

THE EXCAVATION OF A LATE ROMAN BATH-HOUSE AT CHATLEY FARM, COBHAM

BY

SHEPPARD FRERE, M.A., F.S.A.

Introduction.

CHATLEY FARM lies on the eastern side of Ockham Common in the parish of Cobham. It occupies a clearing between the barren sands of the common and the alluvial meadows of the River Mole which bounds it on the north. The Mole and the Wey approach here to within just over a mile of each other, and the intervening country, sloping southwards from St. George's Hill, is covered with heather, birch, pine, and chestnut. The subsoil of most of the area is formed by the sands of the Bagshot Beds bordered by the flood plain through which the Mole meanders. At one place the river turns almost a full circle on encountering an outcrop of hard London clay, which does not, however, otherwise affect the landscape.

Here in June, 1942, Mr. R. M. Brachi saw traces of a Roman building on the river bank. The site¹ lies on the left bank of the Mole on the Bagshot Beds, about 65 yards west of their junction with the alluvium on this side of the river (Fig. 1). The building has been eroded by the river, and the process seems to have been expedited by a spring deep in the sands below the site, which has caused a bight on the bank just where the building lies. Residents say that 4 feet have disappeared in thirty years.

By kind permission of Mr. A. W. Fox, of Chatley Farm, trial trenches were started, and later in the summer the writer visited the site and became associated with the excavations. The work, which was greatly facilitated by Mr. Fox with the loan of tools and with other kindness, was carried out entirely by voluntary labour, and thanks are due for the part played by Mr. P. Brachi and Mr. D. H. S. Frere. Mr. Philip Corder twice visited the site, and the writer has benefited from discussions with him then and afterwards. The excavation, which eventually involved clearing the whole site, was a lengthy task, but in spite of war-time difficulties it was decided to carry it out fully once it had been begun.

The building is a bath-house of the later Roman period. Such bath-buildings were sometimes free-standing, but would normally be expected to have some association with a near-by villa, as at Ashted, or with some industrial process. So far no such site has been located, and it becomes a question whether the river has not

¹ O.S. 6 ins. sheet, Surrey, XVII N.E.

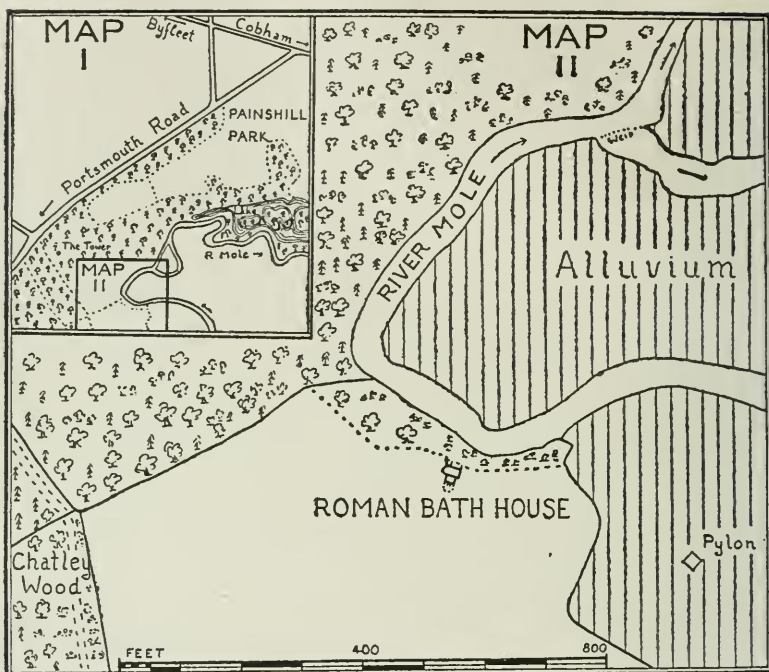


FIG. 1.—MAP TO ILLUSTRATE THE SITE OF THE BATH-HOUSE.

destroyed the main villa (assuming one to have existed) as well as about a third of the bath-building. North-west of the site the ground rises steeply towards the Portsmouth Road, and south-east we are soon on the low flood-meadows of the river valley. Thus a villa could reasonably lie only in the field south or south-west of the site or in the eroded land which once lay northwards. It would be rational to suppose that the bath-building was placed nearer the river to obtain easy access to water. Yet the position of the furnace and stoke-hole between the baths and the field, and of the entrance to the building which would have been at its northern end, contradict this and make it unlikely that a villa lay that side. This lay-out, however, may have been dictated by the need for the stoke-hole to face the prevailing wind.

The establishment as excavated is a normal bath-house, of which four rooms survive (Fig. 2) ; a cold bath (4), a warm room (3), a hot room, and a small compartment (1) used at first as a sweating chamber and subsequently altered to house the boiler. It is probable that at least one other room once existed at the northern end to act as entrance-hall and undressing-room, but if so the river has destroyed all traces of it. At the south-west end the furnace was fed from a shallow stoke-hole.

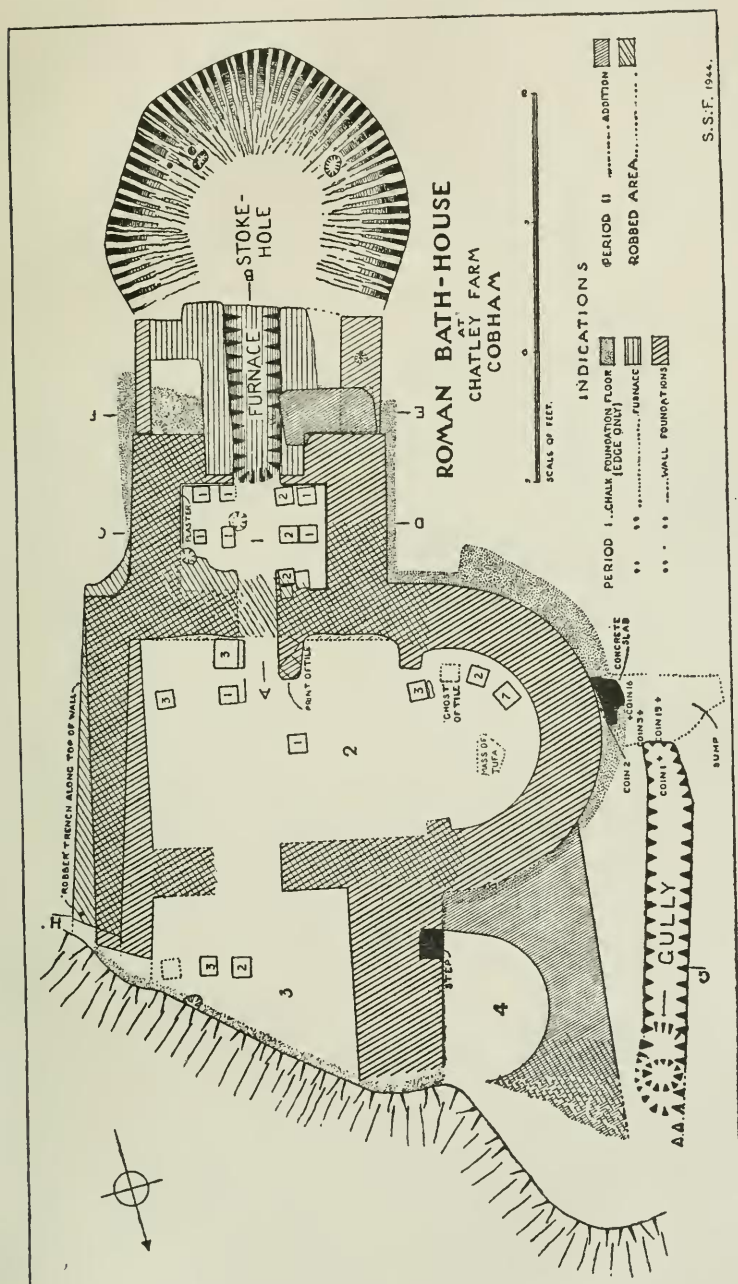


FIG. 2.—GENERAL PLAN.

S.S.F. 1944.

On the evidence of alterations found in Rooms 1 and 4, it is possible to describe two periods in the occupation. The occupation as a whole, however, was short; and much of the evidence for the full history of the site has been destroyed by erosion and also by robbing of the building materials when the building was ruined. Dating material was provided by coins and pottery; but the 4th century is not well represented among local closely dated pottery-types; thus reliance will have to be placed principally upon the coins. Of these there were fourteen, of which three were illegible. They are discussed below by Mr. C. H. V. Sutherland, who states that they suggest a period of about A.D. 320-60 for the occupation of the building. The pottery is chiefly remarkable for the occurrence of some very coarse gritted wares of noticeably "native," uncivilised appearance.

The builders relied on local sources for their materials. The foundation was a solid floor of crushed chalk about 6 inches thick, extending under walls and hypocausts; it had been laid in a pit excavated in the sand to the approximate size of the building as planned. An error of lay-out appears to have been made on the south side of the apse of Room 2. The nearest chalk outcrop is almost 5 miles to the south. On this foundation, the walls, constructed of large chalk flints in courses, had been raised. At the south-west angle of Room 1, the highest standing portion of wall, a bonding course of two tiles survived at a height of just over 2 feet from the foundations. It probably never extended beyond the angles.

