

29 NOV 1967

PROCEEDINGS  
OF THE  
CAMBRIDGE ANTIQUARIAN  
SOCIETY

(INCORPORATING THE CAMBS & HUNTS ARCHAEOLOGICAL SOCIETY)



~~VOLUME LX~~  
JANUARY 1967 TO DECEMBER 1967

LVI - LX  
1963 - 67

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*Published for the Cambridge Antiquarian Society (incorporating the Cambs and Hunts  
Archaeological Society) by Deighton Bell, 13 Trinity Street, Cambridge*

*Printed in Great Britain at the University Printing House, Cambridge*

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# MEDIEVAL POTTERY ROOF-FITTINGS AND A WATER-PIPE FOUND AT ELY

## I. CIRCUMSTANCES OF DISCOVERY

GRACE BRISCOE, F.S.A.

IN 1964 the excavation of street trenches in Ely for new drainage revealed the presence of medieval pottery. Fortunately one of the workmen, Mr P. Buckle, was interested and collected the glazed and decorated sherds, many of them freshly broken. After some repair-work the pottery was given to Mr J. King, who presented the collection to the Mildenhall Museum.

Most of the pottery was thrown up from a depth of 2-3 ft. where Market Hill runs down to Quayside, close to the river bank.

The pottery is mainly of thirteenth-century type. There is nothing earlier than the twelfth century. The two latest pieces are a large brown stoneware handle with decoration, and the upper part of a bellarmine jug with the face intact.

In addition to the domestic pottery, the finds included roof-fittings; large pieces of a louver, a finial, and the crest of a ridge-tile. Pottery water-pipes were found in three places, and one is a complete specimen. These unusual structural fittings deserve publication, and were submitted to Mr Dunning who has written the following notes.

## II. DESCRIPTIONS OF THE ROOF-FITTINGS AND WATER-PIPE

G. C. DUNNING, F.S.A.

### THE LOUVER

The two pieces of louver are made of very hard and dense black ware speckled with numerous small white particles, apparently finely crushed shell, and a few stone grits. Both surfaces are light red, and the inside is smooth. Almost the whole of the outside of both pieces is covered by green glaze, roughened by protruding grits. The fragments belong to the top and side of the louver, and will be described in that order.

