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THE BURIED SHAFTS AT IPSWICH.

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From the archæological standpoint the brickfield of Messrs. Bolton and Co., Ipswich, may perhaps lay claim to that frequently misused title "unique." For a considerable number of years a close watch has been kept upon the diggings for brickearth there, while extensive excavations have been carried out for archæological purposes. This work has resulted in the getting together of flint implements ranging in date from the earliest to the latest, relics of the Bronze and Iron Ages, and very numerous remains from a burial ground of the late Roman period.*

But the interest of the Ipswich brickfield has recently been greatly increased by the discovery there of three very deep, filled-in shafts of a type hitherto unknown in this country, and, in some particulars, unlike those found elsewhere. The method adopted in removing the London Clay is to undercut a section, some 8-ft. in height, and then, to detach the mass by means of crow-bars at the surface. Some little time ago, while such work was in progress, the men noticed in the face of the clay so exposed, half of a well-like digging filled in with material differing from the surrounding London Clay. (Fig. 1). Fortunately, the workmen in the brickfield, after many years' association with archæological activities in their territory, have become somewhat archæologically minded, and, when this strange well-like structure was revealed, they lost no time in acquainting me with its discovery. The site is in the north-west corner of the brickfield, and adjoins the L.N.E.Rly. main line to Great Yarmouth. (Fig. 2).

Subsequently, two other filled-in shafts—differing in character from that first found—were discovered, and these, in close association with each other, occupied a line running roughly N.E.-S.W. It is proposed to describe these three shafts separately, beginning with that first discovered, and called No. 1. The diggings were carried out by kind permission of Mr. William Pipe, J.P., the owner of the brickfield.

SHAFT No. 1. (Figs. 1 and 3).

Work was begun upon this shaft in November, 1934. It was found to be a clay lined excavation of oval form measuring approximately 2-ft. 10-in. by 3-ft. 4-in. in internal diameter. The shaft passed through some 12-ft. of London Clay into the underlying Eocene Sand, where,

* *The Antiquity of Man in East Anglia.* Cam. Univ. Press.

while the inside measurements remained fairly constant, the outer walls were greatly increased in thickness, no doubt to keep the sand in place, and to ensure safety. The walls were composed throughout of strong, puddled London Clay which is very tough and adhesive. Towards the surface of the ground, where, incidentally, no traces of the shaft were visible in the humus, the walls were some 6-ins. thick, but, at a greater depth, the width was in some places as much as 2-ft. The inner surface of the walls had evidently been smoothed off, apparently with some wooden instrument which had left marks upon the clay, while the outer surface was much more uneven, and it was possible to see clearly in places, the impress left by the timbering used in the original construction of the shaft. Both in this, and the other shaft examined, it was apparent that most of this timbering represented pieces split off the outside of a trunk of a tree as the impress was often of convex form, some 2 to 3-ft. long and 4 to 5-ins. in width. The interior surface of the walls of the shaft presented, when uncovered, a highly polished surface due to the slow sinking and consequent polishing action of the infilling during the considerable period of time since the shafts were abandoned. (Fig. 1). The material filling the shaft was a greyish sand with ferruginous concretions which is known to occur in the brickfield, but at some distance from the shaft. This material must therefore have been brought specially to the site.

The shaft was exposed, and dug to a depth of 29-ft. from ground level, (Fig. 3), when it was deemed inadvisable to proceed further owing to the friable nature of the Eocene Sand, and the probability of its collapse. At the depth mentioned the clay walls of the shaft coalesced forming a basin, and it was supposed at first that the bottom had been reached, but, the use of an iron rod passed through the clay, showed that the ancient excavation continued much deeper. It may be well here to mention that in shaft No. 2 a precisely similar coalescing of the clay walls was observed, and it is suggested that this method was adopted to mislead anyone who afterwards opened the shafts. Upon arriving at the point where the clay walls coalesced it might be supposed that the base of the excavation had been reached, and further digging would cease.

The whole of the infilling of shaft No. 1 was carefully removed and examined, but it was found to be practically barren of archaeological relics. At a depth of some 16-ft. from the surface a small piece of pottery was discovered which the authorities of the British Museum think may be of Early Roman date, while, at about 20-ft. was found a small piece of matted hair which the same authorities say is either that of a rabbit or a badger. It is of some interest to note that a precisely similar piece of hair was discovered in shaft No. 2, also at about 20-ft from the surface. There is no doubt that some difficulty was experienced in sinking shaft No. 1 as in places the sand had evidently begun to cave in, and a mass of clay had been rammed in to prevent further movement. Shaft No. 1 was situated some 10-ft. to the W.-S.W. of No. 2 (Fig. 3) and contained a few scattered pieces of charcoal in the infilling.

