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EARLY SITES AND EMBANKMENTS ON THE MARGINS OF THE THAMES ESTUARY.

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The river Thames within the limits of my present examination was, at a remote period, a stream whose waters were not estuarine or salt. At that time the land through which it flowed was so high as to keep the sea wholly away. But then came a time when the land had subsided so far as to permit the ocean to take possession of the freshwater channel. By the continued sinking of the land, the sea gradually crept up the valley until, at the present day, the ordinary tide reaches as far as Richmond.

But the old freshwater bed at what is called the mouth of the Thames had sunk much further below the sea level than that at Richmond by the time the sea had reached the latter spot, and in doing so had afforded room in its bed for successive deposits of mud and refuse. When a river meets the sea the point at which the currents neutralize each other permits the suspended matter to settle; these may be of different natures and constituents.

In the Thames, as elsewhere, these deposits are arranged in certain order, and about the Shorne and Tilbury marshes, for example, the layers of materials take a greater regularity in their relative positions than elsewhere. Coarse gravel lies lowest, smaller above, and then fine sand; this succession denotes the decrease in velocity of the current of fresh water. Next we have sand banks in which the shells of *Scrobicularia* and *Tellina* occur,¹ these

¹ In this layer a human skeleton occurred at Tilbury.

are estuarine shells and announce the access of salt water. Above these comes a layer of peat formed of stranded trees and other vegetable matter, the current at that time having been checked sufficiently to let even floating logs lie. Above is found a very fine grey mud, then a layer of peat formed of land and freshwater plants, above this fine grey mud, then peat again of considerable thickness and toughness, much more commonly formed of brushwood than of water plants, then grey mud again. The alternations of these layers denote intermissions in the rate of subsidence—mud was deposited when washed by the tide continually, peat was in formation when subsidence had either stopped or was reduced to a minimum (if, indeed, it does not show a reversal of the movement); so that the level of the soil had sufficient time to rise by its own growth above the reach of spring tides, even in storms. Lower down the river this division into layers grows less distinct, while higher up the different peat beds merge into each other with less mud between. In the marshes of Long Reach and nearer London, the upper layer of the great mass of peat supported a forest of birch, elm, hazel, and yew, with many others. The yew forest is a remarkable feature—as the yew is intolerant of water and cannot live in salt—yet the yew forest stretched across the whole marsh at Dartford, Dagenham, Rainham, Erith, and Plumstead (as well as elsewhere). The stubs of the trees may be seen about 0' o.d. on both sides of the river bank in Longreach standing *in situ*, as in other places.¹ At Crossness some large yews were dug up, and one I saw fetched up from the excavations was 15 inches, and another exceeded 18 inches in diameter, and there were others larger still which I did not measure. Oaks of medium size are also found on both sides of the river in this layer. Long periods of freedom from the tide must have elapsed for such forest growths to have become established.

The upper surface of these layers of forest and peaty soil in the districts I have named generally lies about 0. of o.d. (from E. to W. and from N. to S.) but it is found of course a little higher on the gently sloping banks, as at Southwark and Westminster, and elsewhere lower down. The successive layers extended further and further

¹ For note on the meaning of "O.D.," see page 272.

westward as the land sank further, the lowest layers in the east not being represented in the west. At Southwark and Westminster, consequently, the bank of ancient or pleistocene gravel through which the river winds had only been covered by a layer of peat, which is the equivalent of the uppermost of those already enumerated, in the Roman period, but not by the succeeding clay, which apparently had not then been deposited westward of Purfleet, except perhaps in creeks.

The inability of the tide to deposit above a *certain* level, coupled with the fact that there are many yards in thickness of deposit, is evidence that room has been made below the certain level to receive it. The room has been generally credited to slipping and sliding, and to contraction of the deposit. I do not forget to give these movements their value, but there has certainly been another, for such movements are not shared by the gravel banks of Southwark, of Higham, or even of Littlebrook, and the many gently shelving shores along the Thames which are either embanked or are regularly receiving that slight deposit of mud from the river which is at present imperceptibly converting them from earthland into marsh.

I have said that at the present day the ordinary tides reach as far as Richmond—vulgarly speaking they reach to Teddington and even further, but that is not the tide water that I am speaking of, viz., the marine.

This limit of the marine tide is that high water level which is the result of the ocean invading the shore, and it is measured by a line known as Thames high water mark of the Trinity House standard or T.H.W. In a longitudinal section of the Thames from a hydrological point of view, the line of T.H.W. coincides with the level of the ordinary spring tides at Richmond bridge; above that level the rise of the water is the irregular result of land floods or storms. That it is a true natural division is also apparent when it is seen to be in agreement with the limit of transport inland of the most delicate marine organisms, the *Diatomaceæ*.³

There is another practical and very obvious limit. The artificial banks which now keep the waters of the Thames

³ See paper by Dr. Bossey in "Proc. Holmesdale Nat. Hist. Soc., 1879."

within definite bounds are inefficient unless they reach a height exceeding 15 feet above a certain level which is called the Ordnance datum line—though there are differences in the elevation of banks, which are higher where winds, currents, or the proximity of the sea oblige the walls to be raised; at the present, 16 feet is the average actual height above O.D.¹

It is evident that all the shore land of the Thames below the level of 15 feet O.D. would be continually subject to the wash of the tides of the present day if unembanked. The land lying below the above level would include a considerable quantity near the marshes, now dwelt on by us, which has never been washed by the Thames in modern times. At a certain distance below this level deposits of mud are being always laid by the spring tides. These deposits occur in bays and unenclosed spots by the river side, and are called *Saltings* or *Salts* to distinguish them from the fresh marshes. All down the river these saltings are within a few inches of the same level, and their average height above O.D. of the present day is 10 feet or 10 feet 6 inches.

The level of the saltings is regulated by the height reached by the spring tides, which float on to the grassy surface muddy water. The water floats off again leaving the mud adherent to the grass and dried soil. It is obvious that no saltings can exist higher than the level to which the springs lift the mud. This then is a most important level. It represents the height at which the tops of the marshes would stand now, if there were free passage for the tide and no walls. But along the Thames the marsh levels within the walls lie below the salting tops at varying distances. To a certain extent by this means a guess may be made at the ages of the different levels; for, looking on either side of a bank dividing the marsh land, it may sometimes be seen that one level is many feet higher than that on the other side. That which is highest having been last enclosed. A good instance of this may be seen near Erith church.

¹ The Thames high-water mark is 12 ft. 6in. above the *Ordnance Datum* line. In this paper the O.D. is the level from which I have derived my measurements as given in the maps and bench marks. In all the measures I have given the greatest

care has been taken to secure accuracy. All localities mentioned by former authors whose measurements have been used by me, have been visited, and as far as practicable verified, or rejected if found indistinct.

It will be perceived also that these marsh levels were once saltings whose upper surface was determined by the height the spring tides reached when they washed over them. The general appearance of the saltings is that of flat meadows covered with grass and weeds and intersected by fleets and creeks. The course of some of these is determined by streams from the shore, while the majority are anastomosing channels formed by tidal wash. The number and size of these creeks and fleets as compared with the area of the salts is small inland. The channels increase in numbers, width, and depth in proportion to the salts lower down towards the sea, winding and intersecting, until in the Medway and the Swale the proportion of water way is equal to or greater than the salting flats. Lastly the wash of the sea becomes more destructive than its depositing power, then there are no salts, only mud banks, as at Blythe, Mucking, &c.; and further out still these are represented by sand and shingle. The sequence is fairly regular, and as the sea advances on the land, especially in the case of subsidence, the different varieties of saltings travel inland too.

It is obvious that in the case of an embanked marsh, after a sufficient period has elapsed for the equalization of its surface, that its level will be the mean level of the creeks and saltings, and that the level of the marshes (as at Hoo or Stoke) would be lower than those in the west, but higher than those in the east, for the same age. If, therefore, there were embanked islands and marshes out on the flats eastward of Sheppey in the Roman time; it will easily be understood that when once they were drowned there was little or no chance of their recovery. The saltings at the Medway mouth and the Swale are going to sea very rapidly, and the area of open water at high tide is annually perceived to increase.

On the marshes of to-day houses stand, and broken glass and bones and other rubbish would indicate the date they were abandoned to the tide, by the variety of relics lying at a given level. In many places on the Thames, remains lie scattered beneath the present surface of the marsh which indicate a definite period, and Roman pottery is so plainly detected that we know by it what was the level of the Roman period.

