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TWO POTTERY KILNS AND A TILERY OF THE ROMAN PERIOD AT CANTERBURY (*DUROVERNUM CANTIIACORUM*)

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THE kilns to be described were discovered during the development of a building estate, now known as Whitehall Gardens, at Canterbury. Kilns I and II were found in the Spring of 1956, during the construction of the new road, and Kiln III in September 1959 when foundations for a bungalow were being dug by the builders. With the kind co-operation of the developers of the site, the author, assisted by a few volunteers, was able to carry out the excavations.

The kilns were situated on gently rising ground between the 30 ft. and 40 ft. contours, to the west of the left bank of the River Stour, outside the Roman city, and about 175 yards to the north of the Roman road to London which issued from the so-called "London Gate" to cross the river hereabouts. Geologically the kilns were situated on the brickearth which covers the valley floor to a considerable depth, and there is no doubt that this formed the raw material for pottery and tile making here in Roman times.

The Ordnance Survey 2½ in. Map National Grid references for the kilns are as follows :

Kiln I 61/144580.

Kiln II 61/144581.

Kiln III 61/143580.

DESCRIPTIONS OF THE KILNS

Kiln I. (Figs. 1 and 2)

This was a pottery kiln of the normal oval-shaped updraught type. It had been constructed below the original ground level in a pit dug into the natural brickearth, to a depth of about 3 ft. 9 in. The kiln consisted of an oven set over a furnace chamber whence a short firing tunnel connected it with an external stokehole pit.

The internal measurements of the kiln were 5 ft. by 4 ft. 6 in., the long axis being in line with the firing tunnel. Built into the furnace chamber was a system of vertical flues formed by pilasters placed three to each side of a central space which extended in line with the firing tunnel to the back of the kiln. These pilasters were not uniform in size and had been roughly built of pieces of flat tiles rendered over with a coating of clay. The bottoms of the vertical flues thus formed, were flat and at the same level as the bottom of the furnace chamber.

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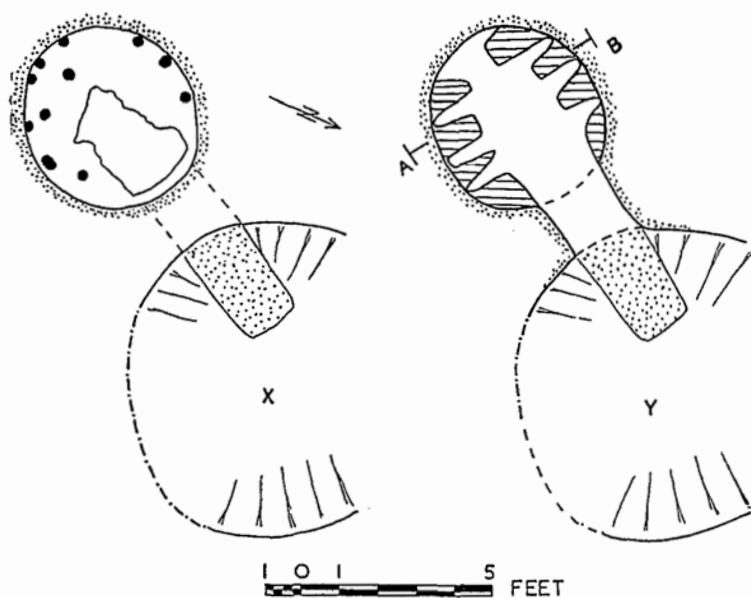


FIG. 1. Kiln I. Plans ; X=oven floor level. Y=furnace chamber.

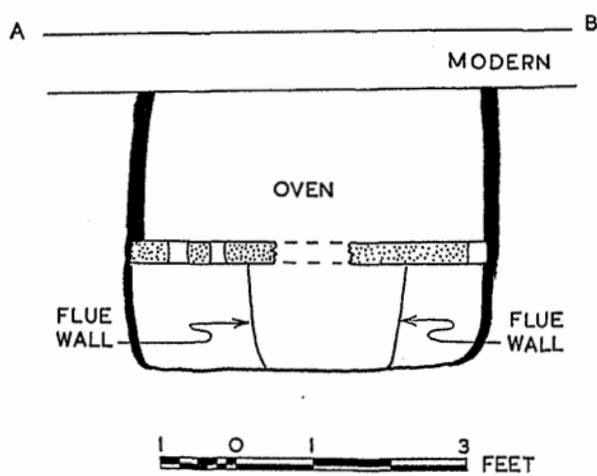


FIG 2. Kiln I. Cross-section.

