A GROUP OF MOUNDS ON SEASALTER LEVEL, NEAR WHITSTABLE, AND THE MEDIEVAL IMBANKING IN THIS AREA

By M. W. THOMPSON

The origin of the mounds that are so commonly found on the marshes around the British Isles has always been a perplexing problem. The Essex Archaeological Society, it will be remembered, after several seasons’ excavation on the Red Hills in the Essex marshes were unable to decide what activity had caused their accumulation, and it was only ten years later that Mr. R. A. Smith\textsuperscript{1} by the use of convincing Continental parallels was able to show beyond reasonable doubt that they were the remains of salt works, where sea-water had been evaporated by an unfamiliar method. A few years later other members of this Society excavated further mounds, taller than the Red Hills, without briquetage and of Medieval date.\textsuperscript{2} They concluded they were salt works also, a view lent some support by the enclosures adjoining them. In the mounds we shall discuss below there was practically no briquetage and very little red earth; the mounds were clearly Medieval in date and not Roman or Iron Age like the Red Hills; and on Sheppey (within sight three miles away) the dialect word “cotereile,”\textsuperscript{3} apparently of ancient origin, suggested that the mounds there may have been thrown up as refuges for cattle and sheep during tidal flooding. For these reasons we were reluctant to regard these mounds as salt works until the bulldozing of further intact mounds showed such frequent traces of burning that the conclusion became unavoidable that some industrial activity was involved.

Although we have no specific documentary proof we propose to assume from the start that our mounds were salt works, while of course not ruling out the possibility that this may need correction. Dr. Bridbury\textsuperscript{4} has recently given an account of salt-working by the evaporation of sea-water as practised in Medieval Europe. We may note one or two points about this still very ill-studied subject. Firstly it is

3 \textit{O.E.D.} As the word is not known before the eighteenth century its etymology is uncertain. Leland, it may be noted, uses “cootes” or “cootes” for coastal and inland evaporation works, e.g. “... a great number of salt cootes or furnaces... wherein the salt water is docoote...” (\textit{Itinerary}, ed. Toulmin Smith, ii, 92-4).
reasonably certain that in the English climate the evaporation was largely done by artificial means and not by the sun. The methods we will discuss later, but it is most unlikely that the briquetage method of Roman times was in use anywhere. Secondly, Domesday shows us that evaporation was carried out over very extensive areas, Kent being one of the more important counties. Thirdly, Professor Darby by plotting the Domesday entries manor by manor in the eastern counties has shown that salt works were frequently up estuaries, or in fenland or in parishes where extensive marsh areas separated the manor from the sea proper. Fourthly, it is known that such salt works sometimes led to the accumulation of mounds. An early fourteenth century terrier from Fleet, Lincolnshire, shows the salt works divided into units of a “hoga cum area.” Hoga is apparently the Latinized form of the modern “howe,” used in Yorkshire to describe a barrow or small hill. An Elizabethan map of Fulstow and Marshchapel, Lincolnshire, shows the “round groundes” in the marsh which were “first formed by layinge together of great quantities of mould for the making of salte.” Those in use had cottages upon them. Leland, who saw the primitive coastal salt industry in Lancashire that survived until the eighteenth century, actually described heaps of sand being piled up.

Some two miles west of Whitstable lies an extensive area of marshland about two miles across from east to west and one from north to south (Fig. 1). It is bounded on the north by the sea-wall separating it from the Swale and on the three other sides by hills of London Clay. In the north-west Boughton marshes pass round the north of the Graveney promontory to link up with the extensive marshes around Faversham. The marsh is divided into fields by a web of straight dikes, but clearly distinguished from these are two or three meandering streams, which normally mark the parish boundaries. One of these enters from the south-east, another from the south-west; turning towards each other they join and flow northwards to the Swale. The parish of Hernhill lies on the south, that of Graveney to the north-west and Seasalter to

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4 G. R. Walshaw, “An Ancient Lincolnshire Map,” *Lincs. Magazine*, ii, n. 7, 1935, 196-208. I owe this reference to Miss D. Williamson. The mounds had a secondary use, for when they became too big new ones were started farther out, while those abandoned became pasture.
5 “...At the end of the sandes I saw divers salt cootes, wher were divers hepes of sandys taken of salt strandys, owt of which by often weting with water they pike owt the saltnes, and so the water is dervid into a pit and after sodde...” (*Itinerary*, ed. Toulmin Smith, iv., 10).
The mounds with which we are concerned are shown on the accompanying sketch plan (taken from O.S. six-inch first edition, the Tithe map of 1840 and a modern air photograph), and as can be seen, lie close to these streams, mainly in the south in Hernhill, but there are several farther west in Graveney and one or two in Seasalter. The construction of the railway in 1841 caused some alterations to be made, but the Tithe map of a year earlier shows that Mound B formerly lay in the bend of a stream which flowed south-westward. Traces of two counter walls survive, the more easterly probably following the course of a now vanished stream just to the north of Mound B. The mounds have no special name now, but in the Tithe map mounds H, I and K lay in Hill Marsh, G and F were called respectively Hawkins and Second Hawkins Hills, and D and E lay in Great and Little Hill Marsh.

During the nineteenth century, as the Tithe maps record, the whole marsh area was used exclusively for pasture, but in the last few years some of it has been brought under the plough. To prepare the land for ploughing bulldozing of some of the mounds began in September, 1955. Mound A was bulldozed first, and then Mound B. When about two feet of Mound B still remained objects of wood came to light, including what was at first taken to be a boat. The matter was reported by

1 Counter walls normally follow stream courses (from which the material is derived) as can be seen on the six-inch O.S. sheets of Sheppey. The westerly counter wall is specifically mentioned as such in "An Inquisition and Presentment . . . " of 1739 in the records of the Commissioners of Sewers of the Seasalter Valley in the County Archives at Maidstone.

