

Meteorites ✦ Adventures ✦ People ✦ Tektites

METEORITE TIMES

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An Interview with
Geoffrey Notkin
by James Tobin



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Meteorites at the Rock Shop: Columbine of Aspen is Breathtaking!

Martin Horejsi



Simon M. Hmani of Columbine of Aspen shares stories about the meteorites in his amazing store.

For those of us with an above average enthusiasm for meteorites, the traditional rock shop is often devoid of the very rocks we crave. Yet we continue to search their offerings in hopes a space rock somehow entered their inventory. And when desperation finally sets in, we resort to asking the question of the proprietor, “Do you have any meteorites?”



A 12kg complete stone meteorite with classic thumb printing on its weathered crust.

For many in the Rock Shop business, meteorites are an anathema that parallels their crystal and cabochon wears, but often remain firmly outside any formal interest. A sad “no” is a common but anticipated ending to the conversation, but sometimes the proprietor of rocks presents some tektites as meteorites, or launches into fanciful tales of encounters with meteorite falls completely devoid of evidence. Or at worst, begins a diatribe of negativity blasting the astronomical price of meteorites, and the complete lack of authentication contaminating the subject. Yet when traveling, I still cannot resist the urge to stop and check whenever I see a *Rock Shop* along the road.



A brightly polished thin slice of Seymchan pallasite.

[Columbine of Aspen](#) is on an entirely different rock shop level. While on vacation in Aspen, Colorado, I checked out any store I could find that held minerals or fossils in their window displays in hopes a meteorite or two would be available. As expected, of the four stores in walking distance of downtown Aspen, one had none, it mostly focused on precious and semiprecious stones including those in the rough. One had some bagged tiny iron meteorite fragments but no information. One had just sold out of all meteorites (sometime in the past decade or two from what I could tell). And one stopped me dead in my tracks with the size and scope of their meteorite offerings let alone their extreme museum quality displays of fossils, crystals, and minerals. Truly jaw dropping!



Joseph sharing his excitement about the incredible specimens everywhere in the store. Note the huge slice of Seymchan pallasite displayed.

Simon M. Hmani of Columbine of Aspen showed me around the meteorites and shared some stories. When working in the rarefied air of meteorites too heavy to lift, there is always more to the tale. And the excitement of discussing meteorites (and minerals and fossils) in a brightly lit museum-like setting where the specimens can be handled is pure joy. We even had a video chat with Sahar Nayzak, a relative who deals in meteorites and who was basking on a beach in Morocco at that moment. Sahar was aware of the Accretion Desk, so I count that as another win that day.

Here are some images of the meteorites on display along with a few stunning fossils. If ever in the neighborhood of Aspen, Colorado don't miss this world class museum that is actually a store.

Until next time....



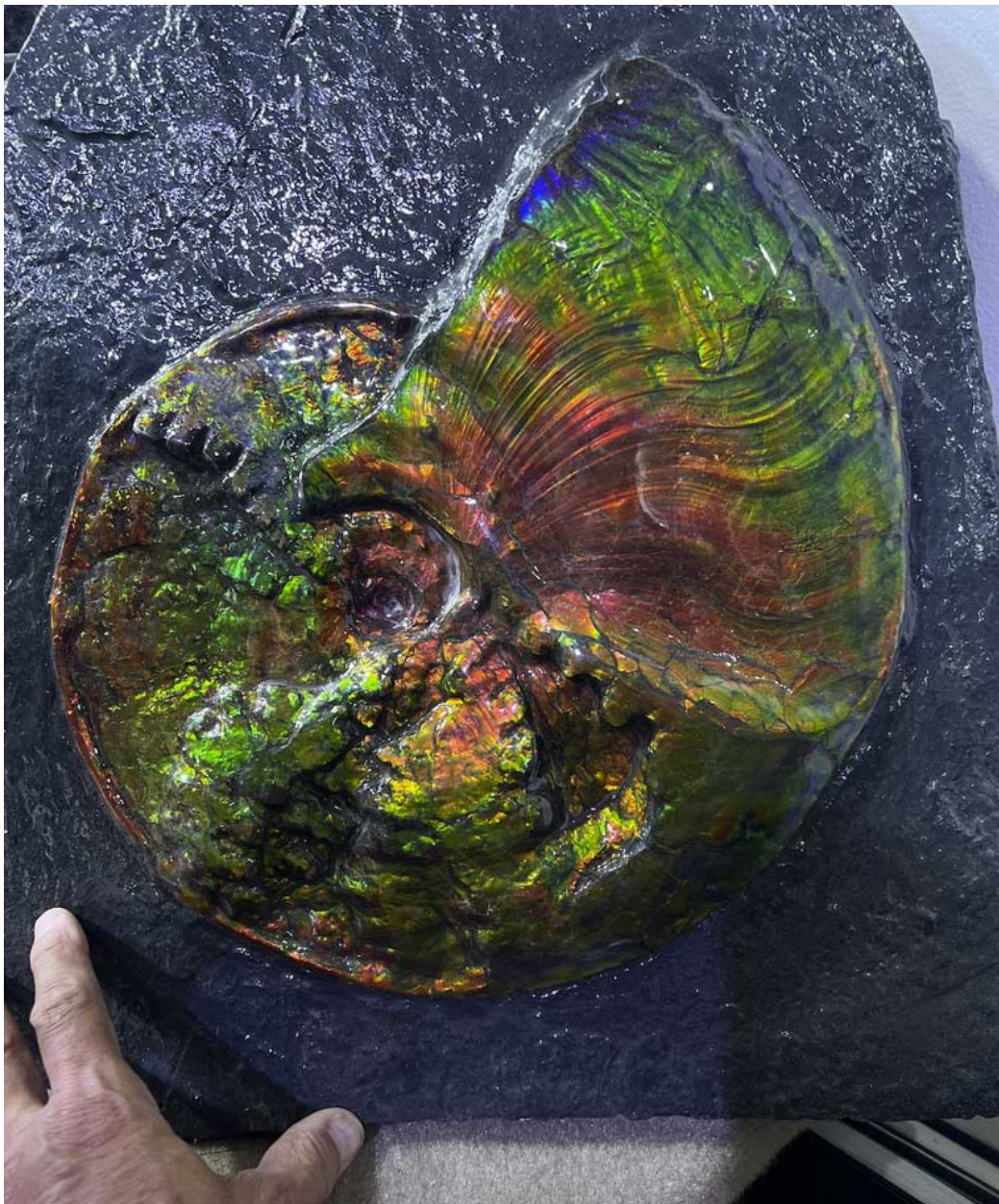
Next level trilobite specimens are on display. This could be yours!



Translucent Moldavites are sprinkled in with the meteorites.



A lightly oriented complete specimen of the Ataxite from Egypt named Gabel Kamil.



This massive opalized ammonite truly is breathtaking. And it's not the only one on display!



A chunk of affordable NWA 869 contains some visible breccia peeking out from under the saw marks.



Plenty of multi kilo-sized Campo del Cielo are sprinkled through the display cabinet and around the store.



Another view of the 12kg stone. Notice the purity of the huge crusted side of this bowling ball from space.



A heavy sculpted Uruacu iron from Brazil. I imagine that meteorites such as this grace the entryways of Aspen mansions as they should.



Simon displays the boundary edge of the 12kg stone showing where the differential aging processes of the desert placed Earth's stamp of approval upon this piece of Asteroid.



A cleaned heavy Campo comes close to representing a Hollywood meteorite as envisioned flying through space. The jagged surface, crater holes and intense density make for an eye-catching item du jour.



A beautiful hand-sized specimen of Libyan Desert Glass is truly something to behold. I would love to display this near a window in my home.



Well-formed and stable Campo de Cielo specimens abound. These workhorse irons are a great entry into display-sized meteorites.



Smaller but still interesting Campos are available for any budget. These palm-sized irons have great character and texture.



Even smaller Campos are just the size to jumpstart future meteorite aficionados.



A large slice of the Seymchan Pallasite that highlights the variety of internal matrix options this unusual stony-iron contains.



For those Troilite lovers among us, this etched slice of Seymchan contains a thumb-sized nodule.



A stunning etched complete slice of the fine octahedrite from Sweden named Muonionalusta.



For the smaller taste, an elegant etched hand specimen of Muonionalusta provides an abundance of octahedrite crystal faces to gaze at.



A huge thank you to Simon for sharing his store with me that afternoon. Aspen, Colorado has no shortage of things to do, but visiting Columbine of Aspen should be one of them. From now on, it will be a destination for me.

Road Trip and Meteorites Along the Way

James Tobin

I took a three-week driving trip around the country in June. I did some camping, and I stayed in hotels part of the time. If the cities I stayed in had museums, I tried to visit some of them. Of course, I was interested in any meteorites that I happened to see in the museums. I decided to drive the whole distance to Meteor Crater the first day and arrive early enough for a nice visit to the Crater at about mid-day. So I got on the road at 3:20 am, a few minutes later than planned, and drove the roughly 8 hour journey to my favorite place. The Crater had not changed, of course, but the facilities had changed since I was there about six years ago. The gift store was completely different, and there were new features in the museum area. The sandwich place was gone, and they had their own restaurant now. The short hiking tour out along the north rim was the same, but I must tell you that the guide was much closer to telling an accurate version in his talk. Other than being just a little off about the plane crash and what happened to the remains of the plane, it was historically and scientifically accurate. The cost of admission was much higher, and the discount for camping at the RV park was not very much. But what am I going to do not visit for a few dollars? No chance of that.









I set up camp after I visited the Crater. It was the first time I had actually set the tent up for real. I had tested it out in the house to see how it worked. But the wind was blowing fiercely, and the tent kept collapsing. I was initially quite concerned, for I had bookings for several nights at campgrounds, and my timetable was based on being at those locations to camp using the tent. If the tent was not going to stay up, then I might have to use hotels every night and my campground reservations were not refundable. Well, as often happens in the desert, the winds died down considerably by nightfall, and the tent stayed up very well. By the second night with the tent, I knew I needed to stretch the base corners out fairly taut to help the upper hydraulic support system work properly. I was up early on the next day for a short drive to Holbrook, there I hoped to do a day of hunting in the Holbrook strewnfield. I have been to Holbrook many times but never by myself. I felt just a bit of anxiety about being out there alone. It was breaking some

of my oldest rules of hiking and meteorite hunting, for example to not have a companion or, even better, a second vehicle.



The road was washed out going down to near the railroad tracks. But my Jeep had no problems going down, through, and up out of the deep rut. I went along the side of the railroad tracks to a spot where I had good luck several years ago. And it was not too long before I found a small meteorite fragment. It was just a nice warm day, not hot, and I had put on plenty of sunblock. I was carrying enough water. I was ready to stay out all day. No one was about, but I never hunted more than about half a mile from the car. It is hard to find much out there now. I was

able to find four fragments and one small whole stone in five hours of hunting. The total weight of my finds was embarrassingly small. Just 0.762 gram was recovered that day. But it was fun, and I was happy that I found the little pieces. I did not make much traveling east progress that day having only gone from Meteor Crater RV Park to Holbrook Strewnfield and back into Holbrook to my hotel. So the next day would be a long drive.



Tucumcari, New Mexico, was my destination by afternoon on day three. I got up early and was on the road with the tent and everything packed by 7 am. I got to my next campground in time to do some exploring around town. I went to the Tucumcari Historical Museum. It was filled to overflowing with artifacts and relics from the past. I love that stuff. Down the street, a couple of blocks, is the Mesalands Dinosaur Museum. This was my kind of place. I was not disappointed. It was great. I bought a memento or two and was chatting with the clerk/docent person about how nice I thought the museum was especially the meteorite display.







Stony-Iron Pallasite, polished
Yellow olivine crystals in nickel-iron.
Imilac, Chile discovered 1822

Stony Carbonaceous Chondrite
All chondrites consist of material in
round pellets, unique to meteorites.
Allende, Mexico fell 1969

While talking to the lady, a man entered and asked if there was a geologist there. She replied that they had paleontologists but not specifically geologists. I asked, "Did you find something?" To which he replied, "I think I found a meteorite." the lady said I will go get the guys from the back, but this man is the meteorite guy." I had already given her my card, and we had chatted for a while about meteorites before he arrived. I said I would go out and look at what he had in the back of his truck. It did not look too bad, but it also did not look just right. He had mentioned that a magnet stuck to it. I went to my car and got my hunting bag that I had just used the day before at Holbrook and put my powerful rare earth magnet on his rock. It did stick but not enough. I stuck my magnet on the side of his tailgate to show him how it would stick if it was a meteorite. I asked if he minded me grinding a small spot to see what was inside. He was happy to know and said. "Go ahead." I ground rather deeply into one edge of the stone; the powder produced was a dark purplish red. There were no shiny metal grains visible. The two paleontologists and I agreed it was hematite and that the rock was likely ironstone. So close to bringing home a great meteorite on my vacation, but not close enough.