The furnace was constructed of large blocks of greensand,¹ set in clay which had been baked to an extraordinary hardness. The greensand outcrop lies about $7\frac{1}{2}$ miles south (or 12 miles in the case of the Puttenham stone). The hypocaust *pilæ* consisted of normal tiles 8 or $8\frac{1}{2}$ inches square. No box flue-tiles remained in position in the walls, but fragments were found in the débris, including types decorated with various elaborate patterns stamped by roller dies as well as with normal scratched trellises. The die patterns are being published in full elsewhere by Mr. A. W. G. Lowther, F.S.A., in a paper dealing with their distribution throughout south-east Britain; he has kindly contributed a note below upon their significance.

Amongst the débris was a small piece of a polished slab of stone, identified by Dr. Oakley as a glauconitic cherty sandstone. It was probably part of a paving stone.² There were also two fragments of sarsen from the Barton Beds, one of which was part

¹ Two blocks of stone from the furnace were kindly examined by Dr. K. P. Oakley and Mr. F. H. Edmunds, and pronounced to be of the Upper Greensand. One was the "fire-stone" and the other the siliceous type of Upper Greensand which is found in the Farnham-Puttenham area (Geological Survey Memoir, *Geology of the Country round Aldershot and Guildford* (London, 1929), 43-4).

² Similar polished slabs occurred at Ashted as the lining of a bath. *S.A.C.*, XXXVIII, Part II (1930), 138.

of a quern; and some pieces of flagstone probably from the Wealden series ("Horsham stone").

Stoke-hole and Furnace.

The stoke-hole was an oval-shaped hollow some 15 feet long and 3 feet 6 inches deep from the modern surface. Into its northern half was built the furnace, a U-shaped trench stoutly constructed of greensand blocks set in clay (Fig. 3, Section E-F, and Pl. Ia, IIIa). Along the northern half of its eastern and western edges were two walls flanking the furnace, rather roughly constructed, the east one of tiles and flints, the other of flints and chalk lumps. These

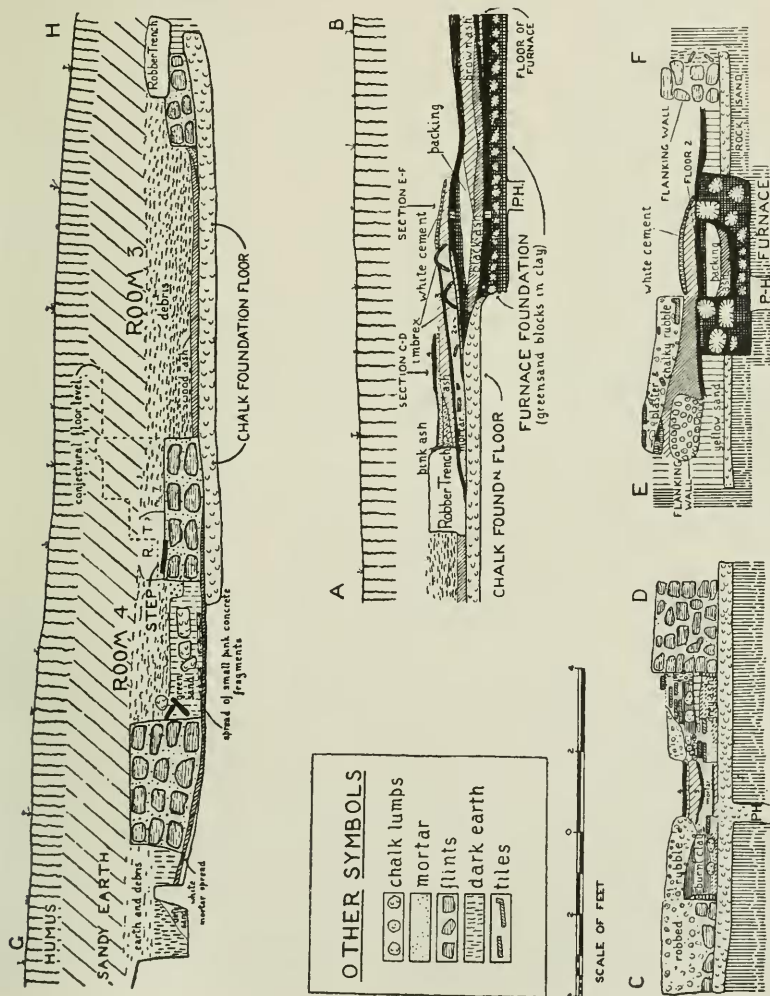


FIG. 3.—SECTIONS.

walls probably carried some light lean-to roof for the furnace chamber, but their main purpose was to revet the sides of the stoke-hole above the furnace. Though not bonded in they belong to Period I, as is proved by the fact that the western wall is over-ridden by a small oblong construction which will be shown to belong to Period II.

The stoke-hole was filled with a rich light black ash, and towards the northern half there were traces of two intermediate floors laid in the ash. They were lightly constructed of clay thrown down on the accumulated ash, extending to about 5 feet south of the lip of the furnace, and may or may not correspond with some of the stages of construction found in Room I. The rear end of the hole had no floors; but there were possible post-holes sunk 4 inches into the sand here, which may have supported the roof. At this end lay a fair quantity of pottery, especially between 20 and 26 inches deep and in the lowest 4 inches of the filling. At the top of the ash but below the humus was a layer of plentiful tiles, flints, and chalk (14-18 inches down), evidently from the collapse of the buildings. The ash contained four coins (Nos. 4, 6, 8, and 12, see list, p. 93), three of which were struck in the period A.D. 324-37, and one somewhat after A.D. 350; the latter lay at a depth of 32 inches from the surface.

Room 1. Description.

Room 1 is a small hypocaust chamber measuring approximately 5 feet 6 inches by 4 feet. The south-west walls of this room were the best preserved in the building, standing 2 feet above the floor¹ at the angle, and containing a double tile-course (Pl. XB). It was here that the fullest detail was obtained of the constructional history of the site. In Period I the heat had issued up into this hypocaust from the end of the furnace which lay at a lower level (Fig. 3, Section A-B). The walls and floor were lined with a cemented plaster to resist the heat, which had splintered the flints where the plaster was missing. Three corners of the room were found intact; but the north-east corner was in a confused state owing to subsequent robbing down to floor-level. Through the north wall the heat issued into Room 2 by a single aperture of which again only one side was definitely preserved.

Subsequently (Period IIa) Room 1 was reconstructed (Pl. IIIa, IIIb). The hypocaust was filled in solid with chalk, clay, and broken tiles (both *tegulae* and box), making a strong basis down the centre of which the heat reached Room 2 through a flue constructed with kerbs of broken roof-tiles (*tegulae*) shown in broken lines on the plan; its sides were not parallel (Fig. 4). The furnace and adjoining southern end of the flue were re-floored at a higher level in

¹ By "floor" here and elsewhere in this paper is meant the chalk floor of the hypocaust, not the floor of the rooms, which rested on the tile *pilae*. It will be seen that in no place were the walls standing sufficiently high to indicate the position of the room-floors.

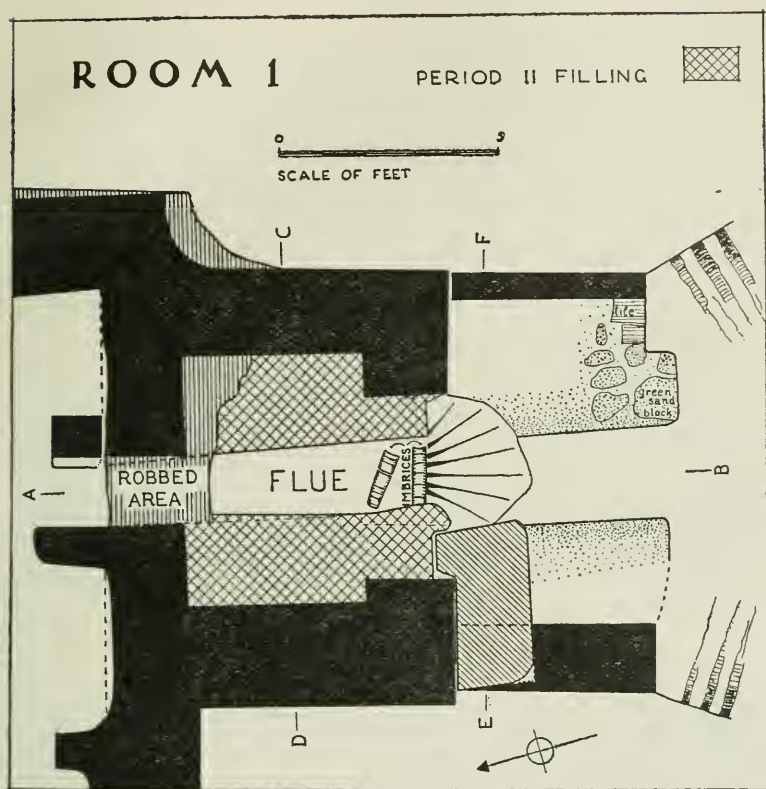


FIG. 4.—PLAN OF ROOM 1 IN THE SECOND PERIOD.

stone and mortar set on clay above a layer of packing—tiles, stones, sherds, mortar débris and yellow sand—thrown on to make the new floor continuously level with the chalk floor of the flue (seen, partly removed, in Pl. IIa). This chalk floor, of course, was still simply the exposed portion of the original hypocaust floor.