In the Roman time the Thorn-eye on which Westminster abbey church stands, consisted of sand surrounded, or nearly so, with peat or marshland. The hard part of the little island where there was no peat was apparently covered with Roman buildings, removed later perhaps to prepare the site of the abbey, and I am informed by Mr. Poole, the abbey mason, that the rubble and blocks of concrete of these Roman buildings were largely used in the footings of the Gothic work of the abbey church; while some may be detected in the older walls. Mr. Poole and Mr. Wright tell me that beneath the floor of the church concrete with brick flags was found *in situ* by them.

Mr. T. Wright, the clerk of the works to the abbey, tells me that in the college garden, when digging the foundations to the new canons' houses, the workmen passed through made earth to six feet from the surface; then peat two feet, to gravel; in the upper part of this peat slabs of concrete flooring surfaced with tiles or brick, roofing tiles and other rubbish with bones and pots, the remains of a Roman dwelling were found. The surface of the gravel here was 14 feet below the level of College street which at that place is 16 feet o.d. Beneath the site of the old organist's house in the dark cloister was gravel; resting on this was 18 inches of peat, in the upper part of which were numerous masses of concrete, bricks, tiles, bones, pots, and other refuse of Roman life. The upper level of the gravel here is 10 feet 6 inches below the surface of the cloister floor, which is 2 feet 6 inches below the floor of the nave of the church, which is 17 feet o.d., so that the Roman surface is o.d. 5 feet, while in the garden it is about a foot lower, both of which levels are beneath the level at which alluvium is now being deposited, but of which these spots have been deprived.

In Southwark the Roman remains are very abundant. The greater part is gravel covered with a light layer of peat or peaty soil in which the relics lay.

The section of the soil in the grounds of Guy's hospital¹ shewed, made ground 8 feet, yellow clay 2 feet, black loam and peat containing pine cones, hazel, and moss

¹ See Dr. Odling's account in vol. i of Guy's hospital Reports.

2 feet, and below (ancient) gravel. In the peat were found Roman pots and pans and the relics of food, and the black loam is the Roman vegetable mould. So the deposit of peat was laid on a soil which had never received a covering of tidal mud. A covering of yellow clay and made ground rose up to 14 feet 6 inches o.d.

In the Roman burial ground described by Mr. A. J. Kempe¹ vases were found about 6 feet below the surface, "they had been deposited just below the stratum of natural loam which is above the alluvial gravel bed." I find the elevation above o.d. to be 8 feet 6 inches, so that the Roman level was 2 feet 6 inches.

Mr. R. E. Way, who has long been collecting Roman remains in Southwark, tells me that the average depth of remains is from 12 to 16 feet below the surface at places where these figures coincide with the zero of o.d. or a little above it.

A great many writers have described Roman floors and other remains in Southwark, but without attention to the level at which they lay below the surface. Most of the buildings stood on peat which was retained in its place by short piles for the purpose, chiefly, of keeping the tessellated pavements which the Romans used from becoming irregular. The piles were driven into the peat and gravel up to their heads, on which the concrete was laid.

When the Albert dock, which extends across the Plaistow and East Ham level was being dug in 1878-9, Roman black pottery (I saw some Samian), and food refuse, with tiles, were found between 8 and 9 feet below the surface (which was 5 feet 6 inches o.d.), on and in the top of a layer of peat; this was covered by tidal mud.

When the southern outfall works were being dug twenty years ago at Crossness, a very exposed situation, I saw much Roman pottery, mortar, tiles, rubbish and portions of wood, lying about 9 feet below the surface (which was there o.d. 5 feet) on the upper part of a layer of peat, which showed unmistakeably that hazel and birches were growing on it, while moss, &c., covered the surface. The bones of the "Roman" ox and large quantities of native oyster and snail shells lay in the peat. I saw a

¹ *Archaeologia*, xxvi, 467.

broken cinerary urn from here which when found contained bones, as the workman told me.

The Romans occupied this part of the estuary at a time which seems to have been co-incident with a renewed depression, when in the western part the yew and oak forest had weakened and declined, though the surface was not too swampy to support other trees and bushes forming a scrubby undergrowth, with most of the flowering plants now living and much moss.

In the excavations for the new Tilbury docks, I saw in October, 1883, Roman tiles and pottery, with bones and food refuse, oyster and snail shells, tiles and flint blocks. They lay in the fine alluvial grey clay, but on a mossy and grass-grown surface which could not have been unlike the surface of the marsh there at present. This layer was 7 feet below the surface. The area covered with remains was about 40 yards square, but there were signs of a much wider spread.

The conditions here were different to those at Crossness, and the salts may have been embanked, but looking over the large excavations I was not able to detect any signs of banks.

Roman pottery in layers, and scattered over the foreshore and banks of the Thames, is very common lower down. On the east side of Tilbury fort at low water, the shore beneath the saltings is covered with Samian, of sorts; and many kinds of black, buff, and white pottery, all Roman. This extends for a couple of miles along the shore. The fragments are sometimes worn but are frequently freshly fractured, and they all appear to have been washed out of the same layer in the mud which apparently lies one or two feet below O.D. No pottery is found in the face of the saltings. On this foreshore and opposite the Low street manor way, the raised portion of which stops abruptly some distance from the water, Mr. P. Benton, of Wakering Hall, Essex, was fortunate in obtaining a remarkable find. He tells me, "we probed down with a prong and found an urn $8\frac{1}{2}$ inches high filled with burnt human bones, and round it two cups and two saucers of Samian ware, a black vase, another smaller urn shaped like a crucible, and another black vessel" of an angular pattern. This find lay about one foot around the

central bone urn, between 3 and 4 feet deep in the mud, about 20 yards from the salting place. The foreshore here slopes somewhat rapidly, and consequently the burial must have been below the o.d. line by about 2 feet. This is in accordance with the docks level. Mr. Benton has another very large Upchurch jar, 14 inches high, with bones in it, from the same layer, and two flagons of light buff ware with handles, a white metal cup, an earthen colander, &c. Other people have obtained cinerary urns from this place also. The river is here cutting away the older embanked marsh which has been resigned to it.

Mr. S. W. Squire of Horndon-on-Hill, to whose assistance in the examination of the Tilbury foreshore I am much indebted, also procured me the view of certain cinerary urns containing bones which lay on a layer of red earth beneath 2 feet 6 inches of marsh clay at Mucking, near the creek.

The Roman potteries at Higham covered the land for about three miles along the edge of the marsh. I have found a very great variety in the kinds of pottery here, mostly black however. I have seen over a hundred unbroken pots at one time, and such immense quantities of broken fragments, that the new embankment of the railway there was in places made of them. Mr. Teanby and Mr. Crafter before this, secured specimens in abundance from the Shorne gravel pit (part of the site) near Beckley.¹

A remarkable find was obtained here of which Mr. Teanby left a sketch which has been reproduced in the above paper by Mr. C. R. Smith. It was a kiln or cowl of circular form made of coarse clay; a master ganger, a most intelligent man,² in charge of the navvies working on the North Kent railway, told me that he assisted while it was being dug out, he said it was a kiln and that it was full of small pieces of pottery which were found packed inside when opened; and that there were no bones inside. Something similar was found at Slayhill.

Mr. Burkitt excavated with Mr. Crafter in a field south of Higham church on the ground sloping to the edge of the marsh. He says,³ "although the most considerable quantity of fragments occurred within one foot of the surface,

¹ See *Archæologia Cantiana*, vol. xi, p. 113. ³ See *Journal Brit. Arch. Assoc.*, iv, p. 393.

² Named Artlett, I believe.

at a depth of three feet there was still a plentiful supply (of Roman pot). At the latter depth our labourers were arrested by land springs, urns with burnt bones were found, and at 3 feet 6 inches part of a quern." By land-springs he means that the *present* level of the marsh was reached, where water stands.

I have traced the relics of the potters here, lying on the gravel, but beneath the alluvial mud to two feet vertically beneath the latter, on the west of Beckley hill.

I have also found a few pieces of pot off the old causeway on the foreshore. On the Blythe sands I have picked up pieces of Roman pot, and particularly near the Brimp, where lay a quantity of broken tile. I cannot help thinking that the Blythe sands may have been dwelt on by the Romans.

Off the eastern spit of Canvey island quantities of Roman pot-sherds constitute an item in the different materials forming the shell bank there, washed out from the Roman stratum which exists or once existed there.¹ Off the town of Leigh was dug out of the oaze an amphora of red earthenware.²

Mr. Humphrey Wickham has described some cinerary vases,³ now in the British museum, from the marsh near St. Werburgh, and he has indicated to me the spot. They were buried, he says, in the flat ground adjoining the Medway, which the spring tides flow over, about three-quarters of a mile S.E. of Hoo church, and were found at the depth of 5 feet. A slight layer of peat occurs at 3½ feet from the present surface, and above that the very stiff clay consisted of the deposit left by the tide. He draws attention to the fact that since they were placed there the land has gone to sea.

