# CHAPTER XIII

## Tools and Implements

NOTHING conjures up so clearly a sense of the life that once moved within the fort, and nothing brings us into such close touch with the individual men who held it, as does a sight of the tools, the implements and the vessels which they handled in their daily life. The axes that levelled the woods of birch and hazel, the scythes that cut the hay, the hammers and tongs with which the smith beat out the blunted spear-points or fashioned the sword-blades, have come down to us in such perfect preservation, differing so little in their forms from those with which we are familiar, that in their presence it is difficult to realise how many centuries have passed since the camp fires of a Roman army glimmered for the last time above the Tweed. The collection of tools, implements of agriculture and iron objects left behind by the garrison of Newstead is without doubt the most remarkable that has yet been met with in Scotland. Many crafts are represented —the smith, the carpenter, the mason, the leather-worker, the weaver, the husbandman. The soldier would seem to have been all of these in turn.

The iron found near the surface was generally in a state of hopeless corrosion. On the other hand, the metal objects from the ditch of the early fort, and those from many of the pits, were in extraordinarily fine condition. The most interesting of all these finds came from Pit XVI. It consisted of ninety-six pieces of iron,—tools, weapons, mountings, and odd pieces of metal, partly worked and partly unworked. It suggested the contents of a camp forge, including as it did spears with their points blunted, pioneers' axes with their edges to be set, hammers, chisels, tongs, mountings for saddles, hub-linings for wheels, as well as much old metal ready to be hammered and welded into something new.

One can easily imagine that on the eve of a sudden retirement such things might be hurriedly cast down a well for concealment. England can

show three similar finds. The earliest was made by Lord Braybrooke in 1854 at Great Chesterford in Essex, where ninety-six objects were found at the bottom of a Roman well.[1] Again, at Silchester there have been two discoveries of such deposits. The first, which was made in 1890, consisted of sixty-six pieces.[2] The second, which belongs to 1900, contained over one hundred articles.[3] Both collections, like that from Newstead, appear to have formed the stock-in-trade of a smith, comprising his tools and material, along with some of his finished goods. In addition to the smith's hoard from Pit XVI, forty to fifty iron objects came from the ditch of the early fort, and a small number of well-preserved tools from other pits. As the association of the articles comprising these finds has been indicated in dealing with the pits and wells themselves, it is possible here to treat them in classes rather than in accidental groups.

## The Axes of the Pioneers

In the sculptures of the Trajan column there are many representations of the pioneers at work, clearing the forest growths and levelling the ground as they constructed the highways for the army. In their hands they swing a heavy pick-axe, the *dolabra*. One end of the head is fashioned like the blade of an axe, the other like a curved pick. It is used to destroy a wall as well as to beat down a Dacian palisade. Specimens of this very tool have been recovered from the Newstead pits. Several of them are unrusted, but their jagged edges and their worn points are eloquent of vigorous usage and of hard toil in making broad the narrow ways.[4] Five of these dolabrae are figured in Plate LVII. Fig. 1, which differs slightly in type from the rest, came from Pit LXI. The whole length is 14½ inches. The pick shows a simple curve downwards. The axe measures 3½ inches along the edge. In the centre is what is known as a slip eye, slightly wider at the upper end of the aperture than the lower, with side clips. The weight is 4 lbs. 4 oz. The lower surface of the axe-blade near the eye bears a circular stamp with letters now illegible, no doubt the name of the maker. Figs. 2, 3, 4 and 5 are all of the same pattern, and were found together in Pit XVI. It will be noted that the curve of the pick is not the same as that seen in Fig. 1, and that its section is hexagonal. The largest of the four (Fig. 5) weighs 6 lbs.

1 *Archaeological Journal*, vol. xiii. p. 1.

2 *Archaeologia*, vol. liv. p. 139. 3 *Ibid.* vol. lvii. p. 246.

4 Cichorius, *Die Trajanssäule*, Taf. lxvii. 242, Taf. lxx. 254, Taf. lxxxvii. 314. 'Correptis securibus et dolabris ut si murum perrumperet.' Tacitus, *Annals*, book iii. c. 46. 'Quod si angustae sunt viae sed tamen tutae melius eat praecedere cum securibus ac dolabris milites et cum labore aperire vias quam in optimo itinere periculum sustinere.' Vegetius, iii. 6.

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| 6. Hammer. Pit XVII. | 286 |

All the objects figured are of iron.


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## PLATE LVIII. PICKS AND SCRAP IRON

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| 1 and 2. Iron in course of manufacture. Pit XVI. | 280 |
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| 4. Pickaxe. Block XIII. | 279 |
| 5. Small pick. | 279 |
| 6. Shod for a pole. | 280 |
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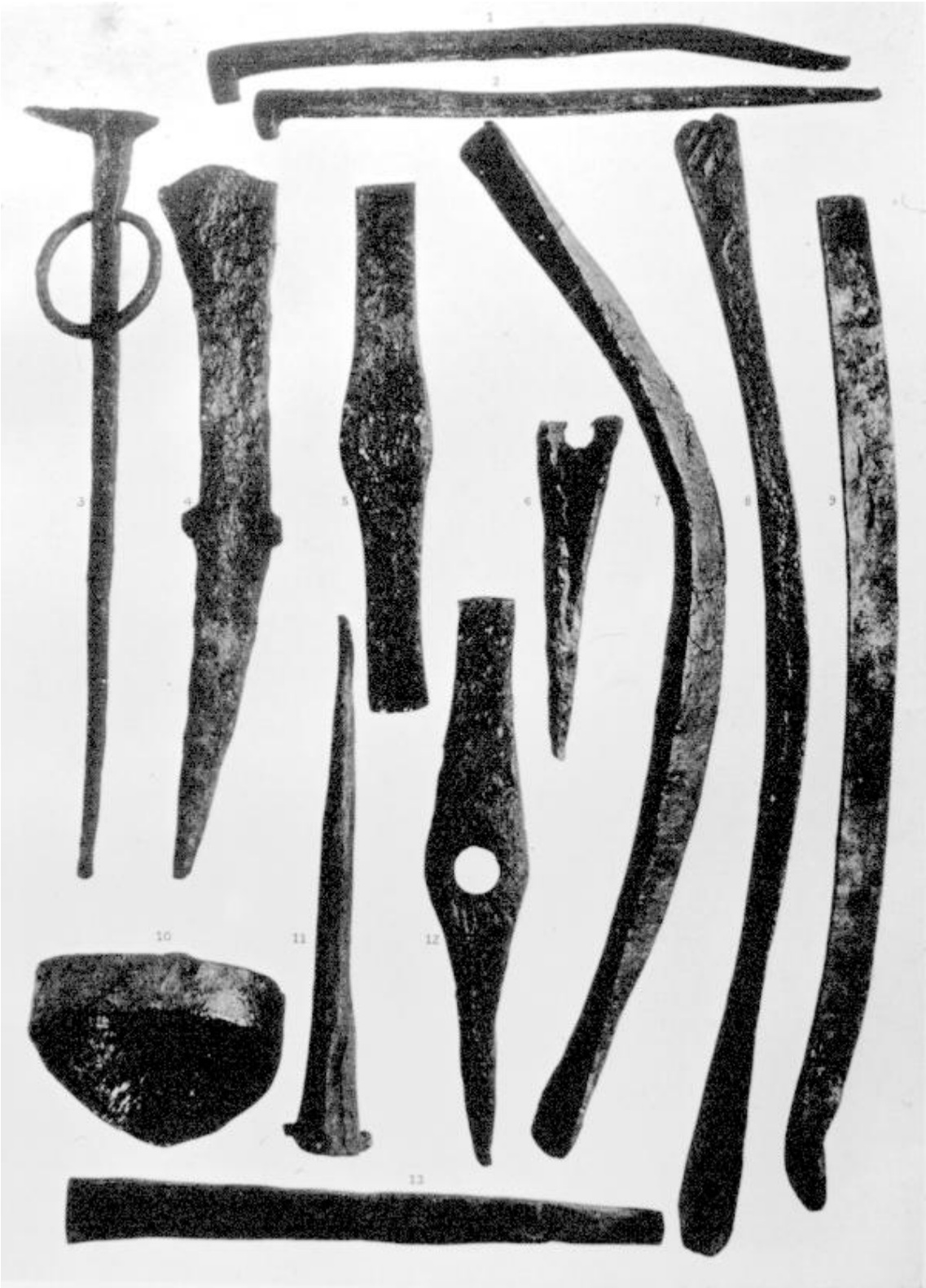
| 10. Object resembling a stirrup. Pit XVI. | 280 |
| 11. Shod for a pole. Pit XVI. | 280 |
| 12. Small pick. | 279 |
| 13. Iron bar. Pit XVI. | 280 |

All the objects figured are of iron.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use, therefore, they must have been either grasped in the hand or fastened to a forked stick. The making of an eye was an operation so familiar to the Roman smith that one is tempted to wonder whether these strange tools may not have been the product of some Caledonian smithy of the pre-Roman period.

