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The Mapleton Meteor

At about eleven o'clock in the forenoon of June 17, 1939, Harvey Meevers, a farmer residing a few miles east of Mapleton, in Monona County, was cultivating corn in the field southeast of his house. It was his birthday and no doubt his thoughts dwelt occasionally upon that anniversary. Accidentally his cultivator caught behind a heavy object, which seemed so unusual that he stopped his team and dug it out of the ground for closer examination.

"It seemed heavier than any other stone" he had ever struck, so he put it on the back of his cultivator for a weight. Driving in from his work in the late afternoon he took it along with him. As he lifted it off the plow he came to the conclusion that "it was a mass of iron," and decided to save it, putting it in the barn for safe-keeping. After doing the usual chores he went to the house for supper. Very soon, however, a severe thunder storm came up and he remembered the large piece of iron in the barn. Fearing that it might draw the lightning, he went out immediately and carried it to a safe distance from the building.

Eventually, the object was shown to a number of friends and neighbors, and naturally their curi-

osity concerning its true identity was considerably aroused. Strangely coincident, the July issue of the *National Geographic Magazine* carried an article on meteorites, by F. Barrows Colton, which furnished them the clue needed to solve the problem. This was truly fortunate, and probably responsible for saving the specimen. Had its nature not been early recognized, it would doubtless, sooner or later, have been cast aside and eventually lost altogether. Such has probably been the fate of other finds in Iowa.

So confident was Harvey Meevers of the correctness of his identification, that he took the curious rock to town where it was exhibited in the window of the local bank as a meteorite. The specimen weighed 108 pounds, and possessed all the characteristics of "meteoric iron," including a dark brown, somewhat rust-stained surface pitted with peculiar prints known as "thumb marks," which appear as if someone had pressed his thumb at random into a plastic surface which afterward became indurated by nature. The dimensions of the meteorite, taken from careful measurements made at the time, were: length, $17\frac{1}{2}$ inches; width, $9\frac{7}{8}$ inches; and thickness, $6\frac{1}{4}$ inches.

In several respects, this was a novel event in Iowa meteoritics. The Mapleton specimen is the only authenticated meteorite found within the state, of which the time of its fall is uncertain.

The four great falls, or showers, in Iowa were actually witnessed. How long the Mapleton meteorite may have lain buried in the ground before it was discovered by Harvey Meevers can not be determined. This period may have been a few years or perhaps several hundred. Its appearance, however, particularly the lack of extensive weathering, would seem to indicate a relatively short time.

A number of people surmise that it might have been connected with a great fireball which went streaking across the sky at about ten o'clock one evening during the winter of 1916-17. The consensus of opinion seems to be "that the ground was frozen hard at the time, that some people had already retired for the night, and that it was certainly before" the United States entered the war. Mr. Meevers, himself, thinks that this occurred on Thanksgiving night in 1916. Be this as it may, the fireball was observed by a number of people in the vicinity of Mapleton, traveling apparently in a "northeasterly direction, giving off a great deal of light, and was followed by a loud explosion." An observer at Emmetsburg, some eighty-five miles northeast of Mapleton, reported that the bright light and explosion occurred southwest of his point of observation.

If this was actually the meteorite found by Meevers, it is difficult to account for the fact that it buried itself so deeply in the soil as to elude de-

tection in a field which must have been plowed and cultivated many times in the previous twenty-five years, for under such circumstances meteorites usually bounce on striking the frozen ground, rather than penetrate deeply into it. The explosion would also indicate that the meteorite must have been broken into several fragments, no others of which have yet been found.

Astronomer David E. Hadden, of Alta, Iowa, writing in *Popular Astronomy*, described a brilliant "Detonating Meteor" which went streaking across the western sky in a southerly direction at about 9:55 P.M. on the evening of May 31, 1917. At this time of the year the ground would not have been frozen, and there is the possibility that this event might have had some bearing upon the Mapleton "iron."

While the physical appearance of the Mapleton meteorite would apparently indicate that it is a complete individual, rather than a fragment broken from a larger one by an explosion, Dr. H. W. Nichols is of the opinion that its extremely thin crust, "not over 0.25 millimeter, suggests that the meteorite burst at so late a period of its fall that there was not time for any noticeable penetration of heat. If this should be the case, there is a chance for a future find of another individual within perhaps ten miles."

The Mapleton meteorite also differed from the other Iowa falls in that it was a typical "iron" or

"siderite" — the only one of this class thus far recovered in the state. The Estherville fall was of the rarer mesosiderite, "ironstone" type, and the Marion, Amana, and Forest City falls were of the more common "stoney" variety known as areolites. While on exhibition in Mapleton, a small chip for a sample was sawed off the meteorite with a hack-saw by a local blacksmith. This revealed a bright metallic interior, which confirmed the theory of the local scientist that it was composed principally of iron.

Being somewhat anxious, no doubt, to turn his new possession into cash, Meevers sent the following letter on July 22nd to the Field Museum of Natural History in Chicago.

"Gentlemen: I have recently discovered a meteorite on my farm. It is of quite considerable size, weighing 108 pounds. This, I understand, is large as meteorites go.

"I wonder if you would be interested in securing this relic for your museum, and if you would make an offer for same. I have a small chip I could send in case you would want to analyze same to determine its authenticity. Of course, I would expect to get the sample back again."

In response to this letter, Clifford C. Gregg, Director of the Museum, immediately replied to the effect that his experts would be glad to examine the sample, and notify him of the results of their findings.

