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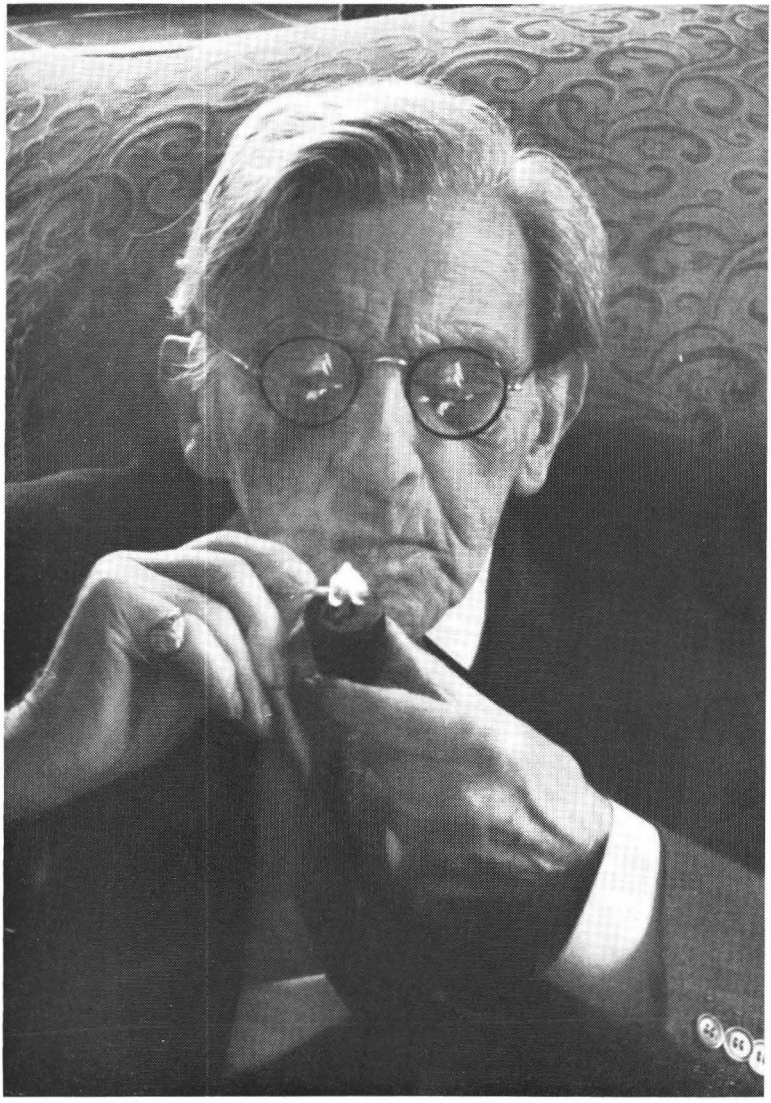

LOUIS FRANCIS SALZMAN, 1878-1971

(A photograph taken in October, 1970, by Miss Verena Smith)

LOUIS FRANCIS SALZMAN, 1878-1971

By the death of Louis Francis Salzman on Sunday, 4th April, 1971, the Sussex Archaeological and Record Societies have lost their senior member; he joined the Archaeological Society in 1896 and was one of the founders of the Record Society in 1901. But Salzman was more than an ordinary member—he was the willing servant of both Societies whether as Editor, President or in any other capacity. Few men can have devoted so much of their lives to their native county as Salzman did to his, and all this work was voluntary.

Salzman, the son of a Brighton physician, was born on 26th March, 1878 and educated at Haileybury and Pembroke College, Cambridge. As his subsequent career was fully described in *The Times* (6th April, 1971), it is unnecessary to repeat it here; this brief and inadequate memoir must therefore be confined to the man himself and his work in and for Sussex. Between 1906 when a long paper entitled " Documents relating to Pevensey Castle " was published in vol. 49 of *S.A.C.* and 1962 when " ' Chopchurches ' in Sussex " appeared in vol. 100, Salzman contributed a great many papers to *Collections;* all of them carried the hall-marks of thorough research, a fine assessment of evidence and an easy style of presentation. Although concerned with all periods of history, he was primarily a medievalist and never happier than when working on something like the Chartulary of Lewes Priory (S.R.S., vols. 38 and 40) or the Ministers' Accounts of the Manor of Petworth, 1347-1353 (S.R.S., vol. 55); this type of record was a challenge and called for a great depth of learning, an ability to translate contracted Latin into readable and understandable English, and the power to interpret the facts correctly and concisely. Family history (not his own) and heraldry were also among his interests, but so were archaeology, place-names, Domesday Book, the vexed question of Sussex territorial divisions, lost villages and chapelries, and much else as may be seen listed in the General Indexes to *Collections.*

It was as an editor that Salzman's expertise came to the forefront. From 1909 to 1958 inclusive, he edited our *Collections* and many a contributor has cause to be grateful for being rescued from publishing some wrong statement simply because Salzman *knew* it was wrong. The immense amount of time he spent going through papers and proofs and writing letters can only be guessed: his patience was inexhaustible as was his kindness unless somebody was stupid enough to pit his imagined knowledge against L.F.S.'s real knowledge. On such occasions the poseur and his theories were demolished in no uncertain terms. But anyone going to Salzman and seeking help got full measure; it was the sign of the true scholar to share his learning and if, on rare occasions, a particular reference

wasn't on the tip of his tongue, a postcard with the necessary information would arrive in the course of a few days. As much was done in the way of editing for the Record Society's publications as for the *Collections* and in his prime Salzman gave very little work to his assistant literary directors.