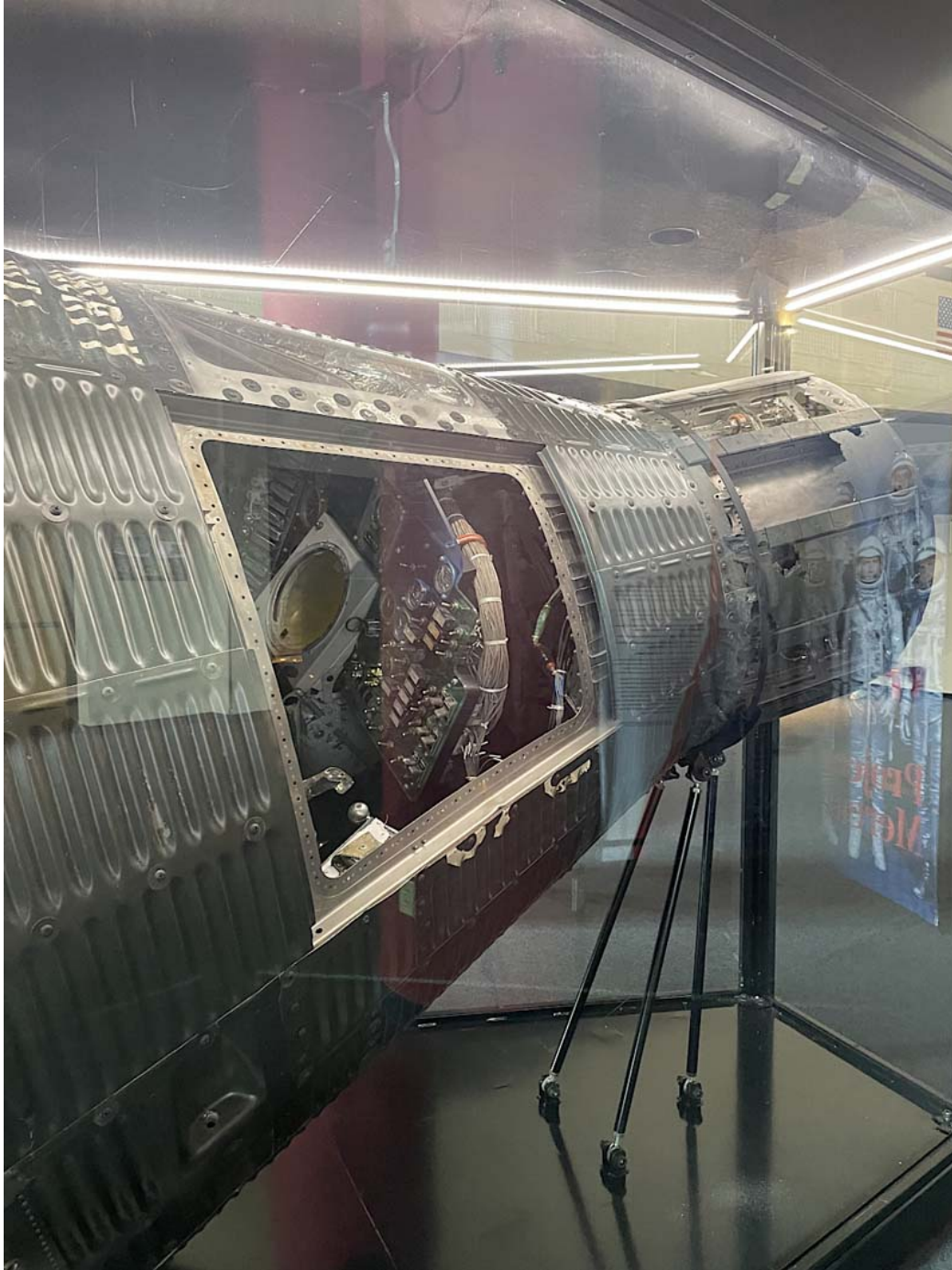
There were mosquitos at the campground, so I sprayed repellent liberally around and on my tent and packed everything I needed into it before the day cooled off. I still got bitten twice. I thought that was not too bad, considering the number buzzing around. The campground was right next to I40, and the huge tree near my tent was full of birds that made noise all night long. I did not get much sleep that night. I had a full day of driving the next day. It would have been nice to have gotten a better night's sleep, but up and on the road again at 7 am. I was on my way to Dodge City, Kansas.

No 75mph interstate I40 for me this day. I had to use county, country, and state roads. It was nearly the same distance as I drove to get to Tucumcari from Holbrook, yet it took two hours more. But finally, I was at a campground away from a busy highway. I did just a little exploring around Dodge City and got an afternoon meal at a restaurant. My dinners so far had been hot dogs, chips, and diet caffeine-free soda. It was nice to get a good meal I did not have to set up the stove for. I even had a chocolate shake for dessert since I brought nothing for dessert with me. I wanted to try and keep my doctor happy. Sorry about the shake Doc.



Seven o'clock in the morning seems to be the time I get up and on the road when camping. It was just a three-hour drive to my destination at my sister-in-law's home in Osborne, Kansas. One day of rest and we were off to Hutchinson, Kansas, and the Cosmosphere. We met up with more family and had lunch at a famous burger place down the street from the Cosmosphere. Then it was off to meet up with more family coming there soon. We milled around looking at the gift shop til the next group arrived. The gift shop had nice Brenham pallasite slices there for not a bad price, but otherwise, there were no meteorites at the Cosmosphere. But there were fantastic displays and great pieces of the space program and missiles of war. I admit to a fascination with WW2 and the technology developed during those years. The displays of the V1 and V2 weapons of the Germans were very interesting to me. Actually, the whole museum was as great as I had been told for years. The Liberty Bell capsule that had been at the bottom of

the ocean for 38 years was there, and I took a few pictures of the corrosion it suffered from the seawater. It had been remarkably cleaned and restored for display.





I stayed three days in Hillsboro, Kansas, with family. I was taken on a great ride out to the Flint Hills, where I saw the thick woods and many old buildings. We saw a large number of deer and other animals on that ride.



After that great stay, we returned to Osborne, took a day off there, and headed the following day to Hays, Kansas, and the Sternberg Museum, a world-famous fossil museum. It was also fantastic. Fossils of every kind; huge and tiny, vertebrates, plants, and shells, mostly from Kansas and, in fact, mostly from quarries not too far from the museum. The 30-foot-long Mosasaur was impressive, but all the specimens were excellently presented. I was not so thrilled by the extensive collection of live venomous snakes and other poisonous animals there. It really was extensive. I looked, but was eager and happy to get back to fossils after finishing with the snakes, toads, and tarantulas.

There was a nice display of meteorites at The Sternberg. Mostly meteorites from Kansas.





I went on other shorter excursions and adventures in Kansas. I saw numerous deer, foxes, and raccoons and so many birds of bright colors. We don't have them where I live. I saw pheasant and turkey as I drove and managed not to hit any of these animals with my car. After about nine days in Kansas, I headed toward home by way of New Mexico and a visit with Geoff Notkin.

It was going to take two days to get to Geoff from Kansas, so I chose Amarillo, Texas, as my city to stay in the first night. I did not have much radio reception as I traveled. I did bring CDs with me, but some of the time, I tried to find a radio station along the way. It happened that I did find a good station about forty miles out from Amarillo that had rock and roll almost continually. It was 98.7 "The Bomb" if you find yourself around Amarillo. It served me well the next morning, too, for about 40 miles leaving town. I had a nice meal in Amarillo at a Steakhouse near my hotel. I don't eat much meat except turkey and chicken anymore, so apologies to my Doctor again, but it was really a good meal.

I picked up an hour going out of Texas and made my way to Albuquerque, New Mexico, with extra time before I could check in to my accommodations that Geoff had made for me in his

town. I had noticed several times over the years as I drove through Albuquerque a sign for The National Museum of Nuclear Science and History. So with plenty of time that morning, I stopped to check it out. I love everything about the history of the Atomic Bomb and the study of the atom, so I was excited to finally get to visit this museum. Wow is about all I can say. It was a spectacular museum for someone who loves science and history. I will include a few images, but I am not going to spoil this by telling everything. This was a great museum.



This is an image of one of the Uranium Cubes that was made for use in a reactor the Germans were building in WW2. Designed by Werner Heisenberg and utilizing 664 of these cubes and heavy water they could have made a major breakthrough in their nuclear program. The reactor was built but never went critical.



Its not a meteorite, but it is ablated by a return through the atmosphere. This is the warhead of an MK2 nuclear bomb. Behind it is one as it appears before launching.



Among the many planes and missiles displayed outside the museum is this beautiful B29. They also have a B52 and a B45.

I got down to my hotel just a few minutes before three pm, which was check-in time. A few minutes after that, I met up with Geoff. We chatted for several hours and ate pizza till evening at a local hangout. I rested for the night in a quaint and quirky hotel that had natural hot spring baths to soak in. The naturally heated water was 105 degrees F that day. The next morning we got together at his home for a bit of work and a lot more fun chatting. So often, I see him, and he is busy with the gem show or an auction or a film thing, and we can not have a nice sit-down and talk. It was great to have that time on my trip. At about noon, it was time for me to get on the road and make my way home. I decided I would go as far as Tucson that day, and as I would pick up another hour going west, I was going to get there just about at check-in time for this hotel. Nothing exciting was done at Tucson except to rest as I decided to press all the way home the next day, and that was a long day of driving indeed.

I had been fighting strong winds all the way since I left Kansas. And nothing was changing about that as I drove across the rest of Arizona and California. In fact, the winds got to be horrifically strong the closer I got to home. Our town is world-renowned for its winds, and we have nearly 5000 wind turbines in the vicinity. I was surprised to see so many windmills all across Kansas, Oklahoma, and Texas. I passed countless thousands. The weather had been good mostly. There were thunderstorms and lightning many nights in Osborne however.



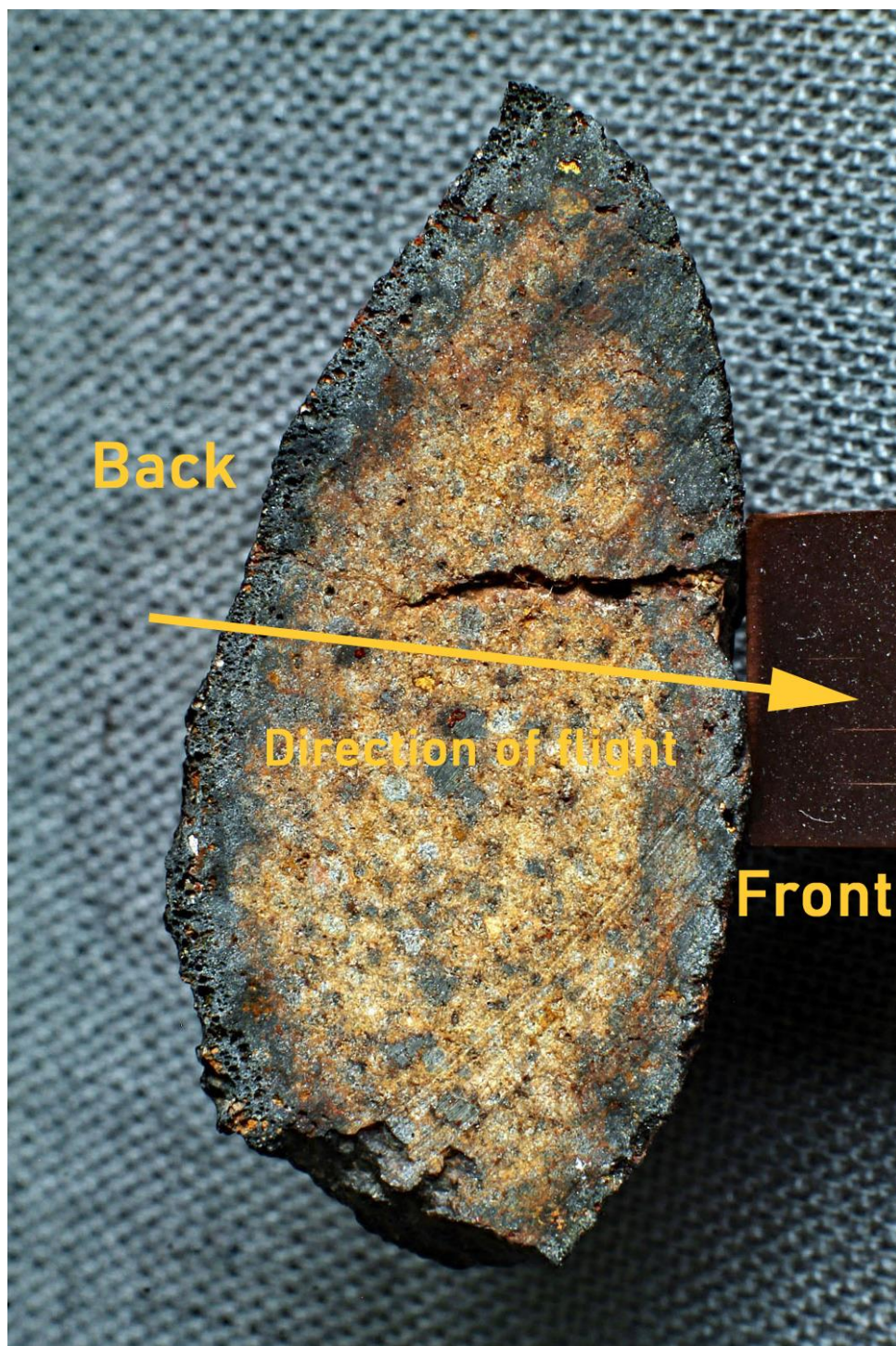
When I got off the interstate at Amarillo, I drove through the part of the city that had been torn up just a few days earlier by a tornado. I had seen the news coverage while in Osborne. Roofs were gone on most of the buildings, and the brick walls of many older builds were only half standing now. As I approached my hometown from a direction I never travel, I got to see the windmills at an angle that showed all of them spinning as fast as their governors would let them in the powerful winds. It was eerily majestic to see them all facing right at me and whirling. My trip was over. I had included meteorites in it. I did not get to use my metal detector on a family member's farm in Kansas. Maybe next trip if I drive, I can find one that Harvey Nininger left behind for me.

Calama 074 Fusion Crust
by John Kashuba

Calama 074 is a 17 gram oriented ordinary chondrite found in October 2018 by Ilya Kryachko on a limestone plateau 40 km east of the city of Calama, Chile. Calama is in the Atacama desert at 2,260 m elevation. Average annual rainfall quotes differ wildly. Wikipedia gives 5 mm with no citation. Sources say that no rain at all fell from 1903 to 1918 (or from 1602 to 1941) (or from 1570 to 1971). Details are sketchy. The place is arid. Details are sketchy.



