Fig. 1

Fig. 2

THE THOMSON, GEORGIA, METEORITE. NATURAL SIZE

A HERETOFORE UNDESCRIBED STONY METEORITE FROM THOMSON, McDUFFIE COUNTY, GEORGIA

By GEORGE P. MERRILL

Head Curator, Department of Geology, U. S. National Museum

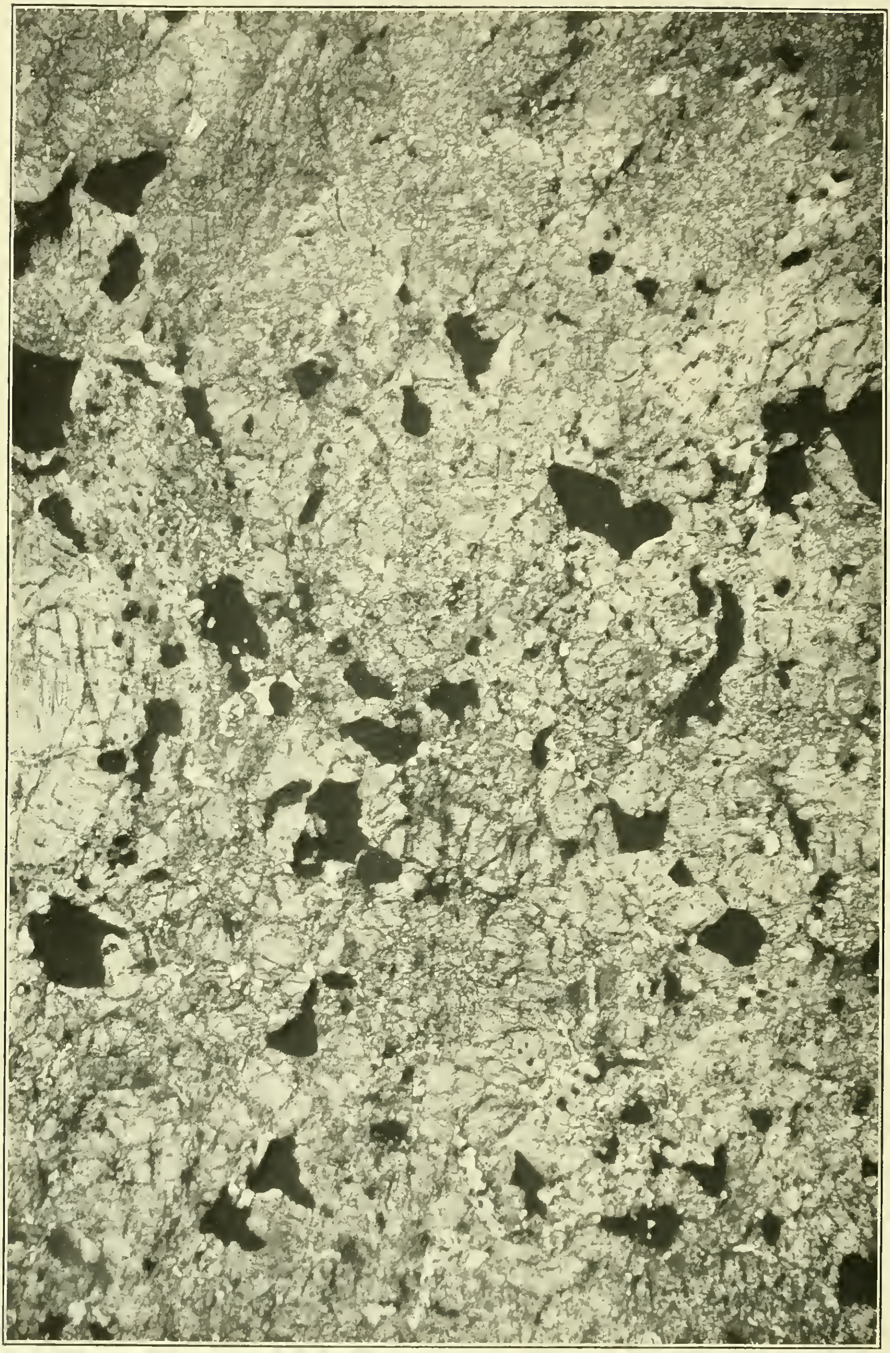
With Two Plates

Through the courtesy of Mr. George H. Plant, of Macon, Georgia, the National Museum has recently come into possession of a heretofore undescribed and, except locally, evidently unknown stony meteorite. The history of the stone, owing to the length of time it has laid in private collections, is unfortunately somewhat obscure. In a letter from B. F. Wilson to Mr. I. C. Plant, dated November 26, 1888, it is stated, "The stone sent you was picked up by the undersigned on October 15th. It was on the place of Mrs. M. A. Wilson, in McDuffie county, four miles south of Thomson. It fell within thirty yards of where the writer was at work." Nothing is said in the letter regarding the time of day, and only the natural inference can be made that it was some time between sunrise and sunset. As Mr. Wilson is now dead, letters were written to the office of the local newspaper and to the postmaster at Thomson. Only the latter replied, stating that Mr. Wilson was picking cotton at the time, and his first impression was that some one had "thrown a huge stone at his head." He then noticed "where the meteorite fell, some thirty steps away. It was buried some six or eight inches in the earth and he dug it up with a spade. Only one stone fell."

The meteorite as it reached the Museum was in a good state of preservation when all is considered. The two views, natural size, on plate LVII, show its appearance better than can any detailed description. The black crust had been knocked off some of the more exposed edges, but the fractured surface shown at the bottom, in figure 2, was very thinly and indistinctly coated with a black glass, showing that the breaking took place not long before the stone reached the ground. The crust over the main portion is thin, slightly rough, dull and lustreless, indicating at once a nearly feldspar-free stone of the olivine-pyroxene type, and such it proves to be. Nowhere on its surface are there flutings and pittings such as to indicate its orientation during flight, but the crust is apparently a trifle thicker near the center on the upper half as shown in figure 2, suggesting that this was the rear, on which the molten material