SHORT COMMUNICATIONS

The Avoca octahedrite

A NEW find of a large iron meteorite near Kalgoorlie, Western Australia, was first reported to Mr. W. H. Cleverly of the Geology Department, School of Mines, Kalgoorlie, in March 1966. The finder was Mr. Nobby Nixon and the site of the find 2·5 miles on bearing 300° from Avoca

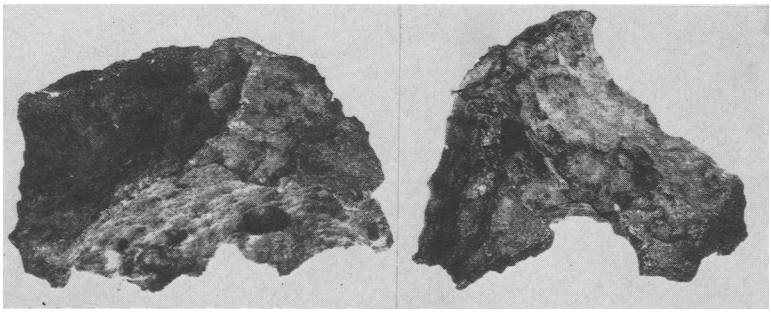

FIG. 1. Avoca Meteorite, main mass. Left, side-on view, showing the concavity of the basal surface; a large, circular troilite pit is visible. Right, end-on view. The mass is 15 in. long and 4 in. wide.

Downs Homestead, which is itself situated four miles east of Randell Siding on the Trans-Australian Railway. No details are available concerning the position of the mass on the ground: though Mr. Cleverly has subsequently visited the site he could find no trace of other meteoritic material or of impact of the mass. The co-ordinates are given as approximately 30° 56′ S., 122° 16′ E.

The mass was presented to the Western Australian Museum by the finder and has been cut at the Commonwealth Steel Corporation's factory at Perth. Before cutting it was a single mass: a highly pitted, complete meteorite, except for a small piece cut off by the finder with a hacksaw. The form was that of an elongate, ridged cone, with a flattened, slightly concave base. It could well represent an oriented mass, the base on which it rested (evidence of burial in soil, in surface markings) having been the rearward facing surface in ablation flight. The mass was 15 in. long and weighed 37·85 kg (83·27 lb). Two views of it are shown in fig. 1. The specific gravity is 7·89.

Polished and etched faces reveal substantial troilite nodules, which are also reflected in rounded pits on the exterior surface of the mass (fig. 1). Narrow rods of troilite are also visible (fig. 2), set sparingly in a base of medium octahedrite material (the lamellae are mostly regularly drawn

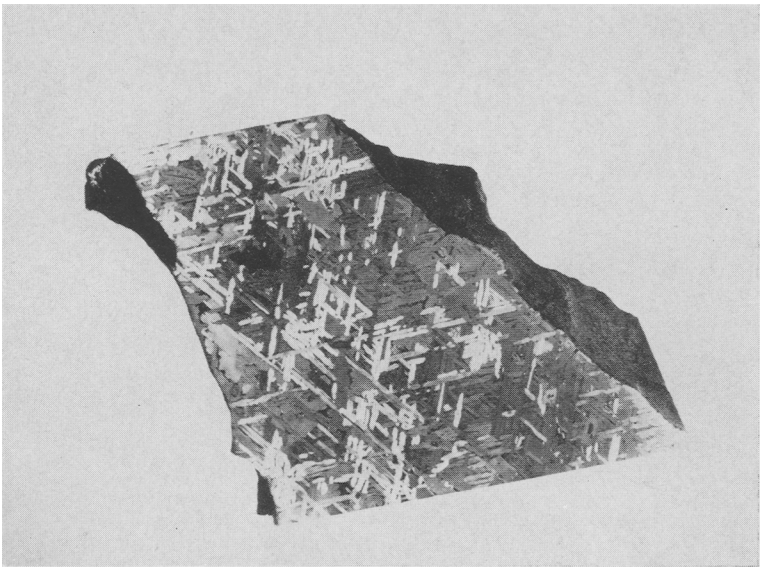

FIG. 2. Etched surface, $\times \frac{4}{5}$.

and range between 0·5 and 1·5 mm, but there are some more irregular, wider bands of kamacite, almost granular patches, about 1 cm long). The troilite forms narrow lamellae or rods running along the margin of the regular lamellae, or enclosed within the more irregular, granular patches of kamacite. There is interstitial plessite forming dark grey, polygonal fields, many of which show complex intergrowth patterns including taenite, which otherwise is only visible on a microscopic scale, bordering kamacite lamellae.

A partial chemical analysis by G. H. Payne, Govt. Chem. Lab. (no. 8034/66) gave 8·65 % Ni, 0·52 % Co, which is entirely in accord with a classification Om derived from the etch pattern.

This mass adds one more large iron to the already long list of such finds in Western Australia: unlike the two giant-sized masses recently recovered from Mundrabilla and totalling about 20 tons (Wilson and Cooney, 1967), this has no interest at all deriving from field occurrence,

and is purely of interest in that it provides another source of absolutely fresh meteoritic iron with troilite inclusions for geochemical study. The entire recovery is held by the Western Australian Museum, except for small specimens supplied to the British Museum (Natural History) and the School of Mines, Kalgoorlie.

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Reference

WILSON (R. B.) and COONEY (A. M.), 1967. Nature, vol. 213, p. 274.

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Quartz twin on {30$\bar{3}$2}

THE presumed twin here described was found at the Ariranha pegmatite in the Municipio de Pavão, about 60 km north-east of Teofilo Otoni, Minas Gerais, Brazil. Only one specimen is known, although it is reported that other specimens resembling the one at hand were observed at the locality. Hence proof is lacking that this particular intergrowth is not accidental but has a frequency of occurrence greater than chance. The probability that the intergrowth actually is a twin is increased by the very close agreement in zonal and angular relations with the requirements for twinning on {30$\bar{3}$2}, by the symmetrical distortion of the two joined individuals—a feature shown by many types of growth twins—and by the correspondence of the supposed twin law with a geometrically equivalent law, the Belowda {30$\bar{3}$2} twin, in high-quartz. The planar nature of the surface of juncture and its coincidence with the apparent twin plane also is indicative of a twinned relation between the two individuals.

The intergrowth consists of two euhedral prismatic individuals united to give a V-shaped appearance (fig. 1). The intergrowth was attached to the matrix at the apex. The two crystals weigh 107 g and are about 8½ cm long. Each crystal is considerably foreshortened along the shared *a*-axis perpendicular to the plane of the *c*-axes. The terminations of the joined individuals consist of large faces of *r* {10$\bar{1}$1} and small faces of *z* {01$\bar{1}$1}. None of the faces present on the two individuals is parallel, although certain faces of the trigonal prisms {11$\bar{2}$0} and {2$\bar{1}\bar{1}$0} would fall into this relation if present. The re-entrant angle