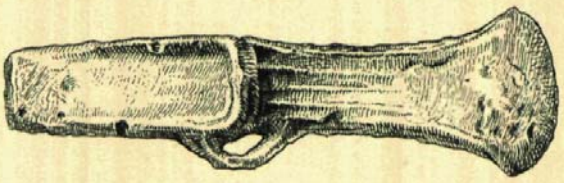

Fig. 1.

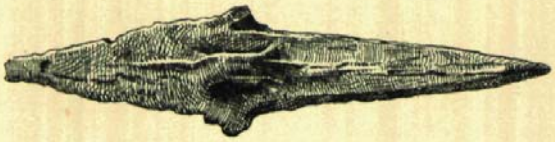

Fig. 2.

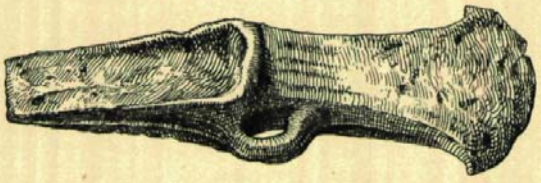

Fig. 3.

Fig. 4.

J. TOWNSEND LITH. EXETER.

PALSTAVES FOUND AT BITTERNE.

½ *Scale.*

# A HOARD OF BRONZE IMPLEMENTS FOUND AT BITTERNE.

By W. E. Darwin, M.A., F.G.S.

Sir John Evans in his work on Ancient Bronze Implements gives a list of the principal hoards of implements found in Great Britain as far as he has been able to collect the particulars up to the date of his book.

Apart therefore from local interest, the Hampshire Field Club will be doing a service to prehistoric archæology by allowing me to place on record in their Proceedings the discovery of a hoard of bronze implements which has lately been made in the neighbourhood of Southampton. In the month of October last (1894), a workman, of whom I know something, brought me five bronze implements, which he told me he had found in cutting a new road in the Bitterne Park estate, and one or two days afterwards he brought me three more which he had found in the same place. I afterwards visited the spot and found my friend at work there, and he then shewed me the exact position in which they were discovered. A new road called, I believe, the Manor road, runs to the north out of the main road on the Bitterne side of, and close to the Cobden bridge, out of this road at about 100 yards from the Cobden bridge there is a new road being cut towards the east, and about twenty yards up this road on what is now the body of the road, these implements were found. I understand that they were at a depth of about 13 to 14 feet from the surface in a peaty soil, and that peat had accumulated above them. The finder first came

across them with his pick, and has broken the rim of one of them, he then made a search in the black earth and found the five implements in what appeared to be a hole made for the purpose of hiding them. I think for several reasons we may conclude that they had not sunk in the peat, but that the peat had accumulated over them ; in the first place the locality is about 30 to 40 feet above the margin of the Itchen, and on a slight hill-side, hence there would be a fair drainage, and the peat would not become boggy in consistency. The finder also tells me that he found with the implements a weapon of about two feet in length, with rivet holes in it at one end. Unfortunately as soon as he took hold of the weapon it crumbled to pieces in his hand ; there is no doubt however that it was a leaf sword, so called from its resemblance to a long narrow leaf, and of foreign manufacture, according to Professor Boyd Dawkins. Even supposing the finder made a mistake as to the length of the weapon, it is pretty clear that a long narrow piece of bronze would not sink equally in the peat with heavy compact implements, therefore it seems very probable that the tools were found just in the spot where they were deposited. The depth of peat above them, however, will be very little guide as to age, as it appears to be only a local deposit filling up the hollows on the hill-side, and probably is the remains of vegetation caused by water oozing out of the hill, or possibly there may have been a spring not far off.

There is one point of interest in the spot, namely that it is about three quarters of a mile to the north of the Roman station of Clausentum, and both places being on the east side of the river there is great probability that the Roman road to Winchester and the north would have passed above the Itchen bank much in the direction of the present Manor road. Roman roads must in many cases have followed the lines of much older roads, therefore we may suppose that the ancient possessor of these implements had his circular hut on this hill-side overlooking the track to the north, and had buried his treasures either under the mud-floor of his hut, or in some handy nook near by; and I think it not improbable that as the neighbourhood is developed for building purposes more signs of a pre-Roman settlement may come to light.

I may add that I possess a fine neolithic celt, which was found on the surface, near this locality just above the river level.

