondary fusion crust. ... www.sott.net/.../210962-Brazil-Meteor-Fireball-Produces- Meteorites – Cached

24. Meteorites in Iowa’s History

Rock fragments showered an eight square-mile area, and local residents reported a smell of sulphur. As with Iowa’s other meteorites, fragments now are ... www.igsb.uiowa.edu/Browse/ meteor/ meteor.htm – Cached

25. Society for Popular Astronomy :: View topic – Possible Meteorite ...

She emphasised the smell and characterised it as a little like the smell ... Ordinary small meteorites, maybe up to a metre or two in size ... www.popastro.com/phpBB2/viewtopic.php?t=1449 – Cached – Similar

Get more discussion results

26. Meteorite Strike – from Usborne Publishing

In 2000, a meteor caused two sonic booms and a foul smell in the air in the Yukon Territory, Canada. A NASA aircraft flew through the debris, searching for ... www.usborne.com/ meteoritesstrike/ – Cached – Similar

27. Police: Meteor falls on beach – Israel News, Ynetnews

Apr 24, 2010 ... Another lifeguard, Yossi Mizrahi, said: “The meteorite kept on burning and gave off an odd smell. It kept on burning even when we put it in ... www.ynetnews.com/articles/0,7340,L-3880008,00.html – Cached

28. Meteor Crash in Peru Caused Mysterious Illness

Sep 21, 2007 ... Locals described the meteorite as a bright, fiery ball with a smoke trail. The sound and smell rattled residents to the point that they ... news.nationalgeographic.com/.../070921-meteor-peru.html – Cached – Similar

29. If There Ever Was... a book of extinct and impossible smells, by ...

Oct 23, 2008 ... Mark Buxton recreated the smell of the Peruvian meteorite; I can’t say what he did exactly, but I assume he left out the foul smell of ... www.nstperfume.com/.../if-there-ever-was-a-book-of-extinct-and-impossible- smells-by-robert-blackson-perfume-books/ – Cached – Similar

30. » Meteorite Is Making People Sick In A Peruvian Village Dvorak ...

Sep 18, 2007 ... That sounds more like a volcanic vent than a meteorite. A volcanic vent would explain the smell and other symptoms. ... www.dvorak.org/.../meteorite-is-making-people-sick-in-a-peruvian-village/ – Cached

Video: Fiery Meteorite Falls on Israeli Beach

Another lifeguard, Yossi Mizrahi, said: “The meteorite kept on burning and gave off an odd smell. It kept on burning even when we put it in the water and it melted seashells as if they were candles.”

Dream comes true with meteorite find

Kevin Meade – July 14, 2006 – Verified: David Elliott with the 17kg meteorite. It took him more than two years to locate them, but the two meteorites western Queensland grazier David Elliott found on his property are further proof that he has an uncanny knack for spotting rare rocks.

My previous articles can be found "HERE"

For more information, please contact me by email: Bolide*chaser

Please Share and Enjoy:
IMCA Insights – September 2010
Commemorating the Schwetz Iron
by Andrzej S. Pilski

More than 20 years ago I started my meteorite adventure by reading a great work by Dr. Jerzy Pokrzywnicki „Meteorites of Poland” (Studia Geologica Polonica, Vol. 15, 1964). Then I visited Polish meteorite collections to learn how meteorites actually do look like. In the collection of the Museum of the Earth in Warsaw, the capital of Poland, I could see a rusty slab of an iron meteorite labelled Schwetz. I knew already that it was the one and only specimen of this iron meteorite in Polish collections, traded from Berlin for a specimen of the Łowicz mesosiderite shower.

Despite the little experience I had in preparing irons I dared to ask the Museum to let me refresh the slab in order to show its nice Widmanstätten pattern hardly visible under the rust. Much to my surprise the director of the Museum accepted my proposal. Moreover he agreed to cutting off a small slice for the collection of the Olsztyn Planetarium in trade for a slice of the Seeläsgen iron for the Warsaw collection.
The results of etching were beyond my expectations. The pattern was bright and clear and in the Museum they liked the slice so much that they placed its photo on the cover of their catalogue “Meteorites and Tektites in the Collection of the Museum of the Earth” by Teresa Hanczke. I included the story into my introductory book on meteorites (in Polish) “Nieziemskie skarby” (Unearthly treasures).
The book was read by Bogdan Tarach from the village of Kozłowo near Świecie, former Schwetz. He was impressed to learn that he lived next to the place where a meteorite had been found. He tried to find another meteorite in the area and one day he came to visit me in Frombork with his truck full of stones. I checked them but unfortunately I could find no meteorite among them. Several years passed and one day I was told that the authorities of the town of Świecie wanted to commemorate the meteorite that had been found near their town. They had built a monument, and last August I got an invitation for the unveiling ceremony on August 21, 2010. The timing didn’t fit my schedule, but the organizers insisted. I was surprised: why did they want just me to be there?