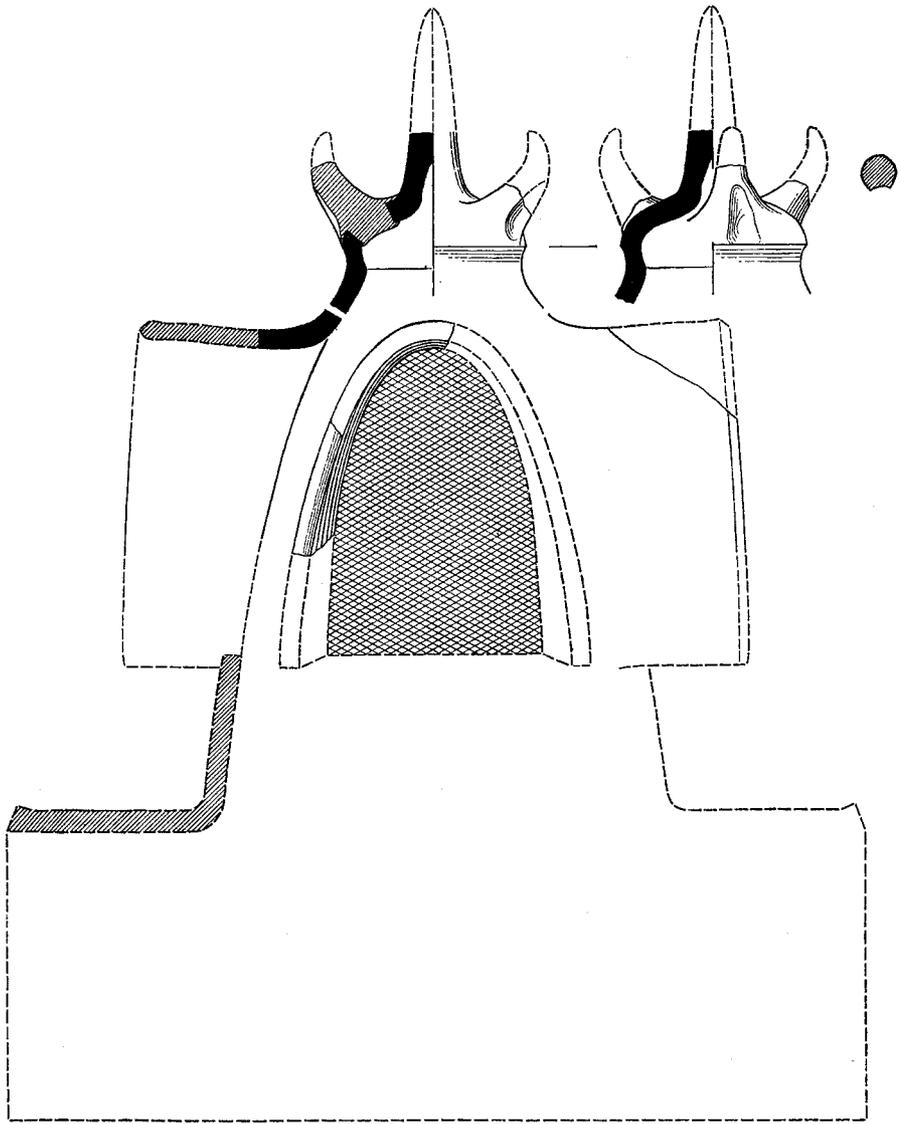


Fig. 1. Louver. Ely. Scale  $\frac{1}{4}$ .

The top is dome-shaped, 3.9 in. in diameter at the angular bulge, and has processes of two kinds rising from it. At the centre is the lower part of a vertical spike, about  $1\frac{1}{4}$  in. in diameter at the base, and probably about 4 in. high when complete. On the side of the dome are three equally-spaced processes which curve outwards and upwards. Each process is attached by means of a dowel or plug which passes through a hole cut in the dome, and is pressed flat on the inside. In shape each process is like a curved horn; only one is nearly complete, the others are broken off nearer the base. Originally they were about 2 in. long. On the outer side near the base each horn is marked by a long thumb impression.

The lower part of this fragment widens out to form the side of the louver. At two places on the broken edge the profile turns outwards to become horizontal, though in between it continues downwards. Each turn marks the top of an aperture in the side of the louver. Since in plan these are on two lines at right angles, it follows that there were four apertures and no more, spaced equally round the louver.

The other fragment shows most of the left side of an aperture and its apex, with a baffle-plate or flange projecting about  $3\frac{1}{4}$ – $3\frac{1}{2}$  in. beyond the side. The flange covered the apex and extended down both sides of the aperture. The original margin of the flange is present for a length of  $2\frac{3}{4}$  in.

In the drawing the two fragments could be brought into relation with one another at the apex of the aperture, and the lower fragment given its approximate slope. Thus it has been possible to determine the shape of most of the aperture, and to complete it by comparison with those on other louvers. The aperture was triangular, about  $6\frac{1}{2}$  in. high and  $4\frac{1}{2}$  in. wide at the base.

As reconstructed the louver was conical in shape, about 13 in. high to the top of the dome, and about  $9\frac{3}{4}$  in. across at the base in one direction. The comparatively small size at the base suggests that the Ely louver was not a separate structure (type 1) but attached to the ridge-tile (type 2), like the louver from Goosegate, Nottingham,<sup>1</sup> and another from Southampton.<sup>2</sup> In that case its base would not be circular but oval, with the shorter axis across the tile. Accordingly a ridge-tile 18 in. long has been added below the louver in the drawing (Fig. 1), giving a total height of about  $23\frac{1}{2}$  in. to the top of the terminal spike.

