STONE AXE FACTORIES NEAR CUSHENDALL, COUNTY ANTRIM.

BY W. J. KNOWLES.

[WITH PLATES XXXI-XXXVIII.]

Several sites in which stone axes have been manufactured are known in county Antrim, but none of them have been carefully examined. The rough unpolished axes from Rathlin Island are well known, and most antiquaries have specimens from that place in their collections. A number of axes, dressed into shape by chipping, but unpolished, had been brought to me from time to time from the neighbourhood of Clough, near Ballymena, but I had obtained no flakes, broken axes, or anything of the nature of a failure. Suspecting that there had been a manufactory somewhere in that district, in order to investigate the matter, I made frequent visits to the place a few years ago. On inquiry, I obtained some flakes of black stone and some poor and broken specimens of axes. I concluded that there must have been a centre of manufacture in the farm belonging to Mr. John Crawford of Glenleslie, and that possibly other sites existed in neighbouring townlands. I encouraged the farmers and labourers to collect the flakes and broken axes, and each market day in Ballymena specimens, in greater or smaller numbers, were brought to me. I soon received quite a large series of flakes, broken axes and failures or partially made axes, chiefly from the townlands of Glenleslie, Tullykittaugh, and Moneyduff, near the village of Clough. Many of the specimens, though considered of little value, were interesting and instructive, and I found that many of the flakes were dressed round the edges into points and scrapers. Though there were undoubtedly one or more sites of manufacture in this district, the land on which they stood had been so long under cultivation, that they had been almost obliterated.

A man named Henry Green, a sort of pedlar, seeing me buy poor objects like black flakes, shortly afterwards brought me a number of flakes of black rock from near Cushendall, found in a field belonging to Mr. Richard McCurry of Tamnaharry or Tavnagharry in Ballymon Glen. This being a new place for such objects, I went there immediately, and found that the field contained a well-marked site of an axe factory. The land had only recently been broken up for cultivation, and the whole process of manufacture of axes was plainly exhibited. Pieces of natural rock partly chipped, rough axes, some of which were broken, flakes and hammer-
stones, were lying around in considerable numbers. Nothing had been removed, unless it was so large, that it interfered with the plough, as the objects were considered of no value. The hammerstones were mostly rounded balls, of black stone, the same as that from which the axes were made; but a few quartzite boulders, hammered on the ends, were also found. The flakes were, as a rule, short and broad, and such as had been struck off in the manufacture of axes. Many had wings projecting from one or both sides of the bulb of percussion, and some were dressed into spear-like points and scrapers. A few core-like pieces and long flakes were found, but I saw no evidence that this kind of rock had been used, like flint for procuring flakes, for the flakes alone. Flint is found in the neighbourhood, and many long flakes and scrapers of that material were found in and around the sites, but the waste flakes of the manufactories were also used abundantly for all purposes of cutting and scraping. The field containing these objects is on an elevated part of McCurry's farm, and in view of the sea. The prospect is delightful, but I am not sure that the axe-makers resided here or used the place for anything but a manufacturing site, as I saw no kitchen middens or remains of food, such as shell-fish and split bones of animals; nor was there any fragments of pottery, such as accompanied the manufactories of flint implements at While Park bay and other places round the coast.

