Meteorite Times Magazine

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Like many collectors, I was first introduced to the Crumlin meteorite through the cartoon that appeared in John Burke’s must-read book Cosmic Debris.

The caption of the cartoon reads:

The British Museum has “Collared” another Irish Treasure…the remarkable meteorite that fell near Belfast during the period of the British Association’s visit to the city in September last. Dublin “Daily Express,” November 13, 1902.

L. Fletcher representing the History Museum in South Kensington wrote in Nature (Volume 66):
The particulars of the fall, as given orally to me by Mr. and Mrs. Walker, are as follows:—At 10.30 a.m. on Saturday, September 13, which was a cloudy morning, VV. John Adams, who is in the employment of Mr. Walker at Crosshill farm, was gathering apples from a tree on the edge of the cornfield and near the house; he was startled by a noise of such a character that he thought it was due to the bursting of the boiler at the mill, which is a mile to the south and is situated near to Crumlin railway-station.

Another loud noise, like that of escaping steam, was followed by the sound as of an object striking the ground near by, and a cloud of dust immediately arose above the standing corn at a spot only twenty yards away from where he was at work. Adams ran through the corn towards the cloud of dust and found a hole in the soil; thereupon he hurried to the farmyard for a spade, and within a quarter of an hour of the fall had extracted a black, dense stone, which had penetrated the soil to a depth of 1 1/2 feet and had then been stopped by impact against a much larger terrestrial black stone was hot and, according to Mr. Walker, was still warm to the touch even an hour later. There was a sulphurous odour. Two other men were working at a haystack twenty yards further away from the hole made by the stone and also heard the sounds. Mr. Walker, who is seventy-two years of age, had himself just gone into the house, which is close by, and heard nothing of the explosion. Mrs. Walker told me that she was in the lane on the far side of the house and heard a sound comparable for character with that made by a swarm of bees, though much more intense, or with the rattling noise made by a reaping machine; she said that others who had heard it had likened the same sound to that of a reaping machine which had run away.

It may be mentioned that the sound of a reaping machine is at present very familiar to the observers, for the harvest is in progress. Mr. Walker had heard that the detonation was remarked at Antrim, five miles to the north of Crosshill; at Legoniel, nine miles to the east; at Lisburn, eleven miles to the south-east; and also at Lurgan, thirteen miles south-south-west by south. Mrs. Walker said that some of the hearers had taken the sound to herald the arrival of the Day of Judgment. As yet there is no certain information as to the direction of the line of flight of the meteorite. As for the stone itself, it weighs 9 lb. 5 1/2 oz.; it is 7 1/2 inches long, 6 1/2 inches wide and 3 1/2 inches thick.

Its form is irregular and distinctly fragmental; there are nine or ten faces, each of them slightly concave or convex; the edges are rounded. Five of the faces are similar to each other in character, and, except for minute pittings and projecting points, are smooth; they show those large concavities which are common on meteoric stones, and have been likened in shape to “thumb-marks”; the remaining faces are different in aspect and have a low ridge-and-furrow development; they are doubtless due to fractures during the passage of the stone through the earth’s atmosphere, possibly to the break-up at the moment of detonation. A crack going nearly half-way through the meteorite at a distance of an inch from an outer face was probably caused by impact on the larger stone met with in the soil.

The meteorite is virtually completely covered with the characteristic crust which is formed during the passage of such bodies through the air; the crust is in parts black, in parts brown perhaps owing to the influence of the soil it is inferred that the meteorite broke up in the earth’s atmosphere at an early part of its course, when the speed was still so enormous that the heat produced by compression of the air in front of the quickly moving stone was sufficient to scorch the newly broken surface, for a fresh fracture of the stone is quite light in colour. In one part the crust is iridescent in purple, blue and pink colours. Here and there bright particles of a metallic alloy of iron and nickel interrupt the continuity of the dark crust.

On one of the smaller surfaces of latest fracture there is visible a section of a large flat nodule of the bronze-coloured protosulphide of iron, troilite, which is a characteristic mineral constituent of meteorites and is not found as a native terrestrial product. Owing to the presence of particles of nickel-iron dispersed through the stony matter, the meteorite affects the magnetic needle, though not to a great extent. A mould of the meteorite has been made from which models will be prepared; a detailed mineralogical and chemical examination of the material of the stone will be at once begun.

Crosshill is a mile to the north of Crumlin, a small village on the line of railway between Lisburn and Antrim; it is twelve miles west of Belfast and 3 1/2 miles east of Lough Neagh, a sheet of water thirteen miles long and seven miles wide; it is thus possible that the remaining fragments of the mass which entered the earth’s atmosphere may have fallen into the water. The distance of separation of stones belonging to a single meteoritic fall has not yet been observed to exceed sixteen miles; it has on several occasions been found to reach ten miles.
The Crumlin meteorite is the largest stone which has been seen to fall from the sky to the British Isles for eighty-nine years, and is larger than any which has fallen in England itself since the year 1795.

Although a small slice, this piece has a nice trolite inclusion, a defined metal bleb, obvious chondrules, and the always-important rind of crust. Troilite is an iron sulfide compound named after Domenico Troili who first observed it in a Albareto, Modena (Italy) meteorite that fell in 1766.

W. H. Milligan wrote in the October 6th issue of the Stonyhurst College newspaper:

FALL OF A METEORIC STONE NEAR CRUMLIN (CO. ANTRIM) SEPTEMBER 13.