Associated with them on Plate LVIII. are some pieces of iron from the smith's stock in Pit XVI (Figs 1, 2, 9 and 13). Fig. 11 from the same pit is evidently the shod of a pole or spear, while Fig. 6 must have served a similar purpose. In Fig. 10 we have an object whose appearance at once suggests that it was used as a stirrup. It is almost circular, 4½ inches wide by 4 inches in height, and measures 4 inches across the tread from front to back. It is, however, doubtful whether the stirrup formed any part of the equipment of the Roman horseman, although an object recently found at Alesia has been thus classified.[1] Fig. 3 shows an iron peg, 15½ inches long, with a ring inserted near the upper end. This was doubtless driven into the earth as a means of tethering horses or other animals. It is, in fact, what is known in the north-east of Scotland to-day as a 'baikie.'

## The Carpenter's Tools

Several tools can be identified as belonging to the carpenter. The most common of these were chisels. Two specimens came from Pit XIV (Plate LIX., Figs. 7 and 8). Both are socketed, and they measure 10¾ inches and 9 5/8 inches in length respectively. The former still preserves its short haft of deer-horn, 2 inches long. Two other chisels were among the tools in Pit XVI (Figs. 10 and 4). They are only 7¾ inches and 6¾ inches long. The larger of them had had a wooden haft, part of which remained in the socket. The smaller has a solid iron haft, the metal of which shows abrasion from hammering. They are no doubt morticing chisels. The head of one of the wooden mallets which would be used with them was found in Pit LIV (Plate LXXXIII., Fig. 3). It measures 8 inches long by 4½ inches by 3 inches. The eye, 1½ inches in diameter, is bored through the mallet. The handle is awanting.

A socketed gouge (Fig. 13, Pit XVI) was doubtless also a carpenter 5 tool. It is 6¾ inches long and has had a wooden haft. A smaller instrument of the same kind (Plate LIX., Fig. 3), 5 1/8 inches long, with unusually flat cutting edge, was found in the ditch of the early fort. Two larger gouge-like tools were perhaps augers. One (Plate LIX., Fig. 14), which was taken from Pit XVI, has a length of 11½ inches. It is a bar of iron roughly octagonal, terminating in a gouge at the lower end, while at the upper end

1 Espérandieu, 'Note sur un étrier gallo-romain,' *Pro Alesia*, vol. i. p. 17, plate iii.

## PLATE LIX. THE CARPENTER'S TOOLS

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| 1. Wedge. Ditch of the early fort. | 281 |
| 2. Blade of a moulding plane. Ditch of the early fort. | 281 |
| 3. Socketed gouge. Ditch of the early fort. | 280 |
| 4. Chisel. Pit XVI. | 280 |
| 5. File. Ditch of the early fort. | 281 |
| 6. Part of the handle of an auger. | 281 |
| 7. Socketed chisel with deer horn shaft. Pit XIV. | 280 |
| 8. Socketed chisel. Pit XIV. | 280 |
| 9. Socketed chisel. | |
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| 13. Socketed gouge. Pit XVI. | 280 |
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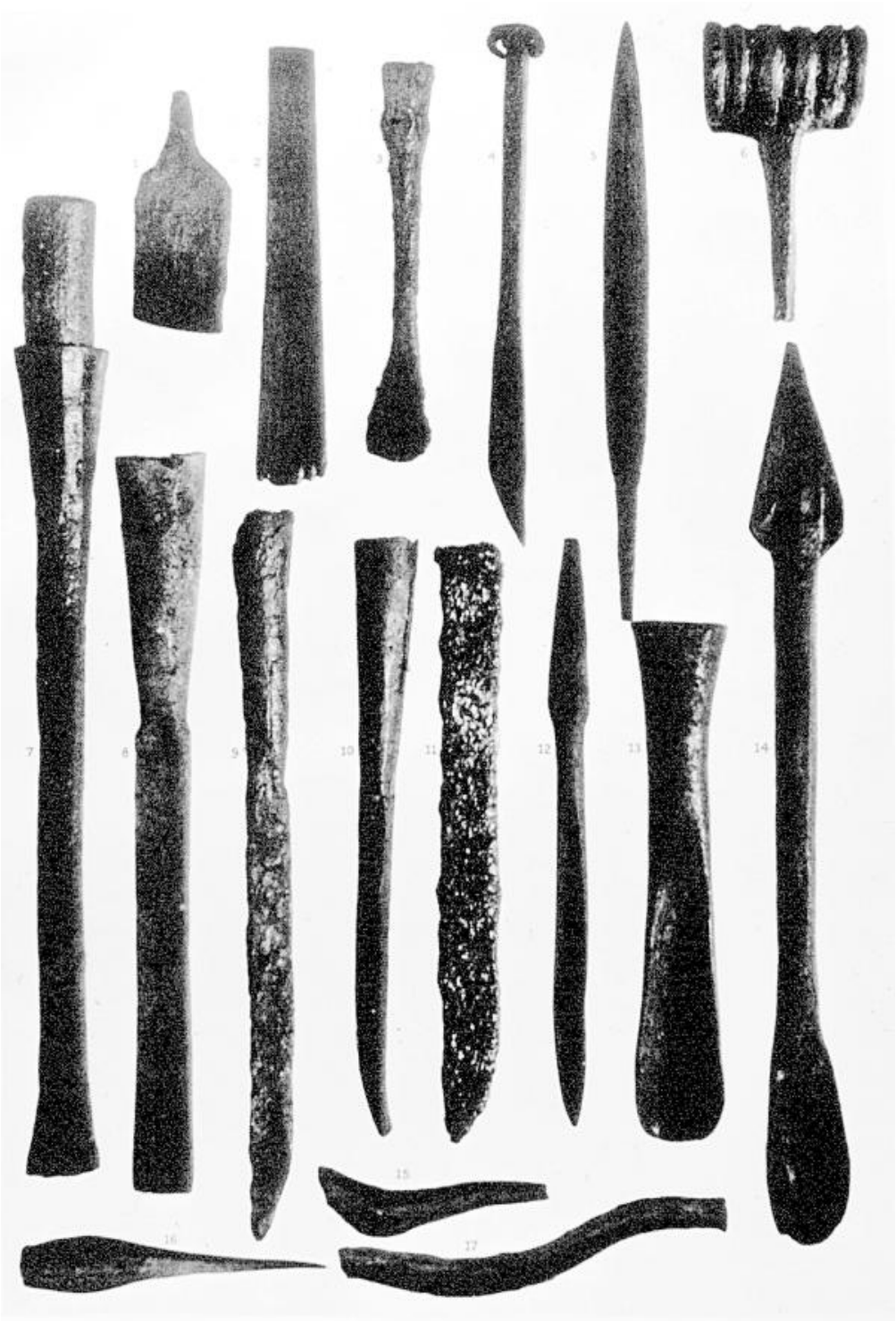
| 15. Blade of a small plane. Ditch of the early fort. | 281 |
| 16. Awl. Pit XLIV. | 281 |
| 17. Wrench. Pit XIV. | 281 |

All the objects figured are of iron.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it is flattened out into a triangular shape. This flattened portion was evidently inserted in a wooden handle. A very well-made example of a similar tool is shown in Plate LIX., Fig. 12. It measures 7½ inches long. The upper portion is square in section and somewhat tapered to allow for insertion in a socket. It came from the ditch of the early fort. In Fig. 6, which was found in Pit LV, we have perhaps part of the handle of an auger. It is obviously a socket through which a cross-bar of wood would be inserted. Fig. us possibly a wedge.