Neither must his work on the Society's archives, library, museums and properties (especially his beloved Michelham) be forgotten. Here again, his contributions were immense, his energy never flagging and his joy unbounded when some " treasure " turned up. Then there were the various Committees where he made his presence felt—sometimes a shade too sharply for the comfort of his colleagues —but it was all for the good of the cause and everyone realized this on reflection.

Brought up in the traditions of Horace Round, Oswald Barron, Haverfield, Tout, St. John Hope, Tait, Pollard and many other " giants " of the historical and antiquarian world in the early years of this century, Salzman had plenty of opportunities for sharpening his wits and he was an apt pupil in this respect. While some of his slightly younger contemporaries such as Vivian Galbraith still speak of him with affection and praise, Salzman is still remembered (like Richard Montagu, that controversial Bishop of Chichester in the 17th century) as one capable of " tartness of writing, very sharp the neb of his pen, and much gall in his ink " against those with whose views, or deductions from evidence, he did not agree. This outspokenness probably lost him a good many friends, but, as it happened, L.F.S. was usually right!

It may not be generally known that Salzman had a droll sense of humour behind that rather stern face; he often sported a flower in his buttonhole (which he liked you to notice and comment upon); he wrote a play (*The Girdle of Venus*); he published what he called *A Random Scrap Book* (in some respects his only really unsuccessful work) and compiled a delightful anthology, *History as she is taught*, based on what some of his pupils (he had been a schoolmaster at Harpenden) thought were the correct answers to examination questions.

He was, I believe, the oldest Fellow of the Society of Antiquaries (he was elected in 1911), but other honours did not come to him until late in life. Her Majesty conferred the C.B.E. on him in 1955 and the University of Sussex made him an honorary D.Litt. in 1965; these recognitions and the celebrations on his eightieth birthday and the volume of *Collections* published in 1959 to mark his fifty years as Honorary Editor gave him particular pleasure.

Salzman was Spartan in matters of comfort, food and clothes, but always the good host if you were invited to share his simple meal. Slight in build and as full of physical stamina as of academic industry, L.F.S. at eighty could easily outstrip many of his juniors. Those who knew him well will never forget his enormous eye-brows which,

on occasions, could signal that some devastating utterance was about to be made. But it is Salzman, the friend and scholar, whose memory we shall cherish; to see him relaxing with a strong-smelling pipe and to hear him discourse on almost anything historical was both a privilege and an education. His latter years were a heavy burden for him to bear, but they were lightened by the devoted care and attention he received from Miss Verena Smith and Miss E. V. Flight who shared their home with him.

So this eminent scholar, this " little man " as he was affectionately called by some of his friends amongst themselves, has slipped quietly away from the scene after a long and useful life for which all Sussex people in particular, and all historians and antiquaries in general, have cause to be thankful. It was a gracious thought to fly the Union flag from Lewes Castle on Salzman's 93rd birthday and I happen to know how much this expression of appreciation and goodwill pleased him. F.W.S.

A SANDSTONE ROUNDEL AND MESOLITHIC FLINTS FROM BOGNOR COMMON, FITTLEWORTH, SUSSEX

By E. W. HOLDEN, F.S.A.

The perforated sandstone roundel (Fig. 1), a number of worked flints and waste flakes were found in one small area in 1970 by Mr. G. Bruce. They came from the disturbed surface soil at the northern edge of a sandstone quarry on Bognor Common in the parish of Fittleworth (TQ. 012213). Because the ground had been stripped of its topsoil by machine, objects from the piles of soil, even if close to one another, are not necessarily associated, but the lack of finds belonging to later periods suggests that the roundel may have some connection with the flints. There can never be certainty in the case of surface finds that an association is culturally valid and not the product of chance. The site is situated on the Hythe Beds of the Lower Greensand, less than half a mile SSW. of Bedham I flint-chipping site investigated during the years 1931-5 by our member Miss P. A. M. Keef, F.S.A. (Scot.).[1] It is recorded that surface flints were found also to the south of the principal concentration, which would be approaching the area of the recent finds.

THE FLINTS. Miss Keef noted that the Bedham flints were of three colours, viz., opaque grey, translucent buff and black, which colours agree with the flints to be described, and it may be that the new finds are an extension of the Bedham I site. While the greater number of flints, particularly the darker varieties, bear a natural slight gloss, some of the lighter coloured ones are dull and lustreless. Two scrapers, one serrated and two utilised flakes, bear small patches of high gloss.

The late Dr. Eliot Curwen in 1940 suggested that the Bedham flints bore some resemblance to the Mesolithic flint industries found on the Lower Greensand hills in East Surrey—West Sussex district, but especially the site at Selmeston in East Sussex[2]. Bedham I yielded flints in the Mesolithic tradition, but also a piece of Neolithic ground axe; Bedham II and III likewise had worked flints of both periods. Mrs. Susann Palmer kindly examined the Bognor Common flint assemblage and confirmed the writer's opinion that it was of Mesolithic character.

A large number of flakes show signs on one or more edges of having been utilised. The minute serrations, being caused by wear and not secondary retouch by hand, are therefore classified below as *utilised* flakes.

[1] *Sussex Archaeological Collections* (hereafter referred to as *S.A.C.*), Vol. 81 (1940), pp. 215-35, see pp. 215-20.

[2] Ibid,. p. 218, and see *Antiq. Journ.*, vol. 14 (1934), pp. 134-158.

