

THE METEORIC IRON WHICH FELL IN JOHNSON COUNTY, ARK.,  
3.17 P. M., MARCH 27, 1886.

By GEORGE F. KUNZ.

[With Plates XXXVI—XXXVIII.]

The Johnson County meteoric iron, the latest whose fall has been observed, is of more than ordinary interest, because its fall is so well substantiated. It is the largest mass ever actually seen to fall; and it is noticeable that it fell within five months of the date of the last previous authentically\* recorded fall, that of the Mazapil iron. It is almost an exact counterpart of the larger of the Hraschina (Agram), Croatia, meteoric irons, the first of the recorded falls. The Agram iron fell in two fragments, one weighing about 40 kilos (88 pounds) and the other about 9 kilos (19.8 pounds), the combined weight being about equal to that of the Johnson County iron. The latter was lost at the time.

This mass fell about 6 miles east of Cabin Creek (now Lamar, see Plate XXXVI), Ark., in longitude  $93^{\circ} 17'$  west of Greenwich, latitude  $35^{\circ} 24'$  north, within 75 yards of the house of Christopher C. Shandy. Cabin Creek is on the north side of the Arkansas River. Mrs. Shandy states that about 3 o'clock (at 3.17 p. m. exactly) on the afternoon of the 27th of March, 1886, while in her house she heard a very loud report, which caused the dishes in the closet to rattle, and which she described as louder than any thunder she had ever heard. At first she thought it was caused by a bombshell, and ran out of the house in time to see the limbs fall from the top of a tall pine tree, which, she says, stands about 75 yards from her dwelling. She did not investigate the matter until her husband came home about 6 o'clock in the evening, when, in company with John R. Norton, their hired man, they went out to find the cause of the noise that had so startled Mrs. Shandy. They discovered that a large hole had been made in the ground by some falling object, and that the fresh earth had been thrown up to a height of 30 feet on the surrounding saplings and trees. They dug down, and a steam or exhalation arose, which on a dark night might perhaps have produced a phosphorescence similar to that described in the case of the Mazapil iron. The iron had buried itself in the ground to the depth of 3 feet, and the earth around it to the thickness of one inch seemed to be burned.

The ground was still warm when the iron was taken out, and the iron itself was as hot as the men could well handle. The weather had been

---

\* This meteorite was first mentioned before the New York Mineralogical Club, February 2 (New York Academy Science, March). The irons whose falls have been recorded thus far, are: Agram, Croatia, May 26, 1751. Charlotte, Dickson County, Tenn., August 1, 1835. Brannau, Bohemia, July 14, 1847. Tabarz, Saxony, October 18, 1854. Victoria West, Africa, 1862. Nejed, Central Arabia, spring of 1865. Nedagolla, India, January 23, 1870. Rowton, Shropshire, England, April 20, 1876. Mazapil, Mexico, November 27, 1885.

quite cloudy all day, but no rain fell until night. These facts are from the affidavits of Mr. and Mrs. Shandy and John R. Norton. Mr. Shandy at first supposed that their find was platinum, then silver; he finally learned what it really was and sold it. Mrs. India Ford, Dr. W. J. Bleek, Mr. S. A. Wright, constable, and Mr. L. Wright, chief of police, also heard the report caused by the fall.

The noise was heard 75 miles away, and was likened to a loud report followed by a hissing sound as if hot metal had come in contact with water. It caused a general alarm among the people, and teams of horses 25 miles distant, becoming frightened, broke loose and ran away. In Webb City, Franklin County, on the south side of the Arkansas River, a number of bells kept on sale in a store are said to have been caused to tinkle.

Mr. B. Caraway states that he heard two loud reports at Alma, Crawford County, at 3 o'clock on March 27, 1886. The report was also heard at Russellville and in the adjoining county of Pope. The Democrat, of that place, April 29, 1886, says:

The wonderful meteoric stone, as it is called, but erroneously, for nothing is further from stone than it is, is now on exhibition here. We looked on the strange thing, and wondered what it was and where it came from. The noise it made when it struck the earth's atmosphere on the 27th of March and came whizzing to earth near Knoxville will never be forgotten, neither will any one who looked at it ever forget it.

A description of the mass then follows.

The Dardanelle Post of April 1 contains several articles and communications in reference to the explosion. The story of the local reporter reads as follows:

On last Saturday, the 27th instant, the people of this town were startled by an unusually loud report in the heavens, accompanied by a well marked and peculiar whirring or whizzing sound. Attention was first attracted to the northwest by the report, after which there seemed to be an immense and irregular body whiz toward the zenith and somewhat north of it, and there seemed to stop and whiz like ten thousand scalding hogs, and then, after another terrific report, to die away in the southwest.

