## I.

## NOTICE OF A COLLECTION OF PRIMITIVE IMPLEMENTS OF THE ANCIENT SWISS LAKE-DWELLERS, FROM CONCISE, ON LAKE NEUFCHATEL.

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In proceeding to fulfil a promise to communicate to the Society some notice of American Antiquities, I am tempted to turn aside from the indigenous relics of this continent to others, which, though enriching an American collection, illustrate the arts and habits of Central Europe in ages preceding its historical epoch.

It is now twelve years since the attention of Dr Keller was attracted to the discovery of carved deers' horns, stone implements, and other relics of human workmanship, brought to light in consequence of operations resulting from an unusual depression of the waters of the Zurich Lake. The revived attention to the primitive archæology of Europe, and the

direction which certain geological speculations and researches have recently taken, tended to render the period of the discoveries at Zurich peculiarly favourable for their thorough investigation. Since then, accordingly, various highly competent investigators have followed up the first glimpse of the traces of ancient lake habitations in Switzerland with great success. Remains of extensive pile-work, the sites of populous villages and settlements, have been brought to light, and the disclosures consequent on their minute exploration have suggested many ingenious speculations relative to the earliest inhabitants of Switzerland, the condition of animal life contemporaneous with the primitive lake settlements, and the probable date of the first presence of man in the sheltered valleys of that remarkable district of Central Europe.

The correspondence of the lacustrine pile-works of Switzerland to Irish and Scottish crannoges has not failed to attract attention; and though some of the evidence in relation to the latter tends to show that they continued in use down to a comparatively late date, there are many points of resemblance between the two well deserving of minute study. It is interesting, indeed, to find in this, as in so many other instances of recent disclosures in relation to primitive European antiquities, that, although the full significance of the traces of the Scottish lake-dwellers was not appreciated when first brought to light, they have long been noted as objects of exploration by the Scottish antiquary. A letter by Dr John Ogilvie of Forfar, preserved among the earliest communications made to the Society of Antiquaries of Scotland, describes the construction, and some of the contents of a crannoge discovered in the Lake of Forfar, in 1781, in consequence of the lowering of its waters by drainage. One of a set of upwards of thirty carved counters, or tablemen, of bone, found on that occasion, is now in the Society's collection. Silver ornaments, described by Dr Ogilvie as resembling ear-rings, were also met with; and he further describes several very large tusks of boars or wolves, and deers' horns of an extraordinary size.[1] The discoveries in Duddingston Loch at a still earlier date (1778) also included large deers' horns and other animal remains, along with numerous bronze

[1] [In addition to the above, the reader may refer to the Notice of two "Crannoges" in Bute, with Plans. By John Mackinlay, Esq., F.S.A. Scot., in the Proc. Soc. Antiq. Scot., vol. iii. p. 43].

weapons, besides which several human skulls were dredged up, the subsequent disappearance of which, without any record of their typical characteristics, is greatly to be regretted.[1] Traces of piles still standing in the eastern part of the loch invite to further research. The piles and oaken logs found in the Loch of Forfar supplied a striking counterpart to some of the recent disclosures in Switzerland; and those, with the abundant remains of an extinct fauna, clearly indicate an era when the country was still covered with the natural forest growth, and in part occupied by many long extinct animals, and even by some which were supposed until recently to have altogether preceded the presence of man.

During my last visit to Europe, in 1863, I had repeated opportunities, both in France and England, of examining collections illustrative of the character of the remains found in the lacustrine villages of Switzerland. But since my return my attention has been attracted by a curious, and in some respects more valuable collection, formed by Professor Agassiz, and now in the Natural History Museum at Cambridge, Massachusetts. As this collection has been formed under peculiarly favourable circumstances, and lies beyond the reach of most British students of the remains of the ancient lake-dwellers of Europe, a few notes and sketches illustrative of its contents may not be without some interest and value to my old friends of the Society of Antiquaries of Scotland.

