

IV.

NOTICE OF EXCAVATIONS IN THE BORNESS CAVE IN THE SUMMER OF 1874. SUPPLEMENTARY TO PREVIOUS NOTICE. WITH PLANS AND PHOTOGRAPHS. BY W. BRUCE CLARKE, Esq., B.A., F.S.A. Scor.

On August 3, 1874, excavations were again commenced at the Borness Cave.¹

Thus far the main body of the cave had been excavated to the depth of 3 feet, with the exception of the narrower portion at the end, which has been spoken of as the passage. Besides this a few hard portions of breccia remained to be cleared out round the edges.

The vertical face of the earth which was presented to view at the entrance of the passage was about 3 feet 9 inches in height, for just at the back of the cave the earth sloped upwards slightly before it was disturbed. In order, therefore, to make the upper or A layer of the passage accord the A layer of the main chamber, it was decided to take off 1 foot 9 inches in that layer, leaving the remaining 2 feet for B and C.

As the passage was so narrow and irregular, it was decided to take out the whole width in each layer at once, and not to subdivide the several parallels, as had been done where the width was considerably greater.

To work in the passage, however, was no easy matter, for the roof was so low that it was impossible to stand upright, or to wield any ordinary tool; and to crown other difficulties, a very considerable amount of breccia was encountered. However, after renewed attacks for some days,

¹ See the accounts of the previous excavations in the Proceedings, Vol. X. p. 476.
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the passage was completely emptied, and the results of the excavation were very satisfactory, some new light being thrown on several questions, which will be alluded to hereafter.

Bones, implements, shells, and charcoal were found heaped together, just as in the other parts of the cave, the latter occurring even at the furthest extremity, which was too narrow to admit any one but a small boy. In the lower parts of the passage, particularly at the far extremity, very large and flattened stones were found lying *in situ*. After the completion of the passage, the remains of breccia at the sides of the cave itself were removed, and finally the stalagmite and breccia rampart at the mouth was attacked.

Thus far all the attempts to blast it with powder, or break it up with hammers and pickaxes, had made but little impression on it. This year, however, a new substance, Mackie's patent cotton gunpowder, one of the most powerful explosives known, was called into requisition. After a few preliminary unsuccessful trials, some tin cartridge cases were made, and the powder was fired by means of a detonator, into which an ordinary piece of fuse was inserted and lighted in the usual way. So effective did one charge in particular prove, which was deeply buried in the solid stalagmite, that with about 2 ounces of the blasting powder nearly a ton of stalagmite was removed. One great objection, however, to removing large masses in this manner, is the impossibility of determining subsequently the exact locality of any specimen that happens to be dislodged, and so, later in the season, another method of working the stalagmite, viz., by large iron wedges, was tried with great success. By this means considerable pieces of stalagmite can be wedged off at once, and at the same time the exact position of every object is just as easily known as if it were buried in cave earth. After the stalagmite was thus removed, it was in most cases broken up, so that no object should, if possible, fail to attract a due attention.

When the rampart was broken into, it proved to be very far from homogeneous in texture. Instead of being entirely composed of granular stalagmite, masses of breccia were here and there found intermingled with it, and in other places were large holes. The breccia had in most, if not all, cases been covered over with a layer of stalagmite subsequently, and had thus given rise to a wrong idea respecting the constitution of the rampart.

Bones and charcoal occurred in fair abundance in the breccia of the rampart, just as in the breccia from the rest of the cave, and even in the solid stalagmite itself some bones have occurred.

The most important discovery, however, of the year perhaps is, that of two fragments of human skull, one of which was found in solid stalagmite, and the other in the rampart of breccia. Their exact position is indicated in the plan. These portions are very fragmentary, one consisting of a bit of frontal bone, with a part of the orbit remaining, and the other of a parietal bone. Both apparently belong to a child under two years of age.

In addition to these remains, two other human bones have occurred in the fifth parallel of the C layer, where they were found lying close under the side wall of the cave. One is the lower end of a child's femur, and would probably have belonged to an individual of much the same age as that denoted by the skull fragments.

The remaining fragment is a humerus, both ends of which are gone, and thus it is impossible to identify its age with accuracy, but from its size it is undoubtedly almost, if not quite, adult. There are no distinct marks of gnawing on it, such as to lead one to infer that its ends had been bitten off by a beast of prey.

The other bones differ but little from those which were found in the previous year, excepting only that the occurrence of goat, about which there were previously some uncertainty, has now been placed beyond all doubt, by some perfect metacarpal and metatarsal bones, not to speak of a horn core, which have been obtained from the passage.

The bones of the ox have been shown by Dr Smith to belong to the form *Bos longifrons*, a small ox whose remains are very widely distributed.¹

Some of the charcoal from the cave has been submitted to Mr Caruthers of the British Museum, and some of it has been identified by him. At present only two species have been made out, viz.—

Quercus Robur, <i>Linn.</i> ,	Common Oak.
Salix sp.?	Willow.

¹ *Vide* Proc. Soc. Ant. Scot., Vol. IX. p. 624.

Besides these, some fragments of heather but little charred have been obtained from the passage.

Mr Hunt has photographed the more important of the implements which were revealed by the autumn's excavations, and also one of the fragments of human skull. The position of both fragments is shown in his plan.

No. 178 is seen to be perforated in the centre, and to have a groove round its circumference, which at the edge is slightly serrated. It may have been used as a net-weight, but it seems somewhat small for such a purpose.

No. 180 is very similar to No. 111, figured in Plate XVIII. of Vol. X.

No. 179 is a piece of Roman Samian ware; it is a good typical piece, but does not possess any figures, such as are sometimes present. This object is very interesting, as it accords well with the evidence as to date which was afforded by the other remains.

No. 177 represents the only flint chip which has hitherto been met with. This chip ($1 \times \frac{1}{2}$ inch) possesses a peculiar interest, inasmuch as, like the Samian ware, it shows that its original possessors were given to exchange or barter in some fashion, for flint does not occur naturally anywhere in the neighbourhood. Professor Geikie has been kind enough to supply me with an account of some of the localities in which flint occurs in Scotland. Flint is found in a brecciated bed underlying the basalts of the Irlmore of Carsaig in the Isle of Mull; in boulder clay; in the basin of the Forth; and abundantly in the north of Scotland, between Inverness and Peterhead; though, as Professor Geikie adds, it is by no means certain that any of these localities furnished the flint in question. Many of the flints from these localities are far too brittle to be used for the manufacture of flakes. Mr John Evans, in describing the manufacture¹ of gun-flints, draws attention to the necessity of procuring fresh flints, because they flake much more easily. A manufactory² of flint implements has been recorded at the confluence of the Leochel and the Don in Aberdeenshire, which may perhaps account for this flake, or it may have been brought from the southern parts of England.

¹ *Vide* Ancient Stone Implements of Great Britain, p. 17 (1872).

² *Vide* Proc. Soc. Ant. Scot., Vol. IV. p. 385.

The remaining objects possess no very remarkable interest.

No. 188 is a similar form to Nos. 6, 71, 102, 137 (*vide* Plate XXI. in Vol. X.)

Similarly, No. 168 is a portion of a comb, and Nos. 181, 144, resemble such forms as 132, &c., on Plate XIX. of Vol. X.

No. 174 is a small piece of bronze.

From these few notes on the fruits of last year's excavations, it will be seen that the Borness cave continues to yield new and interesting results. Should no unusual difficulties be encountered in this year's work, the committee are in hopes that the cave may be completely emptied, and the remaining facts of interest that may be elicited will then be laid before the Society.