Fortunately the modern drain trench in which the kiln was first exposed had not gone deep enough to penetrate the oven floor, hence upon removal of the last few inches of soil, this feature was found to be almost intact, with the exception of a small area over the inner mouth of the firing tunnel. Although the concrete foundation for the modern drain had been laid before the kiln was noticed by the author on a routine visit to the site, it was possible to examine the oven floor *in situ*. It consisted of clay tempered with grass or straw, and was 4 in. thick. It was pierced in a number of places by oval and circular holes placed directly over the mouths of the vertical flues, thus serving as vents to allow the heat to be drawn up into the oven.

The lower part of the oven had survived to a height of 2 ft., the top of its wall corresponding with the contemporary Roman ground level. This wall had been originally the sides of a pit dug to the required shape when the kiln was first constructed, but later it became necessary for repairs to be carried out as shown by five distinct clay linings, each burnt hard, and averaging about $\frac{5}{8}$ in. thick. From this it is clear that the kiln had been in use for a considerable time, in fact long enough for it to be repaired on more than four occasions. Due to this the original internal diameter of the oven had been finally reduced by nearly 6 in., and in one instance a circular hole in the oven floor had been partially blocked. Hence the floor itself seems to have remained in use without alteration throughout the working life of the kiln. It is also of interest that the oven wall curved inwards towards the top. This seems to have been intended and not caused by pressure exerted by the surrounding soil after the kiln was abandoned. No sign was found of the roof which was no doubt of a temporary character, demolished after each firing, in order to gain access to the contents of the oven.

The stokehole pit was 3 ft. 6 in. deep, about 8 ft. long, and apparently oval in ground plan, but its full width was not determined as it extended outside the area allocated for excavation. A layer of ash on the bottom of this pit contained a large quantity of Roman potsherds exhibiting all types of faulty firing. This layer extended into the furnace chamber via the fire-tunnel, and was sealed by a homogeneous deposit of heavy, sticky clay and soil which filled the stokehole pit and showed no signs of stratification. In view of this it can be regarded as back-filling thrown into the pit in one operation when the site was finally levelled off.

The furnace chamber was found to be partially filled. A thick spread of ash rested on the bottom and was sealed by silty loamy soil which had found its way into the chamber as a result of natural drainage throughout the centuries. This ash contained some pottery, the most interesting and certainly significant pieces being two complete "wasters", viz :—a flanged bowl and a jar, as also another broken

jar of similar shape, which were all filled with baked clay. These pots lay in the mouth of the fire-tunnel nearest the furnace chamber, with two larger lumps of clay which had also been baked, and were so shaped and bore markings which strongly suggest that they also had once formed the contents of similar pots. Two more lumps of clay exhibiting similar features were found in the layer of ash on the bottom of the stokehole pit, close to the mouth of the fire-tunnel. The presence of these objects and their positions strongly suggests that the potters used clay filled "wasters", either to seal off the fire-tunnel when the temperature was reached, or as dampers to control the draught through the kiln.

Kiln II. (Fig. 3)

This was a tile kiln of the rectangular updraught type. It had been constructed in a pit below the original Roman ground level, the pit being dug to shape in the natural brickearth. The kiln had an external stokehole pit whence a fire tunnel led into a horizontal central flue channel which extended from the front to the back of the furnace chamber. Originally the oven area measured 6 ft. long by 8 ft. wide, but one side was found to be partly destroyed presumably as a result of artificial terracing for landscape gardening in more recent times.

The internal arrangement of the furnace chamber consisted of three cross-walls carried over the central flue channel on arches, thus forming a system of vertical flues which had sloping bottoms. The two at the rear of the kiln i.e., against the back wall, sloped upwards from the bottom of the flue channel, while the others commenced to rise from a height of 1 ft. above it. The bottom of the kiln lay at 3 ft. below the original ground level.

The fire-tunnel was simply a trench cut into the natural brickearth and then arched over, but the arch of flat tiles had been deliberately destroyed evidently when the kiln was abandoned and the site was levelled off, for only a few springers were found *in situ*, the trench being filled with the remainder.