2 Tithe maps for the three parishes are in the Chapter Library at Christchurch. At Maidstone in the County Archives are preserved the papers of the Hawkins family who owned extensive areas of the Hernhill marshes from Tudor times to the eighteenth century.
Councillor Harvey to the Inspectorate of Ancient Monuments in the Ministry of Works who decided to carry out an excavation. Four weeks' work were carried out by the author and Miss S. A. Butcher in October, 1955, who also made frequent visits to the site during the bulldozing of Mounds C, K and F.

The mounds are rarely circular in plan or regularly domed in section, but oval or kidney-shaped, about 150 to 250 feet long, and commonly with two or more lumps often on the north or seaward side. The maximum heights vary from about seven to over fifteen feet in the case of E and G. The two latter mounds are exceptionally large. The mounds are not shown on the ordinary O.S. sheets, but are shown as protuberances of London Clay through the marsh on the Geological sheets. The five bulldozed mounds are certainly artificial heaps of marsh clay, and there can be no reasonable doubt that this is the case with all the mounds.¹

At the time of Domesday and Domesday Monachorum² Hernhill had not appeared as a separate manor, although its church is mentioned in the latter. It probably formed part of Boughton under Blean.³ Boughton and Graveney were primarily agricultural villages, although the former had one salt works and the latter four. Seasalter, in spite of its name, had no salt works recorded, although it did have an extensive oyster industry. Until the time of imbanking in 1325 we have no further documentary evidence, but unfortunately it is precisely to this intervening period that the pottery leads us to believe our mounds belong.

In 1325 a petition from Thomas of Faversham (holder of the manor of Graveney) was forwarded by Prior Henry of Eastryn of Christchurch to the Archbishop of Canterbury asking him to contribute his share to the cost of imbanking the marshes in Boughton, Hernhill, Graveney and Seasalter,⁴ seven hundred acres of marsh being involved, of which one hundred were held from the Archbishop. The project proved much more costly and difficult than had been supposed, for the evidence of witnesses in 1329⁵ showed that a substantial bank over a mile long (three hundred and twenty perches) and forty feet broad (two perches) had been thrown up in 1325, but that over a third of it had been swept away by the sea within a year or two. Some of the tenants were unwilling to contribute their share of the costs, and it was only due to

¹ The matter has been reported to the Geological Survey, who are putting a note to this effect in the revised Memoir for this area.
² D. C. Douglas, The Domesday Monachorum of Christchurch, Canterbury, 1944, pp. 77, 79-81, 84, 85, 95. The Domesday text is juxtaposed.
³ Cal. Close Rolls, 1234-37, 564. The first mention we have of the parish is in 1237.
⁴ Literae Cantuarienses (Rolls Series), 1887, i, pp. 139-41.
⁵ Sir W. Dugdale, A History of Imbanking and Draining... 2nd Ed., 1772, 42-3. The marsh perch was twenty feet, Ibid., p. 20.
the perseverance of Thomas’s son and the Archbishop that the marshes were finally sealed by the directions of the Commission of 1340.\textsuperscript{1} Evidently difficulties did not end here, for Commissions de Walliis et Fossatis in this area are recorded in the Calendars of Patent Rolls during the rest of the century (e.g. 1363, 1370 and 1380), and for some reason difficult to understand Hernhill marshes (which do not abut on the sea) were the subject of special commissions in 1374, 1376, 1377 and 1379.\textsuperscript{2}

The sea-wall was started from both ends; “from the water-mill towards the east” on the Graveney side and “from Seasalter towards Heyfleet” on the other.\textsuperscript{3} There was probably some kind of beach along this line or part of it, and there can be no reasonable doubt that this was on the line of the present wall. Mr. C. F. Millard of the River Board tells me that the present beach of cockle shells in front of the sea-wall does extend under the sea-wall. In 1325 a Stonberk Marsh is mentioned among those to be enclosed, which is presumably the Stonbache Marsh of 1481\textsuperscript{4} and the Stone Beach Marsh of 1739 which lay by the Red Sluice.\textsuperscript{5} This name presumably refers to a beach existing before the wall was thrown up. The Heyfleet extended from the sea-wall, under le Hill (possibly a reference to a mound) to Pirtiek, and is almost certainly the old stream course by which the Hernhill mounds lie, for it more or less corresponded to the parish boundary between Hernhill and Seasalter. From 1680\textsuperscript{6} the annual accounts of the Commissioners for the Seasalter Valley are preserved and show the sea-wall more or less as today. One of their main items of expenditure was the cost of “cutting” (presumably the reeds), “drawing” (dragging), and “fleeting” the three streams, which are clearly distinguished from the ordinary dikes, and no doubt represent the courses of streams before the imbanking on the one hand and the three streams which are at present distinguishable on the other.

In the foregoing we have shown that before the imbanking the Hernhill mounds lay by a stream not very far from its mouth into the sea in a lower part of the marshes. This is to some extent confirmed by the effects of the great flood of 1953, for it was precisely in the area of the mounds that the depth of water was sufficient to sweep away the railway embankment, and where observers report the water lingered two or three weeks after it had drained off the rest of the marsh (see Plate I).

\textsuperscript{1} App. 1 a. The Commission is recorded in Cal. Pat. Rolls, 1338-40, p. 490.
\textsuperscript{2} Unless it were for the diking of reclaimed land.
\textsuperscript{3} App. 1 a.
\textsuperscript{4} App. 2 b, o. We have not been able to identify Pirtiek.
\textsuperscript{5} In the “Inquisition and Presentment.”
\textsuperscript{6} In the County Archives at Maidstone. The Red and White Sluices are first called by these names in 1736 and 1775. The three streams are the Middle Stream, the Gravenoy or Brookbridge Stream, and the Seasalter or Back Stream, the latter presumably being Heyfleet.
The mounds after the tidal flood in February, 1953, looking S.W. along the railway with Mound C on the left.
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The general level of the marsh around Mound B is 5.4 feet above Ordnance Datum (Newlyn), while the tidal levels in the Swale in front of the sea-wall are approximately: Mean High Water Spring 8.7, Mean High Water Neap 5.5 (feet above O.D.), and Mean Low Water Neap 5.2, Mean Low Water Spring 7.8 (feet below O.D.). Clearly, therefore, if the sea-wall were removed this area would be flooded at every tide. If we make allowance for the rising sea-level, which Mr. John Evans has shown played such an important part in the formation of the north Kent marshes, we should be able to form some impression of conditions prevailing before the imbanking in 1325. Clearly the seven hundred acres divided among tenants mentioned in 1325 were never flooded regularly, but the indenture of 1340 speaks of twelve hundred acres of marsh and pasture being saved “not only in the marshes but in adjacent parts”. We may envisage the marshes before 1325, then, as partly regular pasture in the higher parts but with an area subject to flooding at the centre unsuitable for pasture. The incoming tide would advance from the Pollard across the present flats, and then slowly flood the lower part of the Heyfleet, the eastward and westward spread depending on whether it was a spring tide or not.