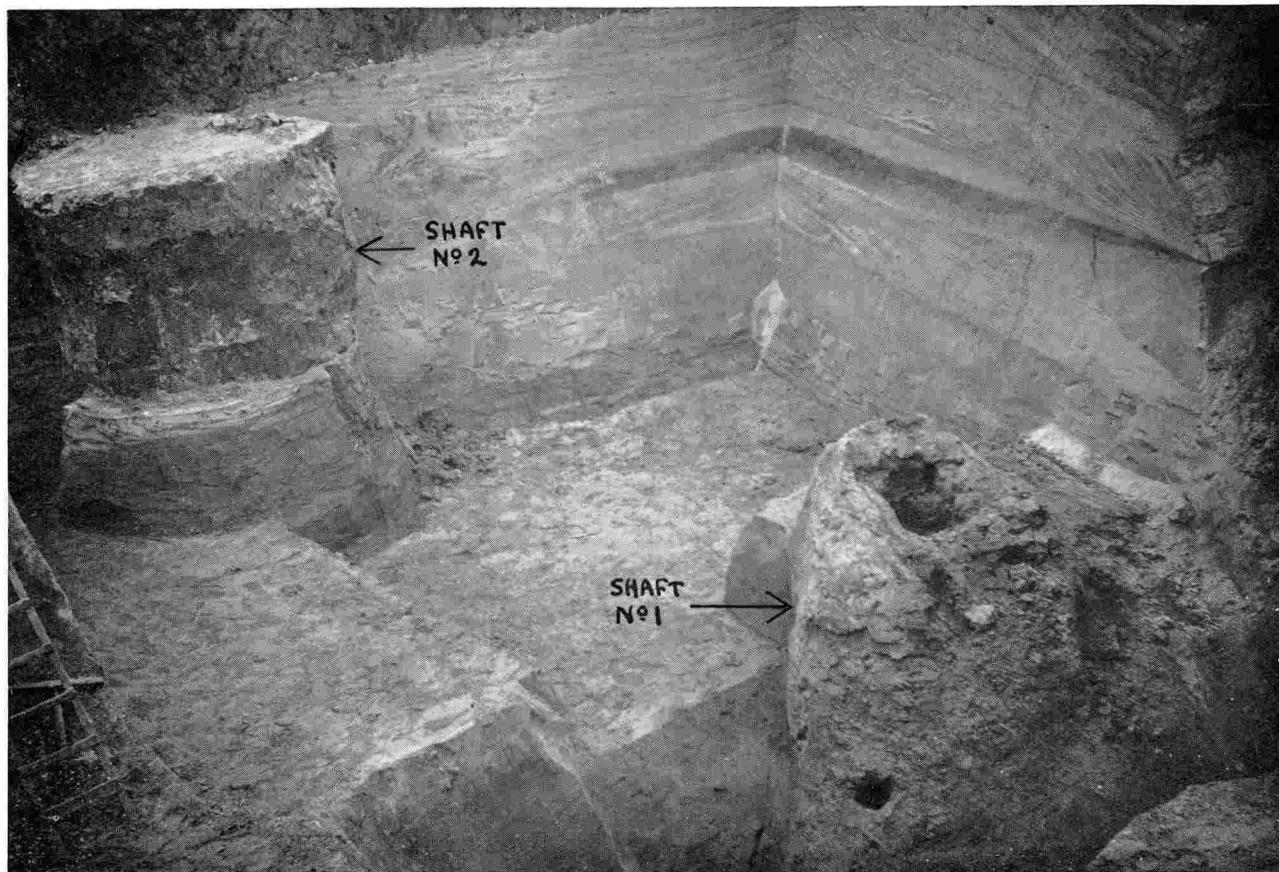


FIG. 3. Shafts Nos. 1 and 2 exposed at some depth from the surface. The hole in the side of Shaft No. 1 was made for examination purposes.

