

A METEORITE FROM ALLEN, COLLIN COUNTY, TEXAS

Abstract: A description of the circumstances involved in the finding (1923) and identification (1938) of an aerolite from near Allen, Collin County, Texas, is given. The stone is an essentially complete individual of 1409 grams (a little over 3 pounds) with a dominant exterior color of dark gray, looking like a relatively recent fall. Yet it is known to have been outdoors most of the time from the date it was picked up until its identification, and has travertine deposits on what were presumably buried areas of the surface. The point of find is about 6 miles from that of the McKinney, Texas, stones, but the Allen find is differentiated from these. It is definitely a chondrite and is tentatively classified as a Crystalline Chondrite, Veined. It is moderately metal-rich, from macroscopic examination and a check with an Al-Ni-Co magnet.

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A METEORITE FROM ALLEN, COLLIN COUNTY, TEXAS

The finding, identification and preservation of the Allen, Texas, meteorite is a chain of circumstances with several links so thinly forged that the story constitutes a sort of complex miracle of Fate.

The motivating element in the finding was the usual combination of intelligent interest and information. Mr. Willie Chandler of Allen, Texas, had read a magazine article on meteorites. He had picked up an unusual stone on his 160 acre farm in the J. Baccus Survey at a date not capable of being fixed precisely, but after the first World War, and probably within 4 years of 1923, one way or the other. The stone was finally thrown under a tree with a pile of miscellaneous articles in his yard. He does not recall specifically how or where it was found, but his farm is on a small tributary of West Rowlett Creek, 4 3/4 miles N. W. of Allen, Collin County, Texas. From a Texas State Highway map we take the co-ordinates of the find to be $96^{\circ} 45'$ W. long. and $33^{\circ} 07'$ N. lat., probably correct to within less than 1' of arc. The assigned coordinate number is hence 0968331. This point is about midway between the small towns of Allen and Frisco, but several circumstances made the designation Allen preferable and the name does not seem to have been pre-empted in meteorite catalogs.

Chandler first thought of submitting the specimen to the Texas Agricultural and Mechanical College, which he had attended, but thru procrastination more or less lost track of the stone. On one occasion in the winter of 1937-8, however, he went down the creek on his property to clear away some brush which had

blocked it as a result of heavy rains sweeping materials down the narrow outlet, and among other things again picked up this peculiar rock! Presumably it had been thrown into the creek by visiting children or in some other accidental way, and he rescued it with the firm resolve to take it to some authority for checking.

On a subsequent trip to Dallas, he put the meteorite in his car, intending to consult some one at Southern Methodist University, but business errands made him late and he failed to stop. Finally, he took it with him on a trip to Denton, Texas, in October, 1938, where he went by the Chemistry Department of the North Texas State Teachers' College for information.

(The writer enters the story thru "indoctrination" at this point. I had made a considerable but futile search in Denton County for further information on the Denton County, Texas, iron meteorite, and in the course of a publicity campaign made speeches, among others, before chemistry groups at the college under charge of Dr. J. L. Carrico, who became especially interested in the general subject.)

When Chandler went in to show the stone, it was compared with some bits of Canyon Diablo iron. Because of the obvious failure of the specimen to match these, he was about to be sent away with a verdict of "Not proven", when snatches of the conversation and the word "meteorite" reached Dr. Carrico's ears in an inner office. He emerged, caught Chandler in the hall, and examined the stone.

The more he looked at it the more he became convinced it was an aerolite. He finally tested the density by simple water dis-

placement, and when this came out about 3.6, Carrico was practically certain of the meteoritic nature of the stone. I was informed of the piece Nov. 12, 1938 and went to Denton to see it the next day.

The meteorite is a practically complete individual stone, and weighs 1409 grams or 3 pounds, 2 ounces. The original finder had once knocked a chip off about 2 x 3½ cm. and more recently it had been struck a hard blow with a hammer. Luckily the stone is apparently very sound and the blow glanced, resulting in the detachment of only a very tiny chip. A few corners and vulnerable spots show other very slight breaks.

The meteorite is remarkably well preserved, especially considering the vicissitudes of fortune it has encountered. A most surprising feature is that the dominant tone of the exterior color is a dark gray; while there is a general tendency to rusting, it is sufficiently confined to scattered spots and small areas to make the outstanding color gray instead of brown. The gray tone would lead one to infer a lesser age than the story obtained indicates; indeed, at first inspection, the writer thought the stone surely represented a recent fall and could hardly have been in the soil over 5 years. All my experience, however, has constantly tended to make me revise age estimates of meteorites upwards--"age" being here used in the sense of elapsed time since the object's fall.

Several faces and portions of faces are mildly covered to heavily spotted with travertine--presumably the lower parts of the rock as it lay in the soil. The "Austin chalk" group of the Upper or Gulf Cretaceous Series prevails in the region of the find and there is a superabundance of limestone dominating the surface geology.

Considering all the circumstances, the writer is inclined to think that the travertine on this meteorite could have been deposited thereon in a relatively short time, perhaps even a year or two.

In shape the stone is roughly confined within the outlines of a right triangular prism. The natural base is somewhat concave, the central portions being a centimeter or more higher than the corners of this triangular side, which project downwards as "legs" as the stone rests on them. One corner projects laterally about 2 cm. This base and the lower third of an adjoining side, A, are covered with relatively uniform and small pits (1 cm. or less in diameter and only a few mm. deep); it is suggestive of the region to the rear in the last stages of the melting flight. These pittings are apparently rused rather heavily but are mostly covered and concealed by the thickest and whitest of the travertine, which, however, probably nowhere attains a thickness of over 1 mm.