In this way we can perhaps explain the curious siting of the mounds by the old stream course, while their proximity to the high ground would be explained by the convenience in bringing fuel and tools to the site. It will be noted that in the Hernhill group all the mounds except A and K are on the landward side of a stream. Surely it is unlikely that cattle or sheep refuges would be placed where, in the event of severe tidal flooding, stock on this side could easily scramble on to natural high ground a few hundred yards away, while stock on the seaward side would be cut off by the swollen stream from any kind of refuge at all. The astonishing height of the mounds is no doubt partly to be explained by the severity of flooding, which we know took place just before and after the wall was built, and for which there is abundant evidence from elsewhere during the thirteenth century.

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1 Figures supplied by Admiralty Hydrographie Dept., interpolated from known levels at Sheerness and Herne Bay.
3 App. 1 a.
4 The imbanking in the Romney Marshes began early in the thirteenth century (Dugdale, op. cit., 27) where exceptional flooding was common, while Matthew Paris (Chron. Maj., R.S., iii, 379, 387, and v, 170, 284, 418, 461, 607) refers repeatedly to disastrous tidal flooding. There is indeed a suspicion, not more, that the site of the Domesday church at Seasalter had to be abandoned for this reason in favour of that of the present Early English building on the hill (Hasted, Hist. of Kent, iii, 552), for the great storm of 1779 revealed the foundations of a rectangular stone building (and numerous human bones) on the beach near the Blue Anchor, which it was considered might be the remains of a church. Councillor W. C. Harvey tells me that recently further bones have come to light at this point.
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EXCAVATIONS

(in collaboration with Miss S. A. Butcher)

Mound A had already been bulldozed level when we entered the site. It had evidently been made entirely of marsh clay and the large area over which it had been spread was of a slightly lighter colour than the surrounding ploughed field. Small patches of burnt clay and charcoal were found here and there, and several pieces of Medieval pottery were picked up.

Mounds C and K. Both these mounds were of very characteristic shape with their highest part on the seaward side. Only the earlier stages of bulldozing were watched. Both mounds were made up of marsh clay with patches of reddened clay. The bulldozer operator reported that “paths” and “mats” made of pieces of wood as in Mound B were found in the base of Mound C. One small wicker lined pit was dug out by Miss Butcher at the base of this mound. It was similar to pit 3 on Mound B (see p. 52). There was a certain amount of charcoal from this mound and a number of sherds of Medieval pottery particularly from the top. Mound K only yielded tiny fragments of pottery and a very little reddened clay, although near the top the base of a roughly rectangular pit (four feet by two feet six inches) with sides of interwove wickerwork was exposed.

Mound F. The eastern of the mounds that form this group of mounds has been levelled and its material used to fill the adjoining stream (July, 1956). Unfortunately we were only able to inspect the site when this had already been carried out. The mound was quite distinct from the others in the quantity of burnt material found in it. At the base on the landward side a large area of burnt material about one hundred and eighty feet long by fifty feet wide (not less than two feet deep according to the explorations of the bulldozer operator) came to light. Sherds, bones and appreciable quantities of lead (several pounds at least) were found on the surface of this burnt area, which has not been fully explored.

Mound B. Four weeks’ excavation were carried out on this mound by Miss S. A. Butcher and the author in October, 1955, with the kind permission of the owner, Mr. Spencer King.

The mound was oval in shape, measuring about one hundred and eighty by one hundred and thirty feet, but probably the railway and the dike on its west side had trimmed off its edges (Fig. 2). The Tithe map shows that it formerly stood in the loop of a stream on its southern side, and at that time had a building on it, rather as one of the mounds in group L has at present. At the beginning of the excavation the mound had already had its upper part sheared off by the grader to a level about two feet six inches above the level of the surrounding marsh.
We were told that there had originally been two high places on the north side six to eight feet higher than we found it.

The position of our trenches can be seen on the accompanying plan (Fig. 2). A section was drawn from north to south, but the information it yields is so slight that we did not consider worth while reproducing it here. No signs of stratification are detectable in the intractable marsh clay. All over the central area at about two feet below the surface the marsh clay changed abruptly from brown with reddish
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streaks to grey with bluish streaks. This is, no doubt, the level below which oxidation of the iron salts to red ferric oxide cannot take place. This view is lent some support by the fact that all round the mound as one approached the perimeter in any direction this change in colour took place deeper and deeper, the thinning of the superincumbent mound no doubt allowing more oxygen to penetrate. This change must have been at or near the old ground surface at the centre, which was not otherwise distinguishable. For our purposes we may distinguish structures found on or near this level and those exposed on the surface by the bulldozer, although we must not, of course, assume structures at the same level are contemporary.

On the north side oyster shells were scattered over the surface. A trench through these showed it was not a horizontal scatter but they dipped down in section towards the edge of the mound and evidently had been thrown out from above when the mound was partially made.