At a later date (Period IIb), after this new levelled floor had been patched once (Floor 2a, Section A-B, Fig. 3), the flue was remodelled on a slightly narrower scale at a higher level, with the odd result that now its floor sloped down into the hypocaust of Room 2 (Floor 3, Section A-B). Across the south end of the flue were set two *imbres* roofing-tiles (Plan, Fig. 4), probably as a kerb to hold back the liquid mortar with which the level was raised (Pl. Ib, IIb); and the outside was bevelled off with a thin plaster of white cement, laid on top of the accumulated wood-ash as a fire-place. Evidently, then, this stage coincided with minor structural repairs to the building, during which the room-floor had been taken

up. At this level the kerb of the flue was formed of chalk blocks ; but they were only found on the west side of the flue, owing to the robbing of the east half (Section C-D).

The next stage (Period IIc) is marked by further reconstructions of the flue, at a still higher level, with a sand and cement floor laid over the accumulated ash. Only the northern portion of this floor survived, and it was not possible to discern the arrangements at the furnace end. Nor at the northern end was it possible to see the method of entry into Room 2, a point of some interest owing to the now considerable difference in levels (Floor 4, Section A-B). For at this point a robber-trench¹ had been following the south wall of Room 2 and had cut through the flue.

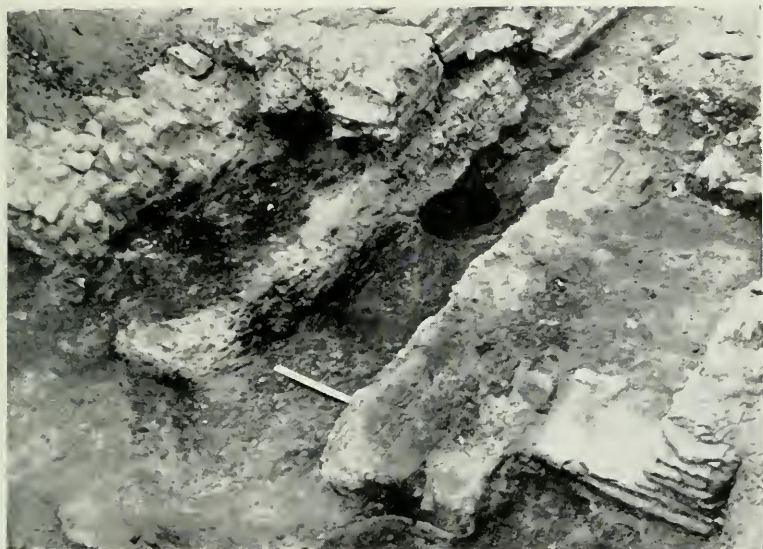
The small secondary construction abutting on the western half of the south wall of Room 1 requires notice (Pl. Ib, IIIa). It was clearly an addition to the original structure, being roughly constructed of concrete, rubble and tiles, and it overlies both the northern end of the western lip of the furnace and also a 4-inch layer of wood-ash. Section E-F shows that it is constructed on a level with the entrance to the flue of phase IIb. It is not in any way paralleled by a similar structure on the east side of the flue ; furthermore, in the ash beneath it was found a sherd of a dish (No. 17), other portions of which were discovered behind the tiles which had been used to fill the hypocaust of Room 1. Finally, as Fig. 4 shows, it overlapped round the broken end of the Period I wall as far as the blocking of tiles which fills the chamber. Thus it is clear that this structure was intimately connected with the Period II flue, though possibly only with its later phases. Its upper part had been ploughed away ; but its feeble construction founded on soft ash shows that it was not intended to bear much weight. On all grounds, then, it seems likely that it was merely a trough in which mortar was mixed for the reconstruction, an interpretation which is supported by the large fragment of *tegula* on which the whole is resting. A less likely alternative is that it supported some lightly built screen which experience may have shown to be necessary to improve the draught in the flue. That difficulty was encountered with the draught seems indicated in other ways. The IIb flue (Floor 3, Section A-B) had been narrowed on its western side by an added strip of concrete (see Plan, Fig. 4), sealing the ends of the *imbrices* below ; and the downward slope (Floor 3) later relevelled (Floor 4), and indeed the whole sequence of frequent reconstructions during a very short over-all existence, all point with varying emphasis to the same conclusion.

Room 1. Interpretation.

Room 1 thus went through many vicissitudes. It remains to attempt an explanation. In the first place, apart from minor

¹ A robber-trench is one dug into the ruins of a building by men in search of bricks, etc., for re-use ; their trench subsequently becomes filled with the debris they reject.

PLATE X



(A).—THE FURNACE, LOOKING NORTH.



(B).—ROOM 1 AND FURNACE, GENERAL VIEW FROM SOUTH-WEST.
See plan, Fig. 4.

[Facing p. 80



(A).—FURNACE, LOOKING NORTH, WITH
PERIOD II FLUE BEHIND.
Note ash and packing below *imbrex*.



(B).—ROOM 1, LOOKING SOUTH. PERIOD II
FLUE, FLOOR 2A, WITH *imbrices*.

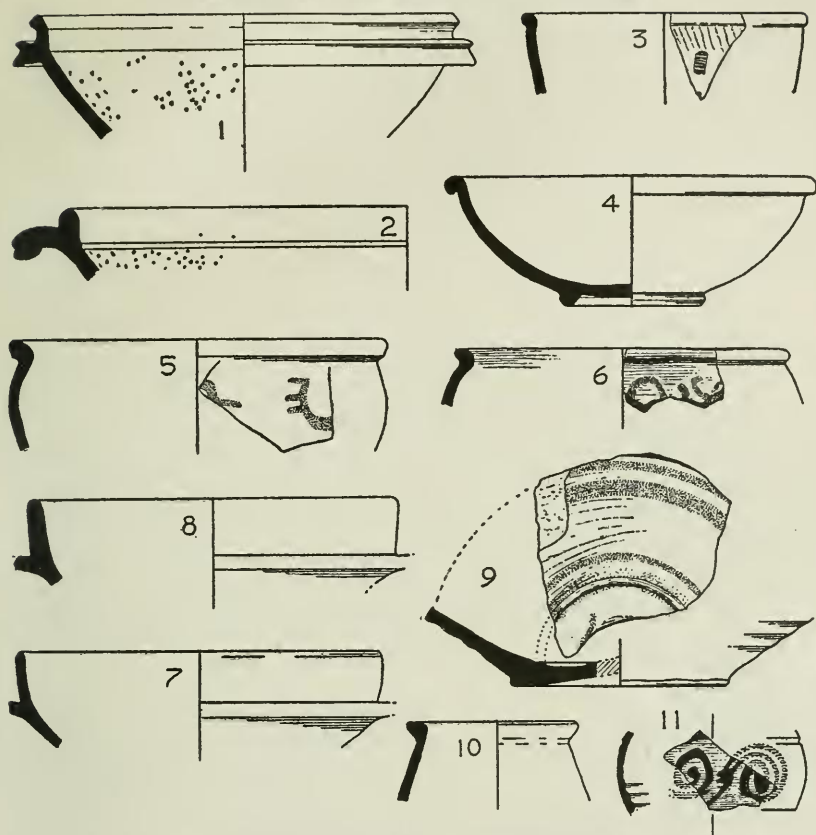


FIG. 5.—THE POTTERY (Scale $\frac{1}{4}$).
Mortaria, colour coated, and other fine wares.

reconstructions, two main structural phases can be perceived. It began as a hypocaust chamber ; it was later reconditioned with a flue. Perhaps this change reflects a corresponding change of use.

A feature of Roman baths always found near the furnace is the *vasarium* or boiler-room. Now it might be suggested that the small size of Room 1, together with its stoutly-planned double *pilæ* (contrasted with the more open arrangement in Rooms 2 and 3), argue that the hot-water tank rested on this hypocaust in Period I. But this suggestion leaves out of account the great length of the furnace structure ; nor does it explain its great strength, stoutly built of stone blocks set in baked clay, and its flat top. These surely had some purpose. Furthermore, at its north end, beneath later accretions, is a well-defined recess set back into the south wall of Room 1, on each lip of the furnace-trench (Fig. 2). This can hardly be anything but the masonry socket for a

metal tank resting on the powerful lip of the furnace structure, and deriving its heat from the fire kindled at the southern end of the furnace-trench. This tank would measure 3 feet 9 inches by up to some 6 feet. Of what metal it was made there is little evidence ; likelihood suggests bronze.¹ But at least one boiler of lead has been found in a Roman building,² lead conducting the heat perfectly, as long as there is water in the cistern. That our boiler was of lead, and that the worst happened, is perhaps hinted by the discovery of a quantity of molten lead in the stoke-hole. Such an accident might well have occasioned the change brought about in Period II.

