A Jadeite Axe from Staines Moor

by DAVID FIELD and ALAN WOOLLEY

The butt portion of an extremely fine jadeite axe (figs 1–3) was discovered in December 1981 by Mr Wood of 43 Waters Drive, Staines. It was recovered whilst fieldwalking at Hithermoor Pit, adjacent to the northern boundary of Staines Moor, Stanwell (TQ 033 743), and had evidently been thrown up with spoil by earth moving machinery during the digging of a drainage ditch. It is thought that this ditch disturbed a medieval feature since pottery of that period also came from the spoil heap, and while it is possible that the axe came from this context (stone axes are commonly found incorporated into later features) it is more probable that there was no connection.

The axe is visually a marbled brown (Munsell dark brown 10YR 3/3), though this colour is due to weathering. A thin slice removed from one of the fractured surfaces revealed a pale green colour at a depth of 2–3mm. One face (fig 2) grades from a relatively homogeneous brown at the butt end into a slightly foliated texture with very fine white folia. The other face (fig 3) is more patchy with a strongly developed foliation in brown and white (fig 3).

The fragment is ground and smoothed with a few small pits on one face. Nearly half the surface displays the remnants of a very high polish. It is triangular with a pointed and slightly damaged butt which originally appears to have been quite sharp. The blade has been completely broken away, apparently along a single, relatively clean fracture, but a second smaller fragment was, probably subsequently, broken off. The break is evidently an ancient one, for the fractured surface displays the same stained brown as the rest of the axe. In profile it is slender and very slightly asymmetrical. In section the faces are flat, becoming lenticular towards the butt and, while slightly rounded towards the sides, they meet at relatively sharp edges. The fragment is 11.42cm long, 5.84cm wide and has a maximum thickness of 1.65cm. It weighs 173.76gm and the specific gravity is 3.30 which is high enough to indicate jadeite. This has been confirmed by X-ray powder photography.

The thin slice has been made into a microscope slide and reveals homogeneous pyroxene rock with minor accessory zircon and muscovite. The pyroxene forms prismatic crystals up to 0.5mm in length, but usually 0.1–0.2mm. These are often aligned, reflecting the foliation apparent on the surface of the axe. The pyroxene is fresh but sometimes is packed with minute inclusions. Chemical analyses have been made of the pyroxene using the electron microprobe, and the average of ten analyses was as follows: SiO_2, 58.68%; TiO_2, 0.13%, Al_2O_3, 22.71%; total iron as FeO, 1.29%; MnO, 0.04%; CaO, 0.81%; MgO, 0.79%; Na_2O, 13.95%; K_2O, 0.02%. This recalculates in terms of pyroxene end-member molecules as jadeite 92.9, acmite 1.9, augite 5.2 (this procedure is explained in detail in Woolley *et al* 1979, 93). The Staines axe is thus confirmed as comprising jadeite *sensu stricto*.

Although we have tried to reconstruct the original form of the Staines axe by superimposing it on full size photographs of others, this did not prove successful. Good matches were found with axes only slightly longer and also with axes nearly three times as long, the reason being that the angle between the sides varies little in relation to overall size. While the maximum dimensions of the complete axe can only be guessed at, it is clear from the surviving portion

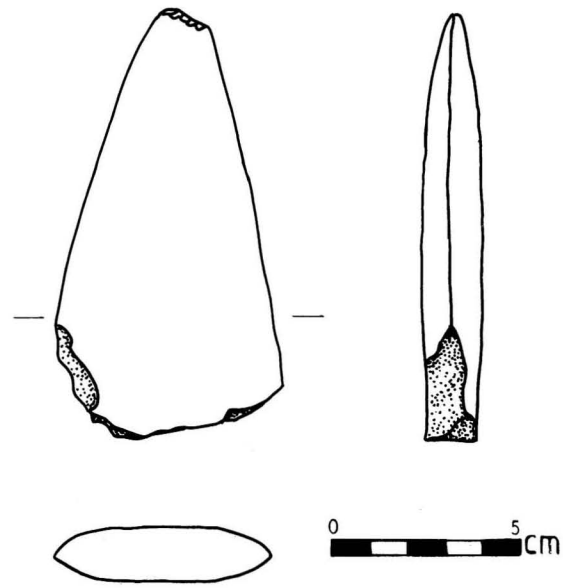

Fig 1 Jadeite axe from Staines Moor (½)

that the width is likely to be more than three times the thickness. It might therefore be placed in Campbell Smith's Group I (Smith 1963), or within more recent schemes (Bishop *et al* 1977; Woolley *et al* 1979, 90–6) be described as of thin/triangular type. Distribution of thin/triangular axes is centred predominantly on northern Britain and in the northern part of central Europe, particularly in the Rhineland (Bishop *et al* 1977). The plump and hachette types of jadeite axe, Campbell Smith's classes II and III, predominate in southern Britain. The thin/triangular type is found only in implements of jadeite, probably because other rock types are just not tough enough to sustain this shape without breaking readily. The chemical composition of the Staines axe is appropriate for an axe of this type, for, as described by Woolley *et al* (1979, 90–6), the large thin/triangular axes are always composed of a very pure jadeite. In contrast hachettes and plump axes are usually composed of pyroxenes having somewhat different chemical compositions.