The writer of this note visited the scene of the fall of this meteorite yesterday evening, September 20, and learned that it occurred at about 10.30 a.m. (local time) on the date in question. The body is almost 0 lb. [sic] in weight and of a more or less irregular outline, and of the usual meteoric appearance. It bears strong evidence of fusion, shines with a metallic lustre on one side and is apparently truncated, a fragment—say about a third—having fractured off in its descent through the atmosphere.

There is also a well-marked line or two of fracture still visible. The evidence at present is that it fell quite
perpendicularly, there being no trace of s’ope or inclination in the hole, about 13-15 inches deep, which it made on striking the soil. Mr. Walker, of Crosshill, on whose holding it fell, says it was quite hot at first, and felt warm for almost an hour afterwards.

Of course, a good deal of interest and local curiosity is naturally aroused, the usual query being "Where did it come from?" Possibly the data given above may help to furnish an answer to this question, although hardly yet sufficient to enable an orbit or trajectory to be computed for this—the third meteorite which has fallen in the British Isles within recent years. The occurrence was accompanied by the usual rumblings or detonations, but the estimations of the duration are here, as is usual in other similar instances, untrustworthy. Crumlin is almost due west from Belfast, distance about 10 miles, lat. 54° 36′ N., long. 6° 12′ W.

In the January 25, 1903 newspaper called the Davenport (Iowa) Daily Republican City ran the following story that came from the London Chronicle:

A MONSTROUS METEOR

None Larger Has Fallen in England for Near a Century. Meteoric stones are by no means unfamiliar things in the history of astronomical and physical science. They form a source of information regarding the constitution of other worlds than ours, and their chemical analysis affords a basis for the belief that a community of composition characterizes all the members of the solar system. Described in Nature by Mr. L. Fletcher, F.A.S., we have the account of the meteoric stone which fell at Crosshill, Crumlim, situated about ten miles west of Belfast, on Sept. 13, at 1:30 p.m., Irish time. It would seem that the Crumlin meteorite exceeds in size any stone which has fallen from the sky in Britain for 89 years. It is also larger than any stone which has fallen in England since 1795.

A lapse of 21 years also represents the time since any meteorite had descended on the soil of British, and in Ireland itself no such visitant has been recorded for 37 years. A Mr. Waller on, whose farm the meteorite fell, says that the stone was hot when it landed, and felt hot for at least an hour there-after. The fall occurred about 10:30 a.m. It was accompanied by a noise compared to the bursting of a boiler. A
cloud of dust showed where the stone had entered the ground, and by aid of a spade the meteorite was extracted from a depth of a foot and a half. A sulphurous odor was perceived in the near vicinity of the stone, and the noise made by the detonation, is is assorted, as heard at Lurgan, Antrim, Lisburn and Legoniel.

The greatest distance was that of Lurgan, which is situated 13 miles from Crosshill. These fragments from the sky which reach our earth represent only a remnant of the many such visitants that career through the heavens, especially at certain periods of the year. Everyone knows the “shooting stars,” as they are called. They shoot athwart the heavens glowing with light engendered by the heat which results from the friction caused by their rapid passage through the air. Most of them are burned out long before they have a chance of reaching the earth’s surface. When the mass of meteorite lasts out the friction, so to speak, it reaches the earth. We have many specimens of such stones in our museums.

Some of them are of large size. It measures seven and one-half inches in width, and three and one-half inches in thickness. It is covered with what Mr. Fletcher calls the characteristic crust that forms on such bodies during their passage through the air. The likeness of chemical composition of meteorite with our own worldly substances is close, but it is noted that in the Irish stone there exists troilite, a photosulphide of iron which is not included in the products of our planets.

Astronomical science postulates the evolution of all planets from a common origin and the composition of meteorites support this view. If the sun’s heat is the product of blazing hydrogen gas – the gas used to inflate balloons, and formed one of the two gases whereof water is composed – and if other common chemican elements (iron included) are found to form part of the celestial orbs, the idea that all the planets have been developed from a common basis must certainly receive at least respectful consideration.
The reverse side of my slice shows the depth of the troilite nodule, or at least that it continued right on through with little change in size. Interesting is the iron within the troilite region. If you compare the position of the nickel-iron inclusion in reference to the troilite boundaries with the other side of this slice pictured above, it appears as if the troilite is consuming the iron.

An article titled The Crumlin Meteorite and written by H. Palin Gurney and published in The Mining Engineer, Volume 24, 1902, vol. xxiii., pages 85 and 229, the following was written:

The writer is indebted for a cast of the Crumlin meteorite to the kindness of Mr. Lazarus Fletcher, E.R.S., the keeper of the Mineralogical Department, at the Natural History Museum, South Kensington. It represents all that has been found of a sky-stone, which fell at 1030 a.m. on September 18th, 1902, at Crumlin, about 12 miles west of Belfast.

A loud noise was heard at the time, which may be attributed to the breaking of the meteorite, and the detonation was observed at places 30 miles apart. The fragment weighs 9.34 pounds (4,237.5 grammes). It is 74 inches long, 6A inches wide, and 3A inches thick. The edges are rounded, and five of its faces are nearly smooth, and show clearly the characteristic pittings. The remaining four or five surfaces are apparently due to fracture, and they exhibit distinct ridge-and-furrow markings. As Crumlin is only 3 1/2 miles east of Lough Neagh, a lake extending over 13 miles by 7 miles, possibly the remaining pieces may be buried beneath its waters. The crack, represented on the model, was probably caused by impact on a larger stone in the earth, in which it buried itself to a depth of about 18 inches. The meteorite is
covered with the usual peculiar external layer.

