
A possible Early Bronze Age metalworker's mould from Angus

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The mould

The mould (Illus 1a) comprises a squarish block of Old Red Sandstone conglomerate, measuring 590mm by 585mm and up to 180mm in thickness. Until recently it was displayed as a feature in a rockery on the north side of the driveway of the farmhouse at Ledmore, just a few metres from its find spot (NO 5337 6474), but it has now been put under shelter at the farmhouse whilst a decision on where it will eventually be deposited is awaited. On one surface there are five carved features. Three are large circular hollows, two with concave profiles and the third vertically sided, which measure up to 220mm in diameter and 65mm in depth. Large cup marks are a feature of highland Perthshire and other areas, and comparable examples to the Ledmore cups may be seen at Balvarran (Dixon 1921, 95-7) and at Tullypowrie (Dixon 1925, 95-6) in Perthshire. The date of these features is unknown, but they are clearly of later date than the two other carvings, matrices for bronze flat-axes, both of which have been damaged by the later working of the block.

The smaller of the two matrices is the more complete and measures 135mm in length by up to 60mm in breadth at the blade end and 17mm in depth; it has been slightly damaged at the butt-end and is more triangular on plan than the waisted matrices that belong to the Migdale axe tradition (Britton 1963). The blade end of the second matrix has been destroyed, but its shape and measurements (at least 155mm by 37mm by 17mm) indicate that it, too, was probably designed for the production of flat axes. A fragment of a possible third matrix is situated close to the blade end of the first, but it has largely been destroyed by the carving of the lower of the large cup-shaped hollows.

Discussion

The distribution of Early Bronze Age axe moulds in Scotland has a marked bias towards the north side of the Grampians (Illus 1b). Although a mould for flat axes and bar ingots has recently come to light

near Newburgh in Fife, the Ledmore example is the only example from the area immediately to the south of the Grampians. And, as such, it answers to some degree a paradox which, for many years, has seen a spread of flat axes across Perthshire, Angus and Fife divorced from the main distribution of moulds in the far NE. While Coles (1971, 31, fig 25) was confident that a number of the southerly axes could be paired with their original northern moulds, many more could not, and it is probably reasonable to presume that the Ledmore mould is the source of some of the southern axes.

Perhaps the most striking feature of the Ledmore mould is its size; compared with other moulds from Britain it is far larger (Illus 1d) and thus heavier. A consequence of this is that it would have been impracticable to have matrices on more than one face, and the justification of using such a large stone may have been that it originally bore more than the two, possibly three, matrices that now survive. Alternatively, the mould may have been a permanent 'fixture' at a single location, and portability, which is such a distinct feature of all other flat-axe moulds, may not have been a consideration in either its design or use. If this was the case, then matrices could have been carved on any convenient piece of stone.

In comparison to the very high standards of workmanship on many of the moulds from NE Scotland, the Ledmore example is rough and ready. The blade end of the smaller axe matrix is neither curved nor overtly expanded as might have been expected, nor was there any provision for the casting of extra metal there to facilitate its final shaping (Inglis and Inglis 1984, 636). There is no evidence for any actual use of the mould; there are neither traces of residual metal nor heat discolouration, nor are there any gouge marks at the edges of the matrices. Given the rather simple shape of the matrices, and the fact that any casts would require considerable subsequent reworking, the possibility of relating the Ledmore mould to any of its products (Coles 1969, 18-22) is remote.

The dimensions of the more complete matrix do not compare favourably with those of other flat-axe matrices from NE Scotland (Illus 1c) or from Scotland as a whole (Schmidt and Burgess 1981, 33, fig 3). One reason for this may be that the mould was not designed for the production of the high quality 'blanks' which the other NE Scottish moulds produced, and which, though requiring reworking, nevertheless were quite near the finished product. Rather, the Ledmore mould appears to have produced thick, axe-shaped ingots; the crudeness and simplicity of the technology suggests a date early in the initial period of copper and bronze smithing in Scotland.

It has been suggested that metal-working in the north in the Early Bronze Age was based on the working of either copper or bronze ingots and on the reworking of obsolete artefacts (Cowie 1988, 12). The original sources of that copper, however, are unknown, but the possibility that native copper from Glenesk (Cochran-Patrick 1878) was being worked in the Early Bronze Age at Ledmore should not be dismissed.

Moreover, the prospect that there was a continuing tradition of copper-working in Angus may also be entertained. The function of the large hemispherical features on the mould is unknown, but, within the context of metal-working and not excluding other possible explanations, attention should be drawn to a series of Late Bronze Age plano-convex copper ingots found at a series of sites across southern England and Ireland (Tylecote 1986, 18, table 9; 23, fig 9). Further, if the near-vertically sided hollow (185mm diameter by 55mm deep) was in actual fact a mould, then it could have produced cake-shaped ingots remarkably similar in size to copper ingots of Roman Iron Age date. Take, for instance, the copper cake from Carleton, Wigtonshire that measures about 210mm in diameter and 55mm in depth (Curle 1932, 343).

The finding of the Ledmore mould should come as no great surprise. In terms of natural resources, Strathmore must have been the equal of the area to the north of the Grampians, and evidence of a vibrant Early Bronze Age population, founded on a sound Neolithic basis, is attested to by a series of artefact finds and monuments along the length of the valley. Ledmore lies on the SW slopes of the White Caterthun, a site of great complexity that has yielded both Neolithic and Early Bronze Age artefacts, and the extensive settlement and cultivation remains on the hills to the south-west of Ledmore contain elements of both the Neolithic and Bronze Ages (RCAHMS 1983).

The importance of the area to the north of the

Grampians cannot be disputed; whatever the origins of the copper used and notwithstanding the factors that have affected the pattern of the discovery of moulds, the area appears to have been the principal Scottish source of bronze axes in the Early Bronze Age. However, the Ledmore mould provides evidence for axe production outside the core area of the NE, and adds to the already impressive corpus of evidence that suggests that northern Strathmore was itself a centre of some considerable importance in the Neolithic and Early Bronze Age.

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Abstract

About 1975, what may be an Early Bronze Age metalworker's mould was found in a drystone dyke at Ledmore, near Brechin. The mould is unusually large and the first from NE Scotland found on the south side of the Grampians.

Keywords: Early Bronze Age, flat-axe mould, Angus, copper, Grampians

