2017 was an interesting year from any perspective, meteorites included. But then again meteorites are always interesting so anything they touch becomes a curiosity as well.

A few notable meteorite “things” caught my attention and here’s the short list. The first thing is that the top hits on Google for “meteorite” no longer begin with science but rather marketed products. The top Google-supplied shopping images include Amazon.com, a jewelry retailer and etsy. Prior to the search I would have figured eBay would be the top meteorite shopping hit, but no, eBay is the sixth shopping hit if one continues to dig.

Second, Amazon.com has become a fairly large vehicle for the sale of meteorites as well as meteorite-themed products. Call me old, but “massive” seems to be a little smaller these days, especially for a highly treated and tumbled Campo del Cielo.
Also on Amazon was a dog tag-shaped slice on a chain. A company called Starborn is marketing the etched Seymchan. As a pallasite, Seymchan has two main flavors, traditional coarse octahedrite, and traditional olivine-rich matrix. My first concern with a wearable dog tag of meteorite iron would be durability. Oxidation from sweat is always a concern with meteorite jewelry but no worries, Wikipedia put my concerns to rest with the simple line in the Seymchan entry: "Seymchan is considered a stable and rust-resistant pallasite." So it must be true.

Also on Amazon is a "Meteorite Hunting Kit" for $30. What does all that money buy? Well, a telescoping magnet, a dual lens magnifier, and a bottle of "Nickel Alert Detect." For those of us already flush with magnets and magnifiers, the Nickel Detect solution is also available on Amazon for $23 for 7.2ml.
Two more Amazon offerings include an Herb and Spice grinder with a lid laser-etched with a childlike line drawing of what a meteorite in space might look like. Also on Amazon is a box of Double Bubble bubble gum labeled “Meteorite.” Presumably there is no actual meteorite in the gum since the FDA might have something to say about that, as well as the American Dental Association. However, since much of the labeling on the box of meteorite bubble gum is in Spanish, perhaps Americans are not the primary customers. The blue colored blobs are literally “acid with a liquid center,” just like a real meteorite (with acid meaning sour and a strawberry flavoring).
So with meteorites trending in other product lines, it’s no surprise that chondrite kitsch wall art would be next. For less than five bucks including shipping you too can have a 3-D wall decal portraying a future meteorite. When tilted appropriately, the deep space gash in your wall can take on an incoming bolide appearance which is especially important when trying to induce nightmares in your child’s play room.
While Amazon might be the household name in meteorite gifts and jewelry, Etsy takes the cake with over 6700 hits for the word meteorite. Etsy is where you can sell “handmade, vintage or craft items.” The breath of Etsy’s meteorite offerings stretches from >$1000 rings to individual meteorite specimens as found. I guess it is the latter category would would qualify as vintage.
The list of discriminating meteorite collectors who use Etsy to enrich their collections is apparently not my usual crowd of academics. For instance princessangelina526 bought a large (46 gram) piece of “Real, Natural, Campo Del Cielo Fragment, High Quality Collector Grade Meteor Specimen.” So thrilled was princessangelina526 that she posted on November 14, 2017, “Amazing! This piece came from the universe to my hand! I am overwhelmed! Cool!” The princess is right, however, the large piece of real Campo did come from the universe.

One of the oddest entries into the meteorite fray is none other than Kentucky Fried Chicken or KFC as they rebranded themselves since “fried” became a five-letter four-letter-word in fast food. For a mere twenty thousand dollars (yes, $20,000) you could have been the proud owner of a nine-and-a-half-pound Chicken Zinger Sandwich-shaped meteorite. But unlike the meteorite bubble gum, this meteorite delicacy is not for human consumption (as noted in the description).
At this point I was a little confused as if the word meteorite still meant the same thing it did when I started collecting them. So a quick stop by the Urban Dictionary answered the question. Of course a meteorite is a meteorite... as well as a few other things. Here are two of the alternative definitions that are mildly appropriate to show here. If you are truly curious, you can look up the third non-traditional use of the word meteorite yourself and only in the company of adults.
It seems in 2017 that a whole new concern about the value of a meteorite surfaced. The worry is that if NASA found a way to drag a minor asteroid named 16 Psyche back to earth for mining, the iron alone could be worth ten-thousand-quadrillion dollars which of course would collapse our global economy currently worth only a paltry seventy-three trillion dollars. At the moment, however, I’m not too worried because the likely market price for iron would drop to tons per penny with that kind of surplus, and the unintended damage of landing 16 Psyche on earth would be a boon for all other sectors of the economy. But just a heads up NASA, although the Iron Age has not technically ended since its start around 600 BCE, I imagine a 10,000 quadrillion dollar influx of iron would pretty much usher in the new age of Steampunk. Now that would make it worthwhile.
Nasa plans to explore a $10,000 quadrillion asteroid that could cause the world's economy to COLLAPSE

- 16 Psyche is a huge chunk of metal, made up of iron, nickel and precious metals
- On Earth, the iron would be worth £8,072 quadrillion ($10,000 quadrillion)
- Nasa plans to visit the asteroid in 2023 but does not plan to bring it back to Earth
- If it did, its value would play havoc with commodity prices and destroy the world's economy

By SHIVALI BEST FOR MAILONLINE

It may be 230 million miles (370 million km) away from Earth, but this asteroid could be worth a small fortune.