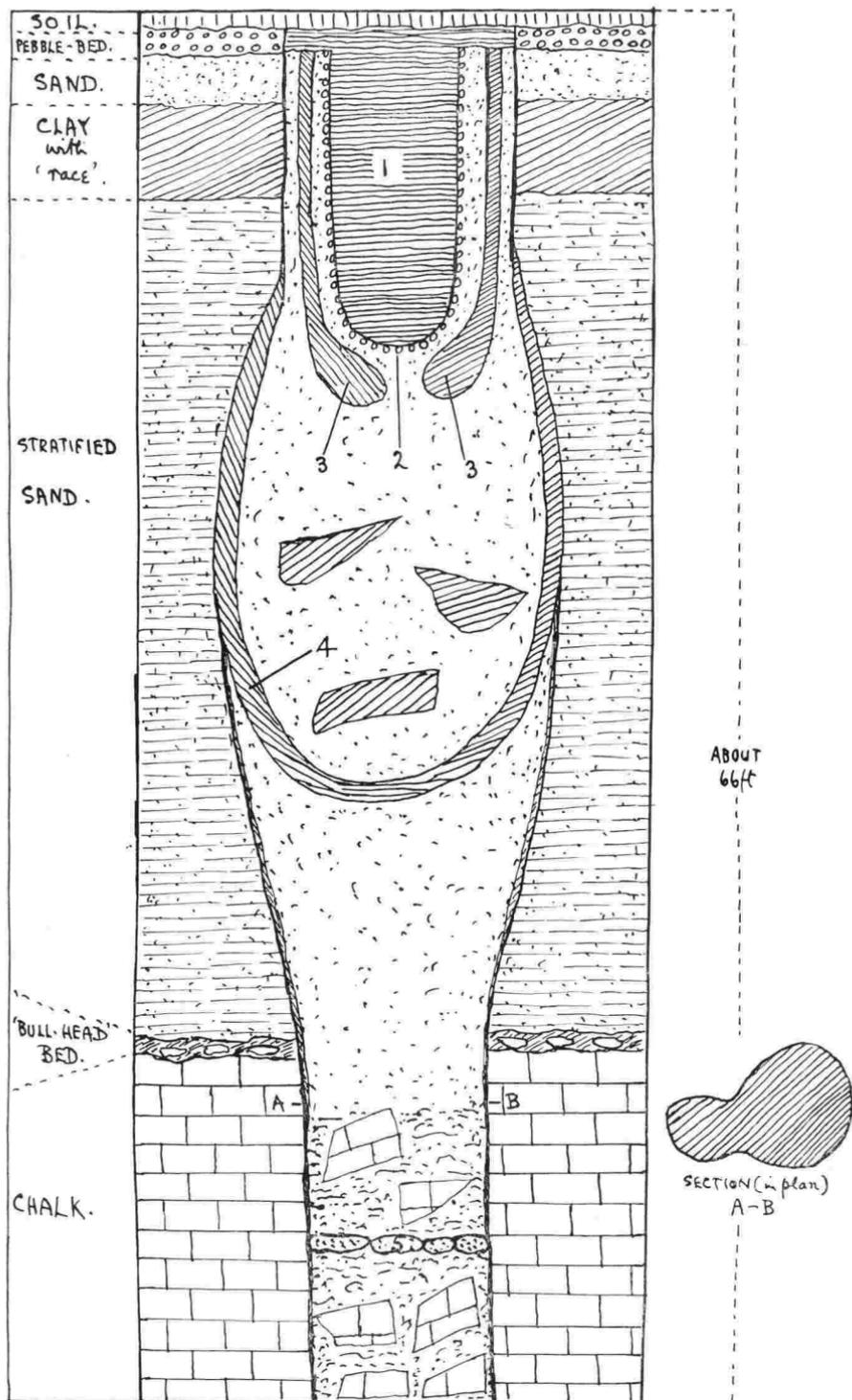


FIG. 4. Diagrammatic Section of Shaft No. 2. 1 Clay Core ; 2, Pebbles ; 3, Clay Walls. 4, Clay Wall ; 5, Pavement of Chalk Flints.

SHAFT No. 2.

As has been stated, shaft No. 2 was situated about 10-ft. to the W.-S.W. of shaft No. 1 (Fig. 3). When the excavation of shaft No. 1 had begun it was not known that other shafts existed in the area. But, while the brickfield workmen were removing sand close to shaft No. 1 the neighbouring excavation was discovered. After due consideration it was decided to examine shaft No. 2, and as the work progressed it was found necessary to resort to timbering, and when the chalk was reached, the installation of powerful pumps to cope with the inflow of water.

Shaft No. 2 differed very markedly from shaft No. 1, and was, in fact, of such a remarkable character, as to call for a detailed description. There is no doubt that the uppermost 18-ft. of the shaft had been most carefully filled in. Below the 18-ft. level the infilling was quite irregular, and the uppermost portion may be regarded as the ceremonial sealing-in of the shaft. Very careful drawings (Figs. 4 and 6), supplemented by photographs (Fig. 5) were made and it is as well that this was done otherwise, perhaps, few people would have been prepared to believe the account which now follows. The shaft at the surface was roughly circular in form and about 6-ft. in diameter, but lower down the original digging widened out to nearly 10-ft. Thus the shaft was bottle shaped contracting somewhat where the chalk was reached at about 40-ft from the surface. When the process of filling-in had reached a level of 18-ft. from the top the following method was carried out. A mass of "strong" London Clay, some 4-ft. wide, was puddled and placed in position in the centre of the shaft. This mass would probably have risen a foot or two above the floor and round it were placed a layer of black pebbles stuck into the sides of the circular pillar of clay. The next process employed was to build, at a distance of some 6-ins., a wall of whitish clay about 3-ins. in width, erected on opposite sides of the central core, but not completely surrounding it. This wall was constructed with a widened, rounded footing which exhibited a globular section (Figs. 4 and 5). When this wall had been raised to a certain height, sand was poured in between it and the central mass of clay. Again, between the outer surface of the clay wall and the sides of the original digging more sand was placed, and, by slow degrees, the infilling was accomplished and the whole covered by a layer of the puddled London Clay of which the central core was composed. When seen in section the shaft had the appearance of an immense bottle with an elaborate, and well-fitting cork. The black pebbles used in the decorative process were available close at hand as a bed of them, known as the Woolwich and Reading Pebble Bed, occurs at the base of the London Clay. Fig. 6 illustrates (in plan) the structure of the uppermost 18-ft. of infilling. At a depth of 29-ft. from the ground level, the outer clay walls of the shaft coalesced forming a basin similar to that observed in shaft No. 1. Upon arrival at the chalk the ancient diggers altered drastically the form of their shaft, for, at this level, the excavation assumed, in plan, a roughly hour-glass shape—the larger axis of