This crust or varnish is thinner on what are probably the surfaces produced by the breaking. It is mostly black or brown, the latter colour being possibly attributable to its contact with the soil, but on one part there is an iridescence, in which we may trace purple, pink and blue. On one of these surfaces, a flatfish bronze-coloured nodule of troilite is distinctly visible.

The meteorite belongs to the variety known as “aerolites.” It consists mainly of stony matter, but it contains sufficient nickel iron to affect a magnetized needle. Its exact composition is at the present time the subject of investigation by Mr. L. Fletcher. This fragment is larger than any meteorite which has reached British soil since the fall at “Wold Cottage, Scarborough, on December 13th, 1795, which weighed 4434 pounds (20,111 grammes).

It is the first sky-stone observed to fall in these islands since the Middlesborough meteorite, which was found on March 14th, 1881, and weighed only 3-52 pounds (1,5944 grammes). Principal H. Palin Gurnet exhibited models of the Crumlin meteorite, together with an iron model prepared by Prof. A. S. Herschel to test the speed of fall of the original, and by which he had ascertained that the Middlesbrough meteorite struck the earth with a velocity of 412 feet per second.

Crumlin is a classic staple of any collection of historic meteorites. If not just for its age, place of fall, and importance in culture and meteorite history, but also for its role in a political cartoon that carried with it much greater implications beyond its humor.

Until next time….

The Accretion Desk welcomes all comments and feedback. accretiondesk@gmail.com
The last time I had been to the Natural History Museum in Los Angeles was about 30 years ago. My wife and I have been trying to take our grandchildren and their parents on some outings during the summer. When the new Dinosaur Exhibit opened at the museum we thought that would be fun. So I booked tickets for it and added in the Butterfly Pavilion as well. I knew there would be some meteorites there if I looked in the geology hall so it was my plan to see that part of the museum before we left.

Our tickets were for the Butterfly Pavilion first and that was a pleasant surprise. A lot more butterflies then I had expected. A really nice exhibit where you walk through a greenhouse full of butterflies and the plants they love. We really enjoyed that. But, it did not take very long to make our way through, so it was off to see the dinosaur exhibit. A very large portion of the museum is devoted to the dinosaurs. There were many impressive full-scale skeleton exhibits and lots of rock samples and claws and teeth. There was the required exhibit about Chicxulub with a meteorite on display. There was no name plate on this approximately one foot wide iron. I am guessing it is a Canyon Diablo or Campo probably the former.

We left the dinosaurs behind and headed to the Hall of Minerals. Almost as we entered we ran into the meteorites that were on display. I know that with the Griffith Observatory not far away and its fabulous exhibit of meteorites there was no compelling reason to show a lot at the NHM. But I will show you in the next pictures what was on display.
Neenach Meteorite
(Seggy, Ordinary Chondrite)
On loan from UCLA Institute of Geophysics & Planetary Physics

In April of 1948, this meteorite weighing 30 pounds was found on a ranch near Neenach in the western Antelope Valley. Mr. Elden Snyder unearthed it with his plow, in the process breaking it into four pieces. The rock was unusual enough that Mr. Snyder saved it and placed it on the porch of his ranch house. In the fall of 1952, Mr. Charles Johnson of Lancaster, California, brought it to Dr. Robert Webb, at the University of California, Santa Barbara. Later, it was added to the collection at UCLA’s Institute of Geophysics & Planetary Physics.
Littlerock Meteorite
(Stony, Ordinary Chondrite)

In April of 1979, this meteorite weighing 42 pounds was found on farmland at Littlerock, a small town east of Folsom in the Antelope Valley. The farm owner, Mr. Donald Reed, broke a piece off the nodule and sent it to the Smithsonian for identification. The freshness of the fusion crust suggests that the meteorite landed only about 100 years ago. Mr. Reed sold the meteorite to the Natural History Museum of Los Angeles County in 1979.

Millbillillie Meteorite
(Stony, Achondrite)
Fell in 1960 at Millbillillie, Western Australia
On loan from Charles and Cecille Schoettlin

Achondrites are stony meteorites without chondrules. These are volcanic rocks composed of silicate minerals such as plagioclase, olivine and pyroxene and some are considered to be the analogous to the Earth's crust.
Allende Meteorite
(Stony, Carbonaceous Chondrite)
Fell on February 8, 1969
at Allende, Chihuahua, Mexico

Carbonaceous chondrites are stony meteorites that consist mostly of silicate minerals. They contain particles that were among the first solids to form in the early solar system.
Gao Meteorite
(Stony, Ordinary Chondrite)
Fell on March 5, 1960
at Gao, Sissili, Burkina

Ordinary chondrites are the most common stony meteorites. Named for the silicate spheres (chondrules) found inside them, they formed about 4.6 billion years ago from the original dust and gas of our solar system.
Imilac Meteorite
(Stony-Iron, Pallasite)
Found in 1822 at Imilac, Atacama
Desert, Chile
On loan from UCLA Institute of Geophysics
& Planetary Physics

Stony-iron meteorites contain both silicate and nickel-iron. Pallasites contain approximately equal proportions of silicate and nickel-iron. They are considered to be analogous to the Earth's core-mantle boundary.
Laguna Manantiales Meteorite
(Iron, Octahedrite)

Found in 1948, Laguna Manantiales, Santa Cruz, Argentina
On loan from UCI Institute of Geophysics & Planetary Physics

Iron meteorites are composed mostly of two nickel-iron alloys: kamacite (high iron) and taenite (high nickel), which may be intergrown in a crisscross (Widmanstätten) pattern. They may be analogous to the core of our own planet.
Meteorite from Mars

Provisionally named "Los Angeles Meteorite"

Chondrite: Type 3a.2, X-ray

Found in October 1955.

