

PRELIMINARY NOTES ON CLEBURNE AND KIRBYVILLE METEORITES

By Oscar E. Monnig

Acting upon Mr. H. H. Nininger's dictum that every county has its meteorite, which might be found if only enough interest in the subject can be aroused, the writer began giving the topic as much publicity as possible in this immediate region of Texas in the fall of 1933. The results in 1934 were two heretofore unrecorded Texas meteorites. In each case the possessors knew the true character of the objects, which were being properly preserved, but neither meteorite had ever been scientifically recorded or studied.

Cleburne

The first of these was found in Johnson County, Texas, not far south of Ft. Worth. The location of the find is at about $32^{\circ} 23'$ N. latitude, $97^{\circ} 23'$ W. longitude, a point on the J. W. Haynes Survey, about one-half mile east of Noland's River and 5.5 miles northwest of Cleburne by road. It has been deemed advisable to name it the "Cleburne" meteorite because Cleburne is the nearest town of any consequence, and because the meteorite has been there and known there for some years.

On a fall day in 1907 (perhaps a year earlier or later), Mr. Rufus Anderson set out to clear a "cluster of set rocks" on his $64\frac{1}{2}$ A. farm. The locality is in the stratigraphic subdivision known to geologists as the Main Street Limestone, a formation in the Lower Cretaceous, and the abundance of the limestone rocks made the field in question unfit for cultivation until at least the worst of them had been removed. He used a heavy crowbar, and after most of the rocks had been taken out, his 14 year old son, Chester, continued knocking around the hole with the crowbar, when his attention was attracted by a

"black rock". The father was sitting on the opposite side of the large, shallow hole they had dug, with the sun to his back, and as Chester struck at the "black rock" and hit it with his crowbar, Rufus Anderson saw a flash of steel in the sunlight. The surprising object was at once excavated.

When the meteorite was found, it was barely protruding from the general ground surface, with perhaps two-thirds of its upper faces showing. In shape it is a low cone, and the base (the side to the rear in flight?) was downwards. The sides of the cone are irregular, and one especially large, flat side was laying just south of and in contact with the bed of rocks being removed.

At first there were excited thoughts of the strange object perhaps being a part of or a marker to a treasure. Noland, an adventurer said to have gone thru this region on his way from Florida to California during the gold rush, and slain near here on his return journey, was thought by some to have had riches with him, and the nearby river is named for him. Accordingly, Anderson used a pick and a crowbar to dig a further hole around the spot where the meteorite was found, two to three feet deep, but nothing further was discovered. It was ^{not} ~~was~~ long until he realized that the object was probably an iron meteorite, and Chester Anderson, proudly claiming it as his "meteor rock", displayed it to all the neighbors. Anderson farmed the land for about 10 years afterwards, and estimates that he hauled away 40 or 50 additional loads of rocks, all the while watching for other meteorites, but none was found. He has since always lived near the community, but has heard of no further finds. On a field trip which the writer made to the point of fall, inquiries from present inhabitants brought out the same negative results. The region is fairly intensively

cultivated, but there are some wild spots. The foregoing circumstances militate against the probability of other related meteorites being found.

Chester Anderson, the actual finder of the meteorite, died the following spring. His father has kept the object ever since. Shortly after its find it was exhibited at a Johnson County Fair, but took only second prize, being exceeded in interest by an ancient family Bible in the eyes of the judges. In later years, Anderson made contacts with two universities in Texas and with a national institution which collects meteorites, but because of peculiar circumstances did not dispose of his find to them.

The mass is an iron with the shape of a poorly-formed, low cone. The base to some extent follows the lines of a triangle with sides of about 13 cm., and the height of the cone is about 8 cm. Thumbs-marks are present, but are smooth-edged and not very conspicuous. Originally the object is claimed to have weighed 15 pounds, but some portions were once cut off with a cold chisel and much labor by a local blacksmith; the fragments were apparently used, in the main, for submission to a buyer of old gold and precious metals, who never reported further. These deductions result in a present weight of 14 pounds, 9 ounces. (6.6 kgs.).