A full catalogue of British jadeite finds is given in Jones *et al* (1977). The Staines axe constitutes the 108th of which the authors are aware, and that number will be used in any updating of the catalogue. Few come from the south east. Of these, those to the north of the Thames, the axes from Langham (Smith 1965) and Paglesham (Smith 1972) in Essex, and King Street in the City (Jones *et al* 1977) are of plump or hachette type, while the axe from Knebworth is perhaps better seen as an outlier of the East Anglian concentration. To the south an exceptionally fine example of the thin/triangular type is recorded from Canterbury (Smith 1926, 100). Three examples come from the Thames or its banks. One, from building excavations for the railway bridge at Strand-on-the-Green (Adkins & Jackson 1978, No 244) has an unusual rectangular section. The others are of thin/triangular type. Of the latter, one was found by a diver whilst clearing the channel after the rebuilding of Vauxhall Bridge (Lawrence 1929) and the other along the stretch of river adjacent to the Ship Hotel, Mortlake. Lawrence (op cit) was of the opinion that the Stone and Bronze Age artefacts from this location came from the Surrey bank.

Two other axes have been recorded from Surrey which are comparable. Unfortunately, these

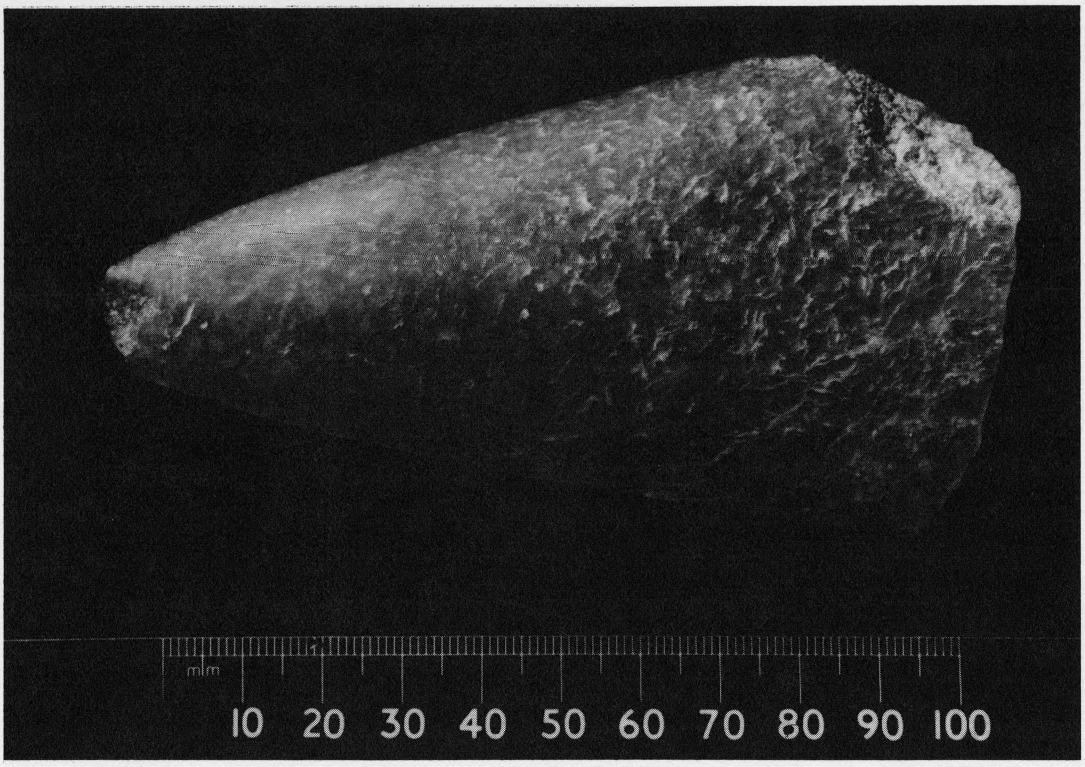

Fig 2 Jadeite axe from Staines Moor, face

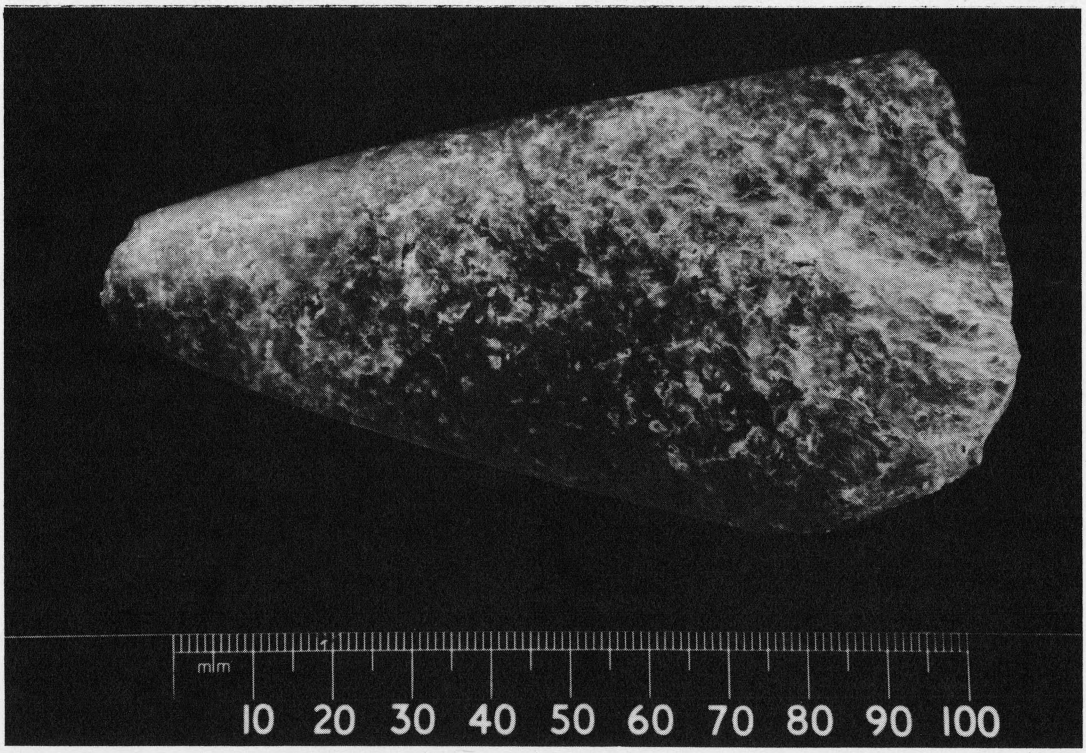

Fig 3 Jadeite axe from Staines Moor, reverse

are not available for inspection and there are no descriptions of them extant. One was found at Purley and was sectioned by the Institute of Geological Sciences. The sections indicate that although the axe is undoubtedly of the pyroxenite group it is probably not a pure jadeite. The second axe, also sectioned by the Institute of Geological Sciences, was found on Wimbledon Common. The section indicates a rock composed of about 80% pyroxene, possibly close to jadeite, with feldspar and quartz also present.