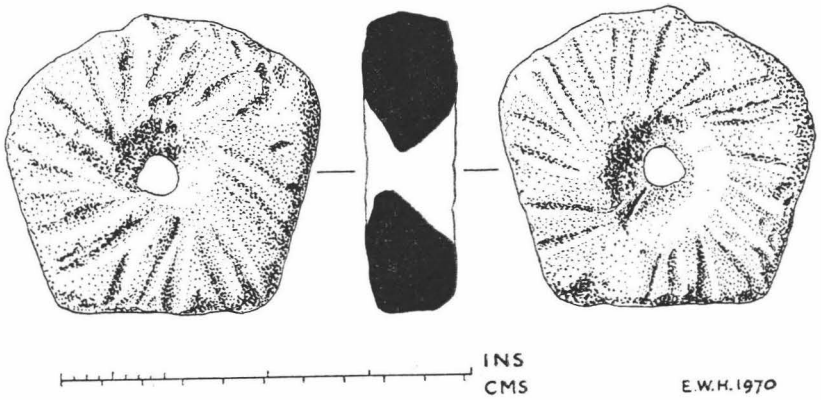

FIG 1. Sandstone Roundel from Bognor Common, Fittleworth.

List of Flints Found

Scrapers (2 with gloss)	12	Flakes	76
		Flakes (utilised) (2 with gloss)	42
Serrated blades	4		
Obliquely blunted blades	2	Serrated flakes (1 with gloss)	7
Blades (utilised)	2		
Saw	1	Cores	10
Arrowhead (petit tranchet derivative)	1	Core-trimming flake	1
		Fire-crackled flints	10
Burins	3	Total	171

THE SANDSTONE ROUNDEL (Fig. 1). This object is of fine sandstone, buff in colour, resembling visually samples of stone from the layer immediately below the topsoil in the adjacent quarry. It is possible that the roundel was made locally. In shape it is roughly pentagonal with flat faces on either side, the edges and corners slightly rounded. It measures 3.1in. wide by 2.95in. high and is 0.9in. thick; its weight is $4\frac{3}{4}$oz. A central hole has been made by pecking from each face in an irregular " hourglass " technique, deeper on one face, the final perforation being ovoid, 0.42in. by 0.39in. There are no signs of grooving that might be caused by suspension on a cord. Some slight traces of damage may be seen, but generally the object is in good condition. There are about 20 grooves on each face up to 0.08in. deep and half-round in section. It is noticeable that the majority of grooves do not radiate from the centre, but are nearly all tangential either to the edge of the central hole or to some point between that edge and the top of the " hourglass ".

Despite extensive enquiries it has not been found possible to define the function of this object. The nearest parallel traced is a chalk disc found on the surface of The Caburn in 1929[1] (Pl. I). This is round, 5in. diameter, $1\frac{1}{4}$in. thick, with a smooth central hole 0.8in. in diameter, the perforation being midway between a cylinder and an hourglass, with a rounded splay on both faces and without cord grooves. On one face a concentric circle has been incised around the hole, and from it a number of lines radiate towards the circumference. On the other face radiating incised lines run from the lip of the perforation to the circumference of the disc. On this disc too, some of the lines are tangential to the central hole. Perforated pieces of chalk, usually of irregular shape, are recorded in a Neolithic context from the Trundle.[2] One large broken block (op. cit., p.143, Pl. IV, A) has some radiating scratches

[1] E. Cecil Curwen, " The Caburn: Its date and a fresh find," in *S.A.C.*, vol. 72 (1931), pp. 151-5. The object is in Barbican House Museum, Lewes.

[2] E. Cecil Curwen, " Excavations in The Trundle," *S.A.C.*, vol. 72 (1931), pp. 100-149, see p. 143, Pl. IV, Pl. XIII, 36 and 38.