The horns on the dome of the Ely louver are unusual on a structure of this kind. Similar horns are, however, known on different types of roof-fittings of another sort, namely finials:

(1) Attached finials, tall structures consisting of a globular part attached by a cylindrical stem to the ridge-tile. These finials are grouped in southern England. An example from New Canal, Salisbury, has groups of three horns above and below the globular body.<sup>3</sup>

(2) Separate finials, a regional type in south-east England and East Anglia. Horns occur on two finials in London and also on an example found at Cambridge in 1860, in the University Museum of Archaeology and Ethnology (Fig. 2). This finial, green-glazed on the upper part, has a terminal spike surrounded by three horns curled inwards in spirals at the top.

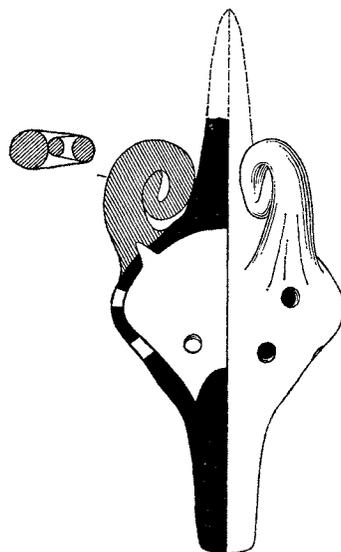


Fig. 2. Separate finial. Cambridge.  
Scale  $\frac{1}{4}$ .

<sup>1</sup> *Trans. Thorton Soc.* LXVI, p. 20.

<sup>2</sup> Southampton Arch. Soc. *Quarterly Bulletin*, 1 (1962), p. 16.

<sup>3</sup> *Salisbury Museum 1860–1960*, fig. 56.

The novel feature of the Ely louver is the presence of the three horns, which may be regarded as finials, on the domed top. This feature it shares with only two other louvers, both of type 1. These louvers are from Great Easton,<sup>1</sup> near Dunmow, in north-west Essex, and from the More,<sup>2</sup> near Rickmansworth, Herts. The first has knob finials on the central dome and also attached to the top of each baffle-plate covering the apertures, and the second has spur-shaped finials surmounting the baffle-plates. Although louvers are known from about twenty-five sites in various parts of England, mostly in the southern counties and the Midlands, these two louvers and that from Ely are the only ones known for certain to have finials added as decorative elements, either on the central dome or above the baffle-plates, or both. The three louvers at these places, only 40-60 miles from one another, thus form a small sub-group within this category of roof-fitting.

#### KNOB FINIAL

The finial is made of hard dark grey ware similar to that of the louver, and it also has finely crushed white shell and a few large stone grits in the paste. Glaze covers the cylindrical lower part of the finial, where it is dark green, thick and lustrous. On the upper part the glaze is light green and thinner, and the spike is unglazed.

The finial is solid and complete, 4 in. high; its base is concave and is a structural join where the finial was attached to the crest of the ridge-tile. In shape the stem is cylindrical, 1.4 in. in diameter, which at the upper end expands into a broad flange or collar,  $2\frac{3}{4}$  in. in diameter. The flange has a sharply defined edge and a slightly convex top, which terminates in a conical spike 1.3 in. high.

The shape of the Ely finial is new to the large series of knob finials. These finials are widely though sporadically distributed over southern England, the Midlands and East Anglia. The majority of the finials in East Anglia are, however, separate structures, like miniature versions of the finial from Cambridge (Fig. 2), but plain. Several examples of this form are in the King's Lynn Museum, and others have been found by Miss Helen Parker in the current excavations at King's Lynn.

The terminal spike on the Ely finial is a feature which it shares with the louver from Ely and the finial from Cambridge. It is uncertain how many of these finials were attached to the ridge-tile; there may have been only one, though a row of two or three similar finials per tile is also possible.

<sup>1</sup> *Medieval Archaeology*, x, p. 74, fig. 26 and pl. II.