Around the shores of Grain and Sheppey and the marshes of the Medway Roman potsherds can almost always be found. They are washed out of the mud which constitutes the wide spread marsh-land which lies about Sheppey and the mainland to the west and south.

Mr. George Payne in his "Catalogue" enumerates several objects from these marshes, food and cinerary urns, and a number of armillæ, signet and other rings

¹ See Benton, "History of, Rochford," i, 80.

² Benton, *ib.*, i, 397.

³ "Archæologia Cantiana," x, 75.

obtained from a Roman villa, whose site shows that it was destroyed by fire, in the Slayhill saltings. He has also found in these marshes fine vases of Samian. Several finely figured vases of this ware have been found in the Upchurch marshes, &c.

Of many varieties made here one sort of pottery was the peculiar manufacture, it is believed. I have already alluded to a cowl found full of small pots from this part, while the walling and bars belonging to the kilns, and refuse indicate their actual sites.

In the marshes opposite Gillingham and in the Sharfleet, Slay or Slade hill, Milford hope and other saltings, together with those about Lower Halstow and Funton creek are frequent evidences of potters' settlements, and Roman brickyards; over the whole marshland of this district was scattered houses and potters' yards. Even in the older enclosed levels of Sheppey fragments may be found, and I have picked up fragments in the Neatscourt and Queenboro' marshes.

The saltings have layers of pottery at various distances below the surface, and some of them at first appear to be the original levels on which the potters worked, but I have seen no satisfactory evidence of a Roman floor or level above 9 or 10 feet. Floors hardened by fire in order to consolidate them for cattle, as well as men, are frequently found, from the surface downwards, frequently covered by *debris* of pots also, but belonging to the occupants of the marshes in subsequent ages.

The true Roman floors and foundations are found at a lower level. In the Sharfleet creek and its branches I have seen several places about 11 feet down where potteries stood, and in one, a favourite place for hunting relics opposite the Medway saltings, the great abundance of pottery and refuse points to there having been a larger factory than common. Many blocks of Kentish rag and flanged brick made of Gault clay obtained from near Maidstone shew the building to have been better than usual. Numerous pots, evidently the stock of the potter, are obtainable by digging, quite perfect and in good condition, while broken refuse lies thick and wide. The floor is hard, and lies at present about 18 inches below the surface of the mud, and the evidence is complete that there was a

kiln here. It is about 11 feet below the saltings. There are many such places at about the same depth, and although it has been said that the pottery found in the bottom of the creeks has been washed out of the saltings, and such of course is the case, yet the pottery so washed is worn and sorted into lighter and heavier fragments, while the bricks and bars and tiles are wanting in such drifted collections. This lower level seems to be a true level of the Roman time, and its great depth is one reason why there is difficulty in finding sites and foundations, which are bared only by those creeks which cut deeply enough.

The pots are said to be found by different persons at from 3 to 4 feet, as well as other distances below the surface of the salting. There is difficulty in reconciling these statements, except we remember that the sea is continually rearranging them. The waves wash the pottery from the mud and drift it into the sides of the creek and on to the ooze and over the surface of the saltings; while layers of *debris* and drift are covered by fresh layers of mud and a new salting surface.

When the cant is subsequently washed away and a new face exposed the different layers are seen; in the latter deposits shells are occasionally found with the pot. In some of these layers, the inferior kinds of pot have rotted and broken up into a pulp, which is sometimes mistaken for charcoal and sometimes for peat, especially when a little drift wood lies in it, and thus a fictitious potter's level is formed.

I have examined many miles of the edges of saltings in the hope of discovering mounds and embankments or signs of them, but without success hitherto. I believe that the greater part of the salting *visible* in the sides of creeks is of so late a formation as to be subsequent to the Roman date.

Nowhere have I heard of or seen Saxon pottery in these saltings. I am inclined to believe that the Roman settlement, from whatever cause, was suddenly abandoned, and not re-occupied for a lengthened period after, and then by another people, who, however, found the life there much harder than the Romans did from the physical changes it had undergone.

Notwithstanding that the marshes of the Swale and Medway keep their saltings level with the upper limit of the spring tides, yet the force of the currents so deeply intersects the saltings with creeks, that the nearer the sea the smaller are the blocks or masses of salting land, and the horizontal waste is very great. Beyond the isle of Sheppey eastward there are no longer any saltings in existence. But there can be little doubt that there were some once. About Whitstable and the coast of Harty, as elsewhere along the Swale, Roman potsherds are thrown up by the waves. These sherds often consist of Samian, as well as black and shelly pots.¹

Eastward of Sheppey there are shallows called the Cant, and the Cantish or Kentish flats. In part of the former, viz., the Cant, is a mass of so-called rock, the Pudding-pan rock. On this rock and in its neighbourhood numerous specimens of Samian ware were and are frequently obtained.² The hillock is now never dry, being always covered by at least one fathom. In the additions to Camden by Gough,³ we find "Mr. Jacob, whose residence at Faversham gives him great opportunities, observes that the rock is half a mile long from east to west and 30 perches wide; it is covered with various loose stones which are frequently dredged up."

Governor T. Pownall in 1777 describes the rock as being about the size of the hulk of a moderate sized ship, "having upon it about nine feet at low water, and three fathom all about it. At the first hale of the net along one side of it we brought up a large fragment of brick-work cemented together, which I guessed might weigh about half a hundred-weight. So far goes my brother's account."⁴

¹ These pots are made of coarsely crushed or pounded shells, *cardium*, *mytilus*, and *mya*. The bits of shell when burnt become white, and have been mistaken for the similar bits of quartz, &c., in the so-called Celtic pot. When the former, however, have lain on the surface long, the shell is dissolved out and little pits remain.

² The so-called Samian from here is usually thick and of a somewhat dull tint, not shewing the brighter colour of the best varieties, nor is its glaze so brilliant as the best examples. No specimens encrusted with figures are found now I believe, except the ivy-

leaved pattern; stamped flowers and potter's marks are as frequent as not. I am inclined to think it was a local manufacture. The story of a ship having been wrecked here rests on no foundation, and is improbable. It would have needed the agreement of many shipwrecks at this spot to account for the quantity of pottery that has been found. I would rather suppose it the wreck of a town or village of potters, from the abundance of bricks, mortar, stones and tiles, which accompany the pots.

³ Gough's *Camden*, i, 256.

⁴ *Archæologia*, v, 283.

The poor of the coast, Governor Pownall says, used as household utensils much Roman pot, red and coarse black. The rock appeared all of brickwork, which agrees with the statement of Gough, that large quantities of Roman brick were thence fished up, and with Mr. Jacobs.

At that time the "sand" on which the rock stands, he thinks, was called "the Speck," which name it once bore from that part of it being visible. He points out that Toliapis at $54^{\circ}15$, and Counos Nesos $54^{\circ}30$ would make another island east of Toliapis or Sheppey, and that if Kawnen was the Celtic for "Reedy island" "ever since the English language prevailed a speck of it was to be seen."

I may mention that the broken masses of salting about Sheppey are called Cant, and that "the Cant" in maps of different ages is differently placed, as if the name belonged somewhere though the exact place was lost—truly a derelict appellation. At the present day the Pan rock is but the highest spot on the Kentish flats, and pots are dredged over a space of several miles in extent. Seldom do the men who earn many a shilling by selling the red pots care to notice the black ones now. The dredgers are very careful to examine the dredges when at work in this district, and *curious* and *valuable* things are found which prompts this studious care, but of which no tangible record is preserved. Large masses of brick and stone masonry are occasionally "caught," and many roofing tiles: of the latter over thirty whole ones of a red colour were obtained on one spot not two years ago, their sizes were $17\frac{1}{2}$ inches by $13\frac{1}{2}$ inches, with turned up edges. Ridge or channel tiles also $17\frac{1}{2}$ inches long were found. The average number of red Samian pans dredged from the Pan-rock and sand is about two or three dozen in the year. All are so preserved by the men as to retain the distinctive "ross," or oyster spat and weed, which marks their marine sojourn.

The island of Sheppey is only the largest of a crowd of low islands of which the number is now great and was greater. Varying in size from Sheppey we have Queen-boro, Elmley, Harty and others, together with several hundred of the tiniest little mounds, some of whose tops

rise but a few feet above the marsh level, while others are known to reach hardly so high as the level. They are the leavings of the broad mass of London clay which once overspread the district, and was carved into these forms in a far distant period.