On the east side of the mound a lined pit was exposed by the bulldozer, pit 3. This measured two feet eight inches and two feet ten inches by three feet two inches and three feet four inches. The bases of the uprights were preserved. Those at the corner were about one inch thick, with smaller ones set between, the whole bound together with twigs. The pit, which was dug out by Councillor Harvey, contained black vegetable matter, pottery, and some wooden objects. There was no made bottom to the pit.

The bulldozer had scattered burnt material over a large area, but two conspicuous areas were visible to the south of the centre of the mound, oval in shape and approximately eight by five or six feet. These were composed of charcoal, burnt wood and baked clay.

Beneath the eastern burnt area pieces of wood and reed were found to a depth of about four feet, that is well into the grey clay. The material was quite unstratified and gave the impression that the area had been churned up, perhaps by people wading about in the soft mud.

Two paths, made of short pieces of broken sticks laid roughly parallel a few inches apart, were found in the southern part of the mound. The southern ends had probably decayed. They converged and met, and turned eastward leading up to pit 2. Just before this point a similar path of reeds led in from the right. This short piece of path, like two pieces farther north, had longitudinal strips along their edges.

Between pits 1 and 2 two rectangular hurdles lying horizontally and measuring about five feet by three feet six inches came to light. These were made of twigs with reeds over the surface. Only in one case were the twigs interlaced between the uprights. They did not appear to be fallen as there was no means of holding them upright, and they were perhaps intended to act as a firm platform on soft mud.
Timber cover of Pit 1, Mound B. The upright stakes belong to a modern weapon slit.
Two oval pits, 1 and 2, measuring approximately six to seven feet by five to six feet, which had been dug into the old ground surface were found in the positions shown on the plan. Pit 1 was about two to three feet, pit 2 four to five feet deep. In the soft clay which surrounded them it was impossible to determine the dimensions accurately. They both contained a great deal of vegetable matter, indeed the methane emitted from pit 2 was accidentally set alight and burnt for several minutes. The burnt material from the western burnt area poured down into pit 2, which was evidently only partially filled when the fire was lit. Pit 1 yielded some sherds of medieval pottery and parts of a leather boot.

Both pits had some kind of cover or lid made of substantial unshaped timbers, which have been identified as oak. In pit 2 three heavy cross pieces or ribs lay in the pit and were covered with a mass of small twigs, obviously arranged and possibly intertwined between the ribs. Pit 1 was wholly covered by timber work which, sagging in the middle, gave the appearance of a shallow boat for which it was at first mistaken. It was formed of four massive cross timbers or ribs of unworked wood lying laterally across the pit (Plate II). These were up to five inches in diameter and seven feet long. Down the middle on the upper side was laid a thin branch one to one and a half inches thick and with its bark still adhering. A good deal of wickerwork was found on the upper side laid in such a way that it seemed as though the timbers were held in position by this.

**Dating and Conclusions**

A list of the objects found is given below, and Mr. G. C. Dunning has achieved a fairly close dating from the pottery, but even a cursory glance at the drawings will show the reader that the pottery found is homogeneous and of Medieval date. Material of no other period was found on or near the site, while some of that illustrated was found beneath and in Mound B. Moreover the leather boot which is non-durable in the open air must be roughly contemporary with the pit in which it lay. The dating for Mound B is therefore about as strong as it is possible for archaeological evidence to be. The other four mounds are also dated by pottery, sometimes from the make-up or beneath the mound, and are clearly of roughly the same date. There can be little doubt that the whole group of mounds served the same purpose and are probably of roughly the same date (to within a century or two). Four of the mounds bulldozed out are fairly peripheral, but material from Mound F, which is near the centre of the whole group of mounds, seems to be of a very similar date.

In spite of the excellent preservation of organic matter on the site no trace of a layer of growing vegetation was found on the surface on
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which the mound was thrown up, neither of grass nor of reeds. The footpaths and probably the hurdles\(^1\) suggest that the surface was a soft one on which it was difficult to keep a foothold. Such a surface could surely only be tidal mud flat.

The only modern human activity on such an unpleasant surface is the collection of shell-fish or worms for bait, which does not of course lead to the accumulation of mounds. If, however, we return to our original assumption that the mounds owe their existence to salt-making, we can hazard a guess about the purpose of some of the structures found.

Of the six methods of making salt listed by Brownrigg it is clear that only methods 3 and 4 could have been used here.\(^2\) Method 3 involved partial evaporation by the sun and then boiling. Possibly in warm weather such a method was used, but it is more likely that at Hernhill salt was made by method 4, “... from strong brine or lixivium drawn from earths, sands or stones impregnated with common salt.” This method was used with sand in the Lancashire industry, but what modification would be necessary for mud it is difficult to say. Brownrigg says that in the Lancashire industry the sand was collected from the surface of the spring tide zone in great heaps, and then put in pits filled with straw or rushes, the salt being filtered off and the sand constantly replaced. Perhaps the vegetable matter in our pits 1 and 2 had a similar purpose.

Collins\(^3\) tells us how to lay out a salt works in “sea mud, oase or sleech.” The preliminary evaporation was done in open pans by the sun, but the brine so prepared should be kept in cisterns eight feet deep, dug in the mud and lined with “posts of timber with hurdles between them, the ground being such as will not imbibe the liquor ...”. For winter boiling the cistern was covered with a roof, tiles being preferable to thatch, and then it was called a brine house. The whole is very reminiscent of what was found on our site, although if our pits 1 and 2 were cisterns or brine pits they were not lined and were shallower than this. The covers on our site may have been simply to stop the rain diluting the brine, but the great thickness of our timbers suggests they were intended to take some weight, perhaps to support the mud during the straining process.

The receptacles used for boiling may have been of earthenware, but these are rather small and in Lancashire lead pans were used. It is therefore of interest that a small piece of lead was found in Mound B, while Mound F yielded very appreciable quantities of this metal. Indeed, as Miss Butcher points out, the very large burnt area in this

\(^1\) P.P.S., xiii, 1947, 135. Hurdles have been found in the flats of the Humber Estuary which it is believed were used in just this way.


mound suggests that possibly the main boiling was done here while only the preliminary concentration was done in the outer mounds.