In Period I, at any rate, the heat after passing beneath the tank reached the hypocaust of Room 1, which at this time was the hottest room. Its small size and proximity to the boiler make it probable that this room served as the *alveus* or hot bath ; but no traces of an outlet for water, or a drain to carry it away, were found outside, and the waste water must have been conveyed away by pipes to the outlet in the apse of Room 2 (though no traces now remain owing to the robbed state of the walls). Alternatively, and perhaps more probably, Room 1 may have been used purely as a sweating chamber, for which its small size and great heat would render it suitable. *Sudatoria* of this kind are usually placed away from the moistness of the *caldarium* (in this case Room 2), since a dry heat, not a steam heat, was desired ; but in the case of a small-scale establishment the design may have been modified.

In any case the design did not last. The *sudatorium* may have been too moist for success ; but there was a far more serious structural disadvantage. The *vasarium* was outside the building, and the tank can only have been protected by some very light lean-to structure resting on the revetment walls each side, which was not the most effective way to ensure a supply of hot water. Worse still, resting as it did on the cheeks of the furnace, it was on the level not of the room floors but at least 2 feet lower, level with the hypocaust floor. Much hot water must therefore have been wasted in the lowest 2 feet of the tank, which could never reach the establishment.

The next step, therefore, was to move the tank inside and to a higher level, at the cost of sacrificing Room 1. For this is what is implied by the conversion of the hypocaust into a flue in Period II. The massive tile and concrete blocks filling Room 1 each side of the flue would not only afford a firm foundation for a heavy boiler ; being better insulated from the soil, they would, once hot, retain the heat below the tank far more effectively than had the solid furnace structure in the previous period. At the beginning of Period II the furnace-trench was filled level with its top, where a new floor was laid ; and judging by the hardness and signs of

¹ As laid down by Vitruvius, *De Architectura*, V, 10, 1.

² At Boscoreale. See *Archæologia Aeliana*, 4th Series, VIII, 276.

heat, the furnace fire now burned on the area later covered by the *imbrices*. Four feet, therefore, of original furnace structure to the south were now disused—strong argument for a tank having occupied the space in Period I.

Successive reconstructions had raised the flue about 1 foot above the level of the hypocaust into which it led. This would certainly have produced an awkward junction between the two, and may also have made the flue itself inconveniently shallow. Unfortunately the robber-trench destroyed the possibility of examining the junction; but before asserting that the flue was unduly shallow it is necessary to form some idea of the original floor level of the rooms themselves above the hypocaust and flue. There are several indications. In Section C-D there is a tile beside the western wall of Room 1 at a height of 17 inches above the chalk base. If the tank had rested on this layer of tiles, the latest flue would have been 7 inches deep. But in fact it must have been deeper. The tile bonding course on the south-west angle of the room, lying 2 feet above the chalk base, has already been mentioned. This perhaps denotes the old ground level outside; but inside there is no trace of any offset for the floor which in Period I covered the hypocaust. No doubt, then, it was at some higher level still, and if the floor, then presumably the tank after it. As a matter of fact, it will be seen below (p. 86) that the floor of Room 3 was some 26-28 inches above the chalk base. Presumably the floor of Room 2 would have been no lower. Room 1, which needed even more heat, may have had its floor slightly higher than this, with a step down into Room 2; this would have ensured the retention of a greater heat in Room 1, as the hottest gases would be trapped above the aperture, unable to escape into the hypocaust beneath Room 2.

If then the tank was some 30-36 inches above the chalk base, we have a space of 20-26 inches for the flue of phase IIc, which is amply sufficient. It is true that there would still be a steep irregularity where the flue entered the hypocaust of Room 2, but this angle was evidently filled with ash as can be judged by the surviving layers immediately south of the robber-trench (Section A-B).

Rooms 2 and 3.

Room 2 was the hot room or *caldarium*, and Room 3 the *tepidarium*. Their floors were supported by a series of tile *pila* resting on the chalk floor of the hypocaust; of these only a few have survived at all, and only one (of seven courses) to anything approaching its full height.

The heat entered Room 2 between a projection of the wall on the west side, and a large *pila* subsequently enlarged (perhaps in Period II to improve the draught) by the addition of an *imbrex* and of a connexion in mortar with the next *pila* to the north. The hot

air passed from Room 2 to Room 3 through an aperture 30 inches wide in the party wall.

Unfortunately this wall had been extensively robbed; its western half survived to a height of only 2 inches, but nothing remained of its eastern half at all.

Room 2 is not quite rectangular, and measures approximately 8 feet by 11 feet, to which the apse adds a further 3 feet 6 inches of room. This apse no doubt contained the *labrum* or warm water basin; traces of an outlet for water were found outside the apse (p. 87).

Room 3 measures 8 feet 6 inches by at least 8 feet 6 inches, and perhaps was as long as Room 2. The floor of these rooms consisted of pink concrete, with a quarter-round moulding at the junction of floor and walls. None of this was found *in situ*, but fragments occurred in the fillings together with painted wall plaster.

The walls were nowhere surviving high enough to show an offset for the floor; only on the west side of Room 3 and in the apse was the wall-face unrobbed, and here it stood to a maximum height of only just over 1 foot above the chalk base. This chalk floor, which in places bore traces of a protective coating of mortar, was covered by a layer of wood-ash, particularly near the edges; but the flue to Room 3 was clear. Above the ash was a layer of debris reaching up to plough soil. Resting on the floor of the apse (dotted outline on plan, Fig. 2) and surrounded by the ash, was a lump of material identified by Dr. K. P. Oakley as calcareous tufa, impregnated with humus and peaty soil. He states that it was perhaps formed at the margin of a bog where there has been seepage of calcareous (*i.e.*, hard) water, and could occur locally on the Bagshot Beds. The lump measured about 1 foot 6 inches by 1 foot 6 inches; it was very soft and no form was apparent from which to deduce its purpose. One is reminded of the voussoirs of tufa found in the Baths at Chesters and used in the double ceilings of the hot-room.¹ The voussoirs at Chesters, however, are of considerable hardness; whereas this lump was very crumbly as well as shapeless. Tufa, it will be recalled, was extensively employed in the construction of Roman buildings at Darenth and Folkestone.²

Evidence of robbing was particularly clear in these two rooms. In the first place there is the distinctive robber-trench which follows along the top of the eastern wall of the building at a slightly divergent angle. When first seen in the river bank (see Section G-H) this suggested the footings of a Period III wall built partly on the ruins of the first; but it was later recognised as a robber-trench dug to recover building material. This trench bites deeper into the wall as it goes south, until in Room 1 there is only one course of flints surviving in the east wall.

¹ *Archæologia Aeliana*, 4th Series, VIII, 278-84.

² Also at Dover, Pulborough, and North Wroxall (Wilts). Winbolt, *Antiq. Journ.*, V, 421-2; *Roman Folkestone*, 36 *etc.*

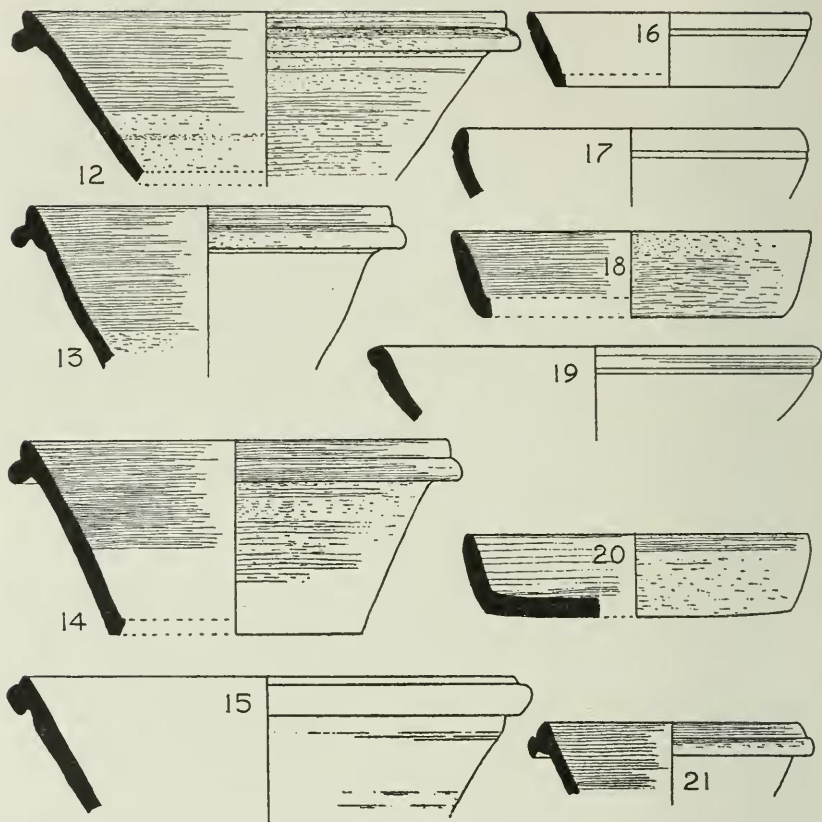
Again, in Room 2 the fragments of pink concrete floor were not plentiful as they would have been had the floor merely collapsed into the hypocaust; nor were many *pila* found in position or even collapsed, which proves that far from dealing with a natural ruin, we are faced with a case of extensive robbing. Furthermore, it is a suggestive fact that the filling was very homogeneous and compact; it was never possible to note the position of a vanished *pila* by a change of colour or compactness in the soil above. In other words, it seems likely that this part at any rate of the robbing—the raising of the floor and removal of the *pila*—was done in Roman times before the filling had had time to settle and assume a character of its own. The robbing itself in fact conditioned the filling.