Apparently many of these islands were scattered further eastward than now, for some are being submerged and others washed away at the present time. These 'mounds,' as they are commonly called, although the name of 'coterel' is given to them in Murray's guide to Kent, stud the marsh in such a manner as to be suggestive of artificial formations; and as similarly shaped artificial mounds are formed, a little attention is required to determine which they are. Most of the natural ones are much higher than the artificial refuges for sheep and cattle, and the former also frequently run in a line fringing a shore; the average height of the smaller kinds is 15 feet. Professor T. M. K. Hughes describes these and discusses their formation, treating them wholly as natural formations. I think that most, if not all, are natural, but it is certain that some of them have been modified by art, of which there are examples near Queenboro and Sheppey Court. There is certainly some ground for the tradition that they have been burial mounds or barrows, for at Higham the mound in the marsh is still called the "barrow" and the "giant's grave." Very many of these mounds lie in the most convenient positions for aiding, or being incorporated with, the tidal embankments, yet of the hundreds scattered about this is an extremely rare occurrence. The "giant's grave" at Higham lies in such a position as would make it a valuable assistance in forming the (older) causeway. It is, therefore, probable that it was either carefully avoided, or that the land stood so high at the period of the earliest existence of the road as to offer no advantages. The resemblance of these mounds to barrows or graves may have procured them reverence from a belief in such an origin, or even because advantage had been taken of them to bury in. The fact is apparent that they have been avoided rather than welcomed by the makers of walls. The modern cattle mounds are generally irregular in shape and flat on the surface. Sometimes they are circular walls when larger

areas are needed, but these are generally used in unenclosed marshes. The mounds require to be examined.

Doubtless the Pan sand was such a place as Harty, and covered by the Romans with buildings; perhaps a *pharos* or *castellum* covered the highest point. With the post-Roman subsidence the low-land became submerged, and the sea obtained greater power, until for a long period nothing was to be seen of these lands but the relics of the great building shewing above the waves and now lost to sight.

It appears probable that Sheppey was surrounded by low embanked lands all round, and these may have remained so embanked until late times, for Minster is said to have been in the centre of the island in 1780, and in John Speed's map of Kent, dated 1608, it is represented in that position, if the low marsh lands stretching southward as we know them are excluded. But in the latter map another indication is met with. The line which describes the northern extension of the Lath of Scraye in which Sheppey lies, runs out on the seaward side from Shellness to Shireness at a considerable distance from the shore. This is an exception to the other boundaries, and appears to shew that the dry or marsh land extended so far out so recently, as to be recorded on the map of 1608, as being then capable of reclamation. Northward of Sheppey the land appears to have sloped quickly down to the sea. The cliffs at Warden are now 140 feet above o.d.; fifty or sixty years ago they seem to have been much lower or about 80 feet. This will give a clue to the rapid loss of land in late days, for walls can be raised on marshes capable of withstanding the sea so long as they are kept up, but as soon as the sea gets the mastery and attacks the base of the cliff it cannot be restrained, and the loss of land continues in a ratio increasing rapidly with the height of the cliff. This is apparently what has happened to Sheppey, and to this cause other islands have wholly succumbed.

There is in this view of matters a great probability that the tradition of lord Shurland's swim out to the king's ships when off the coast is a true one.

The ridge of Warden point is wasting rapidly. Professor Hughes mentions that from the account of a man he knew personally, about 50 years before the professor's observa-

tions, the cliff extended one-eighth of a mile seaward from the church, and that houses stood at that distance. The church disappeared in 1881, and land has gone behind it. I should say the waste since has been at least equal to that before. If we merely take it at 220 yards in a century, and it may well be called double that, the removal of so large a projection from the mouth of the river must largely influence the upper reaches.

The same waste has been going on in the Thames mouth on the Essex coast, and is doing so now at a rapid rate. At the Hamlet farm in Prittlewell, which has about 500 yards on the shore, $2\frac{1}{4}$ yards are annually washed away, calculated from the last 60 years. The cliff is 21 feet high, and this is but a specimen of what is happening eastward in neighbouring lands: and in the neighbouring Chalkwell manor, off which the Crow stone stands, Mr. Benton says, "It is probable that where this stone stands was formerly the edge of the saltings, as in an old map of Chalkwall hall, 100 years old, several more acres of saltings are shewn than at present exist."

The sea-walls or tidal embankments of the Thames have not, I believe, ever been treated of before as a whole. I have for many years examined and mapped them, and made myself personally acquainted with the whole district of the Thames estuary, mainly for the purpose of learning what history they could be made to give of themselves. I have found this a rather solitary investigation, but the hope that I should find some spot likely to yield a clue to the whole matter induced me to continue. Dugdale in his history of Embanking, of course speaks of them, but only from documentary evidence, and that, as might be expected, from a monastic point of view. Evidently he knew little or nothing of them personally. Other writers mention them incidentally in giving account of lands belonging to manors and corporate bodies. Even these writers have not cared to worry out of old deeds more than the most general statements, and in the matter of precision their remarks are worthless for present identification of pieces enclosed or their locality. This may be explained, perhaps, for the common form of speech by which enclosed marshes are named in deeds, is to speak of the newest as

¹ P. Benton, *Roehford*, p. 461.

the "inoned" marsh or by some such term (much like that of "baby" in a largely increasing family), but which affords no means of deciding which marsh it is among its neighbours, or whether it was inoned for the first or fiftieth time.

The inoning or embanking of a marsh, as practised in the Thames now, consists of digging soil from within a proposed enclosure and heaping it into a wall. What the earliest banks were formed of, other than surface clay, I have no evidence,¹ excepting that occasionally there is a record that a certain wood was cut down to use in embanking. But I have found no signs of such wood, nor have I seen any in dock excavations. In an old bank at Erith, which was blown out of the earth in 1864 from the layer of peat, at a depth of 10 or 12 feet below the surface of the marsh, the severed ends of the banks shewed no signs of wood, and consisted wholly of marsh clay. There is no need for piles except when the bank crosses a flat or creek. This absence of piles is not unsatisfactory when considering the rate of wasting in old banks with respect to their age; which wasting may, therefore, be treated as uniform.

In a given district the process of inoning is begun from the hard land, and banks are carried out a certain distance, returning to the dry land at some other place; then from some point of that line other essays are made until a large area is enclosed. Not unfrequently the older intervening banks were taken away, and in some old deeds this was especially prohibited.

Many writers are impressed with the "mighty," "stupendous," or "vast" embankments which keep out the water of the river, while Dugdale and Wren seem to have thought that because they were so great, none but Romans could have raised them. There is no need for such expressions. If embankments were needed in the Roman and early times, they were of minor importance as engineering works in the upper part of the estuary and near London. The height to which we see them now rise, is the gradual increase from slighter banks which costs but little exertion, although regular attention. Even were

¹ Where the surface was of peat walls raised on it without piles, would not be wanted, nor could they be

this not so, there is nothing astonishing in the banks of the Thames, however it might apply to those of the Netherlands. The most difficult place for embanking in the Thames is the Swale marshes, and I am informed that there was lately made an enclosure of 200 acres in Slayhill marsh which took two years, with an average employment of 30 workmen; an enclosure at Milford hope was accomplished at a much less labour from the diminished trouble caused by creeks. These banks look formidable, and are really so, compared with those higher up.

Some old banks are clearly seen to be river walls, while others, though faint, are identified as such by their connexion with the former. Care must be taken in separating true banks from old ditch or drain emptyings, to which length of accumulation has given illusory importance.

In all marshes there are roads or manor ways¹ down into the marsh; many of these are slightly raised above the general surface and have a slightly sinuous direction suggestive of old walls; others are merely flat roads running out perpendicularly from the general line of the earthland foot to a certain distance: the termination or change in direction of a row of these, whether banks or roads, forms a line which may indicate the termination of the fresh marsh at some period; and the former existence of an enclosing wall there, may easily be inferred, while further evidence will frequently reward the search. Some of these ways are still called walls. There is evidence of these cross walls at varying distances from the land in every marsh. They are particularly well shewn at Tilbury, Grays and Cliffe.

As it is impossible for me to prepare for publication all the large maps I have made of the tidal walls of the Thames, comprising nearly fifty miles of its length, I have selected for particular attention the banks which thickly bestrew the margin of the land and the marshes near Higham in Kent, by way of illustrating the whole subject.

¹ This is sometimes pronounced manna-way, and may really be a manor way, in the sense of a private road connecting detached property with the manor house; but it must be remembered that it is more commonly man-way. Both these words can be reconciled as good Saxon, *manna*, a labourer, villein; and *man*, any man, male or female. In abp. Ælfric's

Voc. the word is spelt *maan*, *facinas*, also *manna*—in "*manna* poeth." It has been contended for legal purposes that these narrow ways are main ways, which is an absurdity, as they are always byeways, and generally blind. Lastly, a very common term for them fully explains their use, viz., *landways*, or ways to reach certain lands or fields.

