

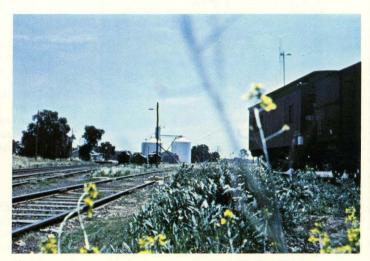
A portion of the Australian town of Murchison where meteor shower fell.



"Now where would be a good place to look?" — Athol Jenkins and the author.



Many of the meteorite fragments fell into high wheat — hard to locate.



Some of the meteorites were found in the railroad yard.



One of the fragments of rare type Carbonaceous Chondrite.



The meteorites are black and gave off a decided odor.

# Scenes At The Finding Of The Rare Carbonaceous Chondrite Meteorites

I ADIDARY IOIIRNAI

# A Once In A Century Event - -

# THE WITNESSED FALL AND RECOVERY OF METEORITES

# By Cyril Kovac, F.G.A.A.

Kovac's Gems & Minerals, 120-122 Commercial Rd., Prahran 3181 Melbourne, Australia

It was a bright sunny morning at Ruffy, just a few miles west of Murchison, Victoria, Australia where it all happened. No one within hearing could know that the peace and quiet of that Sunday morning, the 28th of September, 1969 would suddenly be disturbed by an event unique in Australian history.

Just before 11 a.m. a shattering sound, like thunder but sharper and more intense, roared and echoed through the valleys and around the hills. When the roar had died away all began to wonder where it came from, and to conjure up all sorts of ideas as to what might have happened.

The local residents of the small town of Murchison and the farmers and stock raisers in the area were the only witnesses of an event that is unique anywhere in the world—the fall of a swarm of meteorites, but they hardly realized this at the time.

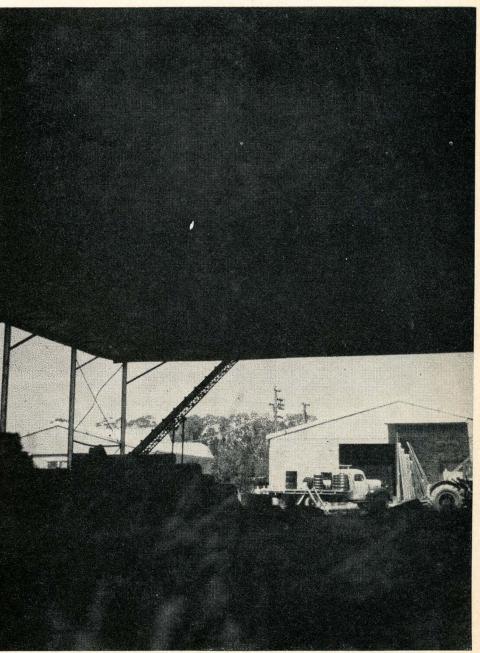
It was Sunday so no one would be blasting. There was no gas storage tank in the vicinity that could have exploded. Little did the viewers realize at the time the significance of what they had heard.

The next day in Melbourne, while at work in our rock shop, we heard the first stories of the "something" that had exploded in the sky. The papers published details of the finding of pieces of a strange black meteoric material in a cowyard at Murchison, and the stories began to pour in. The black substance soon was identified as of meteoric origin, and so the stories we heard of smoke and flame in the sky began to gain credibility.

We listened to stories of bright lights in the distance that turned to smoke, trailing balls of fire which disappeared into nothing with a final glorious blaze. Some people claimed to have seen as many as five "somethings," but an eye witness at Murchison described how three objects, making a considerable noise, attracted her attention, and one appeared to explode almost overhead. One Murchison farmer, about to have a quiet Sunday glass of beer, was so startled by the noise of the meteorite that he dropped bottle and glass in fright.