Los Angeles County Museum

The meteorite weighed 24.4 grams. It is on display in the permanent collection at the Los Angeles County Museum of Natural History.
Scattered around Los Angeles County are some very nice and large Canyon Diablo irons that were acquired long ago. Griffith Park Observatory has wonderful examples that appear in a past article I did on that venue. I was however surprised when the first meteorite you see as you round the corner into the meteorite area is a beautiful Canyon Diablo at NHM. There is no weight marked on the name plate but, here it is with my granddaughter Kayli. Who by the way has quite and interest in meteorites and science in general.
Just when you think you have seen the last meteorite that the museum has to offer; in the section devoted to native metals there is a beautiful full slice of Gibeon.
We saw all the gems and minerals and it is pretty impressive. But, besides the meteorites of course I found the butterflies to be the most interesting. So that my grandson will not be disappointed when he is older here is a picture of him with my daughter in the Butterfly Pavilion. That was the part he really enjoyed, but later he will learn about meteorites.

I guess it is the way of things in a museum like the NHM of Los Angeles County to have so much to cover that each area of interest must be relatively limited. Unless of course it is featured like the dinosaurs currently are. The meteorites they had on exhibit were all very nice. Though in my opinion the Millbillillie was too small for such a prominent museum.
This Month’s
Meteorite Market Trends

by Michael Blood

Please Share and Enjoy:
Ron Hartman and the Lucerne Valley Meteorites

The finder of the Lucerne Valley Meteorite was more than my colleague; he was my mentor and personal friend.

Even if Ron Hartman would have never found that first Lucerne Valley Meteorite, our paths still would have crossed, eventually. Not only was Ron instrumental in helping me obtain samples of other Lucerne Valley Meteorites in the Griffith Observatory collection for classification, but we also found that we had a common interest in meteorite-recovery on the very same dry lakes not only in California, but other playas in Arizona and Nevada, as well. More than once we would cross paths (on the internet) as we researched our mutual interest in dry-lake meteorite-recovery. Even if we never would have collaborated on that dry-lake research, then there was our mutual interest in iron-etching and meteorite-preservation, topics which Ron had been a pioneer in developing some novel techniques.

Actually, it was that particular mutual interest that finally got me to visit Ron at his office and planetarium at MtSAC (Mount San Antonio College). I had some iron meteorite samples to lend to Ron, so that he and his son, Jim, could test their new techniques. And since the College was less than an hour away, it was logical to hand-deliver the samples. But when I saw his extensive meteorite display at the planetarium, I wondered to myself why I hadn’t visited Ron even sooner. It was great to actually hold the meteorite as Ron would point-out its uniqueness. This was far better than email or phone calls, which is how we usually communicated. Of course my visits would never last long enough, because there was always so much about meteorites that we wanted to discuss.
In retrospect, I now regret that I didn’t visit Ron more often. Not sure why, but, by being cross-town colleagues, it gave us a sort of familiarity that made it easier just to make a phone call, if we had a question, or had found an interesting meteorite. And then, there were the various meteorite-related discussion groups that both of us were usually members and that kept us virtually connected.

And, Yes! There were lots of email messages between Ron and me. So, after hearing the sad news about Ron passing away, I started searching my files for all of our old email messages. Many of them went back to early 1999. This goes back to when Ron and I first started to collaborate on the Lucerne Valley locality. I found one message from Ron where he went in great detail about the recovery of the first 7 stones and even described where on the dry-lake they were found. All of this from memory of events that occurred 36 years earlier. At the end of the message, he thanked me for contacting him after making the new (1998) Lucerne Valley finds. He wrote that it reinvigorated his interest in meteorite-recovery and in meteorite curation. Another message that I will always cherish is where he thanked me again for inspiring him to hunt for meteorites again, out on Lucerne Dry Lake. He said that it was a long time ago when he and his former school-pal, O.Richard Norton, last hunted Lucerne Valley. I told Ron that I wasn’t aware of that fact.

A few years later in a personal communication with Richard, he recounted how appreciative Ron was about being inspired again to go meteorite hunting, and not only just to return to Lucerne Dry Lake, but to actually find another Lucerne Valley meteorite. According to Richard, it was a high-point at that time in Ron Hartman’s life, when he found Lucerne Valley 017, a full 36 years after having found Lucerne Valley 001.

Whether or not these events involving Ron’s return to Lucerne Valley propelled him to his other accomplishments late in his career, is hard to say. But I will always be appreciative of having been able to share those “events” with Ron Hartman. And it will always be an honor to call him my mentor, and my friend.

This article was written with the intention of “complementing” the other articles about Ron Hartman that appear in this issue of Meteorite-Times Magazine. So make sure that you read the other articles in this issue by Anne Black and Dorothy Norton.

- - - ALMOST 36 YEARS AFTER MAKING THE FIRST LV METEORITE FIND, – - -
- - - RON HARTMAN DISCOVERS No. 17 (LV 017) – - -

“Click” on the above image in order to see an image gallery of Ron Hartman’s “Lucerne Valley 017” find.

