

FIG. 1. AIR PHOTO OF BATH-BUILDING TAKEN JULY 1937.

Sussex Archaeological Society

THE ROMAN VILLA AT ANGMERING

BY LESLIE SCOTT

THE site of a Roman building, lying in the meadows between the villages of Angmering and Poling, has been known to archaeologists for a considerable time. In 1819, when sepulchral remains were discovered near-by, certain unrecorded antiquaries decided to excavate the field that had always proved so rich in surface remains. The bare bones of the case are recorded in volume II of Cartwright's edition of Dallaway's *Rape of Arundel* (1832).¹

'At the western confine of the parish (of Angmering) in removing a bank of earth, formerly a driftway to the neighbouring marshes, some sepulchral remains were discovered in February 1819 which consisted of cinerary urns, four in number, containing half-burned bones and ashes besides a few smaller vessels such as paterae, fairly inscribed with Roman characters, two ampullae and a small hexagonal urn of black earth, which are preserved in an entire state.² A coin was likewise found, rendered illegible by corrosion. In an adjoining field of 18 acres, many fragments had been turned up by the plough and had remained on the surface after every ploughing.

'This circumstance induced a further investigation, and in April 1819 a Roman bath was discovered measuring 18 ft. by 15 ft. together with a hypocaust and laconicum or sudatory, with very extensive and in several parts entire cloacae arched above and paved with large tiles at the bottom. No perfect floor of Mosaic has been hitherto found; but indications are frequent, as tesserae white or painted, and fragments of plaster, plain, red, and red and yellow in stripes with which the walls had been coated. Likewise pieces of Sussex marble, one of which appears to have served as an architrave, have been dug up. Foundations of walls have been traced to a distance of 300 ft.'

Except for this description and an abbreviated version of it which appears in the *Gentleman's Magazine* of

¹ pp. 72-3.

² These finds cannot now be traced.

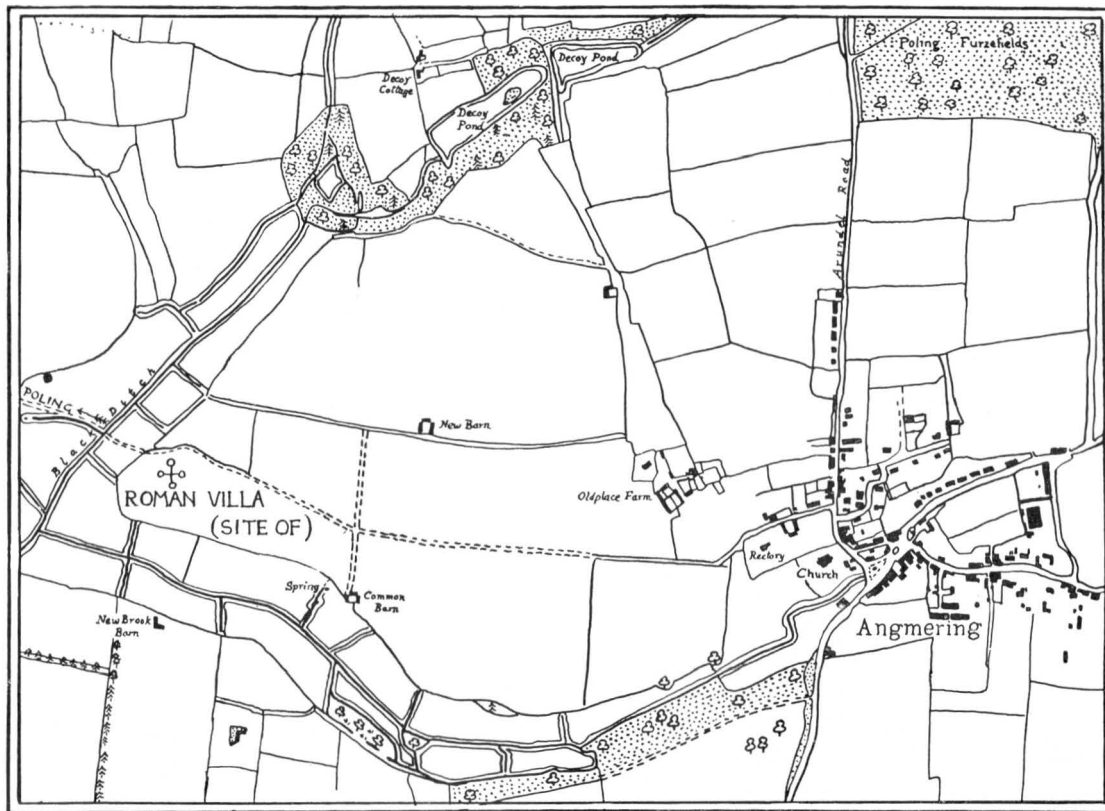


FIG. 2. BASED UPON THE ORDNANCE SURVEY 6-INCH MAPS. SUSSEX (WEST) LXIII, N.E. AND S.E.
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the year 1832,¹ under the heading 'Poling', no plans or other records can be traced.²

In 1927 the site attracted the attention of the Littlehampton Natural Science and Archaeological Society, but lack of funds prevented further exploration until 1936, when a few trial trenches were dug. In 1937 Mr. R. C. Sherriff offered to collaborate, and it was with his munificent support and active interest that more extensive excavations were carried out during May, June, and July. I should like to record my very sincere thanks to Mr. Sherriff for his much appreciated aid in thus making possible the excavations, and to the Duke of Norfolk, his agent, Captain Mostyn, and his tenant, Mr. J. Uridge, for having rendered every facility in connexion with the tenure of the land. I am deeply indebted also to the Littlehampton Natural Science and Archaeological Society and its President, Dr. Hume, and especially for the generous help and untiring activity of Mr. E. W. Hulme, Mr. E. J. Hearne, and Mr. C. A. Butt, and the patience of the Treasurer of the Committee, Mr. D. Crawford. Space does not allow of adequate recognition of all those who have assisted in this season's work; but special mention must be made of Miss P. Keef for her exhaustive catalogue of tiles and bricks, Mr. T. Ward and Mr. R. Goodchild, and not least Mr. George Cutler, whose ready help and supervision of the site have been invaluable throughout. I am indebted also to Messrs. Bell, Jones, Myners, Nicolson, and Scott of Oxford University, who devoted part of their Long Vacation to the use of pick and shovel. My thanks are due, too, to Mr. J. C. Maby, Mr. K. P. Oakley, Mr. D. F. Allen, Mr. E. C. Martin, and Mr. J. A. Stanfield, whose reports are added at the end of this paper. In conclusion, I should like to thank, very gratefully, Dr. R. E. M. Wheeler, first for his help in the inception of the excavations, secondly for his guidance while they were in progress, and finally for his counsel during the compilation of this paper.

¹ Part I, pp. 577-9. My thanks are due to Mr. E. W. Hulme and Mr. E. J. Hearne for this and the above reference.

² A map of the Roman remains in the district, marking Angmering, is given in S. Lysons, *Reliquiae Britannico-Romanæ* (1813-17), III, Pl. 1.

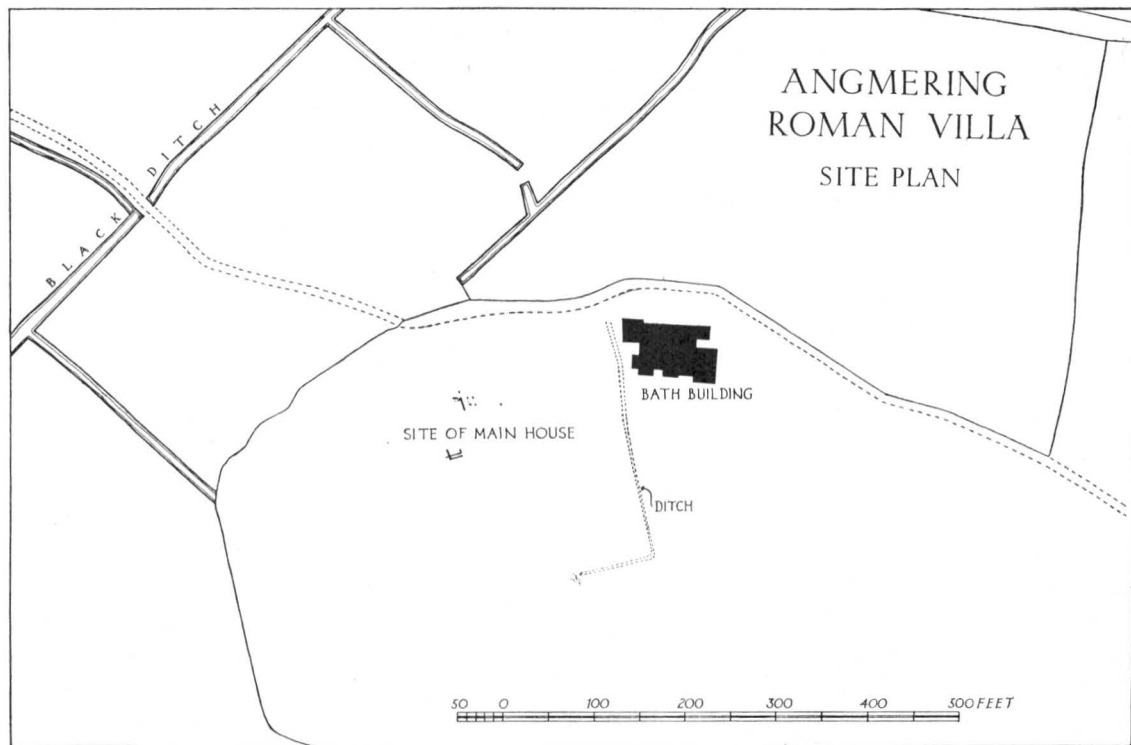


FIG. 3. GENERAL MAP SHOWING RELATIONSHIP OF BATH-BUILDING TO MAIN HOUSE. BASED UPON THE ORDNANCE SURVEY 25-INCH MAPS. SUSSEX (WEST) LXIII. 11.

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The site of the villa forms a triangular peninsula of meadow-land pointing west, bounded by two small streams, of which the northernmost, the Black Ditch, rises from a spring beyond the Decoy woods, whilst the southernmost has a subsidiary spring just south of the Common Barn, although the main source lies eastwards beyond the village of Angmering itself (see Fig. 2). These streams are now bordered by marshes, but the questions of whether the local water-level was higher or lower in Roman times and whether these streams were tidal have provoked much controversy.¹ There seems no decisive evidence geologically on either side, but, from the archaeological evidence this year, it seems certain that the streams in early Roman times flowed at much the same level as they do to-day, for the ditch bounding the baths on the north could have served no useful function if the water-level had been any higher then. The natural sub-soil of the district is chalk, which on this year's site is capped by a varying layer of Brick Earth which occasionally overlies pockets of coombe rock.

THE BATH-BUILDING²

The trial trenches of 1936-7 had laid bare again the drain mentioned by Dallaway, and had uncovered a portion of an *opus signinum* floor with a quarter-round moulding, as well as a considerable stretch of wall foundations. It was decided, therefore, to concentrate during the season 1937 on the area immediately surrounding these trenches. The building excavated proved to be a large bath-house lying on the exterior of the ditch bounding the villa proper (Fig. 3). It had been built at the beginning of the Flavian period and had lasted with some vicissitudes to the middle of the second century. It had, for the most part, been ploughed down to below

¹ Amongst others, P. M. Johnston in *Sussex A.C.*, LX. 67, and A. Hadrian Allcroft in *Waters of Arun* (1930), p. 72.