Two blades of planes were found in the ditch of the early fort. One of these (Plate LIX., Fig. 2) is 5¾ inches in length, and was designed to cut mouldings one inch wide. The other (Plate LIX., Fig. 15), which is 3¼ inches long and slightly curved, is composed of two pieces of metal, ⅛ of an inch thick, which have been welded together, the back plate being made to describe a wider curve than the front one. The same ditch yielded a single example of a file (Plate LIX., Fig. 5). It measures 7¾ inches long and ⅝ of an inch at its widest part. Another carpenter's tool—unfortunately imperfect—is a wrench for extracting nails (Plate LIX., Fig. 17). It came from Pit XIV, while a good specimen of an awl with a metal haft (Plate LIX., Fig. 16) was found in Pit XLIV. This last, which measures 4⅛ inches in length, probably belonged to a shoemaker.

## Knives

The number of knives of varying shapes and sizes was considerable. Eleven are illustrated on Plate LX. Two of the largest (Figs. 1 and 3) are from the pit in the Principia (No. I). Fig. 3, which measures with its handle 13 inches in length, is shaped rather like a modern carving-knife, and has its haft covered with plates of bone. Fig. 1 has a blade 8 inches long with a short tang for insertion into a wooden handle. Both are probably butcher's knives. Two knives (Figs. 2 and 6) are from the ditch of the early fort. Fig. 6, which is 7½ inches long, is finished at the end with a ring for suspension, while on the flat handle are remains of the rivets that have held the bone mountings. Of such mountings we have a fragment with incised decoration from the ditch of the early fort (Plate XCIII., Fig. 7). The blade, with its downward curve, recalls the form of some modern Asiatic knives. This type of knife is common on sites in Germany dating from the second half of the first century. That it was also in use in this country has long been known. Three well preserved specimens from London are illustrated in the catalogue of the Guildhall Museum.[1] An example complete,

1 Plate xvii. figs. 6, 7 and 8.

with its bone handle, has been found at Wiesbaden.[1] The other knife from the ditch of the early fort has a small blade, 3½ inches long, having a slight upward curve and provided with a tang which is inserted in a bone handle. Another knife (Fig. 5) from Pit XL, with a blade 6⅝ inches long, reminds one of the common form of knife represented with other sacrificial emblems upon altars.

Fig. 12, from Pit LV, though a mere fragment, is of special interest, because it probably represents an early type. Its characteristic feature is the brass mounting at the junction of blade and handle. Through the courtesy of Dr. Fröhlich, two knives of the kind from the *Schutthügel* at Vindonissa, are shown in Fig. 40. These cannot be of later date than the reign of Trajan; the type is common at Vindonissa, with handles sometimes of bone and sometimes of metal. In one of them we have a specimen of the bone handle, while in the other the handle of bronze corresponds in pattern to the incomplete examples from Newstead (Figs. 9 and 10). The same style of handle is to be seen at Novaesium.[2] Fig. 7 came from Pit LIV. It is short, the blade having a length of only 3¼ inches, and it belongs to a type which is probably British. A similar knife, still with its bone handle, from the Dowkerbottom cave, and two others from caves near Settle are to be seen in the British Museum. Mr. Reginald Smith has recently described one of these knives found in the Harborough Cave near Brassington, and he cites their occurrence on such British sites as Hod Hill, Dorset, and Glastonbury.[3] Fig. 4, a worn blade with its bone handle, was found in the great ditch of the later fort; the other examples in Plate LX.,—Figs. 8, 13 and 14,—are from surface finds.

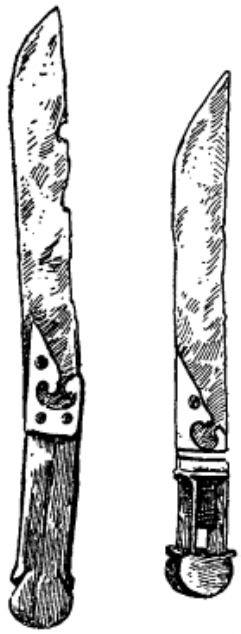


FIG. 40
KNIVES FROM
VINDONISSA

The axe is twice represented. A beautiful specimen (Plate LXI., Fig. 4) from Pit XVI measures 40 inches in its extreme length. Its blade is curved at one end, and has a flat rectangular face at the other. The edge measures 4¼ inches, and there is a slip eye with side clips. The weight is

1 See Ritterling, *Das Kastell Wiesbaden*, p. 101, where references to finds are given.

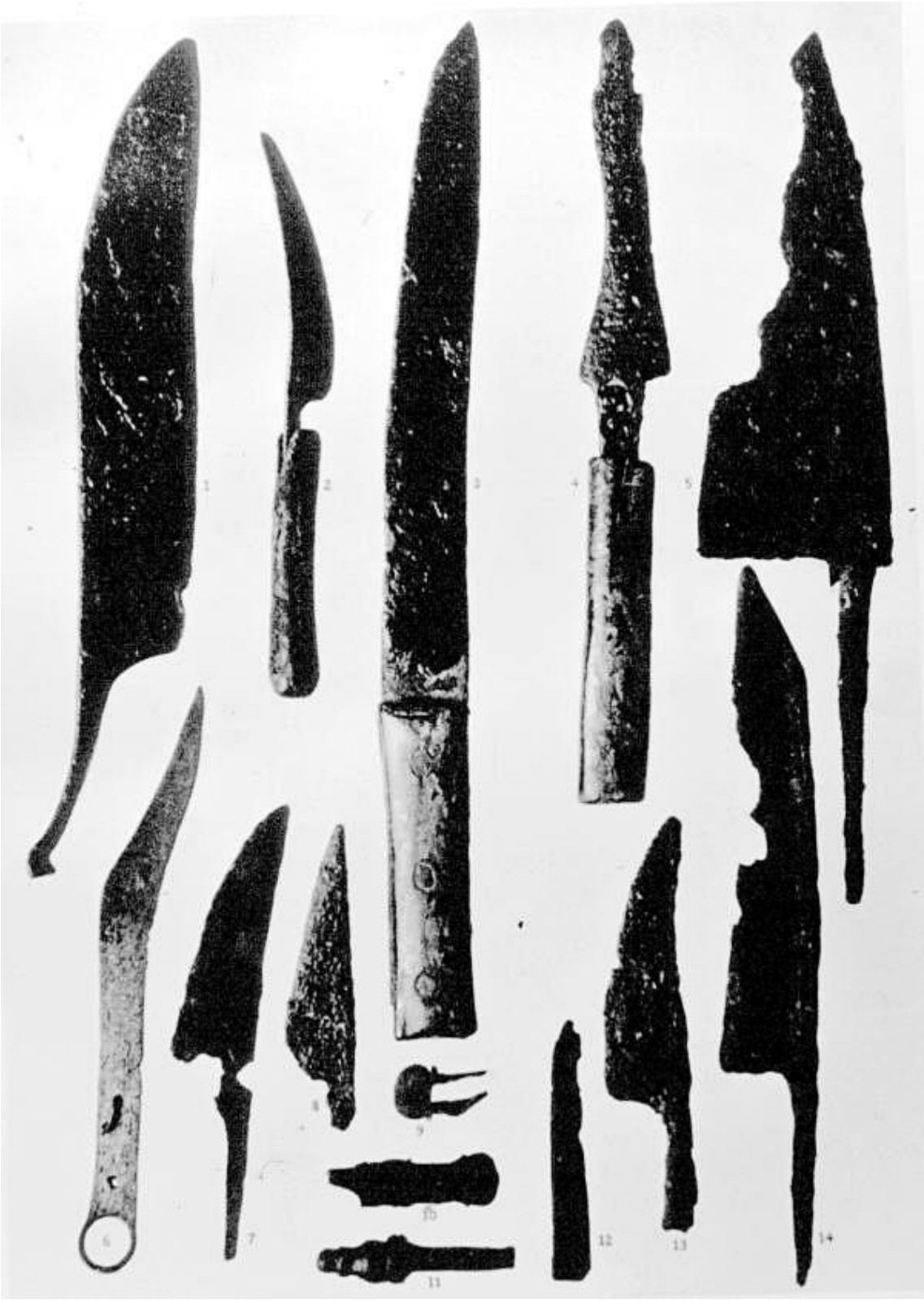
2 *Bonner Jahrbücher*, Heft 111–112, Taf xxxiii. B, Fig. 36.