The father of the distinguished American naturalist, to whose kindness I owe the facilities I enjoyed for minutely studying the objects now referred to, fulfilled, for a period of fifteen years, the duties of a parish clergyman at Concise, on Lake Neufchatel, where in recent years some of the most extensive and varied traces of the ancient lake-dwellers have been brought to light. On the occasion of Professor Agassiz's last European tour, when visiting his native Swiss canton, and the village parsonage where his early years were passed, it chanced that he found engineers and workmen busily engaged in the construction of a viaduct

[1] Prehist. Annals of Scotland, 2d ed. vol. i. 245. The Duddingston crania were submitted to Dr Munro, by Sir Alexander Dick, soon after their discovery; and at my request Professor Goodsir instituted a careful search for them among the objects preserved in the University Anatomical Museum, which includes a collection formed by Dr Munro; but they were probably in a fragmentary condition, and have not been preserved.

across part of the neighbouring lake, for the completion of a railway then in progress between Neufchatel and Louvaine. Availing himself of the special facilities accorded to the son of their old pastor, by the people of Constance, on his thus revisiting the scenes of his youth, after having won for himself so distinguished a rank among men of science, Professor Agassiz obtained the co-operation of some of the workmen on the railway, and had the bed of the lake dredged over a considerable area in front of the old parsonage. The objects of his search were other than the archæological traces to which I now refer. But he was rewarded by the acquisition of a curious and valuable collection of stone, horn, bone, and bronze implements, along with pottery and other illustrations of the primitive arts of the ancient lake-dwellers, and the skulls, horns, and bones, both of their domesticated animals and of those procured in the chase. Among the latter the red deer and the wild boar appear to have predominated as important sources of food. The locality has since furnished many additional traces of the ancient population; but the researches now referred to were made at an early date, and by workmen actuated by an unwonted zeal in their desire to gratify the wishes of their distinguished visitor. Professor Agassiz was accordingly able to obtain some of the choicest specimens of aboriginal art and constructive ingenuity that have hitherto rewarded explorers in this novel field of research.

Concise, on Lake Neufchatel, has proved one of the richest sources of the weapons and implements of the ancient Lake-dwellers, and in other respects also has rewarded research by much valuable evidence illustrative of the condition of the region and the habits of its occupants in the remote age thus revealed to modern science. M. Troyon estimates the implements of bone and stone recovered on this single locality at 25,000; and this Concise site of the Swiss pfalbauten is only equalled by that of Wangen, on Lake Constance, in the number and variety of stone and flint implements which it has yielded. Sir Charles Lyell has introduced, in his "Geological Evidences of the Antiquity of Man," a restoration of one of the ancient lake villages reared on its platform of piles, as designed by Dr F. Keller, partly from Dumont D'Urville's sketch of similar structures still in use in New Guinea. The loss of weapons and implements among such an aquatic community must have been of common occurrence. Many of the objects obtained by Professor Agassiz

appear to have been dropped from the platforms, and become imbedded in the soft mud accumulated round the piles, from which they are now recovered in a nearly perfect condition, after the lapse of centuries, reaching back, not only to Roman times, but some of them undoubtedly to a greatly more remote date. In a few very rare instances the British or Irish stone celt has been found attached to its handle, as in one example found in the County Tyrone, and figured by Mr Du Noyer in the Archæological Journal,[1] and another from County Monaghan, now in the Museum of the Royal Irish Academy.[2] In both of those examples the process of hafting is not surpassed in rudeness by the most primitive art of modern savages. But the high finish of many of the celts, stone-hammers, and other implements found in British grave-mounds, was no doubt accompanied with a corresponding improvement in the method of hafting; and on this first indication of mechanical ingenuity and artistic progress some of the objects recovered from the ruins of the Swiss lake villages throw an interesting light. I have accordingly made accurate drawings of examples of some of the most ingenious types of different classes of tools, which the following descriptions will render fully available for comparison with corresponding objects in the Scottish collection (see Plate XXI.):—

No. 1 is a rudely formed axe of dark limestone, much chipped, and evidently long in use. Its only value is as an illustration of the rudest art of the primitive stone-workers, resembling in this respect some of the implements found in British graves, or dredged from lake and river beds, and only equalled in rudeness by the most imperfectly executed specimens of modern savage art.

