

## IV.

CARVING TECHNIQUE ON THE SYMBOL STONES  
OF NORTH-EAST SCOTLAND.

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This inquiry was undertaken to investigate the authenticity of the so-called alphabetic inscription on the Newton Stone near Inch, Aberdeenshire. It began as a result of a visit from Mr C. A. Raleigh Radford early in 1953 and subsequent correspondence with him, but as the work has included the examination of a large proportion of the existing symbol stones of North-East Scotland and the technique used by their sculptors, a wider title has been given to the paper.

No two scholars have ever been able to agree on the interpretation of the alphabetic inscription on the Newton Stone, and in 1935 Dr R. A. S. Macalister became impatient with what he called its "signs and wonders" and condemned the inscription as a forgery. He accepted the other inscription, the oghams running down one corner of the stone, as genuine, with the exception of the turned-up portion at the bottom.

Nine years later Dr Douglas Simpson in his *Province of Mar* bluntly denied the validity of Macalister's statement, but, in the rapid survey he was making of the monuments of a whole province, did not pause to give detailed evidence.

Convinced at first by Macalister's article, I visited the stone expecting to be confirmed in the belief that the incomprehensibility of the inscription was due to its being a forgery perpetrated in the early years of the nineteenth century and inspired by the then recent discovery of the Rosetta Stone. After deliberate examination I changed my mind, and now feel sure that the inscription is genuine ancient work.

To test the authenticity of the inscription, the carving techniques used on the Newton Stone and on a large number of the symbol stones of Class I in North-East Scotland were examined. The grooves forming the designs have been measured and transverse profiles have been drawn from plasticine squeezes.

In the course of his article <sup>1</sup> Macalister had written: ". . . the technique of the two inscriptions is essentially different. The ogham scores are pocked, the commonest way of fashioning inscriptions in these countries; the alphabetic letters are cut in grooves, with a V-shaped section by means of a mason's chisel. The stone cutter was expert at his task."

<sup>1</sup> *Antiquity*, ix (1935), 389.

Experiments were therefore made to demonstrate the effect produced with punch and chisel on stone of the same geological character as the Newton Stone as well as on other stones used by the symbol cutters, including granite. Geological information was asked for, and very kindly given both by Dr John Simpson (just before his retirement from the Geological Survey of Scotland) and by Professor T. C. Phemister. Miss Margaret Hudson kindly lent sculptor's tools and advised on their use, and I have also had technical help and advice from Mr Adam Johnstone, blacksmith, Inch.

The kindness and hospitality of the late Mrs Parkin Moore of Newton were unailing. As long ago as 1896, when Miss Gordon of Newton, she had helped E. W. B. Nicholson in his researches, and she could remember Lord Southesk's visits to the stone in the early eighteen-eighties.

In writing and conversation about the symbol stones, two methods of incising the lines have been assumed by Macalister and others to be contrasting techniques:

- (1) Pocking with a hammer and punch or with a mason's pick to form a groove which, in section, has a curved profile.
- (2) Carving with a chisel resulting in a groove of V-shaped profile.

More careful inspection reveals that very nearly all the designs have been first executed by pocking, and many, perhaps most of them, afterwards improved by tidying the edges of the groove and smoothing out its sides and curved bottom, sometimes to the extent of producing a surface perfectly even to the touch. Only in a single instance has a groove with V-shaped profile been found.

The first result of practical experiment was to prove beyond doubt that tools of tempered iron were used for incising the symbols and that these tools had to be continually resharpened. Points or cutting edges of untempered iron simply fold up, and in any case there is no reason to suppose that tools of tempered metal were not available to these artists. Given such tools it is easy, even on hard stones, to pock out a groove of the average width and depth of those occurring on the symbol stones. A line six inches long can be made with punch and hammer in a few minutes. The line has first to be marked out by a row of pocked holes, which can then be joined together and deepened to form a groove. The edges can then be trimmed, still using the punch.