Mr. R. E. Cole, whose experience is corroborated by a hundred others of this section, was in his garden at the time of the report. He immediately looked at his watch and noted the time, 3.17 p. m. He followed the sound, the direction of it, with his eyes, and had no difficulty in exactly locating the point where the body appeared to stop, and as the last report died away he noted again the time and found the lapse to have been three minutes. Nothing could be seen, owing to the clouds.

Our correspondents speak of it elsewhere, and Mr. Woolbright, of Gravelly Hill, who was in this week, said that the people of his neighborhood felt sure that it had fallen out in the mountains just north of them and were going to hunt it up.

D. W. McGuire, of Logan, about township 8, range 24 or 25 west, sent in to inquire after it, saying that it was north of him. Mr. Charley Littleton, up the Fort Smith Railroad, reported same as the others, but all agree that where the object seemed to stop and whiz was north of them. At last, yesterday, Mr. John Burkhead, who lives near Delaware, Logan County, came in to tell us that the meteor had fallen in Johnson County, 4 miles north of the mouth of Piney and on the east side of the creek in the Uncle Billy Norton settlement; that a man and his wife were standing in their yard and hearing the report turned their eyes in the direction and saw an object falling directly to the ground. They noted the direction by means of some trees and went in search

of the spot, finding it a short way out in the woods. They secured help and dug it from the ground, into which it had penetrated about 3 feet. It weighs about 110 pounds, is of a smoky color on the surface, but pieces broken off have a bright, metallic luster. We have been a little surprised at seeing no mention of the report in any of the daily papers, for it startled probably half of the population of Yell, Logan, Pope, and Johnson Counties. That it was a meteor there is little doubt, and that a fragment might have fallen somewhere is more than likely. Mr. Burkhead, whom we know to be perfectly reliable, has no doubt whatever that the facts are just as stated, though he could only vouch for it through a responsible neighbor, James Sirley, who saw a man who saw the rock itself. We hope to have more positive information and more definite details by next week.

A correspondent signing himself "Observer" writes:

EDITOR POST:

On Saturday at about 3 o'clock p. m., whilst wending along the road near Bluffton, a report in the heavens louder than a hundred pieces of artillery, and much louder than any thunder peal ever heard before, burst apparently not more than half a mile north of me. It was a sort of double explosion, and its reverberation rolled off in a southwest direction clear to the horizon. It was at the time a little cloudy all over, but the clouds were thin, although the smoke everywhere caused it to be dark enough to seem much more cloudy than it really was. There were scarcely any clouds where the explosion seemed to be. It could not have been thunder, for there was no apparent natural cause for thunder. What was it? It passed on to Gravelly Hill, 6 miles in the direction of where the explosion seemed to be located, but even there it seemed to the people of Gravelly that it was only a little north of them. The horses trembled and even the trees dropped their loose bark in places. Some who were standing still on the ground at the time say that they were violently shaken. My own horse was terribly frightened, and its rider felt very solemn for many minutes. What was it? What does it mean? Is it the precursor of the commencement of heavy rain-falls? Or is there a "strike" in the elements as there is a strike among the Knights of Labor? Who can tell us?

"Lorenzo," another correspondent, says:

SOUTHERN HOME, ARK., *March 31, 1886.*

EDITOR POST:

We had quite an excitement in our neighborhood last Saturday evening over a terrible noise in the elements. There are various conjectures as to what it was. Some insist that it was one thing and some another, but the Nestor of our community says emphatically that it was a "comic busted."

Accompanying the copy of the Post was a letter from the editor, in which he vouches for the reliability of all the witnesses of the phenomenon. He says:

Referring to the Dardanelle Post of April 1, 1886, I have the pleasure to inform you that Mr. R. E. Cole has been for a number of years sheriff of Yell County, is of superior intelligence, and in character above reproach. It is Mr. Cole who testified to the time, 3.17.

"Lorenzo," the correspondent writing from Southern Home, is Mr. James E. Nunn, a perfectly reliable witness.

"Observer" is Capt. H. P. Barry, of Fair Hill, Ark., perfectly reliable. Was nominee of the Greenback-Republican fusion ticket for State auditor in 1882.

D. W. McGuire, referred to in the Post's article, is a brother to the late M. M. McGuire, grand master of the State for the masonic order, and is himself of a class that makes his testimony unquestionable.