The scars inflicted by the blacksmith reveal the octahedral structure of the iron by natural cleavage. One little isosceles triangle with sides of about 5 mm. is a particularly neat exhibit in this respect. Other artificial deformations of the object consist of several battered corners, including the peak or top of the cone, which were severely hit with a hammer in efforts to break the iron shortly after it was found; and several small flat areas on the natural base,

where the crust has been worn away and the metallic interior revealed by constant sliding of the iron on surfaces where it has stood. One of these small areas, a little less than one square centimeter, was polished and etched, and shows a fine octahedral structure, with lines about one-half millimeter wide. The iron will therefore probably be classified as a fine octahedrite. (Of).

The crust is in general not a deep black, but rather a moderately dark brown. It is relatively thin, as is shown by the easy wearing away of the flats spots mentioned above, and as further shown by an area of several square centimeters where a tin-white color is quite noticeable, almost certainly indicating the presence of schreibersite.

In as much as the exact location of the famous Red River (sometimes called "Cross Timbers") and Wichita County (or "Brazos River") meteorites of Texas has never been ascertained, but has been placed by some authorities in the region of the present find, it is worth pointing out that if classification on the basis of interior structure is taken as a guide, the Cleburne meteorite cannot be related to these old finds, as they were medium and coarse octahedrites, respectively, while the Cleburne iron is clearly a fine octahedrite.

Kirbyville

The second meteorite to be treated, while obtained as a result of local publicity, came from a more distant region of Texas. Mr. Gordon Grimes, of Ft. Worth, having seen a display of meteorites here and knowing our interest in the subject, recalled a meteorite in the possession of his relatives in East Texas. This turned out to be a small but almost perfectly preserved stone meteorite from Jasper County, Texas. The exact point of fall is on the J. W. Morgan 40 A.

tract, in the southeast portion of the Calvin Donahoe 320 A. Survey. This is 11.8 miles south of the square in Jasper, Texas, along the new Jasper-Kirbyville highway; thence 0.5 mile east along the lateral road to Roganville. The latitude and longitude are approximately 30° 48' N. and 93° 56' W. Roganville is only a very small lumbering town, while Kirbyville is larger and better established. Hence the meteorite has been named "Kirbyville".

On the afternoon of Nov. 12, 1906, at about 3.30 C.S.T., Thomas W. Morgan, familiarly known as "Bud", and his uncle, Jerome Davis, were building a sugar furnace in the yard in back of their house, which is just south of the road at the location identified above. J. W. (Wallace) Morgan was in the front yard of the same place, some 75 or 100' away from the others, and north of them. Also on the premises were Mr. and Mrs. John Morgan and their daughters, Manda, Laura, and Lora. Some of these were probably in the house. Of these nearby witnesses of the fall, only the three daughters and Wallace Morgan are still living, and all have been personally interviewed.

As nearly as these immediate witnesses can recall---a modification which must necessarily apply to all of the details, after the lapse of so many years---the day was clear. There was suddenly a noise "like a buzzard coming down", and the meteorite was seen to strike the ground only a yard or two from the foot of a stump (still intact) some 40 or 50 feet from where Jerome Davis and "Bud" Morgan were standing, and between a barn and the house. Bud immediately ran over and dug or scraped the meteorite out of the ground with his hand. The surface was a soft, loose sand; the meteorite had penetrated only a few inches, not over 6, and more likely 3 or 4. He at once carried it to the house,

some 25 feet away, and put it into a pan of water. Mrs. Laura Willingham (nee Morgan) states that it "fried", and others confirm this fact; obviously, to them, Bud immersed the stone because it was hot, and yet they cannot recall that he had any particular difficulty in handling or holding it. He subsequently broke off a portion of the crust to examine the interior.

As a matter of speculation, it seems worth while to note that since the physiological sensations of heat and cold are easily confused, Bud Morgan might have only thought the stone was hot, when it was really uncomfortably cold. Or perhaps it was uncomfortably warm, the modern authorities throw great doubt on such a possibility. The "frying" is more difficult to explain. A bubbling action in the case of freshly-formed meteoric glass is hard to conceive; but thin cracks now showing in the crust might have permitted water to get to the interior, displacing gases. Or if the meteorite was actually warm, the sudden cooling and contraction caused by contact with the water might expel gas bubbles thru cracks.