3 *Derbyshire Archaeological and Natural History Society's Journal*, 1909, p. 23.

## PLATE LX. KNIVES

| | PAGE |
|---|---|
| 1. Knife. Pit I. | 281 |
| 2. Knife with bone handle. Ditch of early fort. | 281 |
| 3. Knife with bone handle. Pit I. | 281 |
| 4. Knife with bone handle. Ditch of later fort, west front. | 282 |
| 5. Knife. Pit XL. | 282 |
| 6. Knife. Ditch of early fort. | 281 |
| 7. Knife. Pit LIV. | 282 |
| 8. Knife. | 282 |
| 9, 10, 11. Portions of knife handles in bronze. | 282 |
| 12. Knife with brass mounting. Pit LV. | 282 |
| 13. Knife with socket. | 282 |
| 14. Knife. | 282 |

All the objects figured, unless otherwise mentioned, are of iron.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6 lbs. On the lower side of the square end is impressed a stamp on which appear the letters L.G.R. It is made from a solid piece of iron exactly as a modern axe would be, the eye having been punched out. Along the upper edge is a punctured inscription in two lines (Fig. 41). The first consists of the centurial mark followed by the name BARRI. In the second line the letters appear to be COMPITALICI. It is interesting to compare this beautiful axe, evidently the work of a professional tool-maker, with an axe from Pit XXIII (Plate LX., Fig 1). The two are similar in shape, both having a curved blade at one end and a square head at the other. The extreme length of the latter is 7¾ inches. The edge measures 3½ inches. The weight is 3 lbs. 7 oz. It has a slip eye with side clips, which has a general resemblance to that on the larger axe. But the whole is formed of two pieces welded together at the eye, just as might be done to-day in a country smithy, and the welding of the steel on the head and edge is somewhat clumsy.

FIG. 41.
PUNCTURED INSCRIPTION ON AXE FROM PIT XVI

## Implements of Husbandry

We have already noted that in a fort with such elements of permanency as were obvious at Newstead there must have been some cultivation. Nothing was found which could with certainty be set down as having formed part of a plough, but the pits yielded a few characteristic implements of husbandry. A hoe, half-spade and half-pick, about a foot long came from Pit XIV (Plate LXI., Fig. 9). It could be utilised in throwing up entrenchments, but its real purpose was probably tillage. Liger figures a specimen closely resembling it from a grave at Neuvicque, Charente Inferieure.[1] A smaller example, 8 inches in length, was found in Pit LXXXIX. A single specimen of a rake (Plate LXI., Fig. 7) came from the Baths (Pit LVII). It is formed of a wooden clog, made of oak, the length of which, when complete, was probably 13 inches. Through this have been inserted seven prongs, which project 6 inches and are slightly curved. The opposite ends of the prongs are doubled over the lower edge of the clog so as to form a fastening.

The two sickles on Plate LXI. differ slightly in pattern. They have short curved blades, and must have been little more than a foot in length. Fig. 2 is from Pit I; in it the end of the tang has been turned over the

1 *La Ferrounerie*, vol. ii. p1. 21, H.

handle so as to form a fastening, as was done with the prongs of the rake. Fig. 5 is from Pit XXII; in this case the tang is quite straight. The edges of the sickles have been sharpened, and they appear to have had steel welded upon them. The monuments furnish more than one appropriate illustration. On the Trajan column a legionary, grasping ears of corn with his left hand, cuts them down with a sickle of precisely this pattern, which he holds in his right.[1] Another example hangs on the wall of the shop of a Roman cutler in a monument now in the Vatican.[2] A larger implement (Plate LXI., Fig. 10), found in a rusted condition at the east end of the Bath building, is possibly the *falx arboraria* employed for cutting branches. It is 15 inches in length. A small sickle-shaped knife (Plate LXI., Fig. 8) from a small pit or post hole in the side of the branched ditch in front of the west gate, and a heavy iron wedge for splitting wood (Plate LXI., Fig. 6) may also be included in this class of objects. A specimen of a turf-cutter (Plate LXI., Fig. 3) was taken out of the ditch of the early fort. It is virtually an anchor-shaped knife in outline, 4½ inches across, and furnished with a socket for a strong shaft. These implements are not uncommon on the Limes forts; an unusually large specimen occurred at Zugmantel.[3] They were primarily employed for cutting the turf that went to the construction of ramparts; but, as several blocks of peat came from Pit XXVIII, it is possible that they also served to cut fuel.

Four scythes (Plate LXII., Figs. 3, 4, 5 and 6) came from Pit XVI. The blades are from 43½ to 35 inches long and from 2¾ to 3 inches wide, and have a strong back rib. The tangs which fasten them to the handle vary from 6½ to 5½ inches in length. At the point where the blade joins the tang three of them still have a large anchor-shaped rivet, the curved head of which was no doubt employed to fasten the blade to the single long handle. The scythes show considerable signs of wear, and one of them (Fig. 6) has been carefully patched by a piece of iron bolted on to the back rib.

With the scythes we may associate the small anvil which the mowers used for sharpening them. An example (Plate LXII., Fig. 1) came from Pit XVI. It is a solid iron peg 5½ inches long, sharpened at one end to allow it to be driven into the ground, while at the other it is flat, 1¾ inches square. At a distance of about 2½ inches from the top a hole has been

1 Cichorius, *Die Trajanssäule*, Taf lxxxi. c. 291.

2 Liger, *La Ferronnerie*, vol. ii. fig. 369.

3 *Der Obergermanisch-Raetische Limes*, Lief. 32, 'Kastell Zugmantel,' Taf. xvi. Fig. 55.

## PLATE LXI. IMPLEMENTS OF HUSBANDRY

| | PAGE |
|---|---|
| 1. Axe. Pit XXIII. | 283 |
| 2. Sickle. Pit I. | 283 |
| 3. Turf cutter. Ditch of the early fort. | 284 |
| 4. Axe with punctured inscription. Pit XVI. | 282 |
| 5. Sickle. Pit XXII. | 284 |
| 6. Heavy wedge. | 284 |
| 7. Wooden rake with iron prongs. Pit LVII. | 283 |
| 8. Small socketed sickle. Small pit or post hole before west gate. | 284 |
| 9. Hoe. Pit XIV. | 283 |
| 10. Large socketed sickle (*Falx arboraria*). Baths. | 284 |

All the objects figured, unless otherwise mentioned, are of iron.