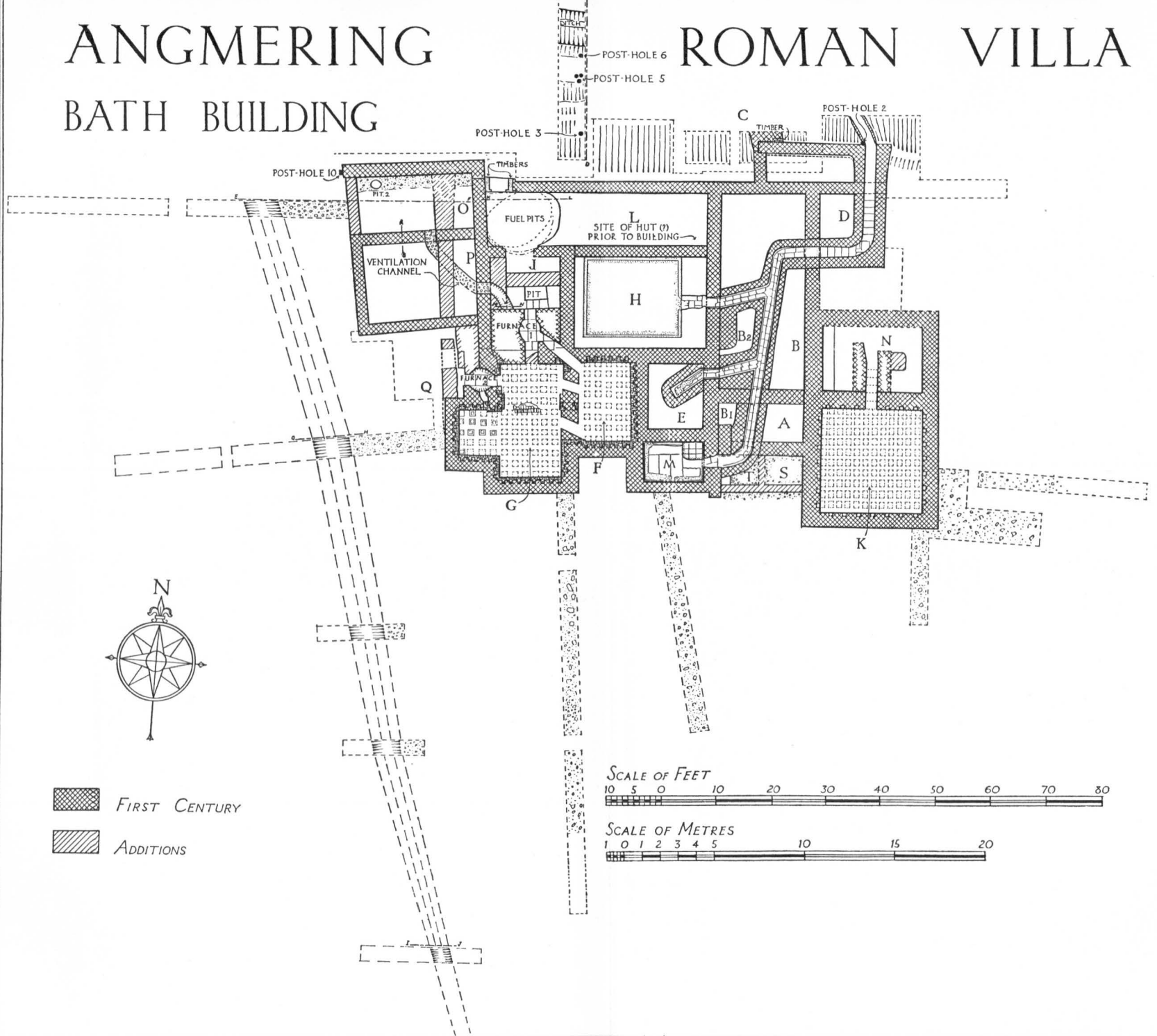
² Throughout this paper I am indebted to Sir George Macdonald's important articles on baths excavated at Mumrills and Chester, and the bath system in general, in *Proc. Soc. Antiquaries Scot.*, LXIII (1929), and *Arch. Ael.*, 4th series, VIII (1931). I have given more specific references only in particular cases.



FIG. 4. GENERAL VIEW OF BATH-BUILDING, SHOWING DRAIN ON LEFT AND COLD PLUNGE BATH ON RIGHT.

ANGMERING BATH BUILDING

ROMAN VILLA



floor-level, had served as a quarry for tiles and bricks in Roman and later times, and had suffered from the extensive trenching of 1819. Enough remained, however, to show that bathers would have entered from the south into A (Plan), in front of which, later, a partitioned room had been built, probably to provide an independent entrance for those wishing only to make use of the Sudatorium, K. A served as an ante-room to the Apodyterium, B; a long room with two smaller rooms, C and D, opening off it at the north end. C seems to have been a small veranda extension of the Apodyterium, and D may have served, perhaps, as an Unctorium (see below, p. 26). The heavy foundations in B1 and B2 buttressing the main north-south wall of the building would seem to give it strength to carry some extra weight above—perhaps a roof-tank, or tanks for swilling out the latrine and supplying the cold plunge bath. From the Apodyterium the bathers would pass into the Frigidarium, E, on the south of which was the latrine, M, and thence through the Tepidarium, F, to the Caldarium, G, which would doubtless have a bath of hot water in the western projection of the room. After returning through the Tepidarium there was a choice of procedure. Those who wished could take a plunge in the cold bath, H, whilst others could receive a cold douche from the basin, which from other analogies¹ would lie above the head of the drain in the Frigidarium. This might be followed by a visit to the Sudatorium, K, which is separated from the rest of the hot rooms and is possessed of a narrow stoke-hole very dissimilar from those of the Tepidarium and Caldarium. It has been suggested² that this difference, elsewhere, was due to charcoal instead of wood being used as fuel. It is worth noting that here wood³ and charcoal had been used as fuel in both types of furnace, but that wood was predominant when the furnace of the Sudatorium was last in use. Since, however, the building fell into disuse directly afterwards, it is need-

¹ *Archaeologia*, LIX (1905), 344, and *Arch. Ael.*, N.S. XII (1886), 126, &c.

² Macdonald, *Arch. Ael.*, 4th series, VIII, 228 f.

³ Mr. J. C. Maby has examined all the samples of this nature taken from the site. See below, p. 44, for his report.

less to emphasize that the proper working of the baths may well have been disrupted. The Sudatorium would also be used by those not wishing to spend time in the longer bath-course, who would pass directly from the dry heat there to a cold douche or plunge. Those who had followed the main course would have a second cold immersion and then return to the Apodyterium.

On the south-east, part of the north, the south, and west sides the bath-building is surrounded by a cobbled area of chalk, mortar, brick, and pebbles, very roughly laid except round the entrance on the south where there is a firmer cemented floor. This rough surface extends southwards for some 60 ft., forming a kind of bucolic palaestra, while on the west it runs down to the boundary ditch of the main house, which in the immediate vicinity of the baths has been re-cut broader and deeper to carry off the extra drainage. On the north the ground sloped away to a similar ditch; three post-holes are dug into this slope, but their purpose is as yet uncertain (Fig. 7, Section C-D).

THE MAIN HOUSE

When it became apparent that the bath-building was an entirely detached establishment, a series of trenches was dug to follow up the ditch on the west, which ran at an angle to the bath-building, in order to obtain some idea of the relationship between the baths and the main house which must have stood near-by. The ditch continued south, getting progressively narrower (Pl. I and Fig. 6) until it broadened out to a corner and turned west. After continuing in this direction for some 29 yds. it was approached by another ditch from the south.

When the ditch turned, it became obvious that the main house must lie within the area bounded by this ditch on west and south, and by the marshes on east and north. Accordingly a few trial trenches were dug, in which wall foundations appeared running north and south parallel with the boundary ditch near the bath-house (Fig. 5). They appear to belong to an outer

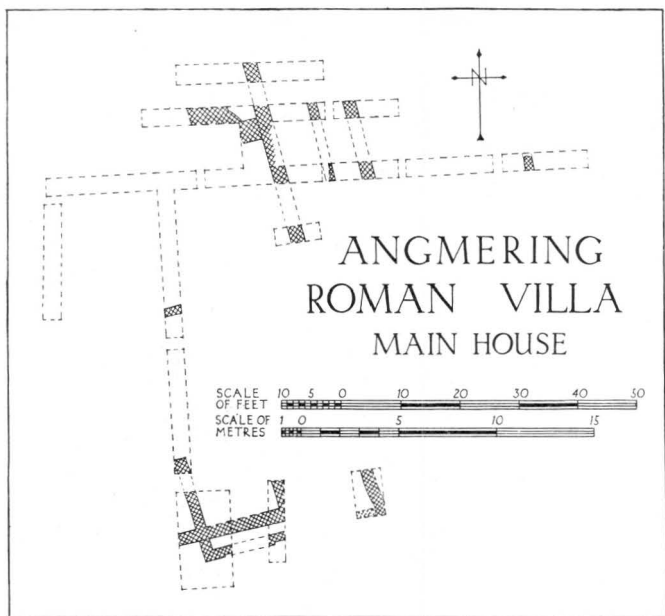


FIG. 5. PROVISIONAL PLAN.

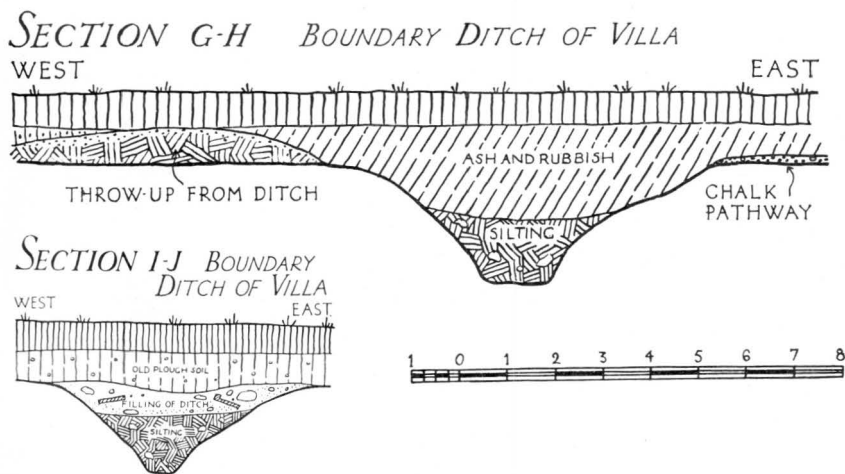


FIG. 6. SECTIONS ACROSS BOUNDARY DITCH.

quarter of the building, the bulk of which must lie farther to the south, but has not yet been completely explored.

HISTORY AND DATE OF BATHS

Evidence for the date of the building of the baths was fortunately obtained from the dumped level of Brick Earth in B. In this level, which would have been sealed by the floor of the room, were found two fragments of Samian, one of a Claudian–Neronic date (Fig. 22, 1) and the other the base of an Early Flavian Form 18. With reference to the bulk of Samian found, Dr. Davies Pryce¹ has very kindly made the following statement: 'Typologically the period of the pottery dates from the pre-Flavian (Neronic) period down to the early Antonine, but only two or three fragments can be definitely placed as late as A.D. 150–60. Most of the sigillata is of first-century date, and a number of the plain sherds appear to be pre-Flavian.' The bulk of the coarse pottery would appear to corroborate this statement (see below, p. 37). The position of the bath-house outside the boundary ditch of the main house, and lying at an angle to it (Fig. 3), would seem to suggest that it was built at a slightly later date. It might be possible then tentatively to assign the building of the main house to the Neronic or early Flavian period, c. 65–75, and the bath-house during the later part of that decade.

