

The Forest City Meteor

Among the regions that have been unusually favored in the number and importance of their meteoric visitations, Iowa ranks high as a field for the investigation of such phenomena, for within the borders of this State have occurred four of the most noteworthy "falls" ever witnessed in modern times. The earliest recorded Iowa meteorite fell in the vicinity of Marion in Linn County on February 25, 1847. It attracted considerable attention and comment throughout the scientific world. On the evening of February 12, 1875, came the great Amana meteor, which for sheer beauty and the brilliance of its pyrotechnic display has seldom been surpassed. The Estherville meteoric shower of May 10, 1879, was in several respects the most remarkable ever seen. Not only was this the largest observed American meteorite, but it was the largest iron-stone type whose fall has been witnessed anywhere. Moreover, the principal mass, which weighed four hundred and thirty-one pounds, penetrated the earth farther than any other in the world.

By the frequent appearance of meteors the people of Iowa became accustomed to such phenomena and so educated in respect to their true significance that the passing of a great meteor was no longer viewed with fear and apprehension but rather with a lively

interest and curiosity. This greatly aided scientists in their subsequent investigations carried on within the meteoric field for the purpose of ascertaining the course, orbit, and other vital information pertaining to meteors.

During the spring of 1890, northern Iowa experienced singularly good weather: the snows of a rigorous winter had receded before the advancing sun and the frost was rapidly coming out of the ground. The second of May found the farmers going about their usual duties, the larks were nesting on the prairie, buds were swelling, and the atmosphere of spring was luring people out of doors.

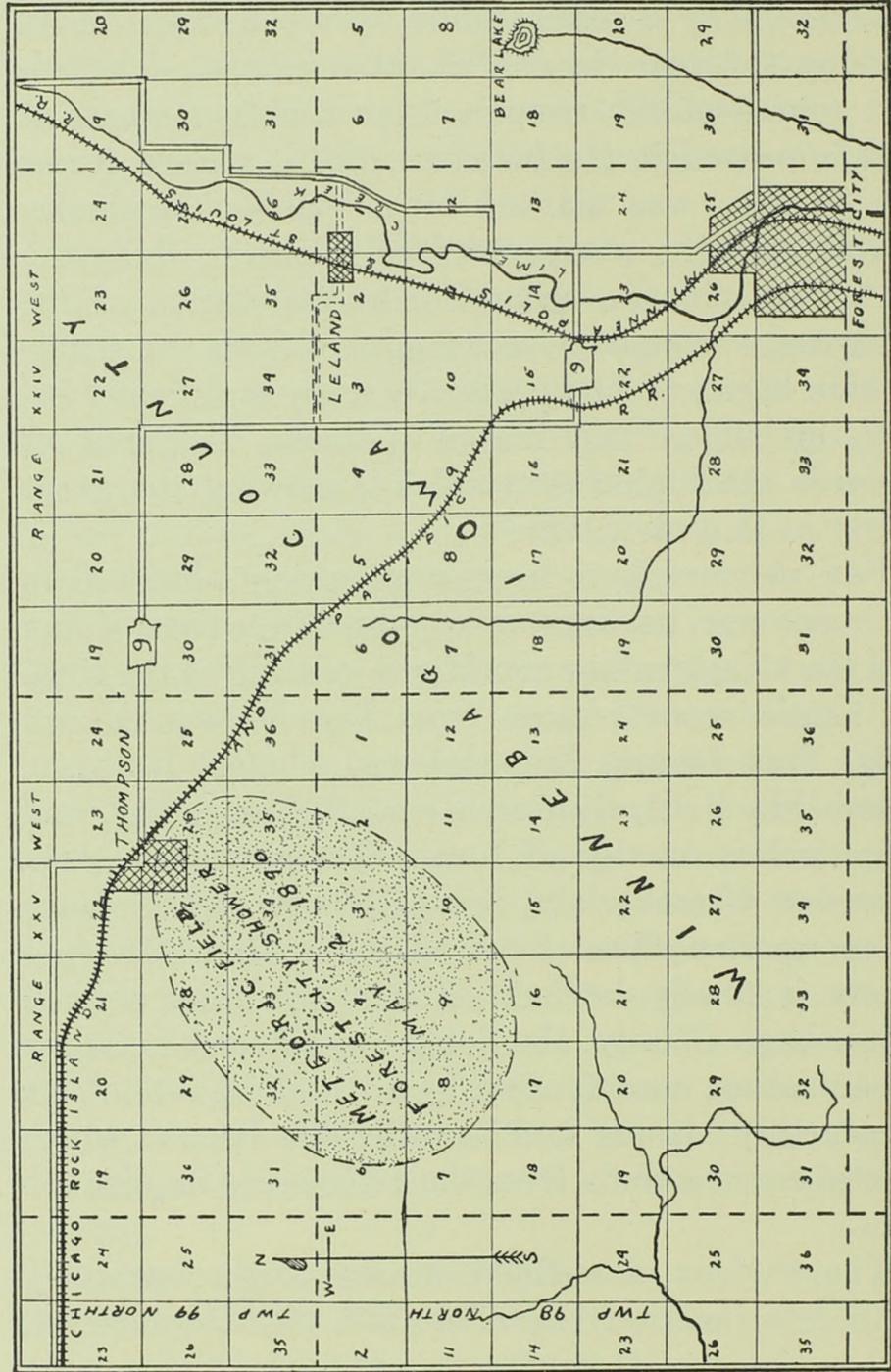
Late in the afternoon, when the sun was hanging low in the western sky, little more than an hour above the horizon, many farmers were coming in from the fields preparatory to commencing their evening chores. Women and children were bringing in the cows, when suddenly a great fire-ball appeared in the west, eclipsing for a moment the sunlight of an almost cloudless sky. Travelling at incredible speed from the southwest, came the roaring meteor, "sputtering" and throwing off a long train of sparks. The dazzling head, likened to the moon in size, left a heavy line of black smoke in its wake, distinctly marking the meteor's course through the heavens.