The walls at the front and rear of the kiln bore the vertical imprints of some implement, perhaps an iron-shod spade, evidently made when the kiln was first constructed. The two corners at the rear of the kiln had been hollowed out presumably to allow an easier passage for the heat into the oven. The cross-walls and bottoms of the vertical flues had been rendered over with clay. No trace of the oven floor was found; perhaps one never existed, for the stacked tiles could easily have bridged the mouths of the vertical flues. A close examination of the ground around the kiln revealed no signs of walls or foundation trenches belonging to the oven superstructure, hence it seems that this was of a temporary nature.

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The vertical flues were packed with consolidated burnt clay which was very difficult to remove. From this filling, a few inches below the top of the mouth of one flue, came a base silver *denarius* of Geta (c. A.D. 211-12). Below the deposit of hard burnt clay which choked the central flue-channel, was a layer of ash, which rested on the bottom of the kiln throughout its entire length, and extended outwards into the stokehole pit. In this ash, close to the rear wall of the kiln and actually resting on the bottom were three pieces of Roman pottery. One is certainly a "waster" for it is cracked and distorted, and is quite clearly of local manufacture although not necessarily made at this kiln.

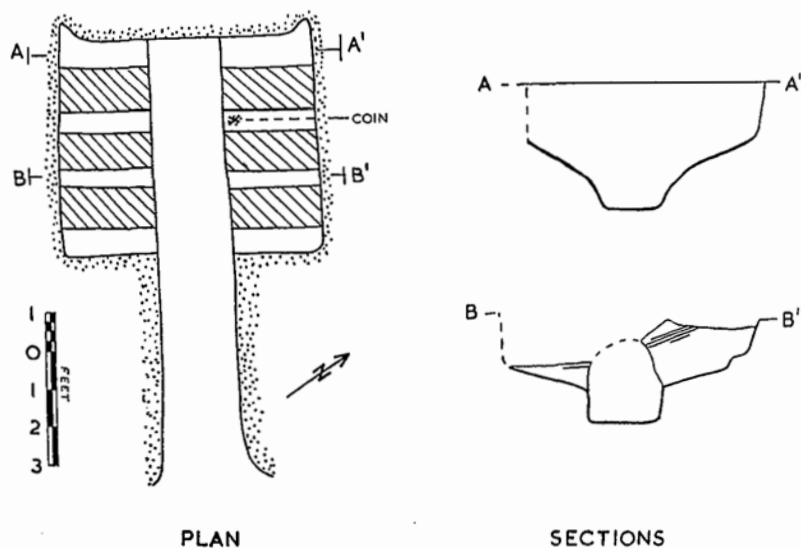


FIG. 3. Kiln II. (Tile kiln.)

Only that part of the stokehole pit immediately in front of the mouth of the fire-tunnel was available for excavation, hence its exact dimensions were not determined. It was simply a large pit dug into the natural brickearth from ground level to a depth of 3 ft. The upper filling showed no signs of stratification and must have been back-filled in one operation when the site was levelled off. It was very difficult to excavate, being heavy, sticky clay mixed with burnt clay, ash and many fragments of tiles. All these exhibited signs of faulty firing. An examination of these, as well as many more strewn around the kiln showed that the main product was the usual flanged tiles. A few pieces bore scoring or combing on the outer surface, but these were not plentiful and too fragmentary for the exact sizes of the box-tiles they represented, to be determined. Unfortunately

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not one fragment of tile bore the name of the maker or any other mark of interest.

Kiln III. (Fig. 4)

This was a pottery kiln of the normal updraught type, being roughly circular in plan and connected to the stokehole pit by means of a fire-