Rather unexpectedly the chisel too will form a groove of rounded profile. If held sloping slightly inward with its edge parallel to the line to be engraved, the tool will, on being struck, carry away the stone under it and, losing force as it cuts downwards, will arrive at the lowest point of the groove, having formed a rounded hollow equivalent to about a quarter of a circle. As will appear later, only one example of a V-shaped groove has been found on any symbol stone, and that worked on a softer rock, so that this form of groove

does not enter into the present discussion at all. The modern monumental mason's technique in cutting a V-shaped groove on hard stone is quite different and depends on the use of a chisel with an inset nose of specially hardened metal: again, it has no relevance in the present connection.

Whether punch or chisel is used to work the stone, characteristic marks remain unless they are smoothed away. A likely way of trimming the groove would be to rub down the pocked surfaces with stone tools of suitable size and shape. This would produce surfaces smooth to the touch and with few or no visible tool-marks.

The process of rubbing away the pock-marks in hard stone grooves, using for the purpose tools made of stone of no more than equal hardness, would involve labour lasting a long time. But is not such employment a usual one among primitive societies? The labour spent by Fijians in preparing coconut shells for ceremonial use by scraping and polishing them to a high degree of finish is an example of the sort of practice by which merit may be acquired, and the slow attrition of the lines on a symbolic design could have a similar object.

Having reached these conclusions, it was not very surprising to learn that this method of carving grooves on stone is one which occurs naturally to sculptors. The use of the chisel and abrasive stone for this purpose is stated in Stanley Casson's *Technique of Early Greek Sculpture* to have been practised from the last years of the 7th century B.C. and to be in use among sculptors at the present day. More remote in time than the Greek examples but much closer to the northern sculptors in *milieu* are the grooves described by Mr Miles Burkitt in his *Notes on the Art of Certain Megalithic Monuments in Ireland*.<sup>1</sup> These grooves must have been executed with bronze tools and are therefore presumably on softer stone. The second in his list of techniques, pocked lines, and the third, lines made first by pocking and afterwards rubbed smooth, are the same as those used by the sculptors of the Scottish symbol stones. The plain pocked line is often used for Roman inscriptions, as for instance the altar to Belatucadrus<sup>2</sup> now in the British Museum. It is worked on very hard stone.

The only designs among those examined which seem certainly to have been cut with the chisel are the poorly drawn snake and salmon on one side of an unpublished stone from Inchyra, now in the Perth Museum, to which my attention was drawn by Mr R. W. Feachem. Here the profile of the groove is V-shaped (fig. 1, e (2)) and in marked contrast with the other designs on the same stone (fig. 1, e (1), (3) and (4)). Close to the snake and salmon are some trial grooves also chisel cut and running out into sharp points impossible to produce with the punch. The use of this technique is

<sup>1</sup> *Jahrbuch für prähistorische und ethnologische Kunst* (1926), 52. Cf. A. Breuil, *P.P.S.E.A.* (1934), VII, 290.

<sup>2</sup> *C.I.L.*, VII, 318.

natural enough having regard to the medium, an Old Red Sandstone. It is more easily workable than that used for the Newton Stone or any other monument mentioned in this paper and, being therefore not very relevant to the discussion, would not have been alluded to but for Macalister's words about V-shaped grooves quoted above (p. 40).