The velocity of the fire-ball was such that, as viewed by faculty and students from the campus at Grinnell College, where a baseball game was in

progress, only a few seconds were consumed in its passing through the earth's atmosphere. The entire course of the meteor, from the spot where it first appeared in the heavens until it passed below the horizon, was marked by a "ribbon of smoke, having straight, sharply defined edges." Fully ten or fifteen minutes, according to the station of the observer, was said to have elapsed before the smoke column began to curl gradually away and finally became invisible. This ribbon of smoke, "tapered off towards the higher atmosphere, showing the great rarity at that elevation."

Few meteors have been more widely observed in their passage, perhaps on account of the time of day and the ideal weather conditions existing at the time. Authentic reports came from Des Moines, Mason City, Fort Dodge, Emmetsburg, Algona, Ruthven, Humboldt, Britt, Garner, Grinnell, Sioux City, and other points outside of Iowa. The meteor was observed at Chamberlain, South Dakota, at a distance of more than three hundred miles from the spot where it finally landed. For many miles around Winnebago County, the noise was likened to heavy cannonading, accompanied by a "rushing sound" or "unearthly hissing and a noticeable tremor which caused citizens to fly from their houses to inquire the cause."

The meteor descended at an angle variously judged to incline from 50° to 55° with the horizon, and to the eye its course was apparently from the



FROM A MANUSCRIPT MAP BY BEN HUR WILSON AFTER A SKETCH BY TORREY AND BARBOUR IN 1891
 THE GEOGRAPHY OF THE FOREST CITY METEORIC SHOWER

southwest toward the northeast, its fiery "comet-like" tail appearing to be from 3° to 4° in length. The final explosion occurred over Winnebago County, about eleven miles northwest of Forest City. An area some three to four miles in length and from one and one-half to two miles in breadth was showered with meteorites. Although this meteoric field was adjacent to the new town of Thompson, it was readily accessible from Forest City, the county seat. Inasmuch as most of the publicity emanated from the latter place, the meteor became known as the Forest City meteor, though Thompson would have been a more accurate geographical designation.

As usual there was some discrepancy in determining the exact time of the fall, due probably to variation in the timepieces of individual observers. Some said that the meteor arrived at 5:15 o'clock and others fixed the time as much as fifteen minutes later.

According to Joseph Torrey and Erwin H. Barbour who first reported the event in the *American Journal of Science* in 1890, it appears "that the phenomenon was rather in the nature of a meteoric shower, judging by the appearances and the fact that several complete meteorites of considerable size were found at long distances from each other with a number of smaller ones." Of the larger meteorites, two were found weighing approximately four pounds each, one of ten pounds, another sixty-six, and the largest eighty-one pounds. Several hundred smaller

pieces scattered over the meteoric field were recovered, ranging in weight from less than an ounce to almost a pound.

A few small meteorites may have fallen across the State line in Minnesota, but it is not definitely recorded that any such were ever recovered. Another so-called "Kossuth County Aerolite", which was purported to have fallen in the adjoining county, figured prominently in the early reports. This stone, which weighed one hundred and four pounds, was sold to speculatively inclined parties in Forest City, but was subsequently discovered to be nothing but a granitic boulder, commonly called a "nigger-head", so abundant in the glacial drift of that region.

The Forest City meteorites were typically chondritic, the common stony-iron type. Practically all pieces were covered with a dark reddish-brown coating or incrustation formed by fusion, the result of the friction of the meteoric material with the atmosphere of the earth.

Contrary to popular belief, the meteorites were not hot when they reached the earth. While their surfaces undoubtedly became heated to a state of fusion, the duration of their flight through the air was so brief that the interior portion remained at approximately the same extremely cold temperature of outer space, and thus the surface cooled almost instantly after the final explosion when the velocity was greatly reduced. The sixty-six pound mass, which buried itself more than three feet in the hard

prairie soil, was not hot when removed the next day, "notwithstanding all reports to the contrary." A geologist who visited the spot shortly afterward reported that "the clay around it was neither baked nor in any way changed;" and that the eighty-one pound stone "fell on old turf, where last year's grass remained dry, and after the stone was taken out, portions of the grass carried down by it, adhered to the surface unburned."