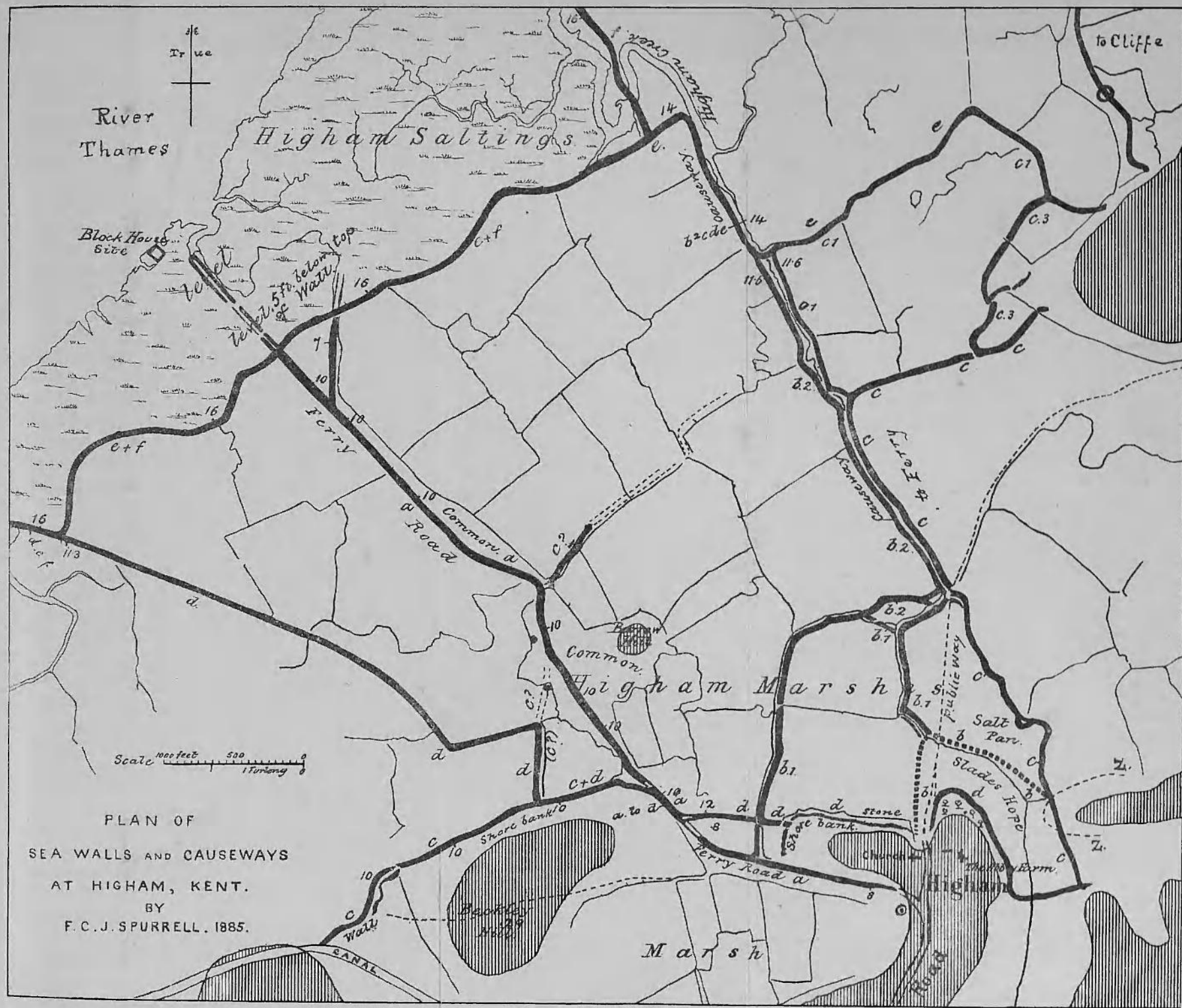
The distance of these from active changes, both by levelling down and natural decay, together with sundry evidences approaching certainty in their relative ages, made their study promise well, or at least better than anywhere else on the Thames. I may mention that this place is not peculiar in the intricacy of its walls.

The banks on the accompanying plan were mapped on the six inch Ordnance map; minor irregular mounds and banks, of which a great number remain, have been omitted for greater clearness, when I could not satisfy myself that they had been sea-walls. The banks are marked in broad black lines and are but little exaggerated in width.

On the south and east sides of the plan, the land whose present level is 15 feet above o.d. has been shewn shaded; this represents the spurs of upland bordering the marsh. The figures placed by the sides of the banks represent the different elevations in feet above o.d., and the letters are an attempt to give a relative age to the banks against which they stand; they merely mean that in construction *b* (for instance) preceded *c*. I do not mean to imply that *b* was necessarily the older bank in all its parts.

It will, therefore, be perceived that the plain portion of the map shews all below where the tide would wash at spring tide were the bank *f* absent.

The bank marked *d* begins near Higham church and runs across the marsh to the Thames. This was not originally a tide wall but a causeway, nay, I suppose that it was in its earliest stage a simple road, for it does not lie on recent alluvium until it reaches at least to some distance past Beckley hill, and probably when first used did not enter the swamp for some hundreds of yards further. It then extends in a straight line pointing to the Hoo of East Tilbury. It loses itself abruptly on reaching the bank *f*, and lies beneath the salting level about a foot deep, but its course can be traced for some distance out by the ditches, the gravel washed off it, and the peculiarity of the plants growing on its surface, which differ from those on either side. It has, of course, received many a covering of fresh gravel, chalk and mud, and its average height is 10 feet o.d. It is quite evident that the enclosed marsh extended much further into the Thames once, and the water is still cutting the old marsh away.



At the spot I have indicated as "blockhouse site," is a quantity of stone and rubble in layers, which I suppose to have been the material used in the foundations of the blockhouse existing there. The uppermost layer lies nearly three feet below the saltings.¹ Hasted says, "In the reign of queen Elizabeth there seems to have been a fort or bulwark at Higham for the defence of the river Thames, the yearly expence to the queen in the pay of the captain, soldiers, &c., maintained in it was £28 2s. 6d." This blockhouse was apparently on the marsh level, perhaps a couple of feet below the top of the causeway by which it was approached. I do not suppose that it was a very important post, but a temporary arrangement consequent on the Spanish scare.

Hasted,² quoting Dion Cassius, says, that the place of the passage of Plautius, who crossed the Thames near the mouth of it from Essex into Kent, was by many supposed to have been from Tilbury to Higham. It may well have been so, but I consider Dion's narrative as too vague to admit of any determination of the exact spot.

There was an abundant Roman population here, but if there are any banks in existence by which the sea was then kept out, they must be far out in the marsh, and I fear buried beneath its present surface; for all the present banks are mediæval or modern, here as elsewhere.

The embankments of the abbey of Stratford existed early, for when William de Montfitchet founded the abbey of Stratford in 1134 he endowed it with marshland amongst other property; and there is this remarkable record of the abbey history, that soon after their occupation the abbey lands then lay so low, or that the water rose so high, as to drown the monks out and drive them away. They betook themselves to Burghstead near Billericay, and did not return to Stratford until the king had taken the drowned property in hand, for it was too great a matter for them; they returned in the time of Richard II.

The situation of East Ham church is very remarkable; it stands on a little tongue of gravel, up to which the

¹ I will mention here that the ruins of a house which lay on the surface, probably of the Tudor period, were bared in Slayhill marsh, three feet below the top of the salts, two years ago, and at the

same level was found the upper course of a well, with bricks carefully made, their ends fitting in radiations of a circle; the internal diameter was three feet.

² *History of Kent*, i, 528.

marsh clay has crept. It is hardly possible to believe that the church was built there when the relations between it and the tide level were the same as now. Its foundations are as low as o.d. 11 feet. Its surroundings point to inundations and protective banks.

The history of the abbey of Barking shews that it acquired by degrees, and presumably by its own labours, much marsh property along the north side of the Thames. After the Conquest, the abbey of Lesnes, which was given by William I. to Richard de Lucy, is not recorded to have received marshland from him on its foundation in 1179, and the earliest record of enclosure is in 1279. The vicissitudes of the marshland of Plumstead and Erith are very interesting, and are given more fully by various writers than any similar property.¹ All the historical account of marshes below this part of the river belongs to similar or later dates, except those referred to in the Saxon deeds of Rochester, Cliffe, and Canterbury; the extent of these, however, I cannot at present determine, but hope to do so on another occasion.²

The ferry on the opposite side of the river left the Hoo of solid chalk, which there projects nearly into the tide way at East Tilbury just eastward of the church; later it was at the spot on which the Coalhouse fort stands, and at present is still further west. It has been the opinion of Mr. Squier of Horndon, and others, that the Roman landing place, if there was one, lay westward of this, on the shore in the direct line with the manor way which leaves the earthland at Low street station, in consequence of the abundance of pottery found thereabout; but the pottery is scattered for miles along the river, and the facilities afforded by the chalk hard, directly opposite the end of the causeway, leave no doubt in my mind that one was arranged to suit the other. If the ferry was kept up in Elizabeth's time it must have been greatly reduced in im-

¹ See Dugdale, *History of Embanking*, Hasted's *Kent under Plumstead and Erith*, and particularly Lambard's *Perambulation of Kent*, written in 1570; also the deeds printed in the Rev. J. J. Wilkinson's *History of Erith*, from the Campbell

Charters in the B.M., and from MSS. of the Soc. Ant.