Most certainly the small township of Murchison was the main target of this celestial bombing. Situated in a rich pastoral area 90 miles north of Melbourne, capital city in the state of Victoria, this quiet countryside with its lush green pastures and high crops of grain was about to gain unexpected popularity.

to gain unexpected popularity.
By Wednesday 1st October, 1969 the "something" had been definitely identified



PHOTOS BY GENE VERSTRAETEN

The pierced roof of a hayshed at Murchison, Australia, hit by a meteorite.

and publicized as being "exciting as moondust," by Professor Lovering, head of Melbourne University's Department of Geology. (Professor Lovering is one of

three Australian scientists to receive moon rock samples from the Apollo 11 flight.) The Murchison countryside was invaded by geologists, university students (in





PHOTOS BY GENE VERSTRAETEN

Left—A 34-ounce specimen of the Murchison meteorite shower, showing ablated surface.

Right—This meteorite broke upon impact, showing stony chondrite interior structure.

bus loads) and amateur collectors, all bent on collecting fragments of this rare material. Some scientists believe that there was living matter where such meteorites originated—most probably in the asteroid belt between Mars and Jupiter.

All the collectors followed up the story of the pieces that landed in the cow-yard (Continued on Page 36)

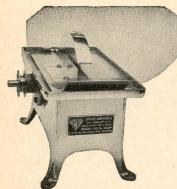
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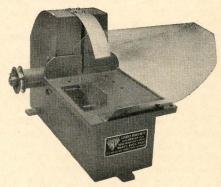
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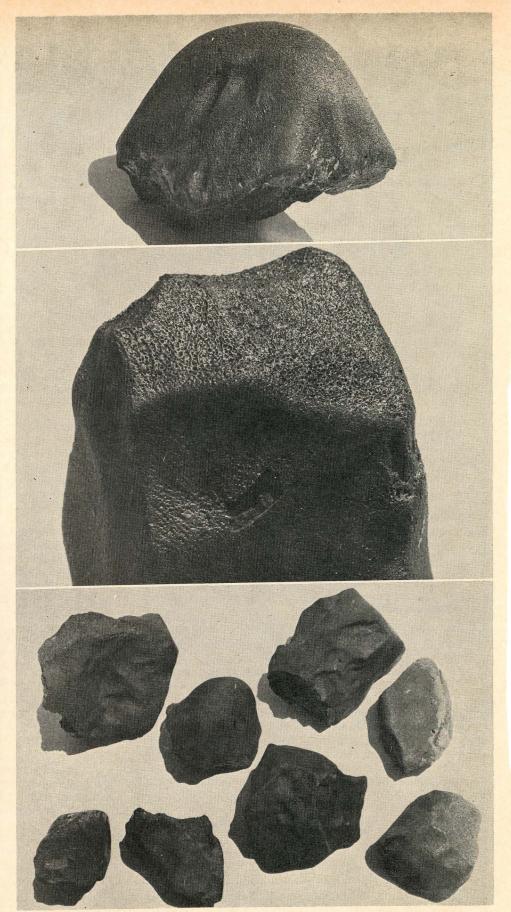
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Top—A typical ablated shaped nose-cone carbonaceous chrondite meteorite from the Murchison, Australia shower.

Center—Showing the melted surface of a meteorite fragment from Murchison.

Lower—A group of eight meteorites from the Murchison fall. All slightly enlarged.

at Murchison West and exploded against the iron fence into a multitude of small pieces. Most of them knew about the farmer whose hayshed roof had been pierced by a large fragment that was possibly only one of many to land on his property. They all knew of the large and small lumps that were seen to land on the 9th green of the Murchison East golf course. Everyone had their theories of where, between the golf course in the east and the cow yard in the west, they would find their bonanza.

They talked to the hotel keeper who didn't know a thing but knew all the people who did. They questioned the greens keeper who helped clean up the golf course. They pestered the gate keepers at the railway yards for permission to enter and look around the grassless, open spaces. Some crawled on hands and knees searching the grass around known landing spots. Others walked the road sides and invaded the fringes of private

properties in search of this celestial gift.

As it happened, it was the people who lived in the district who collected most of the meteorite. One family of five spent a pleasant day searching the banks of the Goulburn River, which runs through the town, and were well rewarded for their efforts. One farmer formed his family into a line to systematically search the paddocks, tieing a white cloth to the fence to mark the last strip of paddock searched.