<sup>2</sup> Originally published in *Archaeological Journal*, cxvi, p. 175, fig. 15; later reconstruction in *Med. Arch.* x, p. 79, fig. 28.

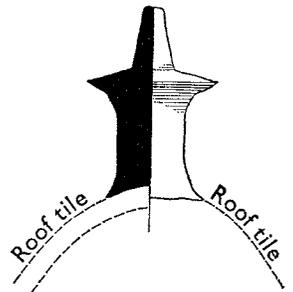


Fig. 3. Knob finial. Ely.  
Scale  $\frac{1}{4}$ .

## CREST OF A RIDGE-TILE

The crest is made of dark grey ware with fine white backing, similar to that of the other roof-fittings. The surface is grey, with a light brown monolayer immediately below the surface. The glaze partly covers one side only and is also splashed on the spikes; it is mottled dark green and lustrous.

The crest was attached to the ridge-tile longitudinally along its concave base, and also by means of a dowel at mid-length which passed through a hole in the tile. When complete the crest was  $4\frac{1}{2}$  in. long by about 0.8 in. thick, and it projected 3 in. above the ridge-tile.

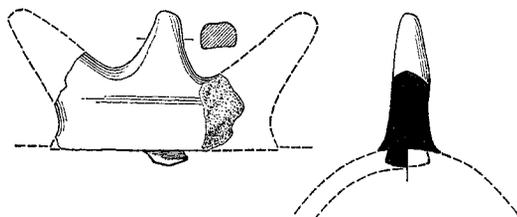


Fig. 4. Crest of ridge-tile. Ely. Scale  $\frac{1}{4}$ .

The decoration consists of three spikes rising from the upper side. One spike is central and vertical, and it is flanked by the others which slope outwards and upwards from the ends of the cresting.

The back of the crest is almost flat, showing that it was made from a slab of clay. The three spikes were probably roughly cut into shape by a knife and then moulded into final shape by hand. In section they are D-shaped, flat on the back and curved in front.

The Ely crest may be compared with a type regional to the Midlands, particularly in Leicestershire.<sup>1</sup> This type is also fixed by a dowel, though the decoration differs in being shaped as a pair of horns or loops, which spring from the middle of the crest and curve outwards, with the ends pressed down on to the top of the ridge-tile. Another version of this type from Coventry has two free-standing horns sloping laterally, and so is closer to the Ely example, though the stem is taller.<sup>2</sup>

## COMMENTS ON THE ROOF-FITTINGS

The three roof-fittings found at Ely introduce several features new to the objects of this kind known in East Anglia. The attached louver is a welcome addition to the very few ventilators found in this region; indeed, the only structure at all comparable is from the recent excavations at King's Lynn. The knob finial is also a new shape outside the range of this type in the region. The terminal spikes on the louver and the finial, and the three horns on the summit of the louver serve to link these structures and roof ornaments with other types of finial in different regions of England. The spikes have analogies on certain types of finial in the Midlands and in south-

<sup>1</sup> *Trans. Leics. Arch. and Hist. Soc.* xxxv (1959), 24, fig. 17, S 1-3.

<sup>2</sup> *Trans. Birmingham Arch. Soc.* lxxxI (1966), p. 117, fig. 10, F.

east Wales, and the horns occur on other types of finial in the south and south-east of the country, of which the nearest examples geographically are at London and Cambridge. The spikes on the ridge-tile link this ornament with the louver and finial from Ely, and have a more remote connexion with the looped crests of the Midlands.

The close similarity of the ware and glaze of the three roof-fittings from Ely, combined with the motifs forming stylistic links between them, imply certain technical and artistic aspects in common. These links strongly suggest that all three objects, together with the water-pipe described next, are products of the same pottery, presumably located at Ely or in the locality.

The objects found at Ely are not closely dated on internal evidence, since it is not known if any of them were found in association with the pottery. However, the analogies quoted above serve to relate the Ely finds to others of the same nature elsewhere, and these suggest that a date in the late thirteenth century or *c.* 1300 would suit all the objects.