In Sir J. Evans's register of hoards there is mention made of only two 'finds' in Hampshire, and one in the Isle of Wight, and only in one of these, namely—in Woolmer Forest—is there a representative (a palstave) of one of the kinds of implements found at Bitterne. In addition to these principal 'finds' Sir J. Evans mentions six other localities where isolated or a few implements have been found in the county, and Mr. Shore has kindly given me a list of nineteen other such localities.

The Bitterne hoard consisted of the leaf sword which crumbled away, and which the workman said was made of bell metal, four so-called palstaves, and four socketed celts. It may save the trouble of reference to some readers if I explain in a few words the names palstaves and socketed celts. The names have come into use to distinguish two kinds of small axe-heads, which at first were made of bronze, though at a later date some were made of iron. The distinction between palstaves and celts consists in the fact that the butt-end of the palstave was formed for insertion in a split or groove in the handle, while the socketed celt has an open mouth at the butt-end into which the handle was inserted. A reference to the accompanying plates will make this difference quite plain. The term palstave has been adopted from Scandinavian antiquaries, and is a corruption of the icelandic word paalstab, which is the name of a spud-like tool still in use in Iceland, and which somewhat resembles these bronze implements (see illustration in Evans).

The word celt, though traditionally derived from the Celts, is believed to be probably the English form of a very rare fourth century latin word—celtis—meaning a chisel: according to Evans it was first used as applied to antiquities as long ago as 1696.

Implements of bronze have been found throughout Europe, as well as in Asia and North Africa, and in all parts of the British Isles. Antiquaries at present are agreed that, though there is a great similarity in all bronze implements, there are several continental types, and that the English type is dis-

tinguishable from the Irish, and in certain cases from the Scottish type. As yet, however, very little has been done in the way of dividing England into districts by the preponderance of any particular local types.

It would be an interesting work for any one who had the leisure for it, to take Hampshire as one district, and then to take districts to the north, east, and west of Hampshire, and to analyse and tabulate all the recorded finds of bronze implements in the four districts. By such a labour probably valuable conclusions would be arrived at on many points. It is considered pretty certain that the manufacture of bronze was not an indigenous invention, but that the knowledge of it was brought from a neighbouring country, probably from France ; also it is shewn in a curious way, to which I will refer later on, that the socketed celts are a continental invention, and that they were imported, and afterwards imitated here. Throughout Europe, as well as in this country, the proportion of copper to tin in the bronze is roughly about ten to one, but in addition there are in its composition varying quantities of lead and iron and other metals, and it is possible that in time these varying constituents may give a clue to the origin of the bronze. It seems therefore highly probable that a careful comparison of implements found in each district may throw light on many points, such as, the localities where the manufacture was carried on, the centres of population in each district, whether one district was more warlike or had a more advanced civilization than another, whether certain types came in more from the west or the east, showing the direction of trade routes, or more intimate intercourse in one direction than another, and in which direction there seemed to be the greater number of implements of a Gaulish type, showing the probable trade route with Gaul, &c. In order to make the account of the Bitterne hoard of service in such ways to students it seemed well to give a sketch of all the implements but one, and accurately to describe each in detail ; as such details are decidedly dry they have been relegated to the description of the two plates.

Both palstaves and socketed celts may be generally described as the heads of small axes, hatchets, and adzes,

they were attached to hafts of lengths varying from 14-in. to 2-ft. and were probably carried hung to the girdle. Palstaves are undoubtedly the older implements of the two, and may be first described. The first parent of the palstave was the bronze copy of the plain stone axe-head, which had a curved cutting edge and tapered towards the butt-end, the earliest and simplest bronze axe-head, however, is not a direct copy of any English stone axe, therefore it is evident that the earliest bronze axe was copied from some foreign model. Axe-heads of this description when fastened into a hole at the side of the haft, or if inserted into the split end of an L-shaped or V-shaped bough would stand a direct blow, but would tend to become displaced by any side strain. When bronze came into use instead of stone it would be in time seen that it was easy to make slight flanges at right angles to the blade at the butt-end, which flanges would counteract the side strain, and would keep the implement steady in the haft. There would also be another objection to the plain stone or bronze axe-head, namely that there would be a tendency to drive the tapering butt-end further and further into the wood, and so split the haft, hence an ingenious workmen would be tempted to make a ridge across one or both faces of the tool just so far down as he wished the butt-end to penetrate the haft, this ridge is called the stop-ridge, and a better hold is given in the fully developed palstave for the split ends of the haft by making the blade thinner above the stop-ridge than it is below, and a reference to the measurements given in the description of the plates will show that this is the case. Many of the moulds for the manufacture of palstaves made either of burnt earth, or stone, or of bronze, have been found; they are naturally of a rough description, and as can be seen by the irregularities in the metal at the sides of the implements the two halves did not fit very accurately together. After the tool came out of the mould in a rough shape it was rasped smooth and the edge hammered out so as to give it a lunar curve with more or less of a fine edge, and then in some cases it was ornamented by punching or filing.