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## PLATE LXII. SCYTHES, ANVIL, AND WHETSTONE

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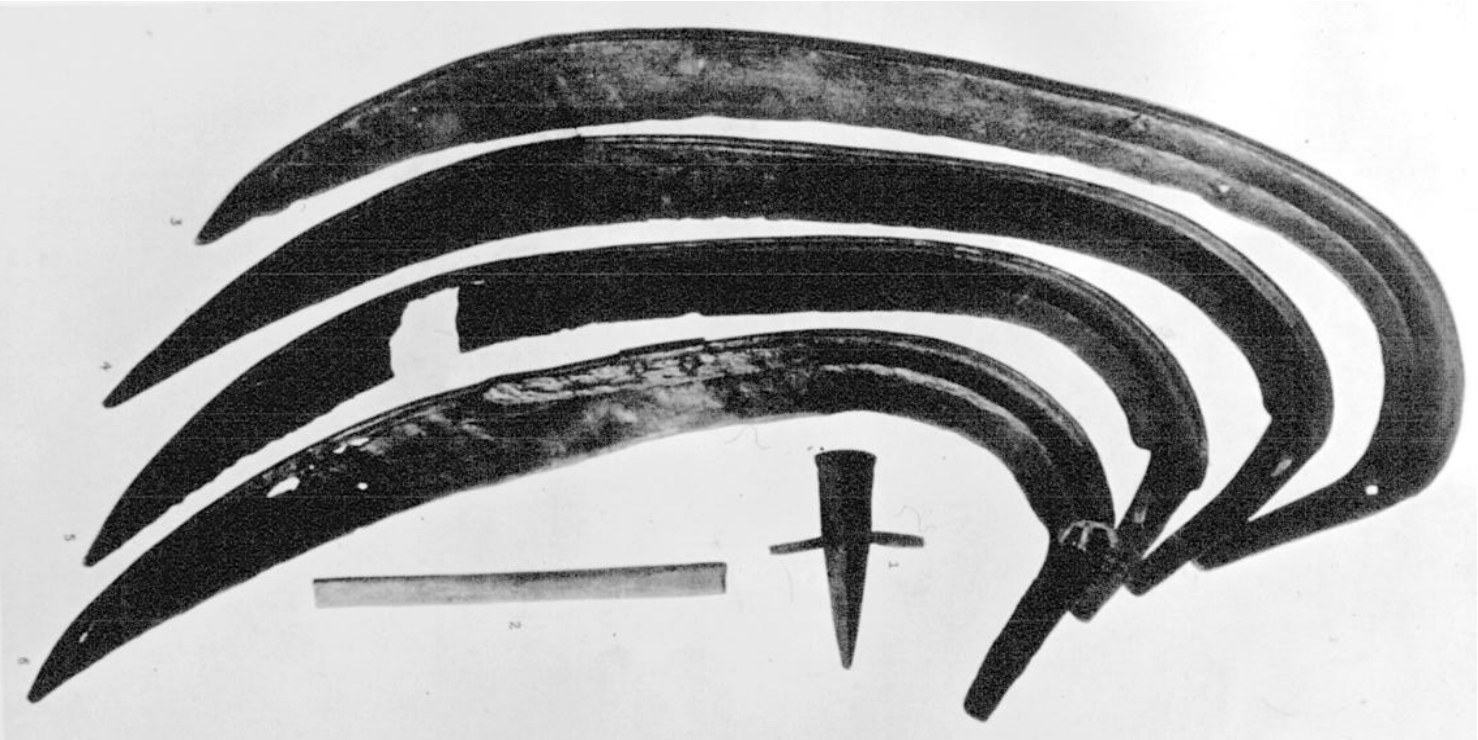
| 1. Mower's anvil. Pit XVI. | 284 |
| 2. Whetstone. Pit LXI. | 285 |
| 3, 4, 5, 6. Scythes. Pit XVI. | 284 |

With the exception of No. 2, all the objects figured are of iron.



punched, and through this a thin strip of iron has been inserted and bent at each end into a spiral, so that it projects 1¾ inches on each side. Its purpose is to prevent the peg from being driven too deeply in the ground. Four of these objects were discovered in the Silchester hoard of 1890, but their purpose was not at first recognised, so long had they ceased to be used in England. It turned out, however, that they were still employed in Spain, in South America, in Italy, and they are common in many parts of Europe to-day. The mower sits on the ground, and, laying the scythe across his knees, hammers out the edges upon the anvil, which is planted between his legs, before giving the edge a final polish with his hone. It may be added that whetstones of various shapes and sizes were common at Newstead. The specimen from Pit LXI, figured in Plate LXII., No.2, is remarkable for its length and fineness. It measures 11¾ inches, and was no doubt intended to be exactly a Roman foot in length. It is evidently a carefully manufactured article, unlike the flattened river stones, many of which, it is apparent, had been used for the same purpose.

Among the smith's tools in Pit XVI were five hammers of different sizes. The largest of these (Plate LXIII., Fig. 11) is a fore-hammer, 7 lbs. 4 oz. in weight. It is 11½ inches long, and the head is The Smith's cross-paned. The shaft must have been fastened with a wedge. Tools The face measures 2 inches by 1⅞ inches, the pane 1¾ inches by ¾ of an inch. Fig. 1 is a smaller fore-hammer of the same type. It weighs 4 lbs. 1¼ oz., and is 11 inches in length The shaft must have been wedged in position. No modern smith would use so small a fore-hammer, but it would be eminently suitable for making spears or sword blades. Plate LXIII., Fig. 5, is a cross-paned hammer, roughly octagonal at one end and furnished with a slip eye. It weighs 16½ oz.; one end seems to have been used for driving in nails, the metal being upset and abraded. The pane shows the steel welded upon it, although nothing of the kind is now visible on the face. Plate LXIII., Fig. 3, is a roughly made hammer, weighing 1 lb. 4½ oz. The eye is badly shaped, and the tool looks as if it had been hurriedly turned out. Plate LXIII., Fig. 6, is a smith's set-hammer—an instrument which is held against the iron and receives the blows of the fore-hammer. The eye is only ¾ of an inch in diameter, and was probably fitted with an iron shaft. The weight is 1 lb. 9 oz. Plate LXIII., Fig. 7, shows the tool known as a 'drift.' It is 5¾ inches long and oval in section, and was used by the smith in making the eye-holes of hammers. It came

from Pit XVI. Plate LXIII., Fig. 2, represents a pair of smith's tongs, 18 inches in length, such a tool as would be used for making nave-bands or other light work (Pit XVI). Plate LXIII., Fig. 4, shows another pair of smith's tongs, 16 inches in length. These also are intended for light work. They were perhaps used for drawing out the heads of spears or for forging bolts. It should be noted that they have been made for a left-handed man (Pit XVI).

In addition to the mower's anvil already described, the smith's stock found in Pit XVI contained a small anvil, 4¾ inches high, ending in a rectangular face from which the steel has evidently been broken off (Plate LXIII., Fig. 10). When in use, it would be inserted in a block of wood. This is the sort of anvil on which nails would be pointed. Plate LXIII., Figs. 8, 9 and 12, are pieces of solid iron (Pit XVI) which were doubtless used in the camp smithy as mandrels on which to shape square staples such as are still employed for carts. A heavier hammer than any of those in the smith's stock came from Pit XVII. It is illustrated in Plate LVII., Fig. 6, and measures 13½ inches in length. At one end it is brought to an edge 2½ inches wide, while at the other end it is flattened and is roughly octagonal in shape. The eye is oval. This hammer weighs 11 lbs. 10 oz.