Indications as to the history of this bath-building are extremely scanty. It has already been pointed out that all the main floor-levels had been ploughed off, and that much of what remains has been disturbed by tile-robbers and previous excavators. Such data as can be gathered serve to illustrate the latest stages of the building. There appears to have been a general dismantling of the baths some time during the first half of the second century. The eastern part of the building seems to have been systematically levelled, and a homogeneous layer of mortar containing chalk blocks, broken tiles, and lumps of *opus signinum* lies over the whole area; all the pilae

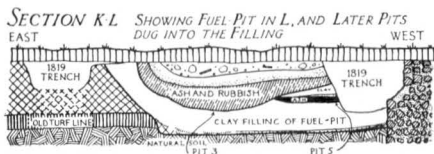
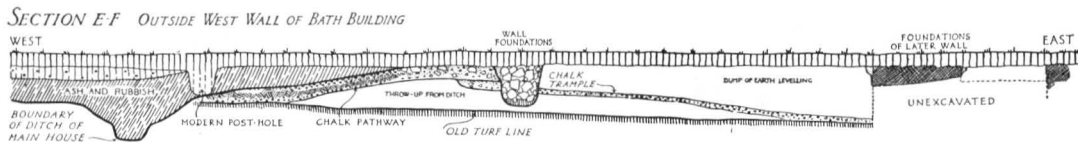
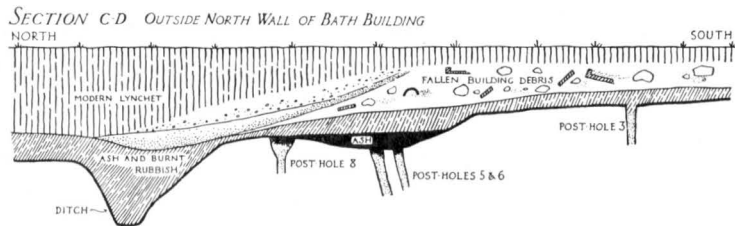
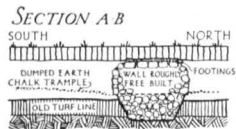
¹ I should like to express my sincere thanks to Dr. Davies Pryce for his patient examination of all the Samian from the site.

and bricks in K and P had been removed and the north wall of C scarped away. As this debris-level thinned out towards the west, a great number of chips of Sussex marble were found, many of them with a polished face, and it would seem that the architectural fittings had been removed for use elsewhere.

The western side of the baths had received rather different treatment. The tiles which supported the floor above the hypocaust in G, and some of the pilae, appear to have been removed, the broken floor falling down to cover the remaining ones. But no attempt was made here to take away the bricks of the furnaces, and the latter remained as they had been left, full of ash. Instead, some slight reconstructions were made, and the area surrounding F and G was apparently utilized as living quarters (for details see below, p. 21). This period of rather squalid reoccupation does not appear to have lasted long before the final levelling of the site. This consisted of filling up the ditches to the north (Fig. 7, Section C-D) and west of the baths and levelling the surrounding area with the hypocaust ash and rubbish which had accumulated during the occupation of the site and may have been stacked in dumps near-by. This levelling contains material from the earliest period of the bath-building until the latest, and thus provides a *terminus post quem nihil* for dating the occupation of the site. A very worn *as* of Trajan (see p. 33, no. 5) was found in this levelling and four small sherds of Castor ware (Fig. 25, no. 16). A Samian sherd of form 37, of Trajan-Hadrian date was the latest found in this association, but in the earth disturbed by the 1819 excavators in H, which there is no reason to suppose was originally other than the usual levelling material, were found Samian sherds which might be dated as late as A.D. 150-60 (e.g. Fig. 23, no. 12). Therefore the period *c.* A.D. 70-160 seems to cover the occupational history of the site.

BUILDING METHODS AND MATERIALS

The bath-building was constructed on flint foundations, while the superstructure, to judge from the relative



LMNS. 1937.

FIG. 7. SECTIONS OF BATH-BUILDING.

quantity of the materials found, would seem to have been of chalk¹ and flint. There is no evidence in this building in the shape of decayed wood, daub, or keyed clay for the walls having been carried up in timber.² A few amorphous tufa blocks were found, and it may be that they served in the roofing of one of the hot rooms.³

The flint wall foundations were packed closely into truncated V-shaped trenches dug through the old humus level, while above, the wall was roughly free-built in flint or chalk for a foot or 18 inches, and the chalk footings slightly set back on this. A layer of Brick Earth had been dumped against the rough free-built foundations in order to level and raise the interior of the rooms and to serve as a firm basis for the make-up of the floors (Fig. 7, Section A-B).

Although all the floors had been destroyed, yet some idea of their appearance could be gained from materials found in the debris of the building. The most interesting discovery was that of triangles, kite-shaped pieces, squares, oblongs, &c., of different coloured stones⁴ (Figs. 8 and 9). Pink, yellow, and dark grey stones from the Wealden series, white limestone from northern Italy, together with Sussex marble, were employed. A kite-shaped, and an oblong piece of brick were also found. Pavements of *opus sectile*, that is, composed of pieces of stone cut into shapes, and bedded in cement, is a form of flooring which appears to have been rarely found in this country. As wall-decoration it may have been used on the Basilica in London⁵ and perhaps at Woodchester,⁶ but here, however, some of the stones are much worn and there is a large hexagonal piece of Sussex marble one foot across (Fig. 9) which is certainly too heavy for a wall, but combined with triangles is a very

¹ A report by Mr. E. C. Martin on the chalk employed in the building is given below, p. 43.

² The black levelling material is full of pottery and other rubbish; it can in no way be due to a conflagration of the upper parts of the house.

³ Cf. Macdonald, *Arch. Ael.*, 4th series, VIII. 280.

⁴ The report on some of these stones is given below, p. 43, by Mr. K. P. Oakley.

⁵ In the British Museum.

⁶ *An Account of the Roman Antiquities at Woodchester* (1797), p. 9, by S. Lysons.

typical element in floors of the first centuries B.C. and A.D. in Italy.¹ At Silchester² 'a rude imitation of a pave-

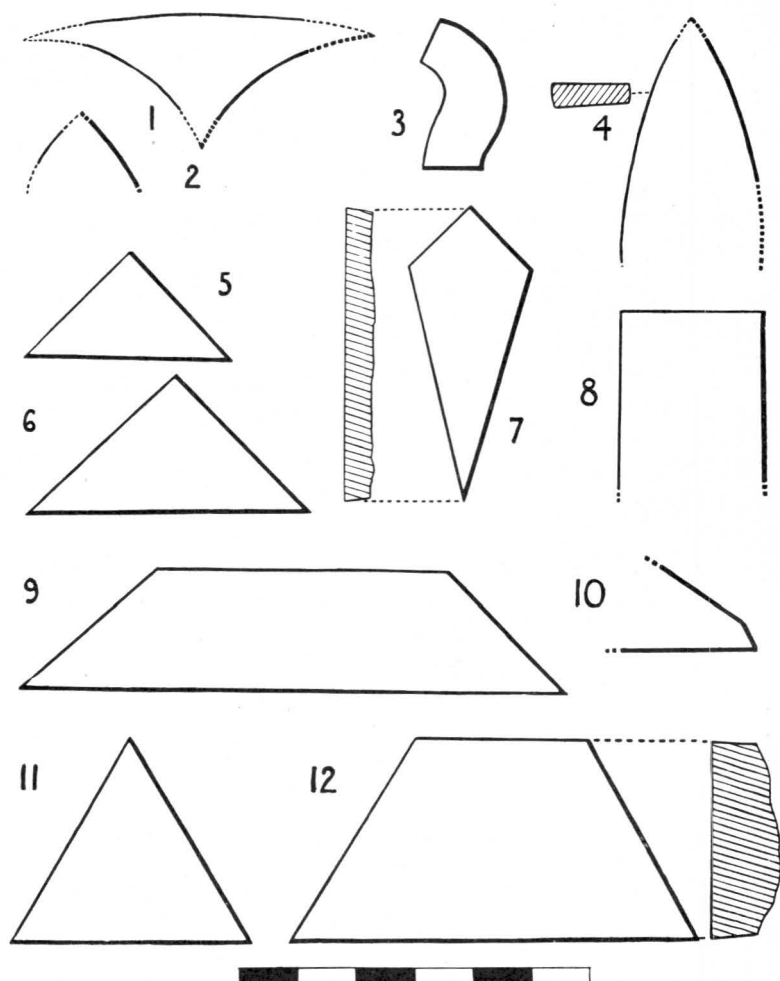


FIG. 8. OPUS SECTILE. Scale of inches.

ment of *opus sectile*' composed of hexagonal, octagonal, and diamond-shaped red tiles and tesserae was found in the entrance of House 1, Insula XXIII. At Wood-

¹ M. E. Blake, *Mem. American Acad. Rome* (1930), VIII. 49.

² *Archaeologia*, LVII (1901), 230, Pl. XXIX.

chester,¹ Lysons found slabs of foreign marble and local stone in oblong, triangular, and semicircular forms which were unfortunately not *in situ*. At Bignor² he found a chequer pattern of 6-in. black and red tiles apparently rather similar to that found at Silchester. Pieces of stone which may have formed part of pavements of *opus sectile* have been found at Colchester³ (unstratified) and at the villas at Folkestone⁴ and perhaps Ashtead.⁵

The stones found at Angmering appear to have formed pavements of two kinds. One composed of geometric patterns (see Fig. 8, nos. 5–12), mainly different coloured triangles, kite-shaped pieces, and rhomboids of Sussex marble, and the other of stones cut to form components of some naturalistic design (nos. 1–4).

Another link with Italy is the use here of grey and white tesserae only. Plain black and white—black would have been difficult to get in Sussex and the grey stones obtained from the Weald near-by are the obvious substitute—mosaics were characteristic in Italy during the early Empire.⁶ In what appears to be the only fairly complete floor of probable first-century date from this country, the mosaic found at Silchester,⁷ a border of black leaf-tendrils on a white ground is a prominent element. Comparatively few grey tesserae have been discovered in proportion to the white and one might deduce a similar pattern to that at Silchester or an all-over pattern with geometric shapes outlined in black such as was popular in the first century A.D. in Italy.⁸ The sizes vary considerably and were seldom square-cut, the main bulk of both white and dark being $\frac{1}{2}$ -in. and $\frac{1}{4}$ -in. cubes, or $\frac{1}{2}$ -in. squares, an inch deep.

¹ *Woodchester*, p. 9.

² S. Lysons, *Reliq. Brit. Rom.* III. 4.

³ In the Colchester and Essex Museum.

⁴ S. E. Winbolt, *Roman Folkestone* (1925), p. 109.

⁵ Kindly communicated by Mr. A. W. Lowther.

⁶ Blake, *op. cit.*, concerning Pompeii, p. 78: 'Although the early type of polychrome paving was undoubtedly laid during the Roman period, mosaics of black and white, often in elaborate geometric designs, are much more characteristic.'

⁷ *Archaeologia*, LVI (1899), p. 245, Pl. XIV.

⁸ Many small white, and a few grey tesserae were found by Mr. A. W. Lowther in a Flavian horizon at the Ashtead villa.