After collecting a large number of articles in this field, I examined other fields in the neighbourhood, finding many comparatively barren of flakes and implements. Eventually, I found another site in Mr. James Quinn's farm in Clougheen, about half-a-mile distant from the site on McCurry's farm. The place which showed the greatest evidence of manufacture was around a damp spot in one of his fields. Probably there was a well here originally, and the people may have sat round it and manufactured their axes. I collected a good many objects from this site, but though none of the objects had been previously removed, the land had been a good deal cultivated, and therefore this site had not the freshness of the one previously described. I found, in this case also, that as one moved away from the site, the objects became scarcer. From this farm, it is about half-a-mile to a small house which has been erected for a herd near Tievebulliagh, a peak 1,346 feet high. Around this house many objects were collected, and at one spot where a fence had been made and some sward removed, I have picked axes, flakes, and hammerstones, out of the bared ground, and also out of the sods which had been put on the fence. A field in front of the house, which was the only piece of land brought under cultivation in this neighbourhood, was full of flakes and rude pieces of rock, many of which were partially chipped. Here, as in the other sites, nothing had been removed, unless it was large and impeded the plough, in which case it was carried to the fence. Farmers are surprised that such poor objects should have any value, and when shown a large axe, they assert that they often put such objects in drains. I can believe this, as the finest specimen I have was used as a wedge to fasten one of the stakes in a byre, or cowhouse, to which cows are tied during the night, I made frequent visits to these and other sites, and had perfect liberty to walk
over the fields and examine and collect without hindrance. The young people on the various farms, when they knew the kind of objects that were desired, collected them for me, and often my collection was so large, that I was obliged to employ a horse and cart to convey it to the railway station. I extended my survey over the whole Glen of Ballyemon, and found other sites and obtained specimens, similar to those already enumerated, every time I went round. The proper season is the spring, when land is being ploughed and harrowed, or at the time of digging the potatoes in the autumn. In the summer no search was made, as trespass on the fields at that time would have been injurious to the growing crops. At this season I explored the part of the district outside the area of cultivation, in the high land surrounding the valley. My wife and I went to Cushendall for a short holiday, and spent our time in wandering about the hills. One day in climbing to the top of Tievebulliagh, we came on a place where the peat and soil had been denuded and washed away, revealing several sites which had never been disturbed. We found a great many axes, broken specimens, and partially worked objects, rounded hammerstones of black rock, and some large ones made of waterworn boulders of quartzite. The flakes were in thousands, and many of them were worked along the edges into points and scrapers, like the "pointes" and "raclois" of palaeolithic time, which are described and figured by French authors. It took my wife and daughter, with myself, several days to remove all the manufactured objects. I did not seek other assistance, as my previous finds had now come to be talked about, and I did not wish to reveal my discovery on Tievebulliagh until I had made a thorough investigation. The objects found on these sites were not mixed with soil, or partially covered up, as was the case with those found in the cultivated fields, but everything was seen as it was left by the early workmen. The peat at the sides of these bared places often stood up like banks, and I have taken specimens from beneath the peat where it rested on the clay. The peat had therefore formed after the workmen had made the axes on the top of Tievebulliagh. All around this mountain there are signs of an active and extensive industry in the manufacture of the black stone axes having been carried on. Even on the east side, which is almost perpendicular, there are ledges on which they have set and carried on their work. Now, after many centuries of denudation, the talus formed at the foot of Tievebulliagh is full of flakes, broken axes, and other signs of the industry. My wife and I have gone to the talus on several occasions with our small picks, and have always been able to fill our bags with instructive specimens. Many of the farmers' sons are now acquainted with this talus and its contents, and call it the quarry. They come with their picks and turn over parts of the numerous streams of stones that have come down the mountain side in search of specimens, and a find of some importance has occasionally been made.

While the sites on the top and sides of Tievebulliagh yielded examples that were instructive, no very finely manufactured specimens were found. These would no doubt be carried away for use or for grinding and polishing at places lower down in the valley, where the Old Red Sandstone appears at the surface, or in the
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beds of streams. However, although axes in various stages of grinding and polishing have been found, I have not, as yet, succeeded in finding in Glen Ballyemon any grinding stones, fixed or otherwise. Some may yet be found, as I have made frequent inquiries for them, and have drawn the attention of the more intelligent inhabitants to the matter. The Old Red Sandstone is the rock that would no doubt be used for the purpose, but it appears in massive form in many parts of the valley, and as grinding could as easily be done at one spot as another, and on a new piece of rock as well as one previously used, no special piece of rock showing marks of grinding may be found. In the valley of the Bann, where sandstone is scarce, many pieces have been found, showing hollows and grooves formed by grinding axes on them.

In addition to the places already mentioned, flakes and axes similar to those described, have been found in the neighbouring valleys of Glendun and Glenariff, indicating sites of manufacture.

In Glen Ballyemon, several varieties of rock were used for axes, but the kind which was most in favour was a close-grained rock of bluish colour which, as far as I can find, is not native to the district. Metamorphic rocks do occur in the valley, but I have not as yet observed this close-grained bluish rock anywhere in situ. It always appears in the form of boulders, which show glacial striæ. The flakes show well-marked bulbs of percussion and a clean fracture. It is a mistake, however, to say that bulbs of percussion are peculiar to particular kinds of rock. The bulb is caused by the blow, and any rock will show a bulb, though in rocks of fine texture, it will be more distinct than in those of coarse grain. I have flakes of granite and quartzite showing well-marked bulbs. In the rock in question, the bulbs are as well-defined as in any flakes of flint. This bluish close-grained rock from which the axes are made, is found all over the valley, until we reach the high ground forming the base of Trostan. On this mountain I did not observe any traces of the rock, nor did I observe any signs of manufacture of axes out of this or any other kind of rock; but on the top of Tievebulliagh, I found boulders of the bluish rock firmly imbedded in the boulder clay, and in cases where the axe-makers could not excavate them, they chipped such parts as remained aboveground. We find that when a boulder was too heavy to be removed, they endeavoured to break it up, though I have seen some boulders which have resisted their efforts. There is a fine large piece of this rock weighing several hundredweight in front of Mr. James Quinn's house, which has had many flakes and spalls removed from it, and now with its weathered bronyz appearance, it looks more like a lump of metal than of stone. I think it is likely that this rock may have been brought by glaciers from Scotland, since we do not find it in situ. Boulders of Ailsa Craig rock are found in various parts of county Antrim, and it was recently found in boulder clay as far inland as Ballymena. It is, therefore, not improbable that the other rock may be of Scottish origin.1