² Dugdale, *History of Embanking*, gives as the earliest mention of embankments on the Thames, Kent, 8. E II. Surrey, 23, E. I. Middlesex, 26, E. I. Essex—undated, John.

portance, for the prioress of Higham nunnery was found liable in 21 Edward I.¹ to maintain a *bridge* and causeway between Higham and the Thames. The office of prioress was no longer filled in 17 Henry VII, and there were but two nuns, while the priory was suppressed in 1521, when it appears that the ferry was forgotten and worthless.

When, from various causes and probably before the suppression of the nunnery, the old causeway was found unserviceable, partly I should think from the absence of a convenient creek, the traffic was carried on for a long period by a road leaving the upland at the east end of Higham church across the line marked "public way" on the level, and down the causeway to a landing at Higham creek; which creek may have been navigable for small boats almost up to the church at one time.

I have marked one bank *b* in big dots, enclosing a meadow called Slade hope (hoop); this is an old bank, at least of those remaining near the earthland foot; it must have joined the then equivalent of the *fifteen foot or modern level* some three or four feet lower, presumably marked by the line *z. z.* Much later, when the land had sunk, another bank *c. c.*, passed across it, still some distance below the level which would be needed now. The sea must have frequently broken over this property, causing each time fresh banks to be formed or older ones raised *further inland*, and there is one running from the "shore bank" by the church marked *d*, 12 feet high, of a late date, as shewn by its present elevation. It is the latest as well as the highest inner bank existing in this part. The older causeway was used without much keeping up, when the sea covered the marsh through which it passed; its appearance shews it to have been tide-washed.

¹ Hasted, *Kent*, i, 528. The *causeway* was the hard *made* road across the marsh-land. It was sometimes made by placing rushes or brushwood down and boarding over. Baily in his dictionary calls this a "bridge of rushes." But the "bridge" of those days and long before was an inclined way, or causeway as it is now called, leading from high to low water mark, and frequently below that point in shallows. It was made of timber which retained blocks of stone in position. The word

stairs was interchangeable with it.

In Aggas' map of 1578, we have the King's bridge, the Queen's bridge, and Privy bridge shewn; and in Norden's survey of Westminster, King's bridge and Privy stairs, &c. None of these however appear to have been steps. It is quite possible that another "*bridge*" from Tilbury, greatly lessened the water passage of the Thames here, which there is good reason to suppose was formerly much shallower than now.

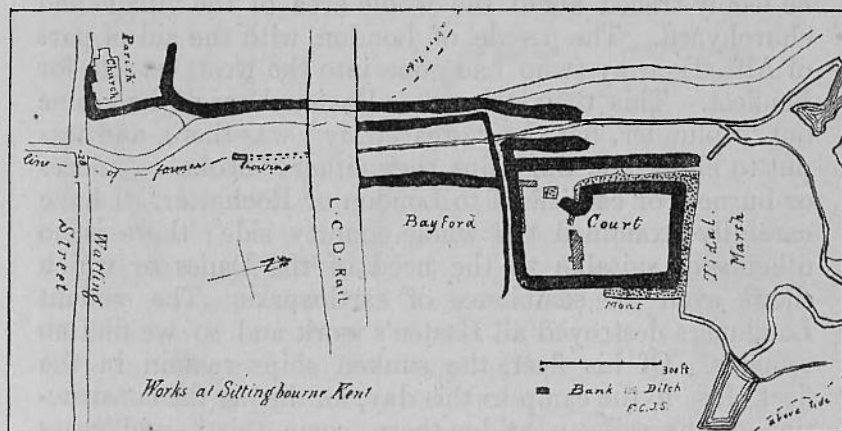
An ancient hythe was such a place as was conveniently situated for hauling up ships, some of which were large, in safety from tides, at periods when they were not required for building and repairs, usually on a low shore; some were placed on the hill side on the stream way; others, up a creek near the head of it, partly for greater shelter and partly to obtain the benefit of the fresh water of the stream running into it. Of these the latter have suffered most from silting up of their approaches. The village of Chalk between Higham and Gravesend is the representative of the Cealchythe of the early Saxon councils. Then the hythe was reached by a ray or fleet. But now nothing of the sort remains, and the perfect level of the marsh testifies to the long period when the deposition of marsh clay went on uninterruptedly. The early hythe must have been early choked up, if the dropping of the terminal "hythe" is an evidence of it, for the name is given as *Cealce* in the bridge charter of Rochester, and in Domesday as *Celca*, by which there was no embanked marsh recorded, as would have been the case had a creek or hythe existed here.

Cliffe and Higham have also suffered. Purfleet early got choked, and the famous Danish resting place at Ebbsfleet near Swanscombe, and others, are no longer inlets of the sea.

Ebbsfleet is the inlet on which Northfleet stands. The valley is a very fertile one and was in the Roman period crowded with villas. It is probable that it was named after Ebbed, whose name is also found in Vippedes or Bedesham (*see Hasted*) close by. The Saxon chronicle speaks of this place under date 465, "This year Hengest and Æsc fought against the Valas near Vippedes fleote, and there slew twelve ealdormen and one of their own Thegns was slain, whose named was Vipped." Of course, Vipped was buried near the place where he died, and seeing that his name remains, as Henry of Huntingdon says it does, attached to the place, it is likely that his family remained here also, which has preserved the name. Dr. Guest says that the locality of Vippeds fleet was unknown, and Mr. J. R. Green does not separate the two places of Eopwine's and Wipped's fleets, and he thinks that the spot where Hengest and Horsa landed was the same spot as that on

which Hengest and Æsc fought the Valas. But I submit that the names are different, that the account of the English chronicle requires a spot for the latter event nearer London than the former, and that a flight of 70 or 80 miles to London would not have carried the Britons to their nearest stronghold, had they ever got so far as Thanet. But that the ford over the Ebbs-fleet at Northfleet was the place, and the nearest stronghold might have been London, only 17 miles away.

In 893 Hasten came up the Thames to Milton, or King's Middleton. There he made a stronghold which took some time to prepare; it was to accommodate at least the 80 ships he brought with him, perhaps many more, and ultimately the fleet of 250. Hasten intended to occupy a series of ports for some time, and thence to harry the country between, and it is recorded that the Milton fortress with Apuldre was constantly occupied for a year. Now, without computing too exactly how many men were at Milton, there must have been over 1000 with the ships. The works around Bayford court appear to me to be such



as Hasten required. Then, again, this fort is in Milton, the paramount manor of Bayford court, and Sittingbourne town is but a prolongation of Milton town, which is now slightly removed from the great road.

The name Sittingbourne I take it was the result of the Danish stay on that particular bourne. The Saxon chronicle says the band "sat" at Middleton. As to the mythic Sœdingas said to have given their name, I do not

know of them. The place called Castle Rough on Kemsley Downs is wholly unsuited to be the stronghold of an army, it is too small even to have accommodated Hasten's men, and there was no place for the ships. But this small square-shaped enclosure, together with the one on the other side of the creek, and many another site of similar construction, appear to be, like Howbury, Cooling, &c., merely the sites of private fortified manor houses.

Hasted¹ stated that Castle Rough on the west was built by Hasten, and another Castle Rough on the east of the creek was built by Alfred some time afterwards; for the last there is no evidence, for the first the evidence is contrary.