G. R. WILLIAMS.

The succeeding issue of the Post, April 8, suggests the meteorite which had been found as the probable cause of the explosion.

Mr. B. Caraway who visited the spot for me informs me that the pine tree through which the meteorite fell is 107 feet high, and that the distance from the foot of the tree to the center of the hole made by the mass is 22 feet 3 inches. The limbs on the west side of the tree were broken, and the meteorite lay in the hole with the flat side down. The hole was 75 yards from the house.

Prof. H. A. Newton, who has kindly interested himself in this matter, says that the data furnished indicate that the mass must have fallen nearly from the zenith. This was the direction of the end of its path, the earlier portion being more inclined to the vertical, as the path must be affected by gravity and the resistance of the air. The earlier direction must have been from the northeast and more nearly from the east than the north.

Mr. Shandy sold the meteorite to Mayor Caraway, who in turn sold it to Col. J. C. Betten,\* a lawyer of Eureka Springs, of whom the writer obtained it. Colonel Betten bought it as a business speculation, expecting to realize something of an income from its exhibition. While in his possession it was exhibited at Eureka Springs. Circulars† headed "The Tenth Wonder" were printed and circulated.

It was also called the "veritable wonder that was seen to pass through the sky, blazing, sparkling," etc. Twenty-five cents were charged for admission to look at it.

The mass is in general flat and very irregular, resembling a mass of molten metal thrown on the ground and then pitted. The illustration of the Agram‡ mass figured by Von Schreibers could be mistaken for the upper side of this were it not that this is larger. It measures 17½ inches (44<sup>cm</sup>) by 15½ inches (39<sup>cm</sup>), while the Agram measures 15½ by 12 inches. A high ridge, 5 inches high, at the highest point (12.5<sup>cm</sup>), runs through the center. One-half of the mass is not over 3 inches (7.5<sup>cm</sup>) thick, part of it is only 2 inches (5<sup>cm</sup>), and around the edge it is only 1 inch or less. It is only exceeded in size among the irons seen to fall by

\*Affidavits were furnished by the county clerk and the mayor of Eureka as to the trustworthiness of Colonel Betten and Mayor Caraway.

†The handbill reads as follows:

#### THE GREAT METEORIC STONE!

The meteoric stone that fell near Knoxville, Johnson County, Ark., on the 27th of March, 1886, is now on exhibition at ————

Everybody who desires to see a real substance from another world than this should not fail to take advantage of the opportunity.

This wonderful meteor is the finest of metal, entirely foreign to anything known to exist on this earth.

Go everybody and see this wonder before it is too late.

The price of admission is within the reach of all.

MORTON & MALONE.

‡"Beiträge zur Geschichte und Kenntniss meteorischer Stein- und Metall-Massen," by Dr. Carl von Schreibers, Wien, 1820, folio, platez viii.

the Nejed, Central Arabia, now in the British Museum, which fell in the spring of 1865, and weighs 59.420 kilos. The weight is 107½ pounds (48.752 kilos), and it is intact with the exception of three small points, weighing not more than 2 ounces in all, which were broken off. One of these is seen in the etched figure, another was sent to Professor Clarke by Colonel Betten to be analyzed, and the third piece was lost.

The two sides are wholly dissimilar (Pl. XXXVII, XXXVIII). In fact one would scarcely suppose that they belonged to the same mass. The upper side is ridged and deeply dented, while the lower side is flat and covered with shallow, but very large pittings. On top the color is in many places almost tin-white, without any coating whatever, and the pittings are very deep and usually quite long, like finger depressions made in potter's clay. These depressions measure from 2<sup>cm</sup> to 4<sup>cm</sup> in height and from 1<sup>cm</sup> to 4<sup>cm</sup> in depth. This side is remarkable for striæ showing the flow and burning and all running from the center toward the edge, identical with those in the Rowton, Nedagolla, and Mazapil irons, but on a larger scale. Some of them are thinner than a hair and yet twice as high (like a high knife-edge), and they are from 1 to 4 inches long. In one space of 5<sup>cm</sup> twenty are arranged side by side, and on one small part which is black there are fifty lines in 1 inch of space (25<sup>mm</sup>), all running in the same direction. Near all the pointed edges the fused metal has flowed and cooled so as to hang like falling water. The striæ and marks of flowing are around the edges of the upper surface (Pl. XXXVIII). On the under side the pittings are very shallow, but much broader, one depression, apparently made up of four pittings, being 20<sup>cm</sup> long and 9.5<sup>cm</sup> wide. The whole side is coated with a black crust, 1<sup>mm</sup> thick and having minute round bead-like markings. On one of the indentations of the lower edge the crust has a strikingly fused appearance, as if a flame had been blown on it from the other side. This edge is undoubtedly the place where a greater amount of burning took place when the body was passing through the air. Seven small bead-like lumps, from 5<sup>mm</sup> to 10<sup>mm</sup> in size, which are visible on this side, are drops of metal that were entirely melted and flowed and cooled so that they resemble drops of a thick liquid. There are also to be seen what appear to be cracks, fifteen in number and nearly as thin as a hair. One of these is 10<sup>cm</sup> long and extends from the highly fused edge above mentioned toward the center. The other cracks are from 3<sup>cm</sup> to 5<sup>cm</sup> long. These are so evenly arranged that they are without doubt "Reichenbach lamellen" in which the inner troilite has been burnt out. If such is the case they are as abundant as in the Staunton, Va., (East Tennessee)\* meteoric iron.