If this is so, then the coins found in the filling of Room 2 can be used to date the robbing as well as merely the collapse of the building; in fact without the robbing it is not easy to see how they could enter the hypocaust filling at all. The coins found were three, Nos. 5, 9, and 10 (see list, p. 93). Two of these were of Constantius II, one being minted not earlier than c. A.D. 350. Those are the final coins of the sequence which Mr. Sutherland describes as having a frequency covering the years 320 to 360 or 365. The implications of the coin evidence will be further discussed below. It remains here to emphasise that the discovery of the two latest coins of the coin-list stratified in this filling conveniently dates the destruction, and probably also the robbing, of these two hypocaust chambers. How much later the walls were robbed it is impossible to prove; that their dismantling was part of the process which saw the robbing of the hypocaust seems likely, yet the fact that the method used was a trench along the top of the wall at a higher level than its footings inside might argue that by their collapse was already considerable, and the hypocausts already choked.

Room 4. The Cold Bath.

The cold bath was a roughly semicircular room on the west side of Room 3. It was reached from the south-west corner of that room, for at that point we found a step on the existing top of the wall. It was evidently one of three steps down from the level of Room 3, and consisted of a slab of pink concrete, about 13.5 by 10 by 1 inches, with an upward flange on the bath side, as if the actual tread had been a tile bedded on it.

The presence of this step allows us a calculation of the probable level of the floor of Room 3 above its hypocaust. The step itself is 10 inches wide, and is set back from the face of the wall by 2 inches. It lies 13 inches above the sand beneath the cold bath, and rests on a wall 42 inches wide. Allowing a thickness of 6 inches for the vanished floor of the cold bath and a 1 inch tile resting as a tread on the concrete step, we arrive at a bottom step with a rise of 8 inches and a tread of 12 inches. If we reconstruct further

FIG. 6.—THE POTTERY (Scale $\frac{1}{4}$).

Bowls mainly in grey ware.

steps of the same dimensions, we find room for three in all, with a sill 6 inches wide at the top. The floor of Room 3 will then be 28 inches above the chalk base of the hypocaust. This room, being the *tepidarium* or coolest member of the heated series, would tend to have its floor on a level equal to or lower than those of the others; Room 2 would perhaps, and Room 1 certainly, have floors a step higher, so that hot gases would be retained beneath them for a longer period. This point has been discussed before.

The cold bath as it exists at present was an addition to the original building, for the apse wall has a T-junction with the apse of Room 2, and the chalk foundation of the building does not under-run the apse of Room 4 but ignores it, continuing its original course below the exterior wall of Room 2 and turning north below the western wall of Room 3. The apse of Room 4 lies directly on

the sand. The addition of the cold bath necessitated thickening the wall at this angle, with the result that the chalk foundation was overlaid by wall ; but despite robbing at this point, the line of the original wall of Room 2 can be gauged by its presence.

The cold bath was constructed in a hollow excavated in the sand to the level of the footings of the adjoining walls. It seems that the western wall of Room 3 may have been partially reconstructed at this time, for it thickens slightly towards the south, and a 1 inch layer of black ash, evidently from the hypocaust, underlies it over the chalk foundation, and continues across the surface of the hollow excavated for the bath. The purpose of this reconstruction may have been the insertion of the steps. The layer of ash continues under the apse wall (Section G-H).

The floor of the bath had been constructed of tiles and pink concrete set on large chalk lumps. But subsequently the floor had been broken up and all traces even of the lining of the walls had disappeared. What was found (Section G-H) was a thick layer of clean sand overlying the ash layer and incorporating large chalk blocks with fragments of tile attached by concrete which had run down in semi-liquid form round the blocks.

At a slightly higher level, still in the sand, at the north end of the bath, were some tiles and tile fragments laid out like a floor, covering an area about 2 feet square. But they were not set in mortar and it seems unlikely that they were part of the permanent structure. Above the sand layer was a layer of *débris* ; against the apse wall were several fallen tiles lying at various angles.

The interpretation of this is not easy. It seems likely that after the original bath floor of chalk and tile had been broken up, the clean greenish sand was added to envelope the chalk lumps and act as a filling on which to construct a fresh floor at a higher level. But of this no trace remains, and probably it was never completed.

It seems evident that though Room 4 itself is an addition (and has therefore been assigned to Period II), a cold bath of some sort must have formed part of the original plan for the establishment ; unfortunately, the river has prevented us finding out where it lay and what it was like.

The Gully.

Outside the north-western portion of the building ran a gully (Fig. 2 and Section G-H). It was a square-sided excavation and could be traced from the end of the apse of Room 2 to a soak-away near the river bank. Its purpose was to conduct waste water from the hot room. No trace of any tile lining was found, but this may have been removed. Just outside the western end of the apse, resting on the chalk foundations, was a rather fragmentary slab of pink concrete, backing on to the wall and with traces of a vertical face up the wall ; and westwards of this out from the wall was a small area covered with rounded granules of tile and concrete, laid by the action of water. This was highly suggestive of the outlet of a drain. Lying on the surface of the

sand hereabouts were four coins, and one more behind the concrete slab (Nos. 1-3, 15-6), the three legible ones being the earliest on the site. Numerous bones and sherds also occurred in the filling of this gully, as well as a number of small glass beads. At one place near the head of the gully a mass of flints and mortar lying in it suggested that when the cold bath was constructed the gully had become disused; but if so what alternative arrangements for drainage were made it is impossible to say, and the flints concerned may more probably date from the collapse of the walls after the desertion of the site.

The Post-Holes.

Four large post-holes were noted beneath the chalk floor, one (7 inches by 20 inches) seen in section where the river bank cuts Room 3; one (7 inches by 24 inches) within Room 1; a third outside Room 1 at its south-east corner; and one (10 inches by 41 inches+) below the furnace. In the case of the first three, the chalk floor was not firm above them, and had sunk down into them; the rest of the filling being dirty soil and building débris. The post-hole beneath the furnace was only found after the furnace had been partly dismantled; it was firmly sealed by the baked clay floor, and continued under the flanking side of the furnace. It was excavated to a depth of 41 inches, and a probe easily sank in further to a total depth of 5 feet 6 inches below the furnace floor.

No occupation layer or pre-building remains of any kind were found with the post-holes, and it was not considered useful to break up the whole chalk floor on the chance of discovering more; it seems likely that they contained scaffold poles used on the construction of the building¹; in that case the furnace was constructed after the walls had been completed, and the interior poles would have been sunk through the floor for better security, the floor being patched afterwards.

Conclusion.

The excavation of this bath-house has given Surrey a useful series of dated 4th century pottery, some of it, as was to be expected, having been manufactured at the nearby pottery area round Farnham.

Mr. Lowther's report (see below, Appendix III) throws useful light upon the economics of the later Roman period, when flue-tiles were apparently difficult to obtain, and had to be robbed and re-used from the ruins of earlier buildings.

In general, we can form some impression of the decay of civilised life and technical skill in the country-side of Britain. One is left with a picture of people endeavouring still to supply themselves with the traditional amenities of civilised life, but unable to obtain the services of a competent architect. For this bath-

¹ Compare one at Windmill Bank, Walton-on-the-Hill, *Journ. Rom. Studies*, XXX (1940), 181 and plan.