Much of the carbonaceous chondrite has found its way to the Melbourne University in response to urgent newspaper, radio and television appeals for fragments of this rare material for scientific study. A very small amount of it has been sold to my friends Athol and Gwen Jenkins and myself for commercial distribution to collectors. The greatest proportion of material found to date is undoubtedly still in the hands of amateur collectors and people of the district who have not gotten over the novelty of having something from outer space.

In my opinion there is as much, or more, material hidden in the long grasses and crops as has yet been found. This material will probably disintegrate before reaping and harvesting removes the protective shield.

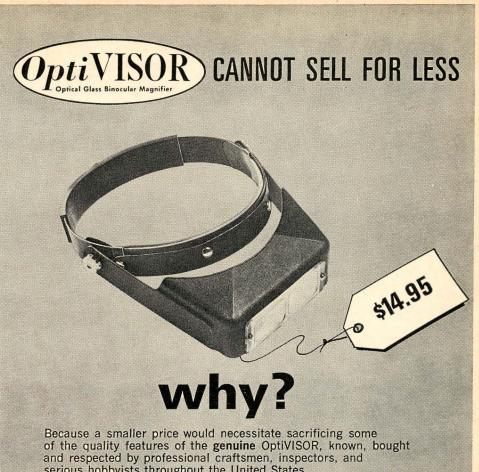
Whether more is found or not, and no matter whether what has been found goes to universities, museums, professional or amateur collectors, the people of Murchi-son will long remember the day the meteorite fell. It seems a pity that in a few years all that will remind us of this exciting event will be a printed record of the Murchison carbonaceous chondrite.

Upon reading of the meteorite and hearing many accounts of its fall, we could hardly wait for the weekend to come so that we could drive to Murchison and join in the search.

Sunday dawned at last, and I set off with my wife, Patricia, and our two year old son, Ciril. We soon left our home town of Melbourne far behind, and drove past mile after mile of the countryside we love so much. The rolling hills were still dressed in their prettiest green, and the sheep and cows were fat from their lush pastures. All the while, we were thinking of the pieces of meteorites we hoped to find, lying hidden in the grass.

A signpost said "Murchison 3 miles." We couldn't wait any longer. I pulled the car up with a jerk, and we clambered out to begin our search. Patricia and Ciril peered into the grass on one side of the road, and I searched on the other

(Continued on Page 40)



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(Continued from Page 37)

side. The grass was high, and any pieces of the meteorite were certainly well hidden, but this did not deter us in the least. An hour passed, and our search was fruitless, so we decided to drive into the township and look there.

First we came to Murchison East, and all that we saw there was a petrol station, one or two houses, the railway yards, and of course a "Pub" and towering over all the buildings were wheat silos. We stopped to talk to the owner of the petrol station, and he gave us a graphic account of Murchison's eventful week. He suggested we continue our search along the side of the road leading to the main Murchison township.

We took his advice and started down the road. After going about ½ mile we saw two men and a little girl pacing up and down a newly mown paddock. We stopped to say hello, and sadly one of the men told us that his paddock had yielded no meteorite, however, he told us that many of his neighboring farmers had been more fortunate and had found considerable amounts of the meteorite.

We drove a little farther, then stopped to resume our search beside the road. This time we all stayed together, as the grass was even higher here, and behind the flimsy-looking fence was a large bull who eyed us suspiciously, snorted, and pawed at the ground. Patricia kept little Ciril well back from the fence as he was saying "Moo-cow!" and was eager to have a closer look.

With our eyes glued to the ground we walked up and down, but to no avail, so we left the bull, who by now had completely lost interest in the weird humans tramping outside his paddock, and set off again.

The main township of Murchison lay just over the river, and it is much larger than the cluster of buildings in the East. We stopped for a cool drink, then started to look for an orchardist, whom we had been told would be able to help us locate some pieces of the meteorite.

After taking several wrong turnings, we eventually found what we were looking for — an orchard with a pink house. We drove in, and our arrival was heralded by the dogs barking. Mr. and Mrs. Eliason made us very welcome, and introduced us to their daughter Betty, sonin-law Ted, and granddaughter Deborah. Mr. Eliason disappeared for a moment, and returned proudly holding pieces of the meteorite he had found after many hours of walking. These were the first pieces we had seen, and eagerly we held them, and smelt their unusual odor, marvelling at the fantastic distance they had travelled to reach our Earth, and the mystery of their origin. The smell of a leg of lamb roasting brought us back to earth, and we were very happy when Mr. Eliason offered to help us in our search after lunch.