16 Psyche is one of the most mysterious objects in our solar system, and scientists could soon be getting a close-up view thanks to a newly confirmed Nasa mission.

If the asteroid could be transported back to Earth, the iron alone would be worth $10,000 quadrillion (£8,072 quadrillion).

Its value would be large enough to destroy commodity prices and cause the world's economy - worth $73.7 trillion (£59.5 trillion) - to collapse.

Shortly after the 16 Psyche news broke, The Economic Times (indiatimes.com) made a list titled, "A look at five biggest meteorite crashes of all time." Topping the list was Ensisheim, which did actually crash, but biggest? Figuratively perhaps. Second on the list is Murchison. Again, a figurative crash, mostly of traditional science. Third is Allende which could be considered the biggest meteorite crash of all time if measured in kilotons of scientific papers and journal articles. Fourth is Chicxulub illustrated with a visual of Canyon Diablo. And the final and most surprising entry on the list is Orgueil. which "crashed in southern France as a fireball on May 14, 1864." Crashed as a fireball? Hmmm.
A look at five biggest meteor crashes of all time

Jun 25, 2017, 12:00 AM IST

As Meteor Watch Day falls on June 30, take a look at some of the biggest meteor crashes of all time:

Ensisheim
The oldest recorded meteorite, the Ensisheim struck earth on November 7, 1492, in Ensisheim, France. A 330-pound stone dropped from the sky into a wheat field, witnessed only by a young boy. German King Maximilian even stopped by Ensisheim to see the stone on his way to battle the French army. Maximilian decided it was a gift from heaven and considered it a sign that he would emerge victorious in his upcoming battle, which he did. Today, the largest portion stands on display in Ensisheim's Regency Palace.

Murchison
On September 28, 1969, a meteor exploded over the town of Murchison in Australia. The explosion left smoke rings in the air and left 700 kg of meteorite debris scattered across 33-sq-km area. Remarkably, the cosmic rocks contained molecules such as amino acids, which are essential to life. This was the first time organic chemicals had been found in a meteorite.

The last entry in this list of meteorite curiosities is one of poll results. Seems a third to a half of all 18-35 year old people would rather a giant meteorite slam into the earth trigging an apocalypse than to have either of the two major party candidates win the 2016 US presidential election. I know that particular news a year old, but apocalypses are kind of a big deal.
Half of young Americans prefer meteor apocalypse to Donald Trump presidency

Third of 18- to 35-year-olds also thought ‘Giant Meteor’ would be better than Hillary Clinton getting into the White House

Young Americans are so dissatisfied with the options in the US presidential election that nearly one in four would rather have a giant meteor destroy the Earth than see Donald Trump or Hillary Clinton in the White House.

The tongue-in-cheek question was intended to gauge young Americans’ level of unhappiness about their choices in the 8 November election, said Joshua Dyck, co-director of UMass Lowell’s Center for Public Opinion, which conducted the poll alongside Odyssey Millennials.

So with that, let’s welcome in a new year. Apocalypse or not, it will no doubt be a curious one too.

Until next time….
I do not cut meteorites for anyone other than our business as a general rule. But, my friend Jason Phillips of Rocks From Heaven, contacted me about a newly recovered meteorite from Mexico that he wanted to get cut open to see its insides. So I said, “Sure send some pieces, and I will slice them.” We had a conversation over many emails the next few days, and he let me know that he would send one large stone, one medium stone, and one small stone. I had a moment of thinking about Goldilocks, but that passed quickly. The stones also arrived quickly in just a couple days. The large one was just that. At about four kilos it was one of the largest meteorites I have cut. The medium stone was covered in thick white caliche but had a nice shape and was over a kilo in weight. The small stone was a nice fusion crusted corner of a stone. I was to find out as the work went on that the small stone was a fragment of the large stone and the source of the type specimen used for getting the meteorites classified. The name submitted to the nomenclature committee for the meteorite was Quitovac.

The stones were found at a newly discovered strewnfield in Sonora, Mexico by a man metal detecting for gold. After finding the first stone, some more hunting produced additional finds. A total of five stones have been found as of the time of this writing with a total weight of 9,112 grams.
There had been no discussion about cleaning the meteorites, but they needed to be cleaned, so I cleared that with Jason and set about making them pretty. The caliche was removed carefully from the spots it covered on the large stone and then it was washed and scrubbed with a toothbrush and alcohol. It cleaned up very nicely. I thought about removing all the reddish brown rusty patches and uncovering the fusion crust. I could make it nice black and dark gray again but decided to leave it in a more as found but cleaned condition. The large stone was only to have the broken side sliced off and smoothed up. The other two pieces were to be sliced up completely. It was more important therefore that they be cleaner since having nice black fusion crust where possible on all the slices was a great improvement over the rusty brown and caliche covered edges the slices would have if I did not clean them. Cleaning up the slices later is much more work and dangerous since there is a higher likelihood of the fusion crust chipping off.

