III.

ON STONE IMPLEMENTS FROM SHETLAND (Specimens Exhibited).

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In Mr Gilbert Goudie's interesting paper on "Rune-Inscribed Relics of the Norsemen in Shetland," (Proceedings, New Series, vol. i. p. 136), reference is made to traces of the site of an early settlement adjacent to the church and manse of Maill, Cunningsburgh. It was in the burying-ground that surrounded the ancient church of Cunningsburgh that the Rev. George Clark, Free Church minister, discovered one of the rune-inscribed stones noticed by Mr Goudie, and which is now in the Museum. As two of the articles on the table are mentioned by Mr Goudie, I quote his remarks:—"Mr Clark has made occasional diggings, resulting in the discovery of a large deeply hollowed stone of the kind regarded as grain rubbers, represented in the Museum by the specimen from the island of Barra, of various forms of rough stone implements of the kind found at Safester and Houlland, in the parish of Sandsting, and at Braefield, in the parish of Dunrossness, so amply illustrated by specimens in the Museum, and described by Dr Arthur Mitchell in the Society's Proceedings, vol. vii. p. 118; also a quantity of charred grain, and a small cup or vessel of steatite so thin and so carefully scooped out as rather to resemble a piece of pottery."

Stone Cup.—My friend Mr Clark very kindly forwarded these vessels to me in August 1880, but I have not had time till now to notice them. The cup was found in an ancient refuse-heap close to the site of Cunningsburgh Free Church. The unfinished basin, and also the top stone of a quern, occurred close to the refuse-heap, but not in it—the former at a depth of 3 feet, and the latter 4 feet below the surface. The smaller

vessel is the outcome of a not very successful attempt to make a perfect cup. It is wider at the rim than at the base, and bulges slightly at the half depth. The diameter at the rim, inside measure, is $2\frac{1}{2}$ inches, and at the bottom $2\frac{2}{8}$ inches. The outside depth is $2\frac{2}{8}$ inches, that of the inside $1\frac{6}{8}$ inch at the centre, and at the sides $1\frac{1}{8}$. The thickest part of the rim, for it is unequal, is $\frac{1}{8}$ and the thinnest $\frac{1}{16}$ of an inch. The material is talcose steatite—a mineral which is abundant on the mainland of Shetland, and is well known as Fethaland Stone, there being a great deposit of it at Fethaland Point, the most northerly part of the mainland. The schistose series of rocks in which this mineral occurs abound in varieties, which often shade so gently into one another as to make definite characterisation rather difficult. In a popular way the term steatite covers all the varieties, whether you have the normal mineral composed of silica, magnesia, and water, or a mica with talc, quartz, and mica, or a variety with lime present, or another with chlorite. (*b*) For example, the substance of which the larger vessel or basin is formed might have been obtained from the same deposit as that which supplied the cup, though in several respects it seems to differ both in composition and appearance. But in this, as in the other, the talcose element predominates, while the siliceo-magnesian element characteristic of normal steatite is present as laminated bits of diallage, distinct from the mass, and not as entering into it in minute particles, as it does in true serpentine. The Fethaland rocks have long been noted for crystals of this mineral. My chief object in this reference is to point out the different appearance, both in colour and grain, which such articles as, say, whorls, may present, though the mineral of which they are made may have been obtained from the same deposit. The brown patches seen here and there on the edge of the basin are calcareous, and point to the decay of lime in the substance. On the edges, but chiefly on the under side of the basin, the beautifully white and froth-like appearance is caused by the weathering of the talc. All these minerals, as the different varieties of steatite, talc, chlorite, and mica, are soft, easily worked, and greasy to the touch.

Very likely the break on the edge of this basin led to its being rejected when only partially hollowed out. Its measurements are—girth, 23 inches; width across the rim, $7\frac{6}{8}$ inches; outside depth, $3\frac{6}{8}$ inches; inside depth at centre, $1\frac{1}{2}$ inch. It seems to me probable that this vessel was intended for cooking purposes. The widespread use of material of this sort in the preparation of food bears testimony to what one might venture to call the "knowingness" of the men in the times of old: seeing that, so far as we know, there is no mineral which can so easily be fashioned into pots, cups, &c., and that retains heat so well and so long as steatite.

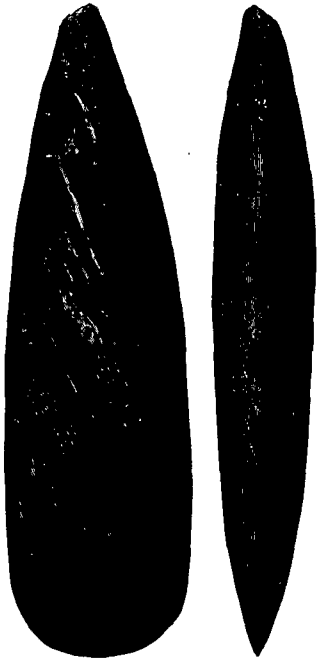
To return to the cup for a moment: over its whole surface, outside and inside, it is covered with close set long strokes. These for the most part are oblique. In one or two instances they are perpendicular to the rim, and when this is the case several of the lines are so perfectly parallel that they seem to have been made by one effort. The strokes are not ornamental. They have been made in the process of forming the cup, and are the marks of the workman's tool. It is not the least likely that the tool was a knife. Had it been so, we would have had evidence of its use in the marks of slices by the blade, and not of scratches by the point. The material will cut almost as cleanly as an apple. Assuming that the maker wished to form a cup by the most convenient and readiest method, if he had a metallic knife, he had only to use the blade for obtaining a series of slices. He would have pared it into form. The marks seem to have been made with a stone. It occurred to me to try what could be done in this way, and having a bit of compact mica schist in my hand at the time, I tried the effect of a bit of granite on it. This (showing specimen) was the result of about three minutes' work. The hollowing out process is begun, and the strokes on the surface are precisely like those on the cup. One might easily, even with a stone like this, form a similar vessel in half a day. When found the cup was quite whole, but was accidentally broken into two pieces by a fall. However, without interfering with the shape, these have been firmly united by cement.

