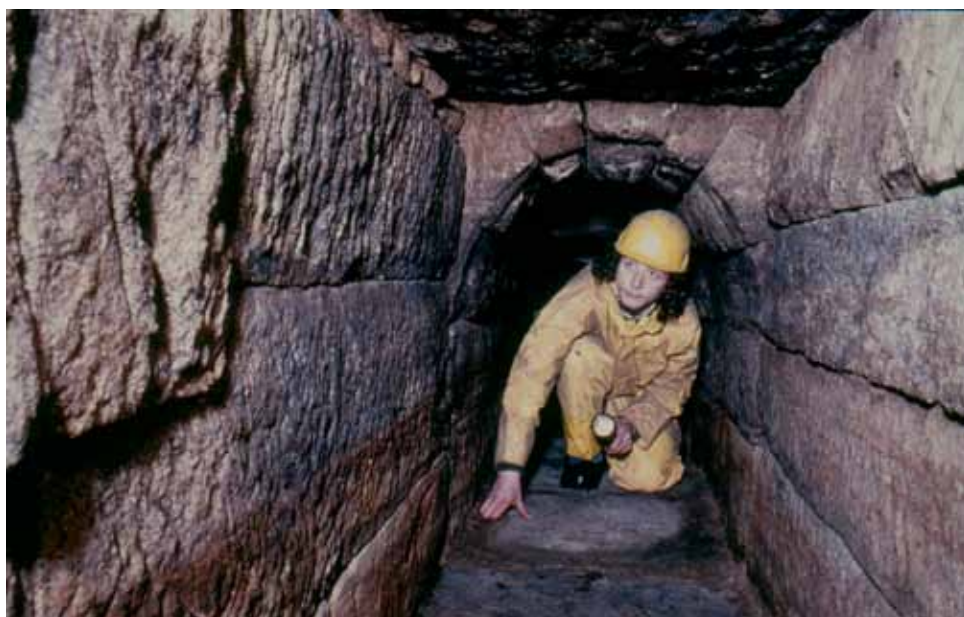


Finds from a Roman Sewer System and an Adjacent Building in Church Street

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Volume 17 Fascicule I

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Introduction

A number of finds were made during the excavation of a Roman sewer system and part of an adjacent building complex in Church Street, York. The circumstances of excavation and the archaeological results are fully described elsewhere (*AY* 3/1) while a synopsis is included below. This report describes the small objects from the site; the ceramics which have a bearing on the archaeological interpretation are discussed as part of the excavation report (*AY* 3/1) and environmental considerations are treated in *AY* 14/1.

Rescue excavations on the site were carried out in the winter of 1972–73; the area in question (Fig. 1) lies alongside Church Street, which follows the line of the *intervallum* road on the south-east side of the Roman legionary fortress. The excavations were primarily concerned with part of an extensive sewer system, whose course and constructional history were traced. In 1974 a brief supplementary investigation took place in the sewer, to which access had been maintained by the insertion of a manhole, the remainder of the site having by then been sealed under a new block of shops and offices.

Sadly, time and resources were insufficient to permit extensive excavation of the surface buildings to which the sewer related. On the evidence available, however, it may be suggested that its primary function was to drain the various services within a bath building.

The main artery of the system was Alignment 1, part of which (1a–1c) was cut off when a blocking wall was inserted and the flow diverted into a newly-built, or perhaps rebuilt, channel, Alignment 2. Several smaller side passages emptied into Alignment 1, each fed by a drain-hole in its roof; a number of ‘splash-downs’ also drained directly into Alignment 1; no subsidiary channels were found in the excavated stretch of Alignment 2, suggesting that its exclusive purpose may have been to carry away the overflow from the principal baths.

Periodic cleaning of the sewer may have resulted in the removal of much of the earlier material, so that the contents are unlikely to be representative of the entire period of use. The pottery evidence suggests a terminal date in the late 4th or early 5th century; the date of construction is more conjectural but a Trajanic origin is suggested (*AY* 3/1, 23). The datable finds all fall within this range, although demonstrably late material is not detectable.

Comparison of the findspots of conjoining potsherds (*AY* 3/1, 38, 43) has shown that the composition of the sediment was at times so fluid that introduced material was carried for considerable distances along the channels and frequently settled into layers already deposited on the floor.

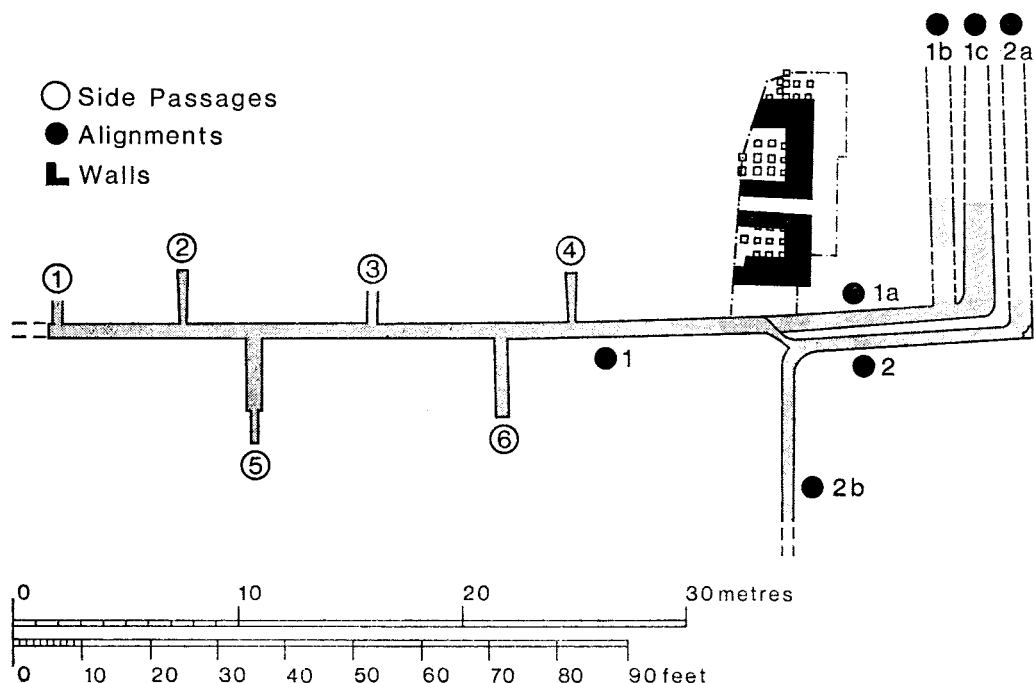


Fig. 1 Plan of Roman sewer system and adjacent structures at Church Street, York

With the exception, therefore, of the material from Alignment 1a, which seems to have been isolated by the late 2nd or early 3rd century (*AY* 3/1, 23, 37), little significance can be attached to the stratigraphic position of any of the finds; nonetheless, the context of each find is recorded in the catalogue, which is followed by a separate finds list arranged by context.

The upper levels of part of a substantial and well-preserved Roman building were excavated alongside the sewer (*AY* 3/1, 17–22); finds from this building, evidently part of a bath house, are discussed and catalogued after those from the sewer. All finds came from the upper layers and thus represent only the later use of the building.

The finds catalogue (pp. 21–4) is arranged by *material*; presentation in the text follows the same sequence where possible but objects are discussed primarily according to *class* or *function*, irrespective of material.

Roman finds from the sewer

Gaming counters

Counters in stone, pottery and glass (Fig. 2) as well as bone (Fig. 3) form the largest category of finds from the sewer. Both stone counters (1, 2) have been chipped from thin slips of micaceous sandstone (cf. Wenham, 1968, 98). Several of the pottery counters (16–26) have been similarly manufactured from body sherds; only in two cases (23, 24) have the rough broken edges been smoothed down to give a more regular and finished

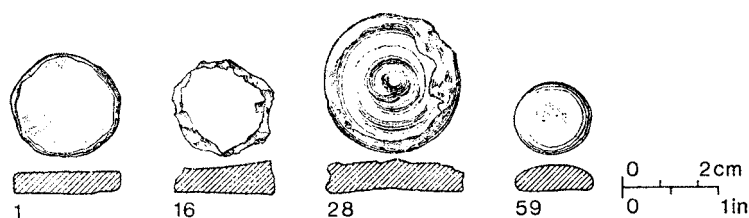


Fig. 2 Gaming counters of stone (1), pottery (16, 28), and glass (59). Scale 1:2

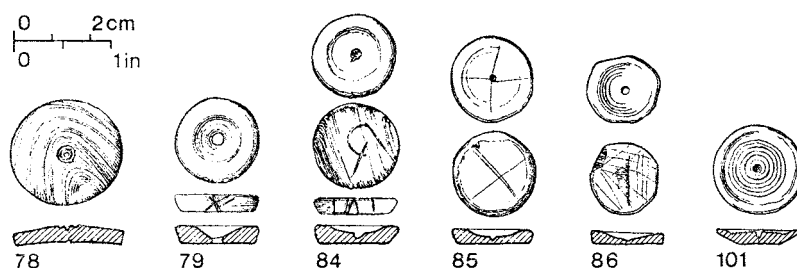


Fig. 3 Gaming counters of bone. Scale 1:2

appearance. An alternative method of production is represented by 27-30, all of them made by trimming the bases of broken colour-coated beakers. One of the glass counters (51) has been produced in a similar way from the base of a glass beaker, while the remainder (59-61) are 'custom-made' from opaque black glass.

Lathe-turned discs of bone are most common and with the one exception (78) have the obverse or upper surface dished or countersunk in the centre and the edge bevelled or rounded to some degree; two examples (101, 102) are further embellished with concentric rings turned on the upper surface. Most of them conform to Kenyon's Type A (Kenyon, 1948, fig. 91), the centrally perforated 79 belonging to Type A4, while those with concentric rings belong to Type B.

How many of the bone counters from York belong to a single set is impossible to say: one of them (84) is numbered VI on the edge but for the others only their size gives any indication one way or the other; interestingly enough, twelve of the 23 plain counters are found to have diameters within ± 1 mm. of 20 mm. and thicknesses within ± 0.5 mm. of 3.5 mm., but this may imply no more than that they were of an optimum size dictated by the shape and dimensions of the animal bones from which they were manufactured. One counter (78) is distinguished by having a much greater diameter than the others, a convex upper surface and a central ring-and-dot ornament.

Three counters have rudimentary graffiti scratched on them: 84 -reversed 'R' on base; 85 -cross on either surface (cf. Wenham, 1968, fig. 40); 86 -irregular hatching on base (cf. Down and Rule, 1971, 83). From the range of board games favoured by the Romans (Austin, 1935, *passim*), the following are most likely to be represented by these finds. *Ludus duodecim scriptorum*, the 'game of twelve points', was apparently an early form of

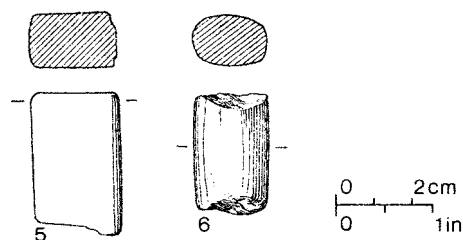


Fig.4 Hones. Scale 1:2

backgammon, played on a board with three rows of twelve stations arranged in two columns. Frequently each position on the board was marked by a letter, the whole arrangement forming a sentence (ibid., 31); others were marked by geometric or other devices, as on the example from Holt, Denbighshire (Grimes, 1930, 131 and fig. 60, 8). Bell (1960, 33) mentions that *Tabula*, a variant of *Ludus duodecim scriptorum* employing only two rows of stations, became favoured at least in fashionable circles from the 1st century AD onwards. One feature of both these games was that players were allowed to 'pile' or promote pieces and, while this would be perfectly easy with the counter-sunk bone discs, those counters with convex profiles would obviously be very difficult to stack and were almost certainly used in a quite different game.