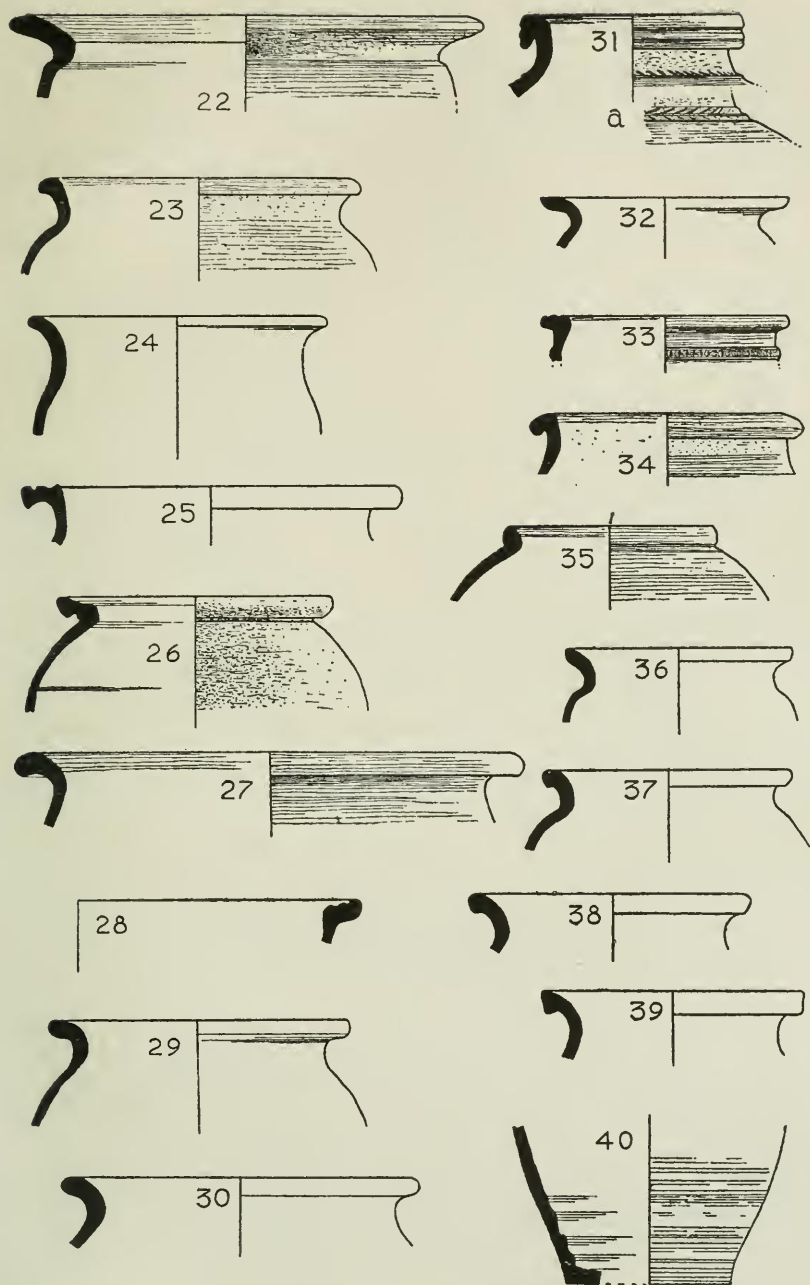


FIG. 7.—THE POTTERY (*Scale $\frac{1}{4}$*).
Jars mainly in grey or buff wares.

building is an amateur construction. Only in such a context can one explain the curious failure to have an indoor boiler at a proper level in Period I, the errors of lay-out, and the incompetence which led to the many reconstructions of the flue, including the expedient of trying to lead hot air down a forward slope into the hypocaust.

The bath-house ceased to be used in or soon after A.D. 360. One is compelled to ask whether its end was in any way brought about by the raids of Picts, Saxons, and Irish which were so notable a feature of that decade. To such a question it must be answered that there was no direct evidence of a violent end, save the suggestion that it was a gutted building which men so soon ransacked for building materials. But in a more general sense doubtless the picture is true.¹ If the building was not sacked, at least it was abandoned, perhaps because its users had been killed, or their activity or livelihood had been destroyed.² We need to know whether such a picture is applicable to other 4th-century buildings in the county.

APPENDIX I—THE POTTERY (Figs. 5-8).

- 1-2. Buff-ware mortaria, from the stoke-hole.
- 3-7. Red colour-coated bowls either plain (4), flanged (7), stamped (3) or decorated with patterns in white slip (shown stippled, 5, 6); 4 has a micaceous red paste with grey core. 3 and 7 from top soil, the remainder from stoke-hole.
8. Similar to 7, but with orange burnished surface lacking a colour-coat. From the gully.
9. Base of bowl of hard cream-coloured ware; inside decorated with concentric circles of orange paint. It appears to have broken off at a carination. Stoke-hole.
10. Small beaker of white paste with orange to dull brown colour-coat. Top soil.
11. Castor-ware beaker of red paste with chocolate brown colour-coat and white slip scroll, illustrated as black. From stoke-hole.

These are all fairly well-defined 4th-century types. 9 is probably to be restored with a vertical collar and moulded lip, as *Richborough*, I, 162, or less probably as a shallow bowl with internal flange. For the type see references cited in *op. cit.* and also Sumner, *Excavations in New Forest Pottery Sites*, Pl. XXXI (Crock Hill).

The red colour coated wares form a distinctive mid-4th-century group; reference need only be made to similar collections from the fort of Anderida at Pevensey (*Sussex Arch. Colls.*, LII, 91), and from the late well at Cunetio, Mildenhall, Wilts (*Wilts Arch. Mag.*, XLI, 151-9). Flanged colour-coated bowls were found in the 4th-century levels filling the theatre at Verulamium, but were rare or absent in the late 3rd-century deposits. And at the New Forest Potteries the ware was extremely rare before the late period (*i.e.*, before c. A.D. 330; *Antiq. Journ.*, XVIII, April, 1938, 125-7). The decorated

¹ It is interesting to note in this connection the recent attempt to date the destruction of the Park Street Villa to the barbarian inroads of A.D. 367 by the complete absence of coins of Valentinian I or Valens (*Arch. Journ.*, CII, 1945, pp. 30, 59). A similar absence of such coins here is noted by Mr. Sutherland below.

² Unfortunately we do not know what class of person the bath had served, and whether it was industrial or domestic.

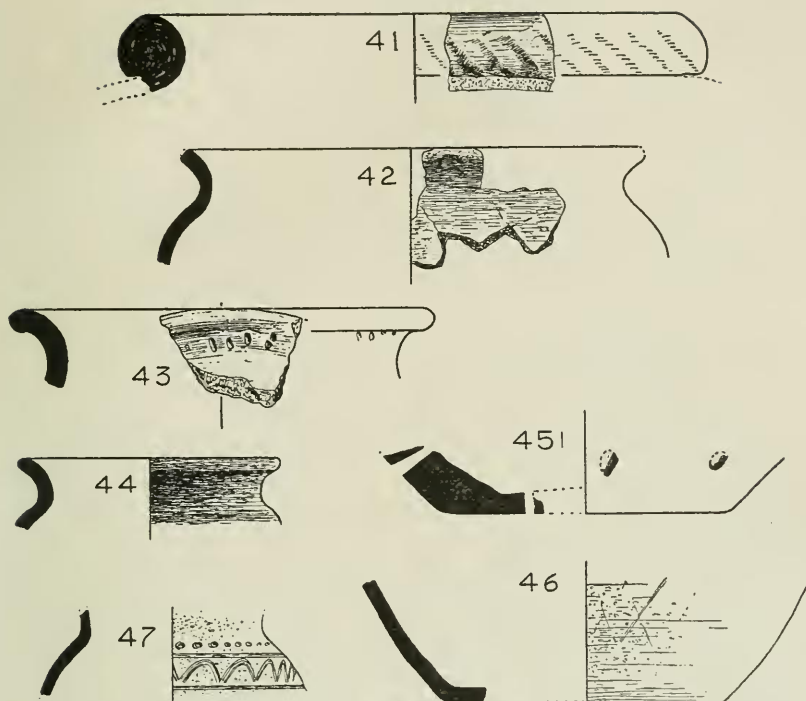


FIG. 8.—JARS, MAINLY OF CRUDE LATE ROMAN TECHNIQUE (Scale $\frac{1}{4}$).

castor ware (11) is more typical of the late 3rd than of the 4th century if the Verulam evidence is applicable (*Archæologia*, LXXXIV, 255).

12-14. Flanged bowls of hard grey paste with black slip, highly polished inside and on lip to flange. 12 found against outside wall of apse below concrete drain outlet, 13 from packing layer filling furnace (Period IIa) 14 from gully.

15. Flanged bowl, hard buff granulated ware, rather rough. Stoke-hole.

16, 21. Dishes in grey ware, with thick white slip inside and over top of lip; 16 from stoke-hole, 21 from gully.

17. Buff granulated paste, found below Period II mortar trough beside furnace, and other fragments behind the Period II filling of Room 1, against the wall.

18. Grey-buff paste, polished black slip, from gully.

19. Burnished orange red bowl, from top soil.

20. Dish of grey paste with reddish surfaces, and thin white slip inside; exterior of base decorated with scribbles on matt ground. Stoke-hole.

Of these, 12-14 and 18 are of an easily recognisable fabric; Miss Kenyon tells me that evidence at Leicester points to this type of flanged bowl belonging to the earlier half of the 4th century (*Richborough*, I, 121). 16 and 21 with their white slip are certainly Farnham types, and Major A. G. Wade has shown me an exact parallel to 16 from his kiln sites in Goose Green Enclosure, Alice Holt Forest.

22. Large jar with white slip below neck and inside lip. From stoke-hole.
23. Hard light grey ware, polished to light blue metallic surface. From stoke-hole.
24. Pinkish sandy paste with traces of thin cream slip inside and out; from stoke-hole.
25. Hard light grey ware.
26. Coarse granulated paste, buff inside, blackened outside; from stoke-hole.
- 27, 31, 33-5. Hard light grey ware with white slip on top of rims and outside except for necks. 27 from river bank, rest from stoke-hole.
28. Hard cream-coloured ware.
29. Brownish buff coarse granulated ware; from gully.
30. Brick-coloured granulated paste coated with thin cream slip; from gully.
32. Coarse grey ware.
- 36-8. Coarse light grey ware, 38 from stoke-hole, rest from gully.
39. Hard light grey granulated ware; from stoke-hole stratified below clay "floor."
40. Base of rilled jar, hard granulated buff ware.

