

INVESTIGATION OF A METALLIC FRAGMENT
REPORTED AS METEORIC Fe-Mn

Maine

A small metallic fragment weighing approximately 20 grains was submitted by Mr. L.C. Richards of the Fuels Division to establish its composition and determine, if possible, its origin.

Description

The fragment was irregularly tabular in shape, with a rough surface. A resinous material spotted parts of the fragment, covering the original dark brown to black, tarnished surface. One cavity contained small amounts of rusty powder.

Reported Origin

The fragment was a small part of a larger plate. The plate was stated to have been observed in flight, supposedly white-hot, by the person(s) who recovered it. The geographic locality of observation was somewhere in Maine, near the Atlantic coast. No contact with the discoverer could be made.

Methods of Treatment

A polished section was prepared, stained, and examined under a metallographic microscope. The study revealed that the microstructure of the metal was austenitic, and contained a few small grains of iron carbide. These fractures and the stain coloration are characteristic of heat-treated Hatfield's manganese steel, an impact-hardening alloy of iron, manganese (13-15%), and carbon (1.15 - 1.2%). No evidence of surface fusion was detected.