Ludus latrunculorum, the 'soldiers' game', seems to be the most likely alternative, a game somewhat akin to draughts but probably employing a rook's move as in chess (Austin, 1935, 27). Several suitable squared 'boards' of stone have been found in Britain, including examples from Richborough, Chedworth, Corbridge, and Hadrian's Wall.¹ Opposing sets of pieces were frequently made of glass of differing colours or with distinguishing marks, as at Lullingstone, where a set of fifteen white and fifteen brown counters with decorative marks was found on a lead coffin in the 4th-century mausoleum (Liversidge, 1968, 350 and fig. 133L).

Several bone counters from the sewer have two straight edges on the base, varying considerably in the degree of pronouncement but always running parallel to each other. This common feature was thought at Leicester to be the result of wear from another type of game, 'as for tiddlywinks' (Kenyon, 1948, 266). Under the microscope, however, many of these 'worn' areas are seen to retain their original surfaces intact, indicating that the counters were in fact manufactured from long-bones in which the relative degrees of wall curvature and thickness made it impossible to achieve a totally flat surface over the whole disc. In other examples, where no original surface remains, the bevelled edges are nonetheless always parallel to the grain of the bone and are simply caused by flaking of the most vulnerable areas along the weakest structural lines. This hazard was apparently quite evident to the counter manufacturers, who almost invariably chose the internal surface of the bone as the obverse face, so that any damage incurred by flaking was most likely to be on the base. There is no evidence, therefore, to maintain the suggestion that any form of tiddlywinks featured among the games of the Romans.

Hones

Dr Neil Berridge, petrographer at the Institute of Geological Sciences, Leeds, has examined the hones (5 and 6; Fig. 4) and contributes the following description:

Thin sections indicate that both fragments are fine-grained calcareous sandstones consisting of angular quartz grains set in a coarse matrix of calcite. In addition, the rock contains much comminuted shelly and phosphatic material and occasional grains of glauconite and heavy accessory minerals. It is very probably a rock known as Kentish Rag, from the Greensand of Kent.

Dr Berridge has likened the sections to one already published from York (Morey and Dunham, 1954, 146) which was also thought to be from the Kentish Greensand; a section from this hone was more recently examined by Ellis (1969, 174ff.) who thought the Kentish attribution almost certainly correct but mentioned too the possibility of a derivation from the calcareous grits of the Jurassic in east Yorkshire.

In discussing similar whetstones from Fishbourne, Peacock (in Cunliffe, 1971, 154f.) mentions several examples probably derived from the Hythe beds, distributed as far as York in the north and Alcester, Warwickshire, and the Barnsley Park villa near Cirencester in the west, concluding that by the 3rd century at least the trade in Kentish hones was well developed. Exploitation of the source for building purposes seems to have got under way at an earlier date, however, for a sailing barge loaded with Kentish Rag was sunk at Blackfriars in the 2nd century (Marsden, 1967, 44ff.) and buildings of the same material have been uncovered in London, apparently dating from the mid-1st century.² No chronological significance can therefore be assigned to the presence of these hones in the sewer.

It may be noted that 5 is marked by grooves along either side of one edge, a feature common on hones of this period and thought (Cantrill, 1931, 97) to result from marking-out the chosen slab with parallel lines before individual hones were snapped off.

Ironwork

Quantities of iron were recovered from the sewer and from the adjacent buildings, all of it oxidized out of recognition; even with the aid of X-rays it proved impossible to identify any of the iron objects, with the exception of a few badly corroded nails.

Coins

Mr John Casey of the Department of Archaeology, University of Durham, has identified the coins from the sewer as follows:

	Issuer	Denomination	Type	Reference	Issue Date	Conditions
74	Vespasian or Titus	Dupondius			69-81	Corroded
75	Elagabalus	Denarius	IOVI CONSERVATORI	RIC 91b	218-22	SW/SW
76	Julia Paula	Denarius	CONCORDIA	RIC 211	218-22	SW/SW
77	Tetricus I or II	'Antoninianus'	SPES AUG/PUBLICA	as RIC 130	270-73	Corroded

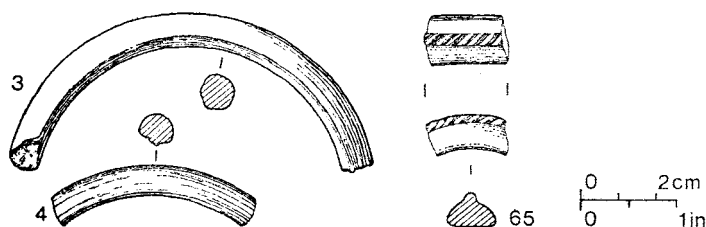


Fig. 5 Bracelets of shale (3, 4) and glass (65). Scale 1:2

Bracelets

Simplest among the personal ornaments found in the sewer are two undecorated shale bracelets (3 and 4; Fig. 5): these were widely distributed in Roman Britain but it seems impossible to assign them to one phase or another within that period; nor does shale respond to the usual analytical methods which might allow us to locate its origin with any precision. A single fragment from a glass bracelet (65; Fig. 5) was also recovered; its sub-triangular cross-section, clear green glass and spiral blue and white relief moulding are all features characteristic of Kilbride-Jones's Type 2 bracelets (Kilbride-Jones, 1938, 372ff.), for which a date in the late 1st or 2nd century was suggested. (See also Stevenson, 1956, 208ff. and Cunliffe, 1971, 366f. for further discussion of the type.)

Intagli

Dr Martin Henig of the Institute of Archaeology, University of Oxford, has prepared the following report on the intagli (Fig. 6; Pl. I); in each case the description is of the impression rather than the gem itself.

- 8 *Red jasper intaglio, oval with flat surface. The stone is in good condition apart from a chip on the left side. 15 x 12 x 2.5 mm. Alignment 1.*

Mars stands towards the front and faces left. He wears a plumed helmet, cuirass, and tunic. In his right hand he holds a spear, its point towards the ground, and his left hand rests upon an oval shield.

The type, possibly derived from a cult statue of Mars Ultor, dedicated at Rome in 2 BC, is very common on engraved gems and especially on intagli found on sites associated with the army. We may note examples from Corbridge, Charterhouse on Mendip, Saalburg, Xanten, and Rankweil in Vorarlberg.⁴

In its style of cutting we observe the emphasis on texture rather than on form which is so characteristic of gems cut in the age of the Antonines. Indeed, most of the other intagli from the sewer are similarly 'patterned' and may be compared with the products of the later Aquileian *officinae*.⁵ Red jasper was employed more frequently in the 2nd century than in earlier times by the *Officina dei Diaspri Rossi* at Aquileia for example.

- 9 *Red jasper intaglio, oval with flat surface. Surface slightly worn, only the upper half of the gem survives. 5 (originally c. 11) x 8 x 2.5 mm. Alignment la.*

Mars, nude but with a crested helmet on his head, marches towards the right. In his right hand he holds a spear and in his left a trophy. The type may be identified with the Mars Gradivus of Ovid's *Fasti*, although in official usage the figure depicted upon this gem will have been understood as Mars Victor.⁶ It is very common on intagli, especially on gems from Roman military sites: examples may be noted from Gloucester,

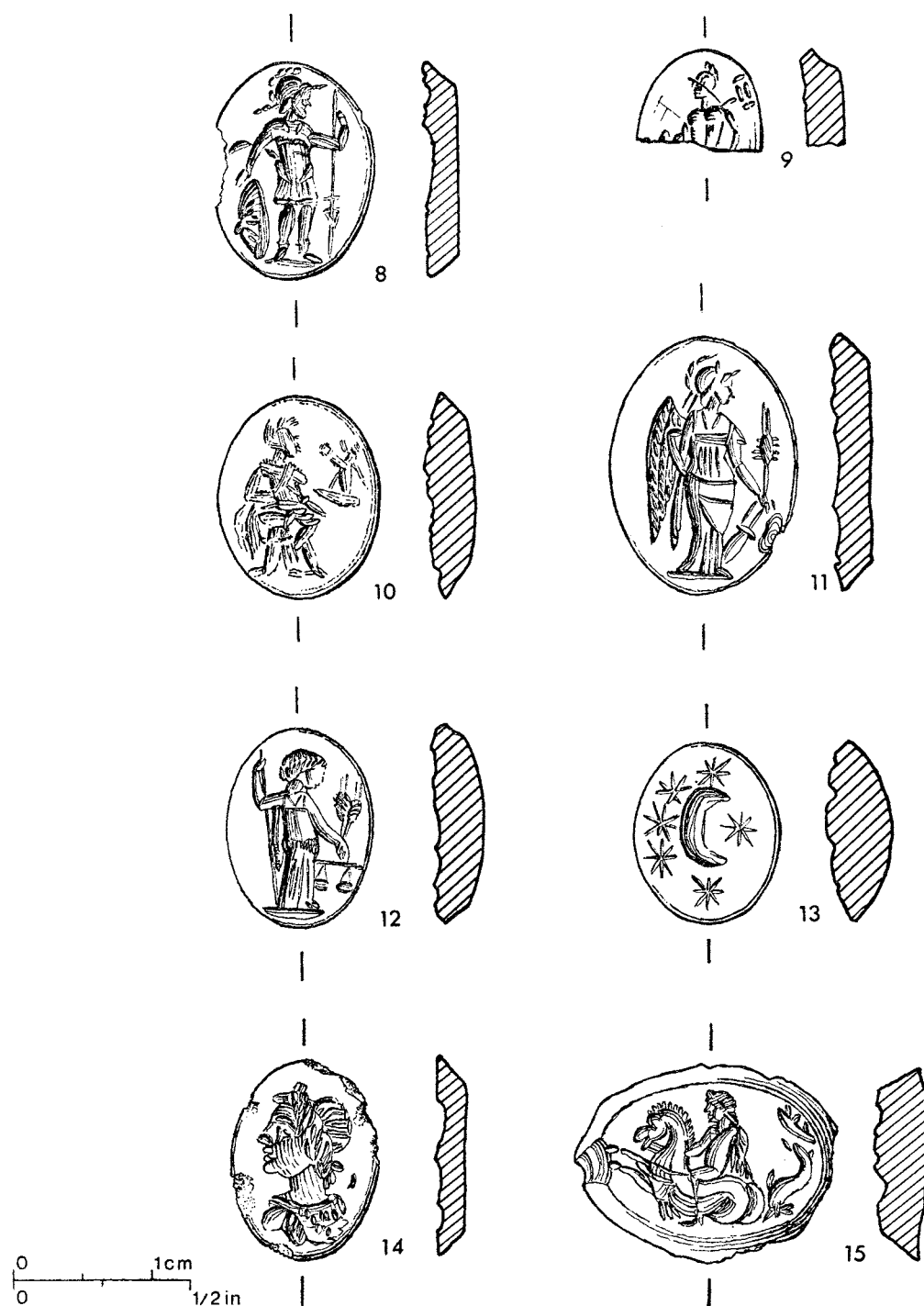


Fig. 6 Intagli of jasper (8,9,14) cornelian (10, 11, 12, 15) and chalcedony (13). Scale 2:1

Charterhouse on Mendip, Caerleon, Vindolanda (Chesterholm, Northumberland), Wall (Staffordshire), Mansewold, north of the Antonine Wall in Scotland, and others from Augst and Xanten on the continent.⁷ Mars Gradivus is depicted on coins, and a bronze plaque from Burgh Castle may also be cited here.⁸

- 10 *Cornelian, clouded with black inclusions, oval and slightly convex surface. The stone is in good condition apart from superficial wear. 14 x 12 x 3 mm. Alignment 1a.*

Roma seated towards the left, wearing a crested helmet, *peplos*, and *himation*. Beside her is a cuirass and her left elbow rests on a shield. A sword is indicated on her left side and in her right hand is a victory.