Bogdan Tarach (right) and the author (left) at the display case next to the monument
Photo courtesy Ryszard Biernikowicz

The mystery was solved when I arrived at Kozłowo and was welcomed by the same Bogdan Tarach who visited me in Frombork. Having served many years as village administrator in Kozłowo and member of the Council of Świecie Bogdan Tarach talked the authorities into commemorating the meteorite find somehow. Finally his idea was accepted as part of a project of building a recreation area at Wda river, formerly called Schwarzwasser.

Here is the quotation I could read about the find of Schwetz iron in the paper by Pokrzywnicki:

The main mass of the Schwetz iron in the collection of the Museum für Naturkunde in Berlin Photo courtesy Dr. Ansgar Greshake

Norbert Classen kindly translated this passage into English:

“In spring 1850, during the excavation of a sandy hill for [the building of the] Ostbahn [Prussian Eastern railroad line] on the left bank of the Schwarzwasser Creek near Schwetz an der Weichsel, an iron mass was found 4 feet [1.2m] below the surface at the transition from sand to the underlying clay. It [the mass] was fissured and could be easily divided. (…)

The original shape of the iron mass is approximately that of a straight rectangular prism with fully rounded edges. It is 9" high, 24" long, and 17.5" wide [Prussian inches, i.e., ~23x62x45.5cm]. The entire mass weighs 43 pounds [Berlin pounds, i.e., 21.5kg].” (Pogg. Ann. Ergânz., Vol. IV, 1854, p. 390 and 454)

Bogdan Tarach starts the unveiling ceremony Photo courtesy Ryszard Biernikowicz

Bogdan Tarach told me that according to his knowledge the meteorite was found during excavations for pillars of the railway bridge. That’s why he suggested to place the monument at the bridge on left bank of the Wda river. The monument was situated between the road and the river and is two-sided so it can be read both by hikers and cyclists from the road and canoeists
The ceremony was started by Bogdan Tarach who described briefly the efforts which led to the building of the monument, and then four notables were asked to unveil the monument together: Bogdan Tarach, Jerzy Wójcik – president of the Council of Świecie, Tadeusz Pogoda – mayor of Świecie and me, as a representative of IMCA and the person responsible for triggering Mr. Tarach’s interest in meteorites that finally led to the creation of the monument.

Two of the three specimens of Schwetz in Polish collections were brought to the unveiling ceremony and were displayed in a special case next to the monument; the small 6.4 g slice from the Olsztyn Planetarium, and a 127.6 g slice from the collection of Jakub Radwan. The last one I spotted a few years ago offered for sale by Sergey Vasiliev. It was priced far beyond my reach, but fortunately another Polish collector had been able to purchase it and soon I was asked to refresh it as its etch pattern was rather weak. Of course, I agreed with pleasure. The result was nice again, then the slice was sold to its current owner and displayed during the meteorite conference in Wrocław, Poland, two years ago. The owner loaned it for the meteorite exhibition in Warsaw, and kindly agreed that the slice could be brought to Kozłowo and Świecie for that special
celebration. Responsible for the slice were Jan Woreczko and Wadi, owners of a large meteorite collection who kept their eyes on it all the time.

Jacek Drążkowski, an astronomer and meteorite collector born in Świecie, who also helped with preparing the monument and ceremony, talks about the Schwetz iron

The monument seen from the river Photo courtesy Jan Woreczko
Then there were a few speeches followed by many discussions and photos at the monument and at the display case, and later everybody was invited to an educational picnic in an old castle in the town of Świecie.

The castle of Świecie Photo courtesy Jan Woreczko

The display case with both specimens of Schwetz/Świecie was moved to the castle, where visitors could see and hear four talks on the Schwetz iron and on meteorites in general, could gaze at the Sun, and later at the Moon and the stars with a telescope on the tower of the castle, or look at the starry sky in a portable planetarium and play in the court of the castle.

