NOTE ON THE RESULTS OF THE EXPLORATION OF THE FORT AT DUNAGOIL.

By Ludovic McL. Mann, F.S.A.Scot.

The excavations carried out at Dunagoil in 1913-15 have been reported in Volume VIII. of the Transactions of this Society. Further examination was conducted during 1919. A report (not yet published) of the results to date was read by Mr Mann at a meeting of the Society held on 25th January, 1916. Mr Mann has now supplied the following summary of the results of the excavations.

Dunagoil Fort was occupied from about 200 B.C. to 100 B.C. The assemblage of relics taken from it is one of the richest yet obtained from any ancient place in Scotland. For practically every century in the present era archæologists have an almost complete knowledge of the mode of life, the conditions of civilisation, the history of fighting and the development of inventions, but the immediately preceding centuries offer the student an almost entire blank with regard to these matters. Dunagoil thus fills a gap.

British history really begins on the arrival of the Romans, a few years before the opening of the present era. It is possible, however, that light can yet be thrown upon the conditions of things during the fourth or fifth century before the advent of the Romans in Britain. This knowledge can be acquired mainly by one means—the use of the spade, and the close study of relics which it may reveal.

For many years archæologists have noted that several of the hill fortresses or citadels of early times in Scotland possess a characteristic which is almost totally lacking in fortified sites outside of Scotland. This feature is that the Scottish sites, which belong to a particular period, have their walls strengthened by intentional burning of the rubble stones comprising the core of the walling. Such are called vitrified forts. They are found chiefly near the seashore and range from the Solway up to the central West Highlands, whence they occur in a belt across country to Inverness-shire.

Until quite recently practically nothing was known about these forts. One was excavated with great skill, but the results were not satisfying in respect that they did not definitely give the age, the occupation having extended over more than one period.

Recognising the great lack of precise knowledge of these forts, Lord Bute decided to explore the large and beautifully situated vitrified fort at the south end of the Island of Bute. The fort is situated along an almost knife-edge ridge, on the top of a large volcanic mass on the sea-shore. Owing to the sharp contour of the summit, the builders of the fort constructed a somewhat crescentic wall on the less precipitous side, which gave them, after some manipulation, a fairly secure platform for their habitations. It resulted also, fortunately, in a large accumulation of food refuse and other material inside the walling on the less precipitous side. The diggers had, therefore, a rich harvest of relics.

The exploration of this fort has been almost completed. The fort was not occupied at a time later than the first century B.C., and there is no trace of any influence whatever of Roman or later times.

Dunagoil fort is, therefore, entirely pre-Roman, and the whole body of evidence offered by the assemblage of relics is positive in this matter. The story told by the structure of Dunagoil and its relics, after very laborious excavation and patient scrutiny, throws a flood of light on the ways of our ancestors in Scotland before the Roman legions came upon the scene.

The fact that vitrified forts are found here and there along the west coast and a portion of the north-east coast points surely to the people of these days having to face the menace of powerful invading fleets, which probably came from the south-west of England up past the Isle of Man and into the Solway, and sailed further north, searching both the west and east shores of Kintyre and into the Clyde as far as Dumbarton.

Plausible conjectures have been made as to who these invaders were, but nothing is certain. On the other hand, we can now state something about the defenders. We can now tell exactly the architectural methods of the defenders; what food they ate; how and what they hunted, and the clothing they wore; the nature of their houses and their industries, such as those carried on in their iron bloomeries or furnaces and their bronze founders' workshops; the ornaments their women wore, and the kind of dishes they used; their domestic tools and implements and the nature of the spears and other weapons.

Among the more notable relics discovered are pieces of soapstone or steatite, which were taken into this hill-top settle-

ment and there sawn up for the manufacture of beads, armlets, rings, cups and other dishes. (Plate 32.)

Soapstone is a somewhat rare material in Britain, and it may be shown that it was imported into the Island of Bute from a mainland location within a few yards of the present pier at Innellan. They also used lignite, or a kind of rough coal or jet, for whorls, beads, and ornaments. (Plates 34 and 36.) A carefully made armlet of what appears to be a kind of hard graphite was found.

Their pottery, which was made by hand and kiln-fired, was inferior. For 2000 years up till the period of the occupation of Dunagoil the art of the potter had in Scotland been gradually degenerating. Possibly the increasing employment of sharp metal tools, such as the iron knives found at Dunagoil, made wooden dishes more popular and pottery become relegated to a secondary position.

The clay pots were rather large, bucket-shaped, straight-sided, flat-bottomed vessels. One of the most interesting sites of the many discovered within the settlement of this fort was a place where bronze implements, weapons, and other ornaments were cast. The clay moulds, for example, for casting the bronze ferrules for the ends of spear-shafts, were found. (Plate 40.)

At another part of the settlement an iron-smith had his workshop and his operations can be easily reconstructed from the group of relics in and around the furnace or bloomery.

Many interesting objects made of bone and antler were discovered, including a handsome whistle, ornamented with incised circles and dots. (Plate 22.) This is a rare find. But whistles were no new things at the time of Dunagoil. Bone whistles have been found with Palæolithic remains dating back some tens of thousands of years.

Another curious bone object was a thick pin, square in section, lavishly ornamented on all four sides, the sharper end slightly upturned and the butt perforated. This is the first time such an implement has been discovered in this country, and it seems to have been used, like a bodkin, in the making of coarse fabrics such as mats. (Plate 14.)

Some beautiful pins of iron with intentionally twisted shanks and circular ring heads were found. (Plate 45.)

Of stone objects there are several axes, the last surviving representatives of an older civilisation, and a remarkable, very early flint implement, much water-rolled since its use, was probably taken into the settlement as a curiosity. (Plate 1.)

Many hammers, knives, anvils, rubbers, smoothers, choppers, of stone, and whetstones of different types, with a great range in shape and size, were discovered (Plates 4 to 12); also circular discs of stone, some of them perforated, as if used as whorls to weight the spindle used in hand-spinning (Plates 30, 31). Other small perforated stones were probably used as beads and amulets. The most noteworthy finds in stone were several saddle-querns of the older type, altered in an unsuccessful attempt to make them into the later rotatory circular hand-querns. Beautifully made round and oval discs of bone, the use of which is not clear, form a class of relic unique, so far as known (Plate 13). The curious smooth scratched lines upon them give rise to conjectures not yet confirmed as to their purpose, but it is thought they were used in the making of slender wooden cylinders used as darts—perhaps with some form of blow tube.

A variety of crucibles of different sizes, circular and three-cornered, some with fragments of the molten materials still adhering to them, were discovered. (Plates 38 and 39.) The crucibles were used by the bronze founder and enameller. (See Vol. VIII., Plate VI.)

Of iron objects there is a large variety, including a curious portable anvil (Plate 47); hook-like objects (Plate 44); sharp-pointed small rods, possibly used in writing (like the Roman stylus) (Plate 45); rings, whole and penannular (Plate 42), and an axe-head with perforation to hold a wooden handle (Plate 46). Bracelets of jet, lignite and glass were discovered. One of jet is beautifully ornamented by a series of curvilinear flutings on its outer surface. The glass armlets are multi-coloured and very pretty, from which it may be inferred that in essentials the lady of 100 B.C did not differ from her very-great-grand-daughter of to-day.

Pieces of hematite used for colouring were found. Prepared fragments of deer antlers, some perforated, may have been used as cheek-pieces for horses' bridles (Plate 24). Other pieces of antler are like napkin rings, but their use is unknown (Plate 23). Other tines were used as picks and borers (Plates 25 to 29). Some pieces of prepared bone seem to have been used to occupy a portion of the hollow in the mould used in the casting of socketed bronze tools (Plate 23).