In mailing the "small chip" to the Museum on July 26th, Meevers showed the utmost confidence in his own judgment of the value of the find, saying: "I am sure that your report on this sample will be that it is a genuine meteorite and that it will have considerable value as a historical piece as well as conveying some leads which will give additional information which is of interest to geologists and astronomers."

The letter containing the above paragraph and the "chip" referred to, were received by the Museum on the morning of July 28, 1939. An examination was made at once and the sample immediately pronounced to have come from an iron meteorite. Arrangements were made between Elmer S. Riggs, who was acting as Chief Curator of Geology, in the absence of Dr. H. W. Nichols, and the administrative department of the Museum "for an immediate examination of the meteorite with the view of entering into negotiations for the purchase of the same."

Consequently, on the following day, Bryant Mather, the Associate Curator of Mineralogy, accompanied by Warren Raymond, the Assistant Register, went to Mapleton, where they visited Mr. Meevers. They were very cordially received, and after assuring themselves of the authenticity of the specimen, began negotiations for its purchase. At first, Mr. Meevers seemed reluctant to consummate a sale on such short notice. He had

apparently written to other potential buyers, but thus far only the Field Museum had replied.

Before he would consent to the sale, he withdrew to consult at length with advisers by phone and with Mrs. Meevers in person. The desirability of having the meteorite preserved in the Midwest, rather than in the East where it would be much more difficult for him and his friends "to come and see it on display," was one of the deciding factors, according to Mr. Mather, which eventually "led him to accept the offer we made and to pick up the five-dollar bills we had been lining up along the edge of the porch floor."

And so, for a nominal sum, the title to the fifth Iowa meteorite, the only one to be found in the present century, passed to the Museum to become a worthy part of a collection containing the largest representation of individual falls of any collection in the western hemisphere, if not in the entire world. At the Chicago Natural History Museum, it is now on exhibition with generous portions of each of the other four great Iowa meteorites.

Upon completion of the transaction, Mather and Raymond made detailed notes concerning the circumstances of the recovery of the specimen, particularly the exact location at which it was found, which proved to be the northeast quarter of the northwest quarter of Section 15, Township 85 North, Range 42 West, about three miles east and one mile north of Mapleton, Monona County,

Iowa. By a careful comparison with available maps, Stanley E. Harris of the Iowa State Geological Survey determined this position to be $42^{\circ} 10' 47''$ north latitude, and $95^{\circ} 43' 18''$ west longitude, this being the location of the center of the particular forty-acre part of the section.

"It was also agreed," reported Mr. Mather, that, "we would make an effort to have notices of the finding of the meteorite placed in the Mapleton and Sioux City newspapers, to have copies of whatever publicity that might appear sent to him, and finally, to suggest that he be made a member of the Museum and sent a card entitling him to free admission." It was late in the day when the specimen was carefully placed in Raymond's car, adieus were said, and the scientists departed for Chicago, where the Mapleton meteorite was safely delivered into the permanent care and keeping of the Field Museum of Natural History (now the Chicago Museum of Natural History).

The first official notice of the Mapleton meteorite was prepared by S. K. Roy of the Department of Geology of the Field Museum and appeared under the title "Field Museum Obtains First Iron Meteorite Ever Reported for State of Iowa" in *Field Museum News* for September, 1939. In the following month, *Rocks and Minerals* also published a brief account. In both of these articles the name Mapleton Meteorite was assigned to the object.

In due time, the Museum authorities began the scientific analysis of their newly acquired treasure, which included such matters as chemical composition, specific gravity, and internal structure. In determining the latter, it is necessary to saw off a section, whereupon the flat surface is first polished very smoothly and then etched by dipping it repeatedly for brief intervals into a weak solution of nitric acid. This brings out the so-called Widmanstätten figures in relief, thus revealing the internal structure of the meteorite, by which means it is classified. The Mapleton "iron" proved to be of the type called medium octahedrite.

While the specific gravity of most "iron" meteorites is relatively uniform, this feature has incidental significance. As determined from a small section, the specific gravity of the Mapleton meteorite was found to be 7.70, which is about the average for such an "iron."

Chemical analysis, made in the Museum laboratory by Henry Herpers, disclosed the following elements present, which are given in percentages: iron, 92.16; nickel, 7.61; cobalt, 0.036; copper, 0.003; carbon, 0.14; sulphur, 0.01; and phosphorus, 0.10. These elements are all common to meteorites of this type.

Dr. Nichols did, however, state to the writer, that it was one of the toughest "irons" that the museum technicians had ever attempted to saw, and that the working blade would on occasion

apparently make little or no progress for hours at a time. This he said might possibly be due to inclusions of microscopic diamonds (crystallized carbon), of which there was a sufficient quantity shown in the chemical analysis to account for the phenomenon, but that no test had yet been made to prove the theory of their presence.

The Mapleton meteorite is now displayed in a cabinet of Meteorite Hall of the Chicago Natural History Museum where it has been assigned the catalog number Me2286. Its weight is stated as 108 pounds. There is also one fragment of 34 grams, presumably the sample originally sent in by Mr. Meevers. It was sawed into a number of sections which consist of two "end pieces," of 35.5 and 47 pounds each, and three "slabs" weighing 10 pounds, 7 pounds, and 4290 grams respectively, all of which have been retained by the museum, with the exception of 20 grams which have been exchanged with H. H. Nininger, a meteorite collector of Denver, Colorado.

Fortunately, there are many men scattered over the country, like Harvey Meevers, with a wholesome bump of curiosity in their nature who are continually uncovering new facts and new objects for science. Were it not for such individuals, the progress of civilization would have been greatly retarded. No one knows how many other such "finds" may be awaiting similar discovery.

BEN HUR WILSON