No. 2 is a specimen of a deer's horn socket, which appears to have been the favourite device for adapting the stone celt for use, when required as a chisel, gouge, or spade. This example, like many others dredged up in Lake Neufchatel, is formed from the root of one of the horns, apparently of the red deer, where it swells out immediately above the point of attachment to the skull. The broad end has been hollowed out to receive the stone blade, which must have been secured by means

[1] Archæological Journal, vol. iv. p. 3.

[2] Catalogue R. I. A., vol. i. p. 46, fig. 53.

of bitumen or some other tough cement, as is still done by many of the stone and shell-workers of the Pacific. The narrower end is cut into a square tenon, obviously for the purpose of inserting it into a handle, probably of wood.

Horn sockets have been found at Concise in considerable numbers, and designed for adaptation to a variety of tools; while the sites of other lake villages, equally prolific in stone axe-blades and chisels, have disclosed very few; and in some cases, as at Wangen, on Lake Constance, where upwards of a thousand stone axes have been found, not a single horn socket or handle has hitherto been met with, and only a few of wood.

No. 3 is a good specimen of the deer's horn socket, with the small stone chisel to which it was adapted still in its place. The drawing sufficiently shows its form and character. The length of the original, including stone-blade and socket, is $5\frac{1}{8}$ inches.

No. 4 illustrates a smaller form of horn socket, with a knife blade attached to it, made of a hard, pale, greenstone (serpentine). The exposed part of the blade measures 2 inches, and the whole implement $4\frac{3}{4}$ inches long. The ingenuity displayed in the mode of applying the deer's horn as a socket for the axe or knife-blade in implements of this class is obvious; but the object aimed at is less apparent. If the stone blade could be more firmly secured in the deer's horn than in wood, owing to the liability of the latter to warp and swell in its constant exposure to water, among the lake-dwellers, we ought to find the entire deer's horn wrought into the axe handle. Viewing those socketed tools in this light, it appears to me not improbable that the tenon with which they are provided may have been designed to admit of the use of one large handle for a variety of implements, in the same way that a modern carpenter is supplied with sets of blades and chisels of various sizes.

But examples of horn-hafted tools in complete condition are also abundant. In the specimens shown in Nos. 5 and 6, the stone axe or chisel is attached to a horn handle roughly rounded at the upper end, and either intended to be used without any further addition; or, if provided with a wooden handle, it must have been permanently secured to it. In both the examples now shown, however, the hafted implement appears, as I conceive, complete. The horn handles are sufficient to admit of

their being conveniently employed as knives or chisels; and they may fairly be taken as illustrations of the stone implements of this class, applicable to so many wants of a rude hunting and fishing race of lake-dwellers in such a region as that where they have been recovered. These examples measure respectively 6 inches and $5\frac{3}{4}$ inches long.

No. 7 illustrates another class of hafted tools, in which the handle is formed of the upper portion of the deer's horn, where one of the small lateral tynes adapts it for convenient handling as a knife. The blade is of dark serpentine, wrought to a fine edge, and the implement measures altogether 11 inches long; though, as will be seen from the drawing, the point of the longer tyne is broken off.

In No. 8 another highly polished serpentine knife-blade, considerably fractured at the edge from repeated use, has been inserted in a handle of deer's horn, formed, like the previous one, by an adaptation of one of the forks of the antler to the requirements of the tool. But in this example more labour has been expended in adapting the handle for convenient use; and it is completed with a large circular perforation, probably intended for its suspension at the girdle as a *couteau de chasse*. The exposed part of the blade measures nearly 2 inches, and with its handle $6\frac{3}{4}$ inches.

