

II.

ON THE MOUNTING OF LEAF-SHAPED ARROW-HEADS OF FLINT.

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Of all the many thousands of arrow-heads that have been collected from time to time, very few have been found with the shaft attached. One is figured in the *Catalogue of the Royal Irish Academy*, vol. i. p. 254. This was a stemmed and barbed arrow, and it is stated that there was "part of its briarwood shaft with portion of its gut-tying still attached." In the *Journal of the Royal Historical and Archaeological Association of Ireland*, 4th ser., vol. vii., there is figured on the plate facing page 127 an arrow-head found in Kanestown Bog, County Antrim, with a portion of the shaft and the tying of gut or sinew. This specimen had an indented base and was inserted in a slit in the shaft, but the tying of gut or sinew had apparently nothing to do with securing the arrow-head in the shaft. I believe the use of the tying was to prevent the shaft from splitting when the arrow struck the object it was aimed at. There was a whitish substance in the cleft of the shaft, which it is supposed was cement. A stemmed arrow-head is figured by Keller in *Swiss Lake Dwellings*, 2nd ed., vol. ii., Pl. xxxix. In this case there was also a tying round the shaft. A leaf-shaped arrow-head found in the Moss of Fyvie in Aberdeenshire, which, though mentioned last, was second as regards time of finding in the British Isles, is figured by Dr Anderson in *Scotland in Pagan Times* (see "Bronze and Stone Ages" of that work, p. 362). This specimen was still in the shaft when it was figured, and the shaft reached to the point of the arrow, but the opinion is expressed that possibly the rough handling to which the specimen was subjected may have caused the arrow-head to slip further back into the shaft.

It is in reference to the mounting of leaf-shaped arrow- and spear-heads I wish mainly to speak, and I think the evidence I can produce will show that in this class of arrow-heads the shaft reached to the

point, and that in the Fyvie example the arrow was most likely in its proper position when figured.

In the summer of 1905 an arrow-head of the leaf-shaped kind, thin and finely made, was found in Teeshan Bog, about 3 miles north of Ballymena, County Antrim, during the time of peat-cutting. The peat-spade struck the arrow, and thus attracted the attention of the workman, and while I believe a shaft must have been present also, none was observed, or thought of, and the arrow-head only was extracted. If a shaft had been present, a labourer might not think of looking for it, and he would likely regard it as one of the numerous small twigs or branches so abundant in peat. The arrow-head was brought to me shortly after it was found, and on washing off the black stuff, which I supposed to be peat, I observed two lines running from base to point which adhered firmly. I stopped washing at once, as the thought flashed on my mind that the two dark streaks were cement and the space between them was the mark of the shaft. This I believe is the correct interpretation. I regret that I handled it rather roughly, as no doubt some of the cement may have been removed. It is $2\frac{5}{8}$ inches long, and is shown in fig. 1.

About September last, when I was looking through some of my arrow-heads, my attention was drawn to a specimen having a band of lighter colour than the portions on either side, extending from base to point. It occurred to me that this was further evidence of shafting, and I think we may explain this case by supposing that the arrow- or spear-head had fallen so as to leave one of its flat faces exposed to the weather, and that it had lain long enough before being covered up for the portion of the blade on each side of the shaft to be weathered a darker shade than the portion that was covered. The greater portion of the face that was undermost and protected from the weather is similar in shade to the part protected by the shaft on the side that was uppermost. We meet with many cases of implements having the side that had lain exposed to the sun and weather much darker in colour than the other which was protected by lying on the ground. I have

many instructive specimens of this kind found in Ireland, France, Egypt, and elsewhere. From the breadth of the band of lighter colour in the specimen under consideration, I would conclude that the shaft was pretty thick and that it had been used as a spear. It is $2\frac{1}{2}$ inches long, and was found in peat near Glarryford, about 5 miles from Ballymena, over twenty years ago. It is shown in fig. 2.

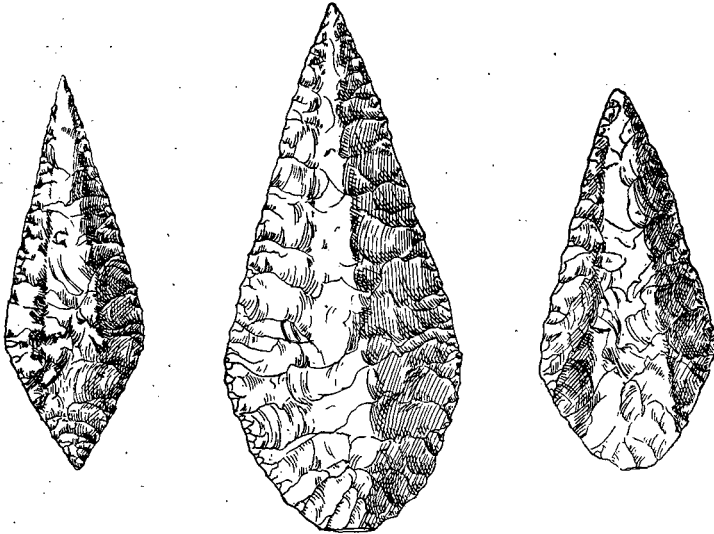


Fig. 1.