The side, A, which has ~~xxxxxxx~~ similar pittings and travertine on its lower (concave) portion has a quite different (convex) upper half or more, dark and smoothly rounded. This general condition extends around to an adjoining side face, B, which is perfectly smooth and flat except for a gentle curvature around an upright edge that divides it into two unequal sub-faces.

Making a sharp, right-angles turn, this same sort of surface continues on the adjoining lateral surface, C, which is practically a flat, smooth parallelogram $3 \times 6\frac{1}{2}$ cm. The rest of this side, C, is apparently a broken, concave surface with a few broader and gentler pits, and turns abruptly to another similar facet which could be considered as belonging to either this face, C, or the next lateral surface, A. This intermediate area in fact represents the

upwards and sidewise extension of the "projecting" corner of the base mentioned above. We have thus described sides, A, B and C, with a portion that may belong to either C or A or be taken separately.

The top of the stone, as it rests in a natural position, in part probably represents the brustseite and is the most oddly pitted or ridged face and probably the most irregular surface. The pits tend to be surrounded by right-angled ridges which protrude as much as a centimeter, and such projections are offhand more conspicuous than the pits of which they are really an incident. Flowage is practically non-discernible but may be inferred to some extent. Some of the crust, especially on this upper side and the adjoining edges, may be the black original--not dark black now, but a gray-black. A certain amount of handling, in exhibiting the stone, has perhaps made it a trifle darker--meteorites always tend to assume a sort of hand-polished surface from the natural grease and rubbing of palms when they are passed around for examination.

The older chipped-off portions reveal an interior which seems light-colored in three areas, one especially large, but one or two old breaks seem to show dark interiors. This led to an idea that the stone might be brecciated, which is still possible but not confirmed when an area about 2 cm. square was ground and polished on one of the older fractured (dark) ~~xxxxxx~~ spots. A relatively uniform brownish-gray interior, moderately dark, was revealed. Inspection with a hand lens gives an impression that the brownish (oxidized?) areas have a slight red-

dish tinge, while the gray portions present a bluish cast. A few very irregular veins show up in properly reflected light. They shine peculiarly, like graphite; near the edges of the polished section a few are worn down into open cracks, as though the vein material had been ground out or weathered away. There is some tendency for the reddish-brown areas to follow the veined areas.

From the attraction which the stone had exhibited towards an Al-Ni-Co magnet, it had been inferred that it was fairly metal rich. The polished surface did not reveal as much metal as was expected and shows only a fair average amount. The nickel-iron specks are mostly very small; the outstanding one is slightly under 1 mm in greatest dimension. The troilite is smaller, but seems nearly if not actually as abundant as the nickel-iron.

A thickly crowded group of chondrules is revealed, relatively uniform in size range and mostly very small. Three or 4 quite noticeable naked eye, and perhaps as many more found with a hand lens, are just a little over 1 mm. in diameter, but the great host of them are tinier. At least two of the largest ones have a slight greenish tinge suggestive of olivine; one of these has a central round core. Most of the chondrules seem to be enstatite, and it is mostly this material, both in chondrules and in the background material (shattered fragments?) which seems to be bluish-gray. One enstatite chondrule is clearly porphyritic and the fragments in it have a peculiar luster which makes it conspicuous. A wide variety in the structure of the chondrules can be inferred, though probably nothing unusual.

These facts indicate a probable classification as a Crystalline Chondrite, Veined (Cka): "hard, crystalline, veined mass with firm chondri of radiate structure, breaking with matrix".

On many grounds the Allen find is distinct from the McKinney, Collin County, Texas, aerolites. McKinney is classified as a Black Chondrite (Hypersthene), Cs: "dark or black mass, chondri of various kinds breaking with the matrix". Merrill, in his descriptions of it, harps on the black coloring material which everywhere infiltrates it. It has some very large chondrules. Its crust is old, yellowish and limonitic. A careful comparison of the Allen stone with a slice one of the McKinney stones in the Texas Observers' collection indicates no point of similarity.

It should be of incidental interest and value to record the fact that the McKinney, Texas, meteorites were probably found near the former settlement of Foot, about $5\frac{1}{2}$ miles west of McKinney. Their co-ordinate number would be 0967332, and the point of find was very close to $96^{\circ} 43'$ W., $33^{\circ} 12'$ N., which is $6\frac{1}{4}$ miles N. E. from the adopted point of the Allen find. To show how near and yet how far one may be from a meteorite discovery, I had made a considerable canvass of the Foot region in search for more McKinney specimens prior to 1938, and had made inquiries for meteorites within less than 4 miles of Chandler's farm---yet never stumbled into any word about his meteorite!

The Allen stone has been previously listed in Barnes' Catalogue of Texas Meteorites and in Addie D. Nininger's Second Catalog of Meteoritic Falls Reported to the Society for Research on Meteorites (Pop. Ast., April, 1939).

Photographs never show such objects very satisfactorily. What is needed is at least a stereoscopic view to give some of the three-dimensional effects. Nevertheless, we offer some reproductions which should show some of the features mentioned.

Two trips of inquiry have been made in the neighborhood of the Allen find, and the stone shown, in an effort to locate additional pieces of the find, but with entirely negative results to date. The last trip was made Dec. 7, 1941.

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