In the front yard, Wallace Morgan heard the sound as a "popping noise" such as he had never experienced before, something like "guns shooting, but a little keener". All the others on the premises insistently confined their description of the noise to a comparison with a buzzard descending, and resisted suggestions of "whizzing", "roaring", or "whining". Those who have heard a buzzard swoop down are aware of the uniqueness of the sound, which is but poorly described as between a whirr and a muffled whizz. The direction from which the noise apparently came is not clear, but is thought to have been southwest, some inclining to south, others to west. In general, the sound seems to have been heard in the community to the west, possibly as far away

as 10 miles (near Magnolia Springs). A cotton picking party, including Abe Jerome, was off to the southwest about 3½ miles, and heard it "pass over" or "heard a roar". Noah Davis, who was about 2 miles off to the west, was interviewed personally; he described the sound as a "roaring", and later used the adjective "whizzing", but he saw nothing.

Of all the parties talked to, none remembers seeing a fireball or daylight meteor; no smoke train was seen; and no one saw the meteorite itself falling. Is it possible for a daylight fall to occur without visual phenomena? This case is some evidence of a positive answer.

The year is certain, being fixed by reference to the death, in the following year, of the man who picked up the meteorite. The month is fixed by reference to the activity of syrup making, as well as other memories, but might have been October. The day might be in error by as much as a week, but Mrs. Wallace Morgan gives the accepted date with great positiveness. In spite of the fact that the fall took place near the Leonid epoch, there can obviously be no connection as the radiant was well below the horizon at the place and time.

The region of the fall contains much cut-over timber land which has never been cultivated; therefore the chances of finding additional material from this fall still exist, tho admittedly small. Surface rocks, either as detached stones or outcropping ledges, are rare in the immediate vicinity, which is a favorable factor. The surface geology is the Citronelle and Fleming groups of the Pliocene and Miocene (Cenezoic). This is the first meteorite to be recorded from a large area of Southeast Texas.

The beautiful preservation of the stone is a credit to the family which has possessed it. It weighs 97.7 grams, and has the general shape of an irregular truncated pyramid. The base of this pyramid,

about 4 by 4 centimeters, is by no means flat, but has a marked, the small, knob in the center, several ridges, and several well-marked areas where material has been removed during the fusing process--"pits" in a very broad sense. This base was apparently the brustseite, as the flow lines clearly originate on it, curving away from the little central knob, and "spilling" beautifully over the edges and back along the sides of the pyramid. Two of the pyramid sides are roughly in planes at right angles to each other, but the other two are combined in a gentle, sweeping curve. The pyramid is about $3\frac{1}{2}$ cm. high. Its truncated top is rectangular, about $2\frac{1}{2}$ by 2 cm., concave, well marked with small pits, and beautifully encrusted. This was apparently to the rear in flight, and is smaller than the assumed brustseite.

The crust is typically black and shines beautifully, especially at what was apparently the rear side in flight, where it is thickest and blackest. Where the crust is thin, as on the forward side (pyramid base), it has a brownish cast, perhaps a result of handling or deterioration. About 4 square centimeters of the crust, and perhaps a very small portion of the original meteorite, is missing; the major breaks are on two corners and along the edge joining them. As these are on the side which was forward in flight, the crust might have here been weakened by its impact with the ground.

The exposed interior seems relatively hard; it has been mostly dirties thru handling. It is obviously a gray in general color, and examination with a 10x hand magnifier shows tiny black particles in a white groundmass. Showing thru the crust are numerous tiny yellowish to brown globules (olivine?). Sparkling flecks, possible metallic, can also be seen, but no rust spots have developed. Eight X-ray photographs of the stone, taken with exposures ranging from $\frac{1}{4}$ of a second

to 4 seconds, with peak kilovolts ranging from 70 to 100, and with a current of 10 milliamperes, do not reveal any definitely recognizable signs of metal. An X-ray cassette with a double fluorescent screen was used. The stone is not well adapted to such an experiment on account of its squarish shape. Altogether, however, it seems that the metallic content is low.

Both of the above meteorites are now in the collection of the Texas Observers, a group of amateur astronomers at Ft. Worth, Texas. Final arrangements for cutting and analysis and detailed mineralogical descriptions have not been made.

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