A variety of crude pins and skewers, some of them perforated, were made of bone (Plates 17 to 19).

A tabular piece of bone, with six perforations and twelve blunt teeth at one edge, may have been a tool for impressing ornamental indentations upon the surface of the clay pots before firing took place. Among the bronze objects are tweezers and pins with beautiful heads (Plate 41).

The bones of animals used for food and brought into the settlement fill many sacks, and consist of the remains of the red-deer, the early Scottish ox, swine and other animals. A bone of a wild cat was got. (See Vol. VIII., P. 50.)

Now as to the architecture of this great citadel, careful examination of the remnants of the walling, which was some twelve feet thick, shows how the builders constructed the work. First of all, a small dry-stone walling was built at the outer and inner margins to the height of a few tiers. The interior was then filled with rubble or land-gathered stones. These were covered with brushwood and the whole sealed up with clay. The brushwood was then ignited, probably in suitable breezy weather. The smothered combustion prevented the stones from fracturing, but allowed them to become viscous and run together, thus forming a kind of concrete of immense strength, to which the two dry-stone settings became fixed. This was the pre-historic fore-runner of our modern reinforced concrete and cement structures. It was solely a Scottish invention.

After about two or three feet of height had thus been built, the operation was repeated, the mass of walling getting higher and higher until it reached about fifteen feet. The rampart had probably two parapets, one at the top and the other some feet lower on the interior side. The fort had at least two entrances, protected apparently by massive timber doors held by large wooden bars. When not in use, the bars lay in long horizontal holes constructed in the interior of the walling.

After the fort had been occupied for a considerable period it was extended to the east, and again vitrifying operations were carried on in the construction of the extended walling which covered some of the old kitchen midden, deposited by the original holders of the site.

For some unknown reason—possibly a pre-historic tragedy—the whole fort, as already mentioned, was abandoned probably in the second century before this era, and was apparently never again occupied.

In the following forty-seven plates some of the more interesting relics are illustrated from photographs by Mr R. D. Whyte.



A

Plate I. Two views of a Palæolithic (?) water-rolled Flint Implement. ($\frac{1}{1}$)



Plate 2. Flint Flakes, not definitely Implements, the period of occupation of the Fort being too late for the Industry of Flint Implements.

1 0 1 Inches

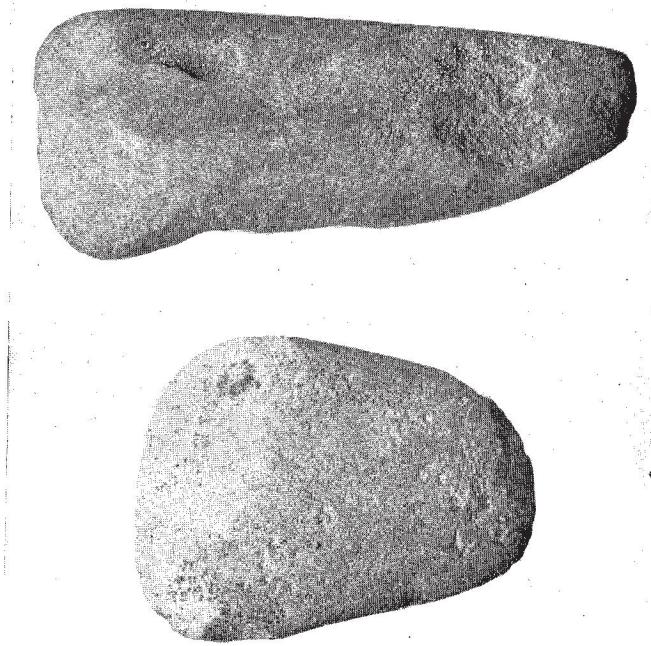


Plate 3. Polished stone Axe-heads, the use of which may have survived to the time of the occupation of Dunagoil.

1 0 1 Inches

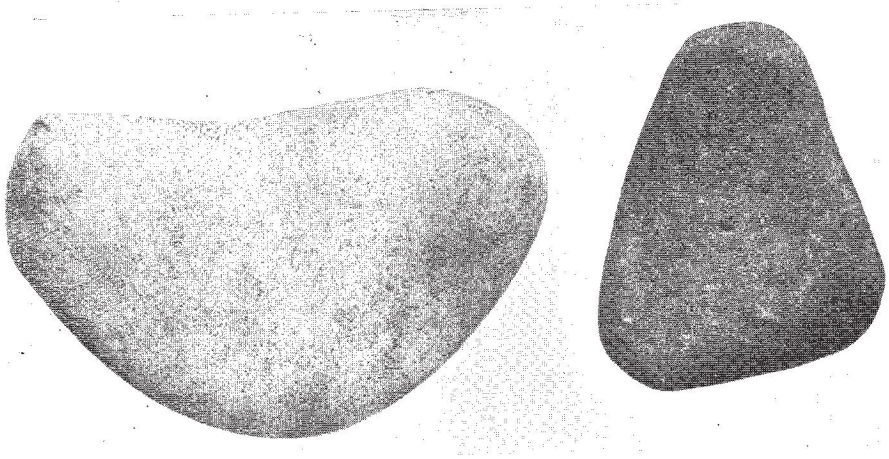


Plate 4. Rubbers or Polishers of stone.

1 Inches



Plate 5. Hammers or Pounders of stone.

1 Inches



Plate 6. Pebbles with abraded surfaces, used as Pounders.

Much Reduced



Plats 7. Hammer-Stones.



Plate 8. Pounders or Hammer-Stones with roof-shaped abraded ends.

Inches



Plate 9. Polishing Stones and Hammer-Stone.

Inches



Plate 10. Whetstones.

Inches

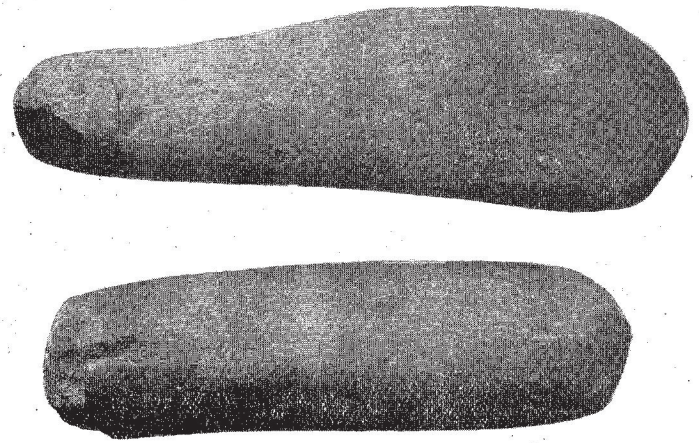


Plate 11. Stone Pounders.

Inches



Plate 12. Rubbers and Whetstones.