The picnic ended late at night.
Looking at the Sun with telescope brought to the tower from Olsztyn Planetarium Photo courtesy Ryszard Biernikowicz
Chuck,

There are a lot of pictures of NWA 2377 L3.7 on the web. No doubt this is because it’s such a good example of a chondrite. It’s got a dark matrix with large contrasting well defined chondrules. Mike Bandli (collector, dealer, hunter) sees “a candy filled chondrule matrix”. Yes, I’m adding another part slice picture to the worldwide cybermass. I just have to. But I’ll show you some new thin section pictures too. I just got my first thin section of this baby and it’s really pretty good.

John

This part slice is about 30 mm long. It looks like all the rest but you see what I mean.
This is my version. The view is about 9.3 mm wide.

Peter Marmet (all around nice guy) has a low magnification view of NWA 2377 on his THE COLORFUL WORLD OF THIN SECTIONS page.

But what struck me most is that there are several compound chondrules on this one slide. You don’t find those every day. Here’s a finely barred chondrule inside a porphyritic one.
Another barred chondrule that had material accrete and crystallize around it.

And a big one, over three millimeters long.
Does it look like this formed around a BO chondrule fragment?

The variety of features on this slide is amazing. This granular aggregate contrasts with the POP chondrule above it.
Quite a variety of textures here.

Assorted forms.
Finally, these two; neighbors but different.

Please Share and Enjoy:
# Meteorite Calendar – September 2010

by Anne Black

These meteorites fell in September but the exact dates are unknown.

| 1843 Picote | 1875 Morancourt | 1930 Agaga | 1933 Noyan-Begdo |
| 1869 Yokedown (New York) | 1886 Bradford Woods | 1930 Milabruska | |
| 1905 Modoc | 1910 Grzempach | 1930 Santa Cruz | |
| 1955 Zveclav | 1573 Lupunomas | 19885 Mecoz-Madaras | |
| 1567 Ufinner | 1753 Lupunomas | 1986 Novo-Ucei | |
| 1924 Unokoka | 1868 Saragás | 1930 Planterville | |
| 1995 Dong Ujimqi Qī | 1902 Crumlin | 1980 Miacchi | |
| 1997 Wodea | 1768 Lucy | 1992 Cape Arago | |
| 1870 Kessov | 1822 Epiné | 1993 Tillet | |
| 1911 Demina | 1902 Crumlin | 1937 Kansai | |
| 1918 Saratov | 1936 Afonso | 1976 Qiangzen | |
| 1954 Arbel Solo | 1836 Aubez | 1910 Baroth | |
| 1963 Karatun | 1997 Gardab | |
| 1843 Klein-Werden | 1889 Kharig | |
| 1920 Kushik | 1942 Mazea | |
| 1969 Susho Dar | 1954 Atila | |
| 1979 Toratlan | 1977 Rodach | |
| 1937 Mahwe-Kloya | 1869 Tjabe | |
| 1945 Soroti | 1910 Khebar | |
| 1945 Atila | 1949 Kewar | |
| 1987 Phu Hong | 1873 Kharig | |
| 1934 Rio Negro | 1899 Donga Koloro | |
| 1949 Bedigdert | 1936 Macibini | |
| 1949 Akaba | 1944 Torrington | |
| 1965 Maddoor | 1942 Nazaba | |
| 1934 Rio Negro | 1956 Fermo | |
| 1939 Glanggang | 1928 Naoki | |
| 1939 Selakopi | 1939 Benid | |
| 1973 Lichtenberg | 1999 Kobe | |

Please Share and Enjoy:
Ensisheim

by Michael Johnson

Ensisheim using three cm cubes and one inch cube. They are the faux antique ones that Tom Phillips makes. Here is the message to the Meteorite List where Tom explained the cubes, naming them after me, Martin Horejsi and the reason a picture of the cubes with Ensisheim is important.

http://www.mail-archive.com/meteorite-list@meteoritecentral.com/msg82108.html

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Web design by Michael Johnson of rocksfromspace.org
ROCKS FROM OUTER SPACE

Please Share and Enjoy:
Indochinite 42.2 grams

by Editor

Like Sign Up to see what your friends like.

Indochinite 42.2 grams
Please support Meteorite-Times by visiting our sponsors websites. Click the links below to open their website in a new tab / window.
Once a few decades ago this opening was a framed window in the wall of H. H. Nininger’s Home and Museum building. From this window he must have many times pondered the mysteries of Meteor Crater seen in the distance.

Photo by © 2010 James Tobin