## From the Smith's Stock

Passing from tools, one has next to catalogue a number of pieces of iron, so miscellaneous in character as to render classification difficult. They include articles of which the use is uncertain, things in process of manufacture, and mountings and fastenings. To the first category, and also no doubt partly to the second, belong several of the objects that formed part of the smith's stock in Pit XVI. Of these the most striking are five beautifully forged rods of iron. Four of them are illustrated in Plate LXIV., Figs. 1, 2, 4 and 5. They measure from 9 inches to 13 inches in length, and are decorated with a series of hammered mouldings expanding at a central point into a larger disc 2⅛ inches in diameter. The pattern is the same in all of the pieces. In spite of the fact that they are obviously incomplete, they seem to represent, in the hoard, old metal about to be used again rather than work in an unfinished condition. It will be noted that in all of them the mouldings on either side of the larger disc correspond, a circumstance which suggests that they were used in a horizontal rather than in a perpendicular position. This fact, together with the number found, five pieces, gives a clue to the purpose for which they were forged. They must have formed part of the connecting

PLATE LXIII. THE SMITH'S TOOLS

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| 1. Fore hammer. Pit XVI. | 285 |
| 2. Tongs. Pit XVI. | 286 |
| 3. Hammer. Pit XVI. | 285 |
| 4. Tongs. Pit XVI. | 286 |
| 5. Hammer. Pit XVI. | 285 |
| 6. Set hammer. Pit XVI. | 285 |
| 7. Smith's 'drift.' Pit XVI. | 285 |
| 8. Staple mandril. Pit XVI. | 286 |
| 9. Staple mandril. Pit XVI. | 286 |
| 10. Small anvil. Pit XVI. | 286 |
| 11. Fore hammer. Pit XVI. | 285 |
| 12. Staple mandril. Pit XVI. | 286 |

All the objects figured are of iron.


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## PLATE LXIV. THE SMITH'S STOCK

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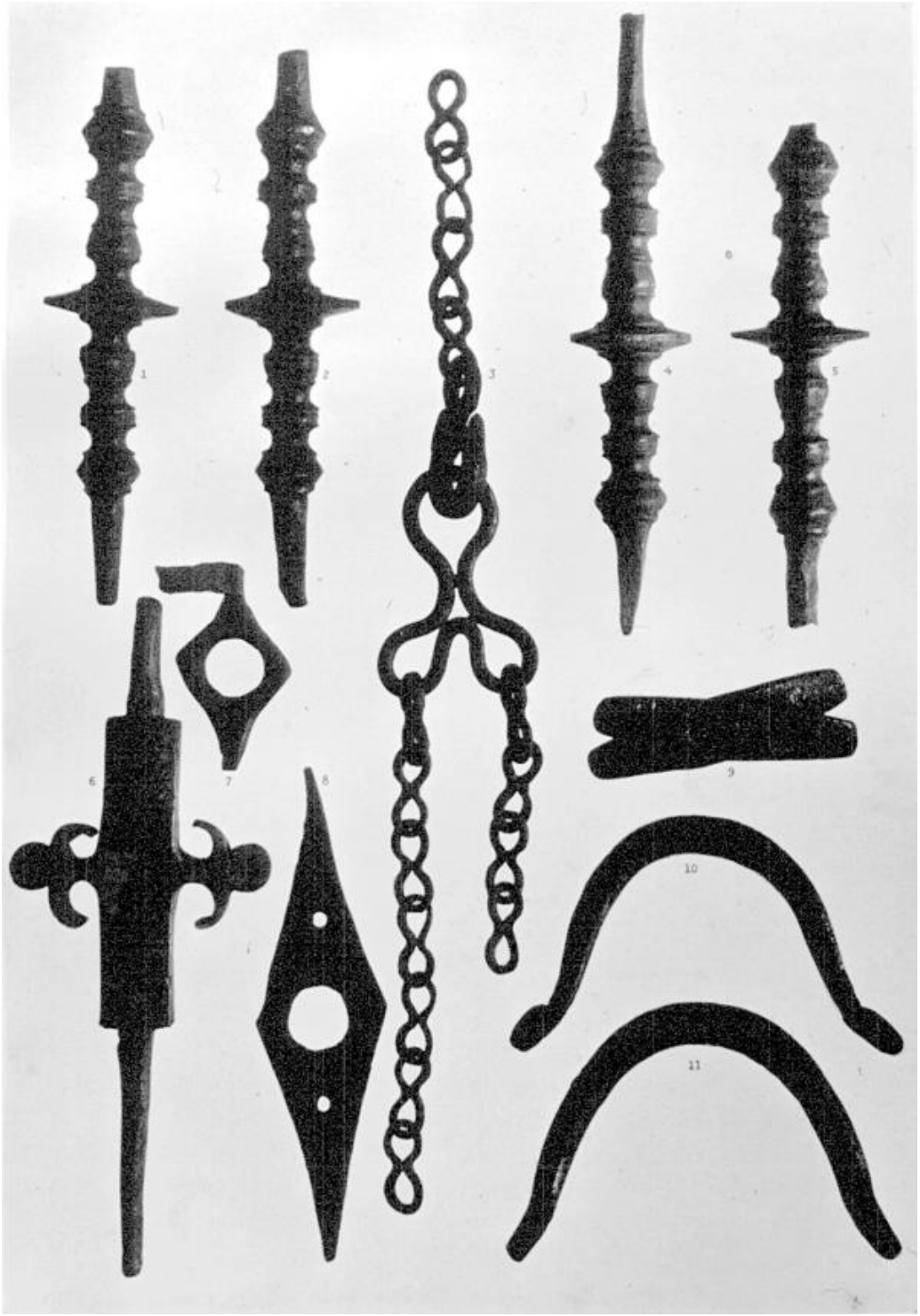
| 1, 2, 4 and 5. Iron objects which probably formed part of the framework of a seat. Pit XVI. | 286 |
| 3. Chain for suspending a pot over the fire. Pit XVI. | 287 |
| 6. Iron object over-laid with white metal, perhaps a bolt. Pit XVI. | 287 |
| 7 and 8. Iron mountings of uncertain use. Pit XVI. | 287 |
| 9. Iron object. Ditch of early fort. | 288 |
| 10 and 11. Mountings forming part of the ftamework of a saddle. Pit XVI. | 288 |

All the objects figured are of iron.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rods binding together the ends of a seat, perhaps a *sella castrensis*. It is quite clear that these decorated pieces were intended to be welded to longer metal rods, and this has been done in the piece which has been omitted from the illustration. On one end a metal rod is affixed measuring from the central disc to its end a length of 8 inches, so that, if the opposite end was treated in the same way, the whole would have a length of 16 inches, which would probably mean that the seat was some 8 inches in length.

Such a seat, found in a Roman cemetery at Nymwegen, is to be seen in the Museum of the Canisius College there. The framework, which is of iron, resembles a modern camp stool, except that the ends, instead of simply forming a St. Andrew's cross, are curved gracefully, the lower and the upper half each describing a semi-circle. The two ends are tied together by five rods; two join the feet together, two the supports for the seat, and one ties together the ends at the point of intersection. The rods themselves measure about 14 inches in length, and each rod is ornamented by three disc-like mouldings of brass placed at intervals upon it. The feet of the seat terminate in small shoes or sandals of bronze, which possibly give us a clue to the use of three objects of brass which were found with the iron rods in Pit XVI. Two of them are illustrated in Plate LIV., Figs. 2 and 3. They very probably formed part of the feet. It is on a seat of this kind that Augustus is placed in the reliefs on the silver cups from Boscoreale now in the collection of Baron Edmond de Rothschild,[1] and on the columns of both Trajan and Marcus Aurelius we may see the Emperor seated upon it. Doubtless the Newstead seat formed part of the camp equipment of some officer of high rank.