Description:
Lucerne Valley 017, Stone, Ordinary Chondrite (L6 S3 W4), 12.8 grams
Found March 30, 1999 on Lucerne Dry Lake by Ron Hartman
Note smooth exterior and rhombohedral shape.
NOT PAIRED with any other LV find, per A. Rubin.

- - - MAP OF LUCERNE DRY LAKE
“Click” on the above image in order to see a map of where Ron’s LV 017 was found!

To see an on-going compilation of links relating to the life and times of Ron Hartman, “Click” on the following link: “A Tribute to Ron Hartman”.

“Click” HERE – to go to Ron Hartman’s Lucerne Valley Meteorites Web Site.

“Click” HERE – to go to Bolide*Chaser’s “Lucerne Dry Lake Strewn Field” HOME Page.

“Click” HERE – to go to the “archive-version” of CALIFORNIA STREWN FIELDS Home Page.

“Click” HERE – to go to the Directory of IMAGES that were taken in 1999 of the Griffiths Observatory Lucerne Valley specimens.

REFERENCES:

Search results for internet references to Ron Hartman:

Ron’s website
Lucerne Valley Meteorite
IMCA co-founder
Fallen Stars – IMCA members & meteorite people, gone but not forgotten
http://www.michaelbloodmeteorites.com/TektiteParty05.html
http://www.meteorite-times.com/index_of_articles/Meteorites_101_Index.htm

My previous articles can be found *HERE*

For for more information, please contact me by email: Bolide*chaser
Many people in the meteorite community knew Ron as a collector and dealer. Some recall that he was gentle, patient and a generous mentor, always willing to answer a question or help solve a problem. Not everyone knows that he was also very funny. He was a constant source of inspiration to me when I was drawing cartoons for Meteorite magazine, and I must confess I stole some of my best ideas from him. Ron was a keen observer of people and events, and he had a wry sense of humor which was often quite understated. He was a quiet and very private person, so much so that he didn't want anyone to know he was ill. Probably only people who knew him well realized how much he enjoyed a good joke or prank. And often the recipient of his jokes was Richard Norton.

Ron and Richard became friends in college. They were students at UCLA in the meteoritics class taught by Dr. Frederick C. Leonard, an early meteoriticist and one of the founders of the Meteoritical Society. With Ron Oriti they became the Three Musketeers of Meteorites. When the class took field trips to Meteor Crater in Arizona, they were able to hunt for meteorites in and around the crater with the blessing of curator George Foster. The class also visited Nininger's American Meteorite Museum in Sedona and bought small specimens from H. H. himself. (How's THAT for a field trip?) Later the Musketeers visited the Odessa, Texas crater and hunted dry lakes in the deserts between Texas and California. All three worked at Griffith Observatory in Los Angeles giving planetarium shows, they all continued in astronomy and they all directed planetariums. They also continued to collect meteorites. Ron Hartman and Ron Oriti developed a business selling tektites and meteorites in 1963. Later, Ron created the Hartman Collection for use in his teaching. Part of it was displayed at the planetarium and library at Mt. San Antonio College in Walnut, California, where he taught.

At UCLA, the Musketeers delighted in teasing each other and Dr. Leonard mercilessly. When Richard devised a plan to drive Dr. Leonard crazy, Ron Hartman was always ready to contribute. When Dr. Leonard announced that his prized 250 pound Canyon Diablo iron was too big to steal, they moved it into a closet after everyone else had gone home. Dr. Leonard never mentioned the incident, refusing to dignify their prank by commenting on it. Ron was Dr. Leonard's teaching assistant and graded Richard's tests.
He had perfected Dr. Leonard's distinctive signature — an ornate monogram FCL— and occasionally left severe notes for Richard signed FCL, which terrified him. He was afraid to ask Dr. Leonard if they were real. All this was done in a spirit of fun and never became malicious, though it often became physical. Ron liked to tell a story about Ron Oriti and Richard scuffling on the floor of Meteor Crater when they both spied a surface specimen and dived for it at the same time. Ron wondered what the tourists on the crater rim watching through telescopes must have thought was going on down there. (Ron Oriti told me it actually happened on the crater rim. In fact, it must have happened more than once. Youthful exuberance often got the better of them.) They competed in everything, even dated the same girls, much to Dr. Leonard's confusion. He would say to Ron, "Ronald, come into my office and close the door." Then, "Who exactly is dating Miss Godecker?"

Dr. Leonard was very fond of the Musketeers and they all loved him. He knew they didn't have much money and weren't eating well, so he invited them to his home for dinners, sometimes twice a week. His influence on their lives extended far beyond the classroom. Ron even named his youngest son Frederick in his honor. The Musketeers continued their good natured assaults on each other throughout their lives, and amused themselves with concocted newsletters from the Coconino County (Arizona) Jail (temporary home to a few noted meteorite hunters), fictitious business propositions, threatening letters from the Bar T Bar ranch (which leases land around Meteor Crater) and general nonsense. Their love of meteorites and camaraderie in their college years grew into a lifelong friendship that never wavered.