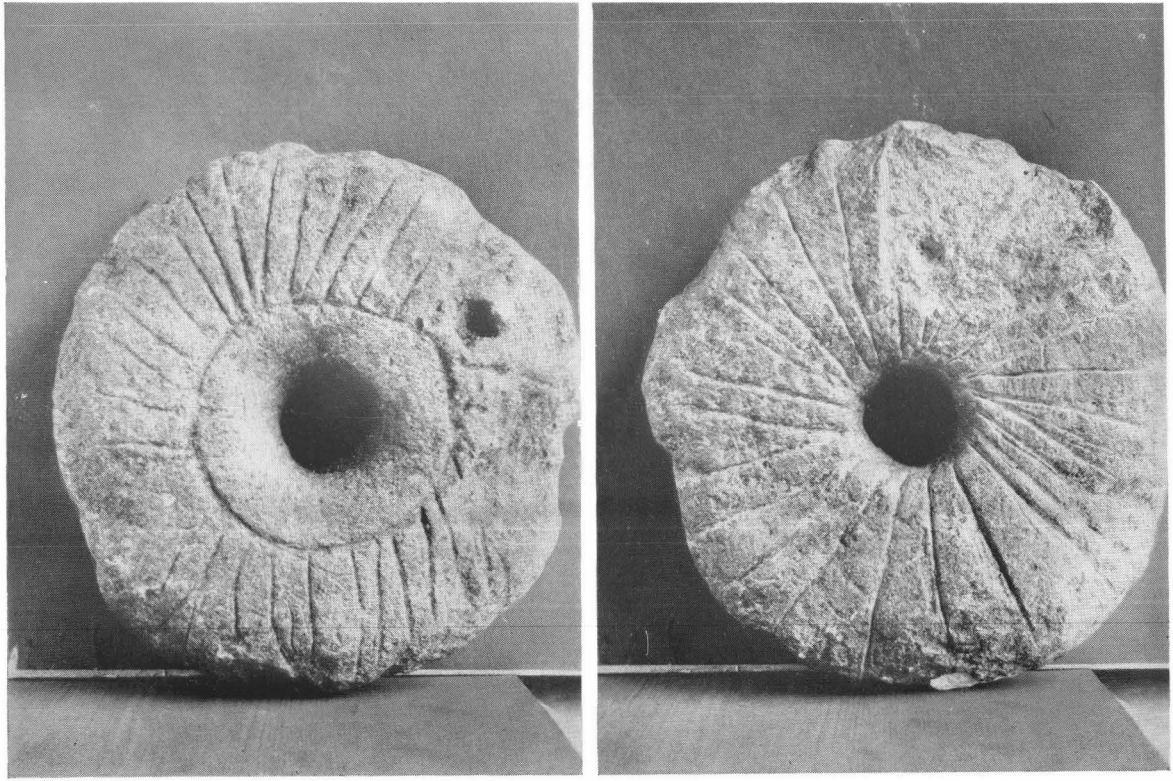

PLATE I. Chalk Disc from The Caburn (diam. 5in.).

around the remains of a hole. Other perforated chalk blocks are recorded at Whitehawk.[1] Somewhat similar perforated pieces of chalk were found at the Neolithic causewayed camp of Windmill Hill,[2] two of which have random scratched lines. No cord wear is visible on the Windmill Hill specimens and such wear is not known on intact perforated blocks from other sites. It would appear, therefore, that these chalk blocks were not used as loom weights. Curwen says that The Caburn object has all the appearance of a much-enlarged spindle whorl and one of The Trundle pieces (op. cit., p.143, Pl. XIII, 38), small and sub-rectangular in shape, is said to resemble an asymmetrical spindle whorl, but in neither case are they claimed to be such. The large block from The Trundle (op. cit., p.143, Pl. IV, A) is much too large and heavy to have been a spindle whorl.

Although the possibility of the Bognor Common sandstone roundel perhaps being an asymmetrical spindle whorl should not be dismissed, if it were one, it would be out of place in a Mesolithic context. However, it must be remembered that its near association with Mesolithic flints may be fortuitous. The writer does not favour the spindle whorl theory and, like the Caburn disc, another surface find, the date and function of the sandstone roundel are at present matters for conjecture.

ACKNOWLEDGEMENTS. Thanks are due to those who have endeavoured to identify the sandstone roundel and for helpful advice, particularly to Professor J. G. D. Clark, Miss C. Johns of The British Museum, Miss P. A. M. Keef, Mrs. S. Palmer, Mr. T. G. E. Powell, Mrs. F. Roe and Dr. Isobel Smith; also to Mr. G. Bruce, the finder, for bringing the matter to my attention and for depositing the roundel and flints in Barbican House Museum, Lewes.

[1] R. P. Ross Williamson, "Excavations in Whitehawk Neolithic Camp, near Brighton," *S.A.C.*, 71 (1930), pp. 57-96, see pp. 78-80, Pl. XVI.

[2] Isobel Smith, *Windmill Hill and Avebury. Excavations by Alexander Keiller*, 1925-1939, (1965), p. 132, Fig. 57, C.16-19.

AN IRON AGE PROMONTORY FORT AT BELLE TOUT

By Richard Bradley

Introduction

This paper completes the publication of two seasons of excavation carried out at Belle Tout in 1968 and 1969. Accounts of the Beaker settlement, which formed the main object of this project, and of the methods employed in its excavation have already appeared nationally,[1] and the important assemblage of Mesolithic flints from the site is now discussed in a separate paper published by this society.[2] Here it is intended to give the results of two sections through the promontory earthwork which encloses the entire Belle Tout plateau and to publish the Bronze and Iron Age pottery found within its area in the course of excavation on the Beaker settlement.

The site itself is an extensive headland plateau of Upper Chalk occupying an area of roughly 25 hectares and rising to a maximum height of 80 metres.[3] It lies three kilometres to the west of Beachy Head and immediately above Birling Gap where the land can be directly approached from the sea. Despite the effects of coastal erosion the single bank and ditch enclosing this area still take in fully 20 hectares and run from a point a little above Birling Gap to meet the cliffs again directly east of the 19th century Belle Tout lighthouse. The course of this earthwork is continuously traceable around the crown of the hill except for one short length to the N.W. where its line is completely concealed by undergrowth. Again to the N. and E. of the lighthouse its remains have been badly damaged by wartime use of the building as a gunnery target. Its line here however is clearly shown to be continuous by a pre-war air photograph of the lighthouse once issued as a picture postcard, and latterly by a clear surface crop mark. Only one possible entrance might be suggested from the evidence in the field. This lies at the midpoint of this circuit immediately SW. of Horseshoe Plantation but the steep scarp below the line of the ditch hardly supports this suggestion. A resistivity survey over this area failed to provide any unambiguous sign of a solid causeway, and it is more likely that the original entrance has now been lost to the sea. There is no reason to assume that the circuit was ever continuous to the S. and indeed the line of

[1] Richard Bradley, 'The excavation of a Beaker settlement at Belle Tout, East Sussex, England', in *Proceedings of the Prehistoric Society* (hereafter abbreviated *PPS*), vol. 36 (1970), pp. 312-79; 'Artifact density in the interpretation of timber buildings', in *Antiquity*, vol. 45 (1971).

[2] Richard Bradley, 'A Mesolithic industry from East Sussex and its implications.' Sussex Archaeological Society Occasional Paper no. 2.

[3] N.G.R. TV 557996.

the earthwork where it approaches Birling Gap is hard to explain without the defensive advantage imparted by the cliff. Despite thorough field work within the enclosure no internal features of Iron Age date have been recognised. The site has only once been fully discussed in print when a Neolithic date was suggested on account of the number of struck flakes within its area,[1] and the site plan in Fig. 1 is the first detailed survey of the earthwork to appear.