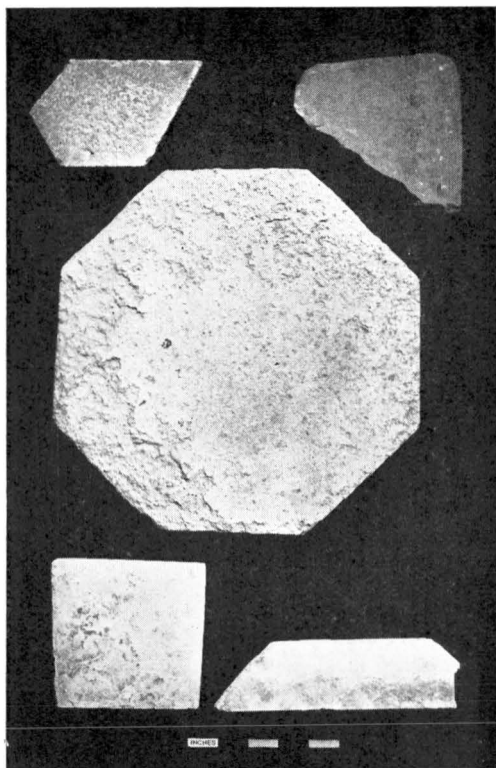


FIG. 9. PIECES OF *opus sectile*. THE OCTAGON IS OF 'SUSSEX MARBLE'.

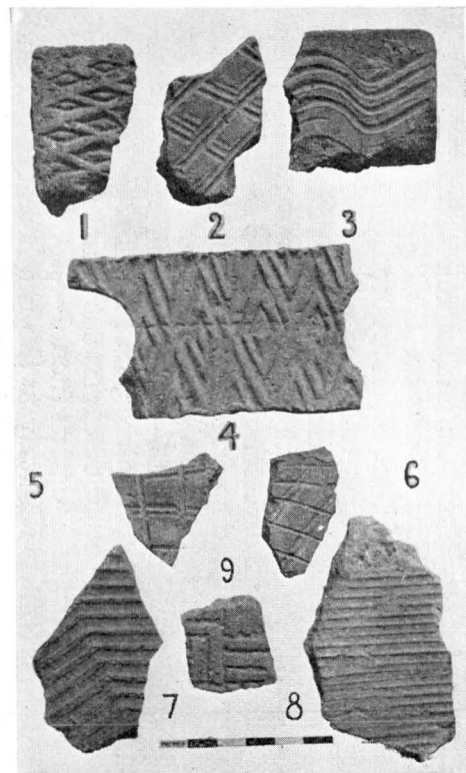


FIG. 10. PORTIONS OF FLUE TILES ILLUSTRATING PATTERNS EMPLOYED. Scale of inches.

This bath-building at Angmering, then, exhibits some peculiarities when compared to standard Romano-British building in the first century. Its superstructure was probably of chalk and flint, although prior to the second century timber seems to have been the normal building material. It possesses, too, *opus signinum* floors, another rarity prior to the second century,¹ and contains materials for two styles of floor-decoration unusual in this country although characteristic of the same period in Italy. It would seem, therefore, that perhaps a point could here be added to Haverfield's remark: 'The inhabitants of the villas were so far as we can tell Romanised natives of Britain. Here and there a settler from Gaul or even from Italy may have found his way to the Island and acquired landed estate. There is, however, a singular absence of proof or indication of any such thing.'² Here, if anywhere, are indications of the foreign settler—certainly of the foreign builder, importing Italian material and eking it out with local substitutes during the first generation of the Roman occupation. The site is appropriately only twelve miles from Chichester, where the famous dedication of the Temple of Neptune and Minerva, the inscription set up to Nero, and the coins and pottery testify to extensive romanization in early post-Conquest times. It is hoped that the excavation of the bath-building will be followed by the uncovering of the main house. Trial trenches suggest that this has in fact been destroyed below floor-level, yet the plan and constructional details may alone suffice to emphasize the individuality of this early and little explored phase of rural settlement.

DETAILS OF BUILDING

Bricks and Tiles.

Very large bricks measuring 24 in. by 17 in. by 2½ in. had been used as flooring in all the stoke-holes, but the

¹ But cf. *Verulamium Report* (Soc. Antiquaries of London), XI (1936), p. 142, though apparently not true *opus signinum*. Wheeler, *J.R.S.* xxxii (1932), p. 127.

² *Roman Occupation of Britain* (1924), p. 232, quoted and endorsed by R. G. Collingwood in *Roman Britain and the English Settlements* (1936), p. 215.

two sizes in ordinary building use were 15–16 in. by 11 in. by $1\frac{3}{4}$ in. and 14–15 in. by 10 in. by $1\frac{3}{4}$ in. Two bosses were found on many of these bricks, usually set in diagonally opposite corners, but sometimes two bosses were found at one end. These bosses were put on when the clay was still soft enough to take the imprint of a dog's paw. A slight hollow had been scratched in the

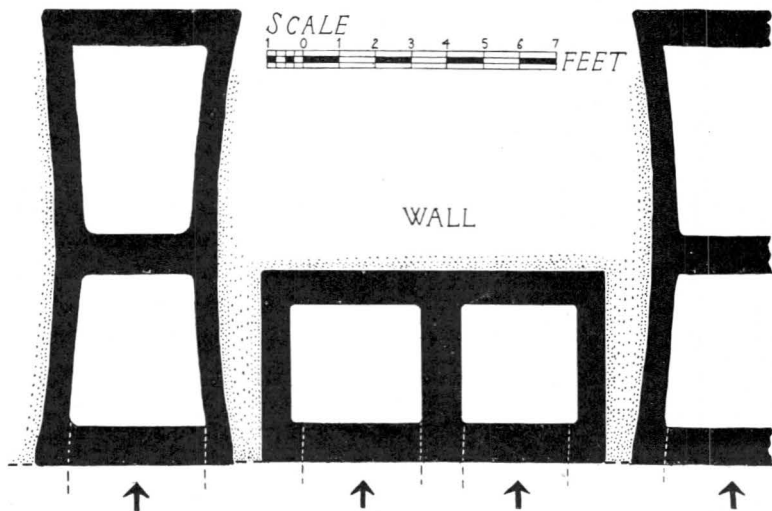


FIG. 11. PLAN SHOWING POSITION OF FLUE TILES IN CALDARIUM.

clay with the fingers and the extra dab probably attached with a slip.¹

The roof appears to have been of the imbrex and tegula type as would be expected in a chalk country.

The flue tiles of the bath-building also claim attention. The ubiquitous square box-flue is outnumbered here by the long flat-ended slightly hour-glass form divided into two by a partition down the centre, and another double form which is like two box tiles placed side by side. In the Caldarium, where flue tiles are *in situ*, it can be seen that the two forms are placed alternately

¹ The most likely suggestion as to the purpose of these bosses is that they facilitated the necessary air-passage between the tiles when stacked in the kilns. Even a single boss, such as found at Verulamium (*Verulamium Report*, p. 41), would have been sufficient for such a purpose.

(Fig. 11), and one long face next to one short face is presented to the room. These faces are also decorated with alternate patterns impressed on them presumably with a wooden stamp, but the other faces of the tiles bear the ordinary scabbled and scored patterns for keying the mortar. Types of both stamped and free-hand patterns are shown in Fig. 10. Although potteries still flourish at Poling and along the line of the London Clay and Reading Beds at the southern edge of the Downs, the stamped patterns found are of a common and widely diffused type, and no evidence of a tile industry attached to the house has yet been found.

Heating System of the Tepidarium and Caldarium (Pl. I).

The first plan for the heating of the two rooms was the construction of an oval-shaped furnace on the north side of G. A narrow flue passed eastwards into F, whilst a broader one carried the hot air straight into G. This single furnace does not seem to have been a success; in fact, it is difficult to see how the farther parts of the Caldarium could ever have obtained enough heat. So an additional furnace of a similar form was constructed on the west side of G. In this, the main flue led out into the major portion of the room, while a small subsidiary one led the heat to the projection on the west. At the same time the level of the first furnace seems to have been raised, and the western flue blocked, although the hot air could still circulate freely between the two rooms by means of the slanting passages through the partition wall. Behind the original furnace was a fuel-pit dug in the natural soil, and beyond this a doorway through into another pit in L. The floor of the latter pit was burnt red in patches and was intermittently covered with a thin layer of charcoal. It may have acted as an auxiliary wood-store, and the timbers which passed through the north wall of L may have served to support steps which would appear to have formed the main means of entrance to fuel-rooms and stoke-hole. The tiled wall flanking the second furnace on the north was composed of broken pieces of brick, tile, and flue tile,

laid carefully in courses and set in yellow clay.¹ A hollow in the ground behind the furnace served as a fuel-room. About the same time as the reconstruction of the first furnace the ash in the fuel-room J was partially cleared and two tiled wings were added, forming a built-in pit for fuel instead of the original hollow in the ground.

At some time after this a period of decay set in (see also above, p. 12). G fell into disuse, many of the pilae were removed, and the supporting tiles of the floor above apparently also, for a layer of broken cement covered the hypocaust floor and the remaining pilae. The second furnace and the fuel-pit behind it had also been left full of ash, but after the accumulation of a certain amount of debris both had been carefully filled in with clay and broken tiles, and a course of flint footings laid across the filled-in fuel-pit apparently to support some flimsy superstructure. It appears that an attempt was made to keep F as a living-room, although G was in a state of disrepair; for the debris lying on the floor of the latter was cut back and a load of clay dumped to block the air channels leading from F to G. The pilae of F were removed, and a trampling of red clay, similar to that used for the blocking, appears fairly uniformly overlying the remains of charcoal on the hypocaust floor. This period of reconstruction would coincide with the last reorganization of the first furnace area. The fuel-room J, and the entrance into L, were filled up with a rubbish levelling for a roughly built wall, which effectively denies the working of the furnace. Slightly later again, the old fuel-pit in L, which had been partially filled in, had been lined with clay and used as a cooking-pit, until it, too, was sealed with clay, through which again a pit was dug (Fig. 7, Section K-L). The semi-squalor evidenced in this part of the building appears only to have lasted a short time before the final levelling of the site (see above, p. 13). The only trace of later occupation is a short stretch of chalk wall-footings set a

¹ Vitruvius, *De Architectura*, v. 10, advises the use of *argilla cum capillo* as a substitute for mortar between the bricks of the pilae, and also for the upper joints of vaults connected with hot rooms. It is noticeable that here clay is used in the pilae, in the furnace, and in the brick cheeks on either side.

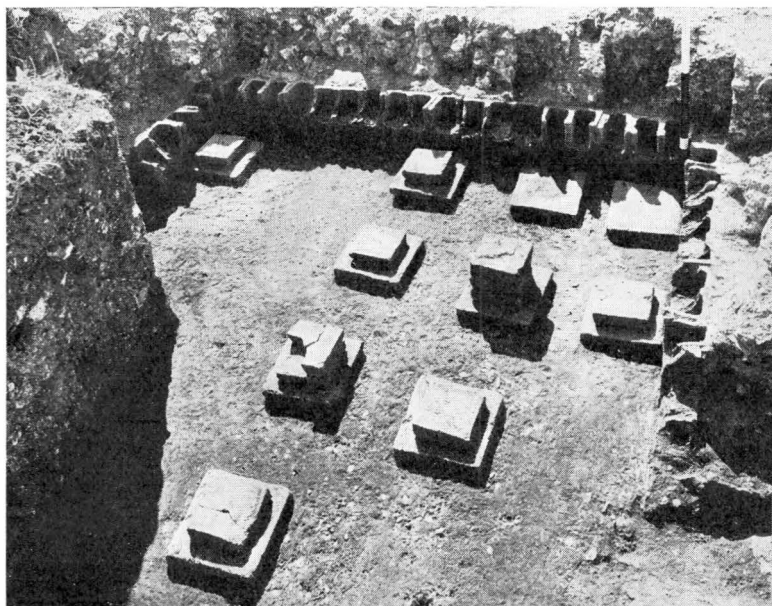


FIG. 12. WESTERN PROJECTION OF THE CALDARIUM, G, SHOWING JACKETTING OF FLUE TILES AND PILAE BASES.



