

I.

ON SOME STONE IMPLEMENTS. BY PROFESSOR DUNS, D.D., F.S.A. SCOT.

I have occasionally brought under the notice of the Society stone implements from widely different localities, which seemed to me of some interest from the comparative point of view. Implements, chiefly weapons, have thus been shown from Shetland, Aberdeenshire, Berwickshire, and Dumfriesshire; Canada, Barbadoes, Brazil, and Chili. Most of the specimens now on the table are also exhibited for the purpose of comparison. Looked at thus, they become of as much value to the archæologist, and as suggestive either as permanent or shifting varieties of plant and animal species are to the naturalist, whether limited to narrow areas as counties, or to wider areas as countries, or, even, as continents. Accurate knowledge of such forms may shed light on conditions of climate, of surface, of soil, and of environment. Something analogous to this obtains in connection with implements. Not only may they differ in England, Scotland, and Ireland, severally, as modifications of given or of ideal types, but the variations may be quite as well marked within different districts in the same country. In the latter case the distribution of the variety would be very limited. As the areas of distribution widen, varieties of type and of modifications of the same type may, and often do, increase. But this may, and often does, imply the occurrence of identical, or almost identical, specimens here and there over the whole area of widest—*i.e.*, world-wide—distribution.

When I thought of exhibiting the specimens now before us, I had an impression that my notes on some of the Scottish forms in my collection, touching the conditions both of the localities and the surface deposits in which they were found, might shed some light on the order of superposition and sequence of these deposits. But I soon saw that no trustworthy work was likely to be done in this direction. Yet one is unwilling to give up the hope of getting data which would determine the succession of surface deposits, warrant us to collate the remains found in

them with the steps in the succession, and thus shed fresh light on local conditions of climate and local phases of civilisation.

In the progress of archæology within the last thirty or forty years, many debated questions relative to stone implements have been satisfactorily settled. We have no need now to urge their importance as helps to the history of prehistoric peoples, and as reliable marks of advancing civilisation. Moreover, there is now an almost general *consensus* both as to the modes of fashioning them, and as to their various uses.

Micmac Implements.—The Rev. Dr Paterson, New Glasgow, Nova Scotia, well known by his able contributions to Canadian archæology and ethnology, in 1880 sent me some Micmac implements which were shown to the Society, and described. Since then he has, at different times, forwarded specimens, some of which resemble and others are unlike those first received. They are now on the table. They are of some value as a small comparative collection; but chiefly, perhaps, as memorials of a once large, powerful, and warlike Indian tribe, now almost, if not altogether, extinct. Most of them are somewhat rude both in fashion and in finish, but others are very different, and indicate that their makers were not deficient either, if one might put it so, in artistic taste or in skilled workmanship. I group them all under the term implements, because I don't want to be understood as holding that those named "axes" are axes. Some certainly are, but, as certainly, some are not.

The territory inhabited by the Micmac Indians included Nova Scotia, New Brunswick, Prince Edward's Island, and the neighbouring smaller islands. They were chiefly distributed along the coasts, over an area stretching far inland. The stone implements are found within this broad coast-line. Another Indian tribe, the Malacetes, inhabited the interior, where they are still met with. Pure bred Micmacs were not rare forty or fifty years ago. The scattered fragments of the tribe consist of mongrels which bear the Micmac name, but have very little of the Micmac blood. The area now referred to was the Acadie of the early French invaders, and the Acadia of the English settlers. There seems to be good reason for believing that the Micmacs used stone weapons at a date so recent as the French invasion of Canada. De la

Roche was appointed Lieutenant-General of the country in 1598. This would bring the Stone Age of a great and powerful tribe into line alongside of the French civilisation of that period.

The specimens now exhibited consist of so-called axes, knives, smoothing-stones, spear-heads, and arrow-heads. It would take far too much time, and would serve little purpose, to notice them severally, but some representative forms may be briefly characterised. Igneous, metamorphic, and highly indurated stratified rocks abound within the area of Micmac distribution, and would supply excellent materials for such implements. Accordingly, we find that they consist of granites, syenites, Laurentian gneiss, greenstones, quartzites, and the like. The smoothed axes are for the most part granitoid, trappean, or gneissose; the chipped arrow and spear heads are of quartz, or, mainly, of flinty slates, which might be obtained either from highly indurated silurian beds, or, more frequently, from metamorphic schists, which are hard as flints, and fissile in a high degree.

The specimen No. 42¹ was exhibited at the meeting of the Society, 8th March 1880. I refer to it again, as it is a good representative of several of the forms now noticed. I then said—"That some to which the name 'axe' has been given could never have been equal to the work of an axe, seems past doubt. Of this kind is the largest specimen now exhibited; it is from the entrance to Pictou Harbour, Nova Scotia. It is of compact heavy greenstone, pitted all over with holes, resembling those of vesicular trap, but in this instance due apparently to the influence of weathering on lime granules in the substance. A transverse section would, near the centre, give nearly a semicircle. The polishing is mostly limited to one side. It is $8\frac{2}{8}$ inches in length, $2\frac{2}{8}$ inches at the broadest part, where the bevel begins, and $1\frac{1}{2}$ inch at the narrow end. When the narrow end was grasped by the right hand, the tool (*i.e.*, as a smoothing agent) could be worked with much force by the left hand taking hold of it crosswise. On the side next the worker, the surface is flattened, as if to give a place to the ball of the palm."