But they never completely grew up and never stopped trying to one-up each other. On the way back to our motel after a long, hot and rather tense day of hunting at the Odessa crater, a day in which tempers had flared over the use of a metal detector, Ron asked Richard to stop the car so he could look at some wild flowers. Richard complied; then when Ron had wandered off he quietly started the car and slowly drove away. He parked about two hundred feet down the road and Ron took his time catching up. When he got in he asked if we had a flower book with us and began describing a particular petal pattern, completely ignoring — just like Dr. Leonard would have — Richard's attempt to get some other response from him. But the earlier tension of the day was gone. They spent the rest of the day telling stories and laughing.

Visitors to Ron's websites may have wondered about the occasional appearance of goats, including this picture of Ron with "his dog Spot." Many years ago he and his wife Petrea visited Oregon and drove past a field with a billy goat standing in it. They stopped the car and Ron got out to converse with the goat. Who knows what the goat said to him — he never really explained it to me — but from that moment on he was fascinated with goats. He signed his personal letters W.E.G. (William E. Goat). That led to the introduction of Goatgrams, note paper for typing phony telegrams (long before email, delivered by snail mail). He collected goats of all kinds, stuffed, carved, ceramic, everything but barbecued, or live. He referred to himself as the Old Goat and his sons as (naturally) kids. It was silliness but silliness makes life more fun.
In recent years, health issues kept him from traveling to the Tucson show though he really wanted to, and he missed seeing friends and new meteorites. The membrane box business he started with his son Jim kept him very busy. But he kept up with happenings in the meteorite world and frequently contacted me with an idea for a cartoon. The last one he described to me shortly before he passed away was a variant of the famous Dogs Playing Poker painting, featuring Sonny Clary’s dog Brix (the Meteorite Hunting Dog) and a bunch of hapless humans displaying their finds at the end of a day of hunting. Sorry, Ron, I never quite managed to create that one. Ron was devoted to his family. He enjoyed life wherever he was and found humor and pleasure in the smallest details of daily existence. He taught astronomy for 44 years, even after officially retiring. His students loved him. Dr. Leonard would be proud.

Dorothy Norton

Ron Hartman and the IMCA

In his usual understated, quiet manner Ron was also a very big part of the IMCA. He and his son Jim were very active participants in the creation and development of the Association from the very beginning, Jim worked on our original website, and created our first logos, and Ron kept on pushing for things to get accomplished. I particularly remember a meeting of what was then the “Board” in Tucson in February 2004, with Ron, Jim, Ken Newton and I. Ron had decided that the Association had grown big enough by then that it was time to make it official and give it a legal standing. We were all very hesitant, but Ron would hear none of our arguments. So of course, he got his way and the lengthy process was started. Ken did a lot of research, then, Jeff Kuyken, Norbert Classen and Ken started writing the Bylaws, the Code of Ethics. The State of Nevada was chosen because it allowed us to do everything electronically. There were lots of discussions, and emails between all of us, and Ron! And by the end of September, it was finally all done, all the papers had been signed and delivered, the fees had been paid, we were “legal” and registered as a Non-Profit Professional Association in Nevada.

And I announced that I was going to the Munich Show since they no longer needed me for any proof-reading. I really thought by then that my job in the IMCA was done. They wished me “Bon Voyage” and I left. When I came back some ten days later, I found a bunch of emails congratulating me. Congratulations??? What for? Certainly not for going to Munich, I thought. Then I discovered that I was President of the IMCA. What! Me! President!! I kept looking for information and someone finally admitted privately that Ron (always persuasive!) had quietly talked everybody into electing me as soon as my back had been turned. So of course, I called him and the conversation went something like this:

Me: “Me, President!!! Why me??”
Ron: very calm “Why not?”
Me: “uh! Hhmm…well … What does a President do anyway?”
Ron: “Don’t worry, you will find out.”

Yes, I did find out, and I am still finding out, and as I told Ron so many times, it is all his fault! But I must admit that it has been an unbelievable experience, something I never dreamed I would ever do. Thank you Ron!

Anne Black
Not all CV3 carbonaceous chondrites are alike. More than most, NWA 6207 makes it easy for us to see that its components went through a succession of processes before they were delivered to us. Existing large mineral grains were incorporated into chondrules. Chondrules formed, solidified and then were included in subsequent chondrules. Mineral grains evolved, chondrules gained layers and their internal glasses crystallized. Here are some examples.

The yellow barred olivine chondrule obviously formed early. Then it became part of the large porphyritic chondrule either through a low speed collision or through accretion and partial melting. The apparent diameter of the compound chondrule is 2.5 mm. Thin section in cross-polarized light, XPL. NWA 6207 CV3.
Porphyritic chondrules are generally thought to be the product of the partial melting and subsequent cooling. Since some of the precursor material is not melted there are plentiful 'seed crystals' from which grains can grow. The partial melting argues well for the survival of an incorporated chondrule. Thin section in XPL. NWA 6207 CV3.
Here a barred olivine chondrule is embedded in an aggregate. The chondrule has several sets of bars so it could be called polysomatic, many bodied. It is not clear that the rounded aggregate was formed through melting so it might not be considered a true chondrule. Thin section in XPL. NWA 6207 CV3.

Yet another BO chondrule, looking like a large mineral grain, is incorporated into a large and interesting chondrule. See the closer view below. Thin section in XPL. NWA 6207 CV3.
There are numerous poikilitic grains in this chondrule – small rounded grains of olivine included in, probably, twinned clinopyroxene. Here, the horizontal striping expresses the twinning. Thin section in XPL. NWA 6207 CV3.