The loops on one side both of the palstaves and the celts have given rise to some discussion, but there seems little doubt that they were used to bind the tools to the hafts,

probably they were also of use in preventing the loss of so valuable a property in case the heads should become detached from the hafts; in several of the loops in this collection there is a slight sign of wearing of the loops at their upper junction, showing that a cord has tied them back to the haft, and that they were not suspended by the loops as some have supposed.

The socketed celt is of a later date than the palstave, as has been proved by the earlier appearance of the palstave with other implements in the hoards. It is clearly further removed from the early type of the bronze axe, also it needs more skill and ingenuity in its manufacture from the fact that an inner core is needed in addition to the two outer moulds. The origin of this form of tool seems to have been either in Germany or France. On the continent a form of celt was made which is rare in England, in which the two flanges on the sides of the butt-end of the implement were made broad enough to be hammered round the haft so as to make a sort of socket. A sharp workman who was skilful in bronze casting would see that he could make a pocket by means of a core which would imitate the socket made by hammering round the flanges, and it is probable that an axe-head of this kind; into which a massive haft could be inserted; and wedged; would make a more efficient tool. Another inducement for adopting the socketed celt in place of the palstave must have been the great economy of metal, as I find that three of the palstaves weigh 2-lb. 13-oz., while three celts with about equal total cutting edge weigh only 1-lb. $\frac{8}{8}$-oz. I mentioned in an earlier part of this paper that there is a rather curious little bit of evidence that the socketed celt was a continental invention. It has been stated above that on the Continent there was a common form of celt in which the flanges were large enough to be hammered round from each side, so as to form a socket for the haft, but that this form was rare in England. In this country there are not unfrequently found socketed celts in which there are two curved ornamental ridges meeting back to back close under the rim moulding, and these ornaments have all the appearance of being reminiscences or rudiments of the two halves of the hammered flanges, which would meet round the haft in just such a manner. Hence we may suppose that the workman when he

first made the true socketed celt still preserved from custom the signs of the old hammered flanges, and that these earliest forms of the socketed celts were imported into England for barter, and were afterwards copied here, and that in time the rudiments of the flanges were omitted.

It may be worth while to make a few general remarks on the individual implements of this hoard. Sketches of seven are given, the one of which no sketch is given differs extremely little from Fig. 1, Plate 1; it is about a quarter of an inch longer and rather heavier. In No. 2, the 5 ornamental ridges on each face are very clearly marked; while in No. 3 the ornament consists in four grooves gradually getting longer towards the loop side, which were probably made with a punch. No. 4 is classed as a palstave from its make, but judging from its small size it was used as a chisel, and was let into the end of the handle as in the case of a modern chisel. Of the socketed celts, two only call for remark namely, No. 6 and No. 8, Plate 2. No. 6 is a celt in a very fair state of preservation, and is not much worn, but the ornamental ridges on the faces are extremely faint. Sir J. Evans notices such cases, and gives what appears to be the only explanation, namely, that a much worn celt had been used, from which to make the mould for similar implements, and this is confirmed by the fact that the solid metal below the socket hole is short, which would be the case if an old celt had been used for making the mould.

No. 8, is an interesting specimen: it has clearly been water-worn, as is proved by the surface and the threadlike condition of the loop. Sir J. Evans mentions a celt which corresponds very fairly to this one, which he obtained from the pebble beach at Portland, and which has a very thin and worn loop, and the shape also is long and narrow in proportion, and is of the Gaulish type. We may without much hesitation conclude, that No. 8 in this collection is a Gaulish celt which was imported for barter, and lost on the beach somewhere in the West, and that our Bitterne native either found it, or obtained it in exchange, and has preserved it for the sake of the metal, or as a foreign curiosity.