On the upper side ten nodules of troilite are exposed,† measuring from 33<sup>mm</sup> in diameter to 55<sup>mm</sup> long and 25<sup>mm</sup> wide. On the lower side there are twelve such nodules exposed, 13<sup>mm</sup> in diameter, while the largest measures 19<sup>mm</sup> by 39<sup>mm</sup>. On the upper side these nodules are coated

\* Phil. Acad. Nat. Science, December 23, 1886, p. 366, and American Journal Science, series iii, vol. 34, p. 473.

† A. J. Science, series iii, vol. 15, p. 337.

in spots with a black crust similar to that found on the mass, but on the lower side the crust extends completely around the side of the nodules, showing the fusion very plainly. The troilite is very bright and fresh, like a newly broken mineral, and on the upper side one of the nodules shows deep striation, suggesting that the entire nodule is one crystal and the exposed part is only one side of it. In some cases where the nodules were broken they were found to be iridescent. This is one of the octahedral irons showing the Widmanstätten figures beautifully on etching (see fig. 1), and is one of the Caillite groups of Stanislas



FIG. 1.

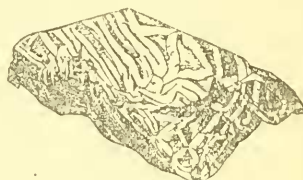


FIG. 2.

Meunier and of the *mittlere lamellen* of Brezina. The lamellæ are 1<sup>mm</sup> wide and the markings more closely approach the Rowton\* and Mazapil† irons. Figure 2 shows the etching on the surface of the unpolished exterior, there being no crust. The lower end of the figure, which is flat, was produced by the hammering off of the piece; but the etching is really finer where it was done on the natural surface of the iron. The specific gravity of the small piece figured is 7.773. Troilite, as before stated, is very abundant in the mass. Schreibersite and carbon have also been found between the laminae. Chlorine is present only in slight quantity, as scarcely any deliquescence has been observed.

The following is a comparative table of analyses of meteoric irons most nearly approaching this in composition :

	Charlotte. (Smith). <sup>1</sup>	Rowton (Flight). <sup>2</sup>	Esther- ville (Smith). <sup>3</sup>	Mazapil (Mack- intosh). <sup>4</sup>	Cabin Creek (Whit- field). <sup>5</sup>
Iron .....	91.15	91.25	92.	91.26	91.87
Nickel .....	8.05	8.582	7.10	7.845	6.60
Cobalt .....	.72	.371	.69	.653	trace.
Phosphorus .....	.06		.112	.30	.41
Carbon, sulphur, etc .....					.54
	99.98	100.203	99.302	100.038	99.42

<sup>1</sup> A. J. Science, III series, vol. xix, pp. 459-463, Charlotte.

<sup>2</sup> Phil. Trans. of the Royal Society, part III, 1882, pp. 894-896, Rowton.

<sup>3</sup> A. J. Science, III series, vol. xxxiii, pp. 221-226, Mazapil.

<sup>4</sup> A. J. Science, III series, vol. x, pp. 349-352, Estherville.

<sup>5</sup> A. J. Science, III series, vol. xxxiii, p. 494, Cabin Creek.

From the fact that the ridged side is so free from crust and the flat side so thickly coated; that the ridged side is covered with striae and

\* Meteoriten Sammlung des k. k. mineralogisches Hofcabinet in Wien., 8vo, Wien, 1885, Pl. 2, fig. 2.