The small stone was easy to clean. Since it was once part of the large stone, its exterior was the same. A
few patches of caliche and the red/brown spots. I removed the spots with my special process and exposed the nice black fusion crust below. The small stone was done in a very short time ready to cut. I had sliced the broken side off the large stone by the time I cleaned the small piece, so I knew that it was going to be weathered inside also. The matrix of the large stone was stained light and dark browns with one area in the center that had remaining lighter original gray. Some of the metal grains were absent in areas of the face. But the stone was very attractive with a pleasing exterior color and was covered with regmaglypts hinting to perhaps some orientation. Two large and interesting mixed metal and troilite inclusions were cut through in slicing off the broken face. Many chondrules could be seen easily even though the meteorite Jason said was an L6 which often have few visible chondrules. I expected that the small stone when completely sliced would produce similar brown matrix slices.

I turned my attention on the second day of work to the totally caliche covered medium stone. There was not a spot on the surface that exposed the fusion crust. I could see, however, that the stone was complete except for one broken side. That broken spot though also covered in caliche did tell me that this stone was
not darkened by weathering and was going to make very fresh looking slices. Some of the stones had been found buried while others were on the surface. This likely explains the difference in the way they weathered. I began removing the caliche, a process that took two or three hours to complete. But a magnificent fusion crusted stone was exposed. Since it was going to be sliced, I removed all the discoloration on the surface. I recovered the black fusion crust so it would look nice on the edges of the slices. The before and after images shown here will show the difference.

I was going to be keeping a portion of the meteorite for doing the cutting and asked to keep one of the endpieces of the medium stone, and it is shown in the next image. I also kept the broken side sliver of the big stone which I hope will make both a piece for my collection and maybe a couple of cabochons as well. There are parts of it that have no remaining metal and are very dark brown. Meteorites in that state are not too attractive as collection pieces but are ideal for jewelry stones that will never further rust and cause problems to the wearer.

I took one very thin cut of about 1.5 mm during my slicing of the small stone to use in making thin sections in the future. I thought there was enough surface area that I could dice it into pieces for four thin sections. The thin sections would be from the same mass as the official type specimen. That is pretty cool and unusual.

I made the first cut into the medium stone expecting that it would be much fresher than the other two pieces. I was not disappointed, it was very fresh looking meteorite material. It was nearly white in color right off the saw which leaves a slightly rough surface. I expected that they would make beautiful very light gray slices when finished off on the diamond lap. The metal was 90+\% intact, and there was little staining beyond small brown specks and a brown rind right near the edges of the slices.

In the distant past, the standard for meteorite slices was about a quarter inch in thickness. Many of the micro mounts sold over the last couple decades are rather cube-like because they have been cut or broken out of such older ¼ inch thick slices. But today with a much larger group of collectors most slices are cut thinner to create more pieces and to fit containers such as membrane cases not made for things that are thick. One rarely sees ¼ inch thick cuts anymore. I had a decision therefore about how thick to make my cuts. On lunar and Martian material the idea is to get the most number of slices and the largest surface area with the lowest weight since the material has traditionally been very expensive. There is more waste with more cuts, but that is what has been happening with high-cost meteorites. I did not have to cut this material
thinly, but I also do not make ¼ inch thick cuts anymore either. I chose .135 inches as the setting I would use for the cuts. When lapped on both side that would yield slices around one-eighth inch in thickness or just a little less.

I took off an endpiece and then another and then one more. There were regmaglypts and beautiful fusion crusted areas that I wanted to preserve in the endpieces pieces and certainly on the one I had selected to keep for myself. Then I remounted the stone on a holder so I could slice it like a loaf of bread from one end all the way to the other side. The image below shows the slices obtained. My blade is .008 inch in thickness but creates a kerf of about .010 -.012 inches so very little waste actually in this type of slice after slice cutting. I usually am at about 5% cutting waste with another 5% or so being lost in lapping. But by keeping the bigger fusion crusted endpieces the total waste was very low on the cutting of the medium size stone. I ended up creating over forty slices from the medium stone with a final weight at the end of preparation of 1097.8 grams.