In viewing the collection as a whole it is worth remarking that the implements were all made from different moulds

and that one celt and the leaf sword were probably of foreign manufacture. Therefore it seems reasonable to suppose that the owner obtained them in various parts of the country, and that none of them were made in the immediate neighbourhood. Professor Boyd Dawkins states that copper ore could only have been obtained in Cornwall, Devon, or Somerset, and Mr. Whitaker tells me that the bronze founders certainly did not get their ore in Hampshire, and he has doubts whether they obtained it elsewhere than in Cornwall. Nuggets of bronze have been found in many hoards together with implements and moulds, and it is probable that they were exported from the west as a simple sort of money. Also it is probable that hoards of implements, where there is no sign of there having been a foundry on the spot, composed the ready money of the owner as well as his store of tools. Sir J. Lubbock in his 'Prehistoric Times' mentions a curious fact, that in the Dublin Museum there are 688 bronze implements, and that no two of them are from the same mould, from this fact he concludes that the moulds were not permanent. On the other hand Sir J. Evans shews that even implements made from the same mould are often unlike from the careless way in which they were cast; moulds are often found, and were made of baked earth and sometimes of stone or of bronze itself, which proves that they were often carefully preserved, and must have been used over and over again. It would be interesting to know whether the Dublin collection was brought together from many different parts of the country.

All conclusions with regard to the general question of the origin of bronze and its introduction into this country, and of the chronology of the bronze age must in the present state of knowledge be to a great extent tentative. Both Sir J. Lubbock and Professor Boyd Dawkins are of opinion that the fact of the very general resemblance of the bronze implements and weapons throughout Europe makes it almost certain that the original patterns came from some common source, and they infer from various reasons that the site of the first invention of bronze must be sought somewhere in Western Asia. M. Chantre, a Swiss authority, maintains that the hoards found on the old trade routes from Italy, go to show that in very early times bronze implements were

exported by the Etruscans, who were pretty certainly of eastern origin, to Switzerland and Gaul. The fact that throughout Europe the earliest bronze implements found are the simple axe copied from the stone axe-head, and the simple dagger copied from the stone dagger show that the first introduction of bronze was a very gradual process, and took place very long ago. Professor Nilsson, a very great authority, holds that bronze was introduced into England by the Phœnicians in about 1200 to 1500 B.C. Lubbock and Evans, while they cannot agree with Nilsson on this point, consider that the traditional account of the early visits of the Phœnicians to this country is founded on fact. On the other hand Professor Dawkins will not allow that they arrived here before about 500 B.C., though he states that they were certainly trading in the Mediterranean as early as 1700 B.C.

The probability seems to be that traders or marauders from Gaul, as being the nearest main land, were the first to introduce implements of bronze, and probably nuggets of the ore, and that the inhabitants in time succeeded in making bronze for themselves in the west, and on the rumour spreading southward that both metals were to be found together in the south of England, that the Phœnician traders were attracted here in very early times. Professor Boyd Dawkins believes that the invention of bronze implements was relatively as great an invention as that of gunpowder in its influence on the progress in civilization and invading capacities of tribes, and he thinks [that bronze was] brought into this country by the Celts, who drove before them to the west, the old long-headed Neolithic inhabitants. On the other hand Mr. C. Elton, in his 'Origins of English History,' has come to the conclusion that the Celts only entered this country after settlements had been made by a tall round-headed race who used bronze implements: this race was of Finnish type which still prevails largely in Denmark and Slavonian countries. The probability of this theory is strengthened by the fact that history in later times shows how apt the northern seafaring races have been to invade and colonize England. The Finns belong to the Turanian stock, from northern and central Asia, and it is quite possible that

they may have acquired the knowledge of bronze by some northerly route at a very early period. Though General Pitt-Rivers shows that in Yorkshire the two races apparently lived on friendly terms together, it would seem that Professor Boyd Dawkins is right in stating that in the south of England, a powerful round-headed race who used bronze, took the place of the Neolithic inhabitants more suddenly than can be explained by friendly intercourse. We have within a moderate distance of Southampton two very interesting remains—Avebury—which is believed to belong to the transition age between neolithic and bronze, and Stonehenge, which has been proved to be undoubtedly of the bronze age.

As to the chronology Sir J. Evans is probably the highest authority. He considers that the bronze age may have lasted in this country a thousand years, and may be divided into three periods, and that palstaves and socketed celts belong to the third period. He states that iron was to some extent in use in the south of England not later than the fourth or fifth century, B.C., and that by the second or third century B.C., the employment of bronze for cutting instruments had practically ceased. He arrives at this conclusion by what he thinks has been proved as to the approximate date of the transition period in France. I cannot find in Sir J. Evans's lists of implements any mention of socketed celts having been found with iron in this country, and Sir J. Lubbock says that there is hardly a single case in which implements of the two metals have been found together; therefore I think we may fairly suppose the implements described in this paper, to belong to a period *before* four to five hundred B.C. Swiss archæologists consider that the bronze age in their country began about 2000 to 3000 B.C. Danish authorities hold that the bronze age covered a very great length of time, judging by the barrow remains in Denmark: also if the Phoenicians visited this country about 1200 to 1500 B.C. I think it may be taken as evidence, that bronze was already known and worked in this country before that date, therefore I should be inclined to say that Sir J. Evans's period of a thousand years is the minimum for the bronze age in the south of England.