1 1 1 Inches

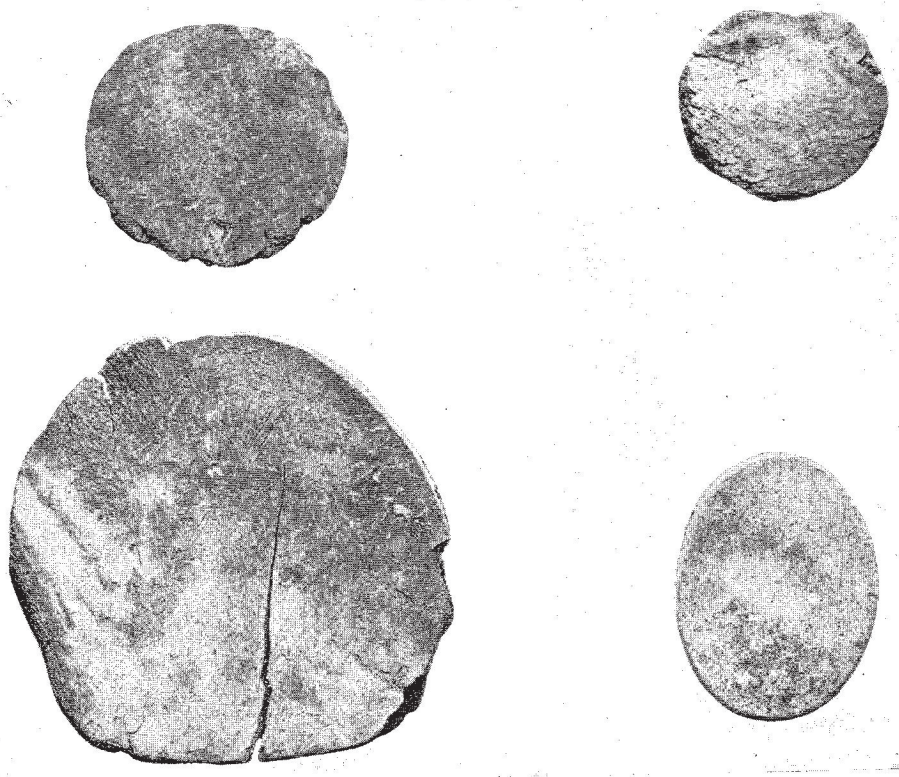


Plate 13. Carefully made Discs of bone, of unknown use. $(\frac{1}{1})$



Plate 14. Two Bodkins and one Needle of bone. ($\frac{1}{1}$)

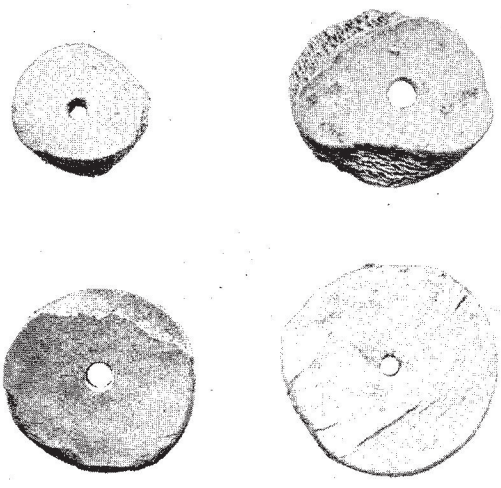


Plate 15. Perforated bone Discs, perhaps used in the finishing process in the making of thin, cylindrical wooden darts.

1 Inches

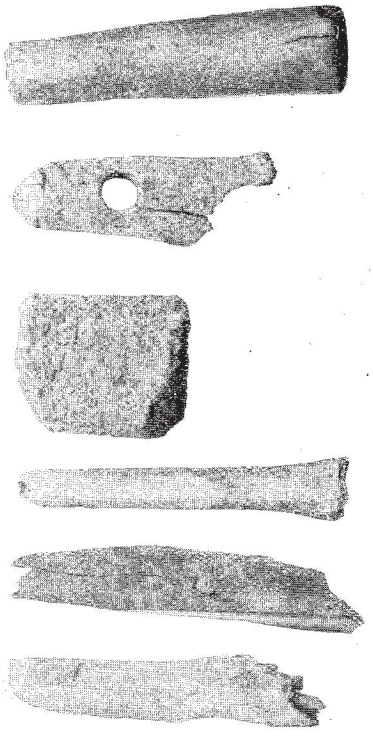
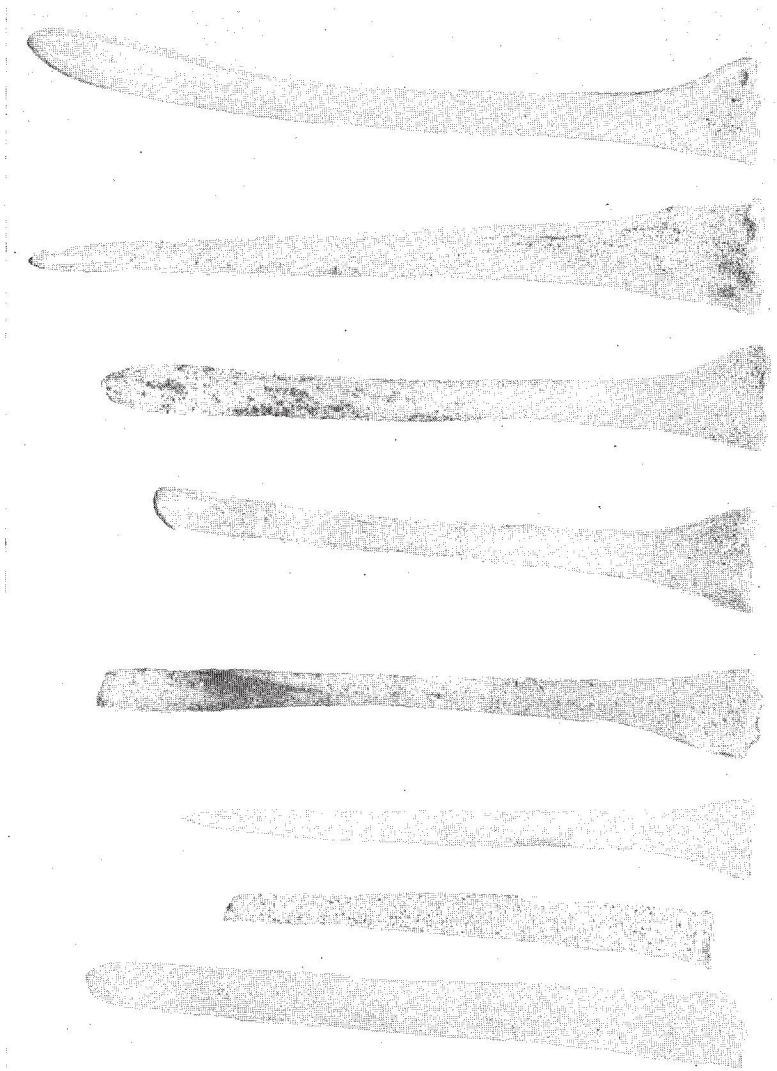


Plate 16. Bone Objects, chiefly used for rubbing and polishing.

1 Inches



(½)

Plate 17. Long, pointed Tools of bone.

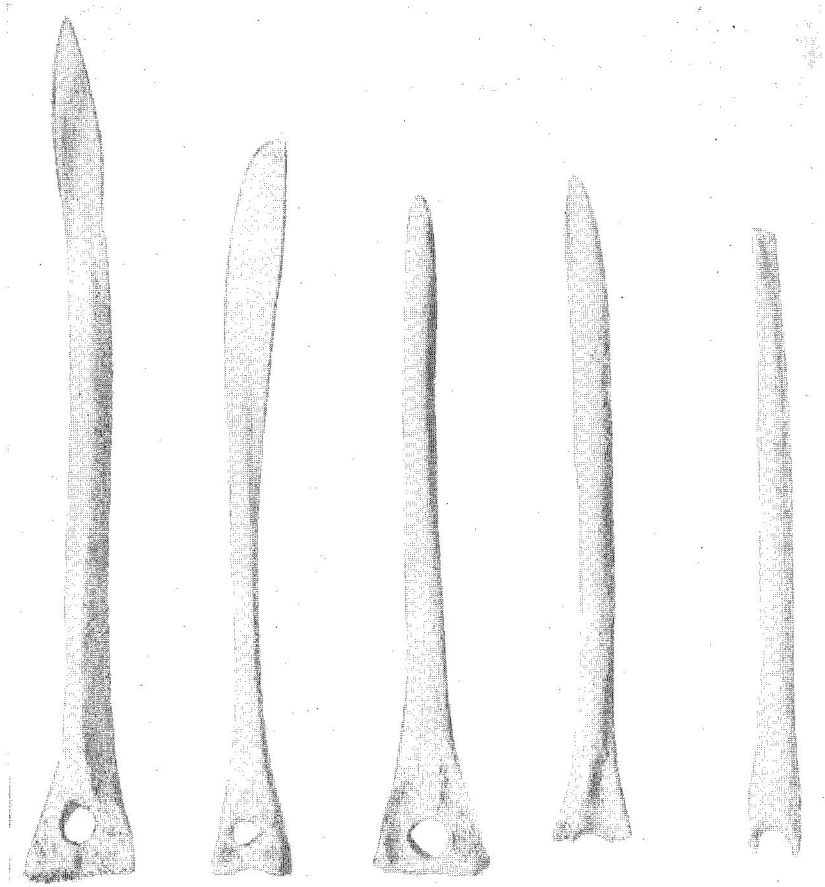


Plate 18. Bone Pins with eye pierced at thicker end.

