

VI.

NOTE REGARDING A MOULD USED IN THE MAKING OF BRONZE AXES.
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Some years ago a stone mould used in the making of flat bronze axes was sent to me for examination by Miss Balfour of Whittingham, who wished to be assured that such was the purpose of the stone.

It was found at Strathconan in Ross-shire, and a copy of it in plaster was made for preservation in the Museum. It is shown in the woodcut, fig. 1.

It is not a mould with two sides, into which, when these are placed together, the molten metal is poured, producing at once an axe almost perfect in its form. It is simply a stone with a cup cut on it of the desired outline, and having also the bottom so shaped as to give the proper form to one side of the axe. The metal poured into such a

mould has one side—the upper one in the mould—quite flat. But both sides of a Bronze-age axe are alike, and they are not flat. Something, therefore, must be done to the metal after it is removed from the mould; and it occurred to me, when examining this mould from Strathconan, that it would be interesting to try whether the right form could be given to the casting by the hammer. Accordingly, I had some molten hard

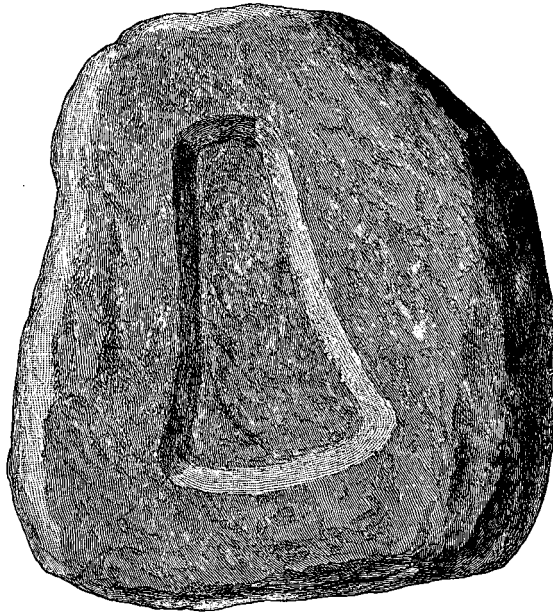


Fig. 1. Stone Mould for Flat Axes of Bronze, from Strathconan, Ross-shire. ($\frac{1}{3}$.)

tin-bronze poured into the mould, and I gave the casting to a hammerman to be worked into the form of the usual Bronze-age axe, one of which he had before him as a pattern. The result was the production of a bronze axe, which, if it had been *doctored* so as to make it look old, might easily be accepted by persons not specially skilled in such matters as a Bronze-age axe. An iron hammer was used instead of a stone hammer, which I wished to be used, but I was assured by the workman

that he could have done the work with a stone hammer on a stone anvil. Those, however, who made Bronze-age axes probably used bronze hammers and bronze anvils, and these are quite comparable in efficiency with the iron hammer and iron anvil used by the workman I employed.

In the two following rough diagrams (fig. 2) I show, first, a longitudinal section of the metal as it leaves the mould (*a*), and, secondly, a section of the metal after being hammered into shape (*b*).

It is worthy of note that the genuine old bronze implements and weapons show no sign of rubbing or grinding in giving them either outline or surface. All that is done to them after they leave the mould, whatever kind of mould may have been used, is done by some sort of hammer. On many of them it is very plain that the sharpening is done in this way, and not by grinding.

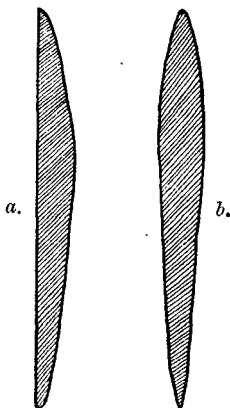


Fig. 2. Diagrammatic sections (*a*) of the Cast and (*b*) of a Bronze-age Axe.

There are three moulds in the Museum like that which I have now described, but there are also seven specimens of the complete mould which gives both faces, as well as the contour, of the implement or weapon cast in it. Notably among these last are two, which I had the good fortune to fall in with in Campbeltown, Argyllshire, and which were used in the manufacture of bronze spear-heads. They are of a hard, close stone, have been made with much care, and have a good finish. I am not aware, however, of any instance of a mould of this complete kind for the making of the ordinary flat bronze axe. These weapons or implements seem to have been generally, if not always, made in open cup moulds, like that which Miss Balfour obtained from Strathconan in Ross-shire.