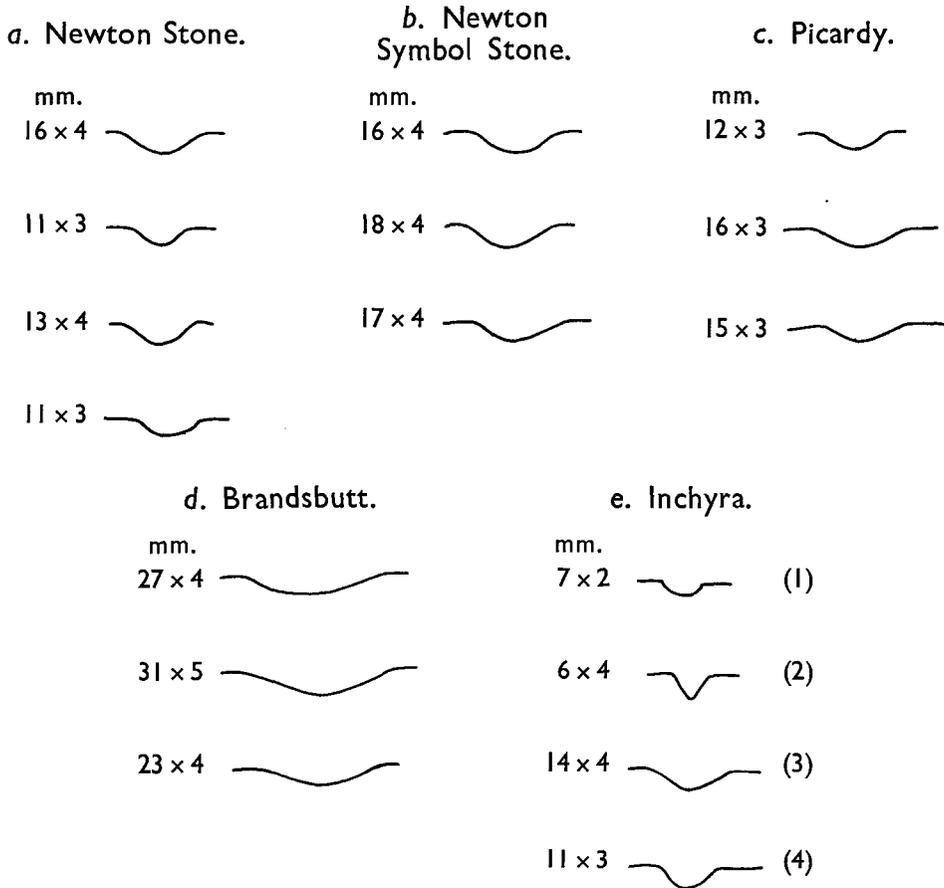


Fig. 1. Profiles of grooves on symbol stones.

Not all of the Class I designs have been improved by rubbing or by any other process after the original pocking, though most of them certainly have to some extent. The symbol stone now standing within a few feet of the Newton inscribed stone has its outlines deeply and roughly pocked (Pl. IX, 1): there is secondary working, but it is very slight, and it is suggested that a forger, bent on producing an inscription of romantic appearance, would have been more likely to carve it in this suitably barbaric style than

to adopt the far smoother and more careful technique used for the Newton inscription. At the other extreme from the rough-looking work of these symbols is the Brandsbutt Stone near Inverurie (Pl. VIII, 2), where both the symbols and the ogam inscription are improved to such an extent that its shallow grooves are smooth and regular, contrasting clearly with the flat but roughish surface of the boulder. Yet even here faint traces of the original pocking are discernible. Several of the symbol stones in its near neighbourhood are close to Brandsbutt in technique, for example those at Logie Elphinstone, Mounie and others.

The techniques of the two inscriptions on the Newton Stone do indeed differ from each other as Macalister noticed, but not in the fashion nor to the extent that he convinced himself from one inspection under unfavourable conditions. The ogams are competently pocked (Pl. IX, 2), and though there is some attempt at trimming it is of the slightest. The turned-up portion of the ogam inscription is by a different and more careless hand but, as I believe, an early one. The alphabetic inscription on the other hand, while bearing some traces of its pocked origin, has been carefully smoothed off both on the edges of the groove and in its rounded bottom (Pl. VIII, 1). Nearly comparable technique is to be found on the Picardy Stone (Pl. IX, 3) three miles away. Here the groove is a trifle broader but the profile is similar, and the secondary working, though more erratic, is at least equally laborious. This stone has a much more rugged surface than the two at Newton: obstinate veins of quartz are encountered and, as is sometimes the case, its choice as a field on which to incise designs does not seem to depend entirely on the suitability of the boulder for the purpose.