(½)



(1/1)

Plate 19. Thin pin-like Tools of bone.

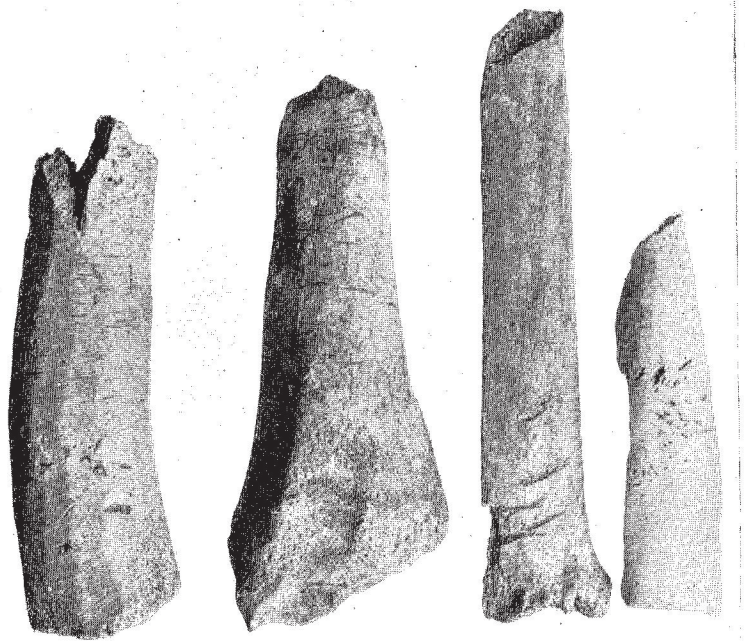


Plate 20. Bone Objects bearing traces of knife-markings and perhaps impressions of dog's teeth.

Inches



On much reduced scale

Plate 21. Bones of Birds.

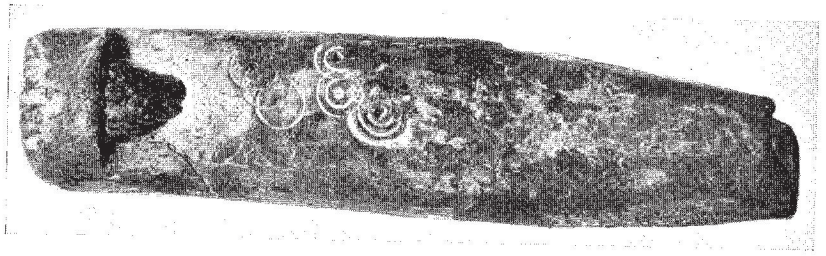


Plate 22. Whistle of bone, with incised decoration of dots and concentric rings.

$(\frac{1}{1})$



Plate 23. Antler Fragments and Rings. The two objects in the lower right corner are of bone, and are supposed to have been placed in the hollow core of a matrix for casting socketed bronze objects.

Inches

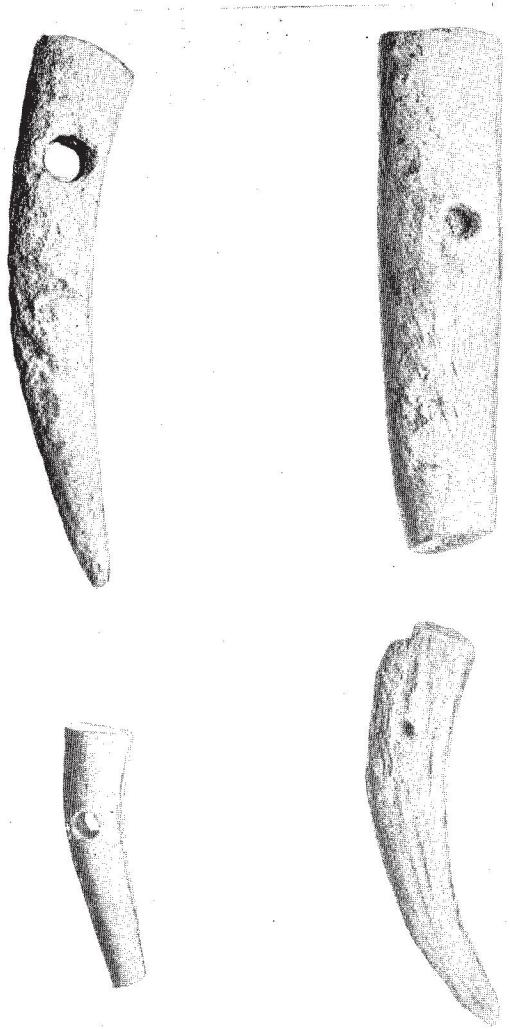


Plate 24. Antler and bone Objects, perhaps Cheek-pieces for Horse-bridles.

On somewhat reduced scale

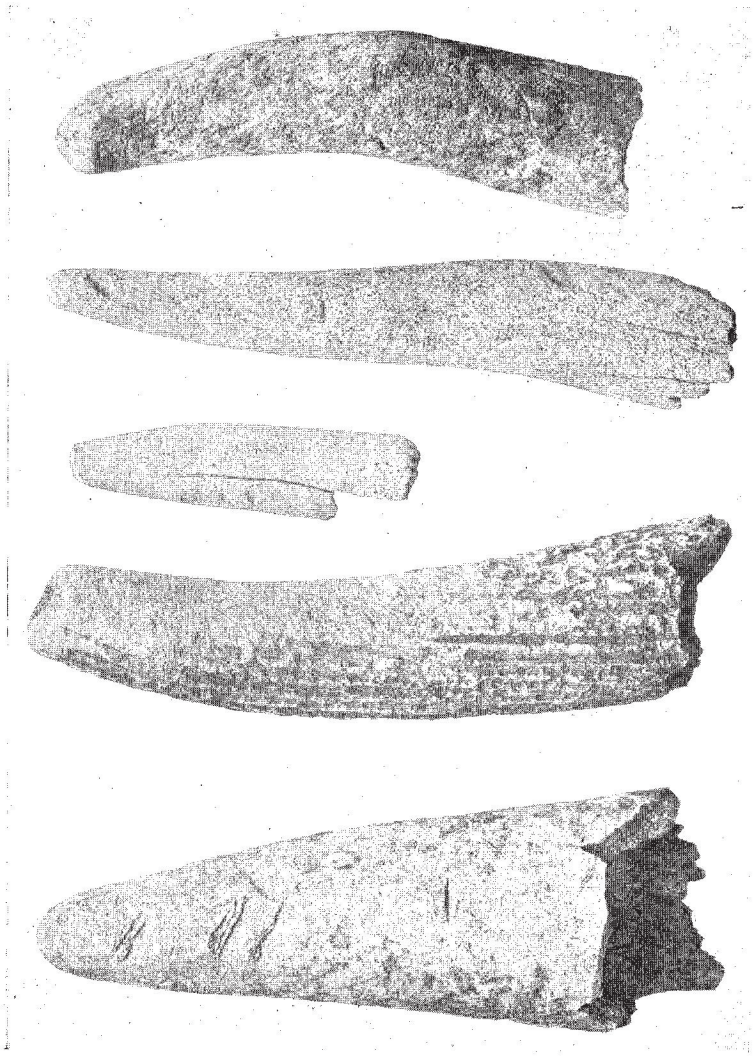


Plate 25. Tools of antler and bone, with points abraded by use.