I finished the medium stone slices off to 1200 grit on the diamond lap. They did turn out as can be seen in the images a nice light gray as if they fell yesterday. Well, not yesterday maybe. On three of the slices are sections of a very large object that from its smoothly oval shape looks to be a chondrule about 7/16 inch in diameter. I was excited when I hit that with the saw. I shot some pictures with my phone and sent them off to Jason. I was keeping him up to date pretty well with images. I knew he was excited too to see the inside. There was a generous amount of metal scattered across the slices of the medium stone. Certainly in line with what could be seen in an L chondrite but more than is often seen. In the slices of the small stone, much of the metal had weathered out just as expected.
As can be seen in the images above the chondrules maybe easily visible but they are quite altered and clearly blending into the matrix of the stone. There are no distinct edges. They were on their way to fading into the matrix.
The small stone was sliced according to the same criteria; two endpieces with great fusion crust were made, but the slices were cut just a little thicker. I set the saw at .150 inches and finished off the slices were just over one-eighth inch thick. However, because the stone was weathered and stained, it was much harder and more solid than the light gray fresh material. I finished the slices to 1200 grit and then polished them on one side with 50,000 mesh diamond on a felt disc. They ended up with rich chocolate colors. There were 17 pieces created from the small stone and a total weight of 543 grams.

The large stone was a bit of a chore to cut. When you go to the desert and pick up a chunk of pretty agate or jasper or petrified wood it is just a broken mass. You clamp it in the vise of the diamond saw and chop slabs off it. Not so with meteorites. They are almost always masses with round ends and sides that often refuse to be clamped without special attachments or a lot of fiddling around. Also, care must be used not to crack or break the meteorite by applying too much force with the vise. I ended up flipping my vise up out of the way and cutting a piece of ¼ inch plywood into an exact rectangle that would fit on one side of the saw blade. I used the short wall of the saw top as a guide to push the plywood against. I mounted the meteorite to the board with masses of hot glue after tilting the stone so the broken surface was the most vertical that it could be. In the end, I took off a slice that faded off to nearly nothing right after passing the one bump in the surface I had to remove. I do not think I could have cut off any less than I did. But the stone was also too large for my rotating lap. I had gotten a very nice smooth cut so I decided that I would smooth and low polish the surface by hand grinding it on a big sheet of thick glass. I never throw anything of worth away. It is a character flaw and habit inherited from my parents who grew up during the Great Depression. So all I had to do was go to the shelf where sheets of glass are kept and get one saved from an old copier or printer I had dismantled. It was nearly a ¼ inch thick and certainly strong enough for me to grind the 3-4 kilo stone on. I poured out some 600 grit aluminum oxide on the glass and wet it with methanol. Wearing vinyl gloves, I ground it smooth to a low polish in less than an hour. It was like being a teenager again making telescope mirrors. I washed the stone with alcohol and dried it off. The flat surface looked very nice.

I did not want to polish the face for it would lose most of the little contrast it had for seeing the chondrules. Also, I would have to figure out another unique setup to polish it. I could put it on the vibrating lap and let it
run for a couple of weeks to polish beautifully. But that would be long exposure to water which I felt was not good for this somewhat weathered stone. Same result though of not being able to see the features of the meteorite once it was dark in color. The image below of the surface shows that it turned out nice and that the details of the meteorite are still visible.

I took my normal care with the drying of the slices as they were cut. I used chlorine free purified water with a little alcohol as the coolant in the saw. Just enough alcohol to “wet” the water so it would flow better along the sides of the blade and down in the kerf. Dried the slices with a towel after removing them from the soft landing zone below the blade. Put each slice in a bowl of 100% alcohol to soak until at least the following slice was finished cutting. Then it was into a can of fresh silica gel to sit until time to lap. Lapping is the same; each slice is dried and soaked in alcohol after each grit. This time I used just the 360 grit to start since they were quite smooth right off the saw. Then just a touch with the 600 grit and 1200 grit disks to remove the marks of the previous stage of lapping.

I knew that I wanted to write this article about the cutting project, so I was taking all the images along the way. I also took the following video of the cutting of one full cut on my home made saw. The video is about 2 minutes long but may be interesting to watch and see how meteorite preparation is done. I am pretty happy with my saw still after a few years of use. It gives me all the control I always missed in selecting a thickness and repeating a thickness of cut. It also makes feeding the meteorites through the blade very smooth and controllable. I had tried using stepper motors and other things but have returned to a threaded rod screw feed. I have made thousands of cuts with the saw and am sorry to say I did not take the time to clean the saw for the video.
All the pieces except the 3500+ gram big stone were put into silica gel immediately after a soak in alcohol following cutting. It is a chore to open the container of silica gel 40-50 times, but it is essential that the slices get dry as soon as possible after running in the coolant water for the 5-10 minutes the cuts take. Also, the fresh material was much more porous than the hard solid weathered material, and I wanted to do no harm. That is the biggest reason that I do not accept cutting jobs. Whenever I have cut for people, I worry about the other person’s meteorite too much. I think about the embarrassment there would be if I had to tell them of a catastrophe on the saw. Like maybe their stone fell apart on unseen cracks. Just do not want to have to make that call ever. But everything went very smoothly on the cutting of the Quitovac stones.