#### WATER-PIPE

The water-pipe is made of the same kind of ware as the roof-fittings. It is wheel-thrown, and the inside shows broad wheel-marks running spirally. The outside shows evidence of further work by hand after the pipe was thrown on the wheel; for lengths of  $7\frac{1}{2}$  in. from the smaller end and  $3\frac{1}{2}$  in. from the larger end the surface is faceted longitudinally, made by trimming with a knife. Glaze covers the entire outside and both ends, but not the inside of the pipe. The glaze is dark green with brown flecks, lustrous and even in thickness, and good in quality.

The pipe is conical, 18·1 in. long, 2·6 in. in diameter outside at the smaller end and 4 in. in diameter at the larger end. The corresponding internal diameters are 1·9 in. at the smaller end and  $3 \times 3\cdot2$  in. at the larger, which is slightly oval in shape. The difference in size between the two ends allowed the pipes to fit one inside the end of another, making an overlapping joint of about 3 in. The edge of the larger end still has traces of the white mortar used to seal the joint and make it watertight.

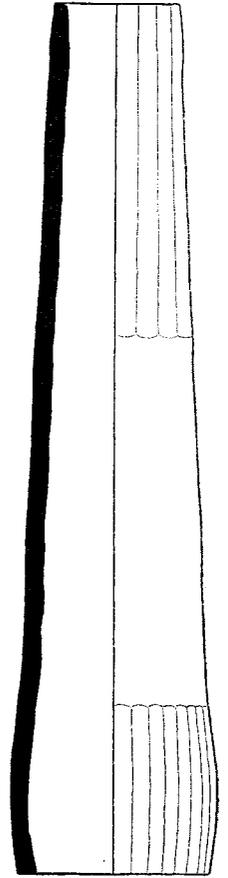


Fig. 5. Water-pipe.  
Ely. Scale  $\frac{1}{4}$ .

#### NOTES ON MEDIEVAL WATER-PIPES OF LEAD AND POTTERY

During the Middle Ages, as in the Roman period, water was conveyed by means of lead piping or in sections of pottery pipes fitted together to form a continuous pipeline.

In both periods the lead pipe was made in the same way by a strip of lead bent round into a tube and sealed along the join. In medieval times two methods of sealing

were followed; either the edges of the tube were overlapped and simply pinched tightly together in a ridge, or the seam was soldered by molten lead.

Roman water-pipes of lead are best known at Chester,<sup>1</sup> where several lengths are dated A.D. 79 by inscriptions on a raised panel. Similar lead piping was found near the forum at Wroxeter, and recently at Cirencester.

Pottery water-pipes are among the specialized products of the works-depot of the Twentieth Legion at Holt.<sup>2</sup> The pipes are of two types, the first flanged at the smaller end and the second plain; the lengths are 2 ft. 2–5 in., and 1 ft. 11 in. respectively.

At Fishbourne, lengths of pottery water-pipes for the supply of fountains have been found *in situ* on three sides of the Palace garden.<sup>3</sup> The pipes, dated A.D. 75–100, are cylindrical of the flanged type, shorter in length and larger in bore than those at Holt; they measure 17½ in. long and 6–8 in. in diameter outside.

Evidence is plentiful that the supply of water on a large scale, often brought from a considerable distance, was re-introduced into England in the twelfth century.<sup>4</sup> Lead water-pipes are known from the twelfth century and onwards, but water-pipes of pottery were apparently not made before the latter part of the thirteenth century. A few examples of pipes of both materials may be given; the evidence is largely derived from monastic sites and castles, and the water-pipes found at Ely show that the system was also followed in the towns.