1 Professor Cole has kindly examined a specimen of the rock and writes—"The flinty Antrim boulder, a fragment of which we have long had in hand from you for cutting, has
On examining the objects collected from the sites in the neighbourhood of Cushendall, more particularly those found in an undisturbed state on Tievebulliagh, one can easily observe the whole process of the manufacture of axes. Boulders are seen with only a few flakes removed, which, in this unfinished state, look like rude paleolithic implements (Pl. XXXI and XXXII). Others will be found nearer completion, or perhaps sufficiently blocked out to be ready for grinding and polishing (Pl. XXXIV and XXXV). I have a find of five objects from Glenariff, showing one specimen very rudely blocked out (Pl. XXXIII, 4), another nearer completion, but still in a rude state (Pl. XXXIII, 5), while the other three axes are as finely finished as it was possible to do by chipping (Pl. XXXIII, 6, 7, 8). So perfect are these, that a section through them would be almost as symmetrical as that through a convex lens. Two of these are of the same size, seven inches long and three inches broad. The third is six inches long.

The objects found in the various sites consist chiefly of axes. These were evidently the main object of manufacture. Some pick-like objects were found, which must be considered a distinct class of tool. Some of the same kind made of flint have been found in various parts of Antrim (Pl. XXXVI, 23, 27 and 28). Some implements with heavy butts and dressed to a point at the opposite end are shown, front and side views, in Pl. XXXVII, 29, 30 and 32, a disc-like object in Pl. XXXVII, 31, and two chopper-like implements are shown, front and side views, in Pl. XXXVII, 33 and 34. The objects figured on Pl. XXXVII are examples of fairly frequent occurrence, which I believe are neither partially blocked out axes, nor failures, but implements finished, as far as they were intended to be, by chipping. Flakes dressed as points and scrapers are shown in Pl. XXXVIII, 35, 36, 37, 38 and 39. The long flakes, dressed along each side, are like the “pointes” of the paleolithic age, and the scrapers (Pl. XXXVIII, 37 and 39) are like the “racloirs” of the same period. Front and back views of two flakes which have been dressed like axes are given in Pl. XXXVIII, 40, 40A, and 41, 41A. An axe of the kitchen midden type, one of several, is represented, front and side views, in Pl. XXXVI, 22, 22A, and two similar views are given of an axe made from a large quartz crystal. The sides of the crystal are unchipped and in their natural state, but a cutting edge has been dressed on it by neat and regular chipping (Pl. XXXVI, 21, 21A.) Two of the hammerstones rounded by repeated hammering, are shown in Pl. XXXVI, 25 and 26. A small chisel, one of several that have been found, is shown with section in Pl. XXXVI, 24.