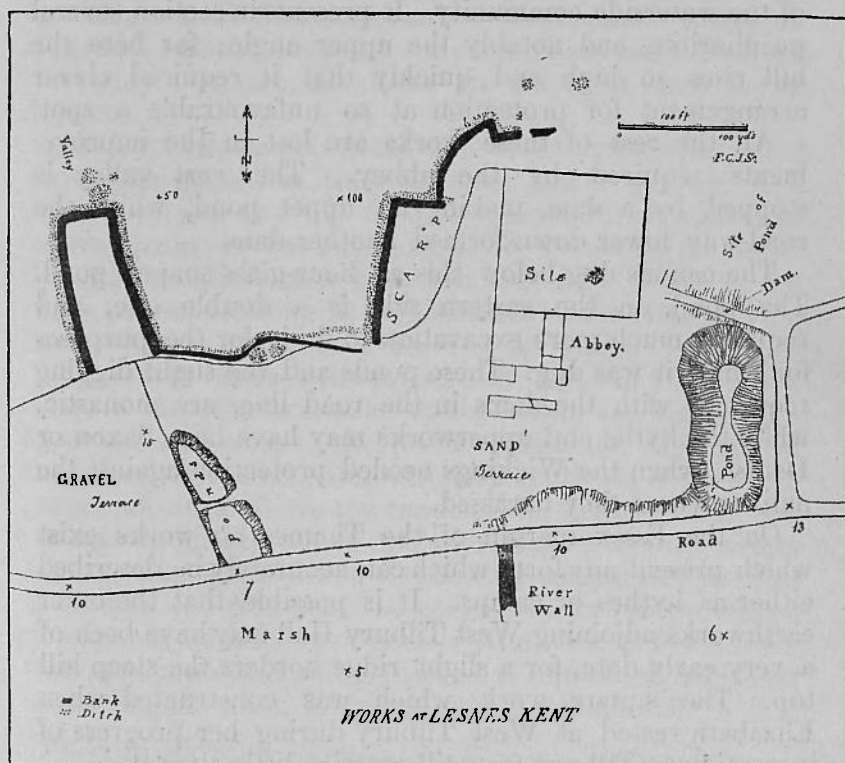
While Hasten was at Middleton he was preparing another camp across the Thames at Beamfleet, now Benfleet, a most suitable spot for the mustering of his forces; there he assembled the "great army" from Appledore, and also that from Middleton, and we may presume the fleet of 250 ships too, or a great part of it. The low spit at Benfleet was the site of the camp, and banks may be feebly traced about the whole area of the village and churchyard. The people of London with the aid of part of Alfred's army (who had gone into the west) set off for Benfleet. This they stormed. Hasten himself had gone out to plunder, but the "great army" was there, and was put to flight, and the ships they either "broke to pieces or burned, or carried off to London or Rochester." I have carefully examined the whole country side; there is no other spot suitable to the need of the Danes or which shews even the semblance of earthworks. The valiant Londoners destroyed all Hasten's work and so we find no remains. Of his fleet, the sunken ships remain in the fleet close to the camp to this day, for during the construction of the railway bridge there, some thirty odd years ago, the navvies came upon the ships, many of which were charred, and in and about them lay great quantities of human skeletons.

The whole of Hasten's forces then retired to the south-east corner of Essex to the sea, and there constructed the fortress of Shoebury. This work is essentially different from the others, for it was not properly speaking a hythe

¹ *Kent*, ii, 616 and i, xxxix.

for ships, of which they had lost so many. What remains of this earthwork is part of a large oval; the bank was 7 or 8 feet high, and the ditch very wide, over 40 ft., but not very deep, about 5 feet 6 inches. The ditch, unlike those which in flats and bays could have been constructed to receive water at high tide, was a dry one, and its bottom was about six feet above high-water mark. It is evident that at the time of construction the camp must have been wholly on the land, for otherwise it would have presented an easy access from the shore to enemies. The section of the cliff here shewn by the rapid inroad of the sea leaves no doubt as to this point.

In the parish of Erith, about the site of the abbey of Westwood in Lesnes, are some earthworks which do not belong to the abbey buildings properly speaking; although there is little doubt that when needed, these banks were used and altered in addition to new ones, by those who laid out the gardens, &c. of the monastery. Little doubt



can be entertained that the hoo or shelf of land on which the abbey stands was an ancient and suitable site for a community before being selected by Sir Richard de Lucy. Just above the marsh runs the lower road which skirts the Thames swamps. It is now raised to a pretty even level, damming in two little valleys which opened east and west of the abbey buildings. At the time when the earthworks were constructed the tides flowed up to these valleys across which the road passes. The eastern one has a square-shaped work around the bottom of the valley at a distance secure from the reach of the tide, and its bank on one side, if not on both, at one time continued much further northward (to the river) than it does now, in an irregular manner influenced by the shape of the ground. The square-shaped hythe wall continues westward up the hill, then in a general direction southward, skirting the hill side for some distance. The ditch all along this bank is landward, for the protection of the waterside community. It presents in section several peculiarities, and notably the upper angle; for here the hill rises so high and quickly that it required clever arrangement for protection at so unfavourable a spot.

All the rest of these works are lost in the improvements required by the abbey. The west valley is stopped by a dam, making an upper pond, while the road-way lower down formed another dam.

The canons dug below this an hour-glass shaped pond. The pond on the eastern side is a double one, and required much more excavation to fit it for the purposes for which it was dug. These ponds and the slight digging required, with the dams in the road line, are monastic, while the hythe and upperworks may have been Saxon or Danish, when the Wickings needed protection against the natives whom they harassed.

On the Essex margin of the Thames no works exist which present any form which can accurately be described either as hythes or camps. It is possible that the outer earthworks adjoining West Tilbury Hall may have been of a very early date, for a slight ridge borders the steep hill top. The square work which was constructed when Elizabeth rested at West Tilbury during her progress of inspection to Tilbury fort still remains little altered.

Purfleet, whose earliest form is "Pourtefleet,"¹ presents no evidences of enclosure now; although its situation, which resembles that at Benfleet, was admirable for occupation, but for ages the soil has been quarried from the hoo, and government works and powder magazines have covered the ground.

At Barking, on the edge of the Roding, there are remains of a large prehistoric camp. This camp is a water-side camp, but is wholly above tidal level; it appears to have been of the order of camps of refuge, for women, children, and cattle, surrounded by swamps to which its protection was mainly left; at the north-west corner is a mound rising to a point whence the few watchmen left in charge could keep a look out; this watch mound rises scarcely fifteen feet above the average level of the camp, which is on a plain of gravel but slightly raised near the middle; the walls do not at present shew any deviation giving a covered access to the Roding, which it skirts on the eastern bank for many yards. The camp is traceable all round, but the northern walls are easiest seen. Its form is roughly a square, but there are no right lines in its defences.

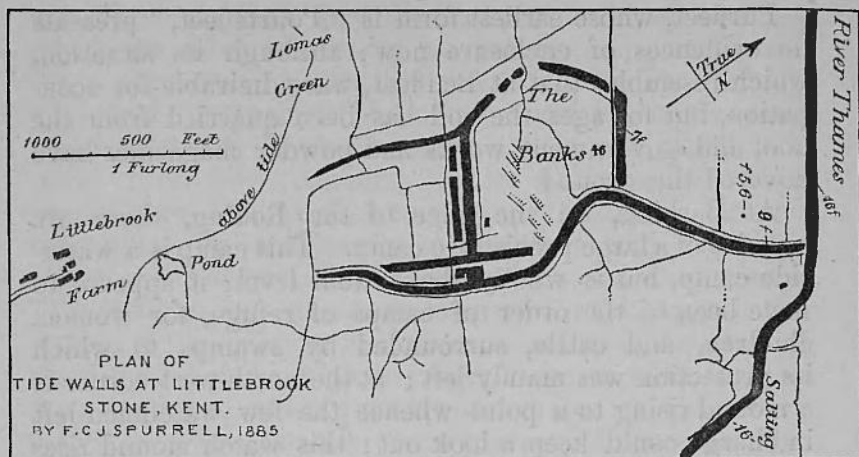
At Crayford, on the spread of gravel thirty or forty feet above the creek on its west side, and a quarter of a mile or less due south of Howbury, is the barest outline of an oval camp; its bank may be feebly traced on the north side, and the ditch also here and there, by means of the chalk pits made along it, the existence of the chalk having been revealed by the excavation of the ditch.²

The works beneath the present tide level at Littlebrook farm, in the marshes near Stone, Kent, are those of a hythe situated close to the present earthland foot, and at the period of construction were apparently on a stretch of gravel not quite above the reach of the highest tides, and perhaps requiring slight walls protective against severe storms. The works are of a character comparable to those of Hasten, and represent the enclosures for the protection of ships—a "wick" or "port." The wick at Littlebrook was once important and preserved a reputation still dear to the English when Ethelred gave to Rochester in A.D.

¹ Temp. Ed. III. See Morant's Essex.

² This outline is involuntarily shewn

on the map of the Geological Survey, but is exaggerated in width.



995, "unam mansam solita anglorum vocitatione et Lytlanbroce celebriter appellatam." At the present day may be found the graves of those early English of Littlebrook, on the top of the hill immediately overlooking the port.¹

Here and there on the marshes the sites of salt pans can still be seen, where salt was obtained by natural evaporation, but I have not found any such further westward than Higham, unless there be the remains of a boiling place or weller's work (*wylleres sæta*) in the marsh about half-a-mile south-west of East Tilbury church; where is a small irregular mound largely formed of red fragments of burnt clay pots, and reminding one of the "red hills" of the Essex coast.