The gem depicts a pre-Hadrianic conception of the goddess, such as is shown on the coinage of Nero. Cornelius Vermeule illustrates a similar stone in the Sir John Soane Museum, London.⁹ An intaglio from Silchester also shows this early type of Roma, but the goddess holds a patera instead of a victory.¹⁰ The style of cutting, so close to that of the *Officina delle Linee Grosse*, will not support a date earlier than late Antonine times, so presumably the gem was copied from an earlier gem or from a 1st-century coin.¹¹ The later Hadrianic cult image is shown on gems from Colchester and Wroxeter.¹² All three gems found in Britain depicting Roma came from highly Romanized sites and the York gem serves to confirm the surmise that the personification of Rome as a goddess was a conception which appealed to the higher echelons of society, amongst whom we must include both legionaries and curiales.

- 11 *Cornelian, translucent with a few black inclusions, oval and very slightly convex. The stone is in good condition apart from superficial surface wear and a small chip on the right side. 18 x 14 x 2.25 mm. Alignment 1a.*

Pantheistic Fortuna; the goddess stands towards the front and faces left. She wears a girded *peplos* and a *himation* and holds a cornucopia in her left hand and a steering-oar with rudder in her right. Other intagli from Britain show Fortuna holding the corn-ears of Ceres in the same hand as the steering-oar; here a single ear is depicted.¹³ However, this is the first gem from the Province to depict Fortuna with the plumed helmet of Minerva on her head and the great eagle-wing of Victory sprouting from her shoulder, although in general the type is common enough.¹⁴ Presumably the owner of this signet wished to invoke the protective powers of all these deities of whom Fortuna, Victory, and Minerva were especially popular amongst the members of the Roman army.

The bold cutting and interesting use of short hatched lines again suggest a 2nd-century dating.

- 12 *Cornelian, somewhat clouded, oval and very slightly convex. The stone is in good condition apart from some surface wear. 14 x 11 x 3 mm. Alignment 1 a.*

Aequitas stands towards the front and faces left. She wears a girded *peplos* with overfold and holds a sceptre in her left hand and a pair of scales in her right hand. Also in her right hand she holds two ears of corn, which bring Ceres once more to mind.

Again, this is the first time that the type has been found on a gem in Britain, although examples are recorded from several sites elsewhere in the Empire, for example at Grand, Xanten, Aquileia, and Caesarea Maritima.¹⁵ The conception is specifically Roman and would undoubtedly have appealed to the more high-minded officers and men serving in a legion. The type of Aequitas is, of course, well known on the Imperial coinage.¹⁶

Although the gem is smaller than 11 (above) and the figure more truncated, it is stylistically similar.

- 13 *Milky chalcedony, oval and convex on both faces. The stone is in excellent condition apart from slight surface wear. 13 x 11 x 3.5 mm. Alignment 1a.*

A crescent moon is depicted, surrounded by six stars, one almost within the horns of the crescent and five on the other side.

Crescents and stars are often found on intagli, although the number of the latter varies, sometimes fewer being depicted than there are here and sometimes more. The commonest number is seven, and it is thought that in most cases these stones are intended to portray the constellation *Septem Triones*, which was used as a punning reference by L. Lucretius Trio on coins struck in 76 BC.¹⁷

However, the type has a deeper meaning, for the stars were the abode of the dead and hence coins showing the crescent and stars were struck for the consecration of the dead members of the *Domus Divina* in the 2nd century, while in the Severan age we find such issues proclaiming the *Aeternitas* of the living Augustus.¹⁸

It seems that the device had long been regarded as a symbol of the heavens, the abode of Jupiter. Some of the shields represented on Trajan's Column show the thunderbolt with crescents or stars, while a gem in Berlin depicts a crescent and five stars, a thunderbolt, and then two other stars.¹⁹ It is not at all unlikely that the choice of chalcedony as a material was conditioned by the fact that the stone was thought particularly appropriate for Jupiter.²⁰

The gem probably dates from the 2nd century AD.

- 14 *Red jasper intaglio, oval with flat surface. The stone is in good condition apart from slight chipping. 14 x 10 x 2.25 mm. Alignment 1.*

Bust of a maenad in profile towards the right; she has short hair, plaited as a diadem around the edges, and wears a *nebris* (the skin of a wild animal) over her shoulders. Behind her is a crescent moon, which probably indicates no more than the fact that many of the Baccllic ceremonies took place at night.²¹

This is only the second portrayal of a maenad to have been found in Britain. The other, also a red jasper, comes from the *vicus* at Vindolanda.²² Several parallels may, however, be cited from published collections. Furthermore, a jasper found at Cambridge and depicting a bust of Bacchus exhibits a similar richness in the cutting.²³

Once again, the patterned style indicates a late 2nd-century dating for this piece.

- 15 *Cornelian intaglio, colour shading from yellow through to orange, oval, slightly convex on both surfaces. The stone is chipped on the lower edge. 16 x 11 x 4 mm. Alignment 1.*

Cupid seated on a hippocamp, shown in profile to the right. Behind the creature, and in place of its normal long fish-like tail, a dolphin is represented. The scene makes allusion to the soul's voyage across the sea to the islands of the blessed, a theme which would have had great appeal to soldiers exposed to the rigours of military life. Cupid is frequently depicted on gems riding on hippocamps or dolphins.²⁴

The somewhat elongated shape of the gem, combined with the fairly free style of cutting, allow us to suggest a later date for this intaglio than the other seven. An interesting comparison may be made with a gem which also depicts a sea-beast, found in York about 1876 on the site of the railway station²⁵: the wing-like projection from the creature's back is of similar execution to Cupid's on 15; the manes of the two animals are very much alike and both intagli display deep, gouged cutting.

It would be rash on the basis of the similarity of two stones to claim that there was a gem-cutting workshop in operation in York during the 3rd century, but it is certain that the craft was practised in Britain during the middle empire, and both the importance of York and the eventual growth of a jet-carving industry in the vicinity are points in its favour.²⁶

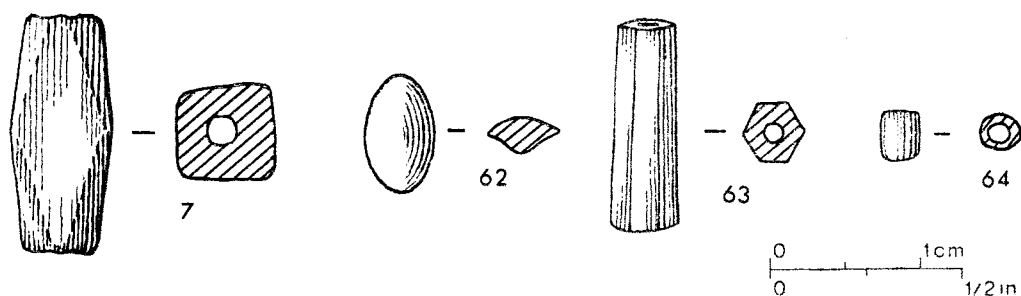


Fig. 7 Personal ornaments of jet (7) and glass (62, 63, 64). Scale 2:1

The discovery of Roman intagli and other jewellery in a drain inevitably brings to mind the find from the culvert at Bath, which included a cache of 34 gemstones, apparently never mounted. It has been argued elsewhere (Henig, 1969, 71-88) that these represent a single offering made to Sul by a gem cutter. Unfortunately, the York stones cannot be regarded as a closed group, nor are they likely to have been votive in character. Presumably they represent no more than casual losses and it may be significant that four of the gems have sustained some damage, perhaps connected with their having become detached from the finger-rings in which they were set. In any case, all display some surface wear.

None of the objects is at all surprising in the context of a legionary fortress, and Mars, Roma, and the pantheistic Fortuna are especially appropriate for the soldier and his world where, while cherishing ideals of fair play and equity in an empire ruled by the Senate and people of Rome, he did not lose sight of his final reward among the stars, in the islands of the blessed or some equally happy Bacchic paradise.

Other personal ornaments

A few additional trinkets were recovered, ranging from beads of fairly common types (Fig. 7) to some quite fine gold pieces. The single jet bead (7) reflects in more angular form the common biconical shape found, for example, at Shakenoak (Brodrribb et al., 1971, fig. 26, 17) and at Icklingham, Suffolk (Liversidge, 1968, fig. 52, g); the faceted treatment may be compared with several jet pin-heads from York (RCHMY 1, pl. 69). Icklingham also produced hexagonal-section beads similar to 63 (Liversidge, 1968, fig. 52, d-f) and the type is represented in the British Museum both in plasma (Marshall, 1911, no. 2730, pl. LX) and in dark blue glass (*ibid.*, no. 2705, pl. LVI), in both cases alternating with gold links in necklaces of the 2nd or 3rd century. Tiny beads like 64 are occasionally found incorporated into ear-rings rather than necklaces (*ibid.*, nos. 2622-3, pl. LIV, and 2679, pl. LV; Higgins, 1961, 184, pl. 54, D, H), either in a cluster or threaded on a simple hoop; 1st- or 2nd-century dates are suggested for the examples quoted.

Of the gold pieces (Fig. 8), 73 is an ear-ring in which four grooved bands combine to form a cage-like structure. Possibly it originally contained, within the cage, a bead of glass or paste as in a pair in the British Museum from Enkomi in Cyprus (Marshall, 1911, nos. 2407-8, pl. LI), dating from the 2nd or 3rd century AD. No. 72 is a pendant in the form of a plain cylinder with closed ends. A rather similar pendant in the British Museum (*ibid.*, no. 2983, pl. LXIX) with a single ribbed suspension ring and decoration of soldered globules

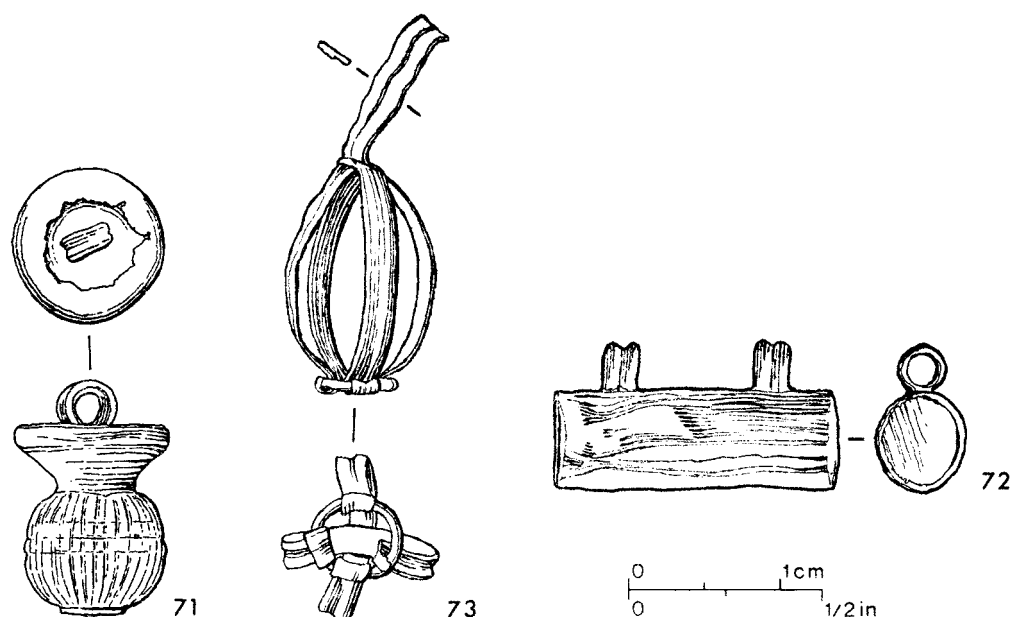


Fig.8 Personal ornaments of gold. Scale 2:1

was filled with a composition of sulphur; possibly this new example from York also had an amuletic significance but since the ends are not removable its contents, if any, cannot be ascertained. Another comparable example with ribbed suspension rings but with an octagonal cylinder (*ibid.*, no. 3155, pl. LXXI) is mounted on a fine gold chain. 71 may be compared with several vasiform pendants in the British Museum collection, for example Marshall's no. 3150 (*ibid.*, pl. LXXI), which is similarly closed by a lid-like cover with a suspension loop, the whole being held in place by the inturned rim of the pot-shaped pendant. The necklace on which another example in the British Museum was hung (*ibid.*, no. 2700, pl. LVI) is composed of alternating beads of gold and garnet. The present loose-fitting nature of the 'lid' of the York piece suggests that it may once have been fixed with adhesive, or perhaps the entire internal space was filled with some substance as in Marshall's no. 2983 (see above). No. 3150 in Marshall's catalogue contained an inscribed sheet of fine gold and the type as a whole may have been habitually used as locketts or amulets.