Two nephrite axes are known from Surrey, making a total of ten from the British Isles as a whole. Nephrite is commonly lumped with jadeite under the term 'jade' though mineralogically it is quite distinct, being a member of the amphibole group of minerals. Of the Surrey examples, one from Farley Heath is in the British Museum, while the second was found near Guildford and is privately owned. A nephrite axe from Hendon in Middlesex may conceivably be of thin/triangular type (Hendon Dist Archaeol Soc 1977).

Dating is problematical, use between *c* 3500 bc and 1700 bc being indicated on the continent (Bishop *et al* 1977). In Britain the only well dated find is the thin/triangular axe from the Sweet Track in the Somerset Levels (Coles *et al* 1974) with a series of C14 dates centring on 3200 bc. In addition a fragment comes from a causewayed ditch at High Peak, Devon where occupation is dated to 2860 bc (Coles *et al* 1974).

Proximity of the present find to the Staines causewayed monument (Robertson Mackay 1962) is therefore of some interest, as indeed is the proximity of the cursus complex and possible henge (pers comm D Bird) recently discovered by aerial photography in the same area. If such public monuments did indeed perform a marketing and distributive role amongst their no doubt various functions, it may help to explain the concentration of flint and stone axes in the area. Six petrologically grouped stone axes come from the Thames at Staines in addition to one from the causewayed enclosure itself (Council for British Archaeology Stone Implement Petrology Survey, Record Cards). Seven flint axes have also been dredged from this stretch of the Thames (Adkins & Jackson 1978). Three axes come from the riverside site at Runnymede Bridge (pers comm S Needham) and it is tempting to see this site connected to some degree with the Neolithic sites on the opposite bank.

Jadeite and nephrite axes constitute a particularly interesting group of stone artefacts, not only because of the superb craftsmanship displayed in many of them which, allied to the very attractive shades of green commonly encountered and the semi-precious nature of the rock, makes them very attractive implements, but also because the material of which they are made is not found in the British Isles. At present the rock source appears likely to be in the southern Alps (Bishop *et al* 1977).

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