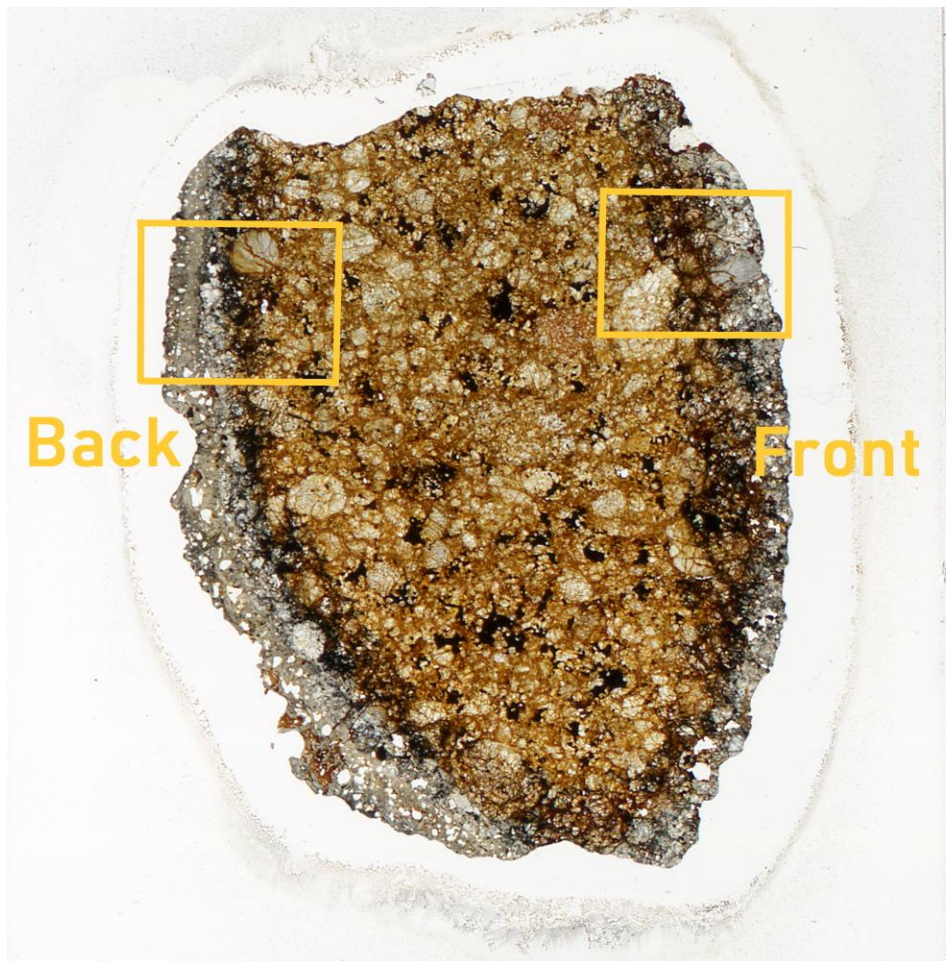
In his Meteorite Picture of the Day posting Timur Kryachko, Ilya's brother, states that both the front and rear of this oriented meteorite retain thick fusion crust. In recent correspondence Timur avers that a portion of the leading face may be free of crust. I suggest that oriented flight was not fully stable and that some in-flight rocking motion distributed melt rather broadly. Timur Kryachko photo.



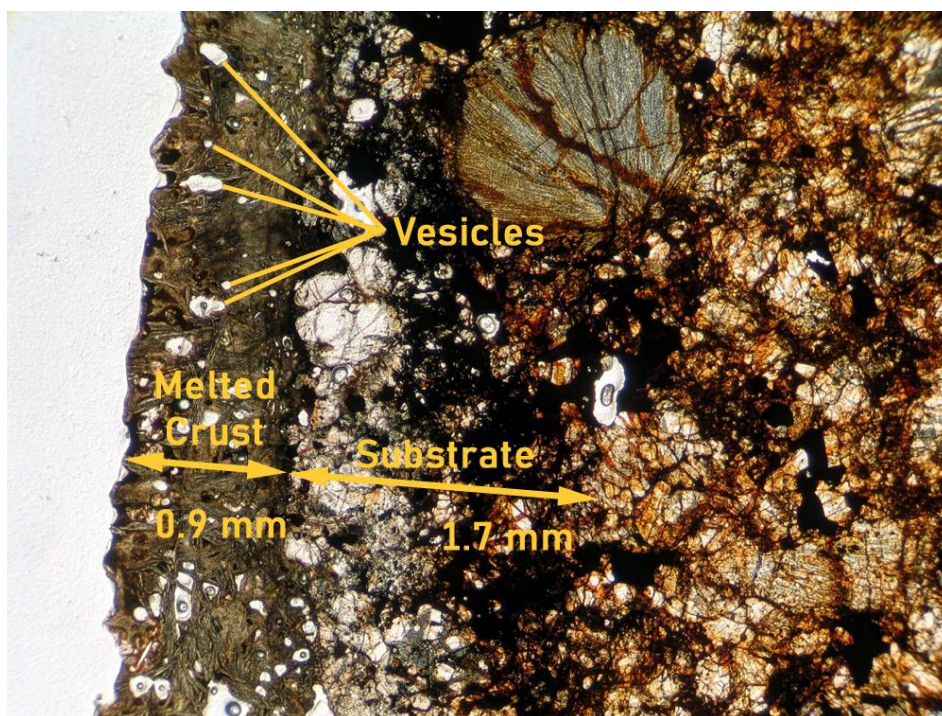
Timur made the thin section from this cross-section illustrated in his MPOD. The stone was small, about 36 mm long. Timur Kryachko photo.



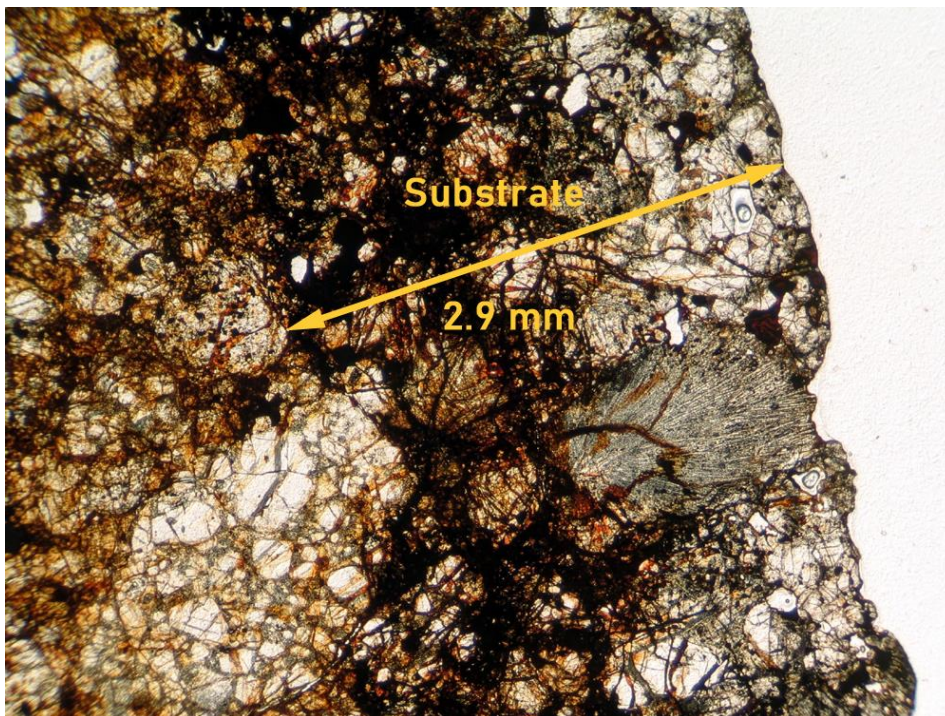
Standard glass slide 26 mm x 46 mm. The front of the meteorite is to the right. Transmitted light.



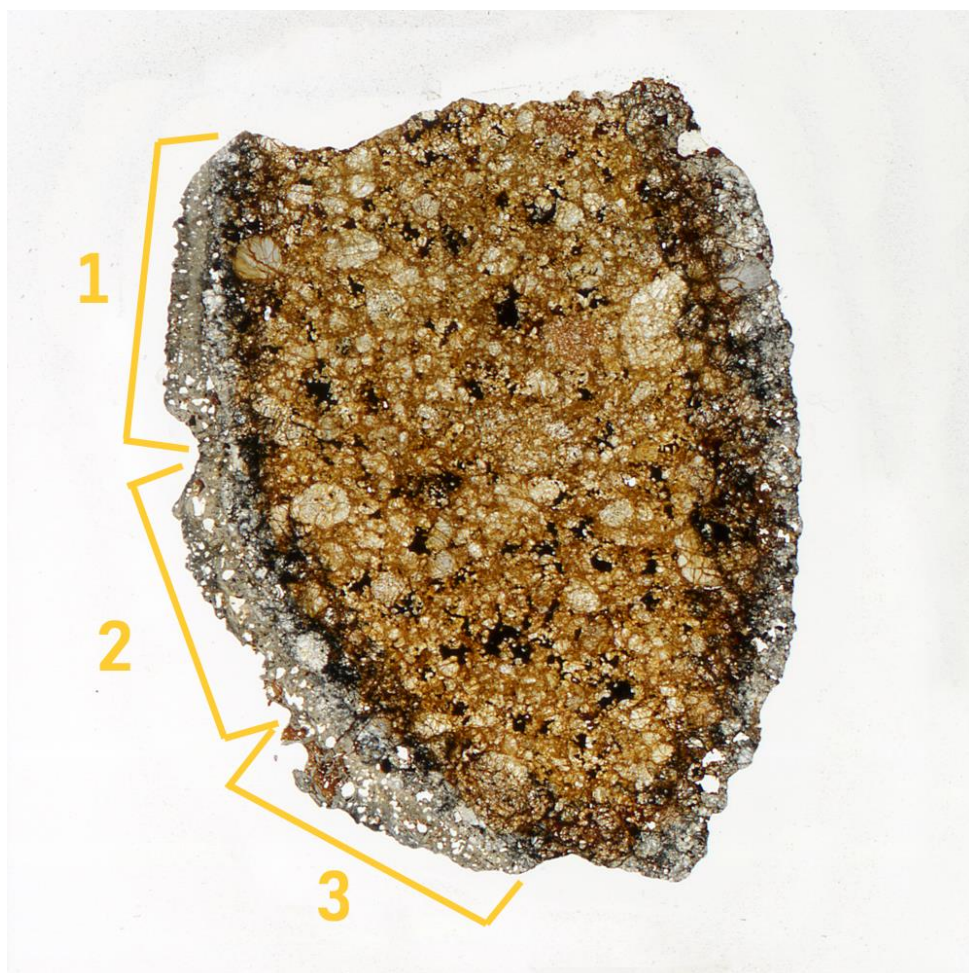
Closer views of these two areas are below. Thin section in transmitted light.



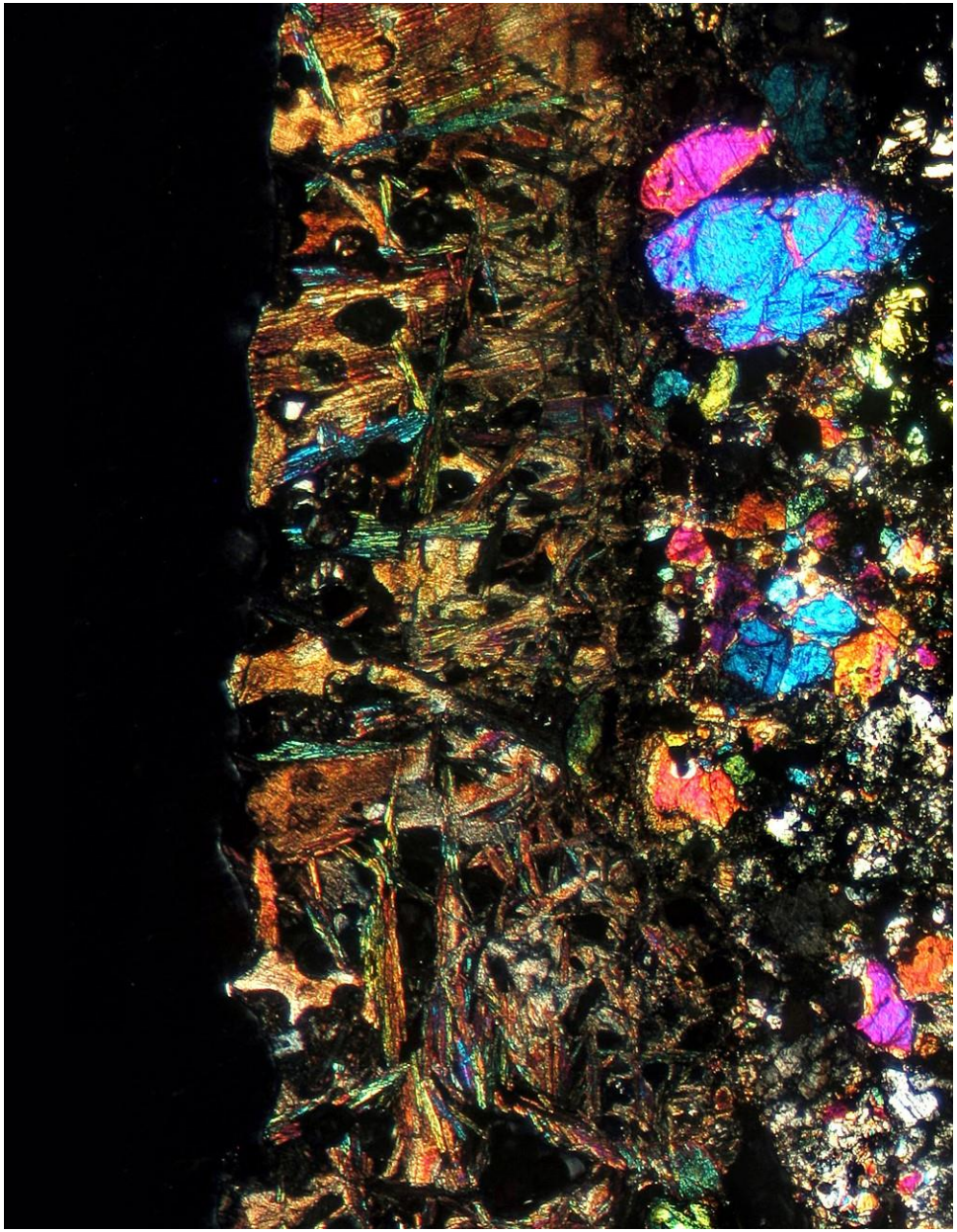
The back has a thick vesiculated fusion crust. The melted crust overlies a heat affected substrate. Thin section in plane polarized light (PPL). Field of view (FOV) is 5 mm wide