THE FINDS

The Boot (Fig. 3). This is perhaps the most interesting find made on the site. It was found in the vegetable matter in pit 1 and therefore is securely stratified. Mr. John Anstee of the Museum of English Rural Life at Reading has very kindly given the following report and made sketches on which the figures here are based.

"This boot is extremely interesting as it is radically different in style from the majority of Medieval shoes that I have seen."

"From the general condition of the remaining fragments, and the fact that the outer sole is missing, I would suggest that it had been thrown away and not sucked off a foot in the mud. The boot, as restored after detailed measurements of the original, and experiments with leather cut to the drawn plan, is eleven and three-quarter inches long and four and a quarter inches wide across the sole; that is size nine of a male left foot."

"The fragments consist of the following: (a) most of the main upper, (b) a smaller quadrilateral insert to this, (c) two complete pieces of upper edge binding, (d) fragments of the inner sole, (e) triangular patch, almost certainly a toe reinforcement for the sole. The main upper had been cut out with a minimum of wastage, pierced with lace slits and sewn on every edge. Stitched to it by three edges was a small irregular quadrilateral piece whose fourth edge (forming part of the circle of boot top above the ankle) had also been stitched. This stitching of the top is unusual; at first I thought it proved the presence of an additional upper around the lower leg."

"At an early stage in the restoration no definite measurement could be fixed for the open boot top and it was thought that there must have been an unsewn but closable seam in the missing back portion of the upper, in order to get the foot in before lacing up. This laced seam is quite usual in Medieval boots but it can exist anywhere in contrast to the modern preference for having it at front. The whole problem was clarified by the discovery that two complete strips three-eighths of an inch wide and eleven and three-quarter and four inches long respectively formed a narrow strengthening binding to the open top of the boot by being stitched to the two pieces of the upper (A—B in Fig. 3). These strips were made by single folding of pieces of leather three-quarters of an inch wide up the middle and sewing them downwards on to the rim of the upper. The ends of the longer strip were enclosed by the fold of the smaller strip for distances of half and a quarter inch respectively. This gave a circumference of fifteen or diameter of 4.8
FIG. 3. The fragments of a Medieval leather boot found in Pit 1 beneath Mound B, with a reconstruction. Scale 1/4.
inches for the top of the boot. The exact position of these strips in relation to the upper was proved by stitch runs that fitted perfectly. The above clue made it possible to restore the back of the boot, and indicated that the larger upper fragment was almost certainly sewn on to itself at the main vertical seam on the outside of the foot. It also proved that a size nine male foot would pass through the orifice and bed down comfortably within the confines of the estimated sole; in fact no adjustable lace-up seams were necessary.

"It will be seen that when placed on the foot this type of shoe was an extremely loose fit above the ankle. This looseness was taken up by drawing the string or thong (which passed through the slits, D in Fig. 3) tightly from both ends and tying them at a point under the inside ankle bone, where there are no lace slits on the original (E). On the restored plan (Fig. 3, F) two more lace slits have been shown, one at an obvious point behind the ankle and another to conform to the regular spacing between those showing on the original. This method of tying removes the necessity for the gusseted heel inserts to be seen on many Medieval boots, where they provided a more comfortable fitting with a tight top and lace-up seam. There is just a possibility that the triangular piece of leather is just such a heel gusset but attempts to fit it into the restored patterns upset the definite evidence of known measurements and the natural horizontal line of the boot top. I can only suggest that this fragment is a reinforcement for the tip of the sole. In this position it completely alters the shape of the shoe but the result looks exactly like other undated Medieval shoe soles that I have handled.

"The few fragments of a thin inner sole do not show clearly how it was attached to the upper but it is probable that they were sewn together inside out and then turned, the thicker outer sole and reinforcing toe piece being added afterwards.

"This boot appears to be an important dated example in a field of study still much neglected. The principle of the drawn thong reminds me vaguely of an Indian moccasin, and the whole arrangement is what one might expect an unsophisticated Medieval peasant to wear."

Wooden Objects. Apart from the paths, pit covers and hurdles a great many pieces of wood of varying sizes and shapes were found in Mound B. Usually these were unworked, but a number of pieces of board came to light. Some of this may have been waste wood for fuel, but this mound as well as Mounds C and F produced some objects which are worth recording.

"Rakes." From Mound B, pit 3, 0.6 inches thick, 3.2 inches broad, 19.5 inches long. Through the centre was a perforation 0.6 inches broad, (Fig. 4, 1). From Mound F, 0.5 inches thick, 4.8 inches broad. This had two perforations set close together 0.5 and 0.8 inches broad (Fig. 5, 1). A fragment of similar type of object (Fig. 4, 3) from Mound B.
Fig. 4. Wooden objects from Mound B.

Fig. 5. Wooden objects from Mounds C and F.
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Hoe-like object from Mound F, 5.4 inches broad, not less than 19 inches long with a large perforation 1.2 inches in diameter. One end pointed (Fig. 5, 2).

Rough bowl, 1 foot in diameter across broadest part just above base, from Mound C (Fig. 5, 3).

Cylindrical piece of wood 1.7 inches in diameter with a deep V-cut along it (Fig. 4, 4).

A kind of mallet head from pit 3, Mound B, 7.4 inches long, 3.5 inches broad and 2.5 inches thick, with a perforation irregularly placed towards one end which is 0.7 inches in diameter (Fig. 4, 2).

The figures in Agricola’s De Re Metallica show that the tools of the German salt boiler in the early sixteenth century were made almost entirely of wood except the metal boiling pan.1 The object he calls “rutrum” which is a prongless rake of wood is very much like what our “rakes” must have looked like when fitted with a handle, while the “batillum” which is a hoe-like object with a large blade with a pointed butt seems to be what our hoe-like object would look like when it had a handle fitted. They seem to have been used for removing the dirt and froth that came to the top of the pan in the early stage of boiling and for the later removal of the salt crystals as they formed at the top.