All three gold pieces from York are linked stylistically by their use of decorative ribbing on the suspension loops and are perhaps not far removed from each other in date: on the strength of the British Museum material a 2nd- or 3rd-century origin may be suggested. Their occurrence here may possibly be attributed to the presence of women in the bath house, which would imply that it did not contain the principal legionary baths. On the other hand, since at least two of the three pieces may be regarded as amulets rather than purely decorative jewellery, their original owners may equally well have been soldiers.

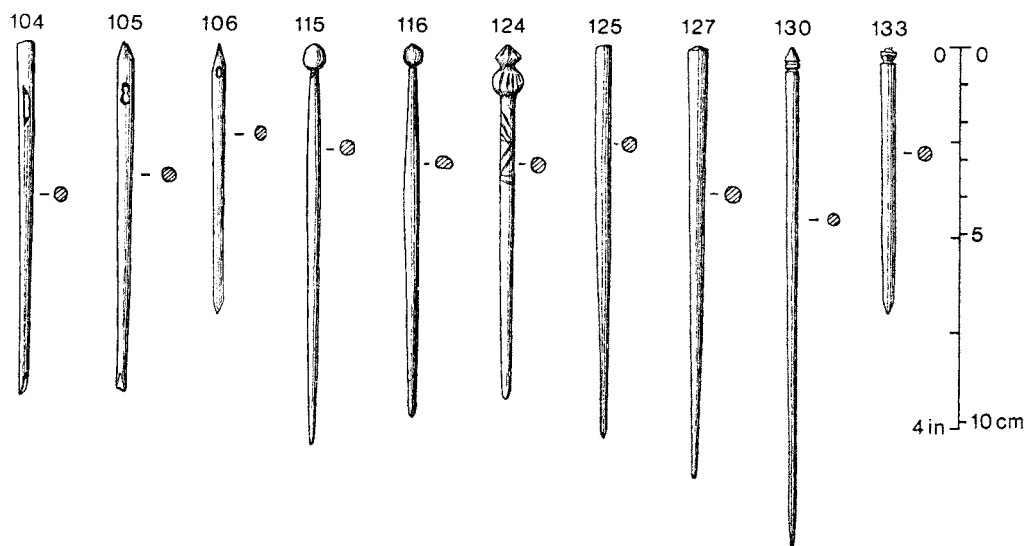


Fig. 9 Needles and pins of bone. Scale 1:2

Bone needles

The number of needles found in the sewer (twelve) was large enough to suggest that they were habitually used in the adjacent buildings, perhaps for carrying out running repairs to clothing. The range of services offered at civilian bath houses was certainly extensive (see, for example, Seneca's description in *Epistulae Morales*, LVI) and mending may well have been among these, although the scope for such enterprise would presumably have been more limited in military establishments. On the other hand, there is some evidence that a variety of light industrial activities were carried on in the vicinity of the sewer (see below, p. 19) and it may be that the needles derive from this kind of work. Three basic types are represented (Fig. 9): one with a flattened elongated head and an elongated perforation (103, 104; cf. Kenyon, 1948, 266); one with a rather pointed head and with an elongated perforation formed by two intersecting circular holes (105; *ibid.*); one with a pointed head and a single circular perforation (106, 107). The variations in length and thickness, as well as in the design of the head, presumably reflect a variety of uses on a range of fabrics of differing degrees of fineness, but even the slinunest is very coarse by today's standards. It may be noted that the stitch holes in the silk fragment from the sewer (see below, p. 14) are necessarily of quite a different order of fineness.

Bone pins

Bone pins were also well represented (Fig. 9). Simple ball-headed pins with swelling shanks were most numerous (115-122), none of them with any decoration. A single nail-headed example was found (123) and five with pointed heads came from Alignment 1a, three of them (130-132) with double lines incised around the top (cf. Frere, 1972, fig. 55, 199). Otherwise only one pin had been decorated (124), having inscribed vertical lines around its pomegranate-shaped head, and at the upper end of its tapering shank some

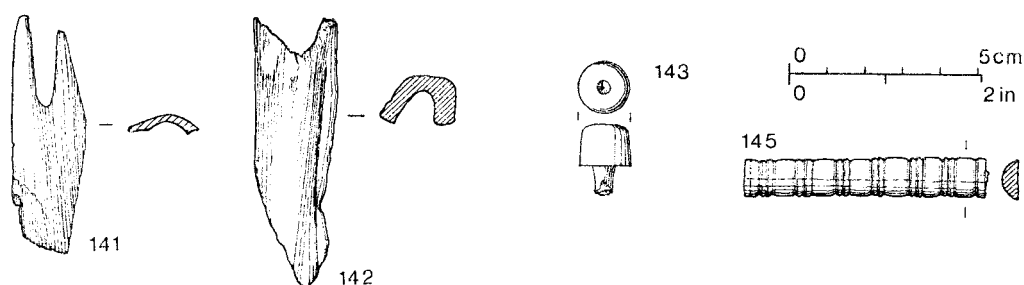


Fig. 10 Objects of bone (141, 142, 143) and ivory (145). Scale 1:2

faint diagonal scratchings which, when freshly executed, would have helped keep the pin from slipping out of place.

Some disagreement still centres around the function of these pins, in particular whether they were used to fasten clothing or whether they were worn in the hair. The obvious debt of the later series of Saxon hipped pins (which are generally accepted as dress pins) to these Roman examples with swelling shanks, certainly seems to suggest that some were worn in the clothing. On the other hand, at least one Roman burial is known from York in which the corpse's hair was found intact and secured in a bun by jet pins of similar form (RCHMY 1, 83). If those from the sewer were used as hair-pins then their presence here might further suggest that the baths were frequented at times by women.

With the possible exception of 124, for which no precise parallel has been noted, all the pins are of such widespread and long-lived types that they can contribute nothing towards establishing the chronology of the sewer.

Other items of bone and ivory

A few items (Fig. 10), all of rather doubtful purpose, fall outside the categories already discussed.

141 and 142, although differing in detail, seem to belong to a single category of implement and may perhaps be identified as netting tools; while they seem rather crude in execution, the fact that several tools closely similar to 141 were found in an Anglo-Scandinavian context at Pavement in York (YAT, Site No. 1972.21) suggests that their casual appearance belies a well developed functional design. 143 seems to be part of a toggle or perhaps a flush-fitting stud or plug from a piece of furniture. From Alignment 1a came a finely executed plano-convex mount numbered 145, manufactured by turning and polishing a rod of ivory on a lathe and dividing it up with double ridges into a series of segments; a bone handle from Great Chesterford, thought possibly to belong to a distaff (Liversidge, 1968, fig. 72), shows an almost identical treatment; cut-marks show that a longitudinal slice was then cut from the rod with a saw, the intention presumably being to incorporate it into a scheme of decorative mountings, perhaps on a box or casket. There is, however, no sign of its ever having been attached with pegs, although conceivably it could have been fixed with glue.

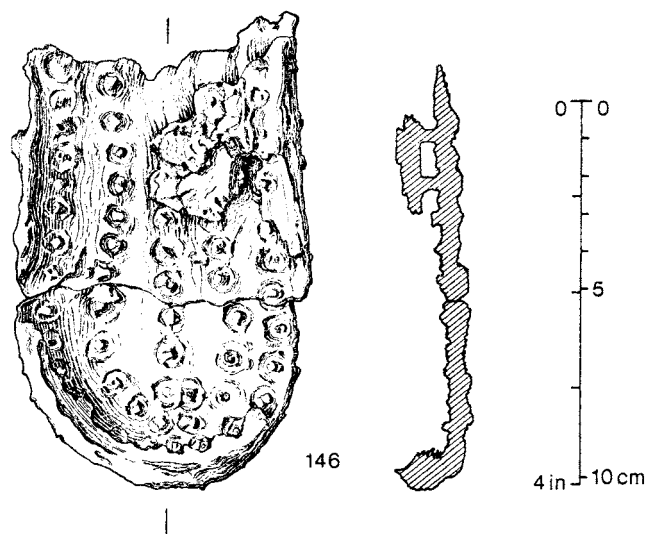


Fig. 11 Leather boot, sole fragment. Scale 1:2

Boot sole

A fragment from a leather boot sole (146; Fig. 11) survived in the silt, rock-hard and apparently preserved by the corrosion products from its iron nails: no structural details may be seen.

Textile

Mr John Hedges of the Department of Archaeology, University of Southampton, contributes the following report:

In the course of sieving a biological sample from the sewer a small fragment of textile (147; Pl. II) came to light. Under the microscope it could be seen to be of an extremely fine plain weave, pierced in places by stitch holes about 0.6 mm. in diameter. One system, which we may suppose is the warp, consists of hard-spun threads with a diameter of approximately 0.1 mm. Curiously both Z- and S-spun threads have been used and there seems to be a distinct pattern: two threads spun in one direction are followed by two spun in the other, and so on. These are well spaced across the weave and there are some 40 per centimetre (eight were counted over 2 mm.). The weft is unspun and the thread quite flattened, having a width of slightly less than 0.2 mm. These are closely compacted compared to the warp and there are about 50 to the centimetre (ten were counted over 2 mm.).

The cloth had every appearance of being silk and this was confirmed by microscopic examination of a number of fibres as whole mounts. The fibres were slightly off-white, fine, and uniform, with none of the internal and external features characteristic of other animal fibres or those of vegetable origin. The light colour of the fibres, their diameter range (6–11 μm . for 25 fibres; mode 8.5 μm .; mean 8.14 μm .), their apparent triangular cross-section and the absence of any longitudinal striations all served to distinguish them as filaments derived from the cultivated silk moth (*Bombyx mori*), rather than any of the wild varieties (Textile Institute, 1965, 14-15; Wild, 1970, 11-12).

Although two moths native to Europe can produce wild silk, *Bombyx mori* was not introduced into the west until the 6th century AD. The Chinese kept both the moth (a native of the Himalayas and China) and the method of preparation of silk from its cocoon a closely guarded secret and it is clear that any cultivated silk of this date must ultimately be derived from China (Howitt, 1951,339).

The routes over which silk travelled from China to the west are fairly well documented (Boulnois, 1966), but they varied with the political climate of the day and it is not possible to postulate one for the silk in question since it lacks a precise date. It would seem, however, that it was imported into the Empire as raw silk, since it has the spun-warp characteristic of cloths made up in the west; in fabrics of Chinese origin neither warp nor weft would seem to have been spun (Pfister, 1937, 35 fr.).

The surviving fragments of Roman silk found in north-west Europe have been fully discussed by Wild (1970); it is sufficient to note here that high counts, unspun weft, and spun warp are characteristic of the group as a whole but that the combination of spinning directions in the warp of this piece is a peculiarity, for all other warps have been said to be solely Z-spun. Syria is known to have been involved in the weaving of imported silks and it is an accepted generalization that Syrian products have Z-spun warps. It is difficult to know how much the spinning of the warp of the York piece can be taken as indicating an alternative place of origin.

Silk was a precious, much sought-after luxury among the Romans; it is not surprising, therefore, that it has been found only rarely in archaeological contexts and that such textiles as have survived are frequently complex and beautifully made, showing features of the weaver's skills which were not lavished on more mundane materials.