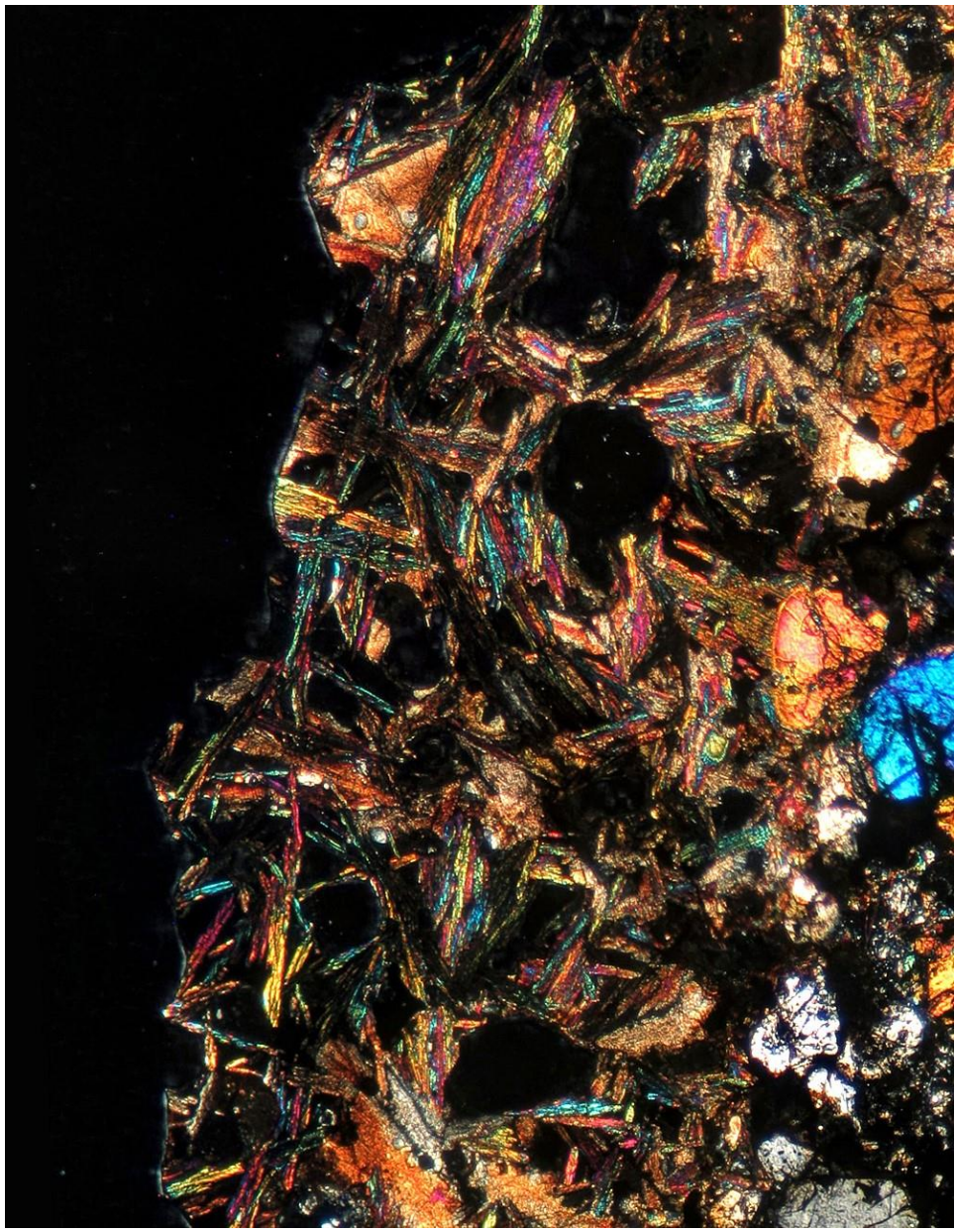


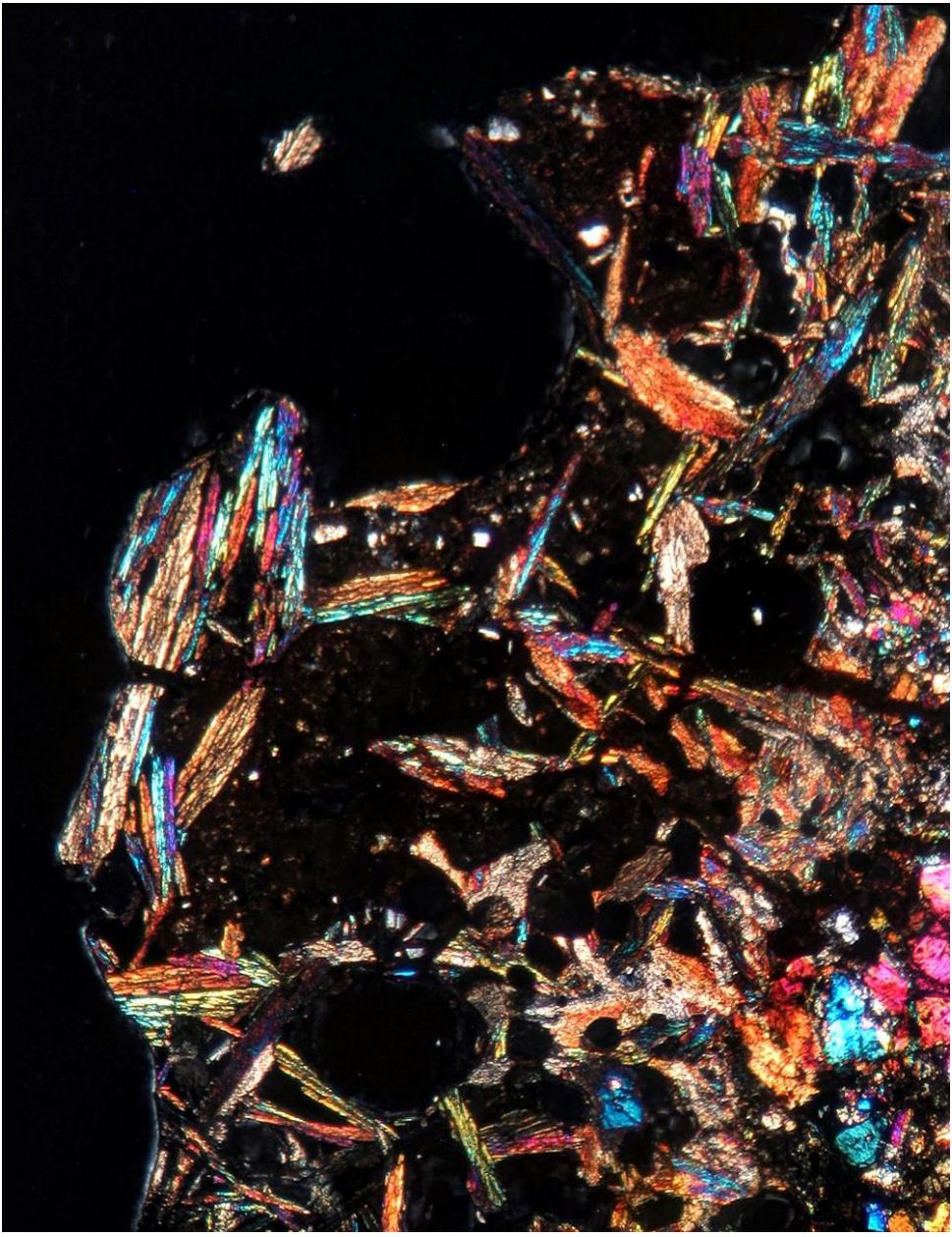
Here the front appears to have shed all of its melt. It has a deeper heat affected zone than the back of the stone. Thin section in PPL. FOV 5 mm wide.

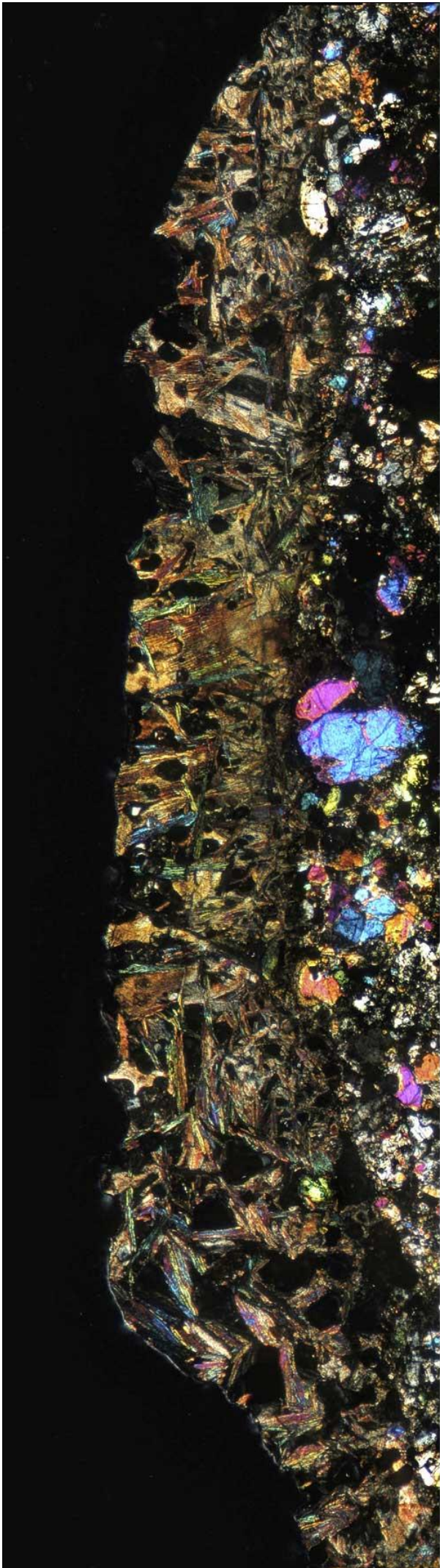


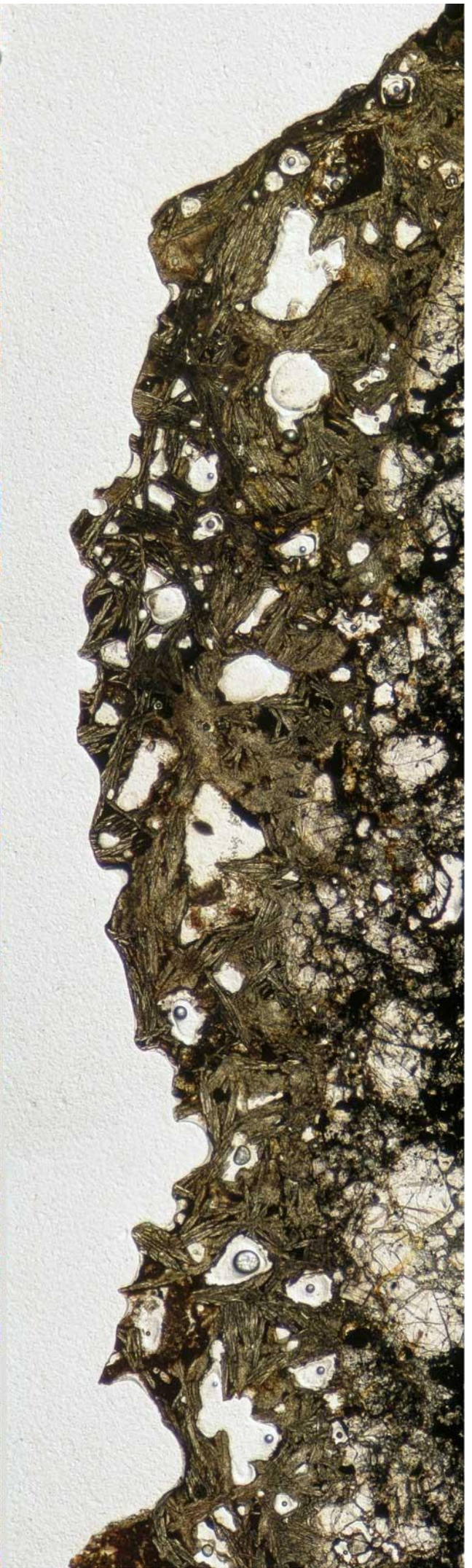
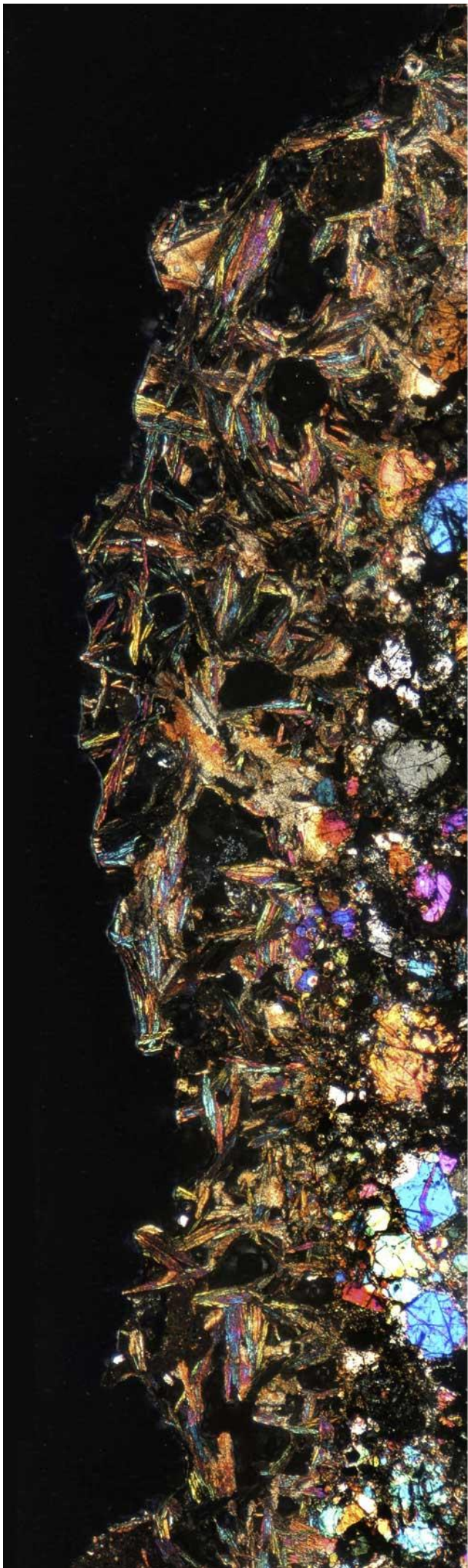
Below are panoramas of the fusion crust in each of these zones, in both PPL and cross-polarized light (XPL). The first three images are details from the panoramas.