The lay-out of a developed system of water distribution and storage by means of lead pipes and tanks is shown in the famous mid-twelfth century plan of Christ Church Priory at Canterbury,<sup>5</sup> in the Library of Trinity College, Cambridge. The source of the water and the conduit house were on rising ground about a mile north-east of the monastery. Slightly later, *c.* 1181–88, the keep of Dover Castle had an elaborate built-in system of lead piping for the supply of water.<sup>6</sup> The pipes were laid in an arched conduit within the immense thickness of the Norman walls. The piping is oval in section, about 3 × 3½ in.; the join is soldered, clearly as a safeguard against leaks, which would be very difficult to locate.

Similar lead piping, smaller in diameter and with the seam simply pinched, has been found at monastic sites in Yorkshire. At Rievaulx Abbey is a quantity of lead pipe pulled up from the cloisters at the time of the Suppression in 1539. The longest piece is 8 ft. 8 in. long, with one soldered joint in this length; the diameter outside of this and the other piping varies from 1¼ to 1¾ in. Short lengths of piping of similar diameter are at Byland Abbey.

In southern England considerable lengths of lead piping have been found in position during the current excavations at Wolvesey Palace, the twelfth-century bishop's palace built by Henry de Blois at Winchester.<sup>7</sup> The piping probably belongs

<sup>1</sup> R. P. Wright and I. A. Richmond, *Catalogue of the Roman inscribed and sculptured stones in the Grosvenor Museum, Chester* (1955), p. 48, no. 199, pl. XLIV.

<sup>2</sup> W. F. Grimes, Holt, Denbighshire: the Works-Depot of the Twentieth Legion at Castle Lyons, *Y Cymmrodor*, xli (1930), p. 134, fig. 60, 10–13.

<sup>3</sup> *Antiquaries Journal*, xlvi, p. 35, pl. V b and xlvi, p. 58 and plan.

<sup>4</sup> L. F. Salzman, *Building in England down to 1540*, pp. 268 ff.

<sup>5</sup> B. Willis, *Architectural History of the Monastery of Christ Church, Canterbury* (1869), pp. 158–68, fig. 33 and pls. 1–2; M. R. James, *The Canterbury Psalter* (1935), p. 53, fos. 284–6.

<sup>6</sup> *Archaeological Journal*, lxxv, p. 253, fig. 5.

<sup>7</sup> *Antiquaries Journal*, xlv, p. 260, pl. lxxxia and plan, pl. lxxxiii.

to the fourteenth century, when the palace was provided with a water-supply which passed through the passage of the gatehouse and was carried to several parts of the building. The pipe is in lengths of 11-12 ft., soldered together at the joints.

It may be noted that medieval lead piping was used not only to distribute water in a horizontal plane, but it was also set up vertically. Viollet-le-Duc illustrates vertical lead pipes hidden in the flying buttresses of the nave of Bayeux Cathedral, which conducted rain-water away from the roof.<sup>1</sup>

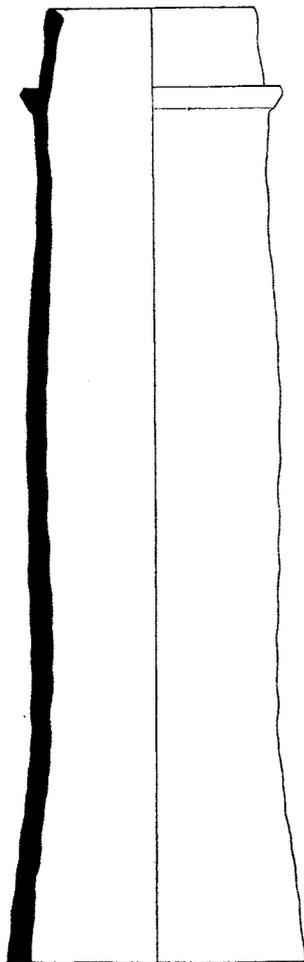


Fig. 6

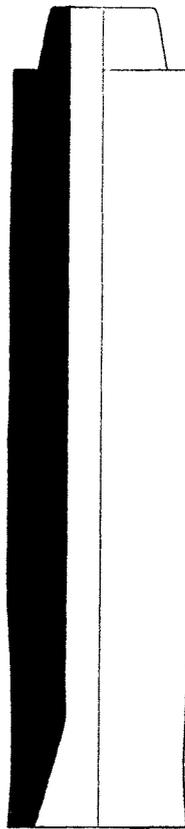


Fig. 7

Figs. 6-7. Water-pipes. Scale  $\frac{1}{4}$ .