On somewhat reduced scale



Plate 26. Antler Picks.

1 1 1 Inches

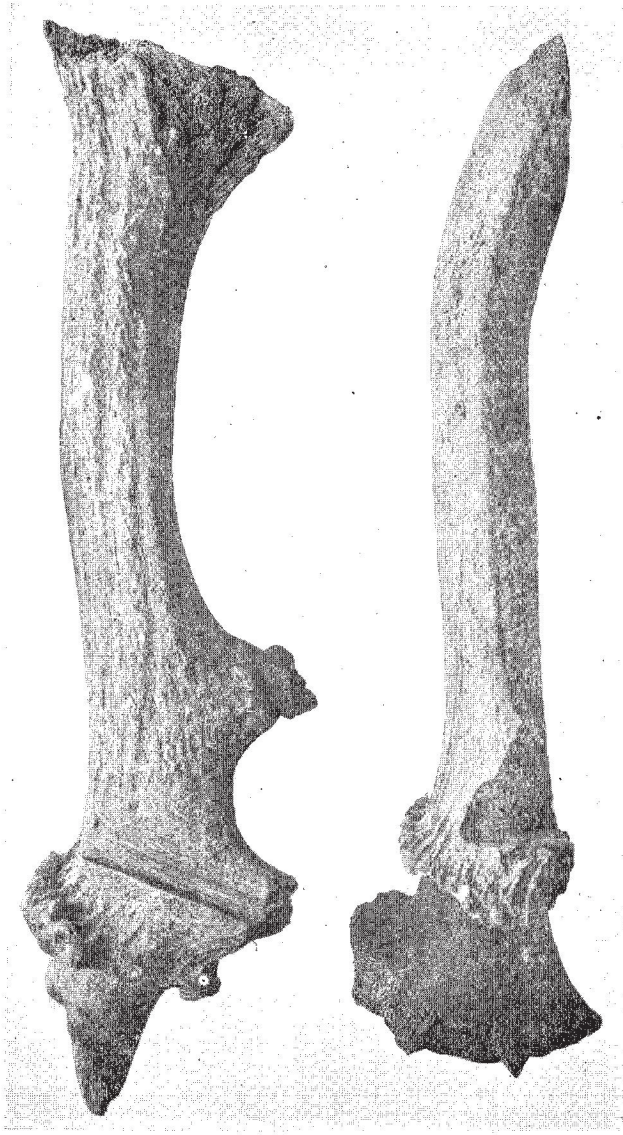


Plate 27. Antlers with skull fragments, showing saw-markings.

1 1 1 Inches

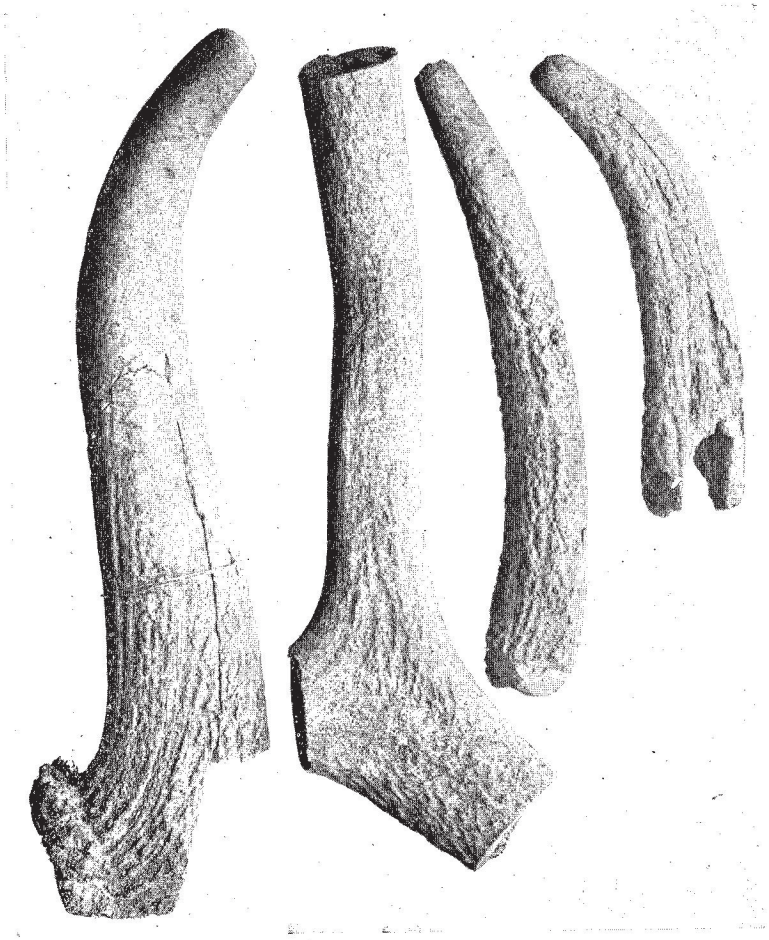


Plate 28. Antler Pieces, sawn and pointed, in some cases abraded by use as Picks.

1 Inches



Plate 29. Sawn, truncated antler Fragments, used as Tools in pick fashion. ($\frac{1}{1}$)

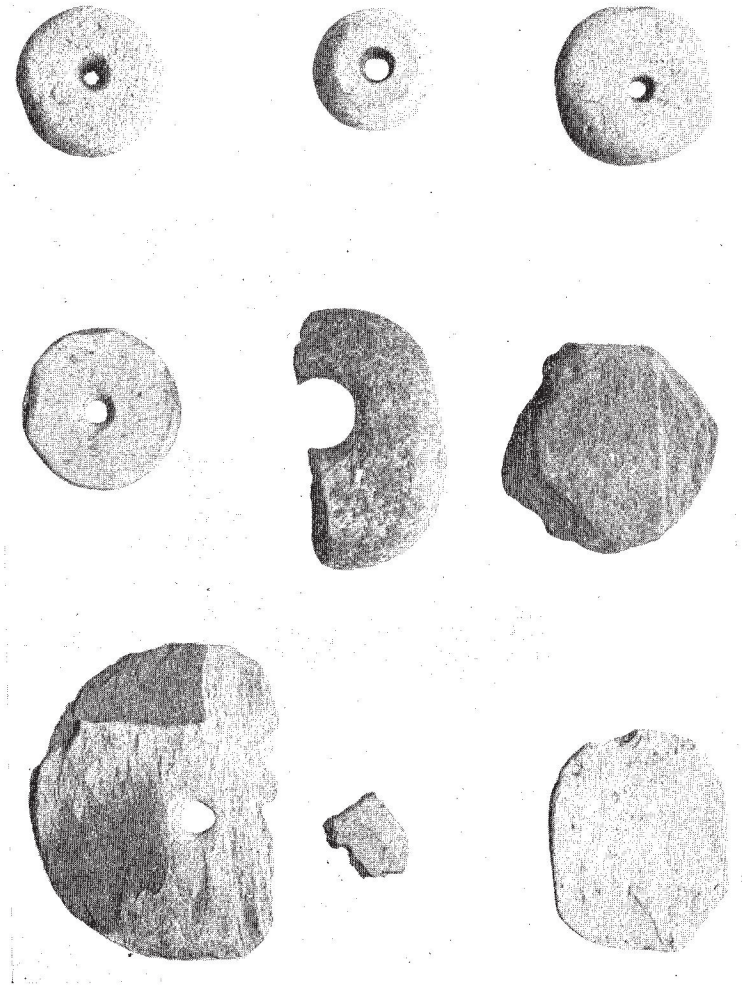


Plate 30. Discs of Stone, some perforated and perhaps used as Spinning-Whorls.