FIG. 13. FURNACE 1, SHOWING ORIGINAL FLOOR SURFACE.

foot above the floor in G. Everything above and around it has been disturbed by 1819 antiquaries.

The Ventilating Channel.

Certain channels whose purpose appears to have been to carry warmed fresh air into the rooms above the hypocausts have been recognized by Sir George Macdonald at Mumrills, Chester, and elsewhere.¹ For this purpose, one end of the channel was placed well beyond the reach of smoke or fumes from the wood burnt in the furnaces, and was probably closed by an adjustable damper. Its course would then run under the stoke-hole and under the floor of the hypocaust. The air, now warm, would pass up a flue in the wall and be admitted as was necessary into the room above. So much for theory, but in practice the ventilating channels which have been examined up to date appear soon to have become obsolete, and have been rendered useless by changes and additions in the building plan, and the method of working the original system has been obscured.

Unfortunately, the portion of channel in the present building (almost certainly to be included in the above category, does not throw more light on the problem. Here a channel cut through the natural soil led down from the wall dividing O and P (see Pl. I), which spanned it with an arch, through another arch, and then disappeared under the cheek of the first furnace. No trace has yet been found of a flue to carry up the warmed air on the opposite side of the caldarium, but this absence was not unexpected, for apparently the channel had never been in use at all. The whole of its course had been blocked with loose clean flints, as can be seen in Section M-N, Fig. 14; these flints must have been thrown in and levelled before the thick layer of cement was laid which underlies the cheek of the stoke-hole. The dumped level of Brick Earth, also, in O runs right up against the northern face of this flint blocking, and a trampling of the same soil lies above it. The stratifica-

¹ *Arch. Ael.*, 4th series, VIII (1931), 283 ff., and *Proc. Soc. Antiq. Scot.* LXIII (1929), 483 ff.

A and B. The floor-levels of these rooms had been destroyed and nothing remained except the levelling dump of Brick Earth on top of the old humus.

C. The actual purpose which this room served in the bath-building it is impossible to say. It appears so far merely to be an extension of the Apodyterium. The north wall and half the room filling has been scarped away by the Roman destruction level (see above, p. 13). But on the north-west a block of masonry of as yet unknown purpose joins the north wall, leaving a recess where a timber would support the corner of the presumed veranda room.

D. No levelling dump of Brick Earth seems to have been laid in this room. It was filled down to the shallow trampled level contemporary with the building of the foundations, with the building debris which represents the decay and destruction of the house in Roman times. This room, then, had perhaps had a paving on a lower level than the rooms round, which had been removed when the building was dismantled (see above, p. 12). Possibly it served as an Unctorium.

H. It served as the cold plunge bath, and was therefore surrounded on three sides by double breadth of walling, which would be carried up to support a promenade for the bathers. It was drained by sub-drain 1, but here again the wall of the bath has been broken at that point, so that the actual channel leading from one to the other has disappeared. The *opus signinum* floor has a quarter-round moulding at its edge which had been first painted entirely with red, and later received a roughly applied coat of white plaster. Originally, too, the remaining portion of the wall above it had a border of red stripes running round it, and judging from fragments was then carried up to the top in plain red. The wall also had been covered with a coarse coat of white. Many fragments of coloured plaster, green and blue, red and yellow, red on buff, and red on white came from the level of Roman destruction in this room, and from the level left by the 1819 antiquaries which lay above it. Possibly, too, the promenade had had a paving of *opus sectile*, as a

large portion of the stones came from this room and the adjoining disturbed levels.

M. *M* appears to be a rather elaborate type of latrine.¹ It is an oblong room with an *opus signinum* floor, on which are marks where partitions have stood (Figs. 15 and 16). In the north-east corner is a sump, originally tiled, and the whole room is surrounded by a gutter 6 in. deep. As in the cold bath, *H*, there has been a second, and coarser plaster facing added on top of the original white-faced surface. The gutter on the north has been filled in by this second plaster coating. The more usual type of latrine² seems to have consisted merely of a gutter, above which may have stood a row of seats; here, though, it is evident that the room was divided up by partitions on the south side, while the sump only would have been covered. The whole floor-level was below that of the other rooms, and was drained by the head of the main drain, although the runaway is not now clearly defined.

L. The west end of *L* has been dealt with in discussing the heating system of *F* and *G*. The remainder of the room merely shows the dumped level of Brick Earth overlying the old humus. The top of the latter contained in the south-east corner a few Roman sherds and pieces of daub, and it would seem that a small hut had stood here, perhaps during the building of the main house.

K. The floor of the hypocaust of the Sudatorium was of *opus signinum* and the walls contained 8-in. square recesses for flues which reached to within 6 in. of the floor (Fig. 17). The eastern cheek of the stoke-hole had been roughly buttressed at some time during its use, but both these rooms were completely filled with the building refuse of the Roman destruction period.

O and P. *O* seems first to have been in use as an open-ended shed probably for storing materials needed in the bath-building, wood, oil, &c., and it was not until later that it was closed by a wall of which only the rough flint

¹ I have not been able to find any similar example in this country.

² For example, at Lydney, Caerwent, Silchester, &c.

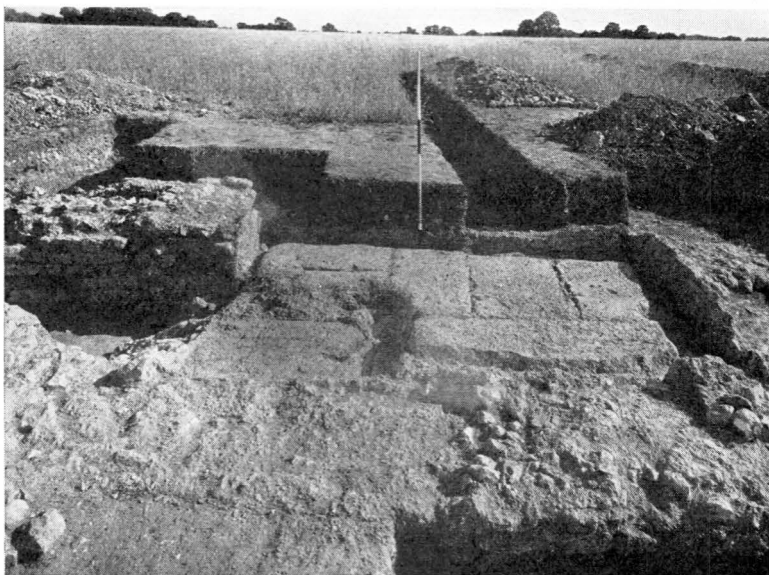


FIG. 15. LATRINE, M, WITH SUMP AND HEAD OF MAIN DRAIN ON LEFT.

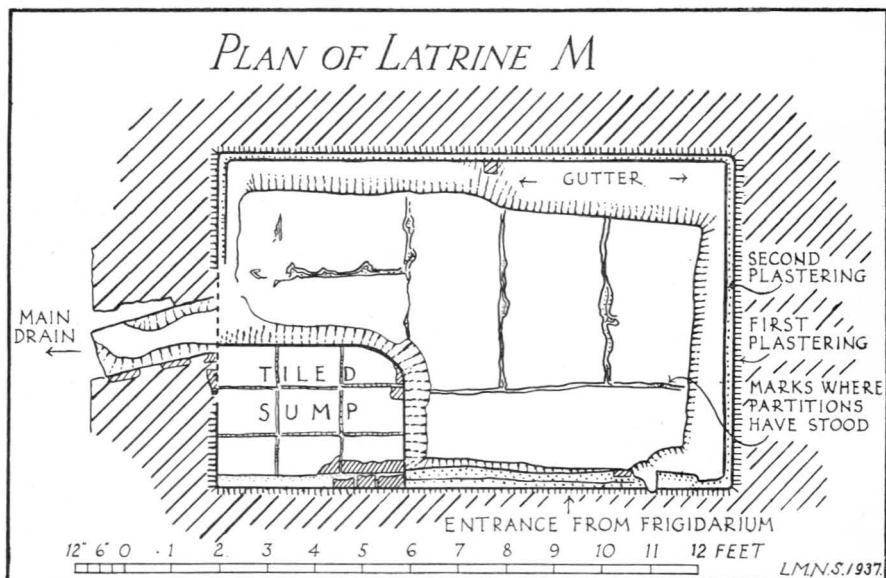


FIG. 16.

foundations now remain (Fig. 7, Section E-F). An uneven chalk-paved floor, now visible only on the north, originally sloped up over the dumped level on the south, and was contemporary with the use of the area as a shed. Another layer of Brick Earth had been laid above it to form a level floor, when the wall was added. P showed only the dumped levelling of Brick Earth above the old humus.

A later wall running north and south had divided O and P into two. This wall was roughly built on shallow foundations (Section E-F). Since O and P seem to have served as storage rooms, it is not unlikely that it served as the revetment wall for platforms at the east end of the two rooms.

Drainage System (see Pl. I and Figs. 18, 19).

The head of the main drain lies at the outlet of the latrine. Then, turning north, it runs straight until it has been joined by sub-drain 1, which carries away the water from the basin in the Frigidarium, and sub-drain 2, which drains the cold bath. The walls, constructed of chalk blocks approximately 6 in. by 4 in. originally plaster-faced, had been carried over to form a vaulted passage about 4 ft. high and 1 ft. broad (only the shoulder of the vault now remains), but where the main walls crossed the drain the latter was spanned by a brick arch. The southern part of the main drain, and the two sub-drains were paved with bricks laid in couples side by side lengthways, but the northern end of the main drain had a flooring of *tegulae* set with the raised edges down. The actual point of junction of the two styles was sealed by cement. The angle between floor and walls had a bevelling of plaster, and where the full force of the combined drains would have struck the eastern wall at the last corner, the latter had been reinforced by bricks set in a curve, so that the sewage could be carried away smoothly, leaving no backwater there. Outside the building a shallow channel, lined with puddled chalk, served to carry away the drainage, and from the number of large pieces of tile and brick lying above the filling

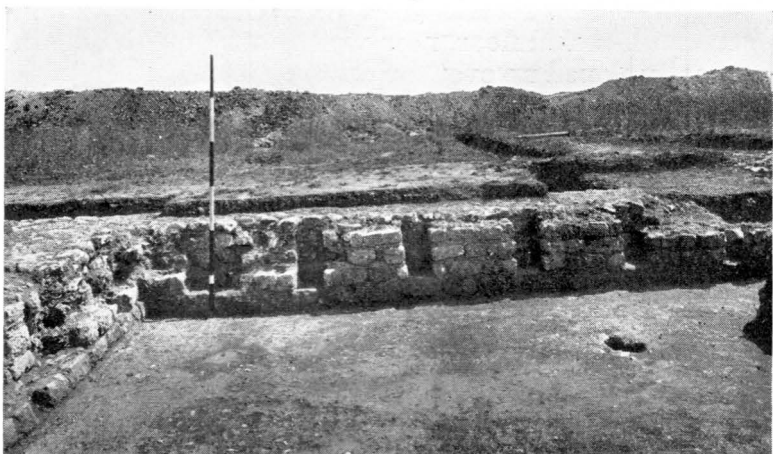


FIG. 17. NORTH-EAST ANGLE OF SUDATORIUM, K, SHOWING NICHES FOR FLUE TILES.