Just a few days after Jason received the big stone and all the slices back. He asked me if I could clean the other three pieces found of the meteorite. He was happy with the cleaning of the first batch. I said sure. I enjoy the cleaning part. I told him in an email it is like opening Christmas presents. Removing the caliche and exposing the fusion crust is like tearing off the wrapping covering something beautiful underneath. Here are before and after images of those other three pieces.
I have little doubt that more pieces of Quitovac will be found. It is starting much as Gold Basin started by
gold prospectors finding meteorites. Only now they are aware that the hot rocks are valuable too. It was
really cool being in at the beginning of this meteorite's appearance on the market. I weighed the slices and
placed them in baggies with a generous amount of silica gel, packed the materials up really safely and sent
them on their way. I hope that many collectors will enjoy this new meteorite. It was a fun project.

I had some time even with the holidays so on a Saturday morning I made the thin sections. I did get four
nice full slide area pieces from the thin slice I had cut off the small fragment used for the type specimen.
The image below shows the completed thin sections in a membrane case. The images after that are of
chondrules in crossed polarized light. They show nicely how the chondrules are fading into the ground mass
and are loosening up on their way to becoming just aggregations of mineral crystal grains. But they are still
together now and still visible.
After writing all of the above information the meteorite became official in the Meteoritical Bulletin about a month later on December 18, 2017. The Quitovac name was accepted and the full classification data is summarized as follows. Five pieces were found with a total weight of 9,112 grams. I got to work on all of them which was really cool. The final classification was L5 which I heartily agree with after cutting 60
slices. The condrules were too visible for the average L6. Shock stage is 2 and weathering stage is 2. The description of the meteorite in the Meteoritical Bulletin is that of the weathered 51 gram mass that was the same as the large stone and the corner fragment also from the large stone. The fresher material cut from the medium stone is not going to be anything like what is described but is the same material. The second batch of three stones that I cleaned only remain a mystery as to how they appear inside.

Share this: on Twitter on Facebook on Google+
This month’s edition of the “Bulletin” focuses on just some of the recent US finds that I have had the privilege to document. *** Note: Not all of the meteorites depicted in this month’s article were found by me. *** For example, in the image above, all of these chondritic stones were found in a tight cluster that was being exhumed next to an eroding hummock. This cluster was found by Mark Bittmann. This image was taken by Mark. Except where noted, all of the other images in this article were taken by me. Mark found his cluster of stony in an “officially” designated DCA (Dense Collection Area). Although finds made within a DCA can be assigned an “official provisional number” by the Meteoritical Society, for some poorly-explained and unknown reason, Mark’s finds were refused provisional status.

Those meteorites that are not found within a DCA are commonly called, “cold-finds” in meteorite-recovery jargon. Those kind of finds cannot be assigned an “official provisional number” until that find is classified by an officially-approved institution. But the USA institutions are turning away finds that appear to be Ordinary Chondrites (OC). Hence, there now exists a “Catch-22” in which these “orphans” fall into, where they can’t get provisionally numbered. Worse, there are no funds to record, let alone database, these orphaned meteorites even after they have been authenticated as being some kind of meteorite. Nowhere in any of this discussion is there an answer to the obvious question, “How do we really know we aren’t missing something rare among all of these authenticated but Unclassified USA meteorites?” If we are so sure that they are only OC meteorites, why do we then ignore them? Now that we’ve removed the only good reason NOT to assign these authenticated meteorites a provisional name and/or number, why not take the next step and record them into some sort of provisional database? If the meteoriticists won’t report them, then who will? Why is this a funding issue? Why is it that the U.S. is the only country that doesn’t record their meteorite finds?

All of these finds depicted here were refused assignment of an “official” provisional number. For those meteorites, and other finds in similar situations, these Bulletin/Newsletters will serve as a database for these “orphaned” meteorites. An orphanage, if you will.

It is for this main reason that I will continue assigning provisional “UU” numbers for all Unclassified U.S.
(UU) Ordinary Chondrite (OC) finds that I can personally authenticate.

Although my own finds would be enough to keep me perpetually busy, my point will be better made if I include other’s meteorites that are in the same situation. But in order to remove any lingering doubts about the true number of orphaned meteorites, every meteorite that appears in this newsletter has to be corroborated. Unless I have personal knowledge, or, I can personally confirm the recovery data, then those finds won’t appear here in this Bulletin.

So, given what you see here is a small subset, consider the meteorites depicted here to be just the tip of an iceberg of undocumented meteorites.

And therein lays the problem. There continues to be a large number of U.S. meteorites being found, and recorded by the finders, and reported to officials, but are being turned-away and forgotten. Hence, the list of these OC finds going undocumented is growing longer.