A small, polished stone celt, of a form familiar to the British antiquary, is shown in No. 9, fastened sideways into an antler of the red deer. Its dimensions are so small—the horn handle measuring less than a foot long—that it must have been designed as a tool for more delicate work, such as cutting the horns or wooden implements into the requisite shapes. But it illustrates one of the simplest ways by which this common stone implement was hafted, either with horn or wood; and when on a scale sufficiently large, would fit it alike for use as a carpenter's or woodman's axe, and as a tomahawk.

The implements heretofore described are of stone; but the group to which I now refer consists of flint-blades inserted in a similar manner into sockets or handles of deer's horn.

Implements of flint are much more rarely found in the Swiss lake dwellings than those of stone; and whether in the form of arrow-heads, knife or lance blades, or mere flint flakes, are generally of small size. The absence of any flint-bearing gravel in the vicinity of the lakes, and

the abundance of every variety of stone, fractured into convenient sizes and forms for the tool-maker of the stone period, abundantly account for the apparent preference of the latter.

The first example, No. 10, is a small, highly polished chisel, or knife-blade of cream-coloured flint, wrought to a fine edge, and inserted in a bone socket, which has a large, well-finished square tenon adapting it for attachment to a wooden handle. The unusual breadth of the socket is worthy of notice, so disproportioned to the smallness of the blade, yet carefully shaped so as to adapt it for some special use. It is a tool evidently designed for the most delicate operations of the primitive carpenter or carver, and is still sharp enough to be turned to its original uses. No. 11 is another knife-blade of yellow flint of nearly the same size as the previous example, but less highly finished, and fractured on the edge from repeated use. It is fastened into a horn handle, and measures altogether $3\frac{3}{4}$ inches long. In No. 12 the blade is a flake of dark flint, of the commonest class, chipped into shape, without any polishing or grinding to an edge. This is inserted into a short horn handle or socket, which is hollowed out at the opposite end so as to admit of its being attached to a longer handle, probably of wood.

Another class of implements is illustrated in Nos. 13–16, where blades of bone are inserted into horn handles. No. 13 is a small knife of this class, measuring $3\frac{1}{2}$ inches long, but, like No. 12, with a hollow socket, admitting of its attachment to a larger handle. No. 14 may be described as a long knife or dagger, measuring altogether above a foot long. Nos. 15 and 16 are bone awls or bodkins similarly hafted with horn. The only remaining example shown in the accompanying drawings, No. 17, is the tooth of a hog (*Sus scrofa domesticus*), inserted into a handle of deer's horn, much in the same manner as is frequently practised by the North American Indians at the present day, especially with the hard and keen-edged incisors of the beaver and other rodents. The hardness of the enamel rendered such tools greatly superior to any that could be made from the densest horn; while they had the additional advantage of being already perfect as cutting tools, and only requiring to be fitted with a convenient handle.

I see, from the reports of the Society's Proceedings, that you have received from M. Troyon, of Lausanne, one of the deer's horn sockets of

the class described here[1]; and also that your attention has been called to the general subject of the remarkable recent discoveries, both in the lakes of Switzerland and the drift gravels of Northern France, by one of your own number specially qualified to do justice to the subject in all its bearings.[2] Some of those bearings, also, in relation to the antiquity of man, it is apparent from your Proceedings, excited lively discussion, as, from their interest and importance, they were abundantly calculated to do. As, however, they have already engaged your attention, I need not refer to them here, especially as I have already discussed them minutely in my "Prehistoric Man," a copy of the second edition of which I have requested my publisher to forward for the Society's acceptance. Possibly, indeed, the whole subject has already been so thoroughly discussed and illustrated among you, that this contribution may be altogether stale. If so, I must beg my old friends among the Scottish antiquaries to accept the good intention in token of my remembrances of them and their pleasant meetings in which I was once wont to take a part.