which lay upon an almost due north-south line (Fig. 4). Moreover, the chalk walls were coated to a thickness of 3 or 4-ins. with a layer of reddish brown unctuous clay of a peculiar kind. There is little doubt that this clay was derived from the thin layer of the Eocene "Bull-head" bed which was met with on the surface of the chalk. The deposit is well known, and contains numerous green coated flints, many of which, in fact, were found in the infilling of the lower portion of the shaft. It was apparent that the coating of clay upon the chalk walls of the shaft presented unusual features and it was decided to have it analysed. This was very carefully carried out by Mr. F. W. Garnham, chemist to Messrs. Fison, Packard and Prentice, Ltd., of Ipswich, to whom I am greatly indebted for their kindness. The analysis brought to light a somewhat startling fact in that the clay lining to the chalk walls of the shaft contained as much as 7-60% of phosphoric anhydride (P2O5) in the form of ferric and calcium phosphate. On the other hand an analysis of samples of the material forming the infilling of the higher portions of the shaft showed that they contained 0.03 to 0.06% of phosphoric anhydride; which is about the normal quantity met with in ordinary soils, and deposits. Mr. Garnham states, "it appears that the material in the shaft is mainly clay which had had some animal matter (the nature of which is very difficult to determine) in contact with it at some time. The brown colour is due to iron compounds." In the upper part of shaft No. 2 very clear impressions were visible of the timbering used in the original excavation (Fig. 7) and casts of these were taken. In the infilling one or two small pieces of wood were found and these, in all probability, represent parts of the timbering which were broken off when it was removed during the filling in of the shaft. Except for these fragments of wood, and the small piece of matted hair, already mentioned, no relics were met with until the excavation passed into the chalk. At this level two small pieces of silver sheeting were found, together with what appears to be an example of polished marble. This was of cylindrical form and of small size. The authorities at the British Museum think it possible that the pieces of silver sheeting formed, at one time, parts of the mountings of a casket, or treasure chest, which were broken off when being lowered into the shaft. It is also possible that the specimen of polished marble may have formed part of such a chest. At a lower level than that at which the silver was found, a number of small pieces of brick were discovered, and these have the appearance of being Roman. They are of such forms as to suggest the fragments knocked off in the shaping of bricks for some building. When the excavation reached water-level, all the removed material was carefully washed upon arrival at the surface, and it was in this process that the various relics were found. The work of digging out the shaft had gone on smoothly until water made its appearance, when difficulties were at once encountered. It was thought at first that the water would not be present in much quantity, and would be got rid of by means of a small pump. This, however, proved to be inaccurate as the deeper the excavation was carried (Fig. 8) the greater became the inflow of water. Various kinds of pumps were tried



FIG. 5. Photograph of infilling of Shaft No. 2, some 18-ft. from surface. 1, Central core of clay; 2,2, Layer of flint pebbles; 3, Clay wall with rounded footing. (Compare with Fig. 4).

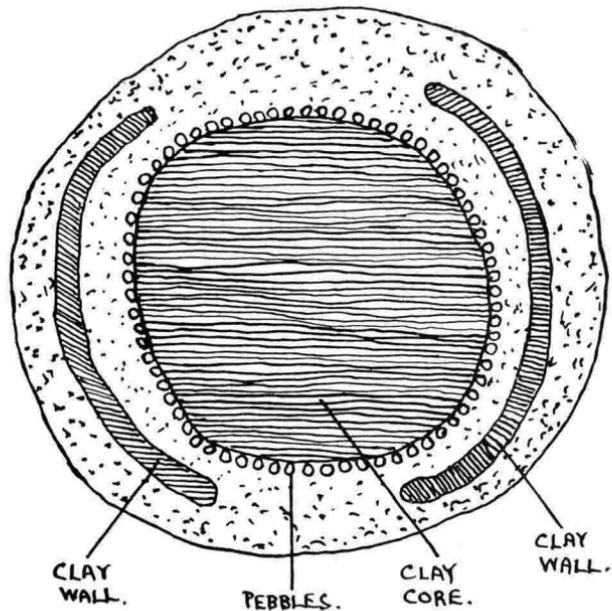


FIG. 6. Diagrammatic Section in Plan of upper part of infilling, Shaft No. 2.