Many U.S. meteorite finds are going unreported, because of a lack of funding to classify U.S. meteorites (granted, there is funding for Antarctic meteorites), which leads to a lack of interest in OC finds by U.S. researchers. The following “Newsletter” is just one example of an alternative way in which to record U.S. OC meteorite finds. My method of assigning “Provisional Numbers”, which uses the date-of-find, is “purposefully-unofficial”, meaning that it actually encourages other meteorite finders (who have gone to the trouble to get their finds authenticated, but have had the door closed in their face when trying to get a provisional number, let alone a classification for their O.C.) to assign their own Prov. UU#s (which can be used as a unique Field ID number). It won’t compromise my numbering sequence, or harm any other numbering system. It won’t make your find any more, or less, a meteorite. The same could be said about the finds depicted in this Newsletter, but it just might get your find “through the door” of a classifier, because there is no such thing as bad-advertising. So if you think it would help to have your “U.U.O.C.” depicted in a future Newsletter, just contact me.

Since this month’s finds appear to be all highly-equilibrated ordinary chondrites, I will forego the “Petrographic Description” until a later time. And since nearly all of the specimens are very-weathered, I will also forego the “Macroscopic Description” until later, as well, unless more info is requested. For example, if a researcher viewing this gallery of images notices something of interest, then by all means contact this author and I will supply more details. In any case, I hope the reader will enjoy the image gallery.

Newsletter for Unclassified (a.k.a., Orphaned) Meteorites found in the USA – Volume 4 No. 1 — January 2018

Meteorite-Recovery Information
All six (6) stones were recovered from the United States (all 6 coordinates were GPS recorded) by two (2) volunteers.

Macroscopic Descriptions
All six (6) stones are fragments from larger original meteorites. Although all stones are very weathered each fragment has retained at least one patch of relict fusion-crust. Specimen “UU160618” is the only specimen not found on a dry lakebed surface. It was found on an abandoned alluvial fan, and is the least weathered of all fragments, having the best preserved (but still “relict”) fusion-crust.

Petrographic Descriptions
All six (6) stones were sampled and thin-sectioned, and all 6 stones appear to be equilibrated Ordinary Chondrites (Class: TBD) of a varied (but mostly moderate) weathering grade (W grade: TBD), which compromised the ability to gauge an accurate shock stage (S stage: TBD). Specimen “UU161111X” has interesting inclusions and large chondrules.

Due to the on-going recovery of meteorite finds from not only these three localities, but many others, this edition of the Newsletter is going to forego (until they are ”officially approved”) the publishing of “Recovery Information” that usually appears here. For now, what will appear here will be a gallery of images of the finds to include their in-situ photos.

*** Note: Two of the following meteorites in this month’s Newsletter were found by Mark Bittmann, and the others by this author. ***

Image of the first of eighteen (18) chondritic stones found in a tight cluster by Mark Bittmann —
hence these are all paired: UU151212A thru V

There were several more subsequent stones pulled out of this "cluster" before Bob Verish recovered his 129.6g mass.

Photo courtesy of Mark Bittmann (2017).

Images of the TWO “cold find” Meteorites found by Mark Bittmann — from two different localities:
Above is the image of "UU160618" after being thin-sectioned, showing the equilibrated-chondrite interior in transmitted sunlight.
Above is the image of “UU160618” after being thin-sectioned, showing metal-grains and troilite in the oxidized interior in reflected light.
Above is the image of "UU170407" after being cut, showing the equilibrated-chondrite interior.
Above is the image of “UU170407” after being thin-sectioned, showing metal-grains and troilite in the oxidized interior in reflected light.

Images of the 4 Meteorites found by Bob Verish — from two different localities:
Above is an image of Bob’s find from the “Bittmann Cluster” (UU151212V) after it was cut. Image courtesy Bob Verish (2016).

Above is the in-situ image for Bob’s largest mass of the 2016-11-11 meteorite (assigned Provisional Number “UU161111X”) — Image courtesy Bob Verish (2016).
Above is an in-situ image of Bob's first unpaired find (UU161212F) from this same locality. Image courtesy Bob Verish (2016).

Above is the in-situ image for Bob’s other unpaired find (both from this same locality) with Provisional Number “UU161213H”. Image courtesy Bob Verish (2016).

Gallery of Images of Unclassified USA (UU) “Orphaned” Meteorites — all from
California:

PROVISIONAL # — Field ID No. — Mass — Notes: each stone has had its GPS coordinates recorded. **UU151212V** — CA151212V — 129.6g — one of 22 fragments found in a tight cluster by Mark Bittmann and Bob Verish **UU160618** — CA160618 — 52.5g — type-specimen cut & thin-section — found by Mark Bittmann **UU170407** — CA170407 — 16.3g — type-specimen cut & thin-section — found by Mark Bittmann **UU161111X** — C161111X — 1,075g — sample cut & thin-section **UU161212F** — C161212F — 18.25g — type-specimen cut & thin-section **UU161213H** — C161213H — 70.88g — type-specimen cut & thin-section

Photo Gallery of the SIX-sampled & THIN-SECTIONED meteorite finds — in this Newsletter:

**UU151212V:**

![Image of meteorite](image_url)
UU161111X.1
thin-section
in sunlight
(transmitted)
The above “Newsletter” is just one example of a way in which to record U.S. Unclassified Ordinary Chondrite (UUOC) meteorite finds. Hopefully, this compilation will bring attention to the problem of the increasing number of O.C. meteorites found here in the USA, not only going unclassified, but even going unreported. Hopefully, some volunteers will offer to help establish a database that will document these “orphans”.