This description is, more or less, applicable to the modifications of form in corresponding examples now on the table.

¹ The numbers and letters refer to the place of the specimens in my collection.

The specimen marked (A) is of a somewhat rare grey porphyry; large, heavy; ground on one face only; length, 18 inches; breadth at broadest part, 3 inches, tapering to the butt, where it is 1 inch. (B) Greenstone; partially ground on one face and one side; slightly bevelled; length, 7 inches; breadth at bevel, $1\frac{1}{2}$ inch; section oval. (C) Greenstone; ground a little on both faces; cutting edge at both ends; length, 5 inches; breadth, 2 inches; section elongated oval. (D) Clay slate; thin; well ground on one face; length, $5\frac{1}{2}$ inches; breadth at point, 2 inches; at butt, 1 inch. (E) Greenstone; partially ground on one side; length, $4\frac{1}{2}$ inches; breadth at point, $2\frac{1}{2}$ inches; at butt, $\frac{3}{4}$ of an inch. (F) and (G) Greenstone; named by Dr Paterson "stone knives." The fragments marked (H), (I), and (K) are worthy of notice, both as minerals, and as suggestive of shapes differing from those already referred to.

Several of the glass-topped boxes on the table are marked "Micmac." They contain spear and arrow heads—some entire, some broken. Several of the spear-heads are finely-formed implements. In box 70 there are weapons from Prince Edward's Island. The spear-head in the centre is of hard, flinty slate. The others are of good flint, with one exception which is of a dull grey quartz. There can be no doubt as to the central specimen. The others are so like British types that, though forwarded to me from the same locality, I hesitated to associate them with it. On the cards 54 to 59 are perfect spear-heads, and also chips of flinty slate, quartz, quartzite, and flint.

New Hebrides Specimens.—These implements had been sent to Canada by one of the earliest Presbyterian missionaries to these islands, and were presented to me by Dr Paterson. No. 1. Felstone; very hard and heavy; a fine implement, well ground; length $7\frac{1}{2}$ inches; circumference at its thickest part, where the bevel of the cutting edge begins, $7\frac{1}{2}$ inches; circumference, 2 inches from the butt, 2 inches; flattened on one face only, the flat face consisting of a broad polished band down the centre, with a narrow band on each side of it. No. 2. Felstone; length, $4\frac{1}{2}$ inches; cutting edge bevelled on both faces; section oval. No. 3. Felstone; coarser; not so well ground; length, $3\frac{3}{4}$ inches; elongated oval; section oval. No. 4. Shell implement; length, 2 inches; breadth

at cutting edge, 1 inch, tapering. This was sent by Dr Paterson, marked "New Hebrides," along with the stone implements from the same localities. At a meeting of the Society, 27th February 1888, I described ten specimens of shell implements from Barbadoes, forwarded to me by Professor Wright, Codrington College, an accomplished observer. Eight of these are now in the Museum. The other two are in my collection. The present form differs a little in shape from these. It is interesting as adding another locality to the area of distribution. On comparing microscopic sections of the implements with corresponding sections from the shell of the large mollusc *Strombus gigas*, it seemed to me that the implements had been made from this form.

Egyptian Specimens.—Axe, No. 51. Nephrite; length, 8 inches; breadth near the cutting edge, 3 inches; at top, $1\frac{1}{2}$ inch; thickness, $\frac{3}{8}$ of an inch. This implement belonged to the late Dr Johnstone, Professor of Chemistry, Durham, who seems to have been more interested in its mineral than its archæological character. A fragment has been broken off at one corner of the edge for the purpose of analysis, the result of which is thus recorded:—

"Common Jade—Nephrite."

"Axe Stone—

Silica,	50.5
Alumina,	10.0
Magnesia,	31.0
Oxide of Iron,	5.5
Oxide of Chrome,	0.05
Water,	2.75"

One face is slightly concave, marked at the centre by evidences of weathering which the grinding has not reached. Mineralogically considered, this is a fine specimen.

In a paper read before the Society, I referred to the prevailing uncertainty as to the so-called jade problem—Have we any reliable information as to where it occurs *in situ* as a rock mass? In addition to the sources of information then referred to, I quote the following paragraph from a number of *Nature*, which I had not

seen when my paper was read:—"The problem as to the origin of the nephrite, of which the tomb of Tamerlane, at Samarcand, is made—a question which has interested a good many mineralogists—seems to have been definitely solved by M. Grombchevsky's visit to the nephrite mines on the Raskem-daria, on the eastern slope of the Pamir. M. Grombchevsky found there a big dyke of nephrite of extreme hardness embedded in the rocky banks of the Raskem-daria, which consist in that place of white jadite" (*Nature*, 14th August 1891). Professor Mushketoff, after careful analysis, concludes that the Raskem nephrite and that of Tamerlane's tomb are identical. This still points to the Orient as the quarter within which the world-wide distributed mineral is likely to be found as a rock mass, and which, in a general way, falls into line with leading archæological theories.