Glass vessels

Miss Dorothy Charlesworth of the Inspectorate of Ancient Monuments, Department of the Environment, contributes the following report:

Bath flasks Most of these are in natural green glass. They were used to carry oils for rubbing the body after bathing and the shape is commonly found in bronze as well as in glass, the glass being a slightly later introduction, presumably cheaper to make. The complete flask is bulbous or globular-bodied with a short neck and broad flat rim. Eyelet handles fit in below the rim and carry a bronze half-loop or chain handle. A typical example was found in an Antonine pit at Corbridge (Charlesworth, 1959, 56). Examples from Nijmegen date from the Neronian period (Isings, 1957,79) but none was found at Camulodunum and it is not until later in the 1st century that they are common. The type continues in production until the 3rd century when decorated examples in colourless glass were made, as well as plain green flasks (ibid., 1957, form 61; RCHMY 1, fig. 88, HG 227).

- 32 Most of a flat infolded rim, small eyelet handle, spiral trail on body; green. Alignment 1. (Fig. 12)
- 33 Base fragment with spiral trail. Alignment 1. (Fig. 12)
- 34 Fragment from the side with a trail; green. Alignment 1.
- 35 Flat, infolded rim, two thin eyelet handles and part of the shoulder; green. Alignment 1. (Fig. 12)
- 36 Part of the shoulder and one eyelet handle of a flask in thicker blue-green glass. Alignment I, (Fig. 12)
- 37 About half the flat infolded rim and a small piece of handle and neck; greenish, Alignment 1a. (Fig. 12)

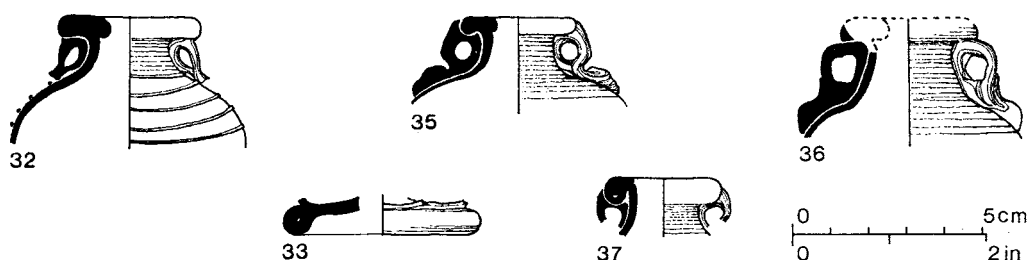


Fig. 12 Glass bath flask fragments. Scale 1:2

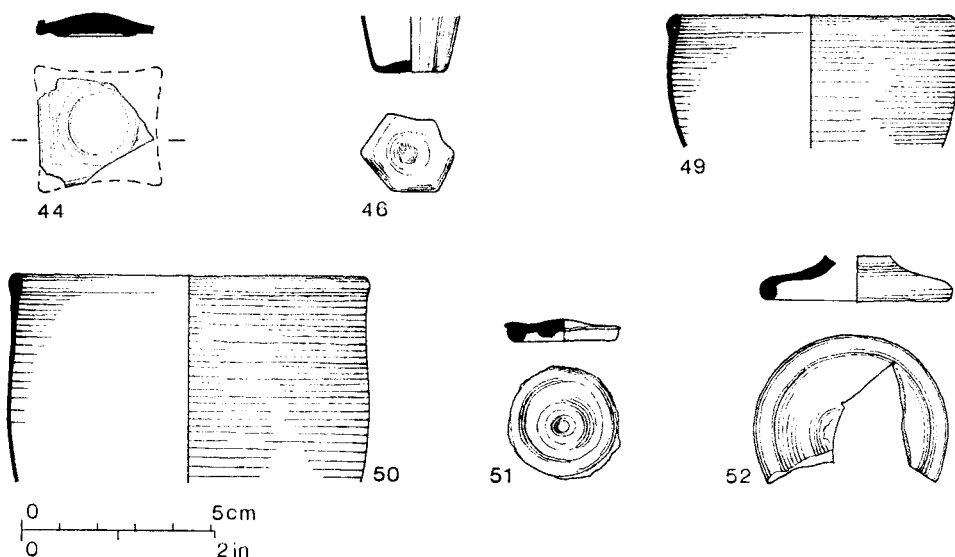


Fig. 13 Glass flask, bottle, and beaker fragments. Scale 1:2

- 38 Part of the base of a handle; green. Alignment 1a.
 - 39 Body fragment; green. Alignment 1a.
 - 40 Body fragment; green. Alignment 1a.
 - 41 Base, slightly concave; green. Alignment 1a,
 - 42 Outsplayed, almost flat rim, probably from a 3rd-century bath flask; colourless, highly iridescent. Alignment 1.
- Other flasks and bottles* Some of the flat fragments found are from square bottles c. AD 60–130 in date, others from small square-bodied, long-necked flasks generally known as ‘Mercury flasks’ because many have a figure of Mercury moulded on the base. These generally date from the 3rd century (Isings form 84) and are not commonly found in Britain.
- 43 Angle fragment from a small square bottle c. AD 60–130. Alignment 1a.
 - 44 Most of the base of a thin-walled Mercury flask in blue-green glass; moulded circle and pontil mark on base. Alignment 1. (Fig. 13)

- 45 Corner of a square-bodied vessel, probably a Mercury flask, in colourless glass; moulded raised dot near the corner. Alignment 1.
- 46 Most of the base of a small thin-walled hexagonal-bodied flask. This could have a long neck like the Mercury flask or a short neck and eyelet handles like a bottle from Silchester in Reading Museum. Alignment 1. (Fig. 13)
- 47 Base fragment from a cylindrical-shaped vessel which could be a flask (Isings form 100 or 102; cr. RCHMY I, fig. 90, HG 146. 1-4) but could also be the base of a beaker. Alignment 1 a.
- 48 Wall fragments from a square bottle in blue-green glass with iridescent weathering; part of base moulding survives as line around edge. Alignment la.

Beakers and bowls None of these can be properly identified from the surviving fragments. The rounded rim and slightly convex side are very common on small beakers or bowls from the later 1st to the 4th century. The double-coil base ring is more distinctive but it is known from the Hadrianic period until the mid-3rd century, for example Isings form 85b (Charlesworth, 1971, 33-7; RCHMY I, fig. 88, HG 202.6).

- 49 Rounded slightly thickened rim and side of a beaker in colourless glass. A second fragment, although it does not join, seems certainly part of the same beaker. Iridescent weathering. Alignment I. (Fig. 13)
- 50 Large beaker, similar to the above, with milky iridescent weathering. Alignment 1. (Fig. 13)
- 51 Double-coil base ring in colourless glass cut down for re-use as a gaming counter. This base could be associated with beakers having the same rim and side profile as the two listed above. Alignment 1. (Fig. 13)
- 52 Part of the foot-ring of a goblet in colourless glass, iridescent weathering. (Isings form 86, 111 or 112). The goblet shape is never common. In blown glass it seems to be introduced in the late 2nd century. Alignment 1. (Fig. 13)

Miscellaneous vessels

- 53 Mould-blown fragment with seam where the two halves of the mould joined running horizontally across a pattern, which imitates facet-cutting. The shape of the vessel cannot be determined. Alignment 1. (Fig. 14)
- 54 Rounded rim with part of a crested handle attached; colourless glass. Alignment 1. (Fig. 14)
- 55 Rounded rim pinched to form a small spout, two fine trails below and indented body; colourless glass. Indented beakers are common in the later 1st to 4th centuries, but the small spout is an unexpected feature. Alignment 1. (Fig. 14)
- 56 Hollow tubular rim in green glass from a bulbous-bodied jar c. AD 70-140 (Isings form 67b or c). Alignment la. (Fig. 14)
- 57 Base of a beaker, flask or jar in green glass; pushed-in hollow tubular base ring. Alignment 1. (Fig. 14)
- 58 Similar to above with pontil mark. Alignment I. (Fig. 14)

Window glass Both the moulded glass of 1st- or 2nd-century date and blown cylinder glass of the 3rd or 4th centuries are represented in quantity, considerably exceeding the small amount of vessel glass. Discussion of the technique of manufacture may be found in Harden, 1959, 8-16; Harden, 1961, 44-52; Boon, 1966, 41-7. The moulded glass is rough on one surface and smooth on the other, generally c. 3.5 mm. thick and green in colour, although here a few colourless pieces were found. The blown glass is generally thinner and smooth on both surfaces. Much of it is green but more colourless glass is used.

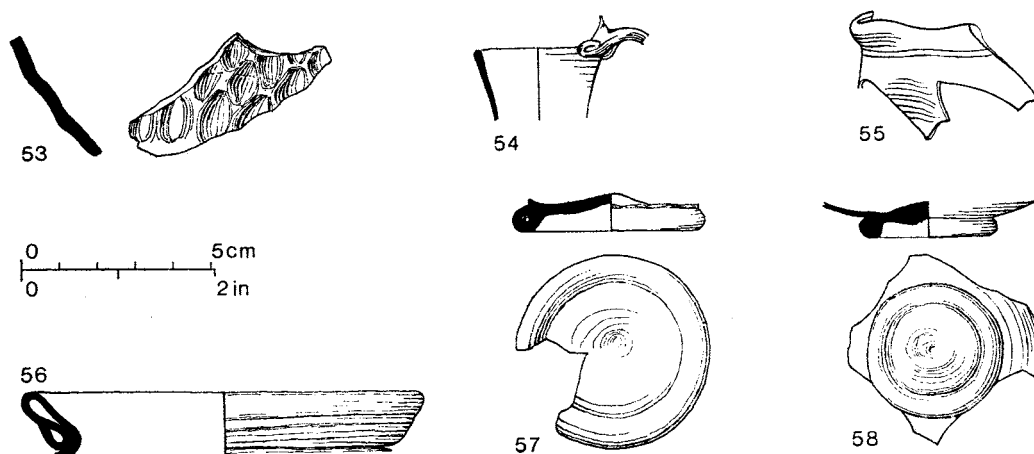


Fig. 14 Miscellaneous glass vessels. Scale 1:2

The significance of the Roman finds

While falling comfortably within the date-range suggested for the sewer by the pottery, the finds are less useful in establishing the limits of the range. From the presence of several 4th-century vessels (*AY* 3/1, 44-6) we might surmise that some of the finds also ought to be rather late in date but there seems little or nothing which need necessarily be placed beyond the 3rd century. Many items belong to such long-lived types, however, that they could date from almost any phase within the period of Roman occupation and much late material could lie concealed within these groups.

In the case of Alignment 1a the early isolation suggested by the pottery (*AY* 3/1, 45-6) is not detectable from the small finds. One type of bone pin, that with double grooves around a low pointed head, and both playing pieces with concentric rings on their obverse surfaces occurred only within this area, but beyond demonstrating that the types were in circulation by the end of the 2nd century no significance can be attached to their exclusive appearance here. Similar pins are recorded in 3rd-century or later layers at Fishbourne (Cunliffe, 1971, 148) and in 4th-century contexts at Shakenoak (Brodribb et al., 1971, 110 and fig. 37), while 3rd-century counters like the York examples may be noted from Canterbury (Frere, 1970, 112) and others from late 4th-century or later robbing layers at Fishbourne (Cunliffe, 1971, 144).