refused to yield a respectable section. By personally finishing a small fragment, however, I have got it translucent, but even then, this extremely altered mass is not explained. By its iron-ore (magnetite) and dull linear colourless areas (probably once felspars), I take it to be an altered fine-grained diorite (an aphanite), which has been penetrated late in its history by a vast number of minute chalcedonic veinsules. The amphibole or pyroxene is now represented by iron oxide only, and the infiltrated chalcedony gives the flinty character in which the ancients delighted. But I know of no other case precisely similar—though basic rocks, as Darwin noted in the Canary Islands, may become silicified like acid ones. I feel, however, that this curious mass really had an igneous origin.”
Nearly eight hundred whole axes have been obtained by myself, besides a great many broken specimens, but the sites having become known, other collectors have searched in them, and have obtained flakes and some axes. The broken axes are mostly small portions of butts or edges. An unlucky blow in the course of manufacture had caused the axe to break, but it is very strange that I have never been able to restore any broken implements, as has been done in the case of Mr. Seton-Karr's finds at the flint mines in Egypt. I believe the reason why we cannot similarly replace broken pieces found in these Irish factories, is due to the fact that the larger pieces of the broken axes were reworked into smaller implements. I have found specimens which support this idea. The axes have been made in various sizes. One fine specimen (Pl. XXXII) is 14½ inches long and weighs 8½ lb. The next largest is 14 inches long and weighs 7 lb. There are others weighing 6 lb., 5 lb., 4 lb. and 3 lb., but the great majority average about 1 lb. in weight. Some small chisel-like objects weigh only 1 or 2 oz. While a few are well-made and finely finished, the greater quantity are rude and coarsely made. Many are crooked, twisted and unsymmetrical, and the part intended for an edge is often thick and clumsy. One could readily imagine that these rude specimens were failures, and had been rejected, but judging from numerous examples in my possession that have been partly ground and polished, I do not believe that the rude specimens I have mentioned were thrown aside as waste material. I am convinced that a piece of good rock was not regarded as a failure, on account of its not working true. When a lump could not be removed by the hammerstone or a thick edge could not be made finer, it appears to me that specimens were not rejected for these defects. A sort of pecking or bruising seems to have been resorted to, for removing an ugly lump; but the chief and final remedy was patient grinding. Pl. XXXIV, 9 and 10, show some of these rude axes that would be finished off by grinding. Pl. XXXV, 15, 19 and 20, show other rude examples. Pl. XXXV, 15, shows a very common type with one broad squared side, the other sharp or nearly so. Pl. XXXV, 16, shows both sides squared, the square sides in most cases like this, being the natural old surface of the stone. Pl. XXXV, 19, is also a typical specimen, and though the chipping has been finished in a very clumsy manner, the process of grinding has begun. Pl. XXXV, 20, shows a thick edge, but though no grinding has been done on the specimen figured, I have other examples of a similar character, where considerable progress had been made in grinding. Pl. XXXV, 17 and 18, are coarse and rude flakes, but both have had edges ground on them at their lower extremities. Pl. XXXV, 17, has an indentation chipped out on each side. Pl. XXXIV, 11, shows an example of the pecking or hammering so as to bruise the surface and reduce it to powder. Pl. XXXV, 13 and 14, are examples of a butt and an edge end of broken axes, but many of the pieces are only about half the size of these. In addition to the rude specimens many, I consider, are only partially manufactured, as Pl. XXXI, 1 and 2, and Pl. XXXIII, 4. The figures are all shown half linear size.
There are various types of Irish stone axes in the polished condition, some of which might be considered a newer pattern than others, which had either been introduced by later immigrants, or perhaps had been developed by degrees from older types; but we find here most patterns among these rudely made specimens. There are examples showing various curves in the cutting edge, semicircular, elliptical and so on. There are expanding edges, squared sides, swages, and the kitchen midden type, all made in these various forms before being polished, and all apparently contemporaneous.

Can any light be thrown on the age of these objects? Were they early, middle or late in the neolithic period? I have taken the implements from the bottom of the peat on the top of Tievebulliagh. I have also removed some of the peat, and dug in the clay underneath, and found the characteristic bluish flakes in the clay below where the peat stood. I have similar rude axes from the townland of Dirneveaghe, about three miles from Ballymena, which were found by Mr. James Stewart, a farmer, who informed me that he got them in the clay at the bottom of a very deep peat bog. He said a hollow would appear to have been made in the clay, and the sixteen rude axes built up in a little heap in the hollow. The evidence here is the same as that on Tievebulliagh, the axes are found below the peat and associated with the clay on which it rests. There are various sections in the neighbourhood of Ballyemon, which show the connection of the peat with the boulder clay. In every case the peat is resting directly on the clay, and is formed round any boulder that rises above the original clayey surface. There is no intermediate layer, as if the clay had undergone weathering, before the peat began to form.

A considerable thickness of peat formed in course of time, which is locally known as hard peat, and on the top of the hard peat the Scotch fir grew abundantly. These trees perished in time, and their roots are now covered with a further thick covering of peat. Occasionally, as the farmer cuts the peat for fuel, polished stone axes are found among the roots of the Scotch fir. Stone axes may have been manufactured down to a later period; but here are two dates, the one between the peat and the boulder clay, the other about the roots of the Scotch fir that grew on the top of the hard peat. The rude axes from Tievebulliagh and Ballyemon being found below the peat, and even mixed with the clay on which it rests is, I think, satisfactory proof that they are of the earliest date and belong to a very early stage in the neolithic period.

As no kitchen middens have as yet been found in the neighbourhood of the sites, we have no evidence of how the people lived. I should think they would occupy the numerous caves in the district, but no examination of them has yet been made. If these caves were explored we would, no doubt, obtain further interesting information.
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