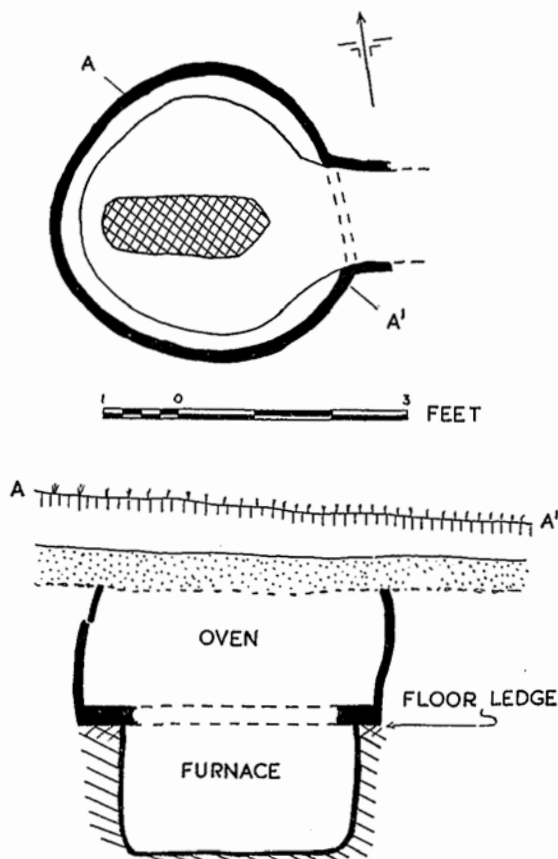


FIG. 4. Kiln III. Plan and Cross-section.

tunnel. The kiln had been constructed below the original ground level, in a pit dug into the natural brickearth.

The furnace chamber was circular in plan and measured 3 ft. in diameter, and was 1 ft. 6 in. deep. The wall of this chamber had not received a coating of clay, but was simply the natural brickearth baked hard by successive firings. The imprints of an implement of some kind perhaps an iron-shod spade were clearly seen, a now

recognized feature present in a number of Roman kilns found in Canterbury, including those just described. Around the top edge of the furnace chamber was a ledge, about 3 in. wide, which once supported the edges of the oven floor. Additional support had been provided by a freestanding tongue-shaped column, extending from a point some 4 in. away from the rear wall of the furnace, in line with the fire-tunnel. This column only survived to a height of some 3 to 4 in., and must have been deliberately destroyed before the kiln was finally filled in. For the same reason very little of the floor of the oven was found *in situ* and then only on the ledge around the top of the furnace wall. Here the floor was seen to be 3 in. thick, and consisted of clay tempered with grass or straw. At three points, parts of vent holes could be seen but not enough remained for the diameters to be estimated.

The oven wall stood to a height of 1 ft. 6 in. above the oven floor, the top coinciding with the original ground level. The overall internal diameter of the oven was 3 ft. 6 in. at floor level above which the oven wall curved progressively inwards to form a truncated beehive-shaped cross-section. Now this is interesting for it proves what the author has long suspected, that most of the Canterbury kilns were dug to shape in the natural brickearth below ground level, in one operation, and then consolidated at the first firing. It is also clear that the oven wall was repaired on at least two occasions by layers of clay the final layer being reinforced with numerous potsherds pressed into it. The evidence thus suggests that the kiln was active over a fairly long period.

The fire-tunnel was 1 ft. 7 in. high and 1 ft. 3 in. wide, but the length could not be accurately determined as the outer mouth lay outside the area permitted for excavation. The inner mouth of this tunnel had been carefully chamfered no doubt as an aid to easy clearance of the ashes after each firing.

THE POTTERY. (*Fig. 5*)

Kiln I

- 1-2. Single-handled, ring-necked jugs. The type had a long life which extended well into the second century. An example was found at the St. Stephen's Road kiln where it seems to belong to the period A.D. 130-40. *Antiquaries Journal*, XXXVI, pp. 40 ff, Fig. 5, No. 2.
3. Large jug with heavy moulded, undercut lip.
4. Single-handled jug with flanged lip. The date range in Canterbury commences in Flavian times and continues into the second century. An unpublished stratified example from the excavations at No. 1, Watling Street, Canterbury, was antedated by a coin of Titus. At Richborough one was dated ?