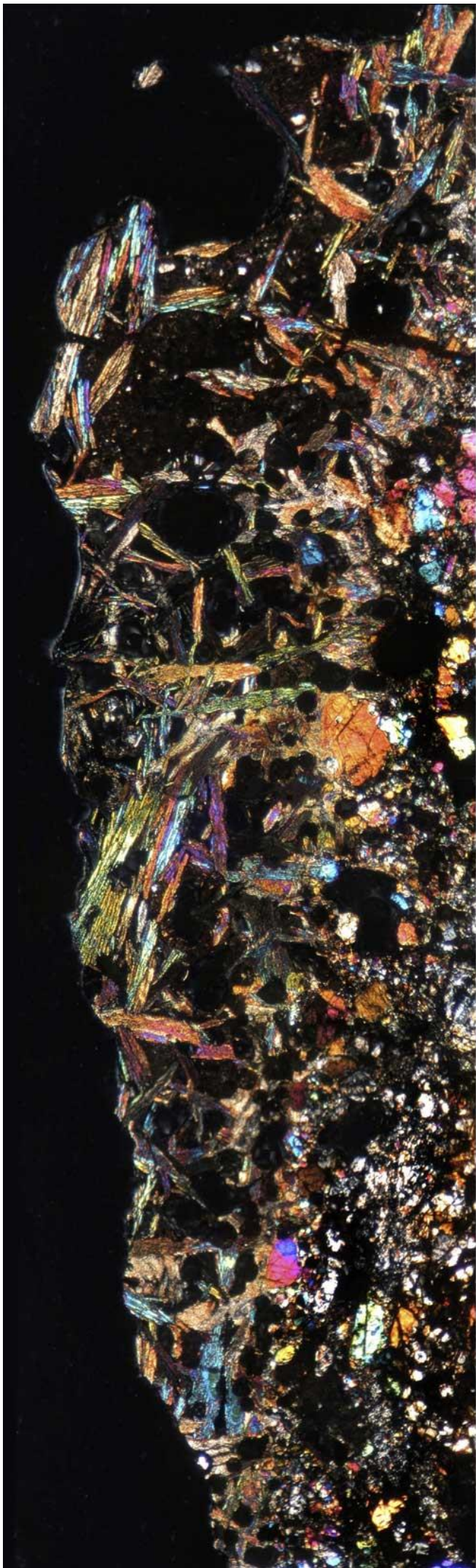












The Dinosaur killer – Chicxulub (pronounced “Cheek” – “shoe” – “lube”)

Mitch Noda

In 1825, George Cuvier, a zoologist deemed the “founding father of paleontology,” first observed a mass extinction of animals between the Mesozoic and Cenozoic eras. In the rock records, there was no evidence of dinosaurs above the K-Pg boundary, formerly known as the Cretaceous-Tertiary (K-T) boundary layer. The K-T boundary is the transition and abbreviation for the Cretaceous period and Tertiary period. At and below the KT boundary, dinosaur fossils could be found. Above the KT boundary, there were no more dinosaur fossils which meant dinosaurs went extinct. What caused this mass extinction? Was it a super volcano or volcanos? There were no human eyewitnesses or recorded accounts of what had happened. Humans did not exist at this time, but we can learn a great deal about Earth’s history, because it is recorded in rocks. Geologists find that most changes in the Earth history have taken place slowly and gradually, but there are a few occasions when the Earth has suffered sudden enormous catastrophes.

It is tough to appreciate how difficult it was to find the answer to how the dinosaurs and most living creatures disappeared about 66 million years ago. We all know the answer now, just like we know that mosquitoes transmit the parasite Malaria. Try to imagine it another way – what causes Dementia? We still don’t know the answer to this. Yes, there are some theories, but no definitive answer. This will give you an appreciation for how difficult it is to find an answer to a scientific mystery.

Walter Alvarez, a geologist and a professor in the Earth and Planetary Science department at the University of California, Berkeley, Luis Alvarez (Walter Alvarez’s father), also a professor at U.C. Berkeley and recipient of the Nobel prize in physics, Frank Asaro, a nuclear chemist at Lawrence Berkeley National Laboratory and Helen Michel, chemist at Lawrence Berkeley National Laboratory were investigating a possible explanation. Naturally, Walter Alvarez studied the geology – the KT boundary in search of an answer to what led to the mass extinction event.



Stevns Klint cliff, near harbor of Rodvig, Denmark. Photo courtesy of my friend, Rob Wesel (Nahkla Dog Meteorites).



Stevns Klint cliff showing the various boundaries, including the KT boundary. Photo courtesy of Rob Wesel (Nahkla Dog Meteorites).



A close-up of the KT boundary with one Euro coin for scale. The thin black layer is the soot layer near the middle of the coin. Cretaceous is bright white almost without color variation, and you will find a high concentration of Foraminifera (primarily marine organisms) embedded in it. The KT boundary section is brown, rusty gray with a tendency to be dark in the upper part. Photo courtesy of Rob Wesel (Nahkla Dog Meteorites).

The team looked at the iridium, the most corrosive-resistant material known, and a rare metal in the platinum group that was found in the clay of the KT boundary where dinosaur fossils were last found. Iridium is more concentrated in meteorites than on Earth. The concentration of iridium in the KT layer was about 9 parts per billion. This may seem like an extremely small number, but it is thirty times larger than the average value of 0.5 parts per billion found on Earth. Some types of meteorites contain as much as 500 parts per billion of iridium. Iridium and all other elements heavier than iron were originally created in supernova explosions.

At first the team did not think it was an asteroid or comet that caused the mass extinction, since an impact would cause devastation, but in a limited area surrounding the impact, not a worldwide event. Maybe it was a supernova explosion? However a supernova explosion would have showered the earth with plutonium 244 with a half-life of 8.3 million years. Plenty of it should still be around after 66 million years. Analysis of the KT boundary found no plutonium.

The impact of a multi-kilometer asteroid could have distributed iridium-rich dust all over the Earth. Other evidence pointed to an asteroid impact. At the KT boundary, there was shocked

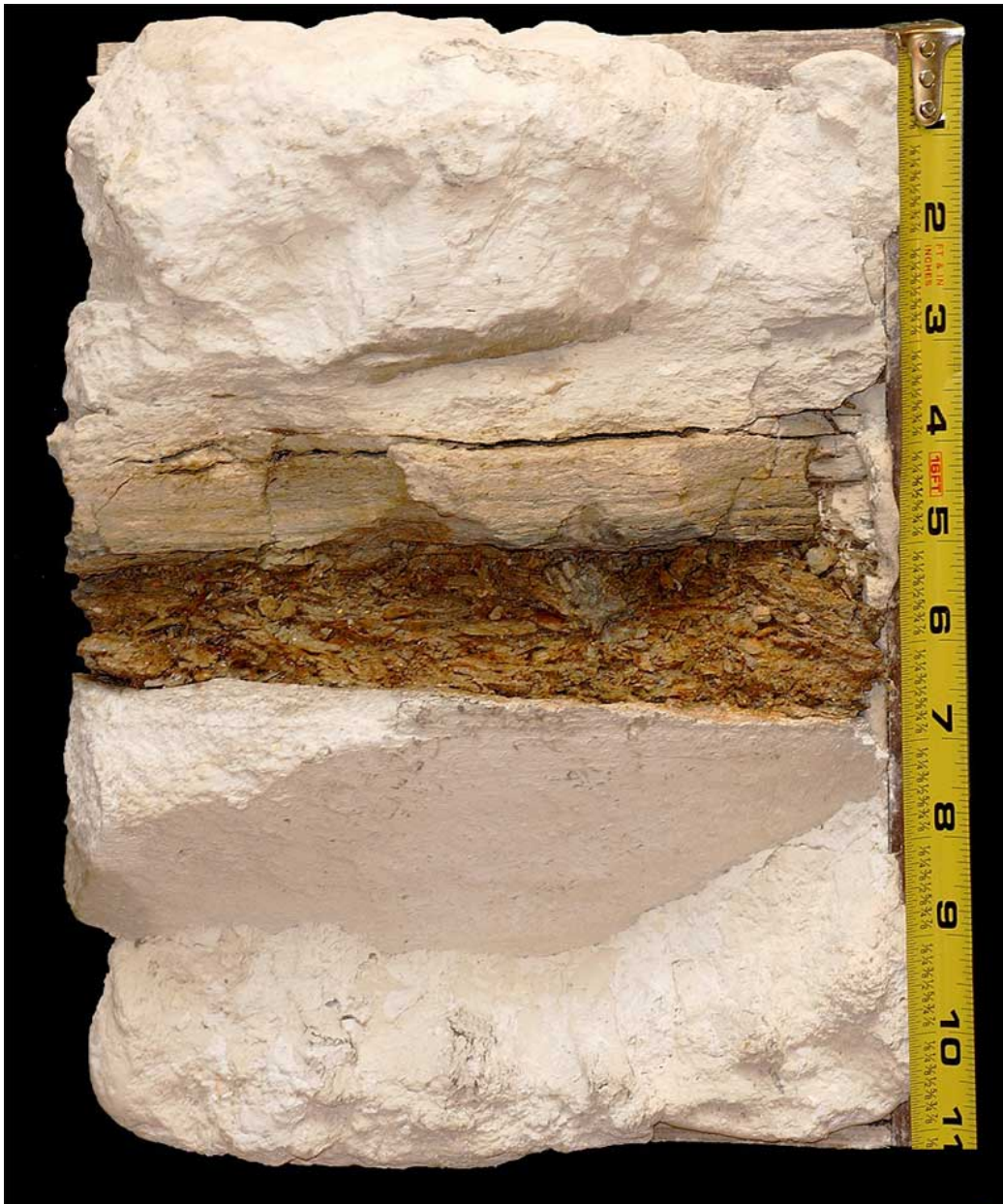
quartz which indicated very high pressure. Impact melt droplets were also found in the KT boundary. Alexander Shukolyukov and Gunter Lugmair, researchers from the Scripps Institution of Oceanography, reported extraterrestrial amino acids at the KT boundary.



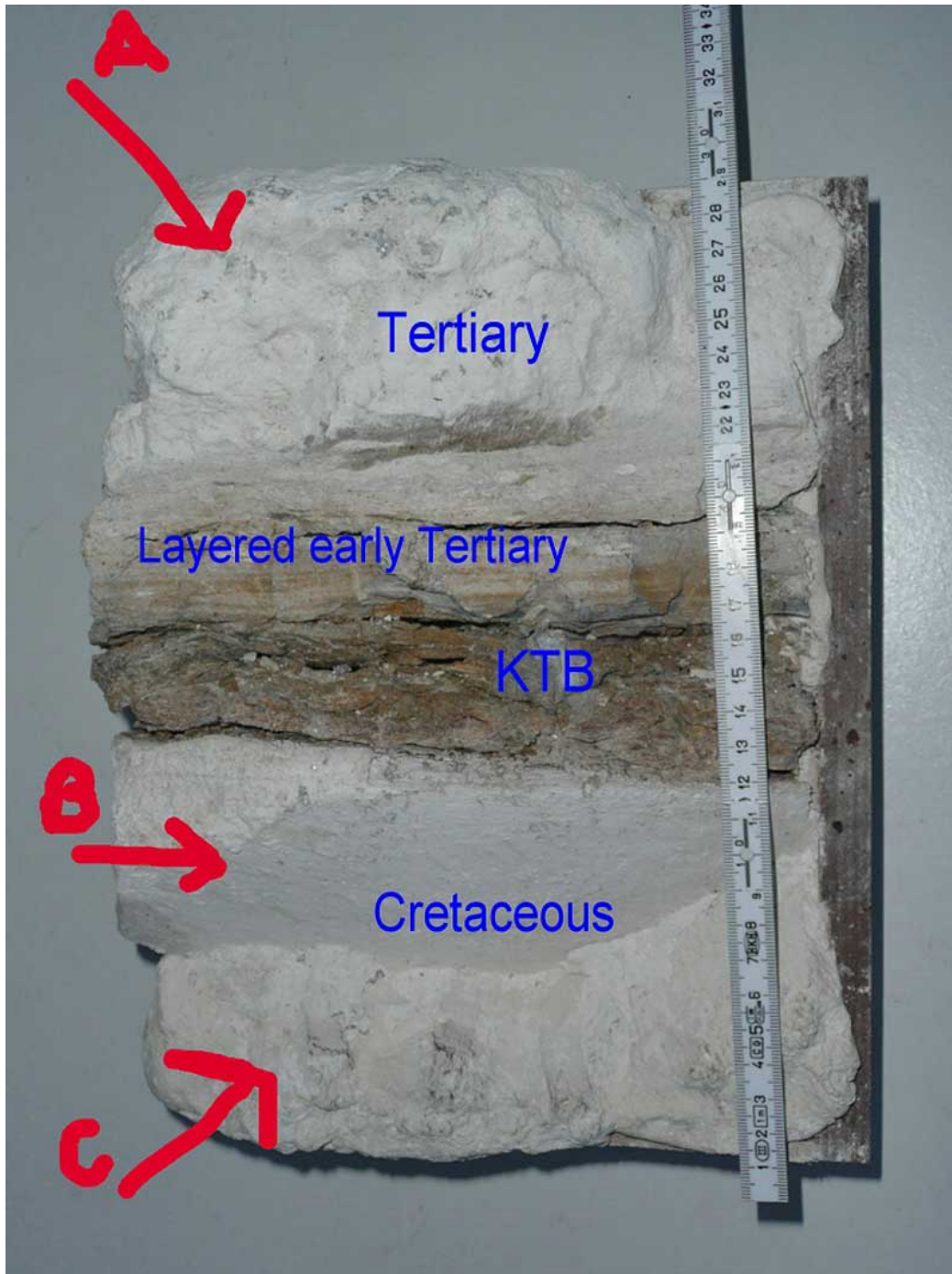
A close-up of the KT boundary with a hammer for scale. Photo courtesy of Rob Wesel (Nahkla Dog Meteorites).

Walter Alvarez, Luis Alvarez, Frank Asaro and Helen Michel wrote a paper, “Extraterrestrial cause for the Cretaceous-Tertiary Extinction,” in the journal *Science*, in 1980 detailing how the Earth’s history recorded in rocks told the story of how the dinosaurs went extinct.

In the 1980’s the KT debate was polarized between those scientists who thought the KT mass extinction event was the result of volcanos, and those who thought it was from an asteroid impact. Some evidence existed for the volcanos theory. A massive volcanic eruption fed by a deep magma chamber that had iridium from the lower mantle might have injected enough dust into the atmosphere to block sunlight and cause the dinosaurs to die out. Scientists from the Lawrence Berkeley Laboratory measured concentrations of iridium and similar metals (ruthenium and rhodium – both in the platinum group) in the KT boundary and found that the relative proportions of these elements were approximately the same as in chondritic meteorites and very different from those in volcanic emissions.



The KT boundary from Stevns Klint, Denmark. Per Rob, the stark white on his piece is natural limestone, not plaster. Spheres (microtektites) can be found in the KT boundary clay section more in the lower area (rusty colored or dark area near the bottom of the KT boundary, but depending on brecciation, sometimes can be also observed in the central area of the layer. Photo courtesy of Rob Wesel (Nahkla Dog Meteorites).