1 Inches

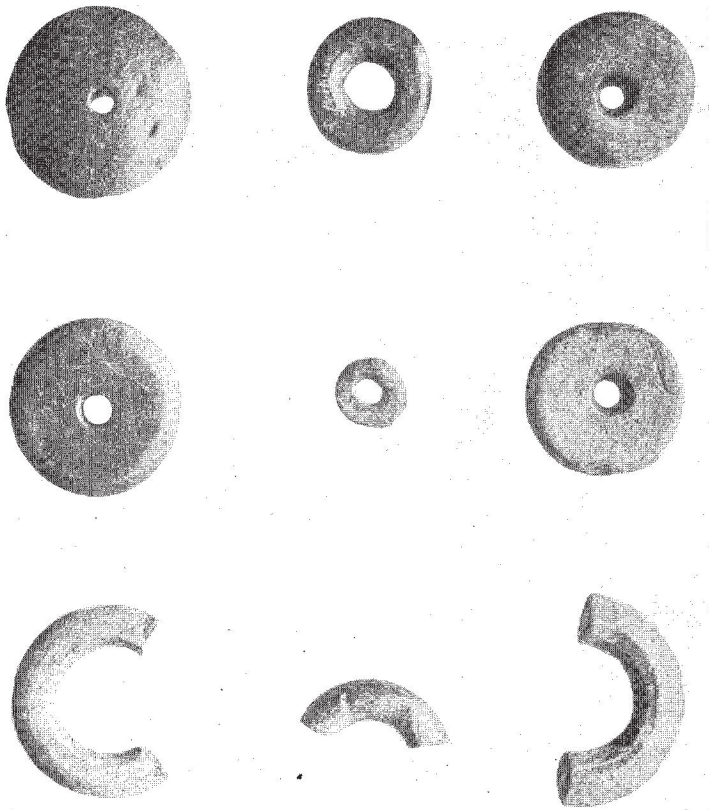


Plate 31. Rings of Stone and other perforated stones.

1 Inches

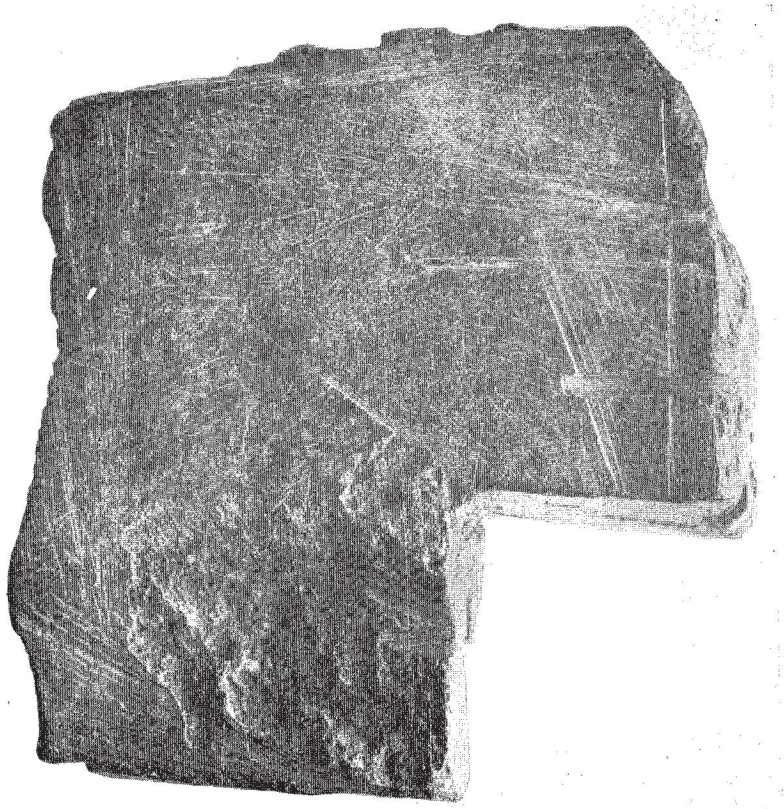


Plate 32. Lump of Raw Steatite in course of being cut up.

($\frac{1}{1}$)



Plate 33. Fragment of Stone Cup with handle.

1 1 1 Inches

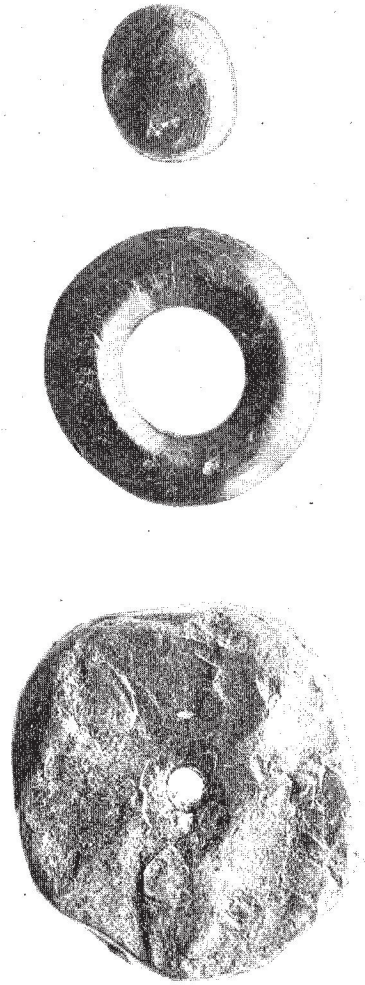


Plate 34. Lignite Objects.

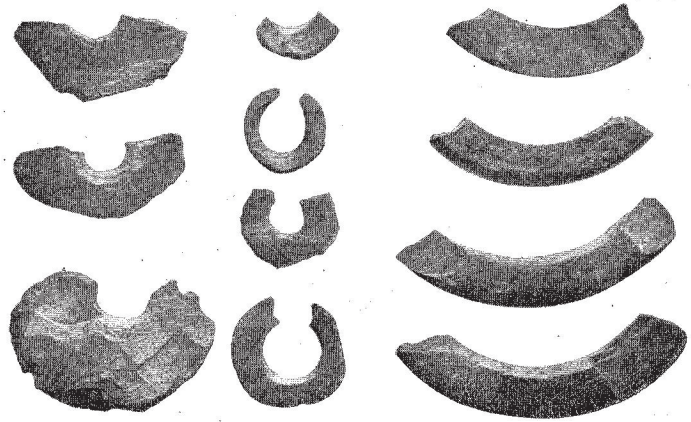


Plate 35. Fragments of Armlets, Rings and perforated Objects of lignite

(1/1)