A variety of textures. Thin section in XPL. NWA 6207 CV3.
A chondrule that has been built up with multiple concentric layers including a thin dark one near the outside, best seen at the lower right. The entire assemblage is jacketed by opaque matrix. Transmitted light. NWA 6207 CV3.
A barred olivine chondrule with an apparent diameter of 0.85 mm. Thin section in transmitted light. NWA 6207 CV3.

Looking closer we see that thermal metamorphism has altered the glass that was between the bars. Thin section in transmitted light. NWA 6207 CV3.
The feldspathic glass has devitrified, that is, it has crystallized (often termed “recrystallized”). Thin section in transmitted light. NWA 6207 CV3.
If someday, someone had told me that I would be going meteorite hunting by taking the Metro, getting off at the station Juvisy on the bank of the river Seine, I would have probably smiled, but that is exactly what I did for 5 days at the end of the month of September.

It all started on Thursday, September 22, in my store in the Ile Saint Louis, in Paris, when a gentleman walked in and told me that he had found a meteorite. He pulled out of his pocket a beautiful and very fresh stony meteorite, and he asked me if I could help him to get it authenticated. You must realize that within the last 15 years or so we have received an average of 30 “would-be” meteorites to identify a week, usually it is by email or during a visit to our store; in fact my son Louis has computed the probability rate: 1 meteorite per 3000 stones examined, and at least every other one comes from the Sahara.

But this time, Mr. Mosset did show me a splendid extra-terrestrial rock of 88 grams, with all the right features: black fusion crust, regmaglypts, pale matrix inside with traces of iron and troilite, attracted to a magnet. Perfect! We had here a real meteorite, and fallen just outside Paris. Mr. Mosset explains to me that after a thunderstorm some three weeks ago, they were surprised to find that the roof was leaking. They then called a roofer who climbed up to replace the broken tiles and discovered this meteorite. The roofer took a tiny fragment for himself and handed the rest to the homeowner. I noticed that another face was broken, meaning that a fragment might still be stuck among the roof tiles. So we decide to meet on the following Sunday on the “site of the crime”!

We are met there by Mr. Mosset and his companion who tells us with a big smile that her name is Mme Comette, with 2 Ts! This could not have been invented! Since our meeting of the preceding Thursday, Mr. Mosset had climbed back on the roof and checked every tile, but he had found nothing. Maybe the roofer had taken more than he had said.

This is really an important discovery. No meteorite ever fell at less than 50 miles from Paris. The Beryllium 7 isotope study proved that the fall was only a few weeks old. It might even have fallen during the month of August when they were on vacation away from Paris.

We had to smile when we remembered all the media storm, all the astounding statements published after a fireball was seen over Brittany, all that while a real meteorite was falling very quietly in a suburb of Paris.

During the following week we searched an area of a 1000 meters-radius around that house. We
distributed flyers to all the people living within that area, so far without success. But the hunting season for meteorites in Draveil is still open, and I would love to buy a nice piece for my collection.
(This Interview with Ron Hartman is from the June 2004 issue of Meteorite Times)

Ron Hartman (RH)  I was an Astronomy major at U.C.L.A. back in the 1950 somethings, and took a METEORITICS course from Dr. Fredrick C. Leonard.  He inspired a number of now well-known names in that Science.  It was about that time that I acquired my first meteorites, a few from Wards, and from a rock shop, Greigers, in Pasadena, CA.  And … as a student in the course one of the requirements was to go with the class and Dr. Leonard to the Arizona Meteorite Crater and find a meteorite!  (We had to pay the crater $1.00/lb for anything we found!)

(MT) What was your first meteorite?

(RH) From Wards, a Potter, Neb.; a Brenham slice, and Maybe a couple others.  From Greiger’s, some very nice Henburys, and a few in the pound range from the AMC that were found on our first class trip.

(MT) Do you still have it?

(RH) Sure.

(MT) Do you have special areas of interest that you focus on in regards to meteorites (thin sections,
(RH) The focus is on acquiring a representative collection suitable for museum display to the public and for teaching students the basic characteristics of meteorites, not for analysis but for recognition.

(RH) My older son, Jim, has a full-time business restoring deteriorating pieces. I never had encouraged his interest. It "just happened naturally".

(MT) Do you have any special approaches to collecting? (Type collection, only stones, only irons, only by aesthetics, etc. or any and all that you like.)

(RH) For many years I gravitated toward irons, as stones were not very readily available except from Nininger and then, Huss, and the specimens tended to be very weathered ones from the plains states that Nininger had found.

(MT) Do you mind saying how many locations your collection represents?

(RH) I really have no idea. I have boxes full that I have not had time to inventory. Hundreds, no doubt.

(MT) Is your collection displayed or kept in a dry box or both?

(RH) Parts of it are displayed in our college planetarium museum area and in our college library. I have four display cases at home. Rest is in drawers, many in a vault area at our college. I don't use a dry box but the temperature is kept within reasonable limits. My meteorites don't rust as they were prepared properly at the beginning. (Might be different if we did not live in a semi-desert area.)

(MT) In what ways do you use your computer for meteorites?

(RH) Only the excel sheet for inventory.

(MT) Do you ever hunt for meteorites?
(RH) Yes. Lucerne Dry lake was my strewnfield discovery. It predates and brought in the great California hunt for meteorites on dry lakes. Since that time, the number of California finds have skyrocketed due to hunting efforts by others on all the dry lake regions.

(RH) My 12 pound Canyon Diablo that I found buried under a bush with my metal detector (many years ago, permission to hunt granted.) Its the shape, not the size that is neat. I have larger but they are not as interesting.