FIG. 8. View looking down Shaft No. 2 during excavation.

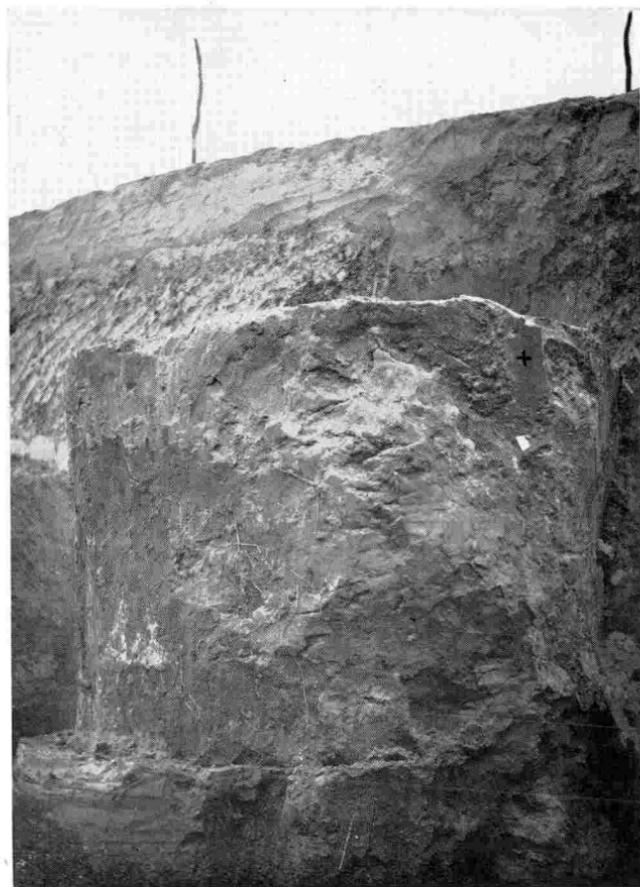
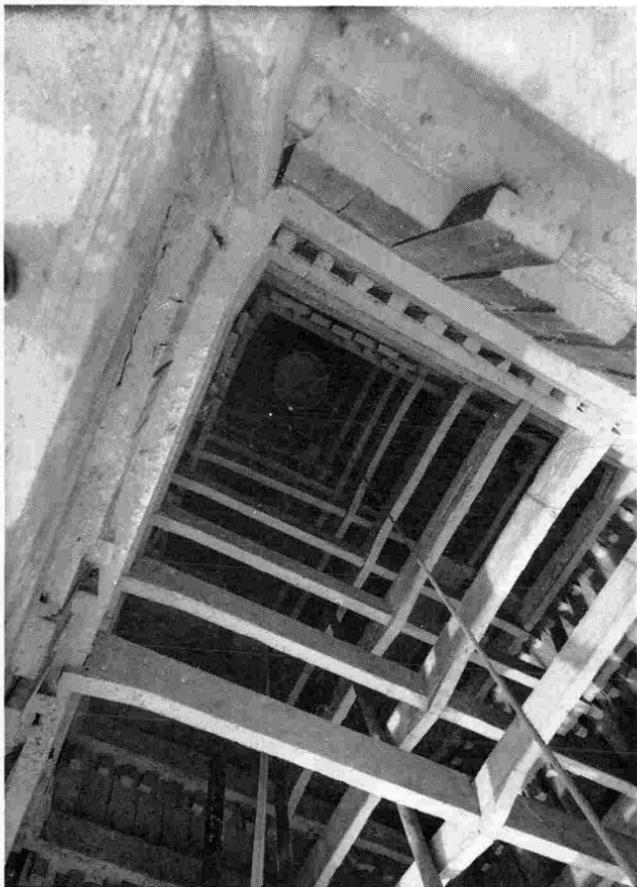


FIG. 7. Shaft No. 2, showing impress of ancient timbering (indicated by a cross) on side.

driven by petrol engines, and finally it was found necessary to instal a steam driven pulsometer pump of considerable lifting capacity. The installation of these apparatuses, their frequent breakdowns, and consequent lengthy delays, made the work of excavation very slow, and expensive. Finally, when a depth of 66-ft. from the surface had been reached and fresh water-bearing fissures in the chalk exposed, it was estimated that the inflow was at the rate of at least 15,000 gallons per hour. To master such a volume of water would have required a still more powerful pump, and boiler, involving considerably increased expenditure. Moreover, it had been found necessary to put in a series of steel piles to prevent caving in of the sides of the excavation, where the solid chalk was not present, and to have carried the work lower another set of piles would have been required. These measures would have cost at least £250, and as the digging fund had by this time become exhausted, the work had with great regret, to be abandoned. It was ascertained that the shaft descended to a lower depth than the 66-ft. reached by us, as an iron rod was easily passed down another 11-ft. without touching the bottom. When the rod was withdrawn red sand poured out of the hole showing that the infilling lower down is composed of this material. At about 45-ft. from the surface a pavement of chalk flints, closely set together, was met with in the infilling. These had evidently been carefully placed in position and probably represent another attempt on the part of the original diggers to mis-lead any later excavators of the shaft. A series of chalk blocks was found bearing ancient pickmarks (Fig. 9). These show that the picks used were somewhat curved, acutely pointed, and of small size. The occurrence of these pieces of chalk well below the present water level shows that, when shaft No. 2 was sunk, the water-table was at a lower level than now. It is impossible to believe, in view of our heart-breaking experience in trying to get rid of the water in the shaft, that these ancient people, with their primitive appliances, could have penetrated beneath the water level. The sand infilling of the shaft showed wavy, uneven bedding lines, such as have been noticed in Roman graves in Messrs. Bolton's brickfield.