Fig. 3.

Fig. 2.

Figs. 1-3. Arrow-heads of Flint showing the mark of the shaft. ($\frac{3}{4}$.)

I now began to search diligently for similar examples, and found two more. One had the markings more distinct than the other. The better marked specimen is a finely made spear-head $3\frac{1}{2}$ inches long, with a very small portion broken off the base. The light band is narrower in this case and appears on both faces, instead of on one only, as in the case of fig. 2. I should think we could explain these differences by supposing that the spear-head had fallen on its edge instead of on one of its flat

faces. Both faces would thus be exposed to the action of the weather. The shaft, too, would not be lying close to the moist ground and would thus dry and shrivel and therefore not protect so broad a space. This specimen was found in Craigs Bog, about 5 miles from Ballymena, in the summer of 1898. It is shown in fig. 3.

Neither of the last two specimens attracted any attention at the time they were procured, and lay unnoticed till a few months ago. I may have other examples in my collection, but, if so, I have not as yet found them. I remember a spear-head which I exchanged with a collector for an ancient gold ornament, and I have a distinct recollection of seeing the band of lighter colour down the centre, but at the time I did not know what it meant. The gentleman is now dead, and his collection has been dispersed or acquired by some museum. I fear this specimen could not be traced.

In stemmed arrow-heads the central tang or stem was no doubt used to tie the shaft to. The tangs are usually stout and strong and suitable for that purpose. Triangular arrow-heads, those with indented base and a variety of the stemmed kind with minute central tangs, were no doubt inserted in a cleft in the shaft, like the specimen described above from Kanestown Bog, having a tying of gut behind the arrow-head to prevent the shaft from splitting, with probably some cement to fix the arrow-head in the cleft and prevent its moving from side to side. In these cases I believe the cleft portion of the shaft only passed for a very short distance along the faces of the arrow, but in the leaf-shaped, the lozenge- and the kite-shaped, the shaft, judging by the evidence of the example from Fyvie and that which is now produced, went to the point of the arrow, probably secured by cement. Perhaps there was a tying round the shaft to prevent splitting, though there is no appearance of anything of the kind in the Fyvie example. The thinness of the leaf and kindred kinds as compared with the stemmed and indented, and the polishing of the faces of our larger Irish spear-heads, particularly the kite-shaped kind, can be better understood when we see how much the thinness would facilitate the peculiar mode of shafting in these classes

of arrow- and spear-heads. From seeing some of the black matter which I imagine to be cement in the space that the stem must have occupied in fig. 1, I imagine that cement had been laid on the faces of the arrow-head and the shaft squeezed tightly down. The two lines of black matter would probably represent what had oozed out on each side.

If cement was used, as I consider probable, we have to consider what was the nature of it and where it was found. In the Swiss lake dwellings they had asphalt as a cement for fixing arrow-heads and axes in the shaft, but in Ireland we have no natural substance, so far as I know, which could be used in the same way. The dark-coloured substance appearing on fig. 1 reminds me of shoemakers' wax. Wax of this kind, though now made differently, was formerly made by boiling resin and tallow together. It is a question whether the people in the time when arrow-heads of flint were in use could have procured sufficient resin from growing pine-trees or from bog-fir to make such a cement. Provided they could, no doubt such fat as they could procure from animals which they killed would do to mix with the resin, and thus make the necessary cement.

I have always thought that if the ancient people had invented the making of putty, it would have been an excellent cement. From seeing the whitish substance in the cleft of the shaft found in the Kanestown Bog, which I took to be cement, I at once thought of putty. Putty is made by mixing whiting, that is limestone ground to a powder, with linseed oil. If the fat of the animals which they slaughtered for food had done as well as linseed oil to mix with powdered limestone, a question I am not sure of, then I should think they may have known the use of putty, as at the prehistoric site of Whitepark Bay I have obtained several pieces of limestone, both ground and scraped. My idea at the time of finding these specimens was, that the people had ground the chalk rock and scraped it in order to get a white powder with which to paint their persons, just as pieces of hæmatite were similarly rubbed and scraped to get red powder for a similar purpose; but seeing that they

knew how to obtain powdered limestone, it only required a suitable ingredient to mix with it to make it the cement in question.

There is another very good homely cement used in the north of Ireland for mending broken crockery. This is a mixture of curds and lime. Possibly a knowledge of this cement may have reached back to prehistoric times. I think the people even then could have provided both ingredients, and, if they could, judging from effects which I have seen, they could have had no better cement. Possibly they may have known of some equally good binding material, the knowledge of which is lost. That cement of some kind was necessary, and was used, I think there can be no doubt.