Inches

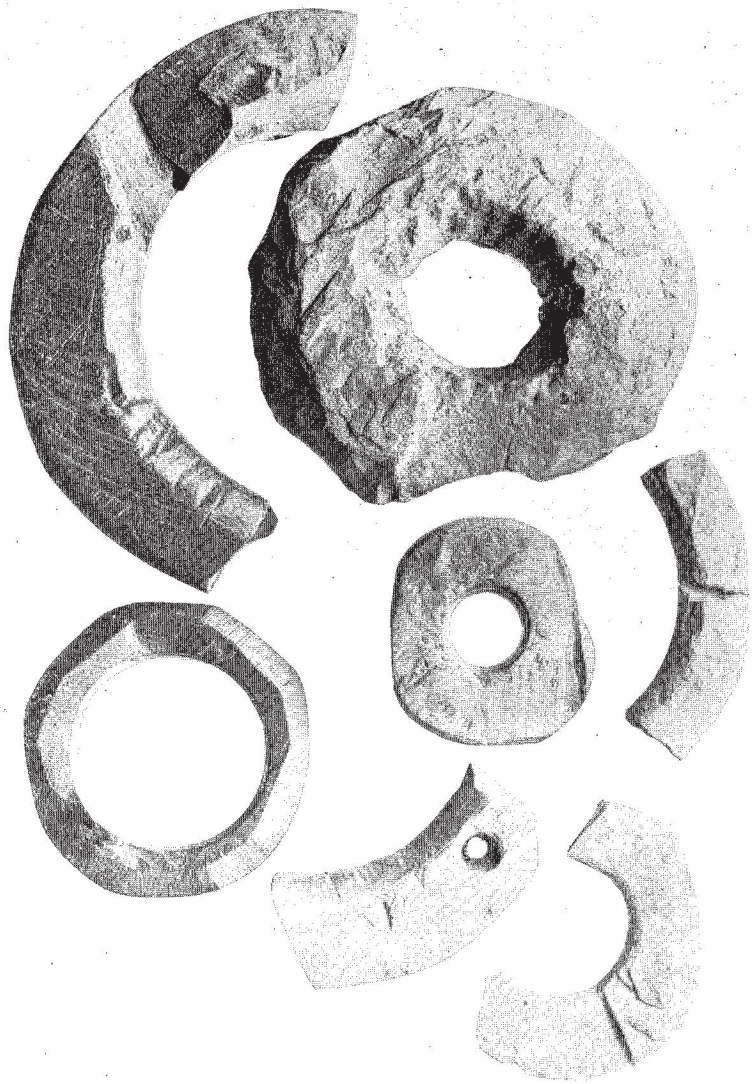


Plate 36. Armlets and perforated objects of lignite.

1 Inches

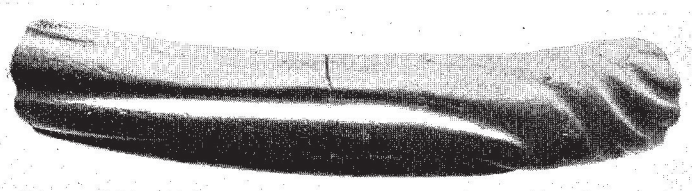


Plate 37. Armlet of lignite with curvilinear flutings.

(1/1)



Plate 38. Crucibles.

1 Inches

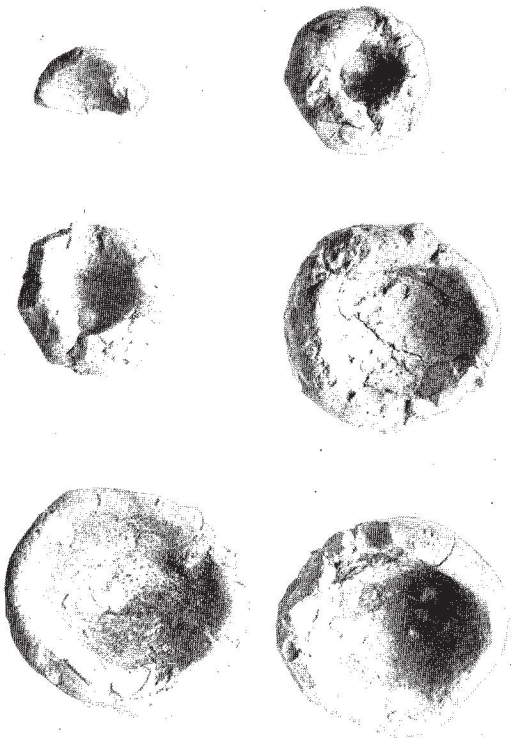


Plate 39. Small Crucibles of clay, used by the Artificer in bronze.

1 1 1 Inches

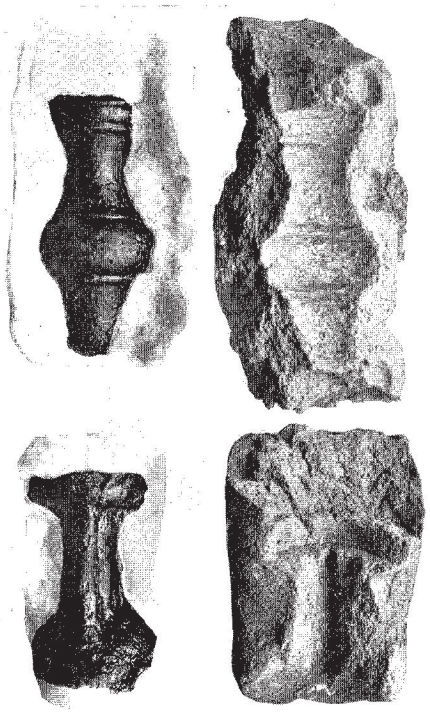


Plate 40. Two Fragments of Matrix for casting Spear-shaft Ferrules of bronze, with wax-casts therefrom.

1 1 1 Inches

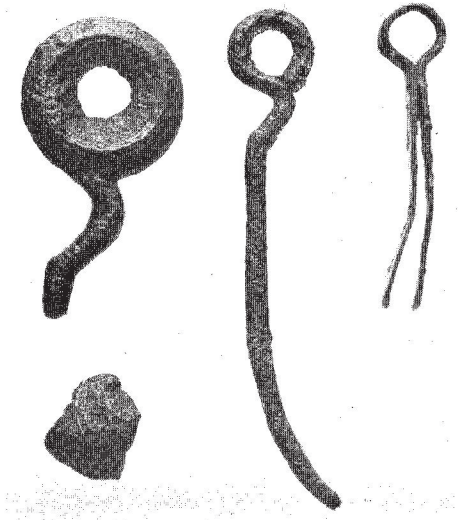


Plate 41. Tweezers of bronze; Two ring-headed Pins of bronze; Small lump of bronze.

(1/1)

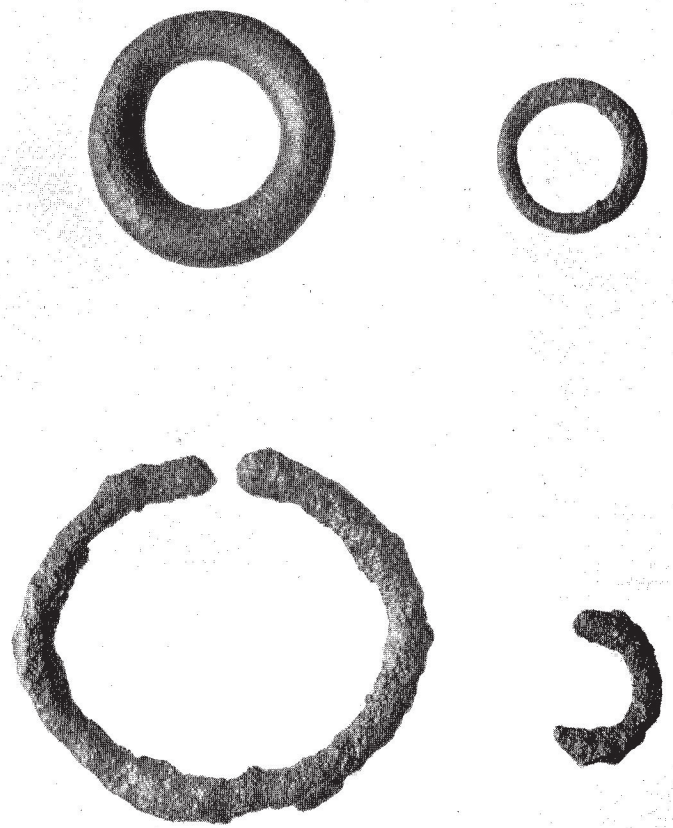


Plate 42. Iron Rings.