Lead. A small, quite shapeless piece of lead was found in Mound B. Similar shapeless pieces were found in Mound F by the bulldozer operator, but of larger size and in much greater quantity.

This lead was presumably waste from work on the boiling pans. We have noted that these were of lead in the Lancashire industry. Agricola said they could be of iron or black lead and should be eight feet long, seven feet broad and six inches high. As they were made of rectangular plates almost three feet square (presumably for convenience of transport) they probably had to be assembled and mended on the site.2

Hone. A fragment of the end of a hone, 2.9 inches broad, was found in Mound F.

REPORT ON POTTERY FROM SEASALTER (Figs. 6-7)

By G. C. Dunning, F.S.A.

The material from the four mounds (A, B, C and F) shows the same range of pottery types and of rim-sections, and the same qualities of ware occur at each site. The majority of the sherds are from cooking pots, representing fourteen vessels, and there are fragments of two

1 G. Agricola, De Re Metallica XII Libri . . ., Basle, 1561, figure on page 448.
2 Ibid., 444, “... cortinam ex ferri uel plumbi nigri laminis, longis pedes tres et totidem latis, minus duobus digitis . . .”
dishes and three jugs. It will be convenient first to describe the
different types, and then to discuss the analogies and dating.

**Cooking-Pots**

The rims of the large cooking-pots are well developed, and may be
divided into five groups:

1. Thickened outside, forming a flange (B2-5).
2. Flanged outside with a vertical outer edge, and well marked
   concave bevel on inside (B6, C3).
3. Pressed down outside, and marked by thumb impressions
   (Cl-2).
   
   The above groups comprise pots of coarse ware, and all have
   a free admixture of crushed white shell which speckles the
   surface. A few of the pots also contain sand in the fabric in
   addition to the shell.
4. Rims thickened outside and bevelled on inside, or flanged
   outside and flat topped (F1-2).
   
   These are of very hard sandy ware, and the shell is absent.
5. Small rims slightly thickened outside, and more regularly made
   (A1-2, B1, F3).
   
   These are of finer quality sandy ware.

**Dishes**

A large rim (B7), heavily flanged outside and marked by the finger-
tip along the top of the flange, and beaded on the inner edge. A smaller
rim (A4') has a plain flange and inner beading.

**Jugs**

Fragments of very different type and ware, one from each mound.

Squared rim with ridge below it outside, of grey shelly ware, red
surface (A5).

Upper part of body of jug with zones of combed lines, of thin grey
sandy ware (B8).

Handle, sharply grooved down the back, of hard orange ware (C4).

**DISCUSSION**

In seeking to date the Seasalter pottery, comparison must be made
with a long series in the same region, for which the sequence is estab-
lished and the dating known within approximate limits. Fortunately,
such a series is available from the post-war excavations at Canterbury,
and several groups have already been published by Mrs. Audrey Williams
and Mr. Sheppard Frere in *Archaeologia Cantiana*. The reports are on
sites in St. George's Street (Vol. LIX), Watling Street (Vol. LX), Butch-
ery Lane (Vol. LXI), and Rose Lane (Vol. LXVIII). Taken together,
there has been built up from these sites a pottery sequence extending
over several centuries, from the later Anglo-Saxon period until the end of the thirteenth century. Significant features of the Seasalter pottery are closely matched at Canterbury towards the end of the series. There the main tendency was for a development of the cooking-pot rim outwards into a flange, with or without an internal beading, during the thirteenth century. Another feature, the hollow bevel on the inside, also appears at the same time. The smaller cooking-pots of close-textured sandy ware, with rims thickened outside, also occur at Canterbury, and are regarded as an earlier (twelfth century) form which survived into the early thirteenth century. The large dishes with flanged rims are also present at Canterbury in the thirteenth century. There is also a close similarity in the fabric of the cooking-pots and dishes. At Canterbury, about fifty per cent of the coarse laminated wares have white shell as backing, and the use of shell persists throughout the thirteenth century.

A few differences between the two series may be noted. At Canterbury the necks of cooking-pots tend to be longer than at Seasalter, where the majority are shorter and have a curved hollow. The two pots with longer necks from Seasalter (CI-2) have thumb-pressed rims, but this feature is not recorded at Canterbury.

It is inferred from these comparisons that the Seasalter pottery belongs entirely to the thirteenth century, though closer definition is not feasible. The general similarity with the Canterbury thirteenth century pots shows that changes of development there also affected the
MOUNDS ON SEASALTER LEVEL, NEAR WHITSTABLE

district around. The differences suggest that the bulk of the Seasalter pottery was made locally, and not derived from kilns that supplied Canterbury with the coarser domestic wares.

It remains to consider the fragments of jugs.

The first (A5) is in shelly ware, with a rim section like that of cooking pots from Mound B; it is therefore of local origin.

The second (B8) is the upper part of a jug with narrow neck and widely spreading body, decorated with zones of combed lines. The ware is thin sandy grey, and unglazed. A convincing parallel for the shape and ware is not forthcoming from Canterbury. For pottery at all comparable we need to look farther west in Kent; for instance the shape may be compared with that of a jug from the kiln site at Potter's Corner, Ashford, and the decoration has analogies, either in straight lines or wavy, on jugs from Upchurch and Maidstone. The closest analogies are, however, in west Kent at Eynesford Castle, near Seven-oaks. At Eynesford, Mr. S. E. Rigold has found many examples of jugs identical in ware and decoration with the Seasalter jug, in deposits of the second half of the thirteenth century. This site is only about twelve miles from the very prolific pottery making centres of east Surrey. At Limpsfield, for instance, Mr. Brian Hope-Taylor has recently excavated a number of Medieval pottery kilns which produced an abundance of grey wares, and no doubt Eynesford was largely supplied with pottery from this source. It is very likely that pottery made in east Surrey was distributed along the coastal part of north Kent, even as far as Whitstable, but there the problem must rest until more evidence is known.