This time there were two car-loads of people, and with our hopes even higher we stopped on a back road. We all began to search systematically, however the children soon became tired so Patricia

found them a shady pond where they could play and splash while she kept one eye on them, and the other on the ground

still looking for a trace of the meteorite.

The rest of the party tramped up and down while the sun slowly worked its way across the sky. The perspiration began to trickle slowly down our faces, but it went unnoticed, as all we were thinking about was the meteorite.

Suddenly Mrs. Eliason let out an excited yell, "Here's some!" We all ran to look — it was only a small piece but our hopes soared high again and we kept looking. Up and down we walked, our backs beginning to ache now, but we were unrewarded.

The sun was low in the sky when we returned to the cars. We all sat by the roadside and had a well earned cup of tea and talked until it was time to say goodbye, then all looking dirty, and feeling tired, we tumbled into our respective cars. The Eliason's headed back to their orchard, and we turned towards Melbourne.

Four miles down the road we stopped again. We couldn't go home empty Up and down we walked only a little slower now, but the daylight turned to dusk and our hopes faded too. Home we went, a little disappointed, but by no means giving up.

We decided to return the following weekend, and hoped our luck would be better then. Monday and Tuesday dragged by, and then on Wednesday I had a chance to return to Murchison with a friend who

(Continued on Page 42)

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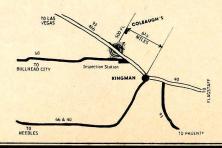
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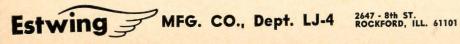




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agreed to help me. This time we were determined the meteorites would not elude

Again it was a hot day, and the sun seemed to be trying to discourage us. Again we tramped up and down, but the morning passed and our pockets were empty. We stopped for a lunch of fresh bread, smoked sausage and a cool drink,

and then felt ready to resume the hunt.

Back to the tall grass we went, and then as we walked along, I saw something black down there. Maybe it was only a shadow, but I reached down — it was solid. I straightened up. "Eric!" I yelled, "Look!" And there in my hand I held it - a piece of the meteorite - and I had found it. Excited and happy we continued our search, and we were lucky again and found two more pieces before the sun dipped down in the West and told us it was time to turn for home again.

Patricia was waiting when I walked in the door, and she could see from my face that this time I had been lucky. We found a piece of bright orange satin, and placed the meteorite pieces in a place of

honor in our mineral collection.

Now that we had a piece of the meteorite some of the urgency had gone from our mission, so we arranged that our trip to Murchison at the weekend would be more in the form of a picnic with our very good friends Athol and Gwen Jenkins who run a rock shop in the busy country town of Shepparton.

We met Athol and Gwen Jenkins by the railway yards at Murchison East. Patricia had brought her camera this time, and was keen to photograph the railway yards, the township, the countryside, in fact everything connected with the fall of the

meteorites.

We toured around Murchison again, stopping to look for a piece of the meteorite at the golf links, and beside some irrigation canals. Then we found the hay-shed that had been 'bombed' by the meteorite, and saw its punctured roof. All the farmers were eager to have a chat about the meteorite, and show us any pieces they had been lucky enough to find.

As we were driving along a dirt track we saw a large flock of sheep blocking the road ahead. We stopped and pulled to the left to let the sheep pass, but we couldn't let the drover pass by without having a talk with him too.

As the afternoon progressed we spent more time combing the grasses, but we were not so lucky this time, and bade our friends farewell without finding another piece.

We left Murchison far behind as we drove towards home, and we were feeling very light-hearted. We had three pieces of the meteorite in our collection, we had photographs, and we had two very happy weekends to remember.

#### Technical Data

Although comparatively rare, the carbonaceous chondrites occupy a place of great importance among the known meteorite types This is because of the peculiarities of their mineralogical and chemical composition, especially the presence of hydrated minerals and organic compounds.