The Excavations 1968 and 1969

It was not a major object of excavation in 1968 and 1969 to investigate the earthwork described above though the finding of quantities of early Iron Age pottery in the Beaker settlement within the enclosed area did demand some preliminary investigation of its character. This seemed to be of particular importance in view of the surprisingly slight nature of the surrounding ditch in both of the sections exposed at the cliff edge.

As a result this ditch was sectioned by hand to the SE. of Horseshoe Plantation (Section A) and the entire defences were sectioned mechanically above Birling Gap where they were best preserved, and where the cliff section indicated that the rampart might be of more than one phase (Section B). It will be seen however, that no contemporary material was found in either area and that the only pottery of its suspected date was that recovered from the loam surface sealing the Beaker occupation levels within the enclosure. This material was entirely unassociated with recognisable features and was found almost wholly over the N. side of the gully occupied by the earlier settlement. The fact that the parts of single vessels were found over closely confined areas does not suggest that these had been manure deposited and, though the gorse over the site may suggest disturbance of some sort, the area showed no sign of ploughing after the Beaker occupation had ceased. It is suggested instead that domestic occupation might have taken place upon the spur overlooking the earlier site and that this material may be rubbish from that activity.

Details of the two excavated sections are as follows:

Section A. In 1968 a section four metres in width was cut through the ditch and associated counterscarp bank at a point close to Horseshoe Plantation (Figs. 1 and 2). The resulting section is entirely consistent with that in cutting B and seems to agree with those exposed in the present cliff edge, though these could only be viewed safely from the sea. The ditch (Fig. 2) was of a shallow U profile with heavily eroded sides and a flat bottom at a depth of one

[1] A. H. Lane Fox, 'An examination into the character and probable origin of the hill forts of Sussex', in *Archaeologia* (hereafter *Arch.*), vol. 42 (1869), pp. 27-52.

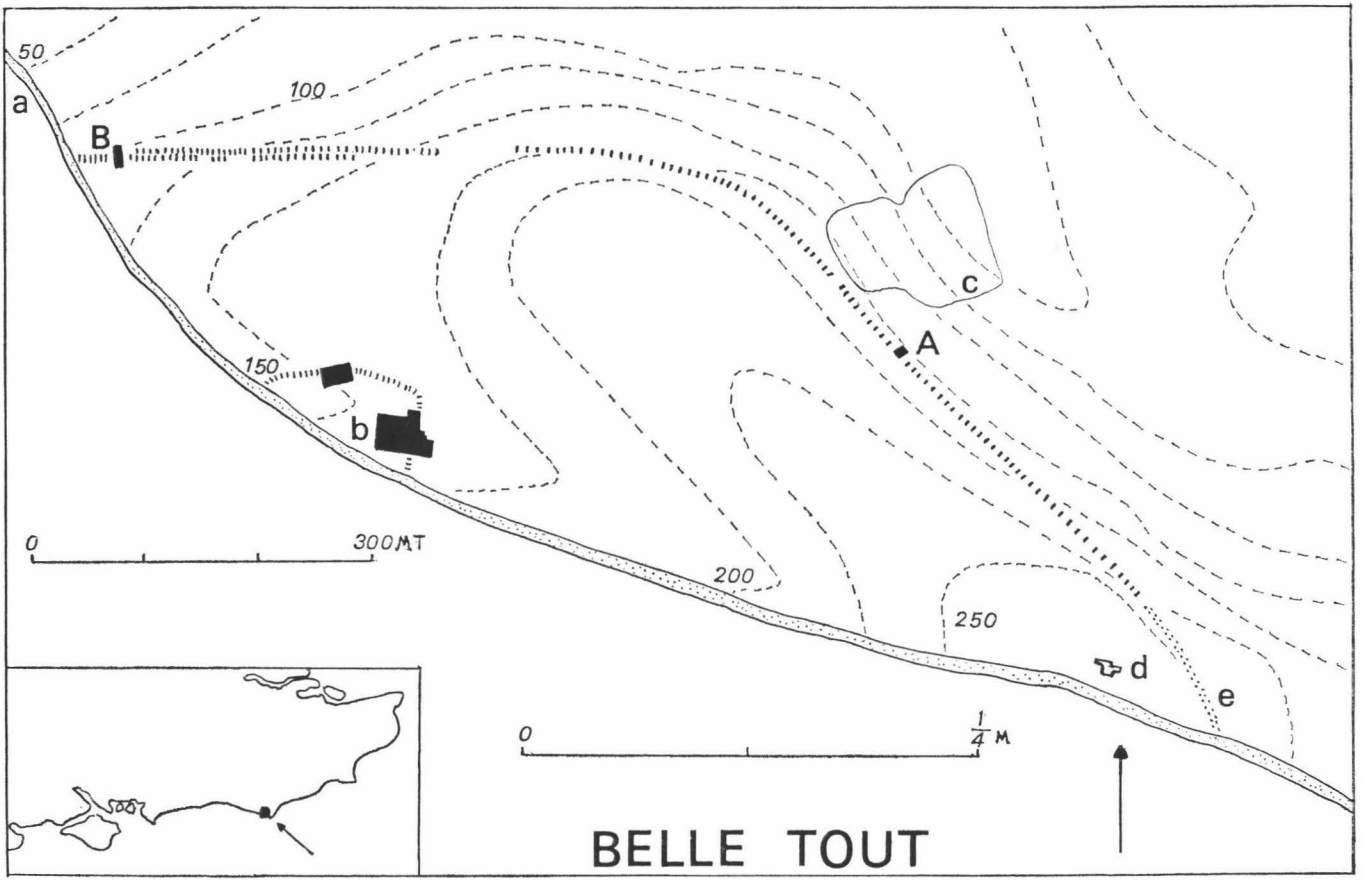

FIGURE 1. The Belle Tout promontory earthwork in its local and regional context. Contours are at 25ft. intervals and based upon the OS 2½in. survey. a: Birling Gap; b: Beaker settlement; c: Horseshoe Plantation; d: Belle Tout lighthouse; e: earthwork