SHAFT No. 3.

Situated about 6-ft. W.-S.-W. of shaft No. 2 and uncovered in its excavation, the upper part of shaft No. 3 was exposed (Fig. 10). This appeared to have been sealed in the same manner as that of No. 2, and to be of greater dimensions. No attempt was made to excavate shaft No. 3, which, except for the removal of a small portion of the eastern side, remains intact. There is reason to believe, from observations made on the condition of the vegetation during last summer, that another filled-in shaft exists to the west of No. 3, and it is possible there may be others towards the main valley of the river Gipping. The discovery of these filled-in shafts at Ipswich has presented a novel problem to archæologists. Who were the people who carried out these diggings; and what was the purpose to which they were put? To attempt to answer this question it is necessary to briefly review what is known about certain ancient shafts in this country and elsewhere.

It is at once clear that the Ipswich excavations do not represent Deneholes, nor do they resemble the few wells of Roman date which have been found in England. These are normally square, and often lined with wood. The well discovered at Ashill near Swaffham, for example, was 40-ft. deep and 3½-ft. square. The upper part was filled in with Roman rubbish, pottery, wall plaster, etc. At the bottom was a floor of flints resting upon solid clay.* Though shaft No. 2 is now waterlogged, there is no reason to believe that it was originally sunk for the purpose of a well, as it seems extremely improbable that two, and perhaps three, other shafts would have been dug in such close proximity if the object was to obtain water. There certainly seems evidence to show that some of the chalk removed in the digging was used, as the amount met with in the infilling did not appear to be as much as that which must have been originally dug. But, while this is the case, it is very difficult to believe that these deep shafts, sunk through many feet of sand were made simply to extract chalk as not more than two miles to the north-west, this rock crops out at the surface over a wide area. After a very careful survey of the whole problem it seems that the closest resemblance to the Ipswich shafts is to be found in the "*Puits Funéraires*" which have been discovered in France. A large number of these burial pits has come to light at Amiens.† and in the Commune of Bernard (Vendée)‡. At Amiens one was about 120-ft. deep, and sunk as a square shaft into the chalk which there occurs at the surface. Those of Bernard were not so deep, but all shared the same characteristics. They were clearly burial pits of the Early Roman period when it was the custom for the ashes of wealthy people to be interred in cinerary urns at great depths, and associated with a wealth of funerary objects. The reason for this is obscure but probably arose from a wish to preserve the remains of the dead, and at the same time, to prevent the haunting of the living by the ghosts of the departed. The pits were divided into compartments by *pavé* composed of blocks of stone, while the burials, which in some cases were numerous, were placed at the bottom of the shaft. It is thus clear that these shafts were kept open for some time, and may be regarded as family vaults in which from time to time, and with no doubt elaborate ceremony, interments were made. Very few of the French shafts contained sterile in-filling but were rich in broken pottery, and other cultural objects. None of them was sealed in in the manner adopted in shaft No. 2. Though, unfortunately, very few relics were found in the Ipswich shafts, it is nevertheless clear that, on other grounds they bear a marked resemblance to the "*Puits Funéraires*." The partings of clay, and the layer of chalk flints already mentioned without much doubt represent the *pavé* of the French pits, while the depth of shaft No. 2, though not ascertained definitely, would, it seems, have been unlikely to exceed that at Amiens of 120-ft. The site of the Ipswich shafts is only about half

* *Archæological Journal*. Vol. XXXII, p. 108, also Vol. XLVI, pp. 33-4.

† *Comment. V*. "Sepultures Gauloises et Puits Funéraire," Amiens, 1916.

‡ Baudry and Ballereau, "Puits Funéraire," La Roche-sur-Yon. 1873.