The third sherd (C4) is part of a handle. The hard orange ware is very distinctive, and similar to the products of the kiln at Tyler Hill, only about four miles from Seasalter. The strap-like form of the handle and the very sharply defined grooves down it are not, however, known as yet at this site. Probably this Seasalter jug is from some other kiln in the Blean area.

The pottery from the site has been deposited at Maidstone Museum.

ADDENDUM

Since writing this paper Mr. P. Tillott kindly drove Dr. Bridbury, Miss Butcher and the author to Sheppey. The coterells are largely restricted to the marshes between the Isle of Harty and Sheppey proper, the valley of the Capel Fleet. All members of the party were struck by the resemblance in shape, size and disposition between these mounds and those on Seasalter Level.

Large mounds also occur in profusion in the northern part of the

1 Arch. Cant., LXV, 184, fig. 4, 2.
2 Arch. Cant., LV, 64, fig. 5, 1-2.
3 Arch. Cant., LV, 87.
valley of the Wantsum, on both sides of the old channel south-east of Reculver (some are shown on O.S. 6-in. sheet XXIV S.E.). Through the kindness of Mr. R. J. Tapp the author has been able to visit these. Some mounds at N.G. 61/243681 have been bulldozed and Mr. Tapp writes: "... burnt patches seem to appear at all levels in the mound ..." Several sherds of fifteenth-century pottery were found. As this area was not imbanked until after Elizabethan times (see map in Arch. Cant., LIV, 1941, Pl. I, opposite page 45) the marshes were presumably still tidal the century before.

APPENDIX

Most Medieval imbanking against the sea is only known to us through the formal and laconic entries on the dorso of the Patent Rolls. For the imbanking of the Seasalter marshes the documentary evidence is quite exceptional and shows how wrong indeed would our picture be if we had to rely on the Patent Rolls alone (no commission is recorded at all for the 1325 imbanking!). The additional evidence is: first, Prior Eastry's letter to the Archbishop; secondly, the evidence of witnesses published by Dugdale (I cannot trace the original at the Public Record Office), whose preservation is due to the temporary seizure of the Archbishop's land in Graveney by the Crown; thirdly, the indenture below recording the final closure; lastly, the evidence of two octogenarians on the boundary between Hernhill and Seasalter taken in 1481, which throws light on the state of the marshes in the century after imbanking. The former two have already been published, the latter are published here for the first time.

In the transcriptions below I have retained the original spelling but expanded definite contractions and altered capital letters and inserted punctuation marks. Mr. A. J. Taylor, F.S.A., F.R.Hist.S., has corrected a number of errors and given valuable advice on the transcription. Photostats of the originals were very kindly made for me in the Christchurch Library by Dr. W. Urry with the kind permission of the Dean and Chapter.

A. Charta Antiqua, S. 295, at Christchurch. Without seals and on paper but probably a copy of only a few decades later than the original date of 1340 that it bears. We have here transcribed the document in full. The names which will be of especial interest to local historians recur in the Hernhill terrier at Lambeth (MS. 1025/4), which unfortunately does not deal with the marsh areas.

B. Ch. Ant., S. 297 (ii), on paper. The actual evidence is in English, the formal part of the document in Latin; only the evidence is transcribed below. This evidence was taken from John Elmer of Strode, aged eighty, in the house of John Gylnott in Seasalter on 18th June, 1481.
C. Ch. Ant., S. 297 (i), on paper. This is a much longer document entirely in Latin recording evidence taken from twelve witnesses on the same subject "in quadam parva camera infra monasterium" of Christchurch on 23rd June, 1481. John Portt, aged eighty, gave evidence first and then the other eleven witnesses in order of seniority, but these added nothing new, merely corroborating what Portt had said. For this reason we have transcribed only Portt's evidence, omitting long formal phrases, and a little that is irrelevant.

It will be seen that the essence of the dispute was which ditches were original "uncast " and "unmade " and which had been done since the imbanking. Apparently Stonbache marsh lay in the north separated by a ditch (original according to Elmer, Portt's evidence is not clear) from Chapel marsh, which in its turn was separated from Hernhill by another ditch called Heyfleth by Portt but only called by this name by Elmer at its western end, although both agreed that it separated Hernhill from Seasalter. No doubt the meanders in this stream were part of the difficulty, for probably efforts had been made then as they are now to straighten it.

A


Cum, ex assensu omnium dominorum feodorum et tenencium mariscoorum in villis de Gravene et Sesaltre per consideracionem quorumdam Justiciarum Domini Regis ad wallias, fossatas, gutteras et waterganges inter villas predictas supervidendas, per commissionem insuper eisdem directam assignatorum mille et ducentum acre terre prati et marisci submersionis periculo tam in mariscis illis quam partibus adiacentibus quondam subiacentes, per quamdam wallam a predicta villa de Sesaltre versus Heyfleth et altera walla a molendino aquatico de Gravene versus Orientem in earundem terrarum marit-timarum salvacionem constructas anno regni Regis Edwardi tercii a Conquesto quartodecimo fuerint incluse, sumptibus communibus omnium quovis modo comodum nul percipient', appositis eiusdem quia clasture manutenencie et reparacionis in futurum apponend', ac ad prosecucionem Domini Johannis, Dei gracia tunc archiepiscopi

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Cantuariensis, et Johannis, filii Thome de Faverissham, tunc Ballivi mariscorum predictorum, Clerici, qui circa constructionem clausture predicte magnas pecuniarum summas apposuerant, tam nostrorum quam quorumdam predictorum aliorum tenencium huiusmodi misis et custibus pro rata porciones tenere sue contribuere nolencium, quod terre prate et pasture infra clausum predictum secundum eorum verum valorem extensa secundum legem maritimam prefato Johanni tunc ballivo debuerunt liberari similiter cum aliis terris et pasturis aliorum tenencium huiusmodi quousque huiusmodi custagia pro rata porciones eiusdem secundum legis predicte consuetudine levaverunt. Tenend'. prout in recordo et processu coram prefatis Justiciariis insuper habitis et confectis plena continetur.