A close-up of the KT boundary identifying the layers. Photo courtesy of Rob Wesel (Nahkla Dog Meteorites).

There was still a crucial missing piece for the impact hypothesis – where was the crater that would have existed from such a devastating mass extinction event?

Canadian geologist, Alan Hildebrand, a PhD candidate at the University of Arizona, decided the Brazos River tsunami bed was key to finding the crater. He reasoned that the impact crater was somewhere between Texas and Columbia, because the Gulf of Mexico is an enclosed body of water protected from distant tsunamis. He knew the tsunami had to come from south of Texas, since that was where deep water was 65 million years ago. If the impact had been in the ocean, tsunamis would have carried the sediments and impact glass from the impact site to other

coastal areas. This is the reason that the impact did not occur on land. He found tsunami evidence in the KT boundary in Haiti.

Antonio Camargo, geologist, and Glen Penfield, geophysicist, working for Petroleos Mexicanos (PEMEX), the Mexican national oil company, identified an impact crater on the Yucatan Peninsula in Mexico while searching for oil. Their work was published as an abstract of a meeting of the Society of Exploration Geophysicists, but the Berkeley team was unaware of their work. The work of oil company geologists would not normally be published in a widely available science journal, since their work is confidential.

In 1991, Alan Hildebrand, et al wrote, "Chicxulub Crater: A possible Cretaceous/Tertiary boundary impact crater on the Yucatan Peninsula, Mexico" in the journal *Geology*. The impact crater was dated about 65 million years in age. The crater is between 180 and 300 kilometers (112 – 186 miles) in diameter, making it the largest impact crater on Earth. This discovery confirmed what the Alvarez team had theorized, that an asteroid or comet struck our planet about 65 million years ago causing a mass extinction event.

The remaining question I had was it an asteroid or comet that struck our planet causing the mass extinction event? I posed this question to my friend, retired Adjunct Professor and present curator of the UCLA meteorite collection, Dr. Alan Rubin, and his response was as follows: "Comets have been described as dirty iceballs or icy dirtballs. In either case, their concentration of Ir would be lower than in meteorites. But two things: the date is now about 66 Ma, not 65. Also, some years ago, Frank Kyte found a 2.5 mm carbonaceous chondrite fragment in a deep-sea drill core exactly at the depth of the Ir anomaly. To me, this is very likely a piece of the projectile that wiped out the non-avian dinosaurs. That means, of course, it was not a comet, but instead was a 10-12 km carbonaceous chondritic asteroid. The Cr isotopic ratio at the boundary also matches that of carbonaceous chondrites."

Since evidence points to a carbonaceous chondritic meteorite, then it makes sense that Alexander Shukolyukov and Gunter Lugmair, researchers from the Scripps Institution of Oceanography reported extraterrestrial amino acids in the KT boundary. The late Dr. Carleton Moore explained to me that amino acids contained in carbonaceous meteorites, such as Murchison (Australia), did not bring life to our planet, but that amino acids are the building blocks of life and make life possible.

It is difficult for us to comprehend the mass extinction event of an asteroid colliding with the Earth since the extreme event is far beyond our life experience. The asteroid was about 15 kilometers (9 miles) in diameter and the size of a mountain. What turned it into a mass extinction weapon was its velocity – 43,000 km (27,000 miles) per hour. A fighter jet's top speed is about 1,500 miles per hours (2,414 km/hour). The speed of sound is about 767 miles per hour (1,235 km/hour). It would take a fighter jet at top speed over 16 hours to circle the Earth (if it did not have to refuel). The Chicxulub meteor could circle the Earth in a little over half an hour. A bullet fired from a gun (depends on the gun) travels about 3,000 feet per second (about 2,045 mph or 3,292 km per hour) and the Chicxulub meteoroid was traveling more than twelve times faster than a speeding bullet.

Scientists released a record of the day of chaos in the Proceedings of the National Academy of Sciences on the Chicxulub mass extinction event. Let's go back in time, 66 million years ago, when the dinosaurs roamed the Earth. At the time of Chicxulub's impact, a mountain-size

asteroid is rocketing towards Earth at thirty-five times the speed of sound. It sped through Earth's 60 mile (97 km) atmosphere in three seconds and causes sonic booms heard on all continents. It struck the shallow waters of the Yucatan Peninsula in Mexico. Any animals that could see the asteroid hit would have been vaporized instantly. No land animals larger than 55 pounds (25 kg) would survive after Chicxulub's impact and nuclear winter. The friction of the impacts causes immense heat and releases energy equivalent to more than one billion Hiroshima atomic bombs. The release of energy heats molecules to far hotter than the surface of the sun. The impactor is vaporized. The impact shockwave forms a blast wave of pressure outwards at more than 1,000 mph (1,600 km per hour) vaporizing anything in Texas and deafening animals in New York. The Chicxulub impact would cause powerful shock waves vibrating through the Earth's crust and triggering fault-slipping earthquakes across our planet. Any living thing on the other side of the planet would feel the ground shake for 30 minutes. The impact triggers tsunamis 1,000 feet tall hitting coastlines in Mexico and the southern U.S.A., and flood tens of miles inland. Tsunamis 600 feet tall hit the coasts of the eastern U.S.A, Europe and Africa. Fifteen hours after impact, all coastlines on Earth are hit with tsunamis. When the tsunamis retreat, they suck living creatures back into the ocean. When the asteroid strikes, its impact sends 25 trillion tons of earth at speeds exceeding Earth's escape velocity. Most of the debris returned back to Earth. The rocks and boulders come back killing or injuring all wildlife they strike. As the debris falls their friction with the atmosphere emit enough thermal radiation to set fires across the Earth. Most of the trees on our planet burn causing smoke that envelopes the planet. Chicxulub hit the oil-rich peninsula, vaporizing the oil and ejecting it towards the sky. The oil condenses in the stratosphere as a black sooty layer covering the Earth like a layer of black paint. The black soot is high above the cloud layer, so it does not rain back down. The soot layer reduces the amount of sunlight to reach our planet by up to 90% for at least two to three years. This is probably similar to the "nuclear winter" Carl Sagan talked about after a nuclear world war. This causes a deep and long lasting freeze. Global temperatures drop by an average of about 50 degrees. At this time, evaporation almost ceases causing rainfall to decrease by 80%. Most of our planet turns into a desert. There was a domino effect. The reduction in plant life had a huge impact on herbivores' ability to survive, which in turn meant carnivores would also die off from not having enough food. Breeding seasons would have been shorter and conditions harsher. About 75% of all animals on the planet die. Numerous wildlife living in large bodies of water and various small land animals, including some mammals survive the catastrophic event. A new era is born.

Acknowledgement: I would like to thank Dr. Walter Alvarez (U.C. Berkeley) who patiently answered my many questions back in 2014. I would also like to thank my friend, Dr. Alan Rubin, (UCLA) whose insights and suggestions made this article more interesting than I could have imagined. A big thank you to my friend, Rob Wesel (Nakhla Dog Meteorites), for providing me with the outstanding photos for this article which brought the article to life. In addition, I would like to thank Dr. Tim McCoy (Smithsonian museum) for always promptly responding to my questions.

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Suizhou, my TYPE of meteorite

Michael Kelly



This is the second installment on a series that focuses in on meteorites that bear the title of type locality. Be that of an entire grouping of meteorites in the overarching classification scheme or just a new mineral or two never before observed by science.

Suizhou is by class quite inconspicuous. After all its one of 12,364 classified L6s, making it a member of the most populated class of meteorites. Suizhou graced the earth with its presence on April 15th 1986 when a shower of 12 stones totaling 70 kg fell. The shock veins within the ordinary chondrite are the main area where some quite not-so-ordinary finds were made.

Polymorphism is the characteristic in mineralogy by which the same combination of chemical constituents are able to arrange themselves into a varied number of crystalline arrangements. This is a function of differences in formation conditions most often variances in temperature pressure or both, either upon initial crystallization or during a recrystallization event.

The prominent shock veins in Suizhou are what have proven to be a cornucopia of new

minerals. Suizhou boasts an impressive record for a L6 as the Type locality of 9 newly discovered minerals. These include polymorphs of several minerals we are much more familiar seeing in write-ups like fayalite, ilmenite, forsterite, merrillite and chromite. To put the formation conditions in perspective, to achieve similar conditions on earth one would have to look in the deep mantle region.

Asimowite	Polymorph of Fayalite
Elgoresyite	A new Magnesium mineral that prior to discovery here only had laboratory synthetic counterparts
Hemleyite	Polymorph of Ferrosilite
Hiroseite	The Iron analog to Perovskite (which happened to be discovered in another meteorite: Tenham, but that's a story for another installation)
Poirierite	Polymorph of Forsterite
Shenzhuangite	A Nickle analog to chalcopyrite
Tuite	Polymorph of Merrillite
Wangdaodeite	Polymorph of Ilmenite, estimated formation conditions 20–24 GPa and >1200°C
Xieite	Polymorph of Chromite, 20–23 GPa and 1800 to 2000 °C formation conditions

Geoff Notkin Collection Auction Part 2

James Tobin



Between the altitude, bears, rattlesnakes and extra-steep ravines, Glorieta Mountain isn't the easiest strewnfield to search, but it is one of the most beautiful.

Geoff Notkin Star of the hit television series "Meteorite Men" is once again working with Heritage Auctions Nature and Science Department on the Geoff Notkin Collection Auction Part Two. Geoff has traveled far and wide on Earth in search of space rocks. Geoff has amassed a fantastic collection of meteorites and related items. Many of these wondrous natural treasures are being offered in an upcoming sequel to last year's auction.

The Geoff Notkin Collection Part 2 Nature & Science Signature® Auction #8116 is open for bids now. The actual live auction will take place 12:00 PM Central Time, Saturday, July 22, 2023. (Proxy bidding ends ten minutes prior to the session start time. Live Proxy bidding on Heritage Live starts 7 days before the live session begins and continues through the session.)

To view the entire Notkin collection please use this link ha.com/notkin

Use this direct link to the entire auction catalog, which is now available both as a flip book and a

downloadable PDF <https://bit.ly/notkincatalog23>

Meteorite photographs imaged by Heritage Auctions

Interview With Geoff Notkin

By James Tobin



A great way to start the day's hunt! Notkin's first Buzzard Coulee expedition, April, 2009. The first find of the day, and just as winter snows were beginning to melt.

My Interview with Geoff Notkin was the last fun thing that happened on a recent trip I took around the Midwest. I had my digital voice recorder with me to make transcribing the interview easier. As we began the interview Geoff had pages of a piece he had written there on hand. We discussed him reading that piece or just getting into an interview. As it turned out, we just began to chat. Me mostly enjoying the time listening to Geoff speak about the what and why of the second Notkin Meteorite Collection auction.

Geoff: It is just a piece I wrote about my motivation for doing the second auction and my interest in living a more planet-friendly life, so maybe we can ease into that. We don't have to use it. I

was just trying to articulate the core of it.

Jim: Well, let's just talk about some of that. I know you wanna make some more donations with proceeds from this auction. Where are you at right now? It seems like this is kind of an in-between time for you.

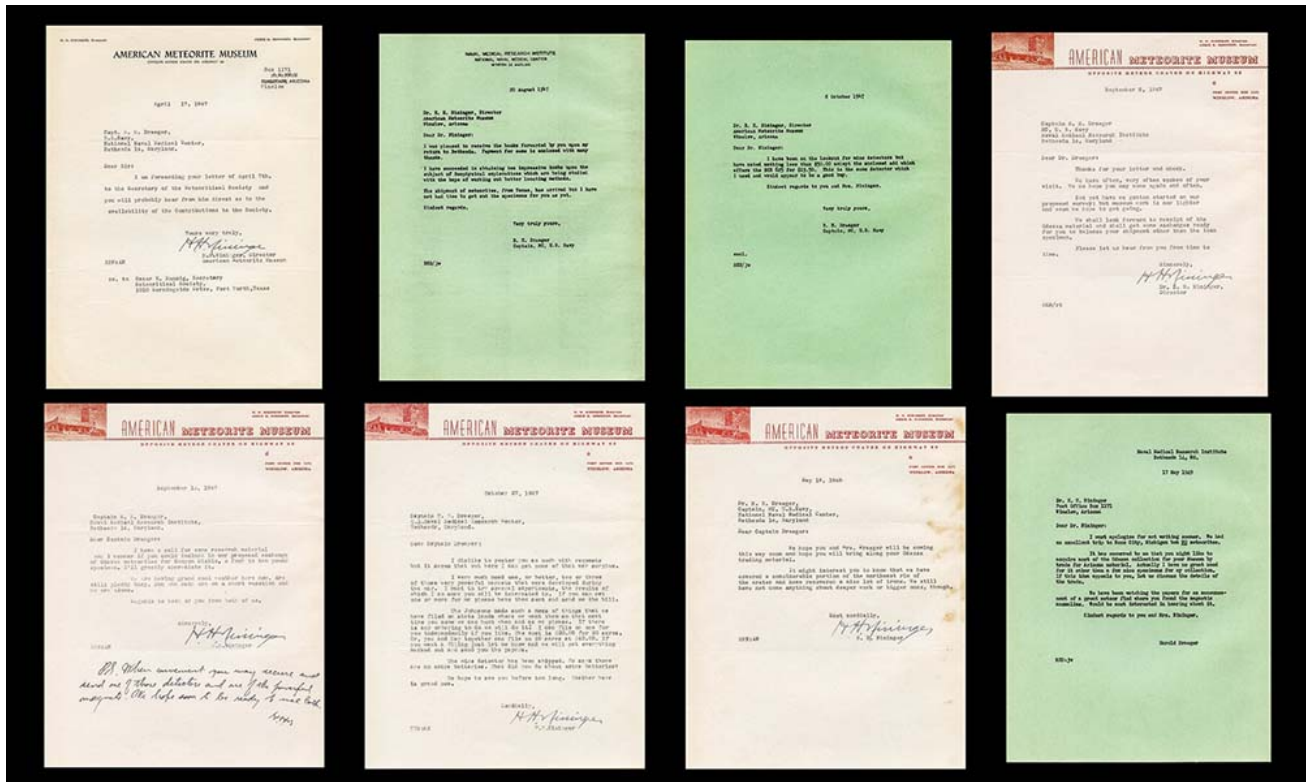
Geoff: Yes, well, geographically, I'm in a small town in New Mexico, and career-wise and emotionally, I feel like I've arrived at a happy crossroads in my life. It reminds me of the time many years ago when I left New York and moved to Tucson. Occasionally we get these opportunities in our lives where we can execute something of a reset. We have either time or perhaps a little extra income, an opportunity to move, and a certain freeing up of responsibilities. That's where I am. When I left Tucson to move to New Mexico, it was intended to be temporary. I've had a long relationship with New Mexico. I first visited the state when I was 10 years old on an adventure holiday with my parents. The same trip that I first visited Arizona. I have a lot of friends in the state. I really enjoy the art scene in Santa Fe, the culture, and the landscape in New Mexico. So I decided to live in a smaller town for a while to see what it was like. And part of doing that necessitated simplifying my life. I've been a collector since I was a little boy. I've obviously collected meteorites but also rocks, and fossils, and books, and records, and film, movie and television memorabilia. I really had the collector bug, and my parents did not. Neither of my parents had the collector gene. My brother does not have the collector gene. I don't know where it came from, but it manifested itself very prominently in me. And I have relished this life of searching for unusual things, not just meteorites but the other things that interest me, including rare books and historic and military memorabilia. But in recent years, not only have I stopped collecting the way I used to, but I have made a conscious decision to let go of a lot of the material objects that I had. That included well over half of my library that I had been building since I was very young. I have always been an avid reader, although when I was a young boy, I was typically reading things like field guides to prospecting and the Collins Guide to Fossils in Color, spelled C-O-L-O-U-R because it was an English book. And my parents, especially my mother, always seemed to be concerned that I was reading technical books, handbooks on mining and mineral identification in the field, or comics. Not what we would today call young adult literature. No disrespect, but I just wasn't interested in that. It was either technical science books or comics, and it seemed like there was nothing in between.