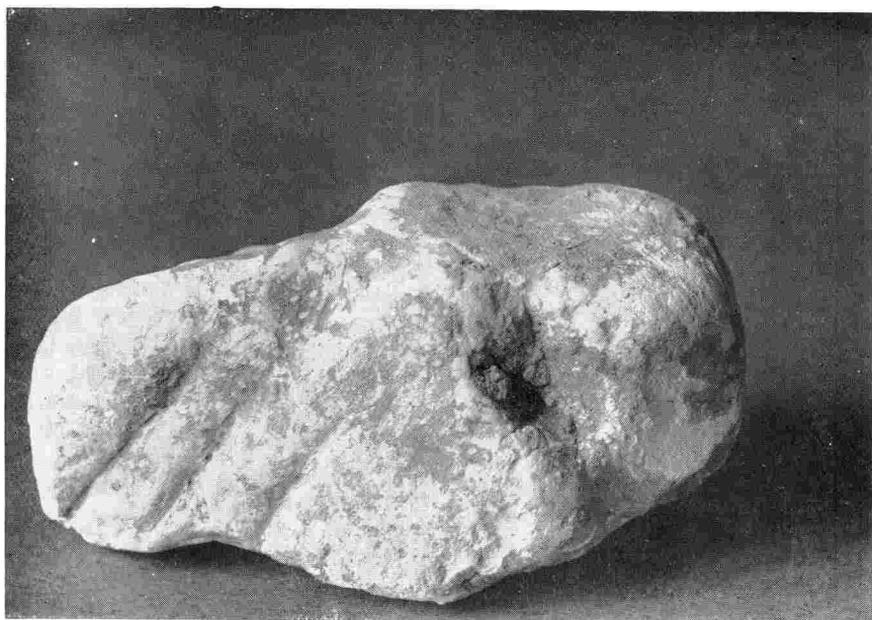


FIG. 9. Chalk showing pick-marks from Shaft No. 2.

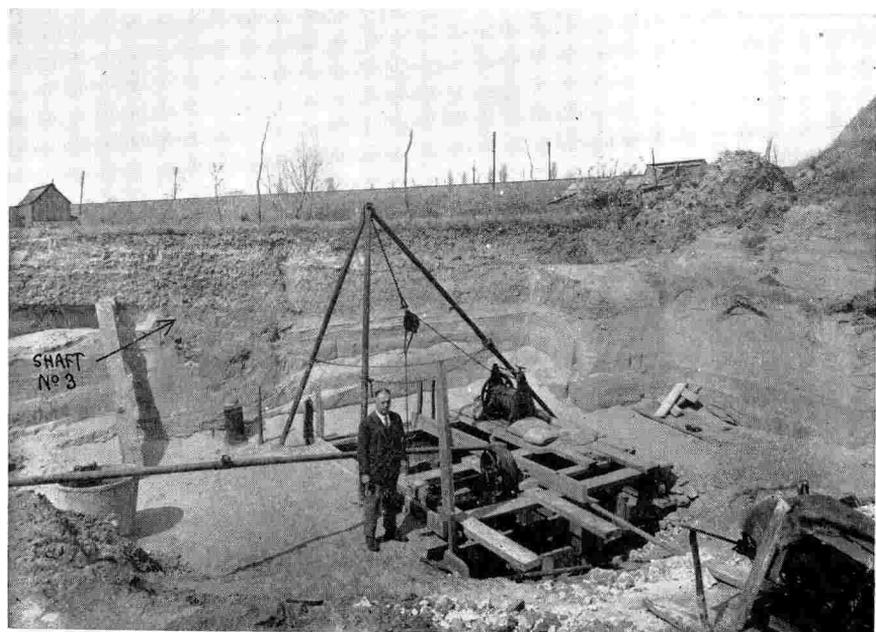


FIG. 10. View of workings of Shaft No. 2, with Shaft No. 3 unexcavated and indicated by an arrow.

a mile from the Roman Villa at Castle Hill, Whitton, while, within 200 yards, was found an extensive burial ground of the poorer people of the Roman period. §

It has always been a problem as to where the owners of the Castle Hill Villa were buried, and it may be that their burying place is to be located at the site of the shafts. But, the great proportion of the remains from Castle Hill, and from the burial ground mentioned, are of Late Roman date, while the burial pits of the kind described are to be referred to the Early Roman epoch. Thus, it is possible the shafts represent the burial places of the earliest occupants of Castle Hill, which were certainly referable to the latter period, or that these shafts are not true "*Puits Funéraires*" but burial pits of the type found in Cyprus and elsewhere which are of late Roman date.* These differ from the "*Puits Funéraires*" in that the shaft leads down to a burial chamber, or chambers, in which the dead were placed in coffins, and accompanied by a great quantity of funerary objects. It would of course have been possible to construct such burial chambers in the chalk, and they may occur at a level lower than that which we were able to reach. In view of this possibility it is more than regrettable that, through the great inflow of water, the Ipswich shafts could not be completely explored. The work which was carried out was, however, of great interest, and has brought to light archæological facts hitherto not met with in this country. But it is impossible to believe that the Ipswich shafts are the sole examples in England of such burial pits, and it is hoped that others may now be recognised and investigated. In the digging of shaft No. 2 it was made abundantly clear that, even with modern appliances, the work was of a difficult and dangerous nature. In Roman times the excavation must have been still more dangerous, and it is, in fact, quite remarkable that such shafts could have been sunk in those days. They dug them for the most part in sand, and of a circular form, and while we found the impress of the vertical timbers used, there is no evidence to show how they kept these in position. Without much doubt cross struts were used, and where these were in place, ingress to and egress from the shaft must have been very difficult. Shaft No. 2 had evidently been kept open for some time as the chalk walls with their coating of brownish clay, had a distinctly weathered appearance. The presence of so large a quantity of phosphoric anhydride in the clay, lining the chalk walls of the shaft, is not easily accounted for. If it had been the custom to carry out sacrifices in the shaft, in which the blood of animals had been poured over the walls, then the condition noted would perhaps be explained. Mr. Garnham in his report on the clay submitted for analysis states, "The sample shows no direct evidence of blood. This is perhaps natural considering its supposed age, as water would dissolve, or change the organic constituents, and leave only a residue of inorganic material. The indirect evidence is the presence of 7-60% phosphoric anhydride (P2O5) in the form of

