

Magnetic Metal

The microstructure of the magnetic metal (Figure 3) has two major features: white acicular ferrite and dark pearlite, itself a lamellar eutectoid of cementite and ferrite. There are wide bands of ferrite at the original austenite grain boundaries that are responsible for the large bright facets seen on the fracture surfaces of the sample broken from the main piece with a sledge hammer.

This structure is typical of a cast, low-carbon steel. The grains showed no evidence of deformation.

A piece of this specimen was heated to about 900°C (1650°F) and allowed to cool in air. Its microstructure then consisted of the normal mixture of equiaxed ferrite grains and pearlite colonies typical of a normalised steel of carbon content about 0.2%.

The steel also contained many sulphide and oxide inclusions, more than one would expect in a good-quality steel.

Heating of Sample with Oxy-acetylene Torch

It has been previously reported that the metal burned in a peculiar way when heated with an oxy-acetylene torch.

A piece of the non-magnetic metal was therefore heated with a small torch and it was found that the metal melted quietly in the usual way. If the oxygen supply to the flame was turned down there was sporadic sparking caused by carburisation and entrapment of gas. With too much oxygen in the flame a large shower of sparks is produced as the metal is burnt by the excess oxygen and the oxides blown away by the force of the gases.

If there are cracks or cavities in the metal, which contain moisture, carbonates or hydroxides, or all three, the transformation of water to steam and decomposition of carbonates and hydroxides on rapid heating might cause small explosions. It is not known whether this could explain the effects reported previously since it was not possible to reproduce them. No evidence of magnesium has been found in the samples, so any effects due to its burning would not be expected.

SUMMARY AND CONCLUSIONS

Samples have been examined from a large piece of ferrous material found at Les Ecureuils, Quebec, in June 1960, and thought to be extra-terrestrial.