Plate LXIV., Fig. 6, also from Pit XVI, is likewise incomplete. It consists of a rectangular iron plate, 5 inches in length, overlaid with brass. At either end of it there projects a rod, the two rods being of unequal length, while on either side of the plate are ornamental projections resembling a fleur-de-lys in shape. These last have also been plated with brass. The use of this object remains uncertain. Plate LXIV., Fig. 3, came from Pit XVI. It is a chain, the full length of which is 19½ inches. The upper part consists of a single heavy chain fastened to a triple loop. From this depend two smaller chains. It was probably used for hanging a pot over a camp fire. The iron mountings shown in Figs. 7 and 8 of the same plate are possibly

1 Héron de Vil1efosse, *Le Trésor de Boscoreale*, Monuments Piot., tome v. 1899, pl. 31 and 32.

sockets for the insertion of the bolts of a door. Fig. 9, which is from the ditch of the early fort, consists of two pieces of iron moving on a short pin which holds them together; its purpose is unknown. Figs. 10 and 11, both from Pit XVI, have served as part of the frame of a military saddle; such saddles had a projecting peak behind and before. The ends are splayed out and perforated with double eye holes, which show signs of considerable wear.

Some of the larger objects from Pit XVI are brought together on Plate LXV. Fig. 1 is doubtless the hoop of a barrel for lowering into a well. It has a loop to hold the suspending chain or rope. Figs. 2, 3 and 4 may be mountings for waggons. Fig. 5 is the tyre of a wheel in process of being welded into something fresh. In Fig. 6 we have an iron peg with the lining of a hub adhering to it. Fig. 7 is another object of uncertain use, perforated at both ends. Fig. 8, from the ditch of the later fort, is perhaps the lining for the pivot-hole of a heavy door, while Fig. 9 is simply an ingot of iron. It came, with four similar ingots, from Pit LVIII, and a sixth was taken out of Pit XVI.

Some miscellaneous iron objects are illustrated in Plate LXVI. Fig. 1 is from Pit XLV, Figs. 2 and 4 from the Barracks (Block No. II). Fig. 1 has its surface hammered into a herring-bone pattern, of which examples occur elsewhere, as on an iron shovel recently found at Zugmantel.[1] Its use is doubtful. Fig. 3 is a door handle, or possibly a knocker. Fig. 5, a square mounting 1 inch high, might possibly have been used as the socket for a pilum. Fig. 6, an iron rim with loops for a cross handle, may have belonged to a small bronze vessel. Fig. 7 resembles an armlet. It is from Pit XXII. Fig. 8, which bears a striking resemblance to a boat hook, is from the ditch of the later fort. It was probably employed to pull up buckets from the bottom of a well; a similar specimen has recently been found at the Saalburg. Fig. 10, a small socketed hook from the ditch of the early fort, was perhaps a meat hook, serving the purpose of the modern fork. Fig. 13 possibly belonged to a steelyard. Fig. 14, which is much corroded, recalls a manacle. Figs. 16 and 17, from Pits LV and XXII, are the spindles of querns. Four of these were found in their original settings. In Fig. 19 we have what is probably a mounting for insertion in the shaft of a waggon. It bears evident marks of wear. Fig. 20 is probably a punch. Fig. 21 is a lunette of iron, finished behind with a projecting tang, by which it was probably inserted into

1 *Der 0bergermanisch-Raetische Limes*, Lief. 32, 'Kastell Zugmantel,' Taf. xv. Fig. 21.

PLATE LXV. HEAVY IRON MOUNTINGS AND INGOT

| | PAGE |
|---|---|
| 1. Hoop for a well barrel. Pit XVI. | 288 |
| 2, 3, 4. Heavy mountings, probably parts of a waggon. Pit XVI. | 288 |
| 5. Disused tyre of a wheel in process of being welded into something else. Pit XVI. | 288 |
| 6. Heavy peg with hub lining for a wheel adhering to it. Pit XVI. | 288 |
| 7. Object of unknown use. | 288 |
| 8. Heavy ring, perhaps a lining for a door pivot. Inner ditch of later fort. | 288 |
| 9. Ingot. Pit LVIII. | 288 |

All the objects figured are of iron.

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## PLATE LXVI. MISCELLANEOUS IRON OBJECTS

| | PAGE |
|---|---|
| 1. Stirrup-like object, probably part of a waggon. Pit XLV. | 288 |
| 2. Stirrup-like object, probably part of a waggon. Praetentura. | 288 |
| 3. Iron object, perhaps a handle. | 288 |
| 4. Stirrup-like object, probably part of a waggon. Pit I. | 288 |
| 5. Box-like mounting resembling the socket of the shaft of a pilum. Pit XVI. | 288 |
| 6. Ring with two loops, probably part of the mounting of a small pail. | |
| 7. Rudely shaped object resembling a bangle. Pit XXII. | 288 |
| 8. Hook with socket for a pole. Inner ditch, west front. | 288 |
| 9. Small wedge. Ditch of early fort. | |
| 10. Small socketed hook. Ditch of early fort. | 288 |
| 11. Ring, perhaps belonging to a balance. | |
| 12. Prong of a rake. | |
| 13. Fragment of a steelyard. | 288 |
| 14. Manacle (?) | 288 |
| 15. Object of unknown use. | |
| 16. Spindle for a quern. Pit LV. | 288 |
| 17. Spindle for a quern. Pit XXII. | 288 |
| 18. Ring. | |
| 19. Mounting of a cart shaft. Pit LV. | 288 |
| 20. Punch. Ditch of early fort. | 288 |
| 21. Crescent-shaped mounting or letter C, which has been attached to wood. | 288 |
| 22. Strigil. Pit LVII. | 289 |

All the objects figured are of iron.

the wood of a door or a chest. Fig. 22, which came from the Baths, is a strigil (Pit LVII).

Two iron objects included in Plate LXXI., Figs. 5 and 6, may be noted here. Fig. 6, found in Pit LVI, consists of two iron rings joined together by a swivel. Fig. 5, from the ditch of the early fort, is an iron collar composed of two semi-circular pieces hinged together, so that it can be opened and closed at will. The ends, which open, terminate in loops—one of these circular, the other rectangular. From examples noted on the Continent it is probable that these loops were held together by a long narrow link, to which a chain was fastened. When the collar was slipped over a wooden post or other object to which it was desired to attach it, it could be drawn taut by means of the chain. On the other hand, when the chain was slackened the long narrow link permitted the collar to be opened. These objects are to be met with on pre-Roman as well as on Roman sites. An example may be noted among the finds from La Tène,[1] while from the Limes forts they are to be seen at Zugmantel and Pfünz.[2] Precisely the same type of collar survived in the African 'slave chain.'

## Nails and Bolts

Nails, bolts and fastenings were common both in the pits and as surface finds. A number of these are collected in Plate LXVII. The T-shaped objects, Figs. 1 and 4, were employed to fasten tiles and tubes to the walls. They were, therefore, common in the Baths. Most of the others tell their own story. Loops such as appear in Figs. 6 and 10 to 13, some of them with rings attached, must have been used for many purposes. Inserted in the beams of the Barrack huts, they would serve for hanging a variety of articles. The nails have a surprising air of modernity about them. They are of all sizes and shapes. Not a few are perfectly fresh. Figs. 16 to 18 represent tackets from shoes.

## Weaving

Although leather was abundant in the pits, cloth seemed to have disappeared almost completely. Two small fragments were, however, discovered among the damp refuse in Pit XXIII, and it is more than probable that among the population which followed in the wake of the army and settled in the annexes, weavers were to he found. No better evidence of their presence can be adduced than the presence of the long-handled combs of bone or horn employed in weaving, which occur also at

1 Munro, *The Lake Dwellings of Europe*, p. 287, fig. 89, 13.

2 *Der Obergermanisch-Raetische Limes*, Lief. 32, 'Kastell Zugmantel,' Taf. XV. Fig. 53 ; *Ibid*. Lief. 14, 'Kastell Pfünz,' Taf. v. Fig. 26, and xviii. Fig. 14.