Of these, 22 is a well-known late form, but the most important group is that with white slip. This was a common technique at the Farnham potteries and there are close parallels to our sherds there (*e.g.*, *S.A.S. Farnham Volume*, 251, R. 130). There can be little doubt that Farnham was the source of these wares.

41. Cabled rim of large storage jar on sandy grey to brick-coloured paste.
42. "Porridgy" grey paste, light brown leathery surface, smoothed. "Soapy" to the touch, and very prehistoric in character. From stoke-hole.
43. Rim of wheel-turned jar; grey paste heavily shell-gritted surfaces pinkish brown to dirty buff. Irregular line of puncture marks below out-rolled lip. From bottom of stoke-hole.
44. Brick red slightly "porridgy" paste, dull brownish-grey surfaces somewhat "soapy" to feel; probably not wheel-made. From stoke-hole.
45. Hard grey ware; both base and wall pierced from outside by holes made by a straight edged rather wedge-shaped tool such as a splinter of plank.
46. Brown "porridgy" rather "soapy" ware with traces of a burnished leathery surface and trellis pattern. Prehistoric character. From stoke-hole.
47. Buff, shell-gritted, wheel-made jar, decorated with small stabs and incised loops. From stoke-hole.

41 and 45 belong to a type of large storage jar pierced by holes which was recently discussed by the writer (*S.A.C.*, XLVIII, 52); Major Wade has very similar sherds from his Alice Holt kiln sites. The remaining pieces illustrate the resurgence of crude "native" types of pottery in the 4th century, resulting presumably from the decline of civilized conditions. Similar wares have recently been excavated at Canterbury in a late-4th-century context.

APPENDIX II—THE COINS.

By C. H. V. SUTHERLAND, M.A.

The sixteen coins found in the bath building at Chatley Farm, Cobham, are as follows. References are to H. Mattingly and E. A. Sydenham, *The Roman Imperial Coinage* (= *R.I.C.*), and to H. Cohen, *Description historique des monnaies frappées sous l'empire romain* (2ème edn.) (= Cohen).

GALLIENUS (sole reign, A.D. 259-68).

1. Obv. *Gallienus Aug.* Rev. ? [*Geni*]us *Aug.* ? Genius stg. l., holding patera and cornucopiae. ? Mint of Rome. *cf. R.I.C. 197.* From gully.

2. Obv. [*Gallie*]nus A[ug]. Rev. ? [Io]vis [Stator]. ? Jupiter stg. l., holding sceptre and thunderbolt. ? Mint of Rome. cf. *R.I.C.* 216. From gully.

CONSTANTINE I (A.D. 307-37).

3. Obv. ? [Constantinus P Aug]. Rev. *Beata Tranquillitas*. Vol. XX on altar. Mint of Treves (STR), c. A.D. 325. cf. Cohen 24. From gully.
4. Obv. *Imp Constantinus Aug.* Rev. *Soli Invicto comiti*. Sun-god stg. l., holding globe. Mint of London $\frac{S|F}{PLN}$, c. A.D. 325. cf. Cohen 530. From stoke-hole.
5. ("Constantinopolis"). Obv. *Constantinopolis*. Rev. Victory on prow. Mint of Treves (TRP), c. A.D. 330-7. Cohen ("Constantinopolis") 21. From Room 2.
6. ("Constantinopolis"). Obv. and Rev. as No. 5. Mint uncertain. Date and ref. as No. 5. From stoke-hole.

CRISPUS (CAESAR A.D. 317-26).

7. Obv. *Crisp[us No] b Caes*, bust laureate, cuirassed, r., holding spear and globe. Rev. Vol. V [*Caesaru*]m *Nostrorum*. Wreath. cf. Cohen, 30 ff.

CONSTANTINE II (as Caesar, A.D. 317-37).

8. Obv. [Cons]taninus Iun [N or Nob C]. Rev. *Gloria Exercitus*. "Labarum" between two soldiers. Mint uncertain: c. A.D. 330-7. Cohen, 119-20. From stoke-hole.
9. Obv. *Constantinus Iun. Nob. C.* Rev. *Gloria Exercitus*. Two standards between two soldiers. Mint of Treves (TRF), c. A.D. 330. Cohen, 122. From gully.

CONSTANTIUS II (A.D. 337-61).

10. Obv. *D N Constantius P F Aug.* Rev. *Fel Temp Reparatio*. Soldier spearing fallen horseman. Mint uncertain: c. A.D. 350. Cohen, 45. From Room 2.
11. Obv. *Fl Iul Constantius Aug.* Rev. *Gloria Exercitus*. Standard between two soldiers. Mint of Treves (TRS), c. A.D. 337-50. Cohen 93. From Room 2.

MISCELLANEOUS.

12. Small copy of the *Fel Temp Reparatio* types (cf. No. 10 above). From stoke-hole.
13. Uncertain radiate, probably barbarous.
- 14-16. Illegible.

The chronological context of this group of coins is Constantinian—i.e., c. A.D. 320-60. The two *antoniniani* of Gallienus are typical "outliers," likely to occur frequently in early 4th-century currency. All the rest of the legible coins, with the exception of No. 12 and perhaps No. 7, were struck in the second quarter of the 4th century; but No. 10 (itself rather worn) was part of an issue, dated c. A.D. 348-50, the diffusion of which would not be immediate. It is to be noted, however, that the list is devoid of coins of Valentinian and Valens, whose joint accession fell in A.D. 364, and whose currency was rapidly absorbed in Britain. And the little *Fel Temp Reparatio* copy (No. 12), typical of a class of copies which (as the first Lydney hoard showed) were fairly swiftly made and diffused in Britain, is the only one of its kind in the present group. Therefore the coin-list, considered as a whole, displays a frequency which suggests that the use of the bath building began c. A.D. 320-30, and continued perhaps until c. A.D. 360-5, though possibly not after 355-60.¹

¹ In a subsequent letter Mr. Sutherland stressed that this dating is that suggested (a) by the coin-evidence only; (b) by the coin-list as we have it, which is of course incomplete owing to erosion by the Mole of parts of the site. Of the two limits he thinks the lower one the more definite; the upper one could be moved up to 300-20, "though the coin series is perilously thin for that extra amount of time."

APPENDIX III—PATTERN-STAMPED FLUE-TILES FROM THE
"CHATLEY FARM" BATH-BUILDING.

BY A. W. G. LOWTHER, F.S.A.

Pieces of box flue-tiles bearing eight separate patterns, some of them of exceptional interest, have been submitted to me for examination by Mr. Frere and are the subject of this note.

In the first place, the finding of so many patterns at any one site is itself quite exceptional. At no other site, apart from London (where over twenty have been found), have more than five separate patterns been found, even including towns such as Verulamium, Silchester or Leicester. Again, though the building in question has been shown by Mr. Frere to be of 4th-century date, most of these eight patterns have already been dated *c.* A.D. 90-150 through their having been found in structural remains, or stratified levels, of this period at other sites.¹ Also the actual clay of which these tiles are made varies for each pattern, but is the same as that of corresponding tiles found elsewhere and of known earlier date.

Briefly, it is clear that, for this 4th-century building, flue tiles were collected from other structures, presumably the then ruined remains of earlier villas or bath-buildings in the vicinity (or possibly at some distance, seeing that tiles of one pattern are identical with tiles found at the Roman villa and brickworks on Ashtead Common, a site that was abandoned *c.* A.D. 200).

A full account of all such patterned tiles (45 different designs in all) is being published shortly by the writer, together with maps showing their distribution. Here it will suffice to say that the use of tiles patterned with roller-shaped dies, usually of wood (instead of their being "combed" or "scored," as was more usual) is confined to S.E. England, with London as the centre. As stated, about half the known patterns have already been found in London, and it is possible that most of the others will eventually be found there, proving London to have been the centre from which the workers of this specialist industry were obtained for work in surrounding areas.

The patterns found at this site are those numbered (following the notation assigned to the full series by the writer) 4, 7, 9, 13, 15, 19, 23 and 24. (See Fig. 9.)

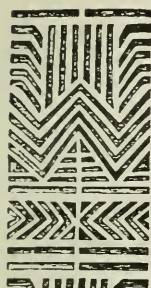
Die No. 4.

This belongs to the writer's "W-chevron" group, consisting of five separate dies, all producing closely allied patterns. Three of the five were in use at the Ashtead Common brick-making site (at the close of the 1st-century A.D.), including No. 4.