† American Journal Science, series III, vol. xxxiii, p. 225, fig. 2.

marks of flowing, while the other has so few marks of this kind; and from the fact that at the edges, especially at the indentation, the back looks as though a flame had come from the other side—from all these facts the writer concludes that after entering our atmosphere the iron traveled with the ridged surface forward (see Plate XXXVIII), the iron burning so rapidly as to be torn off, leaving part of the surface bright. The flame thus passed over the sides, and the indented edge being downward, the flame was driven upward as the iron advanced. The flat side, not being so much exposed, the iron was not so completely consumed, hence a crust and large but shallow pittings. These conditions would perhaps have been entirely different had the mass been round or thicker, for it evidently moved as straight as possible without rotating at all. That it was found in the earth with the flat side down was due perhaps to the fact that it turned after losing its highest velocity.

As the iron only penetrated to a depth of 3 feet (90<sup>cm</sup>) the earth where it struck must have been very compact and the force of the body itself nearly spent. The Agram iron penetrated 14 to 15 feet (4.25<sup>m</sup> to 4.50<sup>m</sup>) in a freshly plowed field, which shows that in the case of that meteorite there must have been considerable force left, the small mass falling very near it. The Mazapil mass, one-tenth of the weight, penetrated only 12 inches (30<sup>cm</sup>).

I must herewith thank Mayor B. Caraway and Col. J. C. Betten for information furnished me, and Prof. F. W. Clarke and Mr. J. E. Whitfield for their courtesies and for the analysis.

---

NOTE.—The following letter was received after the above account was written :

OFFICE OF THE DARDANELLE POST,  
*Dardanelle, Ark., August 22, 1887.*

DEAR SIR: In assorting some old letters I find one from you of April 30. It was misplaced and for that reason has not been answered. I regret it.

I send you by this mail a copy of the Post, dated April 1, with three marked articles; one by a Post reporter, two from correspondents.

"Observer" wrote from a point about 30 miles south from where the meteor fell.

"Lorenzo" wrote from a point about 20 miles southwest from where the meteor fell.

D. W. McGuire, mentioned by the reporter, wrote from a point about 10 miles south from where the meteor fell.

These gentlemen are all perfectly reliable. "Observer" is Capt. H. P. Barry, prominently known over the State. "Lorenzo" is J. C. Lewis. Their post-offices are shown in the correspondence. D. W. McGuire, mentioned by the reporter, lives on the top of a mountain, fully 2,000 feet above the surrounding country. He is a brother of the late M. M. McGuire, who was distinguished by being at one time grand master of the grand lodge of Arkansas, F. and A. M. R. E. Cole, mentioned by the reporter, was for several years sheriff of Yell County.

So much for the names referred to in the Post of April 1. As for myself, I saw nothing and heard nothing, but the reason was plain—I was indoors feeding a pretty noisy steam printing press. But when I went on the street I found the "report" on

everyone's tongue. When I went home that evening members of my family asked about it and wondered. Nearly every one in this county heard it, and from the difficulty I had in locating I remember that I was under the impression that the report was heard generally for 50 miles in east, west, and south directions, and I suppose it was heard north but do not know. We have no intercourse with that section by reason of a range of mountains—Boston Mountains.

I may mention that Yell County lies on the south side of the Arkansas River, and has very little communication with that on the north side, and it was several days after the report before we could hear where it had fallen, and by that time there had been hundreds of rumors to the effect that a meteor had fallen "just beyond somebody's place, and the people were going out next day to find it." There were so many of these rumors conflicting that very shortly the prevailing idea was that nothing had fallen to the ground, but that the report was simply a report in the heavens made by something passing by. The idea that the noise died away in the southwest, I think, may be due to reverberation. The impression made on the observer was that some tremendous thing had passed by going to the southwest. After they learned that a piece had really fallen they concluded that the piece had "sloughed"—"sluffed"—off the main piece.

By the time authentic news was procurable it was the 1st of April, and then everybody was disposed to look on the real locating of the fall as an April fool.

In fact, I attribute the failure of the Little Rock dailies to publish the find to that fact—that they thought it an April joke.

I give you all this irrelevant matter thinking that it may possibly be used, at least some of it, incidentally in making an account of the find, interesting to the general reader.

Perhaps you may not know that some time afterward the meteor was brought to this town, as it was to others, and placed on exhibition at 10 cents a sight. Mr. Malone, who had it, was not very well read up on meteors—at least made little effort to edify his patrons. I looked up the subject a little, and wrote the *Scientific American* folks for information as to probable value, market, etc.

Regretting the delay, and hoping that this may not prove entirely useless, I am, very respectfully,

G. R. WILLIAMS.

Mr. GEORGE F. KUNZ,  
*New York.*