FIG. 18. COLD PLUNGE BATH, H, WITH SUB-DRAIN LEADING OUT OF IT.

of this channel, it would appear that these, laid across some wooden support, served as a covering. The farther course of this channel northward has not yet been followed up.

SMALL OBJECTS (Figs. 20, 21)

1. Bronze brooch derivative of the 'Swarling' type. *Verulamium Report*, Fig. 44, 22, 24. First and early second century. Found in a similar level to 2 and 3.

2 and 3. Bronze brooches of the so-called 'poor man's type'. These are characteristic of the second half of the first century A.D. See *Verulamium Report*, p. 204, Fig. 43, 1 and 2. Both were found in the rubbish of the latest levelling of the site (see above, p. 12).

4. Bronze stylus with rounded blunt end. From a similar level to 2 and 3.

5. A pair of bronze forceps decorated with a silver band near the terminal knob. Found below the throw-up of the ditch north of the building and therefore probably to be dated to the late first century.

6. Part of bronze bracelet with grooved terminal. Similar level to 2 and 3.

7. Fragment of bronze wire chain. Possibly an attachment of a steel-yard weight. Compare *Third Richborough Report* (Soc. Ant. London) VII (1928), (Pl. XIV and p. 82). Unstratified.

8. A bronze fish-hook with the barb broken off. It has a flattened triangular head for line attachment. This was found in the dump levelling of Brick Earth contemporary with the building which may well have been obtained from the banks of the streams near-by. Cf. *Wrocester Report* (Soc. Ant. London), IV (1914), p. 33, Pl. XXI.

9. Globular head of a bronze pin. Unstratified.

10. Bronze and lead bolt of 'tumbler' lock. Cf. *Roman London*, London Museum Catalogue, No. 3, Fig. 17, 2. In a level similar to 2 and 3.

11. Oval blue glass intaglio with scene of male figure seizing recumbent female figure by the hair. Unstratified.

12 and 14. These two objects are similar in that both are made of bone and have a hole bored through one side. But one end of 12 has been fractured, leaving merely the top of another hole below the double groove above the break. The other half of 14 has also been broken away. Similar bone objects from Roman sites are to be found in some quantity in museum collections¹ and are illustrated in various publications.² From specimens which I have been able to examine

¹ e.g. The British Museum, Department of Greek and Roman Antiquities, Roman Britain Room, and at the Colchester and Essex Museum.

² Sir H. Dryden in *Pubns. (Quarto) Camb. Antiq. Soc.* (1845), Pl. 2, Fig. 7, p. 17. L. Coutil, *Archéologie Gallo-Romaine, Franc et Carolingienne du Département de l'Eure*, IV (1921), Fig. 106, nos. 60, 61.



FIG. 19. MAIN DRAIN SEEN FROM THE NORTH. SUB-DRAIN ENTERING FROM COLD PLUNGE BATH ON THE RIGHT.

they have the collective attributes of polished exteriors and unworn and eccentric interiors. The type which has two or three sets of double grooves round it usually has two holes, occasionally one, and some illustrated examples appear to have none at all. The shorter ungrooved type has usually a single hole.

These objects have been variously described as bone hinges,¹ toggles,² parts of flutes,³ *sifflets des morts*,⁴ and furniture fixtures.⁵ None of these categories is, however, very apposite, for obvious reasons, either on account of structure or provenance or number. The question must remain as yet undecided with the hope that future excavation may throw more light on the use of these common objects.

13. Spindle-whorl made of the dome-shaped half of a hollow flint pebble. From a similar level to 2 and 3.

15. Neck of a jug of pale green glass. Unstratified. But compare *Roman London*, Fig. 42, 8, where a similar type is noted as a characteristic shape in the early second century.

16. Sherd of Castor ware to illustrate latest ware in use on the site.

17. Graffiti on a small sherd of Poppy-head ware.

18. A usual type of bone knife-handle with incised criss-cross decoration. Cf. *Second Wroxeter Report* (1913), Pl. ix, 5. From similar level to 2 and 3.

19. A small palette ($3\frac{1}{8}$ in. by $2\frac{1}{4}$ in. by $\frac{1}{2}$ in.) of white Italian limestone (see below, p. 43). Cf. *Roman London*, Fig. 201. In a similar level to 2 and 3. Unillustrated.

20. A melon-bead of pale blue faience. From Roman destruction level in K. Unillustrated.

21. An oblate green glass bead. Similar level to 20. Unillustrated.

REPORT ON COINS

BY DEREK F. ALLEN, *Department of Coins and Medals,*
British Museum

1. Vespasian. Mattingly and Sydenham, *Roman Imperial Coinage*, II. 740.
2. Domitian. Ibid. II. 349.
3. Domitian.
4. Domitian. Ibid. II. 395.
5. Trajan. *As* of uncertain type, A.D. 98–117.

¹ Discussion by M. Beule in *Revue des Deux Mondes*, LXXXVII (1870), 618–19.

² British Museum Guide, *Roman Britain*, p. 49.

³ Dryden, *op. cit.*

⁴ F. Baudry and L. Ballereau, *Puits Funéraires, Gallo-Romains du Bernard (Vendée)*, (1873), p. 322 f.

⁵ Dept. of Greek and Roman Antiquities, case label.

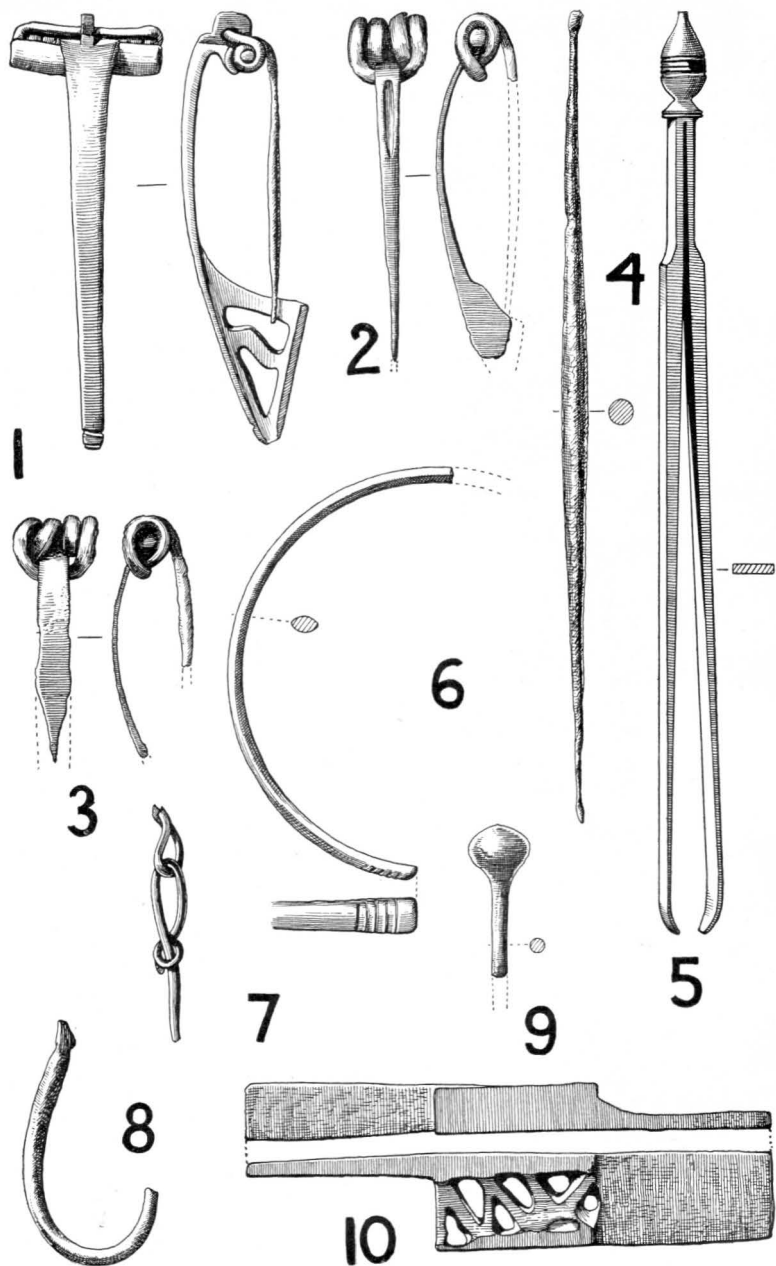
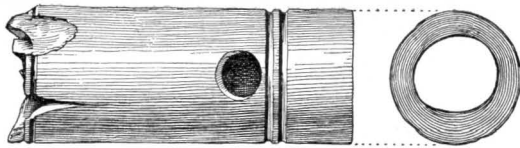
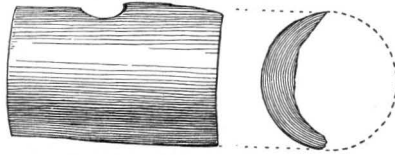
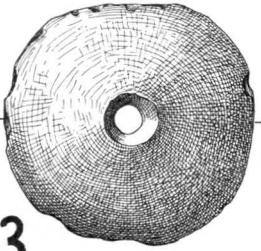


FIG. 20. BRONZE OBJECTS. *Actual size.*

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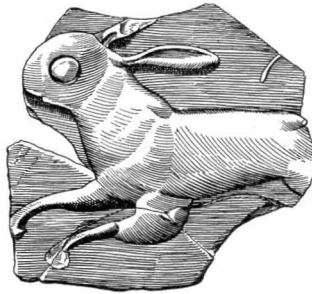
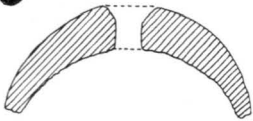


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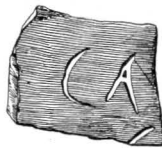
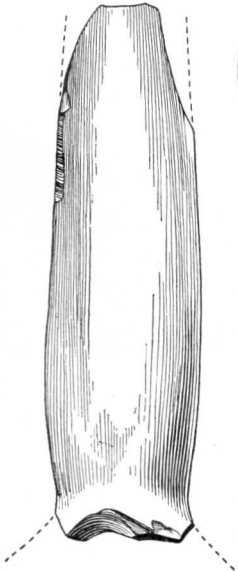
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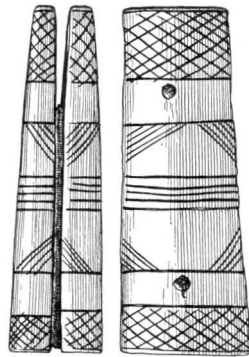


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17



18



FIG. 21. MISCELLANEOUS SMALL OBJECTS. *Actual size.*

REPORT ON THE SAMIAN POTTERY

BY J. A. STANFIELD

Fig. 22.

1. Fragment of a rare shape of dish of which an example has previously been found in London (*vide* 'Unusual Forms of Terra Sigillata', *Arch. Journ.* LXXXVI (1929), Fig. 4, 13). The present dish would appear to be a little later in date, the glaze being darker, say, Claudius-Nero.