The collection from which the above examples have been selected for illustration was dredged up, as I have stated, from the bed of Lake Neufchatel, opposite the village of Concise, along with numerous skulls, bones, teeth, and horns of the red deer, boar, and other animals. The minute observations of MM. Troyon, Morlot, Keller, and others, have thrown an interesting light on the character of the wild fauna, and also of the extent to which the domestication of useful animals had been carried, at a time when the Swiss lake districts were occupied by a people living in lacustrine pile-villages, like those described by Herodotus as occupied by the Pæonians of Lake Prasias, nearly five centuries before the Christian era. Concise alone has furnished examples of the red deer (*Cervus Elaphus*), evidently of unusually large size; of the elk (*Cervus Alces*); the fallow deer (*Cervus Dama*); and the roebuck (*Cervus Capreolus*). Of oxen the bones have been found of the Urus (*Bos primigenius*), now wholly extinct; and of two, if not three, domesticated races,

[1] Donations to the Museum, 12th Jan. 1863.

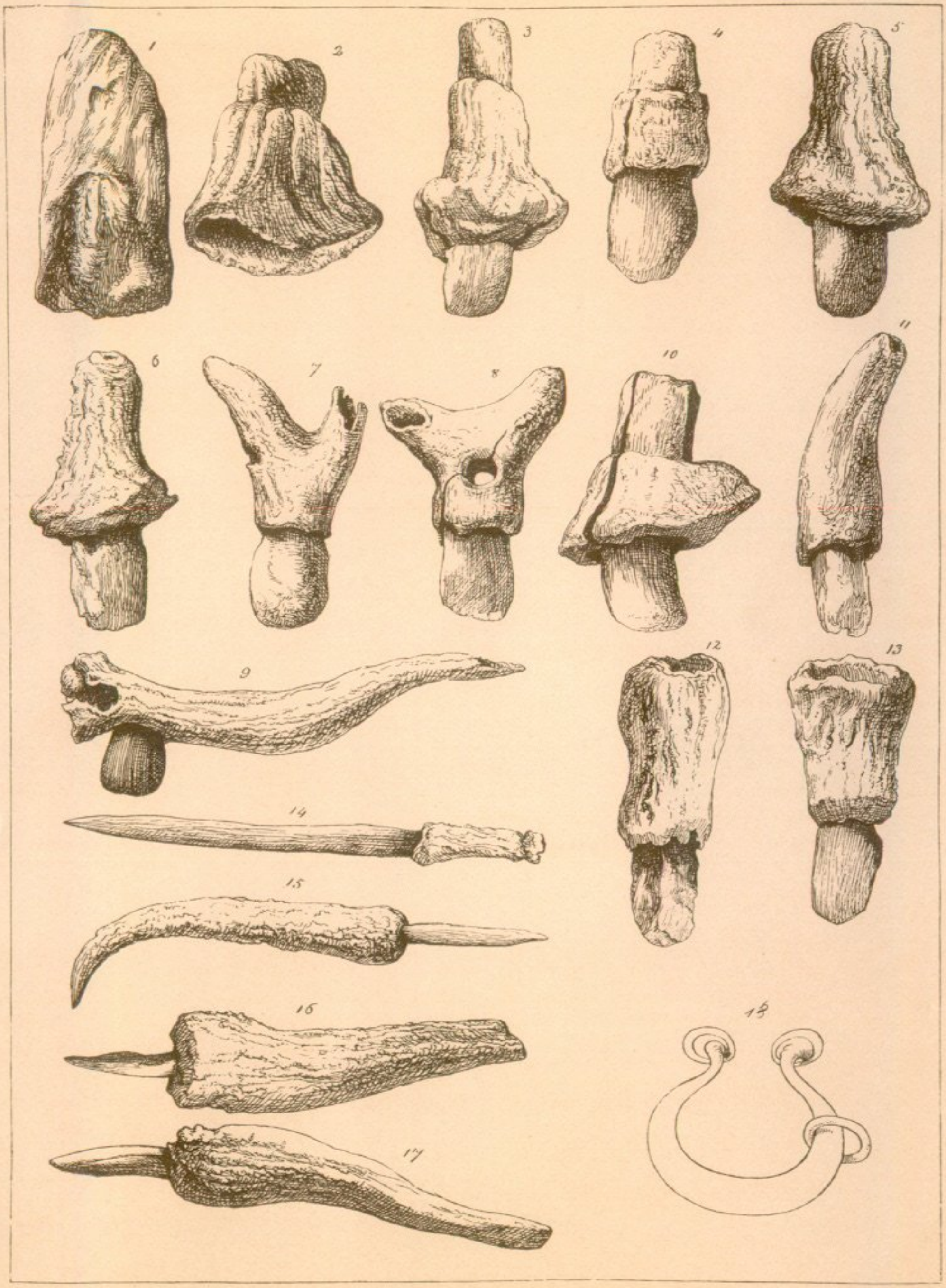
[2] "Notices of Remains from the Ancient Lacustrine Habitations of Switzerland, and from the Drift Valley of the Somme." By Prof. G. J. Allman, M.D., F.S.A., Scot.—*Proceedings, S.A., Scot.* vol. v. p. 79.