Hesiod wrote about 900 B.C., and he gives us to understand that in his day, iron though in use with bronze, was considered an ancient invention. Professor Jebb states that the Odyssey in its first state was composed about 1100 B.C., and was enlarged before 850 B.C., and therefore is earlier than the Iliad. In Book I., which probably belonged to the enlargement, there is the following interesting passage, "and now am I come to the shore, as thou seest, with ship and crew, sailing over the wine-dark sea, unto men of strange speech, even to Temesa (in Cyprus) in quest of copper, and my cargo is shining iron."* It is clear from this passage that bronze, and perhaps pure copper were then the common metals, and that iron was a precious metal, and suitable for barter. How much earlier bronze came into use among the Greeks, it is impossible to say. A comparison of these dates with the preceding ones suggests the conclusion, that the 'Bronze Age' should be regarded as a relative stage of culture, and not a contemporaneous condition extending over wide areas, and that both bronze and iron were originally introduced into Europe from the East.

The 'Bronze Age' is especially interesting, owing to the fact that while the 'Stone Age' in all its stages can still be studied in savage life, the bronze civilization has been unique in the world, and cannot be compared with any modern representative. This circumstance, though no doubt it increases the difficulty in arriving at definite conclusions, should stimulate our desire to know more about such a stage of civilization and its special manufacture, the more so as this manufacture in its latest and transition periods gave proofs of high artistic abilities.

I need hardly add that for most of my facts and observations, I am indebted to Sir John Evans's interesting and valuable work on 'Ancient Bronze Implements found in Great Britain'; to the works of Sir John Lubbock and Professor Boyd Dawkins, I am also much indebted. In conclusion I may say that the implements described in this paper are in the possession of the Hartley Institution, and may be seen by anyone who is interested in the subject.

*Butcher and Lang's Translation of the Odyssey.

## DESCRIPTION OF PLATES.

### Palstaves with one Loop.

Plate I, Fig. 1.—Length of implement, $5\frac{3}{4}$-in.; width of blade just below the stop-ridge, $\frac{3}{4}$-in.; width of cutting edge, which is fairly curved, $1\frac{3}{4}$-in.; thickness of blade just above the stop-ridge, $\frac{5}{8}$-in.; thickness of blade below the stop-ridge, $1\frac{5}{16}$-in. Vertical flanges on each side of both faces of the blade above the stop-ridge, $\frac{5}{16}$-in. high, flanges die away about $\frac{3}{4}$-in. from the butt-end. On each face of the blade there are five very distinct thin ridges, including one at each edge of the blade, these latter continue further down the blade than the three central ridges. A strong flat loop is welded above and below the stop-ridge.

Plate I, Fig. 2.—Gives a side view of implement No. 1 on the loop side. The sides are flat, and in the centre of each side there is a rough ridge, caused by the metal protruding between the two halves of the mould.

Plate I, Fig. 3.—Length $5\frac{1}{2}$-in.; width just below the stop-ridge, $\frac{3}{4}$-in.; width of cutting edge, which is much curved, nearly 2-in. Thickness of blade just above the stop-ridge, nearly $\frac{5}{8}$-in.; thickness of blade below the stop-ridge, $1\frac{1}{8}$-in. Vertical flanges on each side of each face of the blade above the stop-ridge about $\frac{1}{2}$-in. high, the flanges die away about 1-in. from the butt-end. A flat broad loop with upper attachment close to stop-ridge; inside of loop near stop-ridge is slightly worn as by a cord. There are four grooves on one face only, probably made by punching, the longest of $\frac{3}{4}$-in. being on the loop side, and the shortest of $\frac{1}{2}$-in. in length on the opposite side. The sides are flat, and show the junction of the two halves of the mould.

Plate 1, Fig. 4.—Classed as a palstave, but probably used as a chisel. Length $4\frac{5}{8}$-in. Width of blade below the stop-ridge, $\frac{5}{8}$-in.; width of the cutting edge, $\frac{7}{8}$-in. Thickness of the blade just above the stop-ridge, $\frac{3}{8}$-in. thickness below the stop-ridge, $\frac{5}{8}$-in. Vertical flanges to the sides about $\frac{1}{2}$-in. high are much broken away, they die away about $\frac{1}{2}$-in. from the butt-end. No ridges or grooves on the faces; a small loop, which is broken at the top.