Noverit Vestra Universitas, nos huiusmodi custibus tempore constructionis eiusdem contribuere desistentes, Nos et quemlibet nostrum in satisfactione contribucionis nostre predicte ballivo huiusmodi custibus sic per ipsum appositis prout iustum fuerit considerantes sibi concessisse et gratis pro nobis et heredibus nostri confirmasse prefato Johanni filio Thome, tunc ballivo predicto, totum ius nostrum et nostrum cuiuslibet quod die confectionis presencium habuimus in medietate totius marisci predicti vocati Sesaltremersshe cum omnibus suis pertinenciis et iuribus eadem mediata postmodum tenendi. et tenend'. eidem Johanni filio Thome hereditibus et assignatis suis de capitalibus dominis feodi per servicia que inde annuatim debita fuerint imperpetuum. Ita tamen quod altera media marisci predicti penes nos remanentes pro nobis quolibet nostrum et heredibus nostri et etiam quibuscumque ipsum mediata postmodum tenendi. ab omni taxacione et contribucione pro predictis wallis et guttera amodo reparandis vel manutenendis quieta et exonerata remaneat imperpetuum, serviceis alis et consuetudinibus inde debitis Capitalibus dominis foedi salvis et reservatis. Et nos ac heredes nostri modo et forme predictis predictam mediata marisci cum omnibus pertenciis ut premittitur prefato Johanni dimissam, eidem Johanni et heredibus suis contra omnes gentes warantizabimus in futurum.

In cuius rei testimonium uni parti huius indenture penes dictum Johannem filium Thome remanenti sigilla nostra apposimus, alteri vero parti penes Nos remanenti predictus Johannes sigillum suum apposuit. Datum apud Gravene quarto-decimo die Januarii anno supradicto.

"I never untherstode the contrary but fro the chapell callyth Saint Elpheis Chapell otherwyse callith Sesalterstrete continually be the walle unto the comon diche, and fro the saide chapell otherwyse callith Sesalterstrete unto iij stakes that abutte agenst Heyflete Rolck is in the parishh of Sesalter and in the lordschip of the prioris and the
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do\footnotesize{\textup{on}}\textup{covent of Cristes church\textup{e} in Caunterbury. Also there ys now in late tym\textup{e} a mersssh calle\textup{d}e the Forty Acres where as I the saide John Elmere the elther ne\textup{vere} unto now in late day\textup{e}s so herd hit called but only callith Stonebache merssh bey\textup{ng}e in the saide par\textup{i}ssh of Sesalter. Fur\textup{th}ermore y never knew n\textup{e}y\textup{th}er unterstode the dyke that departith Chapelmers\textup{s}h and Stonebache merssh un\textup{ca}st ne\textup{y}ther unmade but as hit is now at this day, and that alle the mers\textup{s}hes a foresaide by ly\textup{inge} in the par\textup{is}h of Sesaltere. Fur\textup{th}ermore I knowe and unter\textup{stande} that the mers\textup{s}hes ly\textup{inge} be the dyke com\textup{yn}ge fro Hey\textup{f}lete to Pir\textup{ty}ek—
the South lieth in the par\textup{is}h of Harnehill and the North lieth in the fora\textup{s}ade par\textup{i}ssh of S\textup{e}saltere. Moreover I John Elmer above wry\textup{ten} have be collector of ii XV\textup{the}z and an halff in my day\textup{e}s of the mers\textup{s}he\textup{z} above re\textup{her}e\textup{s}ith by\textup{yn}ge in the par\textup{i}ssh of Sesaltere, and be alowede for my gadery\textup{ng}e and for my labor\textup{e} of the same xxv\textup{j}s. viij d. And the premissez alle be me thus to yow schewde fro mers\textup{s}h to mers\textup{s}h and fro mark unto mark be tr\textup{we} as y unter\textup{ster}onde and knowe and have herde say of my eld\textup{e}r\textup{s} as y most an\textup{sw}ere a fore God at the day of dome.”

“Et primo super primo articulo, videlicet an mariscus vocatus Chapelmerssh sit in parochia de Sesalter vel in parochia de Harnhill seu aliqua pars eiusdem, Johannes Portt de Sesalter husbondman lxxx annorum etatis libere condicionis . . . dicit quod totum le Chapelmerssh situatum est in parochia de Sesalter. Item super secundo articulo, videlicet an mariscus vocatus Fourny Acres sit in parochia de Sesalter aut in parochia de Harnhill et an quedam longa fossa ibidem iacens inter dictum Chapelmerssh et antedictum mariscum vocatum Fourny Acres sit de novo fabricata temporibus suis vel antiqua seu aliqua pars eiusdem. Interrogatus . . . dicit quod illud dominium\textsuperscript{1} ibidem vocatus Stonbache continet in se quedam mariscum ibidem vocatum Fourny Acres at totum illud dominium\textsuperscript{2} iacet in parochia de Sesaltere. Et dicit, ulterius interrogatus, quod illa longa fossa ibidem iacens inter dictum Chapelmerssh et predictum mariscum vocatum Fourny Acres \textsuperscript{3} est fossa antiqua quia umquam novit ipsam fuisse de novo fabricatam. Item super tercio articulo . . . videlicet an quedam fossa ibidem vocata le Hayflete dividit paroch\textup{ia}s de Harnehill et Sesalter et ubi incipit et ubi finitur, dicit quod illa fossa vocata le Heyflete dividit parochias de Sesalter et Harnehill et sic audivit ab antecessoribus suis et vidit observatum omnibus temporibus suis nec unquam audivit vel vidit contrarium . . . et dicit, ulterius interrogatus, quod dicta fossa incipit a walla maritima ex parte occidentali et sic decurrendo sub\textup{t}us le hills usque Pyrtiek. . . .”

\textsuperscript{1} “ille mariscus” above.
\textsuperscript{2} “totius ille mariscus” above.
\textsuperscript{3} Blank in MS., presumably “non” erased.