one of which is the *Bos longifrons*, the remains of which are of common occurrence alongside of Romano-British remains. The bones and tusks of the wild boar indicate an animal of gigantic size; and at least two domesticated varieties are also represented among the remains dredged up from the pile-works of Lake Neufchatel. The great northern bear (*Ursus arctos*), the beaver (*Castor fiber*), and other animals that have long disappeared from the Alpine lake country, or are wholly extinct throughout Europe, are in like manner represented by the bones found among the spoils of the submerged dwellings. They do not, however, include the *Ursus spelæus* or others of the huge carnivoræ of the caves, with the contemporaneous gigantic herbivoræ of the drift, which other disclosures in different localities are supposed to prove the existence of within the human period.

The collection of lake relics formed by Professor Agassiz also includes specimens of two types of pottery. One of these may be presumed to be coeval with the rudest stone implements. It is thick, coarse, and ill-baked; and both in texture and ornamentation corresponds to the rude pottery found in early British barrows. The other type is a thin black ware, well made and burnt, and bearing considerable resemblance to the earthenware ordinarily found in pagan Anglo-Saxon barrows. The latter may be assigned with little hesitation to the same age as the bronze implements, which also occur in considerable numbers among the objects dredged up at Concise and elsewhere among the lacustrine remains.

The specimens in the Cambridge collection include a bronze spear-head of a type familiar to the Scottish antiquary, bronze penannular ornaments, fibulæ, armlets, &c., the majority corresponding to the relics of the bronze period of Northern Europe. Among those is a dilated penannular ring,—a fibula, or possibly an armlet or anklet, with a small ring of the same metal attached to it (see Plate No. XVIII). Others of the bronze pennanular rings—possibly designed for dress clasps or fibulæ—are not solid, but hammered with considerable skill out of thin sheets of bronze, so as to present a massive appearance with little weight or expenditure of metal. They present, along with certain local varieties of type, sufficient general correspondence with the bronze implements and personal ornaments of Britain and Ireland to prove that they are contemporaneous with that later period of Britain's prehistoric

era, when the primitive artist had acquired considerable skill in metallurgy, and had also developed an artistic taste of no mean ability, which he expended in shaping the moulds, and fashioning his tools and weapons into a variety of graceful and beautiful forms.




Phototyped by Messrs Nelson from Drawings by Dr Wilson.

STONE IMPLEMENTS, WITH DEER-HORN HANDLES, &c., FROM A LAKE-DWELLING AT CONCISE, LAKE NEUFCHATEL, SWITZERLAND.