A RECENTLY FOUND IRON METEORITE FROM COOKEVILLE, PUTNAM COUNTY, TENNESSEE

BY

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Head Curator, Department of Geology, United States National Museum

No. 2153.—From the Proceedings of the United States National Museum, Vol. 51, pages 325–326, with Plate 28

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The iron described below was first brought to my attention by Dr. T. Poole Maynard of Atlanta, Georgia, who stated that it had been found some three years ago. Nothing is known regarding its fall, but it is obviously very old.

As received, the iron was in the form of a roughly polygonal mass, so badly oxidized that its original form was greatly obscured (pl. 28, fig. 2). The weight, before cutting, was 2,132 grams. A cut surface shows an unusual feature in its very regular octahedral coarse crystallization (pl. 28, fig. 1). Practically the entire mass is made of broad kamacite bands 2 to 6 mm. in width. Between these lie, quite regular and parallel, very thin plates of taenite. Between the broad bands and the taenite is always a thin zone of oxidized material, which may be due, in part, to lawrencite, but probably represents a line of structural weakness along which the oxidation would naturally progress most rapidly. Nowhere are there plessite areas. In a single instance a sulphide (troilite?) nodule some 10 mm. in diameter appears.[1] The kamacite bands are peculiarly pitted by rust spots, which suggest a somewhat spongy condition of the original metal.

[1] Since the above was written the iron has been cut into several slices, one of which shows along the margin an elongated area of what at first sight was supposed to be troilite, but which being magnetic was tested and found to consist mainly of the nonmagnetic sulphide with the usual admixture of schreibersite along the border. To this last was due the apparent magnetic character of the entire mass, which was some 50 mm. in length by 10 mm. in breadth.

An analysis by J. E. Whitfield yielded:

	Per cent.
Phosphorus (P)	0.170
Sulphur (S)	.377
Nickel (Ni)	6.380
Cobalt (Co)	.370
Carbon (C)	.204
Iron (Fe)	61.329
Iron oxide	27.890
Nickel oxide (NiO	1.100
Sulphuric acid (SO_3)	0.085
Ignition	2.750
	100.655
Total iron	80.852
Iron in oxides	19.523
Metallic iron	61.329

The ignition was made independently on a fragment somewhat more highly oxidized than that used for analysis. This doubtless accounts in part for the footing up so much in excess of 100.

The main mass of the iron, weighing 1,570 grams after cutting, is in the possession of Ward's Natural Science Establishment, Rochester, New York. To them I am indebted for material for analysis and a slice for the museum collections.

EXPLANATION OF PLATE 28.

FIG. 1. Etched slice of the Cookeville, Tennessee, meteoric iron. Natural size. Cat. No. 518. The dark border at the upper left and below is of oxidized material.

2. The Cookeville meteoric iron as found.

THE COOKEVILLE METEORIC IRON.

FOR EXPLANATION OF PLATE SEE PAGE 326.