Fig. 6. Marwell Manor, Owslebury, Hants.

Fig. 7. Glenluce Abbey, Wigtownshire.

Pottery water-pipes appear sometime during the thirteenth century, the earliest

<sup>1</sup> Viollet-le-Duc, *Dictionnaire raisonné de l'Architecture française*, III, p. 502.

datable pipes belonging to the second half of the century. Water-pipes, together with other building adjuncts such as roofing-tiles, finials, etc., were made at kilns producing pottery for domestic use, e.g. at Laverstock, Wilts.<sup>1</sup>

Medieval water-pipes are also of two types, the first flanged at the smaller end and slightly splayed at the other, and the second plain and tapering, like the Ely water-pipe.

In southern England the best site is at Marwell Manor, Owslebury, near Winchester, where Henry de Blois founded a small college of secular priests in connexion with the church or chapel of the episcopal manor.<sup>2</sup> In trial-holes dug here in 1955-56, Mr W. Hartas Jackson found a large number of fragments of water-pipes of unglazed, buff gritty ware. The pipes are now in Winchester City Museum, and I am indebted to the Curator, Mr F. Cottrill, for permission to study them and make drawings. Assembly of the fragments produced large pieces of three pipes: a splayed end,  $6\frac{1}{4}$  in. in diameter outside, and a continuous section of pipe for a length of  $14\frac{1}{2}$  in.; and two narrower ends, both 4·4 in. in diameter outside, with flanges about  $1\frac{1}{2}$  in. from the end—these pieces are  $8\frac{1}{2}$  and  $8\frac{3}{4}$  in. long respectively. Apparently neither of the flanged ends belongs to the same pipe as the splayed end, since the broken ends would overlap by about 3 in. It has been possible to achieve a reconstruction on paper of the examples from Marwell Manor, showing the complete pipe to be about 20 in. long, which serves as a specimen of the flanged or collared type of water-pipe (Fig. 6).

Pottery water-pipes are also known at monastic sites in North Britain. Pieces of several water-pipes, about 2 in. in diameter outside, are at Whitby Abbey. The most complete evidence is, however, from Glenluce Abbey, Wigtownshire.<sup>3</sup> At Glenluce lengths of pottery pipes for the distribution of the water supply were found in position, and changes in direction of the system were made by means of pottery junction-boxes with removable lids for inspection purposes. The pipes and boxes had tally-marks scored in the wet clay before firing, to facilitate assembly and to ensure tight jointing. Mr Stewart Cruden, Inspector of Ancient Monuments for Scotland, has kindly provided a drawing of one of the water-pipes from Glenluce Abbey (Fig. 7). It is 17·2 in. long and has a fairly uniform diameter of about 3·8 in. outside; the socketed end has a plain shoulder, and is thus a variant of the collared type as at Owslebury. A few similar water-pipes were found at Linlithgow Palace.

Finally, mention may be made of a collection of water-pipes stacked in the Chapter House of the Abbaye de Beauport, near Paimpol, on the north coast of Brittany. As far as can be recollected from a visit to the Abbey in 1961, these pipes were about 18-20 in. long and 2 in. in diameter, and thus similar in size and bore to the more slender of the pipes from England.

<sup>1</sup> Information from Mr J. W. G. Musty.

<sup>2</sup> V.C.H. *Hampshire*, II, p. 211, and III, p. 335.

<sup>3</sup> *Trans. Dumfriesshire and Galloway Nat. Hist. and Antiq. Soc.* xxix, p. 185, figs. 21-22.