Lot 72053

Notkin always called this Campo del Cielo individual "The Dinosaur" because of its shape and very rare, deep-set natural hole. 991.6 grams and accompanied by hand-made Notkin Collection ID card.

Related to that, I've also let go of my comic collection. That was sold at auction last year in addition to the first part of my meteorite collection. And I'm really deeply surprised when I look back at the experience. I feel quite good about it. I don't look back in anguish much and go, "Oh, I can't believe I let go of that meteorite or that comic book." Because let's face it, if you're a lifelong collector and you have multiple collections, most of the things that you have you don't see on a regular basis. Comic books are in their mylar bags and their long white boxes on their shelves above ground in case there's a flood, And we display meteorites and fossils as best we can. Jim, you noticed when you came in here into my little house in New Mexico that I have quite a few ammonites out, most of which I found, on shelves. I'm not worried if a little dust gets on an ammonite, but I am worried if dust gets on a delicate meteorite slice that's been carefully prepared in the lab. So there comes this question. What happens to the collection? Is it OK to leave it sealed up in boxes? In some cases, perhaps with some people in a safe or in a vault, or in a climate-controlled storage area. I didn't want to do that anymore.



Lot 72119

Extraordinary set of original correspondence between H.H. Nininger and Captain R.H. Draeger (an early meteorite hunter) from April 1947 to November 1952. The letters were acquired by Notkin from the Draeger estate. The Nininger documents are all originals, as received by Draeger in the post, signed by H.H. himself (one with additional handwritten notes), and on glorious American Meteorite Laboratory duotone letterhead (three different styles). The Draeger documents are first generation carbon copies. A marvelous journey into the history and friendship of two meteorite hunting pioneers. 23 documents in total, including 13 H.H. Nininger signatures in ink.



Lot 72124

Original, signed in brown and black ink, and dated (July 1928) an extremely rare preferred stock certificate from the Meteor Crater Exploration & Mining Company. Signed by Brandon Barringer (Daniel Moreau Barringer's son and the company treasurer) and Quincy Shaw (president), and embossed.

I've had the experience, and perhaps you have too, where you go to a small museum or a reference collection and you wanna see a particular piece. First of all, you discover it is not on display. Then in a couple of cases, I've had the experience where they didn't actually know where it was. "Well, we know we have it because we have a reference card for it." But this is my greatest fear with a collection that is of great personal value to me and some scientific and historic value as well. That it would get lost, and I don't mean lost like a ship in the North Atlantic without any power. I mean, it would end up in a basement somewhere at a university or larger museum. They were truly grateful to have it but don't have the room to display it properly and perhaps not even the resources to curate properly. And I just couldn't bear to think of that happening to the collection.

So I reached this point in my life where I just want to leave a lighter footprint on the Earth. And I mean that all across the board, from carbon emissions to social media. I personally have seen a really large part of our planet, and I've seen it on foot, by canoe, on horseback, camel, mountain bike, dirt bike, ATV, 4 wheel drive truck. You name it! Even amphibious vehicles in 'Meteorite Men'; trains, helicopters, and every kind of airplane you can think of.



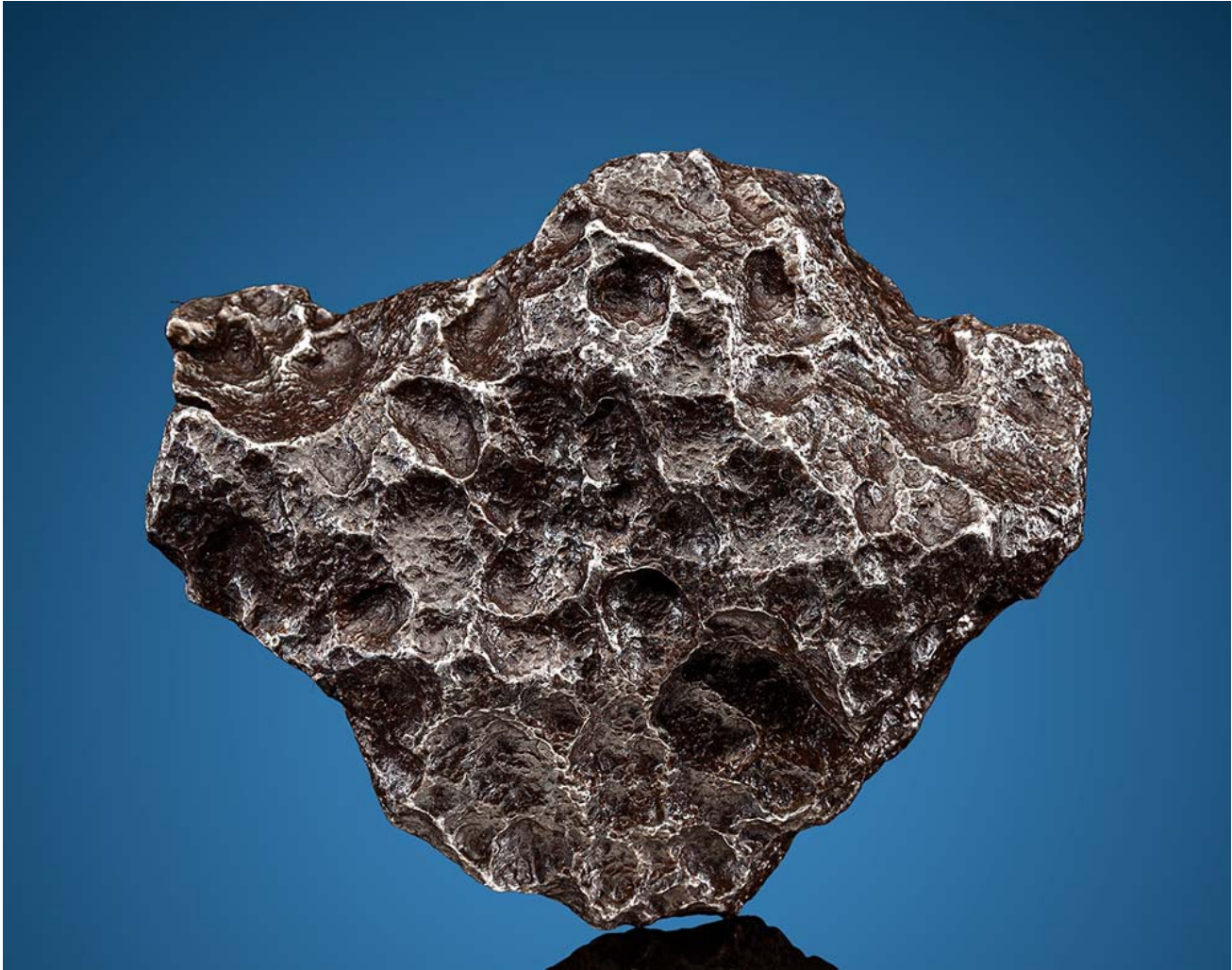
Apart from the strange and fun experience of riding a big, Saharan camel, the view from the hump is splendid and a good vantage point for looking for meteorites!

And the wild places that I've been to have welcomed me and a couple of times tried to kill me, but I don't think that was personal. Over the decades of adventuring, I have noticed an undeniable change in the wilderness places that I visit. A cute little desert outpost that I once knew is now full of tourists and fancy hotels. When I first visited Chile with Steve Arnold in the 1990s, we wanted to hunt the Atacama desert. The only place that we could rent an off-road vehicle was in Santiago in Southern Chile. Meaning we had to make the excruciatingly long drive from there to Antofagasta in the north, where we refueled and got some supplies. Then we went on to hunting sites like La Pampa and Imilac.



Despite the welcoming blue sky, it was 20 degrees F below freezing during this winter hunt at the Imilac strewnfield in Chile's Atacama Desert

Today Antofagasta in the north is a modern town with modern hotels and modern car rental places and everything that comes with that. It was a shocking change for me. It's a lovely town. I don't dislike the town, but I really noticed the change. It didn't seem like a sleepy little authentic place anymore. It was a place that had been discovered by tourism and commerce. Now I have to be honest and say I'm a tech guy myself and a world traveler, and I've benefited from the Internet and Blu-ray discs and digital photography and mapping software and all the rest of it. I don't necessarily bemoan progress, but I do believe that it comes at a significant cost. I've seen with my own eyes how the wild places that I love are eroding away, and lands that used to be rich in wildlife have now been replaced by miles and miles of gated communities. I believe this happens because there are too many people on Earth, and many of them don't care about the impacts that they make. I'm guilty of this, too I've been part of it. I've taken jet airliners all over the world, and I've burned gasoline and used tractors to excavate meteorites. But I also tried to make good afterward. You've heard me talk about this before, Jim, I'm sure. When I'm in the field searching for meteorites or looking for fossils, or even just hiking, not only do I pack out my own trash, but I pack out other people's trash. I have a need to leave the place better than I found it. And I have numerous times been to the Burning Man festival in Nevada and one of their mottos is "leave no trace." I really felt that way already, I had that instinct, but the Burning Man philosophy distilled it for me.



Lot 72048

Campo del Ceilo individual with abundant, small, overlapping regmaglypts. 1,767.4 grams and nicknamed "The Bat" by Notkin. Accompanied by hand-made Notkin Collection ID card.

But I also feel it's not enough to just tidy up after yourself. We've tipped the scale really far, we humans, and just cleaning up your own impact on the environment is not enough. I feel we have to undo some of the damage that has been done, and that may involve using less, consuming less, burning less gas, eating more responsibly, and showing more care for the other creatures that live on the Earth with us and the Earth itself. So those ideas are part of my life now, and selling my collection and donating some of the proceeds to charities and nonprofits and doing tangible things like planting trees, creating micro-environments that are homes for birds, and trying to live a more sustainable life are as important to me as meteorite hunting. If we were to cover all the empty places of the Earth with tarmac, then there would not be anywhere left to hunt for meteorites. I realized that a lot of the things that are most beneficial in life don't cost anything: spending time with friends, spending time with family, reading a good book, and planting a tree. It doesn't cost anything to collect mesquite pods or desert willow pods and germinate them, care for them, and plant them in your garden or in the wild. What would it be like if everybody in America planted one tree or if everybody planted 10 trees? It would be an astonishing change in the environment. So these positive steps are very much within our reach, and I feel that the idea of reducing my footprint on the Earth, selling my collection, and

becoming more involved in caring for wildlife and the environment all go hand in hand. It's a happy change because these meteorites are gonna go to people who are happy. They're gonna be happy to receive them in the same way I was happy to receive them or happy to find them. So in a small way, joy is being transmitted to other collectors. But for me, the bigger picture is my material impact on the Earth is smaller, and hopefully, the beneficial impact is larger.



Lot 72001

A member of the Sikhote-Alin Zoo — Notkin's collection of irons from the famous 1947 Russia fall that have zoomorphic characteristics — this highly oriented complete individual of 462.7 grams with natural hole is "The Lion." Accompanied by hand-made Notkin Collection ID card.

Related to that, in the auction we did last year, I donated to two charities that I really care deeply about, Beads of Courage and Texas Through Time. This year it's six charities, so we're keeping the same two, but we also added four more. Those are Earthlings Hub which is a group that rescues orphans from Ukraine displaced by the war and treats and cares for kids who have PTSD and who've had terrifying experiences in the war zone. And Keepers of Wildlife which is an American nonprofit based in Arizona that rescues and cares for exotic animals that have

been, in some cases, illegally owned or mistreated and then abandoned. So the people who have kept tigers and lions and bears as pets and realize you're not supposed to do that. They sometimes abandon these animals and leave them in terrible condition, so Keepers of Wildlife rescues these animals, treats them, rehabilitates them, and gives them a happy life in safe and spacious environments. Then there is the Association of Applied Paleontological Sciences or AAPS, as we fondly refer to it. And I know Jim that you're well aware of this organization. I've been a professional member for 25 years. This is an organization that's very near and dear to my heart. They are experienced professional and, in large part, commercial paleontologists who work to foster good relations between academia and commercial and private collectors. It's so important, so terribly important, that we do this. We've seen what happens when certain parties exercise, in my opinion, too much elitist power, which results in the banning, for example, of collecting vertebrate fossils on public and government lands in the United States. That's just a mistake.



Lot 72131

One of Notkin's most prized pieces, this 812-gram full slice of the Seymchan pallasite was described by an eminent colleague in our field as "the best transitional pallasite I've ever seen." This slice came from the center of a complete ~80kg mass that Notkin bought from the finders, back in the early 2000s. Notkin thought this the finest slice from the entire mass and kept it in his office display cabinet for many years. Accompanied by hand-made Notkin Collection ID card.

Many of the greatest discoveries in paleontology and meteoritics and astronomy and many other fields have been made by devoted enthusiastic, caring amateurs. To shut that down and say, "No fossil collecting or meteorite collecting! It is only the purview of a tiny sliver of academia," is a really bad mistake. It's elitist, it's close-minded, but it's also impractical because academia doesn't have the funds to do all of the collecting and finding that can be done. When responsible amateurs or commercial interests are allowed to go out and search for things, they make great discoveries, and when they behave ethically, part of those discoveries are turned over to academia anyway, so everybody benefits. I'm a very passionate supporter of this concept, and we don't want what's happened in paleontology to happen in meteorite collecting, where an element moves in and says "We're going to regulate this collecting because ordinary people shouldn't be able to have the pleasure of going out and looking for things." That's just wrong.