(RH) See above.

(RH) Not much, I'm very satisfied with what I have. I've been very fortunate to have lived during a time when collecting has became a golden opportunity. I suspect that opportunity will soon be ending.
Slow and steady, no specific focus on sources but I've given up buying on-line or sight unseen. I want to see the specimen (from all sides!)

Do you also collect related materials like impact glasses, breccias, melts, tektites, shocked fossils, native iron rocks etc?

Not very much.

Do you prepare any of your own specimens? (cut, polish, etch, etc.)

Yes, all

Have you had to take any special measures to protect them from the environment?

Surprisingly, not much. If they (irons) are prepared properly at the outset, most tend to be pretty stable. I think most of the problem is that many are cut and attempts are made to stabilized too quickly or by using incorrect methods. You need to open up the fissures under high heat, get the water and contaminants out, and then fill them with a suitable preservative before letting the slice cool down. If you leave salts and other foreign materials in there, you are only inviting trouble later on. My son, Jim, discovered the prefect way to do that and it works wonderfully. We find that a few of the more troublesome freshly sectioned irons May still, on occasion, rust a bit from fissures and around nodules regardless of what you do. But after resurfacing and etching a second time, occasionally a third time, they seem to stabilize permanently. For example, Red Rock was a problem piece for us. Soon after I bought my first finished slice, it started to ooze. It took two resurfacing and re-etching over as many years but now it has been fine for the several years it has been in the museum case with no special humidity controls.
### Meteorite Calendar – October 2011

by Anne Black

<table>
<thead>
<tr>
<th>METEORITE FALLS CALENDAR</th>
<th>OCTOBER</th>
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<tbody>
<tr>
<td>1814 Girram Konala</td>
<td>1930 Moorleak</td>
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<tr>
<td>1918 Norfolk</td>
<td>1932 Guadalupechí</td>
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<tr>
<td>1960 Mildbille</td>
<td>1956 San Pedro de Quiles</td>
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<tr>
<td>1857 Les Cirmes</td>
<td>1815 Chassigny</td>
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<tr>
<td>1866 Lediën</td>
<td>1883 Ngwii</td>
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<td>1923 Serra de Magé</td>
<td>1902 Zagami</td>
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<td>1951 Aarthus</td>
<td>1975 Ningbo</td>
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<td>1933 Pesyanoe</td>
<td>1827 Bialystok</td>
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<td>1866 Janikheid</td>
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<td>1803 Apt</td>
<td>1924 Fenghsen-Ku</td>
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<td>1803 Ishaiga</td>
<td>1950 Monroe</td>
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<td>1865 Lampcin</td>
<td>1967 Taizuna</td>
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<td>1862 Menow</td>
<td>1971 María</td>
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<td>1954 Ishinga</td>
<td>1938 Zhovtenyri</td>
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<td>1964 Jange</td>
<td>1928 Oteray</td>
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<tr>
<td>1952 Peekskål</td>
<td>1929 Beardsley</td>
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<td>1750 Nicosps</td>
<td>1787 Kharkov</td>
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<td>1857 Chaba</td>
<td>1970 Dvaleni</td>
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<td>1950 Vengerovo</td>
<td>1819 Politz</td>
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<td>1838 Cold Bokkeveld</td>
<td>1852 Bokut</td>
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<td>1877 Soko-Banja</td>
<td>1914 Appleby Bridge</td>
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<td>1859 Hamlet</td>
<td>1959 Hanlet</td>
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<td>1824 Zebrak</td>
<td>1928 Oteray</td>
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<td>1901 Harvey</td>
<td>1929 Beardsley</td>
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<tr>
<td>1975 Tzeltzuec</td>
<td>1897 Delhi</td>
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<td>1988 Sfax</td>
<td>1916 Boguslava</td>
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<td>1984 Zaozyang</td>
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<td>1998 Mariwile</td>
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<td>1910 Buc-Chelchou</td>
<td>1951 Yambro</td>
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<td>1975 Tzeltzuec</td>
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<td>1998 Sfax</td>
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<td>1977 Bo Xian</td>
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<td>1994 Coleman</td>
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<td>1844 Favers</td>
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<td>1901 Hvittis</td>
<td>1933 Po-wang Chea</td>
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<td>1899 Peramah</td>
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<td>1859 Peramah</td>
<td>1740 Rasgrad</td>
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<td>1984 Zhaozong</td>
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<td>1866 Kyushu</td>
<td>1973 Canosa City</td>
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<td>1946 Semarkona</td>
<td>1999 Bihanja</td>
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<td></td>
<td>1965 Eholghai</td>
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<td>1944 Valdavru</td>
<td>1949 Azikh-Bogd (stone)</td>
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<td>1994 Lohawai</td>
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<tr>
<td>1849 Monroe</td>
<td>1951 Kalabka</td>
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<td>1999 Yantuan</td>
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* e-mail: (impactika@aol.com)
Chergach Meteorite with Impact Melt

by Editor

4.5 gram Chergach H5 Meteorite
18.5 gram Bediasite specimen from Grimes County, Texas
Please support Meteorite-Times by visiting our sponsors websites. Click the bottom of the banners to open their website in a new tab / window.
Once a few decades ago this opening was a framed window in the wall of H. H. Nininger's Home and Museum building. From this window he must have many times pondered the mysteries of Meteor Crater seen in the distance.

Photo by © 2010 James Tobin