2. Ritterling 12 of the larger size. The lip rises externally very little above the flange and the internal convex moulding is deep and well marked. Date: Nero.

3. Form 29, upper frieze, showing part of a panel composed of diagonal wavy lines, a common feature in Flavian times. Date: Vespaian.

4. Form 18, stamp only, reading O)F SEVER(I. Date: Vespaian.

5. Form 15 of the larger size, the profile of the upper wall differing slightly from that of the smaller size which is generally straighter and less everted. Date: Nero.

6. Form 27, the footstand high and well formed and the external groove well marked and therefore of fairly early date. Nero.

7. Ritterling 14, the lip much turned inward. Date: Vespaian.

Fig. 23.

8. Fragment which may be either form 37 with a flattened base (and many Trajanic bowls of this form are so flattened near the footstand), or 29/37, the section suggesting that the latter shape is perhaps the more likely. The date of the fragment is, however, not in doubt, because of the wavy line at the base of the design, a feature not used after the time of Trajan. The lioness (Déch. 799), although used at a later date, was much more common during the reigns of Trajan and Hadrian, and it is noteworthy that it also occurs on Nos. 13 and 15. Date: Trajan.

9. Walters 81 with a much everted rim. Date: Hadrian-Antonine.

10. Form 37. Wavy lines both above and below the ovolo are not confined to South Gaulish practice, but are occasionally seen on Gaulish ware of the date of this fragment. The small ovolo is similar to those occurring on the earlier bowls of ATTIANVS and SACER. Date: Trajan.

11. Form 37. The Bacchus (generally similar to the series Déch. 301 to 304, but without panther and staff) is especially a Trajanic figure and constantly occurs on pottery in the styles of IOENALIS, RANTO, and others. The lion (Déch. 766) was also first used in the period Domitian-Trajan and occurs on Form 29 in the style of SACER in the Guildhall Museum, London, and though continued during the reign of Hadrian, gradually drops out of use. The wavy line at the top of the fragment should be noted. Date: Trajan.

12. Form 37. Scroll design with the hare, Déch. 950a, in a horizontally divided concavity of the meander. This hare is so common

as to be of very little value for dating purposes, but the small free objects to the right and left of the fragment occur on pottery in the style of the Trajanic potter RANTO. Nevertheless, this piece cannot be earlier than Hadrian.

13. Form 37. Here again is the lioness Déch. 799 of No. 8, though from a smaller stamp, in conjunction with an animal (Déch. 969 *ter* but smaller), used by the potter DRVSVS. Date: Trajan-Hadrian.

14. Curle 11, uncommonly shallow. A small trace of barbotine decoration remains on the flange. Date: Trajan-Hadrian.

15. Form 37. The lioness, Déch. 799, appears yet again, this time with a cock (Déch. 1025 reversed) first used by several Trajanic potters. Date: Trajan-Hadrian.

POTTERY

The pottery published here is mainly from the levelling strata of the bath-building which contained material from the earliest to the latest periods. It is then illustrated as a group, *c.* A.D. 70-160. Fig. 24.

1. Dish of Belgic ware, whitish-grey core with polished dark grey slip. The shallow curve and probably functionless foot-ring would suggest a mid-first-century date.

2. Smoothed buff dish with strongly incurved rim, low footstand, and raised base. A similar dish of Belgic ware was found in the Claudian well at Margidunum, *J.R.S.* XIII (1923), Pl. x, 5.

3. Upper part of a jar of gritty grey ware, with rolled rim. Cf. *Roman London*, Fig. 54, 1. Probably pre-Flavian.

4. Grey cooking-pot with high cordoned shoulder and everted rim. The type is derived from the Belgic form and is dated up to the third quarter of the first century A.D. Cf. T. May, *Pottery found at Silchester, Reading* (1916), Pl. LXXVIII, 6.

5. A pot of similar shape to 4, but of fine red ware with smooth dark grey slip, and cordon below the neck. Here technique as well as shape are in the native tradition.

6. Upper half of a gritty red-buff bead rim pot with grey slip. It is unlikely that this form lasted beyond the third quarter of the first century A.D. At Richborough (III, Pl. xxxv, 242, 243) the type is found in a Claudian context.

7. A dish of coarse grey ware, decorated with lines of burnishing. Similar dishes have been found at the Belgic Verulamium, *Verulamium Report*, Fig. 22, 15, and Fig. 23, 12.

8. Carinated bowl of grey ware, with horizontally grooved outer surface, and grooved everted rim. The decoration is reminiscent of the native combed ware.

9. Small grey pot with rim grooved for lid.

10. Open bowl of sandy orange ware with everted rim, probably hand-made. This sherd was stratified as the earliest ware on the site, since it was found with pieces of daub on the old ground surface sealed by the dumped level of Brick Earth in L.

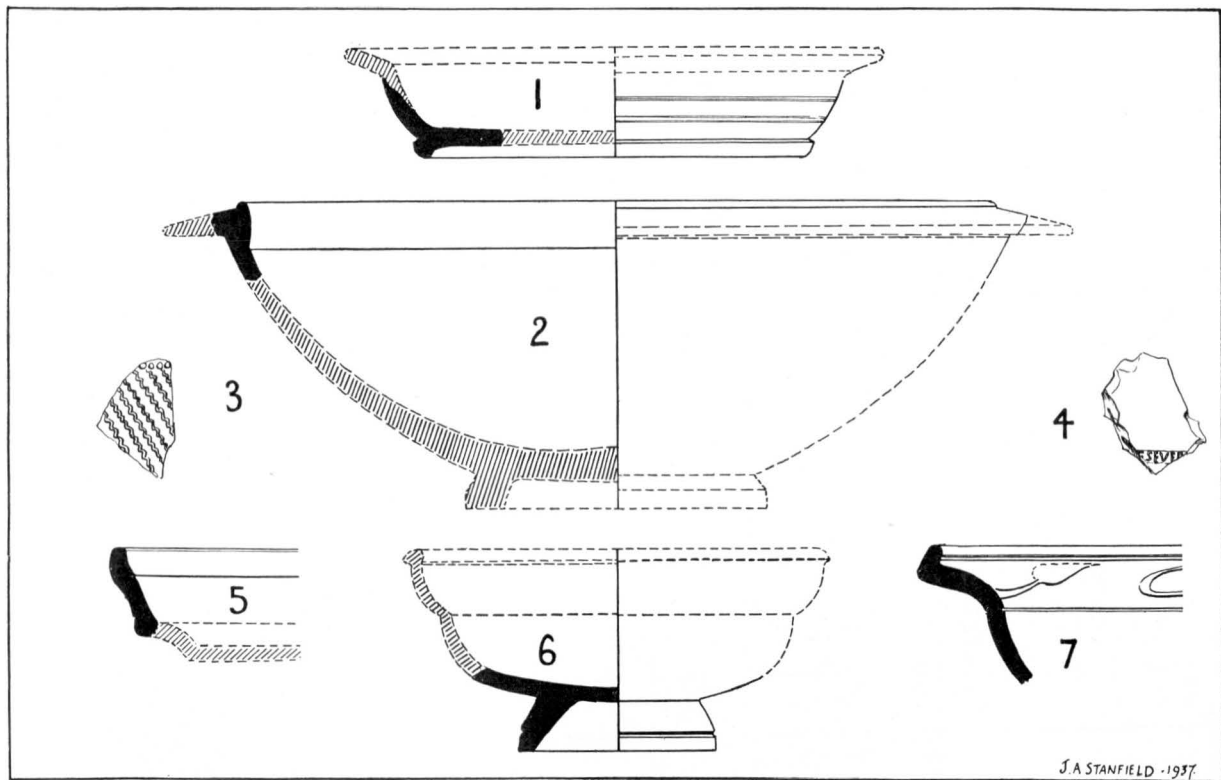
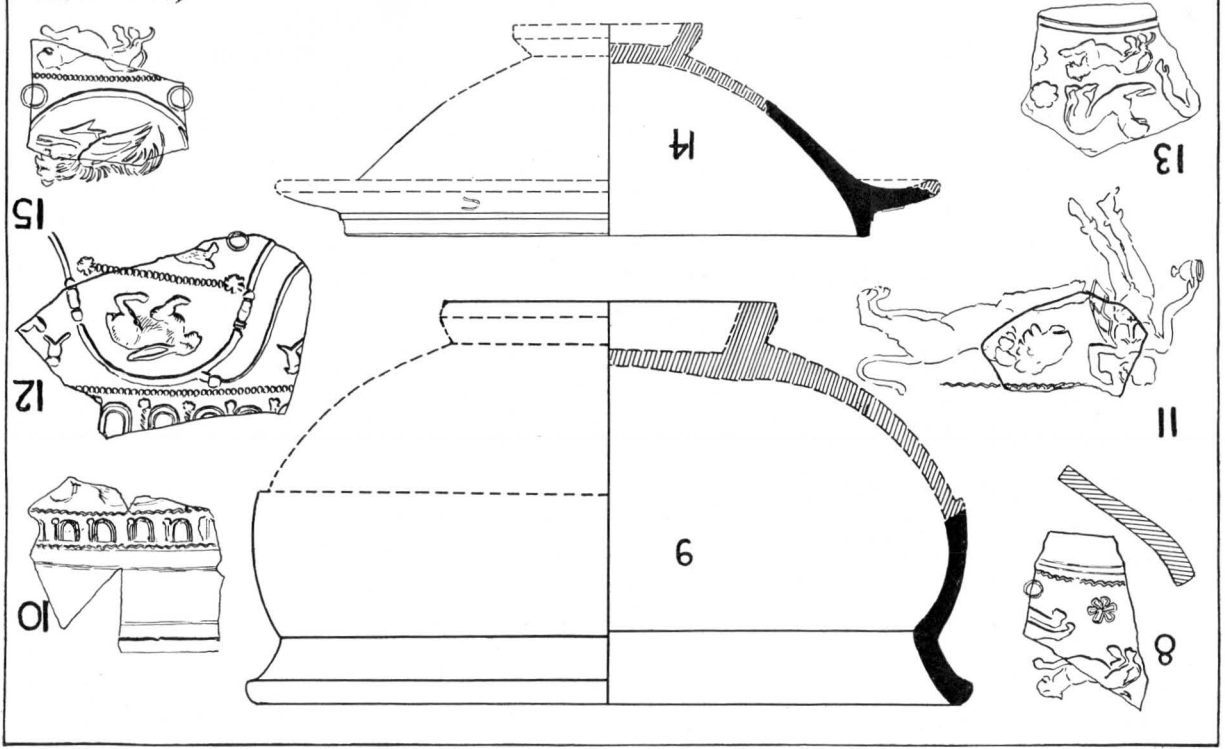


FIG. 22. SAMIAN. $\frac{1}{2}$.

J. A. STANFIELD · 1937

FIG. 23. SAMIAN. 3.