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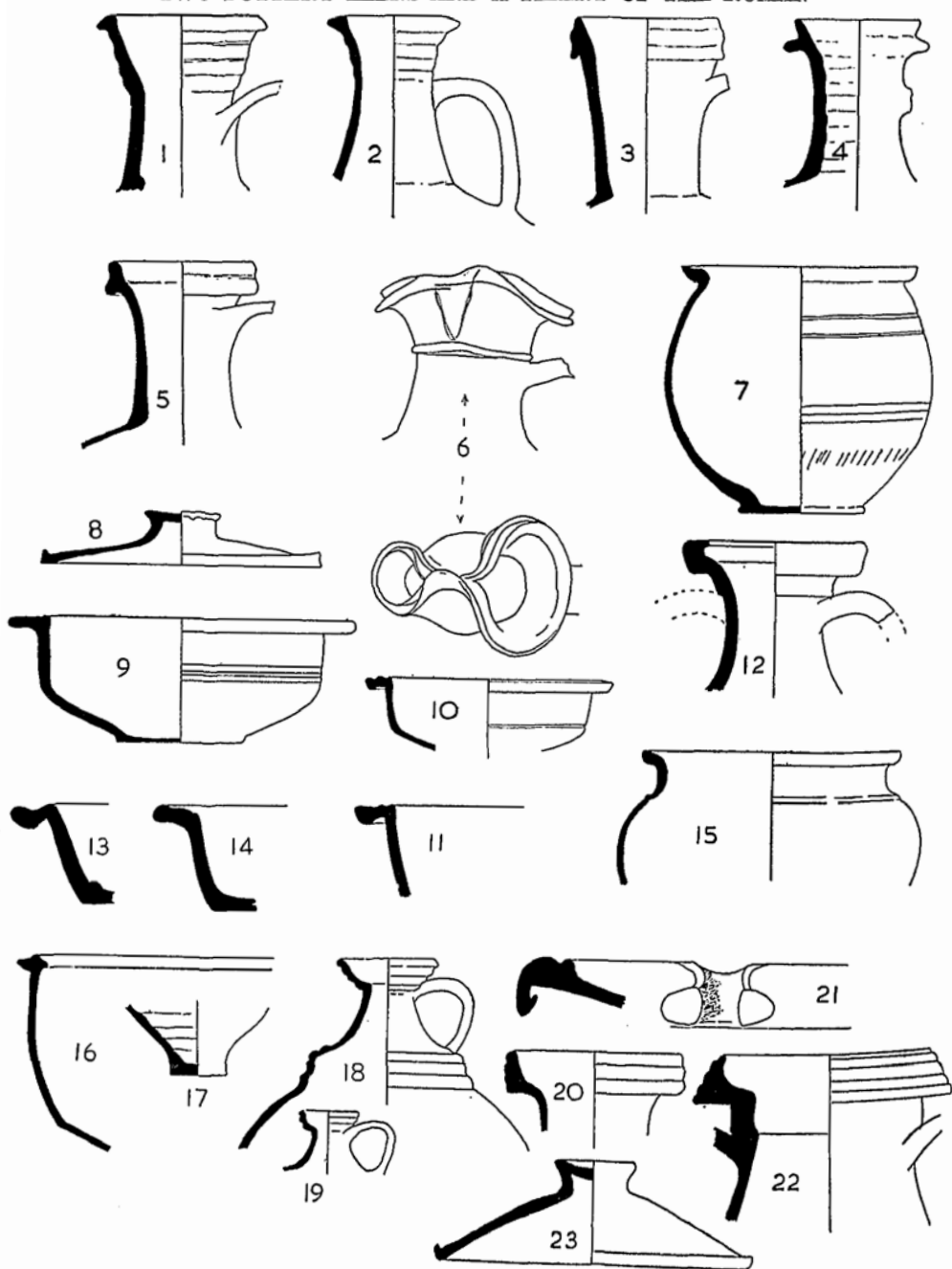


FIG. 5. Pottery from Canterbury Kilns. (1)

mid first century, *Richborough*, I, 39 ; and another example A.D. 70-100, *ibid.*, III, 200.