Camelon and on Roman sites in England. Four very good specimens were found at Newstead. Plate LXVIII., Fig. 2, which is from the ditch of the early fort, shows some signs of wear. It is 4⅞ inches long and has nine teeth, and but for the incised lines, which form a triangle at the base of the teeth, it is without decoration. Fig. 1, from Pit XXXVII, is in perfect preservation. It measures 6 inches long and has eight teeth. The handle terminates in a cross-bar which is decorated with a double set of incised diagonal lines. It has a hole in the centre, probably intended for a cord for suspension. Fig. 4, from Pit LIX, has originally been of the same shape. It is 4¾ inches in length. One end of the cross-bar has been broken off. The main part of the handle is divided into two panels by means of double lines incised across it. In each panel are two circles, inside each of which are seven dots. At the upper end is a hole for a cord. Fig. 3, which represents a common type, came from the inner ditch of the East Annexe. The long-handled combs are of common occurrence among the brochs of Northern Scotland, and Dr. Joseph Anderson[1] has shown how they must have been employed to press the woof on to the web,—the teeth being inserted between the threads of the warp,—and has pointed out that a similar implement is still used for this purpose in the East. In England, long-handled combs have come to light, not only in immediate association with Roman relics, but also on sites such as the Lake-village of Glastonbury and the camp at Hunsbury, near Northampton, which appear to belong to a period of pre-Roman civilisation. On the other hand, the long-handled weaving comb is almost unknown in the finds from the German Limes forts. It would, therefore, appear that at Newstead we must class these combs as things belonging to the native population, and associate them with the characteristic fibulae and horse trappings of Late Celtic design.

Other objects suggestive of cloth-making are spindles. Two of them were found in Pit LIV. They are neatly tapered at each end. One measures 8½ inches, the other (Plate LXVIII., Fig. 7) 6¼ inches. Whorls were sometimes of sandstone (Plate LXVIII., Figs. 13, 14 and 15) and sometimes of bone (Plate LXVIII., Fig. 12). Objects cut from pieces of red and black ware (Plate LXVIII., Figs. 8 to 11) probably served the same purpose. A small, neatly made saw from Pit XVII, with its handle of deer horn, the whole only 5½ inches long (Plate LXVIII., Fig. 6), is just such a tool as might have been

1 Notes on the Evidence of Spinning and Weaving in the Brochs or Pictish Towers?' *Proceedings of the Society of Antiquaries of Scotland*, vol. ix. 548.

## PLATE LXVII. HOLDFASTS AND NAILS


| | PAGE |
|---|---|
| 1, 2, 3 and 4. T-shaped clamps employed for fastening tiles against a wall. Baths. | 289 |
| 5. Bolt with loop for attaching to woodwork. Pit LV. | 289 |
| 6. Loop with ring for attaching to woodwork. Pit LV. | 289 |
| 7. Bolt. | 289 |
| 8. Hook. | 289 |
| 9. Tie. | 289 |
| 10 to 13. Loops for attaching to woodwork. | 289 |
| 14. Pin with perforated head. | 289 |
| 15. Bolt. Pit LVII. | 289 |
| 16, 17 and 18. Shoe nails. | 289 |
| 19, 20 and 35. Flat-headed iron studs. | 289 |
| 21 to 34. Nails of different patterns. | 289 |


All the objects figured are of iron.


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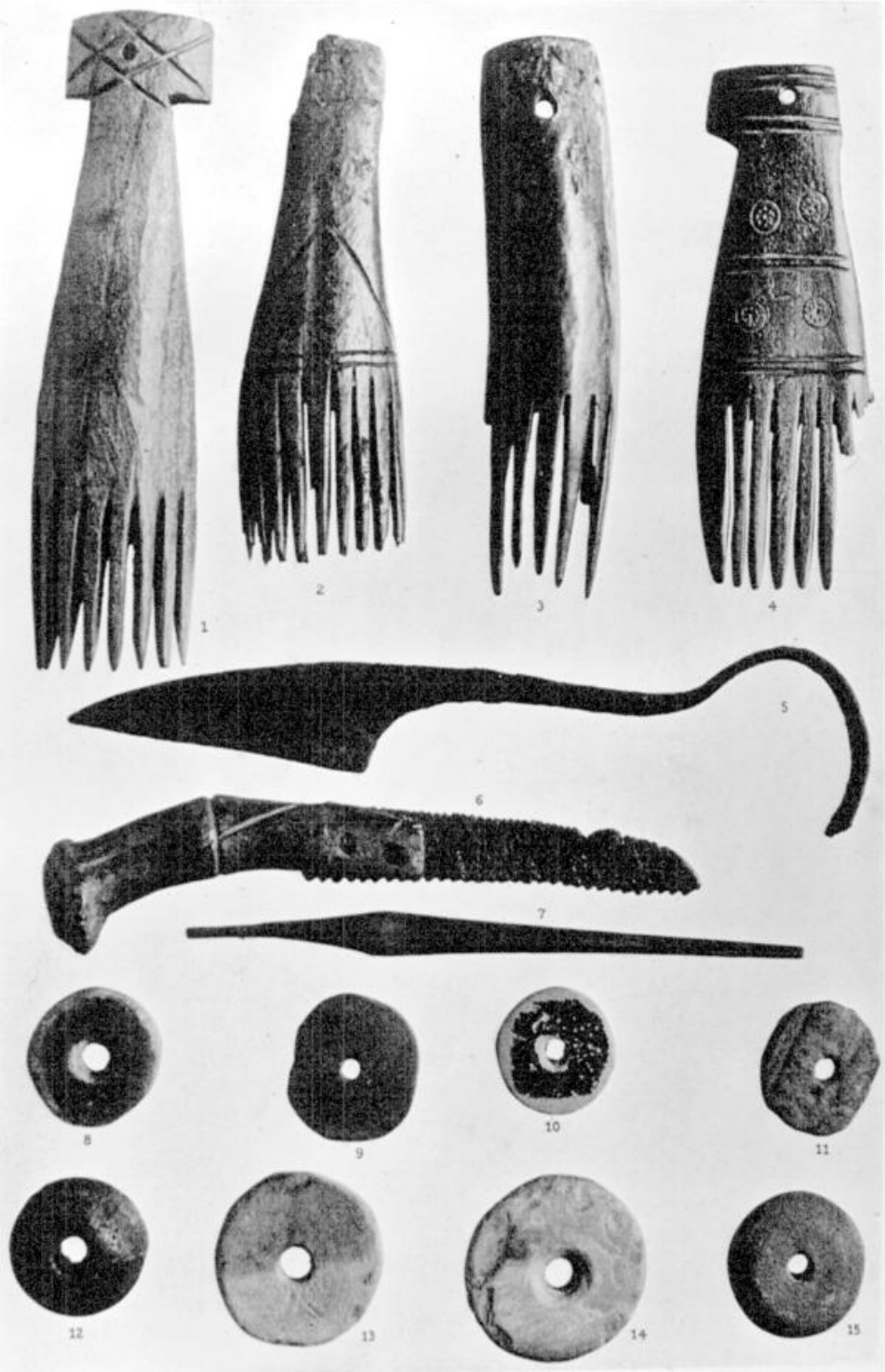
## PLATE LXVIII. EVIDENCES OF WEAVING AND SPINNING


| | PAGE |
|---|---|
| 1. Weaving comb of bone. Pit XXXVII. | 290 |
| 2. Weaving comb of bone. Ditch of early fort. | 290 |
| 3. Weaving comb of bone. Inner ditch, East Annexe. | 290 |
| 4. Weaving comb of bone. Pit LIX. | 290 |
| 5. Shears of iron. Ditch of early fort. | 291 |
| 6. Small saw, iron, with handle of horn. Pit XVII. | 290 |
| 7. Wooden spindle. Pit LIV. | 290 |
| 8 to 11. Whorls made from fragments of pottery. | 290 |
| 12. Whorl of bone. | 290 |
| 13 to 15. Whorls of stone. | 290 |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used to cut out the weaving combs. Of the shears, which were, of course, indispensable to the weaver, we have an example from the ditch of the early fort (Plate LXVIII., Fig. 5). It is unfortunately incomplete. It had measured 7¼ inches in length, and was shaped like the instrument still used for sheep shearing.