In the meanwhile, I will do my part and continue to gather data, and along with others, make a list of what we know to be “orphaned meteorites”.

References:

Bob’s Bulletin – Vol. 3 No. 1 — In my 8th Bulletin, I published a table of sixteen (16) “Provisional (UU) Numbers” (for Unclassified U.S. meteorites) that I assigned to some finds from an existing DCA, but were refused entry into the MBD:

PROVISIONAL # — Field ID No. — Mass — Notes: each stone has had its GPS coordinates recorded. UU140705A — CA140705A — 2.0g — physically-paired to UU150110 UU140705B — CA140705B — 8.25g — sample cut & thin-section UU140719 — CA140719 — 8.9g — sample cut & thin-section UU140726 — CA140726 — 4.7g UU140726B — CA140726 — 15.8g UU140819 — CA140913A — 1.2g UU140913A — CA140913A — 5.2g UU140913B — CA140913B — 3.4g UU140919 — CA140919 — 5.9g UU140923 — CA140923 — 8.9g UU141001 — CA141001 — 8.9g UU141220 — CA141220 — 2.6g — sample cut & thin-section UU141227 — CA141227 — 1.9g UU150103 — CA150103 — 11.6g — physically-paired to UU151228 UU150110 — CA150110 — 2.8g — sample cut & thin-section — physically-paired to UU140705A UU151228 — CA151228 — 1.9g — sample cut & thin-section — physically-paired to UU150103

*** Note: All of these meteorites were found from a single locality, an officially designated DCA. ***

In all of my previous Bob’s Bulletins, I prefaced each one with an explanation of what I mean by the phrase
“orphaned-meteorites from the USA”. I defined “orphaned” as being meteorite “finds” that are recovered in the U.S., but are not being recorded. Contrary to what you may think, these meteorites are being reported, but the finders of these meteorites have encountered resistance in getting provisional numbers assigned to their finds, even when the (obvious) meteorites were recovered from officially designated “Dense Collection Areas” (DCA). These meteorites are being ignored. This is in addition to the current practice by the official classifiers of meteorites to refuse to classify Ordinary Chondrites (OC). Without an “official” classification, meteorites cannot get an officially-approved name by the Nomenclature Committee of the Meteoritical Society, and hence, cannot be cataloged. And hence, uncatalogued meteorites are “orphaned”.

Unfortunately, the vast majority of new U.S. finds are destined to remain orphans.

In my preface I would go on to explain that these “Unclassified U.S. finds” (UU) were being orphaned from the family of “approved” meteorites for the following reasons:

1) The lack of funding for U.S. researchers to authenticate, classify, and document/record these U.S. OC finds has resulted in several new [negative] trends, all which discourage finders from reporting their finds.

2) The increasing trend of commercializing the classification of meteorites by U.S. researchers has priced U.S. OC finds out of the market, and

3) The increasing trend of U.S. researchers to turn away OC finds, even when finders of U.S. OC meteorites are willing to pay for their classification.

Bob’s Bulletin – Vol. 2 No. 3 — In my 7th Bulletin, I published a table of six (6) “Provisional (UU) Numbers” (for Unclassified U.S. meteorites) that I assigned to some recent finds:

UU160428-14 UU160428-15 UU160428-16 UU160428-17 UU160428-18 UU160428-19

*** Note: All of these meteorites were found by one person (not this author) – all in one day. ***

Bob’s Bulletin – Vol. 2 No. 2 — In my 6th Bulletin, I published a table of the increasing number of unclassified U.S. meteorite finds and petitioned that crowd-sourced funding be used for volunteers to compile and record these finds for later classification and official-approval, until such time that this function can be properly funded with U.S tax-dollars.

Bob’s Bulletin – Vol. 2 No. 1 — In my 5th Bulletin, I published a table of all the unclassified finds from Coyote Dry Lake DCA that were reported prior to 2007.

Bob’s Bulletin – Vol. 1 No. 4 — In my 4th Bulletin, I reported that several U.S. researchers were volunteering their time and effort to record and publish meteorite falls and finds, such as, Creston and Misfits Flat. I suggested that this method of cataloging newly found US meteorite specimens could be expanded, but the main hindrance is that there is no funding for this kind of effort.