metre from the present surface. The main filling was of deposits of loose weathered chalk, 9 and 7, and of a finer mixture of rain-washed chalk and humus, 8. The secondary filling consisted of small fragments of weathered chalk and humus, 2, and of bands of finer chalk and humus washing from the front of the rampart, 4, 5 and 6. The ditch may have been cleaned once of rapid silt and traces of a slight counterscarp bank of loose fragments of weathered chalk, 10, could be recognised, although no indication could be found of recutting.

Section B: In the following season the best preserved length of rampart above Birling Gap was sectioned mechanically to a width of three metres (Figs. 1 and 2). Here the ditch stratigraphy is entirely comparable with that in Cutting A, again showing a slight counterscarp bank which was already falling back into the ditch before the secondary filling of the latter had accumulated. Once again this bank, 15, consisted of medium sized fragments of loose weathered chalk, closely comparable to the primary filling of the ditch itself, 17.

The rampart seems to have been of two phases, the earlier represented by layers 4, 6, 7 and 8 and the later by layers 1-3. Though the section was badly damaged by two slit trenches which had been cut down almost to the buried land surface, it is suggested that the earlier rampart was turf revetted and that an extensive tip of brown humic soil, 9A, represents the collapsed remains of this facing. It is likely that this revetment may be associated with a narrow channel cut into the natural chalk of the hill and filled with chalky loam. At one point it could be established that this feature which fronted the bank throughout this section had also been cut through the buried soil (Fig. 2).

The tail of this bank was probably of weathered chalk fragments represented by layer 4 and seems to have been cut back by a secondary quarry scoop filled by layers 11-13. The buried soil, 9, also seems to have been removed. It is likely the material derived from this cutting had been used to heighten the rampart and three layers of chalk rubble unmixed with humus, 1-3, seem to have slipped back to fill this feature. Despite the disturbance caused by the two slit trenches, it is likely that the tips of loose weathered chalk 1 and 5 may be equated. The tail of the primary rampart included one abraded Beaker sherd which is regarded as a survival for reasons given below. This section seems to be essentially similar to that in the cliff face immediately to the S.

Pottery

The only item from either section of the earthwork was a small abraded base sherd of a Beaker comparable to those from the main excavation. Where the earthwork was cut by a recent track