The presence of many of the finds, including bath flasks, pins, counters and intagli, may be readily understood in the context of the bath house which the sewer probably drained. Some slight evidence for the presence of women has been noted which, if well founded, would make it unlikely that the bath house in question was for legionary use, a conclusion strengthened by its location within the fortress (but see also *AY* 3/1, 24, 32). Some items are unlikely to have originated in a bath house, however, and it seems possible that at some time the sewer may have passed through an area housing a variety of light industries,

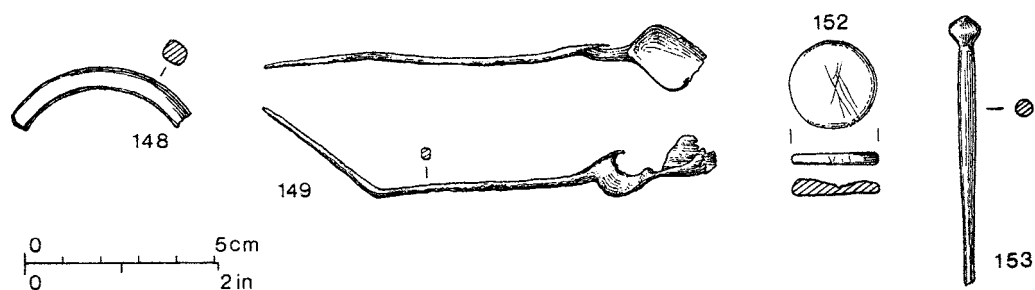


Fig. 15 Objects of jet (148), bronze (149), and bone (152, 153) from the adjacent building complex. Scale 1:2

possibly somewhere upstream of the blocking wall. The notched bone implements (141, 142), antler offcut (144), and nodules of blue frit (68) may be noted, as well as a fragment of crucible (31). Analysis by X-ray fluorescence spectrography²⁷ revealed that the crucible glaze was largely derived from lead, with iron occurring as a trace.

It is interesting to speculate on the significance of one further find, a small blue glass tessera from a mosaic (66). There have been, as yet, no certain discoveries of mosaics within the fortress, but on two occasions²⁸ tessellated pavements have been recorded in the Bedern area, close to the south-east fortress wall. While serving this same flank, the sewer would presumably have been isolated from external contamination by the extent of the defences and the *intervallum* road and so, unless the tessera was destined for reworking in one of the workshops suggested above, it might be taken to hint at the presence within the *praetentura* of at least one fine tessellated pavement: perhaps the bath house itself might be the most likely candidate.

Nineteenth-century finds from the sewer

Perhaps as the result of a single event, when the roof of the main alignment was breached (AY 3/1, 12), a quantity of late material was introduced into the sewer.

With the exception of a few pottery and glass fragments, only clay tobacco pipes were found, all of them broadly contemporary. Many have plain bowls while others are spurred and have moulded flutings or sprays of thistles and roses; two have representations of ships and one shows a railway locomotive whose tall chimney, large boiler dome, and 2-2-2 wheel arrangement combine to suggest a date of manufacture around the 1840s. One spur is stamped with the maker's initials 'LF', which have not so far been traced in the records.

It has been mentioned (AY 3/1, 5) that by 1836 the site was occupied by the Lord Nelson tavern and presumably the large number of pipes (a minimum of 42) is attributable to its presence directly above the sewer. Disturbance of the Roman layers at such a depth below the early Victorian ground-surface seems to have been due to an unsuccessful attempt to sink a well, traces of which were noted in the contractor's trenches (AY 3/1, 12).

Finds from the adjacent building complex

The few finds from the buildings alongside the sewer, described in *AY* 3/1, 17-22, are illustrated in Fig. 15. Only the bronze spoon (149) needs any comment here: the general type was current from the 2nd to the 4th century (Strong, 1966, 177ff.) and this particular spoon may be compared with a more decorative example from the tomb-chamber at Lullingstone villa, dating from a quarter-century or so on either side of AD 300.²⁹

Two coins are identified here by Mr Casey, one (150) from the building complex and the other (151) unstratified, having been recovered from the building contractor's excavations:

	Issuer	Denomination	Type	Reference	Issue Date	Condition
150	Vespasian or Titus	Dupondius			69-81	Corroded
151	Gallienus	'Antoninianus'	DIANAE CONS AUG	RIC 181	260-68	SW/SW

A few fragments of 1st- or 2nd-century window glass were also recovered.

Leatherwork from the surface

Among the finds picked up on the surface during building operations were quantities of leather, including offcuts, shoe soles and fragments of two medieval scabbards with embossed decoration, lending weight to Dr Palliser's equation (*AY* 3/1, 3) of Girdlergate, Church Street's medieval predecessor, with at least one of York's communities of leatherworkers.

Catalogue of finds³⁰

Finds from the sewer

Stone

- 1 Gaming counter: disc chipped from a slip of micaceous sandstone. D. 29 mm. Th. 6 mm. Alignment 1. (*Fig. 2*)
- 2 Gaming counter: disc chipped from a slip of micaceous sandstone. D. 40 mm. Th. 6 mm. Alignment 1.
- 3 Shale bracelet, roughly circular in section; broken. D. (section) 10 mm. D. (overall) 100 mm. Alignment 1. (*Fig. 5*)
- 4 Shale bracelet, roughly circular in section; broken. D. (section) 10 mm. D. (overall) 92 mm. Alignment 1. (*Fig. 5*)
- 5 Hone stone, probably of Kentish Rag, rectangular in section; broken. 34 x 24 x 15 mm. Alignment 1. (*Fig. 4*)
- 6 Hone stone, probably of Kentish Rag, oval in section; broken. 30 x 21 x 14 mm. Alignment 1. (*Fig. 4*)

Jet

- 7 Bead, square in section, the corners bevelled to achieve a diamond faceting effect; drilled longitudinally. L. 15 mm. Th. 6 mm. Alignment 1. (*Fig. 7*)

Gemstones

8-15 Intagli; see pp. 6-10 (*Fig. 6* and *Pl. I*).

Ceramics

- 16 Gaming counter, chipped from samian body sherd³¹ (Form 31); Central Gaulish, Antonine. D. 25 mm. Th. 7.5 mm. Alignment 1. (*Fig. 2*)
- 17 Gaming counter, chipped from samian body sherd (Form ?30); Central Gaulish, Antonine. D. 40 mm. Th. 8 mm. Alignment 1a.
- 18 Gaming counter, chipped from samian body sherd (Form 32, etc.); East Gaulish, late 2nd or early 3rd century. D. 35 mm. Th. 11 mm. Alignment 1/2.
- 19 Gaming counter, chipped from samian body sherd (Form ?33); Central Gaulish, Antonine. D. 12 mm. Th. 7 mm. Alignment 1a.
- 20 Gaming counter, chipped from samian body sherd (Form ?32, etc.); East Gaulish, late 2nd or early 3rd century. D. 35 mm. Th. 7 mm. Alignment 1.
- 21 Gaming counter, chipped from samian body sherd (Form 31 R); Central Gaulish, Antonine. D. 47 mm. Th. 8 mm. Alignment 1.

- 22 Gaming counter, chipped from samian body sherd (Form 37) with ovolo; Rheinzabern, 2nd or 3rd century. D. 30 mm. Th. 6 mm. No context.
- 23 Gaming counter, chipped from samian body sherd (Form 30 or 37); probably South Gaulish, Flavian/Early Trajanic; the edges ground smooth. D. 20 mm. Th. 8 mm. Alignment 1.
- 24 Gaming counter, chipped from grey-ware body sherd, the edges ground smooth; broken. D. 32 mm. Th. 7 mm. Alignment 1.
- 25 Gaming counter, roughly chipped from coarse red-ware body sherd. D. 36 mm. Th. 12 mm. Alignment 1.
- 26 Gaming counter, roughly chipped from mortarium body sherd; buff fabric gritted with brownish flints. D. 40 mm. Th. 12 mm. Alignment 1/2.
- 27 Gaming counter, chipped from base of a colour-coated beaker; pale orange/buff fabric, slipped brown. D. 43 mm. Th. 10 mm. Alignment 1.
- 28 Gaming counter, chipped from base of a colour-coated beaker; grey/buff fabric, slipped grey. D. 36 mm. Th. 8 mm. Alignment 1. (*Fig. 2*)
- 29 Gaming counter, chipped from base of a colour-coated beaker; pale buff fabric, slipped brown. D. 35 mm. Th. 12 mm. Alignment 1.
- 30 Gaming counter, chipped from base of a colour-coated beaker; buff fabric, slipped orange/brown. D. 40 mm. Th. 7 mm. No context.
- 31 Crucible, wheel-thrown in greyish-white fabric; lead glaze internally; broken. D. 45 mm. Alignment 1a.

Glass

- 32-58 Glass vessels; see pp. 15-18.
- 59 Gaming counter, bun-shaped, of opaque black glass. D. 20 mm. Th. 6.5 mm. Alignment 1. (*Fig. 2*)
 - 60 Gaming counter, bun-shaped, of opaque black glass. D. 15.5 mm. Th. 7 mm. Alignment 1a.
 - 61 Gaming counter, bun-shaped, of opaque black glass. D. 12 mm. Th. 6.5 mm. Alignment 1a.
 - 62 Insert of blue glass from an ornament; oval, with slightly convex surface and angular back. 8 x 4.5 x 2 mm. Alignment 1. (*Fig. 7*)
 - 63 Bead of iridescent blue glass, hexagonal in section with fine longitudinal perforation. L. 13 mm. Th. 3.5 mm. Alignment 1. (*Fig. 7*)

- 64 Bead of opalescent glass, circular in section, with fine longitudinal perforation. L. 3 mm. D. 2.5 mm. Side Passage 6. (Fig. 7)
 65 Bracelet of green glass, sub-triangular in section, with applied spiral cordon of blue and white glass; broken. L. 21 mm. W. 13 mm. Alignment 1. (Fig. 5)
 66 Tessera of iridescent blue glass from a mosaic. 9 x 7 x 7 mm. Alignment 1.
 67 Stirring rod of twisted greenish glass; broken. L. 25 mm. Th. 6 mm. Alignment 1.
 68 Blue frit nodules (three). Alignment 1.

Metalwork

- 69 Lead fragment in the form of a truncated cone; perhaps the foot from a small tripod vessel. L. 28 mm. D. (max.) 10.5 mm. Alignment 1.
 70 Lead water-pipe; sealing strip along one edge, incorporating a joint. L. 490 mm. D. 73 mm. Alignment 1. (AY 3/1, fig. 20)
 71 Gold pendant; hollow vase-shaped pendant with grooved suspension-ring on lid; ribbed decoration on body. Ht. 15 mm. D. 9 mm. Alignment 1. (Fig. 8)
 72 Gold pendant; cylindrical pendant with closed ends and with two lateral grooved suspension-rings. L. 19 mm. D. 6 mm. Alignment 1. (Fig. 8)
 73 Gold ear-ring; four grooved strips anchored to a base ring; joined at the top to form an ovoid cage construction. Ht. 24 mm. D. 10 mm. Alignment 1. (Fig. 8)

Coins

- 74 Dupondius of Vespasian or Titus; corroded. Side Passage 3.
 75 Denarius of Elagabalus; semi-worn. Side Passage 1.
 76 Denarius of Julia Paula; semi-worn. Alignment 1.
 77 'Antoninianus' of Tetricus I or II; corroded. Alignment 1.

Bone

- 78 Gaming counter, obverse slightly convex, with central ring-and-dot decoration. D. 28 mm. Th. 3.5 mm. Alignment 1. (Fig. 3)
 79 Gaming counter, obverse countersunk, central perforation 3 mm. wide. D. 23 mm. Th. 4.5 mm. Alignment 1. (Fig. 3)
 80 Gaming counter, obverse countersunk, rim bevelled. D. 19 mm. Th. 4 mm. Alignment 1.
 81 Gaming counter, obverse countersunk, rim bevelled. D. 21 mm. Th. 4 mm. Alignment 1.
 82 Gaming counter, obverse countersunk, rim bevelled. D. 21 mm. Th. 4 mm. Alignment 1.