Bob’s Bulletin – Vol. 1 No. 3 — In my 3rd Bulletin, I proposed the idea of an on-line database for these “orphaned” and other unclassified U.S. meteorites. This would have to be an all-volunteer effort, much in the same manner that the American Meteor Society has established the Fireball Reporting System. This database would give finders a central point to report their finds and have a field ID number issued to them. This “Field ID” would reflect which US state and date of find. The function of this database should not be confused with already established processes of getting a meteorite “classified”, which is obviously way more labor intensive and costly.

Bob’s Bulletin – Vol. 1 No. 2 — In my 2nd Bulletin, I went into more detail about why I use the phrase “orphaned-meteorites from the USA”. I focused on the lack of U.S.-tax-dollar-funding and why no funding was going towards the classification of these particular meteorites. In hindsight, I now realize that I should have pointed-out that there is also a lack of funding for just authenticating and recording that a U.S. meteorite has been found. This function should never be confused with “classifying” a meteorite, which is obviously way more labor intensive and costly.

Bob’s Bulletin – Vol. 1 No. 1 — In my first Bulletin, I introduced the phrase “orphaned-meteorites from the USA”. I defined these “orphans” as being unwitnessed-fall Ordinary Chondrite (OC) meteorite “finds” that are recovered in the U.S.

Unfortunately, the vast majority of U.S. finds are of this type. I went on to write that these U.S. finds were
being orphaned from the family of “approved” meteorites for the following reasons:

1) The lack of funding for U.S. researchers to authenticate, classify, and document/record these U.S. OC finds has resulted in several new [negative] trends.

2) The increasing trend of commercializing the classifying of meteorites by U.S. researchers has priced U.S. OC finds out of the market, and

3) The increasing trend of U.S. researchers to turn away OC finds, even when finders of U.S. OC meteorites are willing to pay for their classification.

Meteoritical Bulletin: the search results for all provisional meteorites found in “USA” – Published by Meteoritical Society – Meteoritical Bulletin, Database.

Meteorites of California the list of formally-recognized California meteorite falls and finds.

My previous Bob’s Bulletins can be found *HERE*

If you would like to sponsor any of these orphans, and help in the funding for getting them classified, in order to get them entered into the Meteoritical Bulletin Database, then please contact me by email:

bolidechaser at yahoo-dot-com

Share this: on Twitter on Facebook on Google+
Cole Creek H5
John Kashuba

One of my first thin sections was Cole Creek H5. I’ve picked up a few more slides over time because it’s a fun meteorite to view in thin section. Barred olivine chondrules survived thermal metamorphism well. There is variety among the BO chondrules with a high proportion being compound.

These photos are from four thin sections and are at different magnifications. All are in cross-polarized light.
The upper specimen is a 120 gram giant that offers a great story on extensional necking and incipient parting. The odd little 12.4 gram piece, almost an order of magnitude smaller than the one above, remains a mystery to me. Both of these specimens are cylindrical in cross-section.

It has long been accepted tektite dogma that many, or maybe even most, teardrops form when a pin-wheeling dumbbell, still in a semi-molten gooey state, parts in the middle region. This specimen captures the moment of incipient parting better than any other we have seen. The deep grooves on the underside almost certainly represent corrosive forces (of whatever form or vintage) that
were taking advantage of brittle fractures that were just forming in the hardening crust of the tektite. Meanwhile, its more molten core stretched like taffy as displayed on the upper left center part.

A view of the opposite side emphasizes the stretchy, ductile nature of the tensional necking. There is a suggestion in the profile that molten interior material was drawn out from beneath an older, deeply pitted crust (right side), forming an overhanging girdling trench.

This returns us to the long argument about the time and place of tektite skin ornamentation. As with so-called “stretch tektites”, the stretched surface has but a few tiny pits, while the apparent crustal highlands are fields of hemispheric pits. I personally believe that the majority of tektite ornamentation is a plasma-erosion effect that occurred within the primary fireball. (Yes, there is terrestrial corrosion, as with Moldavites, but this is about Indochinites!)

And now, the little mystery. Initially I wondered if this one had been culturally modified, perhaps as an ornamental nose- or ear-plug, but there is sufficient pitting around the circumference of the “wheels” to show that this was a primary form.

How does something like this, barely an inch long, form? I used to believe that such flattened ends came from cart-wheeling across the ground while landing hot, but I am now accepting that Indochinites were so solidified by the time of impact that they never show embedded pebbles or vegetation imprints or any other evidence of splatting against anything other than a cushion of compressed air. If anything could make it to the ground with sufficient residual heat to deform in a plastic manner, it would most emphatically not be a tiny one with relative acres of surface area stretched over 12 grams of internal mass. I am open for ideas!
Our Meteorite of the Month is kindly provided by Tucson Meteorites who hosts The Meteorite Picture of the Day.

TKW 1938 grams. Fall not observed. Found 29 March 2016, Kerman, Iran. Found during the Iran-Russian expedition. Meteorite was found from a jeep. The crew consists of Timur Kryachko and Majid Khatami.

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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