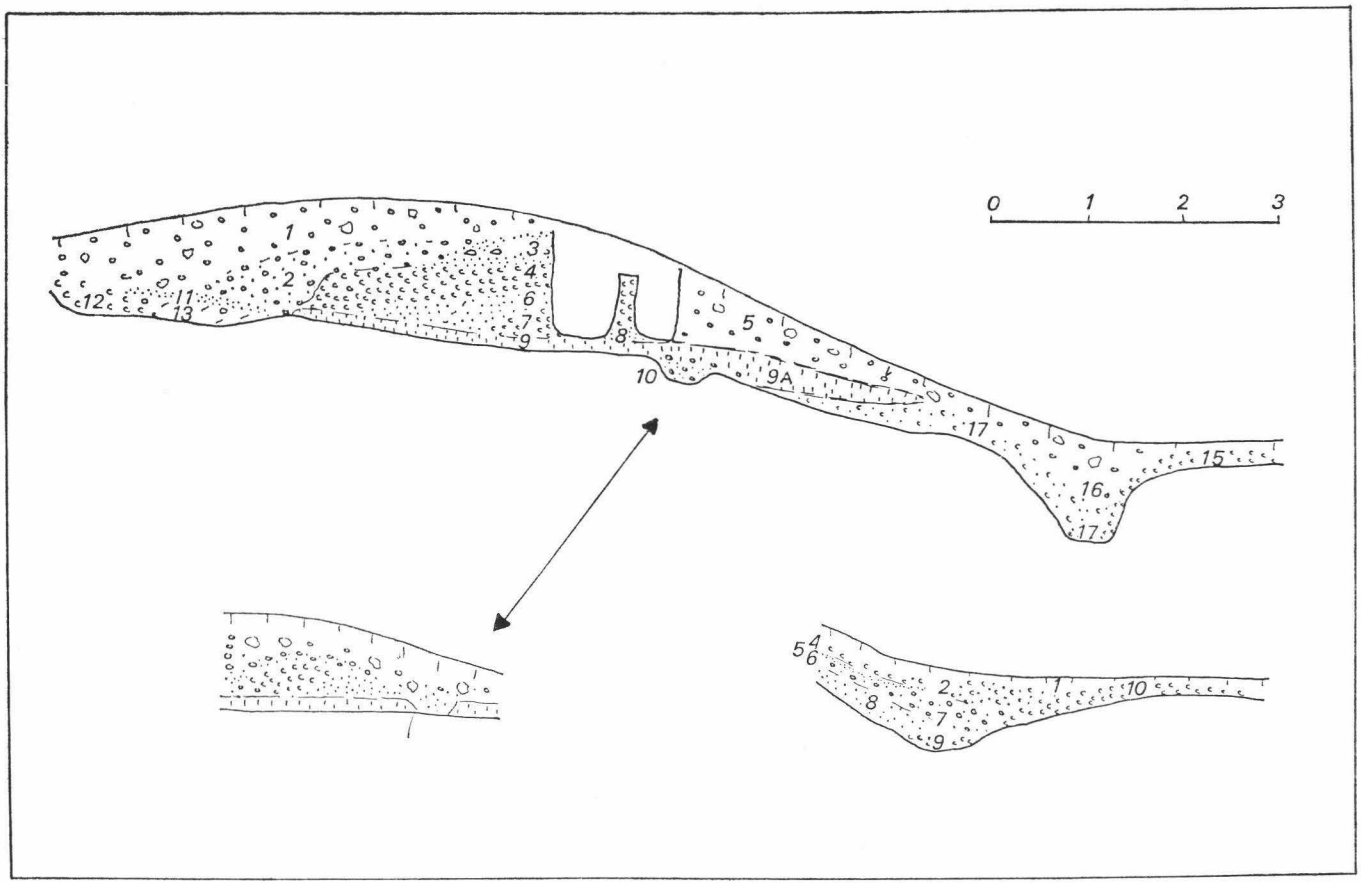

FIGURE 2. Sections of the Iron Age earthwork. Scale in metres. Cutting B south face above with detail of north face mirrored for comparison bottom left.

immediately to the north of section B a hammerstone and a quantity of flint flakes were recovered and so it appears likely that the dyke had disturbed one of several earlier complexes on the hill.[1]

The remaining pottery all comes from the area of the Beaker settlement excavated close to the present cliff edge. Almost 400 very fragmentary sherds are represented. The assemblage as a whole does seem to be relatively homogenous and, in the complete absence of later Iron Age pottery, it is assumed that this material is contemporary with the promontory earthwork. Further, more detailed, work may well lead to some revision of this view. The illustrated sherds are as follows (Fig. 3)[2]:

1. Carinated bowl with slight omphalos base. Hard black to buff body, partially oxidised, with fine and medium flint filler towards base.
2. Neck and shoulder of carinated bowl. Rough sandy buff body with medium flint filler.
3. Rim and shoulder of shouldered jar. Hard black body with smoothed exterior face containing fine and medium flint filler.
4. Neck and shoulder of carinated bowl. Fine black to grey-black sandy body with smoothed exterior and rare fine flint filler.
5. Rim sherd of upright vessel with exterior face damaged. Hard grey-black to buff body with large flint filler.
6. Rim sherd of upright vessel. Abraded sandy body, red-brown externally and grey-black internally, containing large flint filler.
7. Slack profiled bipartite jar with flattened rim and traces of burnishing below lip. Smooth hard black to buff body with fine to medium flint filler.
8. Flanged rim sherd. Sandy body with medium flint filler, externally red-buff to black and internally grey-black.
9. Body sherd with parallel shallow tooled lines. Hard slightly sandy body with sparse fine to medium flint filler, externally grey-black and internally buff to black.
10. Fragmentary shoulder or possibly base. Hard buff to black body with medium flint filler.
11. Shoulder with slight cordon. Rough red-brown body with profuse large flint filler, internally black.
12. ?Shoulder with slight cordon. Grey-black sandy body with sparse medium flint filler.
13. Body sherd with damaged lug. Hard buff body with profuse medium and large flint filler.

Two principal forms appear to be represented, the carinated bowl and the straight sided bucket. The first type, represented by 1, 2, 4 and perhaps 3, has close affinities with the material belonging to the first occupation of Mount Caburn and farther afield with early assemblages in Wessex. Material from the two groups appear in probable association at West Stoke.[3] For these a date at the opening of the Iron Age might be appropriate, although it is not clear how long these types remained in fashion. Some confirmation

[1] For details see Richard Bradley op. cit., 1970, p. 312.
[2] The drawings are the work of Jane Holdsworth.
[3] B. W. Cunliffe, 'Stoke Clump, Hollingbury and the early pre-Roman Iron Age in Sussex', in *Sussex Archaeological Collections* (hereafter *S.A.C.*), vol. 104 (1966), pp. 109-20.