would naturally gather to a greater extent than on the nose or *brustseite*. The total weight of the stone as received was 234 grams. Allowing for all abraded portions, even that from the rough surface now thinly glazed, it could not have weighed more than 250 grams. As now preserved, after cutting slices for thin sections and chemical tests, and as shown in the plate, it weighs 218 grams; specific gravity determinations made on the entire mass gave 3.51; Museum catalogue number 395.

The polished surface of the stone (fig. 2) shows a light gray ground which the pocket lens resolves into a compact mass of gray chondrules closely compressed, sometimes spherical or oval and sometimes angular, abundantly interspersed with small particles of metallic iron and iron sulphide. The surface is traversed by one short and wide black vein and one bifurcating and threadlike, both evidently emanating from the same point. The wider black vein, it will be noted, breaks up at its extremities into several threadlike forms. It would perhaps be more accurate to state that at this point on the surface several parallel-lying, threadlike veins have coalesced for a short distance, then again separated. The filling material of these veins (with the exception of the dark coloring matter which, being unacted upon by acids, is assumed to be carbon) is essentially of the same mineral nature as the body of the stone. Iron and iron sulphide are, however, relatively more abundant, especially in the smaller veins where the sulphide forms in places a spongelike and, at times, a solid filling of the fissure, or may again occur in thin plates lying near the walls, with numerous small particles scattered promiscuously throughout the interior. It naturally follows that this constituent is of more recent origin than the fissures themselves. Occasional evidences of a like secondary nature of the metallic iron are met with, but these are not satisfactorily conclusive. Where the metal fills the vein cavity for a short distance only, it is possible that it antedates the crack which merely passes around it. In other cases, however, there are what appear as mere elongated films of the metal lying parallel with the walls and in shape radically different from that in the body of the stone. Such, it is felt, must also be secondary as compared with that of the ground and, together with the sulphide, offer some interesting suggestions relative to life history.