Sites at which tiles stamped with this die have been found are eleven in number, six of them in Surrey. These sites are:—

- (a) *Ashtead Common* (villa, bath-building and brickworks, excavated 1925-27).
- (b) *Ashtead*, near Parish Church (villa ?, mostly destroyed, excavated 1934).
- (c) *Walton Hill*, Sandilands Road (villa, in garden of "Windmill Bank." Found 1915, excavated 1940).
- (d) *Cobham*, "Chatley Farm" (bath-building).
- (e) *Farley Heath* (among building-débris of the Temple; 1926. As there are no hypocausts at this site, the piece of tile in question was probably obtained elsewhere, suggesting re-use of material from earlier buildings, in the erection of this temple).
- (f) *Beddington* (bath-building, excavated 1871; tile found, on surface, by Mr. Frere).
- (g) *London* (corner of King William Street and Cannon Street; one, almost complete, flue-tile in Guildhall Museum).

¹ It should be noted that it is often possible to tell that tiles from widely separated sites have been made not only with the same pattern but by use of the *same die*, by making a careful comparison of the pieces from each site.



4



6.



7.



9.



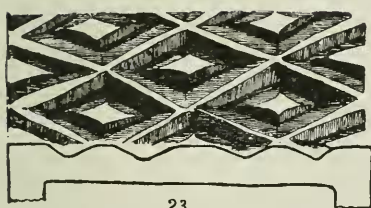
13



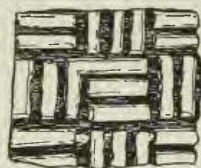
16



19



23



24

FIG. 9.—ROLLER-DIE PATTERNS ON BOX-FLUE TILES (Scale $\frac{1}{2}$).

- (h) *Verulamium*, Herts (several pieces found, near the Theatre, in 1934).
- (i) *Colney Street*, Herts (with a kiln found in 1941).
- (j) *Ridgewell*, Essex (villa, excavated 1796).
- (k) *Chelmsford*, Essex (1947, during re-excavation of site found in 1849).

Die No. 7.

This design was produced by the same die (No. 6) as that used to produce the well-known "Wolf and Stag" pattern (found at Ashted, London and Chelmsford), but altered through recutting of the die. A series of wedge-

shaped forms were cut on the original die, obliterating most of the lettering, but leaving the two animals unaltered.

Apart from the one fragment found at Cobham (top left on Fig. 9, 7), tiles from this "re-cut" die have been found at only one other site—viz., Leicester—and a small fragment is here figured (bottom right, Fig. 9, 7). It was found by Miss Kenyon during her excavation of the Forum (in 1936) and is probably derived from the underlying remains of earlier (2nd century) public baths, demolished for the construction of the Forum.

(A complete drawing of this No. 7 pattern has been seen by the writer in an early publication in Leicester Museum Library, but he is now unable to trace the reference. It is clear, however, that tiles bearing the full pattern have been found in Leicester in the 19th century.)

Die No. 9.

This elaborate pattern (belonging to the writer's "Florid" Group) has been found at two other places—viz., London and Leicester—in both cases produced from the same die.

- (a) *London* (site of Baltic House, 1903, and at an unspecified site in 1850).
- (b) *Leicester* (Forum site, 1887 and 1936).
- (c) *Cobham* (bath-building, "Chatley Farm").

Die No. 13.

Belonging to the "Diamond and Lattice" Group, the largest of the series, and consisting of simple patterns which could be cut fairly easily on the wooden roller of the die.

This particular pattern incorporates the letters I, V and $\frac{T}{O}$ in the centres of three of the diamonds, with a triangular stop in the fourth. Presumably these may be initials of the workers who used this particular die.

In addition to Cobham, tiles from this die have been found at *London*, *Beckley* (Oxon) and at *Leicester* (Forum site).

Die No. 15.

Also a "diamond" pattern, similar to that of Die 16, but differing in several particulars. The one small piece found at Cobham (Fig. 10) does not give the full pattern, but two larger pieces, found at Alfoldean, Sussex, appear to be from this same die. (Photograph in writer's possession; the originals cannot now be located.)

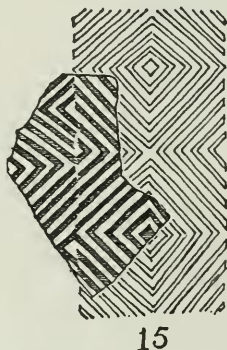


FIG. 10.—ROLLER-DIE PATTERN ON BOX-FLUE TILE (Scale $\frac{1}{2}$).

PLATE XII



(A).—NORTH END OF FURNACE, LOOKING WEST.

Above left, mortar trough ; above right, period II blocking ; below left, furnace trench ; below right, period I hypocaust pillar.



(B).—ROOM I, WESTERN HALF OF SOUTH WALL LOOKING NORTH.

The mortar trough has been removed ; the period II packing of tiles on right ; furnace in foreground.



ROOM 4, LOOKING NORTH.

Chalk lump in foreground ; tiles in background ; robbed wall to left.

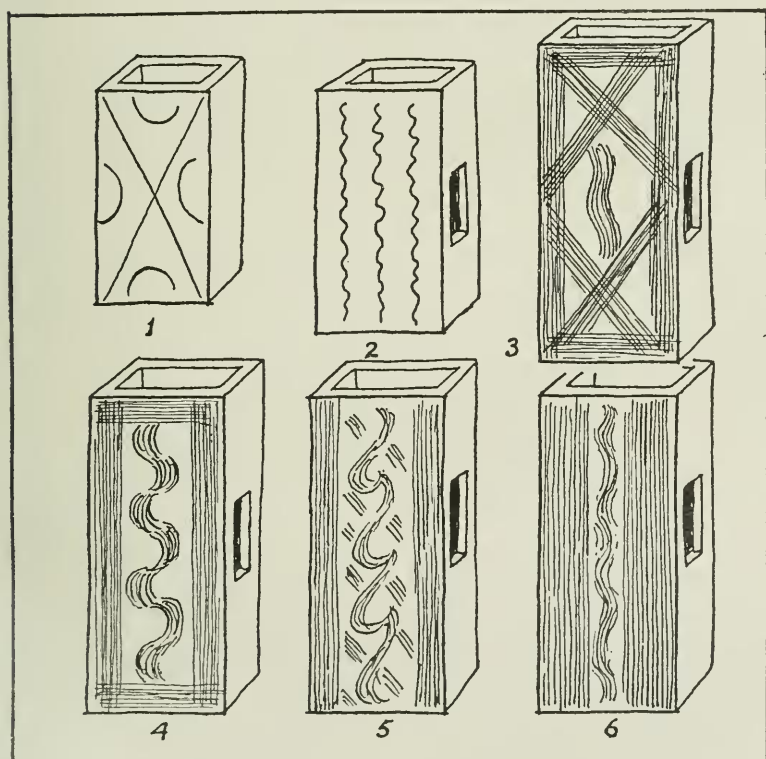
Die No. 23.

This large, deeply impressed, "diamond" pattern is represented by the one piece here figured. Another piece bearing the same pattern was found at Wiggonholt, Sussex (1937), in the bath-building excavated by Mr. R. G. Goodchild. This building proved to be of late date and, as some of the stamped tiles found here are identical with others found in 1st-century levels at Angmering, it is conjectured that some, if not all, of the flue tiles at Wiggonholt had been re-used from earlier structures. Since the above was written, a piece from this die has been found amongst the tiles from the Angmering site, found in 1938; another, found in 1937, from Highdown, Sussex.

Die No. 24.

A member of the "Billet" Group, the pattern (very roughly cut on a wooden roller, which reproduces the wood-grain most clearly) consists of a check design, the squares being filled by billets, set vertically and horizontally in the alternating compartment. Pieces from this same die have been found at two other sites, both in Sussex:—

- (a) *Highdown* (a late Roman bath-building, excavated in 1937).
- (b) *Angmering* (a late 1st-century bath-building, also excavated in 1937).



'COMBED' FLUE-TILES. (No. 3, EWELL, REST FROM ASHTEAD, Sy.)

FIG. 11.

The tiles bearing this pattern are unusually thick (28 mm. as against an average of 18 mm.) and the tiles are poorly made. Were it not for the Angmering piece, one would be inclined to ascribe a late date to this particular die.

Conclusions.

The following points emerge from this investigation :—

1. The flue tiles employed in this late Roman bath-building were obtained by the dismantling of hypocausts of earlier buildings, which were presumably then in a state of ruin.

This implies a difficulty in obtaining the manufacture of such tiles at this late period.

2. Three of the eight dies employed (Nos. 7, 9 and 13) were also used at Leicester, presumably by the same three craftsmen who made the Cobham tiles.

3. London was the centre at which these makers of patterned flue tiles lived and had their main occupation, but they were sent to work at distant sites when required, though the area covered by them is restricted to south-eastern England.

4. Where they can be dated, it seems that A.D. 90-150 covers the period within which these pattern-producing roller dies were employed.

5. The function of this patterning was exactly the same as of the combing process—viz., to produce a surface to which the mortar would adhere. In no case were they intended for use as decoration (the evidence for this is considerable and will be published with the full paper on these tiles), but they did serve to identify the product of each craftsman who would probably be paid according to the quantity of his output. Hence, even in the case of the combed tiles, it can be shown that each man formed a crude sort of pattern in the process (Fig. 11) enabling his work to be identified.