Quern.—The fertility of resource, and the ready adaptive skill indicated by the choice of the stone for cooking vessels, and by the simple means that may have been employed to hollow them out, are equally apparent in connection with the top stone of the quern now on the table. The mineral is a gray, highly garnetiferous talc. No better substance could have been selected. The comparatively soft matrix of talc in which the garnets are embedded supplies a firm setting. The garnets themselves are hard, crystalline, sharp cornered, and keen edged. Thus the fitness of the implement for grinding purposes is secured. The characteristic inequality between the hard garnet and the soft talc maintains a rough surface, much in the same way that a rough surface is kept on the grinding teeth of certain mammals by the distribution of hard enamel among the soft dentine. But more; the garnets vary in size from that of a pin point to a common bean. Thus, when the edges of the twelve sided (*dodecahedral*) large crystals were rubbed off, the surface would present others equally well fitted to do the grinding. If the stone be examined with a pocket lens, it will be seen that the small garnets have their edges still keen and clear. The mineral has been characterised as a grey talc. Externally, however, it is in colour a soft, warm, rich brown. But this hue does not enter into the body of the stone. The article had, no doubt, been buried for a time in peat, or some thick deposit of decaying vegetation, and has been coloured by the limonite which is always more or less present in such deposits—in peat especially. The stone is $13\frac{7}{8}$ inches in diameter.

Stone Celts.—The large, beautiful, finely shaped, and highly polished celt, to which I now call the attention of the Society, was sent to me by Mr Clark in the beginning of December 1880. It was found at Cunningsburgh, at the opening up of a quarry of mica schist, about 4 feet deep in the overlying deposit. Its measurement is as follows:—*length*, $10\frac{5}{8}$ inches; *breadth*, at half length, $3\frac{2}{8}$ inches, at the part where the bevel of the edge begins $2\frac{7}{8}$ inches, at the butt $\frac{1}{2}$ inch; *thickness*, where the bevel of the edge begins $\frac{7}{8}$ inch, at half length $1\frac{7}{8}$ inch, near the end

of the butt $\frac{5}{8}$ inch; *girth*, at bevel of the edge $5\frac{5}{8}$ inches, at half length 7 inches.

This implement presents some points of much interest. I am inclined to regard it as an imported implement. Trusting nothing to the hasty look at Shetland mineral at points which I have personally visited, I have gone carefully into all the usual authorities, and have also shown the implement to my friend Mr B. N. Peach of the Geological Survey, who has recently given much attention to the geology and mineralogy of Shetland, so far as rock masses are concerned. None of the mineralogists describe anything like this, and Mr Peach is sure that nothing of the sort came under his eye. Mr Peach thinks it has some resemblance to the *hälleflinten* of Sweden. I have specimens of serpentine, which present well-marked lines of apparent bedding, and some in which there seems to be so much hornblende as to give it a dark appearance. Those features inclined me to regard this celt as hornblendic serpentine. But some aspects of its lines of bedding, the granular character of its substance as seen at the butt, where, as is the case with so many celts of this pattern, it is chipped, and its resistance to the point of the knife, forbid this belief. It is, no doubt, a highly indurated shale—a substance which has been largely used in different countries for implements of this sort. The maker has cut it out from the mass in a line diagonal to the planes of bedding, and has thus been able to give it a prettier appearance than it would



Celt found at Cunningsburgh, Shetland ($10\frac{1}{8}$ in. in length).

have had, had he cut it in a line parallel with the lamination. But there are other marks on this celt which greatly interest me. Not only are there the distinct proofs of bedding, but associated with these are rows of circular, semicircular, and broken chain-like bodies, which look exceedingly like organisms. They may be mineral segregations, but, if so, they are unique in my experience. To me they seem more like the chamberlet canals of some protozoans. A microscopic examination might shed some light on them, but I have been unwilling to have a slice made in case it might spoil the celt.

A brief note is all that is required for the broken celt which remains to be noticed. The length of the fragment is 3 inches. At the break, and at a line where the bevel of the cutting edge begins, it is 3 inches broad. The thickness at the break is $1\frac{1}{2}$ inch. The mineral is a quartz felsite, of a yellowish brown colour—a dyke of which occurs in the parish of Walls, Shetland, where the fragment was found. It was given to me in 1875 by one of my students, now the Rev. John Bruce, Free Church, Strichen. It is beautifully polished. Looked at from one side, there are no marks of that edge-shaving or rubbing by which the implement had been narrowed to its comparatively expanded butt—a feature of most, if not of all, stone celts, characterised by a broad cutting edge, but, on the other side, two flat lines are well marked, broadening towards the butt, and terminating in a sharp point near the cutting edge.