The veins in general appearance are similar to those in the Fayette



THE THOMSON, GEORGIA, METEORITE. SHOWING MICROSTRUCTURE

County (Bluff), Texas stone, as described by the writer,[1] but differ in that the latter show no proportional increase in metallic constituents. They seem more nearly comparable with those of the Mocs stone as figured and described by Tschermak.[2]

Concerning the origin of the vein-filling matter of meteorites in general, the writer agrees with Tschermak[3] and Farrington,[4] in that it cannot have been derived from inward flowing fused material from the surface, nor can it be due to a fusion of pre-existing particles scattered throughout the mass of the stone. Even were there reason for supposing that the interior of any stony meteorite becomes highly heated during its passage through the atmosphere, the presence of the sulphide filling is indisputable evidence that such did not in this instance occur; otherwise the sulphide would itself have been consumed. The metallic portion cannot be accounted for on the supposition that pre-existing particles were drawn out into filaments through the dragging action of the walls, since it is plain that there has been no such differential movement, nor are there elsewhere in the section any corresponding filamentous forms. The suggestion of Farrington regarding the filling matter of the veins in the Farmington, Kansas, stone seems therefore inapplicable here, and one is apparently forced to the conclusion that the sulphide filling at least (ignoring for the time the doubtful metallic constituent) owes its origin to some reducing constituent acting at fairly low temperature at a period since the fracturing took place.

In respect to structure and texture, the stone is also comparable with that of Mocs, but differs in that the chondrules are compressed and firmly imbedded and break with the groundmass. In the thin section under the microscope the chondritic structure becomes very obscure, indeed, almost unrecognizable, so constant and gradual is the transition into the ground of granular silicates (pl. LVIII). Porphyritic and polysomatic forms are not abundant, the prevailing types being radiating columnar or finely granular. Of the two chief constituents, enstatite prevails over olivine in both chondritic and granular forms. Occasional chondrules are composed wholly of small, fairly well developed but closely compacted monoclinic forms, with small angle of extinction, and evidently referable to Dr. W.

[1] Am. Jour. Sci., vol. 36, 1888, p. 113.

[2] Sitz. d. k. Akad. d. Wiss. Math. Naturw. Classe, vol. 85, 1882, p. 195.

[3] Beitr. zur Classification der Meteoriten, Sitz. k. Akad. der Wiss., vol. 88, 1883, p, 15.

[4] On the Nature of the Metallic Veins in the Farmington Meteorite, Am. Jour. Sci., XI, 1901, p. 60.

Wahl's klino-enstatite.[5] Other monoclinic forms show the polysynthetic twinning so characteristic of the Renazzo stone. In addition to the above-named silicates are numerous small and irregular interstitial areas of a completely colorless, transparent, isotropic, or sometimes weakly doubly refracting mineral without cleavage lines or twin striæ, which would ordinarily pass for a glass. These, as in previous cases,[6] I have considered, for lack of evidence to the contrary, to be maskelynite, basing my determination on Tschermak's figures and descriptions in plates 16 and 17 of his Die Mikroskopische Beschaffenheit der Meteoriten.

The stone will be known, in accordance with the usual custom of naming, as the Thomson meteorite.

EXPLANATION OF PLATES

The Thomson, Georgia, Meteorite

Pl. LVII, Figs. 1 and 2. Two views. Natural size. Fig. 2 shows a polished surface, on which, at the right and near the end, is a broad, illy defined black vein. A small threadlike vein evidently starting from the same source extends upward and to the left, with frequent branching, to the highest point on the polished surface. In photographing this view the specimen was tilted a trifle more than in Fig. 1 in order that the light might so fall as to bring out the fractured surface on the lower margin.

The Thomson, Georgia, Meteorite

Pl. LVIII, showing microstructure. The black areas are of metallic iron and iron sulphide; the small, white interstitial areas the supposed maskelynite. The large chondrule at the middle of the left margin is enstatite. Elsewhere in the plate the silicates are not well differentiated.

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[5] Die Enstatitaugite, etc., Helsingfors, 1906.

[6] See description of Stony Meteorite from Coon Butte, Ariz., Am. Jour. Sci., May, 1906, p. 351, and On the Meteorite of Rich Mountain, N. C., Proc. U. S. N. M., vol. 32, 1907, p 243.