THE LIVINGSTON, OVERTON COUNTY, TENNESSEE, METEORITE*

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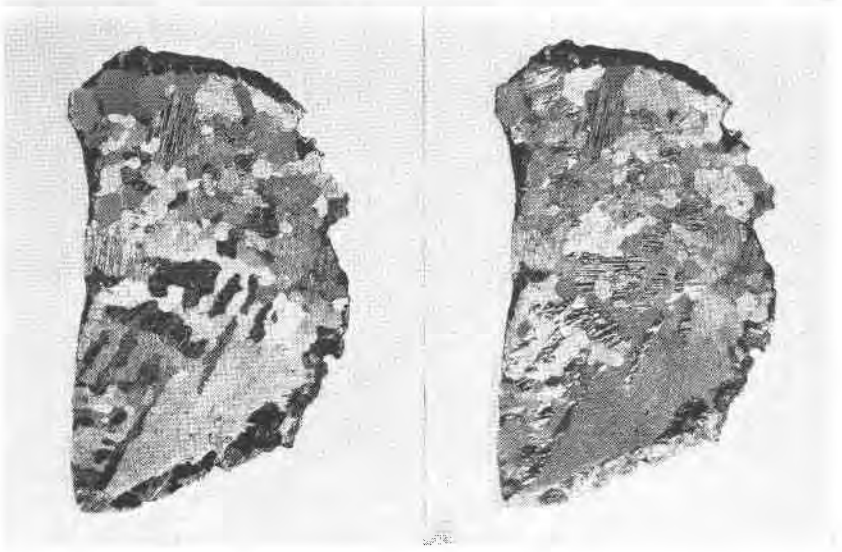
This meteorite was brought to the attention of S. H. Perry in 1941 by Miss Creola M. Wisner of Livingston, Tenn., to whom the authors are indebted for this fragment of 165 grams. It is solid metal and little affected by oxidation.

The meteorite was found in 1937 by Sherman Smith on his farm about



FIGS. 1 and 2. Two photographs ×2, with light from two different directions showing the diversely oriented sheen of the various kamacite areas.

two miles west of Monroe, a hamlet eight miles north of Livingston, the county seat of Overton County (Latitude 36° 25′ N. Longitude 85° 15′ W.).

The mass was described by Mr. Smith as shaped somewhat like a pancake, thicker in the center, 15 or 18 inches across, and weighing per-

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haps 30 pounds. It lay on the rocky bank of Eagle Creek, a considerable stream which flows through a narrow valley at that place. Mr. Smith took it to be a flat stone, but being surprised by its weight when he turned it over, took it to his house nearby where with some difficulty the fragment referred to was broken off with a hammer and chisel. A smaller piece of about 40 grams also broken off at that time is now in the collec-

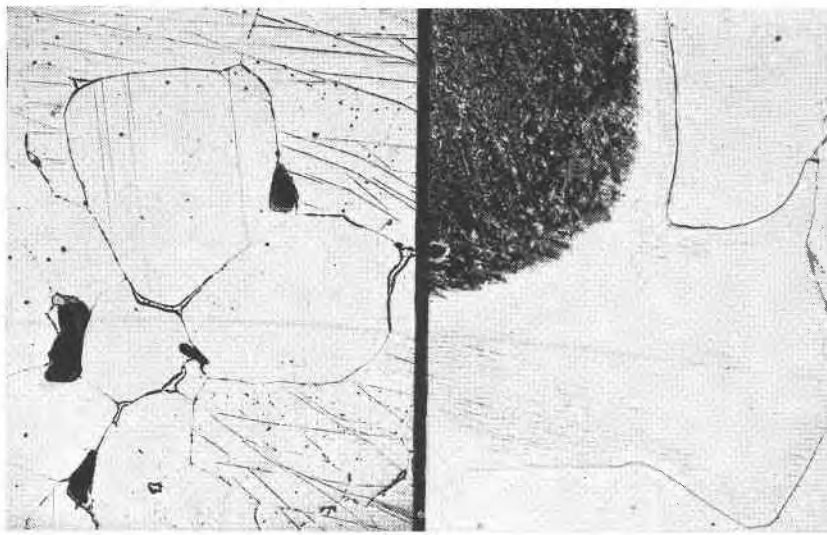

FIG. 3. Typical general microstructure. Irregular kamacite grains with Neumann lines; schreibersite bodies along a grain boundary; four areas of darkened taenite. Nital 15 seconds, ×58.

FIG. 4. Part of an area of darkened taenite with surrounding border of clear fully transformed taenite. There is no definite resolution of the dark core, in which light particles of taenite can be seen in a groundmass of dark gamma-alpha aggregate. Picral 30 seconds, ×572.

tion of S. H. Perry, but the larger of the two fragments was presented by Mr. Perry to the U. S. National Museum.

The meteorite lay for some time on the porch of the house but in the following year Mr. Smith moved to the other side of the creek valley and lost track of the iron. Later the house was moved to a new location some distance away and its site became part of a cultivated field. The spot was carefully searched by both Mr. Smith and Mr. Perry, but with no result. Mr. Smith believed that the iron was left there when the house was moved and became buried in the earth when the site of the house was put under cultivation.

The Livingston iron is a medium octahedrite, the bands of kamacite being sparingly developed and too irregular to permit satisfactory measurement. Much of the surface examined shows no octahedral pattern. The granular kamacite shows exceptional abundance of Neumann lines (Figs. 1 & 2).

The microstructure consists of irregular kamacite grains of varying size. The Neumann lines are diversely oriented, sometimes crossing grain boundaries with little or no change of direction. Irregular bodies of schreibersite are numerous along grain boundaries. The general macrostructure is shown in Figs. 1 and 2.

No plessite fields were observed, and no taenite lamellae, but taenite occurs abundantly in round irregular bodies, clear at the edges but with cores darkened because of incomplete transformation. While there is some appearance of acicular structure at the edges of the dark cores, these areas at high magnification are dense and obscure, but showing the clear separation of needles or particles of taenite and of alpha-gamma aggregate usually seen in darkened taenite.

A sample was removed from the 165 gram fragment and analyzed.

LIVINGSTON, TENN., METEORITE

E. P. Henderson, *Analyst.*

Fe	91.45
Ni	7.45
Co	.48
P	.25
S	trace
	99.63

Molecular ratio of $\frac{\text{Fe}}{\text{Ni}+\text{Co}} = 12.20$