All the carbonaceous chondrites di covered have been seen to fall and picl up shortly afterwards - if left exp

to the elements they soon disintegrate owing to their friability and water soluble compounds.

The first discovered carbonaceous chondrite fell at Alais (France) in 1806. It caused great excitement as it was so different from other known meteorites.

The next recorded fall was in Italy in 1824, and altogether some 20 carbonaceous chondrites have been discovered including three in the United States in 1936 (Crescent, Oklahoma), 1950 (Murray, Kentucky) and 1961, (Bells, Texas).

Carbonaceous chondrites are easily distinguishable from other types of meteorites as they are a dull black color, sometimes with a greenish tinge, and are coated with a black fusion crust. They are friable, generally of low density, and are usually found in fairly small pieces. Carbonaceous chondrites have almost no nickel-iron content, but have a high content of inert gases, especially xenon.

In 1956 an eminent scientist (Wiik) chemically analysed all of the available carbonaceous chondrites and found they could be classified into three groups according to the average values of certain constituents, namely — Silicon Dioxide, Magnesium Oxide, Carbon, Water and Sulphur.

Type 1 have a low density, consist mainly of amorphous hydrated silicate and are strongly magnetic. Much of their sulphur is water soluble sulphate.

Type 2 are largely made up of serpentine. They are weakly or non-magnetic and much of their sulphur is in the free state.

Type 3 Density is 3.4-3.5 and they consist mainly of olivine with accessory pigeonite.

The first two types have never been found as large stones owing to their friability.

The rarity of carbonaceous chondrites

The rarity of carbonaceous chondrites has made scientific research difficult, and the Victorian Universities and museums are collecting all the specimens they can possibly obtain.

Most of the known facts on the chemical composition of the carbonaceous chondrites are due to the work of the scientist Wiik, although some anomalies have now been discovered in his work, and his analyses should now be revised. However the analysis of this unique material presents many problems for the scientist.

The presence of organic compounds in the carbonaceous chondrites was discovered in 1834 when the first found meteorite of this type was analysed. During the remainder of that century a considerable number of papers describing these occurences were published.

Some of the organic compounds can be extracted from the carbonaceous chondrites by the process of converting the substance to vapor and then allowing it to solidify, or by solvents like alcohol, ether or benzene. The extractable amount of organic compounds however is seldom more than 1%, therefore these minute amounts have made positive identification of the organisms impossible.

The presence of the organic compounds has caused much speculation as to whether life forms exist at the source of the carbonaceous chondrites. The most recent research indicates that the organic material was formed by non-biological processes, however many scientists still dispute this view.

The carbonaceous chondrites are thought to originate from the asteroid belt between Mars and Jupiter, and because of the chemical and mineralogical similarities between the three different types they are thought to have all derived from a common parent material.

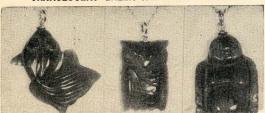
The carbonaceous chondrites are certainly most exciting material for the scientist, and in fact for us all, and we hope the specimens found at Murchison will bring new scientific discoveries about these mysterious meteorites.

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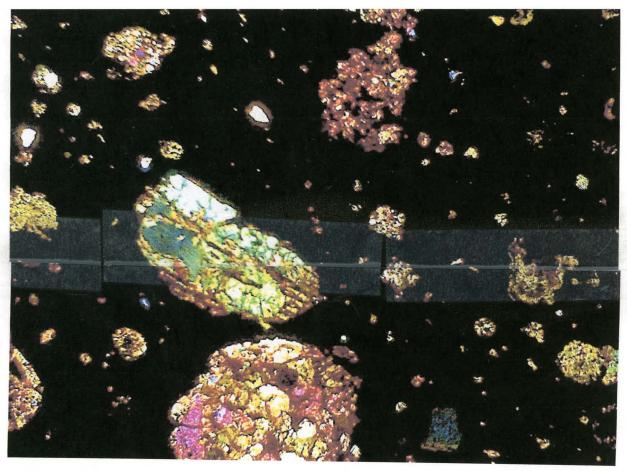
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