Transverse profiles of the letters on the Newton alphabetic inscription and of the designs on the Picardy, Brandsbutt and Inchyra Stones are shown in fig. 1. Pl. IX, 4 shows an individual letter of the alphabetic inscription on the Newton Stone taken obliquely: the lump of white plasticine pressed into the letter is cut vertically and, on its right side, shows the rounded bottom of the groove, a method of illustration suggested to me by Mr Angus Graham.

As far as technique is concerned, then, both the inscriptions on the Newton Stone appear to be typical work of the period of the Class I symbol stones. The hard distinction between work carried out by the punch and by the chisel disappears, though it is probably true that the punch was most often the only incising tool, and the use of the chisel can be regarded as certain in but one of the designs so far examined. There is therefore no reason to regard the Newton alphabetic inscription as a forgery on technical grounds.

There are more positive arguments for its authenticity to be drawn from the geological character of the stone, but before coming to that it should be made clear that the influence of weathering on these hard stones amounts to very little. Dr John Simpson tells me that he has seen ice striations on

hard rocks in exposed situations and even between tide-marks looking quite fresh. The so-called Tod Stone at Leith Hall is a case where the condition of the engraving is perfectly fresh, and in very many cases it is intentional rubbing down which gives the appearance of weathering. Sometimes indeed the rubbing is partly due to the exposed position in which a stone stands, as in the case of the horseshoe symbol in the Square at Huntly; yet even here the polished look hardly affects the depth or profile of the grooves, which are of normal dimensions. In general it can be asserted that weathering affects the quality and colour of the surface rather than its planes.

The Newton Stone itself, the symbol stone standing close to it and the Picardy Stone, are boulders of a rock called hornfels, found naturally on the southern slopes of the Hill of Foudland not far from these monuments, though they themselves have probably been carried to their present positions as glacial erratics. Hornfels of this kind was originally slate, but has been changed in character and greatly toughened by the action of heat proceeding from the nearby *Insch gabbro* when in a molten condition. Newly fractured hornfels shows a dark bluish and very finely crystalline surface with many black spots about half the size of an average pin's head. These black spots consist of incipient cordierite. When this rock is worked with a tool the crystals are broken and the surface is "stunned," to use Casson's term, so that it looks at first pale grey in colour. In course of time the fractured surface, worked or unworked, weathers to a uniform grey rather lighter in colour than when freshly broken. The weathered surface is pitted with numerous small holes which take the place of the cordierite spots seen on the new fracture. They are of course quite a different thing from the pockmarks made by the sculptor. These small holes appear not only on the surface but within the grooves of the Picardy Stone and of both inscriptions on the Newton Stone. This being the case, Professor Phemister, who visited the sites in my company, gave it as his opinion that the symbols and both inscriptions had undoubtedly been exposed to weathering influences since ancient times.

Some notion of the length of time required to cause pitting of the surface in hornfels may be gained from two dressed blocks of the stone built into the wall of the Old Manse, *Insch*, in 1771. They show no trace of pitting. It has been suggested that the pitting within the grooves of the Newton inscription could have been effected by acid used to clean off lichen. A piece of hornfels was therefore sawn in half by means of a diamond saw and one half of it placed in a concentrated solution of hydrochloric acid for 24 hours. There was no visible reaction. Lichen itself is known to disintegrate stone, but it is not probable that lichen has been allowed to remain undisturbed on the Newton Stone for any length of time since 1803.

In Lord Southesk's photograph of the Newton Stone, the same system of pitting can be seen within the letters as is discernible to-day. Further-

more, the stone was certainly cleaned in the early 'fifties of last century for the purposes of Stuart's reproduction, and several times before since its discovery.

On the whole the evidence, both technical and petrological, seems to be so clearly in favour of the authenticity of the inscription that it can be confidently handed back to the consideration of scholars.



1. Newton Stone: alphabetic inscription.



2. Brandsbutt.



1. Newton Symbol Stone: detail.



2. Newton Stones: ogams.



3. Picardy Stone: detail.



4. Newton Stone: detail, oblique.