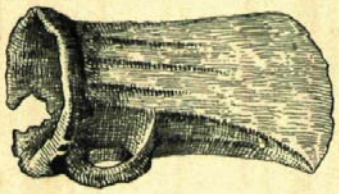

Fig. 5.

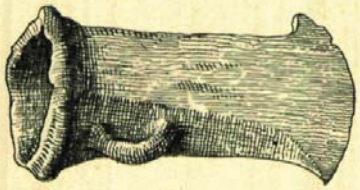

Fig. 6.

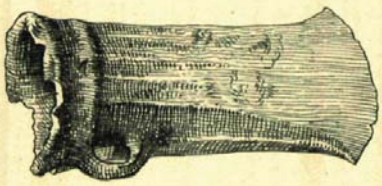

Fig. 7.

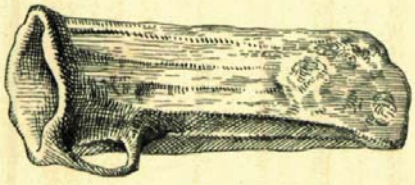

Fig. 8.

J. TOWNSEND, 15TH. EXETER.

**SOCKETED CELTS FOUND AT BITTERNE.**

½ *Scale.*

## Socketed Celts.

Plate II, Fig. 5.—A massive implement, not much worn, modern chip in rim, also one corner broken anciently. Length of implement 3⅜-in., dimensions inside the mouth 1⅜-in. by 1⅛-in. Width of face under moulding 1¼-in., width of cutting edge 2-in. A single light moulding to rim, which is quite flat on the top. A strong loop, angular in cross section, is welded at the upper end to the moulding, and is worn thin at upper end. On each face there are three ill-defined ridges, reaching about half way down the faces; the edges of each face are sharp, and give the appearance of two additional ridges to each face. The sides are not flat, but rise to a central ridge, so that that implement is somewhat hexagonal in section. The socket is quite plain within; the solid portion of the blade below the socket is ¾-in. deep.

Plate II. Fig 6.—A well-made implement not much worn, but the cutting edge is broken away all round. Length 3½-in., dimensions inside mouth 1⅛-in. square with rounded angles. Width of face under moulding 1-in., width of cutting edge 2-in. A single heavy moulding, not flat on the top. A moderately strong loop, attached ½-in. below the rim moulding, loop is worn rather thin at the upper end. The sides are flat, so that the section is nearly square. Very faint marks of three ridges down each face, no ridges at the edges. At the sides there are no ridges, but faint marks of the junction of the two halves of the mould. The socket is plain within: the solid portion of the blade below the socket is ⅝-in. deep. The mould for this implement was most probably made from an old worn celt.

Plate II, Fig. 7.—A rather worn implement, a portion of the rim is broken away, probably by the finder's pick: the celt has circular holes eaten into the surface, in two places quite through the metal. Length of implement 3¾-in.; dimensions inside the mouth, about 1⅛-in. square with rounded angles. Width of face under the moulding 1-in., width of cutting edge 1⅝-in. The mouth spreads a little, but has only a very light moulding, ⅛-in. below this moulding there is another string moulding passing all round just at the point of attach-

ment of the loop. On each face are five worn ridges including the ridged edges of each face. The sides are flat, and have each a ridge down the centre ; in section the implement is nearly square under the moulding All the 12 ridges pass up through the string moulding into the upper moulding. The socket is plain within : the solid portion of the blade below the socket is $\frac{3}{4}$-in. deep.

Plate II, Fig. 8.—A thin and very much worn implement, has all the appearance of having been sea-worn. Length of the implement is $4\frac{1}{8}$-in., dimensions inside the mouth about 1-in. full by $1\frac{3}{8}$-in. Width of face under moulding $1\frac{3}{16}$-in., width of cutting edge $1\frac{1}{2}$-in. The mouth spreads a little, and has one thin worn moulding. The loop is worn extremely thin in its whole length, and is attached to rim moulding. There are three faint ridges on each face, which continue about two-thirds down the faces of the blade. The sides are flat, but have central ridges, which run quite down to the cutting edge. The implement is fairly rectangular in section below the moulding.

The socket is plain within : the solid portion of the blade below the socket is $1\frac{1}{8}$ inches deep.