Lot 72035

A pair of lovely American Meteorite Lab Canyon Diablos, both with handpainted Nininger numbers —34.250 (222 grams) and 34.589 (78 grams). Accompanied by hand-made Notkin Collection ID card.

Jim: The idea to do that has been around for a long time. Science oftentimes would only have the materials to work on because amateurs went out and did the on-the-ground leg work to obtain the specimens. Scientists often can't leave their classrooms and their laboratories to go out to find any of these materials. Hunting and recovering the materials requires a skill set very different from that of a laboratory.

Geoff: I definitely agree with you, but I just wanna say this very clearly: I am not talking about anybody in meteorite science. We have the best possible relationships with many or virtually all of the prominent meteorite scientists. We've at least had the pleasure of meeting them, and in many cases, since we work very closely with them, these people are friends and colleagues. They appreciate the importance of what we do. We appreciate the expertise and unique knowledge, and capabilities that they have. So the meteorite field is a tremendous example of how private and commercial interests work together with academia. We go out and look for meteorites. When we find something that's important, of course, we donate part of it to one of our colleagues. We want it to be classified, we want it to go into the literature, and we want them to be able to do their research work so everybody benefits. It's so clearly a no-brainer that it isn't even really a topic for argument, and we're very fortunate to be in a field where our research and academic colleagues not only get that but enthusiastically support it.

Jim: It really does work very well with meteorites. It would be nice to see that kind of cooperation in some of the other areas.

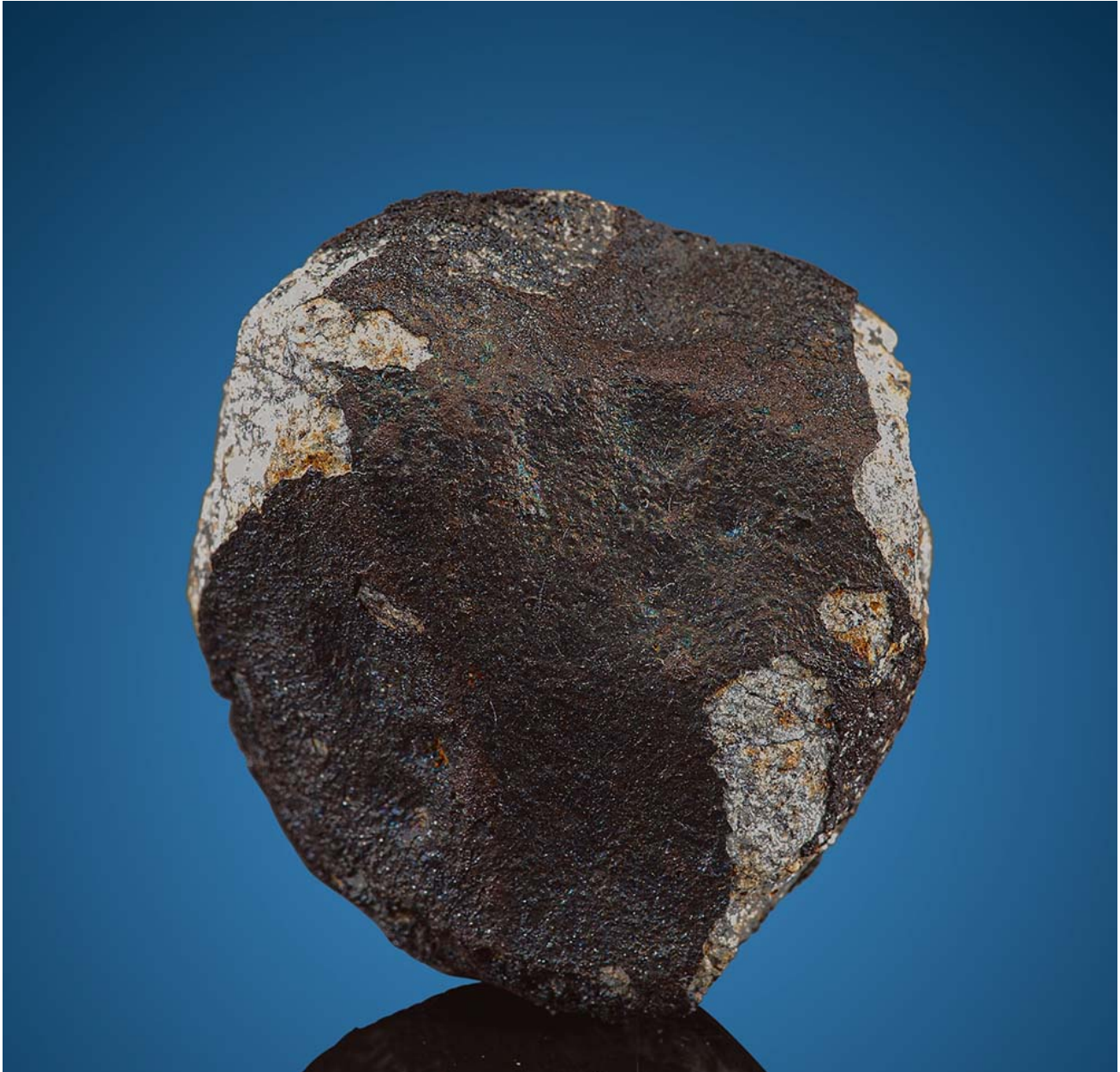
Geoff: We actually set a good example. And I fully appreciate that there are certain very important sites, the Burgess Shale in Canada, for example, that do need to be regulated and protected, and I fully and enthusiastically support the Australian Park Service for turning the Henbury craters into a preserve. We don't want people going and digging into the side of the craters with shovels. You need to respect these wonderful sites, but there's also a way to do it, and that way is not a blanket ban on collecting.



Notkin beside one of the smallest of the 15 protected Henbury meteorite craters in Australia.

Heavy rain had partially filled them with water, but he still found meteorites!

So that's one of the reasons I'm such a passionate supporter of the AAPS and also because they fund paleontology scholarships for students. So it's not just about policy. It's about helping the next generation of paleontologists get on the road and hopefully get on the right road, so if we are supporting these young paleontology students early on in their career and they see our viewpoints, we hopefully will build even more friends going forward and in the long term. Also, it's just the right thing to do. Who wouldn't want to support science scholarships? It's a great thing. Very similar to that, but perhaps in a less structured way, the last of the six charities, by no means the least, is Taking Up Space. And that was founded by my friend Czarina Salido who is a very devoted space flight advocate. She takes underprivileged young girls, largely from Native American communities in the southwest, to Space Camp and introduces them to astronauts and introduces them to, in some cases, life-changing space flight-related activities where they get to dress up in astronaut-style jumpsuits and participate in these fantastic interactive experiences that Space Camp provides. That is tangibly making a difference in the lives of people who otherwise would never be able to have an experience like that. So those are the six groups that I selected this time around. In every case, I have some form of personal connection to them, in addition to believing very strongly that they're making the world a better place.

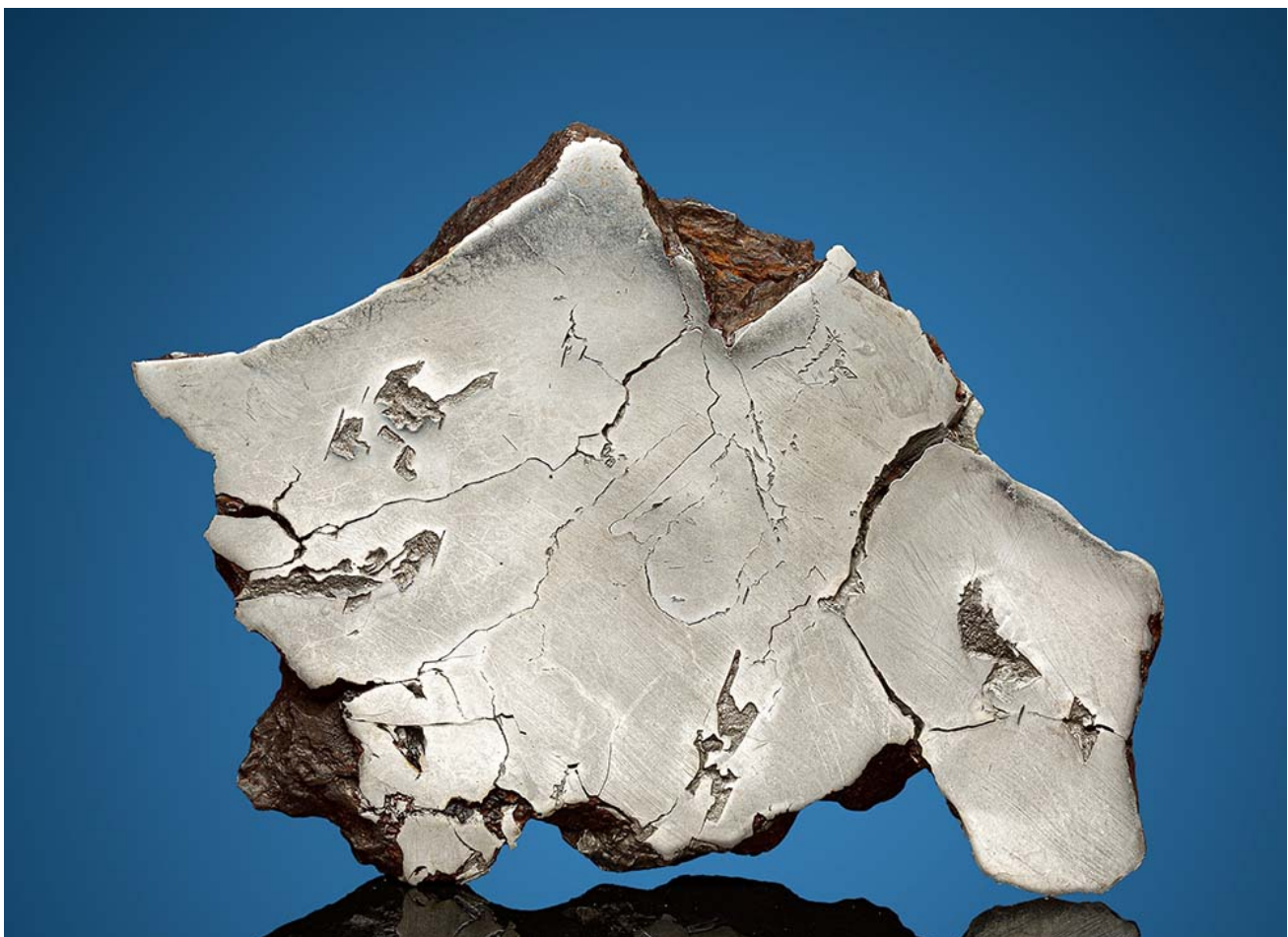


Lot 72109

Notkin headed to Chicago following the Park Forest fall of March, 2003 and found numerous stones of which this was easily the best. At 21.6 grams and largely fusion-crust, it was the first meteorite Notkin ever found in a parking lot! The stone as found, and in situ, is featured on page 59 of Notkin's award-winning book "How to Find Treasure from Space: The Expert Guide to Meteorite Hunting." A signed copy of the book accompanies this lot, as does a hand-made Notkin Collection ID card.

I want to say a few things about Heritage Auctions. One of the main reasons I felt comfortable taking this giant step and doing the Noktin Collection of Meteorites Auction Part Two is because Heritage Auctions in Dallas have just been so fantastic to work with, and the director of the Nature & Science Department Craig Kissick and his assistant director Jenny Milani they're our people. They are genuine enthusiasts and very knowledgeable about meteorites and fossils and minerals, and related items. When I work with them, I don't feel like I'm working with a big

business. I feel like I'm working with friends and colleagues who get me and get the collecting world. Particularly because Craig is a past president of the Association of Applied Paleontological Sciences, of which I am such a fan and enthusiastic member, and, as mentioned, is one of the beneficiaries of part of the proceeds. I've worked with almost every major auction company on the planet, and there's something special and unique about Heritage. And it's their degree of caring about the field. This isn't just another person who's coming in and consigning some rocks. This is a meteorite hunter and collector; they know personally they care about me, they care about the charities that I'm working with, and they put a lot of themselves into the project. I know this from empirical observation because I'll get emails late at night or very early in the morning on the weekend, and they're working on the catalog or working on the photography. They take a very special pride in making this project the best that it can be. It's extremely rare to find that kind of dedication in the modern world. So often, we rush from one thing to another and put a quick photo on social media. We ignore the contemplative aspect of the work, which for me, is so key to meteorite hunting and to paleontology in the sense that you have to invest time and research, and effort at a site to have any chance of finding a meteorite. You have to make the same kind of investments in cleaning, and preparing, curating a fossil and other natural history specimens. So the type of attention to detail and passion that I put into my work, that being the finding and collecting and acquisition of these specimens, is the same kind of caring that my colleagues at Heritage put into their part of the job. That's a fantastic synergy to have, and I really extend my thanks to everyone on the team for making such a tremendous personal effort to do the best for me and for, the collection and for the charities that we selected.



Lot 72020

Sikhote-Alin is a coarsest octahedrite. It is rarely seen etched because one needs a sizeable example to show off its hefty lamellae bands. This whopping 2,394.4 end cut does that and provides a marvelous look at Sikhotes' interior structure. Accompanied by hand-made Notkin Collection ID card.

Jim: Well, I was at the previous auction, and they did a fantastic job. Everything was top flight. Things were beautiful, the display cases and such. The book was beautiful that they produced. The catalog was certainly a collectible on its own.

Geoff: Oh, thank you.

Jim: I was very impressed with the auctioneers at the actual auction and how well everything went.

Geoff: I'm so pleased to hear that. Well, you know me, after the better part of 30 years, I'm not a guy who's uniformly happy with the way things are. So for me to go back and do it again, it had to be really good.

Jim: Yeah, it was really good. It was certainly worth going personally. I interviewed you, and I got excited about the auction and the process and wanted to go and see it. I've been to small auctions. But I had never been to a big auction. I was very impressed. Everything was just wonderful. I enjoyed the day.



Meteorite hunting in the Sahara with a vintage Land Rover and a modern Minelab. It was a fine combo!

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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