- 83 Gaming counter, obverse countersunk, rim bevelled. D. 21 mm. Th. 3 mm. Alignment 1.
 84 Gaming counter, obverse countersunk; reversed 'R' scratched on base, inverted 'VI' within single vertical lines on edge. D. 22.5 mm. Th. 4 mm. Alignment 1. (Fig. 3)
 85 Gaming counter, obverse countersunk; cross scratched on obverse and reverse. D. 22 mm. Th. 4 mm. Alignment 1. (Fig. 3)
 86 Gaming counter, obverse countersunk; irregular hatching scratched on reverse. D. 19.5 mm. Th. 3 mm. Alignment 1. (Fig. 3)
 87 Gaming counter, obverse countersunk. D. 19 mm. Th. 3 mm. Alignment 1.
 88 Gaming counter, obverse countersunk. D. 23 mm. Th. 4 mm. Alignment 1.
 89 Gaming counter, obverse countersunk. D. 21 mm. Th. 5 mm. Alignment 1.
 90 Gaming counter, obverse countersunk. D. 19.5 mm. Th. 3 mm. Alignment 1.
 91 Gaming counter, obverse countersunk. D. 21 mm. Th. 4 mm. Alignment 1.
 92 Gaming counter, obverse countersunk. D. 20 mm. Th. 3.5 mm. Alignment 1.
 93 Gaming counter, obverse countersunk. D. 20 mm. Th. 4 mm. Alignment 1.
 94 Gaming counter, obverse countersunk. D. 19 mm. Th. 3 mm. Alignment 1.
 95 Gaming counter, obverse countersunk. D. 20 mm. Th. 3 mm. Alignment 1.
 96 Gaming counter, obverse countersunk. D. 21.5 mm. Th. 3 mm. Alignment 1.
 97 Gaming counter, obverse countersunk. D. 18 mm. Th. 3.5 mm. Alignment 1.
 98 Gaming counter, obverse countersunk. D. 16 mm. Th. 3.5 mm. Alignment 1.
 99 Gaming counter, obverse countersunk; broken. D. 17 mm. Th. 4 mm. Alignment 1.
 100 Gaming counter, obverse much eroded. D. 22.5 mm. Th. 3 mm. Alignment 1a.
 101 Gaming counter, obverse with turned concentric rings. D. 23 mm. Th. 4 mm. Alignment 1a. (Fig. 3)
 102 Gaming counter, obverse with turned concentric rings. D. 18 mm. Th. 2 mm. Alignment 1a.
 103 Needle with elongated flattened head and elongated perforation; broken. L. 64 mm. Alignment 1.
 104 Needle with elongated flattened head and elongated perforation; broken. L. 95 mm. Alignment 1. (Fig. 9)
 105 Needle with flattened pointed head and elongated perforation formed by two intersecting drilled holes; broken. L. 95 mm. Alignment 1. (Fig. 9)
 106 Needle with pointed head and circular perforation. L. 72 mm. Alignment 1a. (Fig. 9)
 107 Needle with pointed head and circular perforation. L. 86 mm. Alignment 1a.
 108 Needle, broken through perforation. L. 79 mm. Alignment 1.
 109 Needle, broken through perforation. L. 60 mm. Alignment 1.

- 110 Needle, broken through perforation. L. 56 mm. Alignment 1.
- 111 Needle, broken through perforation. L. 52 mm. Alignment 1a.
- 112 Needle, broken through perforation. L. 115 mm. Alignment 1a.
- 113 Needle, broken through perforation. L. 105 mm. Alignment 1a.
- 114 Needle, broken through perforation. L. 100 mm. Alignment 1a.
- 115 Ball-headed pin with swelling shank. L. 110 mm. Alignment 1. (Fig. 9)
- 116 Ball-headed pin with swelling shank. L. 101 mm. Alignment 1. (Fig. 9)
- 117 Ball-headed pin with swelling shank. L. 100 mm. Alignment 1/2.
- 118 Ball-headed pin with swelling shank. L. 115 mm. Alignment 2b.
- 119 Ball-headed pin with swelling shank; broken at tip; recut and re-used. L. 60 mm. Alignment 1.
- 120 Ball-headed pin with swelling shank; broken. L. 62 mm. Alignment 1.
- 121 Ball-headed pin with swelling shank; broken. L. 51 mm. Alignment 1.
- 122 Ball-headed pin with swelling shank; broken. L. 68 mm. Alignment 1/2.
- 123 Nail-headed pin with swelling shank; broken. L. 56 mm. Alignment 1.
- 124 Pin with pomegranate-shaped head and tapering shank; incised vertical lines on head, two bands of opposed diagonal lines at top of shank. L. 96 mm. Alignment 1. (Fig. 9)
- 125 Pin with plain slightly flattened head and tapering shank. L. 116 mm. Alignment 1. (Fig. 9)
- 126 Pin with plain head and slightly swelling shank. L. 71 mm. Alignment 1.
- 127 Pin with low pointed head and tapering shank. L. 117 mm. Alignment 1. (Fig. 9)
- 128 Pin with low pointed head and tapering shank. L. 75 mm. Alignment 1a.
- 129 Pin with low pointed head and tapering shank; broken. L. 41 mm. Alignment 1a.
- 130 Pin with low pointed head and tapering shank; two incised grooves below head. L. 136 mm. Alignment 1a. (Fig. 9)
- 131 Pin with low pointed head and tapering shank; two incised grooves below head. L. 95 mm. Alignment 1a.
- 132 Pin with low pointed head and tapering shank; two incised grooves below head. L. 95 mm. Alignment 1a.
- 133 Pin, probably similar originally to 130-132; head broken. L. 72 mm. Alignment 1a. (Fig. 9)
- 134 Pin shank; broken. L. 80 mm. Alignment 1.
- 135 Pin shank; broken. L. 50 mm. Alignment 2.
- 136 Pin shank; broken. L. 60 mm. Alignment 1.
- 137 Pin shank; broken. L. 33 mm. Alignment 1.
- 138 Pin shank; broken. L. 25 mm. Alignment 1a.
- 139 Pin shank; broken. L. 42 mm. Alignment 1.
- 140 Pin shank; broken. L. 44 mm. Alignment 1.

- 141 Implement with end notch, cut from a bovine nasal bone and polished from use; perhaps a netting tool. L. 64 mm. Th. 2.5 mm. Alignment 1. (Fig. 10)
- 142 Implement with end notch, cut from a fragment of long bone. L. 73 mm. Th. 6 mm. Alignment 1. (Fig. 10)
- 143 ? Toggle fragment or stud; dome-shaped head with broken shank. L. 18 mm. D. 14 mm. Alignment 1. (Fig. 10)

Antler

- 144 Offcut of Red Deer antler, with incomplete saw-cut 1 mm. wide. 125 x 17 x 14 mm. Alignment 1.

Ivory

- 145 Decorative segmented mount, D-shaped section, 64 x 10 x 4.5 mm. Alignment 1a. (Fig. 10)

Leather

- 146 Boot sole studded with iron nails. 125 x 80 mm. Alignment 1. (Fig. 11)

Textile

- 147 Silk fragment, plain weave, off-white in colour. 9 x 3 mm. Side Passage 3. (Pl. II)

Finds from the adjacent building complex

- 148 Jet bracelet, sub-rectangular in section; broken. Th. 5 mm. D. (overall) 60 mm. (Fig. 15)
- 149 Bronze spoon with tapering square-section handle and fiddle-shaped bowl; broken. L. 130 mm. (Fig. 15)
- 150 Dupondius of Vespasian or Titus; corroded.
- 151 'Antoninianus' of Gallienus; semi-worn. Unstratified surface find.
- 152 Bone gaming counter, obverse countersunk; inverted 'VI' between single vertical lines on edge. D. 23 mm. Th. 3 mm. (Fig. 15)
- 153 Bone pin with ball head and slightly swelling shank; broken. L. 72 mm. (Fig. 15)

Provenances

Finds were recovered from each context as follows:

Alignment 1	1-8, 14-16, 20-21, 23-25, 27-29, 32-36, 42, 44-46, 49-55, 57-59, 62-63, 65-73, 76-99, 103-105, 108-110, 115-116, 119- 121, 123-127, 134, 136- 137, 139-144, 146.
Alignment 1a	9-13, 17, 19, 31, 37-41, 43, 47-48, 56, 60-61, 100-102, 106-107, 111- 114, 128-133, 138, 145.
Alignment 1/2	18, 26, 117, 122.
Alignment 2	135.
Alignment 2b	118.
Side Passage 1	75.
Side Passage 3	74, 147.
Side Passage 6	64.
Adjacent Building	148-153.

All sewer contexts remained open from the time of the (probably Trajanic) date of construction to the end of the 4th century, with the exception of Alignment 1a, which appears to have been sealed c. AD 200. No close date was assignable to any groups of finds from the Adjacent Building.

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Summary

The report describes finds from the excavation of a Roman sewer system and part of an adjacent building complex in Church Street, York. A full account of the excavations is given in *AY* 3/1 and environmental considerations are treated in *AY* 14/1. The sewer system (Fig. 1) was probably constructed to drain the various services of a bath house within the legionary fortress, but circumstances did not permit the excavation of associated structures except on a very limited scale. As far as could be established, the system was constructed in the Trajanic period and remained in use until the end of the 4th century.

The objects recovered included gaming pieces of stone, pottery, and glass (Fig. 2) as well as bone (Fig. 3). An interesting collection of jasper, cornelian, and chalcedony intagli from finger-rings was found (Fig. 6; Pl. I), all likely to be of 2nd-century date with one exception (15) which was probably a 3rd-century product. Other personal ornaments (Figs. 7–8) included a number of fine gold pieces, again probably of 2nd- or 3rd-century date. The presence of a large number of bone pins (Fig. 9) is understandable in the context of the bath house which the sewer probably drained, and among the numerous fragments of glass vessels may be distinguished several (Fig. 12) from flasks which originally held oil for rubbing into the body after the bath. A rare find was a small piece of silk (Pl. II) with spun warp and unspun weft, characteristics which suggest that it was manufactured in the west from raw silk imported from China.

All these finds are now deposited in the Yorkshire Museum, York.

Résumé

Le rapport décrit les découvertes faites lors de l'excavation d'un système d'égouts romain et d'une partie d'un ensemble de bâtiments adjacent, dans Church Street, York; un compte-rendu complet des fouilles est donné dans *AY* 3/1 et les considérations biologiques sont présentées dans *AY* 14/1. Il semble très probable que l'égout (Fig. 1) fut construit pour drainer les différents services de bains à l'intérieur de la forteresse, mais l'occasion ne s'est pas présentée d'entreprendre des excavations des structures associées sauf à une échelle très limitée. Autant que l'on puisse le vérifier, le système fut construit à l'époque de Trajan et fut utilisé jusqu'à la fin du quatrième siècle.

Les objets découverts comprennent des jetons de jeu faits de matériaux variés y compris pierre, poterie et verre (Fig. 2) et os (Fig. 3). Une intéressante collection d'intailles de bagues en jaspé, cornaline et calcédoine a été trouvée (Fig. 6; Pl. I), toutes datant apparemment du deuxième siècle sauf le numéro 15 qui serait du troisième siècle. Les autres ornements personnels (Figs. 7–8) comprennent de beaux objets en or, vraisemblablement du deuxième ou troisième siècle également. La présence d'un grand nombre d'épingles d'os (Fig. 9) est compréhensible dans le contexte de bains et parmi les nombreux fragments de vases en verre on peut en distinguer plusieurs (Fig. 12) qui proviennent de gourdes qui contenaient l'huile utilisée pour frictionner le corps après le bain. Une découverte exceptionnelle est celle d'un petit morceau de soie (Pl. II) dont la chaîne est filée mais non la trame, caractères qui suggèrent qu'il fut manufacturé à l'Ouest à partir de soie brute importée de Chine.

Tous ces objets sont maintenant déposés au Yorkshire Museum à York.

Zusammenfassung

Der Bericht beschreibt Funde der Ausgrabung eines römischen Abzugskanals sowie einen Teil eines benachbarten Gebäudes in der Church Street, York. Eine vollständige Veröffentlichung wird in der *AY* 3/1, biologisch-wissenschaftliche Untersuchungsergebnisse in *AY* 14/1 erscheinen. Der Abzugskanal (Fig. 1) wurde wahrscheinlich gebaut, um die verschiedenen Einrichtungen eines Badehauses innerhalb der Festung zu entwässern. Ausser auf einem sehr begrenzten Gebiet, war es jedoch nicht möglich, Oberflächenuntersuchungen zu unternehmen. Soweit man feststellen konnte, wurde das System in der Trojanischen Periode gebaut und blieb bis zum spät-vierten Jahrhundert in Gebrauch.