One of the smaller meteorites, about as large as a cake of soap, which fell upon a straw stack, did not ignite it, and the boy close by who picked it up immediately dropped it, saying that it was "so cold that it burned his hand". At one place the falling fragments bombarded the roof of a farm house like "stones of hail". Many of those who resided within the meteoric field said they detected the odor of sulphur.

Newspapers throughout the surrounding country carried reports of the meteor and persons most interested in scientific pursuits were at once alert for information that might lead them to the exact location of the meteorite. To a Norwegian farmer named Hans Matterson who lived in the neighborhood must go the credit of turning in the earliest reliable information, for within a day or two after the meteor was seen he brought to Forest City a few broken fragments and left them on display at a local hardware store. In thrifty Norwegian fashion he had "pounded them open with an ax in search of silver". In

this he was apparently justified, for the stones "contained fine specks and filaments of bright nickel-iron much like silver in appearance."

Matterson said that a neighbor, Peter Hoagland, had found a stone "as large as a water-bucket". About this time, Horace V. Winchell, assistant State geologist representing the University of Minnesota, arrived in Forest City and went directly to the Hoagland farm. Peter and his wife were quite willing to sell the stone which they believed was a direct gift of God.

It appears that they had been embarrassed "by their inability to contribute to the cost of building a new church" in the community, and on the evening of May 2nd Mrs. Hoagland and her niece "were driving in the cattle when a cloud, making a loud noise, passed over, and out of it dropped this stone", almost at her feet.

Before terms could be agreed upon, a second purchaser arrived. In the three-cornered dickering which ensued the bidding became spirited to a degree of recklessness. When it became evident, however, that Winchell was not to be thwarted in his desire, the newcomer ceased bidding and the stone was sold to the geologist for more than a hundred dollars.

Having paid Hoagland in cash and taken a receipt, Winchell hurriedly placed the meteorite in the back of his buggy and drove back to town, stopping on the way to purchase some of the smaller

pieces at the farm where the stones had fallen upon the roof. At Forest City he lost no time in securing a strong box in which the meteorites were carefully packed. He then took the box to the station, expressed it to Minneapolis, and returned to the tavern with a distinct feeling of satisfaction to await the coming of the early morning train.

It appears, however, that Winchell's erstwhile competitor had his wits about him and had decided to pursue a different course of strategy. He had observed that the meteorite had fallen, not upon land owned by Hoagland, but in a pasture or meadow across the road. And thereby hangs a tale!

The records showed that the meadow land was the property of John Goddard of Greensburg, Indiana, and leased to James Elickson. Since quick action was imperative, a writ of replevin was sworn out in the name of Goddard and signed by his agent residing in the neighboring town of Britt. Armed with this writ, the sheriff went to the local express office in the middle of the night, took possession of the box, and removed it to a vault where it was stored for safe keeping, awaiting the disposition of the courts.

Alas! Peter Hoagland was compelled to surrender the money which he had deposited in a local bank, and no doubt his faith in the providence of the Lord was tremendously shaken, for the district court in Winnebago County decided that the stone had no owner prior to its fall; but since it actually

entered the soil and became a part thereof it belonged to the owner of the land, and that the act of Hoagland in removing it, even with the consent of the tenant, was wrongful.

The case was appealed to the Supreme Court of Iowa, but before this tribunal had rendered a decision the University of Minnesota again obtained possession of the meteorite through an action of replevin and immediately removed it across the line into Minnesota, where it was thrown aboard a moving freight train which carried it to Albert Lea and thence by night express to Minneapolis. There it was buried in a vacant shed, to remain interred for nearly two years. In October, 1892, the Supreme Court of Iowa sustained the lower court in the opinion that meteorites, like coal or any other mineral resources, belong to the owner of the land where they lie.

After this decision, the University of Minnesota was sued on its replevin bond in the district court at Forest City. The jury assessed the value of the meteorite at nearly five times the original value fixed by the court, which sum was cheerfully paid and the stone was deposited in the museum of the University where it has remained unmolested to this day.

The Forest City meteorites are well distributed in various museums. Besides the sixty-six pound stone in Minneapolis the eighty-one pound meteorite reposes in the American Museum of Natural History,

the Field Museum in Chicago possesses the ten-pound mass and more than seven hundred of the smaller fragments, and the Peabody Museum at Yale likewise exhibits between two and three hundred of these smaller pieces. Through various channels of exchange, many of the smaller specimens have found their way into private American collections and European museums.

Both the Forest City and the Estherville meteor of 1879 were apparently aimed from the battlements of heaven toward the State of Minnesota, but both fell some several miles short of the target. This faulty marksmanship, however, did not deter enterprising citizens of Minnesota from obtaining some of the missiles. It is indeed fortunate that important specimens of these rare meteorites are preserved in the Middle West where they fell, as objects of special interest to the people of this region.

BEN HUR WILSON