§Proc. Suff. Inst. Arch. and Nat. His. Vol. 21, Pt. 3.

*"Cyprus, its Cities, Tombs and Temples," Cesnola, John Murray, London.

ferric and calcium phosphate. This may suggest that blood was originally present in the shafts, and that the phosphate present had combined with iron compounds, and calcium carbonate to form ferric, and calcium phosphates, whilst the organic matter had been dissolved." No bones or teeth of animals were found in the shafts, but, as has been stated, two pieces of matted hair, belonging either to the badger or the rabbit, were discovered in the infilling.

There is clear evidence at certain places upon the Essex coast, that the level of the Roman land surface is now some 8 to 10 feet below sea-level. There is, moreover, good reason to believe that this submergence has been caused by a sinking of the land since Roman times. Such a lowering of the land would cause the water-table in the chalk to rise, and would account for the fact that the base of shaft No. 2 is now well below water level. At Amiens in France, it was found that in excavating the burial pits there, evidence was met with pointing to the lowering of the water-table in the chalk since the pits were dug. Thus, it looks as though a tectonic movement, with its axis somewhere in the Channel, has occurred since the Roman period, resulting in the level of the chalk water in France to fall, and that in England to rise. It could have been wished that the reverse had been the case. There seems reason to believe that, in ancient times, it was considered wise, when possible, to divert a stream, and bury the corpse in the river-bed, or lay it beyond running water which, according to ghost-lore is an impenetrable barrier to disembodied, and inimicable spirits.* It is possible the Romans of Castle Hill cherished such beliefs, and that they dug down in the chalk until the then existing water level was reached, and placed the remains of their dead just below it. Though it is not difficult to find an explanation for shafts Nos. 2 and 3 it is otherwise with shaft No. 1, which, as has been described, was a narrow clay lined cylinder with an internal diameter just about sufficient to allow of a slender human being to pass through. But, there is no evidence that this shaft was thus used, or by what means anyone could have descended, and ascended, such a place. This also applies to a certain extent to shaft No. 2, but this was wide enough to have allowed for the use of some kind of ladder, or the cross struts of timber might have been used for climbing up and down. When these shafts were open there must have been an immense tip heap of material lying nearby, but not a trace of this is now visible. The strata passed through in the recent excavation of shaft No. 2 were as follows:—

Surface soil	..	..	9-ins.
Woolwich and Reading Pebble Bed	..	..	to 9-ins.
Sand	..	..	1-ft.
Clay	..	..	3-ft.
Sand	..	..	36-ft.
Traces of Lower Eocene Bullhead Bed			to 1-ft.
Chalk dug to	..	..	23-ft.
			<hr/>
			66-ft. 6-ins.

*Gould, S. Baring. "A book on Dartmoor," p. 93.

Those engaged upon the recent investigation could not fail to be amazed at the daring and skill of the Romans in excavating the Ipswich shafts, and the magnitude of the task they successfully undertook. It is clear that in view of the great and unexpected quantity of water met with in shaft No. 2 the method of excavation adopted could not be successfully applied. If further exploration of this problematical, and important, site — which may be built over in the near future— were contemplated, it would be necessary to open a very large hole which would allow all the shafts to be examined together. To do this would mean the removal of a great amount of material, and the expenditure of some thousands of pounds. Only by such means could the mystery attaching to the buried pits at Ipswich be finally explained. I have to offer my thanks to the Ipswich Corporation, the Ipswich Museum Committee, the Percy Sladen Fund, the Ipswich Natural History Society, and numerous private individuals, for financial help in the undertaking, and to Mr. Reginald Smith, Keeper of the Department of British and Mediæval Antiquities at the British Museum, the officials of the Ipswich Museum, Councillor T. R. Parkington, Mr. Munro Cautley, Mr. Raymond Bennett, and the officials of the Borough Surveyor's Department for invaluable help and advice. Lastly, but by no means least, I would like to place on record my appreciation of the loyal services rendered by the workmen engaged in the excavation.