The flint chips, boxes 65 and 67, are interesting, as definitely suggestive of the shapes of the arrow-heads which the makers had in view. The flint is of a soft, almost black hue. The chips are from Heluan, about 10 miles from Cairo, "where," as the friend¹ who gave them to me said, "they are very abundant."

Indian Specimen.—No. 49. Greenstone; length, $4\frac{2}{8}$ inches; breadth, $2\frac{3}{8}$ inches, tapering to butt, which is $\frac{1}{2}$ an inch; locality, Rewah, Central India; presented to me by my brother-in-law, the late Alex. Grant, Esq., C.E., C.I.E.

Scottish Implements.—I wish to refer to these as briefly as possible. No. 23. Axe of greenstone; found at Burntisland some years ago at a considerable distance from the surface; presented to me by the widow² of the gentleman to whom it was given when discovered. It is chiefly interesting from the well-drawn, deep, clear lines on both faces. The axe is 4 inches long, 2 inches broad, slightly tapering to the butt, which is $1\frac{1}{2}$ inch broad at about $\frac{1}{2}$ an inch from the top. That the lines are not recent, is clear. Their weathered surface is the same as that of the faces. An enlarged drawing of the axe, showing these lines, is on the table.

¹ The Rev. Dr George A. Smith, Professor of Hebrew, Free Church College, Glasgow.

² Mrs Munro, Westgate, North Berwick.

No. 24. A fine axe of very dark, compact basalt; locality, Berwickshire; length, $4\frac{1}{2}$ inches; breadth, $2\frac{1}{2}$ inches; at narrowest part, near the butt, $\frac{1}{2}$ inch. Cutting edge finely polished on both faces. The roughness of the unground part is not the result of weathering, but of tooling. The axe belonged to the late Mr William Stevenson, a well and widely known local antiquary and geologist.

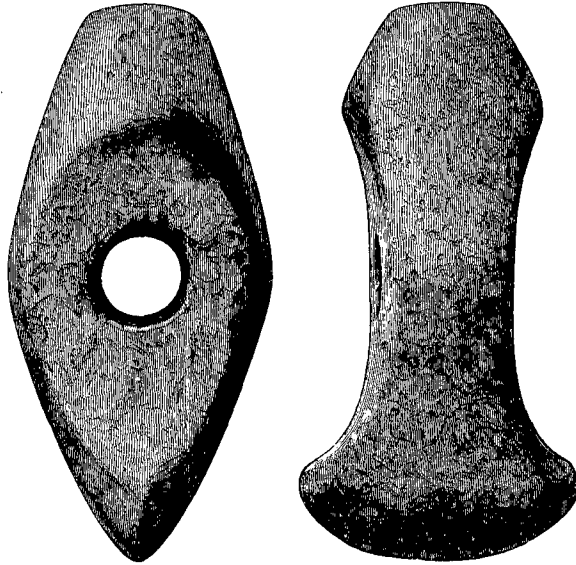


Fig. 1. Axe-Hammer, Shetland, $4\frac{1}{2}$ inches in length.

No. 6. Axe, greenstone; length, $4\frac{1}{2}$ inches; breadth, $2\frac{5}{8}$ inches; at butt, 2 inches; thickness, $\frac{5}{8}$ of an inch; Shetland. It fits exactly into the handle of a North American Indian tomahawk now shown.

No. 26. Axe-hammer, greenstone (fig. 1); length, $4\frac{1}{2}$ inches; breadth at centre, 2 inches; shaft-hole circular, and edge broader than the butt; sides, both deeply-scooped, longitudinal hollows; whole appearance peculiarly handy-like and neat; Shetland.

No. 25. Axe-hammer, highly indurated, compact, light-coloured sandstone, resembling quartzite; length, from butt to axe edge, $5\frac{1}{2}$ inches; breadth across shaft-hole, $3\frac{1}{2}$ inches; shaft-hole circular; measure all round, so as to take in the face bulges, 15 inches; Torhouskie, Wigtownshire; presented to me by the Rev. J. Brown Reid, Wigtown.

With reference to arrow-heads, the attention of the Society is called to the contents of the boxes now on the table, and to the specimens affixed to cards. The forms in boxes 62, 63, and 69¹ are from Slains, Aberdeenshire; presented to me by Mr J. Dalgarno. Those on a card marked Z are from the Ayrshire coast, between Troon and Irvine. In box 62 are imperfectly-formed specimens, the most noticeable of which is a long smooth flake, whose lengthwise fracture is cleaner and finer than a slice of an apple cut with a very sharp knife. In box 63, the fragments are exquisitely chipped, whether intentional or accidental. One, marked with an asterisk, is chiefly worth notice because of its keen, lance-like edge and its dark carnelian-coloured tip, looking as if it had touched blood and kept it. In box 69 are discoidal chipped discs of flint, and a triangular fragment with clean cut edges.

¹ In my collection.