5. Jug with heavy moulded lip.
6. Jug with pinched mouth. An example occurred in a kiln at South Carlton, Lincs., which was active from A.D. 140-80, *Antiquaries Journal*, XXIV, p. 137, Fig. 8, type 2 K. At Richborough on the other hand one was assigned to the period c. A.D. 50-80, *Richborough*, III, 206-7 ; while at Canterbury others occurred at the Dane John kilns which seems to have ceased production in the third or fourth decade of the second century, *Arch. Cant.*, LIII, p. 129, No. 55, and p. 131, No. 56. Another was found in the St. Stephen's kiln, *op. cit.*, Fig. 5, No. 1, which seems to be dated A.D. 130-40. At Verulamium examples were found with many wasters dated to the Hadrian-Antonine period. *Antiquaries Journal*, XXI, p. 290, Fig. 5, No. 12.
7. Jar with moulded footring and flanged lip which is shaped to accommodate a lid. There are girth grooves on the shoulder and body with a zone of oblique strokes below. This pot was found complete but cracked and it is evidently a waster for its surface is vitrified by excessive heat. For a similar rim section cf. *Arch. Cant.*, LXVIII, p. 116, Fig. 8, 71, found in a Hadrianic context. The present example was found filled with burnt clay.
8. Lid with roughly shaped knob or hand grip. From the number of sherds recovered from the kiln it is evident that lids of this type were one of the main products. They were probably used in conjunction with pots of our type 7, see above, and bowls as types 9 and 10 below.
9. Bowl with strongly carinated body and level reeded flange. This was found with No. 7 above in the fire-tunnel. This was filled with burnt clay.
10. Bowl with carinated body similar to No. 9 above.
11. Rim of bowl or jar of carinated type.
12. Two handled amphora with heavy moulded lip.
- 13-14. Bowls with thick walls and flat bases. Heavy flanged lips, the angles of which have been distorted by faulty firing.
15. Cooking pot with outward turned rim and upright neck and a cordon at the junction of neck with shoulder.

Kiln II

This pottery was found in the ash layer on the bottom of the central flue channel near the rear wall of the furnace. It is possible that these pieces found their way into the kiln in soil brought from elsewhere.

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There is no proof that these were made at this kiln, but are illustrated as dating evidence.

16. Bowl with flanged lip shaped to accommodate a lid. This is a cracked and distorted waster.
17. Base of small beaker of stump-footed type in smoothed grey ware. Probably late second or early third century in date.

Kiln III

18. Saucer-mouthed single-handled flagon with mouldings at the junction of the neck with shoulder.
19. Small saucer-mouthed, single-handled jug. Jugs of this type are typologically A.D. 150-200, cf. *Richborough*, I, 148; *Arch. Cant.*, LX, p. 84, Fig. 8, 2.
20. Flagon with heavy ring shaped mouth.
21. Mortarium rim. The example illustrated is a distorted waster, hence the angle of the wall of the vessel cannot be taken as originally intended. The rim is similar to several found at the site of the Dane John kiln, *Arch. Cant.*, LIII, p. 121, Figs. 7-10 inclusive, and are typical of the mid-second century.
22. Large two handled amphora with outward sloping lip which is corrugated externally, and hollowed out internally. A closely similar example came from the Dane John kiln site. *Arch. Cant.*, LIII, p. 127, Fig. 46, also mid-second century.
23. Lid of a type commonly found in the kilns at Canterbury, and in this case of the second century.

CONCLUSIONS REGARDING THE DATING OF THE KILNS

The pottery found in Kiln I was in sufficient quantity to lead one to think that it was made there. Analogous types from sites elsewhere indicate that the kiln was active at a time around the mid-second century, probably during the period A.D. 130-160.

It is clear that the tile kiln, Kiln II, could not have been finally filled in until after the coin of Geta became embedded in the burnt clay, which choked one of the flues, and formed a homogeneous filling throughout the furnace area. It is significant that the coin was embedded in this burnt clay, and could not have found its way to that position from a higher level a long time after the site had been forgotten. The date when it was deposited is uncertain for it may have lain on the site for some time after being dropped, and then finally gathered up with the burnt clay at the time when the kiln was filled in. Hence all we can say is that this did not take place until some time after A.D. 212, the date when it was minted.

The pottery from Kiln III came from the filling of the furnace

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chamber, and was probably made there. Typologically the group belongs to the second half of the second century, say A.D. 150-180.

ACKNOWLEDGEMENTS

The author wishes to place on record his grateful thanks to those who in various capacities assisted the work of excavation. Messrs. Hawkes Construction Ltd., and Messrs. Child Bros., the site developers, who kindly held up their work to allow the kilns to be excavated. Messrs. L. D. Lyle, P. Woodfield and J. Coy, members of the Canterbury Archaeological Society Stour Valley Research Group who actually carried out the work under the author's supervision.