To the north of the roadway leading from Queenboro' to the mainland, which is mentioned by Dugdale as a bank from "Tremmond-ferye to Gothelles," and the same distance (150 yds.) east of Queenboro' castle, is a curious work called a "camp." The central level is 20 inches above the general level of the meadows, the bank is about 10 inches still higher, and the ditch is about 10 inches below the meadows. It may have been formed originally

¹ In the accompanying plan, the figures represent feet above O.D. The dark lines, banks or walls. The average level of the marsh is O. D. 4, in and about the enclosure. Since its abandonment a current or tidal stream has passed through the

work, wearing the banks away on the east and west. The manor-way has been kept up much later. This work was connected by a line of road through the fields into Overy St. Dartford.

from one of the "mounds" already mentioned. A plan of it is given by Mr. Flinders Petrie.¹ Another and larger enclosure of a rectangular shape, extending from the roadway due south to the last, belongs to a date posterior to the permanent inning of the marshland in which they lie: I do not think them tidal works.

There are some descriptions of the Thames and its margins, especially near London, which I think require notice.

Sir C. Wren gives his opinion that the sea once covered the land between London and Camberwell, but he does not say at what date.

Mr. G. L. Craik² in his admirable article in Knight's "London" is more precise; and he thinks that the sea approached much nearer London than now, although it did not reach it.

Sir Geo. Airy³ exactly describes the state of the Thames about London in the time of Claudius, thus:—"Whatever be the date of the mighty embankments which have given its present form to the river channel (and which not without plausibility have been supposed to be as late as Henry VI), there can be no doubt that they did not exist in the time of Claudius. Those vast tracts, known as the isle of Dogs, the Greenwich marshes, the West Ham marshes, the Plumstead marshes, &c. (which are now about eight feet lower than high water), were then extensive slobbs covered with water at every tide. The water below London was then an enormous estuary extending from the hills and hard sloping banks of Middlesex and Essex to those of Surrey and Kent. Immediately below London the shores of sound ground approach, and the estuary would then assume partially the character of a river. This estuary was, of course, the ocean, or sea of Dion, &c., &c." This view is adopted by Mr. J. C. Elton,⁴ and most subsequent writers.

But they improved on it. Dr. Guest, writing in 1866,⁵ says, "The Romans on arriving in the neighbourhood of London saw before them a wide expanse of marsh and mudbank, which twice every day assumed the character of

¹ *Archæologia Cantiana* xiii, 8.

² 1841.

³ *Athenæum*, Jan. 28, 1860.

⁴ *Origins of English History*.

⁵ *Archæological Journal* xxiii, The campaign of A. Plancus.

an estuary. No dykes restrained the water of the Thames within certain limits. The individual character of the river was lost, and the Romans only saw one sheet of water before them When they said they crossed the Thames, they merely meant they crossed the northern arm of the Great Lake which spread out its waters before them on either hand." Mr. Black¹ defines his lake as ceasing at a line drawn between Erith and Purfleet, and makes London stand on it. Mr. J. R. Green² describes with many big words the dismal nature of the land round London, and the "vast lagoon" on which it stands, and completes the account by saying, "Near the point where the two rivers (Lea and Thames) meet, a traveller who was mounting the Thames from the sea, saw the first dry land to which his bark could steer. The spot was, in fact, the extremity of a low line of rising ground thrown out from the heights of Hampstead...to thrust itself on the east into the great morass," by this he means Ratchiff. This is absurd, of course, and shews a want of knowledge of the locality he described, and removes any difficulty we may have as to accepting his account of the ancient Thames.

Mr. Loftie accepts the lake, and describes the "vast shallow lake," with the river flowing up and down it.³ But Mr. Loftie says "St. Bride's cannot be attributed to the time of Canute, the ground on which it stands was then under water." Yet Mr. Loftie describes "the cutting of the ditch by the Danes round London bridge and the dragging of their ships to the west side; and he also describes the existence of a Roman building beneath the nave of Westminster abbey church. Now both these places were more than twenty feet lower than the floor of St. Bride's or the ground on which it stands, which has never been under water since the Romans came.

It should not be forgotten that Lysons says Mortlake "was generally supposed to be derived from *Mortuus lacus*, the dead lake," meaning, I suppose, the Thames, on which it stood.

From this supposed lake it would appear that a derivation for the name of London has been attempted.

¹ Archæologia, xl, 1863-4.

² Making of England, p. 100.

³ Loftie, London, p. 72.

Mr. Loftie, in his History of London says, "The derivation of Londinium from Llyndin, the lake fort, seems to agree best with its situation and history;" and he quotes Mr. Godfrey Faussett in support. If Dr. Guest had thoughts of a like nature when he said "the name of London refers directly to the marshes," he seemed contented *not* to prove the fact.¹ Mr. Loftie, in order to support his derivation, looks out for a similar name, and says, "a considerable tidal estuary or lagoon existed, stretching far up among the woods to the foot of the Laindon hills," and, "it is impossible not to connect the almost certainly Celtic name of London with the similar name of a very similarly situated hill Laindon." There is, I beg to remark, no similarity in the situation of the two places. Besides, Laindon is variously given by Morant as Laingdon, Langenduna, Laingdon, Legniduna, Leienduna, and in Domesday, Langeduna. All these forms are alike Saxon and not Celtic; Laindon is the long hill still, and still without its lake.

But this assistance, with which he supports his derivation, is a broken reed, for it calls to our remembrance the sole important difference in the early spelling of London, viz., Longidinio, to be found in Antonine's *Itinerary*, and which may suit either the form of the ground facing the river on which London stands, or the peculiar form of the early city enclosure. So far, there is a resemblance between *Langeduna* and *Longidinio*, but adverse to the lake theory.

The lake of these writers then resolves itself into the supposition of a few inches of water rising over saltings for a few minutes in the day, during a few days in the month, and even the last reduced to a still smaller number of days in the summer months. But I have given reasons to doubt the existence at the time spoken of, of tidal marshes or saltings near London or above Erith, and in pointing out that no barrier existed at Erith or Purfleet or elsewhere to dam up the water of the river, I submit that there was no lake near London; and also that it is probable

¹ *Archæological Journal*, xxiii, p. 180. Dr. Guest found that Durolevo of the second Iter was near Feversham, he said "The road runs beside the Sheppey marshes, which, in the Roman times must have been a collection of pools," in a

subsequent paper, these *pools* become "a lake"¹ It is quite as great a mistake to say that Feversham Creek was, or is, a lake, as the Thames estuary was or is. See *Origines Celtice*, ii, pp. 55, 117.

that the estuary did not reach so far west as at the present day.

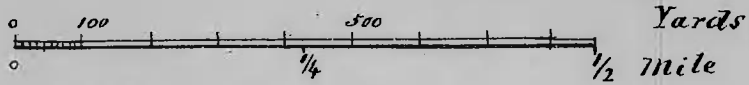
I am clearly of opinion that since the Roman occupation the present channel of the river through its alluvium has remained in almost exact relative position with respect to the earthland foot or hard banks from Lambeth to East Tilbury, and certainly so with respect to the more important hard and landing places on the main stream now existing.

Of banks against the tide in the district below Purfleet there are none surviving of the Roman period, while above that place none or but the slightest ones were needed, and no signs of any can be found. Some Saxon banks, perhaps, exist below Gravesend, but cannot be precisely identified at present, while above it, with the exception of Littlebrook walls, there are none now known of older date than the thirteenth century.

NOTE TO THE MAP.

In the accompanying map of the Plumstead and Erith marshes, I have marked strongly what remains of the old river-walls. The oldest and strongest wall was that on which Belvedere station stands; it may belong to the XIII. century. The name "Flemingges walle" in 1311 attests how early foreigners were employed here. The chief purpose of the map is to shew a different system of embanking to that shewn on the Higham map; and also to preserve the exact position of all the old walls which I have been able to trace, and which are rapidly disappearing before the excavator and builder. These excavations, nevertheless, may now be watched by its assistance in the future with the hope of tracing the foundations of old walls and sites beneath the surface. At the point marked *z*, moor-logs of the old forest may be seen projecting into the ditch. Near this spot, low down in the peat, which rises to zero o.d., a "dug out" boat was cut through, the ends being left in either bank of the ditch which was being made. From out of this boat, a polished flint axe and a very beautiful flint scraper were obtained. Another polished axe of large size was dredged out of the same peat bed in the river off Prices' works close by.

*Tide Banks of the Thames
between Woolwich and Erith, Kent.*



 represents banks.

1885.

F. C. J. SPURRELL.