(1/1)

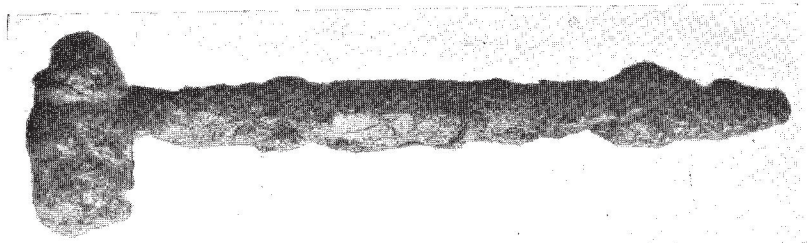


Plate 43. Fibula of iron.

($\frac{1}{1}$)

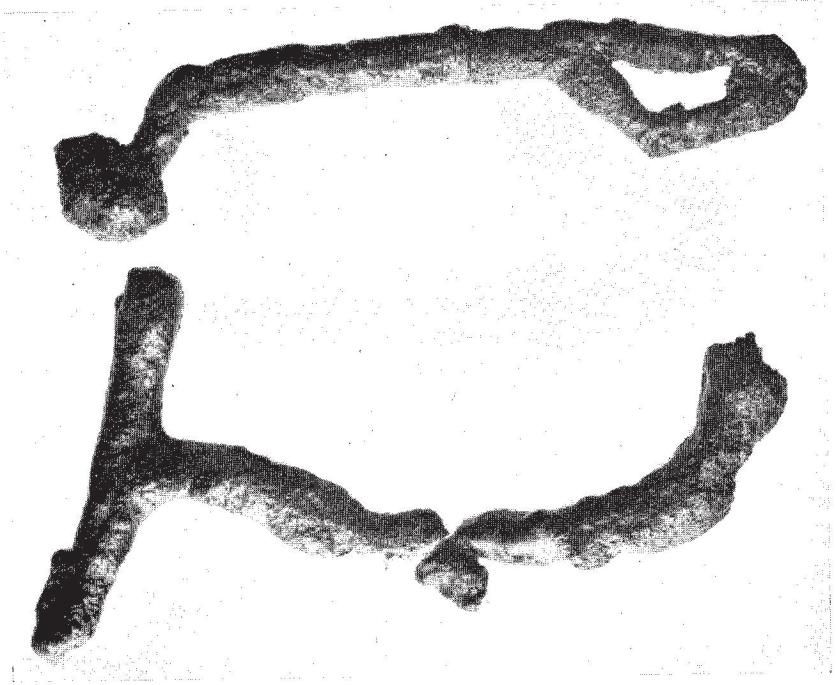


Plate 44. Hook-like objects of iron.

($\frac{1}{1}$)

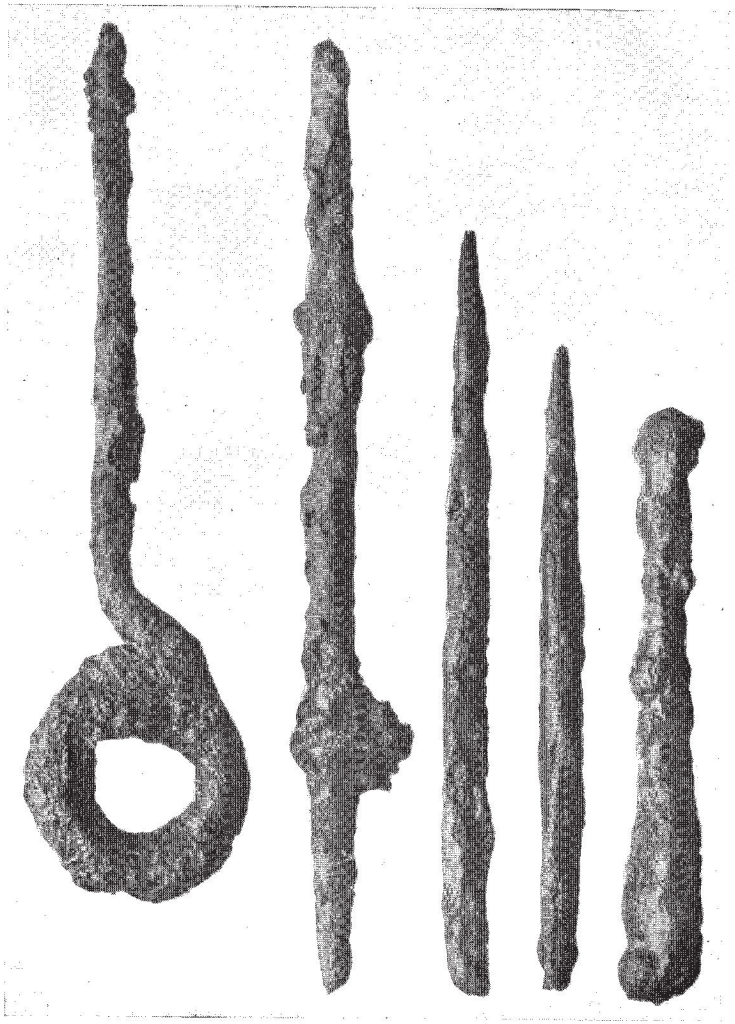


Plate 45. Four Tools like Styli, and ring-headed Pin, all of iron.

($\frac{1}{1}$)



Plate 46. Iron Axe-head with perforation for wooden Shaft.

(1/1)

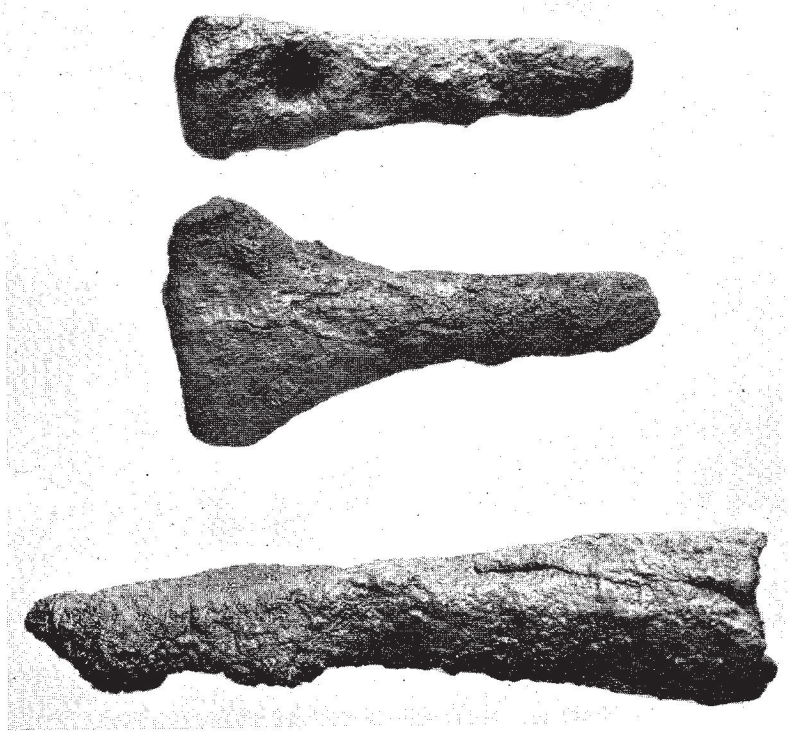


Plate 47. Iron Objects : (1) and (2) Views of a portable Anvil : (3) Socketed Point.

(1/1)