Zu den Funden gehören Spielbretter aus den verschiedensten Materialien, z. B. auch aus Stein, sowie Ton- und Glaswaren (Fig. 2) und Knochen (Fig. 3). Es kam ausserdem eine interessante Sammlung von Gemmen aus Jaspis, Karneol und Chalzedon zu Tage (Fig. 6; Pl. I) welche wahrscheinlich alle von Ringen aus dem zweiten Jahrhundert stammen. Die einzige Ausnahme unter diesen Gemmen (15) wird in das dritte Jahrhundert datiert. Ebenfalls zum zweiten oder dritten Jahrhundert gehören einige schöne Goldschmuckstücke (Fig. 8). Die zahlreichen Knochennadeln (Fig. 9) sind im Zusammenhang mit einem Badehaus völlig zu erwarten. Von verschiedenen Glasfragmenten konnten einige als Behälter identifiziert werden, welche Öl zum Einreiben des Körpers nach dem Bade enthalten hatten (Fig. 12). Ein ungewöhnlicher Fund war ein Stückchen Seide (Pl. II) mit ungesponnener Kette und gesponnenem Schuss. Diese Herstellungsmethode lässt vermuten, dass die Seide im Westen aus importierter chinesischer Rohseide hergestellt worden war.

Alle Funde werden jetzt im Yorkshire Museum, York, aufbewahrt.

Abbreviations

Most abbreviations used are those recommended by the Council for British Archaeology but the following are used in addition. Bibliographical brief references used in the text are explained in the bibliography.

<i>AY</i>	<i>The Archaeology of York</i>
RCHMY	Royal Commission on Historical Monuments, volumes on York
<i>RIC</i>	H. Mattingly and E. A. Sydenham, <i>The Roman Imperial Coinage</i> (London, 1923, etc.)
YAT	York Archaeological Trust

Notes

- 1 Bushe-Fox, 1928, 13 and pl. XIV, fig. 1 (Richborough); *Trans. Bristol Gloucestershire Archaeol. Soc.* 45 (1923) 285 (Chedworth); Curle, 1911, fig. 50 (Corbridge); Newbold, 1913, 62, Simpson, 1913, 338, and Shaw, 1926, 444 (Hadrian's Wall).
- 2 *Trans. London Middlesex Archaeol. Soc.* 21 (1967) 74.
- 3 'SW' indicates a semi-worn condition, suggesting a short period in circulation.
- 4 Charlesworth, 1961, 32 no. 4, pl. IX, 4 (Corbridge); Lewis, 1878, pl. X, no. 4 (Charterhouse); Jacobi, 1897, 516, fig. 85, no. 4 (Saalburg); Steiner, 1911, 120 and pl. XIII, nos. 19-21 (Xanten); Henkel, 1913, no. 1501 (Rankweil); and also cf. Walton, 1950, 192, fig. 4 (Kenchester), Sena Chiesa, 1966, 147-50 for a discussion of the type and Vermeule, 1966, 27, no. 13.
- 5 Sena Chiesa, 1966, 60ff.; note the so-called *Officinae dei Diaspri Rossi, dei Dioscuri and delle Linee Grosse*, pls. XCI-XCIII. Also note the north British workshop distinguished in Henig, 1971, 215-30.
- 6 Ovid, *Fasti* III, 167f.; Fink et al., 1940, 84f.; the type is also discussed in Picard, 1957, 127.
- 7 Lewis, 1879, 280, no. 5 (Charterhouse); *Archaeol. J.* 2 (1845) 395 (Mansewold, Dumfries). The other examples from Britain are not yet published. Steiger, 1966, 35, no. 13 and pl. VIII, 12 (August); Steiner, 1911, 141 and pl. XV, 20. See also Hulst and Maaskant-Kleibrink, 1969, 286ff. for further references.
- 8 e.g. *RIC* Vitellius (*aes*) no. 10; *RIC* Vespasian no. 257; *RIC* Caracalla no. 306; for the plaque from Burgh Castle see Morris, 1948, 116 and pl. III.
- 9 Vermeule, 1959, 31f., 68f., pl. I, no. 39 (gem), nos. 4-12 (coins).
- 10 Duke of Wellington's Collection in Reading Museum, no. 03010. Also note an onyx from Cirencester where Roma holds a wreath (not published).
- 11 Sena Chiesa, 1966, no. 648.
- 12 Vermeule, 1959, 72f. and pl. III, 5 (Colchester); Wright, 1863, 109 and pl. X, 2 (Wroxeter).
- 13 Henig, 1973, 80 and pl. XIII(a) (The Lunt, Baginton) and Henig, 1969, 80, no. 5 (Bath).
- 14 Sena Chiesa, 1966, nos. 610-615; Furtwängler, 1896, no. 7331; Fossing, 1929, nos. 670-675; Righetti, 1955, no. 43 and pl. VII, 22; Brandt et al., 1972, Munich no. 2615; Scherf, 1970, Braunschweig no. 115f.
- 15 Billoret, 1968, 398f. and fig. 36 (Grand); Steiner, 1911, no. 40f. (Colonia Traiana); Sena Chiesa, 1966, no. 570f. (Aquileia); Hamburger, 1968, no. 91 (Caesarea). Also cf. Fossing, 1929, no. 676 and Henkel, 1913, no. 1891 (found near Saalburg), for Aequitas holding corn ears.
- 16 e.g. *RIC* Hadrian no. 743.
- 17 cf. Sena Chiesa, 1966, no. 1497 (six stars), no. 1498 (four stars), no. 1499 (probably five stars); a nicolo showing a crescent and seven stars was found at Silchester and is now in the Duke of Wellington's Collection in Reading Museum, no. 03003; cf. also Furtwängler, 1896, no. 7999 = Zwierlein-Diehl, 1969, no. 557 and Fossing, 1929, no. 1597, also with seven stars.
- 18 On coins cf. *RIC* Marcus Aurelius no. 750 (posthumous denarius of Faustina the Younger) and *RIC* Septimius Severus no. 527.
- 19 Rossi, 1971, 108; Furtwängler, 1896, no. 8002; also cf. Fossing, 1929, no. 1599.
- 20 Sena Chiesa, 1966, 3; cf. Bushe-Fox, 1916, 30 and pl. XVIII, 27, and *Discovery Excavation Scot.* (CBA Group 1), 1966, 42 (Newstead) for chalcidies from Britain which depict Jupiter.
- 21 *Oxford Classical Dictionary*, 2nd edition, 1970, 636. The crescent is in a relatively subordinate position, unlike that shown on the head of a female deity engraved on a plasma from the York Minster excavations. Here the moon-goddess (Selene or Luna) was clearly intended.
- 22 Information from Mr Robin Birley. The head has free tresses hanging down at the back as well as tightly bound locks.
- 23 Zwierlein-Diehl, 1969, Berlin no. 383; Berry, 1969, no. 38; Kibaltchitch, 1910, no. 202 (Olbia). Information on the Cambridge gem from Miss J. Pullinger.
- 24 Sena Chiesa, 1966, no. 275f.; Scherf, 1970, Braunschweig no. 65; Charlesworth, 1961, 34, no. 45 and pl. IX, 19 (Corbridge) for hippocamps. Sena Chiesa, 1966, nos. 278-280; Scherf, 1970, Braunschweig no. 64; Webster, 1964, 144 and fig. 6, 7 (Waddon Hill) for dolphins.
- 25 Set in a 3rd century gold ring, now in St John's College, York, where it was possible to examine it through the kindness of Mr Peter Wenham.
- 26 For gem cutting in north Britain see Henig, 1971, 215-30. The jet industry at York has generally been regarded as a more or less isolated phenomenon, but the techniques employed were presumably the same or at least similar to those of contemporary studios engaged in the manufacture of cameos and intagli cut on semi-precious stones. On Roman intagli from Britain cf. M. Henig, *A Corpus of Roman engraved Gemstones from British Sites*, Brit. Archaeol. Rep. 8 (1974). This was published too late to be made use of in this report.
- 27 The analysis was carried out by Mr Stanley Warren of the Department of Physics, University of Bradford.
- 28 Drake, 1736, 572; J. Raine's notes for 1880, York Public Library.
- 29 Lt Col Meates, *in lit.* David Sherlock; Mr Sherlock kindly provided this information.
- 30 All finds are now deposited in the Yorkshire Museum, York (Accession nos. 1972.22 and 1974.22), thanks to the kindness of Mr W. Peckitt and the Equitable Debenture and Assets Corporation, in whose respective properties the excavations took place.
- 31 The samian ware attributions are by Mr B. R. Hartley.

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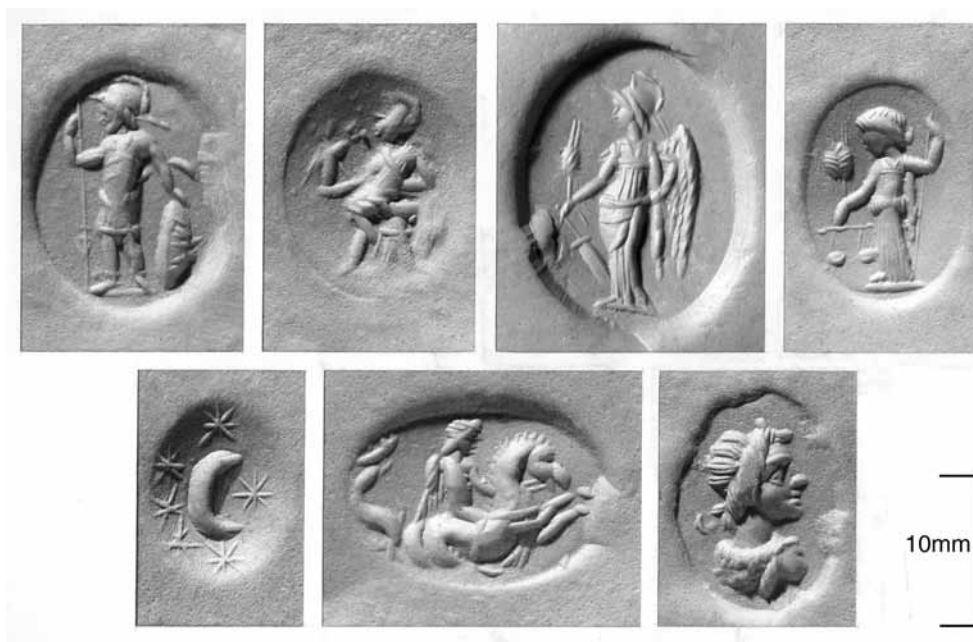


Plate I Impressions from the intagli (8, 10–13, 15, 14). Scale 2:1

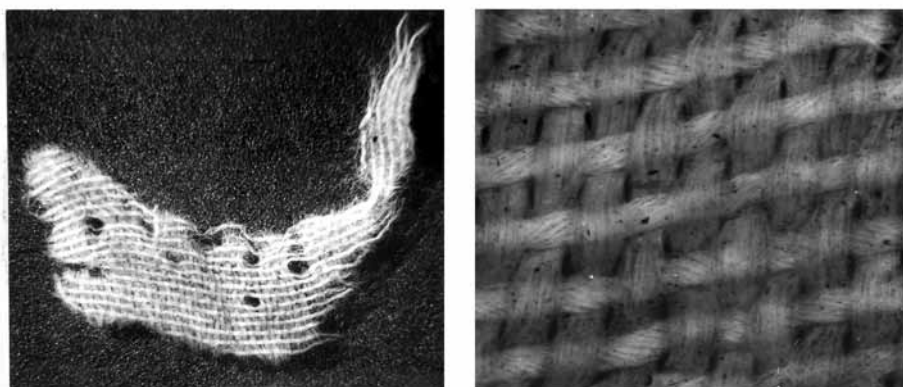


Plate II Silk fragment. Scale a 4.5:1; b 75:1