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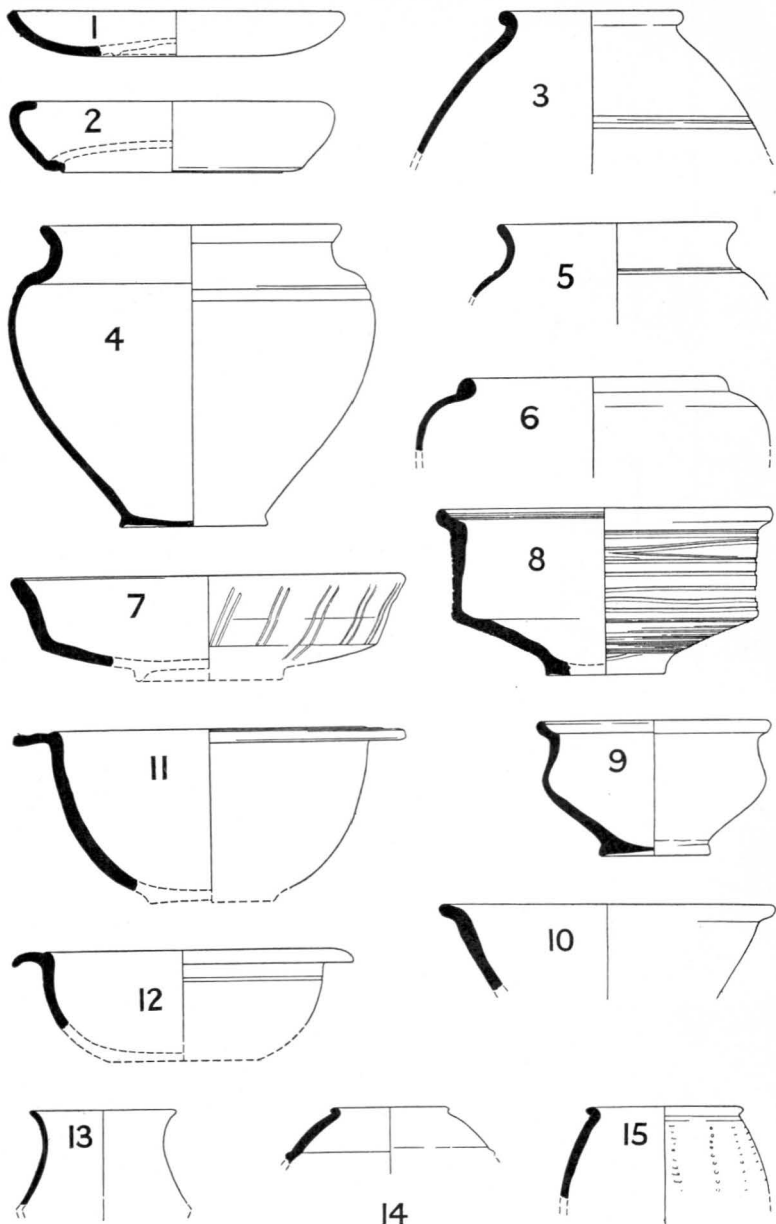


FIG. 24. POTTERY FROM THE BATH-BUILDING. $\frac{1}{4}$.

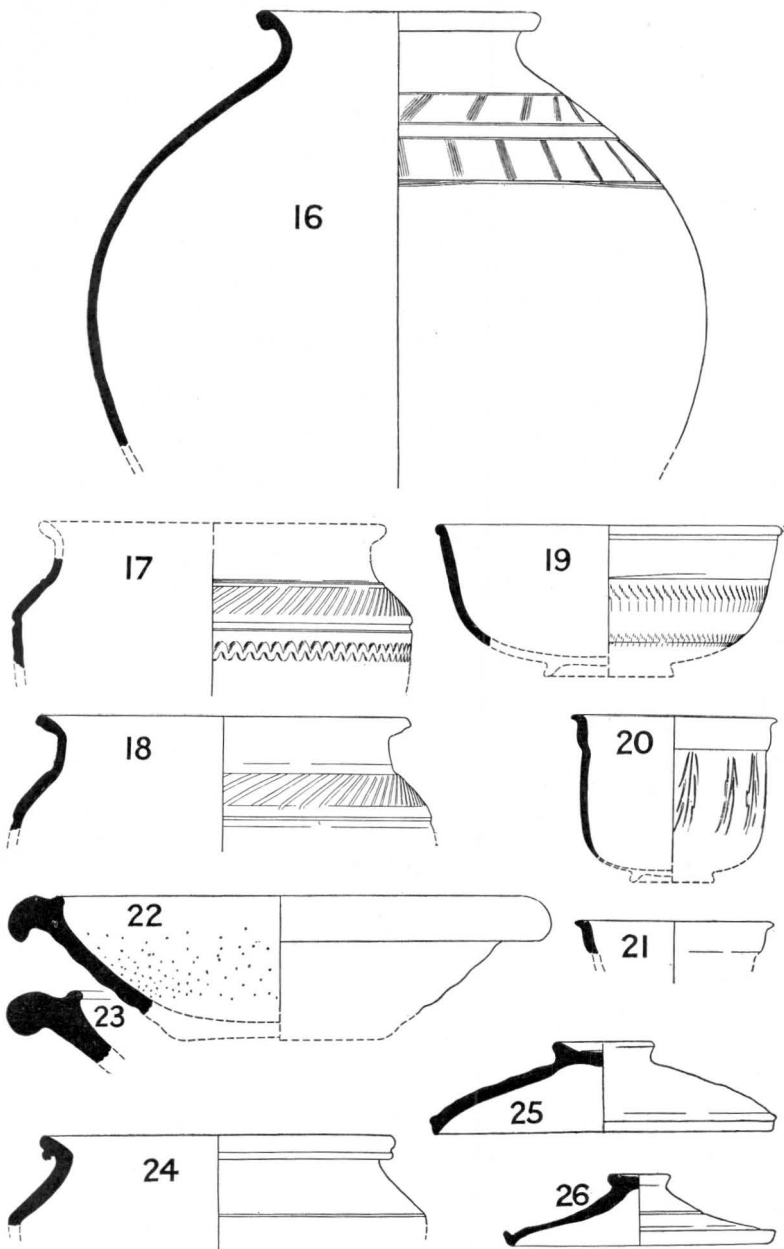


FIG. 25. POTTERY FROM THE BATH-BUILDING. $\frac{1}{4}$.

11. Pink-buff bowl partially burnt on the outside. The thin reeded rim is down-turned. This type goes back to the Claudian period and may be c. A.D. 50-100.

12. Finely made flanged bowl of buff ware. Examples of this type were noted at Wroxeter, I (1912), Fig. 17, 16, as of the end of the first and first half of the second centuries A.D.

13. Upper half of a thin walled carinated cup of red-buff ware with grey slip. For a discussion of this type see May, *Catalogue of Roman Pottery in the Colchester and Essex Museum* (1930), p. 22, No. 48. Mid first century A.D.

14. Top of a pot of gritty grey ware with a cordon, and small everted rim. Probably not later than the Flavian period.

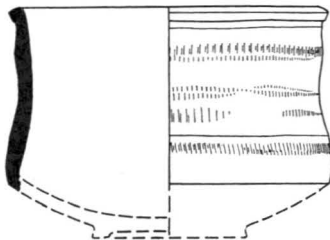


FIG. 26. $\frac{1}{2}$.

15. Top of a jar of smooth grey ware decorated with barbotine dots.

Fig. 25.

16. Upper half of a large jar of gritty grey ware with two bands of decoration on the body. Cf. *Ospringe Report* (Soc. Ant. London), VIII (1931), Pl. XIX, 163.

17. A pot of grey ware with groove on shoulder and band of decoration above and below it. Pots of similar form illustrated in the *Verulamium Report*; the Belgic prototype, c. A.D. 40-60, Fig. 36, 75, and the devolved forms, Fig. 35, 66, c. A.D. 110-40, and Fig. 33, 50. Late Antonine. Here the strength of the profile and sharpness of the decoration would suggest a first-century date.

18. Grey pot of similar form to 17, with a single band of decoration and considerably weakened profile.

19. An imitation of the Samian form 37 with rouletted decoration in smooth orange ware.

20. Imitation of Samian Form 30 in red-buff ware with dark grey slip, with incised design on body. Pots of this type are commonly found in the late first and second centuries A.D., e.g. *Verulamium*, Fig. 27, 7, c. A.D. 160-90, and *Wroxeter*, I, Fig. 17, 11, late first century.

21. Top of an imitation of Samian form 27 in smooth grey ware. Several examples of imitation 27 were found at Richborough. Cf.

Rich. III, Pl. xxxiv, 225 ff., dated to the late first and early second centuries.

22 and 23. Mortaria of late first and early second century type. Cf. *Wroxeter*, I, Fig. 19, 22, and 30. A.D. 80-120.

24. Upper half of a pot of grey gritty ware with moulded rim and steep shoulder. Cf. *Ospringe*, Pl. xxxi, 322.

25. Lid of coarse grey ware, with hollowed top.

26. Lid of smooth orange ware with upturned edge and slightly hollowed top.

27. (Fig. 26.) Cup of hard pink ware with orange-red slip roughly smoothed on and lines of rouletted decoration. Mr. Hull of the Colchester and Essex Museum has kindly quoted an example to me from Sheepen dated to the first century, but the ware and shape is unusual. It would seem to be in imitation of Samian technique and to have been imported into this country.

REPORT ON CHALK USED IN BUILDING

BY E. C. MARTIN, B.Sc., A.I.C., F.G.S.

I have examined the chalk blocks used in the construction of the Roman Villa at Angmering, and am definitely of opinion that they came from the *Holaster planus* zone at the base of the Upper Chalk.

As for the locality from which this chalk was obtained, one can say definitely that it could not have come from Highdown Hill or from any of the pits on the southern slopes of the Downs. It could, however, have come from the north end of the Arun Gap, and there is a large and very old quarry which extends along the west bank of the river for approximately 1,000 ft. immediately north of Houghton Lodge and south-west of Houghton Bridge. The whole of the *Holaster planus* zone is exposed in this quarry.

An alternative source of supply, which I think is worth considering, is the foreshore near Ferring, where the *Holaster planus* zone is brought up by the Littlehampton Anticline.

FOREIGN BUILDING MATERIALS USED IN THE BATH-HOUSE

REPORT BY K. P. OAKLEY, B.Sc.

1. Coarsely crystalline white marble. There can be no reasonable doubt as to its Italian origin, although it is not possible to determine the exact locality from which it was obtained. It is more coarsely crystalline than normal Carrara Marble. (A slab of this was found in an unstratified level.)

2. Compact white limestone with a conchoidal fracture. Thin sections reveal the presence of numerous minute Foraminifera, mainly

Globerina cretacea d'Orbigny and *Globotruncana* sp. No limestone of this type is known in Britain. It is, in fact, highly probable that the specimen is Scaglia limestone from northern Italy. This limestone outcrops in the Apennines, and in the foot-hills of the Alps. (Some quantity of this material was found in the shape of tesserae and *opus sectile* slabs in the bath-building. Besides these definite forms, odd blocks and chips were found extensively in the levelling debris.)

REPORT ON FURNACE MATERIALS

BY J. CECIL MABY, B.Sc., A.R.C.S.

Sudatorium (K), Furnace. Ash sample.

Sandy and calcareous soil (containing chalk or limestone), which contained a considerable proportion of *wood ash* and a little *wood charcoal dust* (too fine for identification of spp.), but no iron oxides to mention. . . . Wood ash predominant.

Caldarium (G), Furnace I. Ash sample.

Similar *sandy and calcareous* soil, containing a little *wood ash*, a little *oxidized iron* (in soil?), and a considerable proportion of *wood charcoal dust*. . . . Wood charcoal predominant.

Caldarium (G), Furnace II. Ash sample.

Mainly *chalk* (calcium carbonate), a very little fine *sand*, traces of what seemed to be *wood ash*, and patches of embedded and broken *wood charcoal*. . . . Much more lime and less ash than previously.