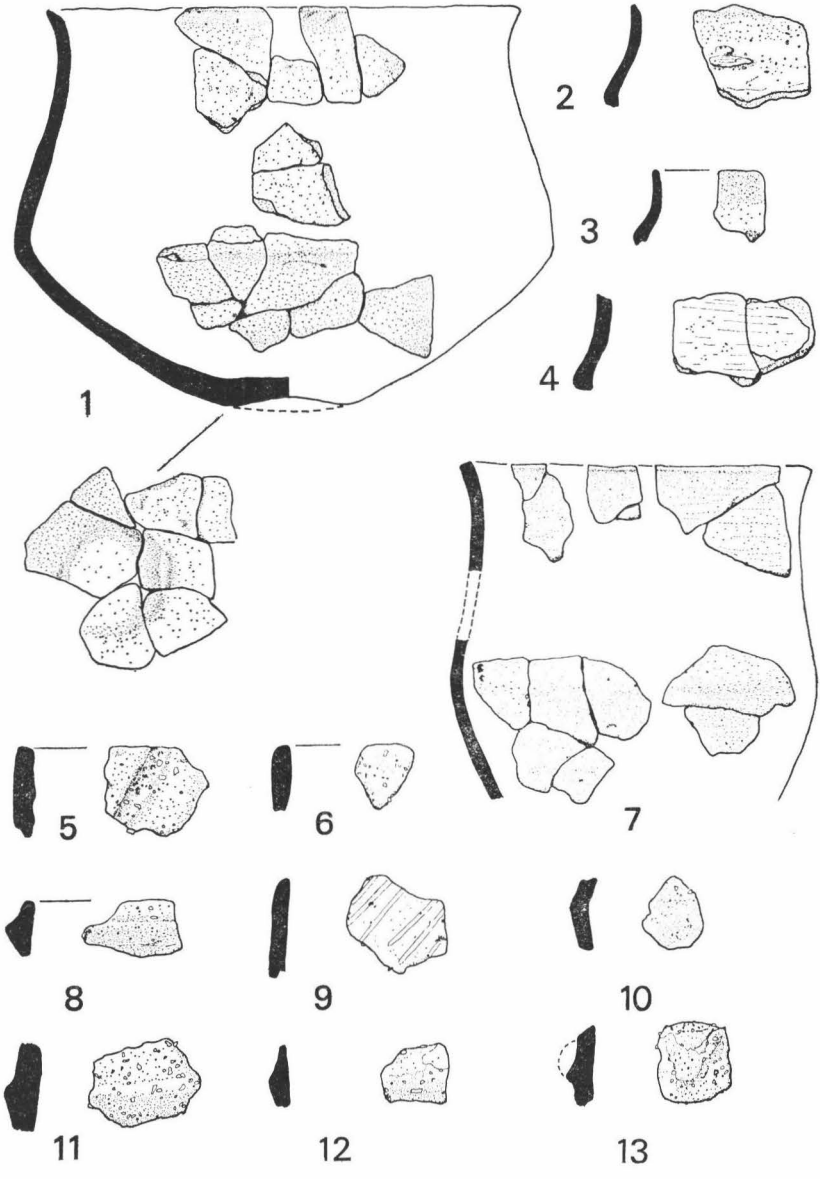

FIGURE 3. Iron Age Pottery from Belle Tout drawn by Jane Holdsworth. ⅓.

of this early context is the apparent association of vessels of analogous type with Late Bronze Age metalwork at Minnis Bay in Kent.[1] The second type may be represented by 5, 6 and 13 and probably by 11 and 12. This form is not easy to date in outline and, though vessels of upright or slightly biconical form may represent a continuing coarse ware tradition with Bronze Age origins, the type is still present in the middle of the Iron Age. However, the presence of 11-13, all three in fabrics more easily matched in ' Late Bronze Age ' assemblages in Sussex, may well support the earlier date. The lug on 13 is a particular characteristic of this material. 11 is in a similar ware and, though its form is by no means clear, it was found together with a quantity of straight sided sherds apparently from the same vessel. Though these were unfortunately not restorable, this supports the suggestion that it belonged to the shoulder of a slightly biconical bucket urn in the Bronze Age tradition. Similar sherds are now known in association with later Bronze Age pottery from Langstone Harbour in Hampshire.[2] The same interpretation might be applied with less confidence to the more fragmentary 12.

Three further sherds give problems. The flanged rim, 8, is hard to match in any context, though related forms are not entirely unknown in the mid Iron Age.[3] The decorated body sherd, 9, probably belongs to the Caburn I series, partly on account of its fabric. Though analogous decoration is certainly found within this tradition, it is uncertain which part of the parent vessel this fragment represents and so final judgments are better not made. The last group of sherds, 7, give more serious difficulties. The flattened rim of this vessel together with its fabric and the traces of burnish below the rim all point to a normal Iron Age context though the profile is that of the Beakers recovered upon the site. Indeed several sherds from the same area of the site have been published as Beaker pottery on account of their decoration, and in the final report on the earlier material it was pointed out that a small area of ambiguity existed in dividing the two assemblages.[4] This being said, it still seems more reasonable to assign this vessel to the later occupation in view of the Iron Age characteristics outlined above. If this is acceptable its profile might be compared instead with a rounded jar in the Minnis Bay assemblage, there found in association with carinated bowls.[5] It must be added,

[1] F. H. Worsfold, ' A report on the Late Bronze Age site excavated at Minnis Bay, Birchington, Kent 1938-40 ', *PPS*, vol. 9 (1943), pp. 28-47.

[2] Publication by Bari Hooper and the writer in preparation.

[3] Richard Bradley ' An Iron Age site at Paulsgrove ', in *Proc. Hants. Field Club*, forthcoming.

[4] Richard Bradley, op. cit., 1970, cited note 1, p. 8.

[5] F. H. Worsfold, op. cit., fig. 6, p. 36.

however, that differences of ware and decoration make this comparison a tenuous one.

It appears therefore that two separate traditions may be represented in this small assemblage, an ' Iron Age ' group and several vessels of ' Late Bronze Age ' type. In more practical terms, however, this division is only that between fine and coarse wares and there is evidence that the two types could be regarded as contemporary with one another. One such association has been noticed at Mount Caburn,[1] while on the contemporary site at Highdown it is clear from the published report that Late Bronze and early Iron Age vessels were found " alongside " one another sealed by the rampart of the hill fort.[2] In the same way, it is now recognised that pottery in early Iron Age styles may appear together with Late Bronze Age metal types. Indeed it is worth mentioning that Belle Tout itself is the possible findspot of an important Late Bronze Age hoard, discovered a century and a half ago.[3]

If therefore the pottery may quite possibly all be contemporary, both groups can point to a date at the beginning of the southern British Iron Age. Though no stratigraphical association could of course be made out, to call one group ' Bronze Age ' and the other ' Iron Age ' might be a matter merely of semantics. It is in the light of these suggestions that the promontory earthwork must now be considered.

General Considerations

The evidence from Belle Tout is unsatisfactory in one major aspect, the context of the pottery. Whilst it has been argued that the diagnostic elements in the assemblage all point to an early date, it has not been proved that that is the date of the promontory enclosure itself, rather than that of an earlier farm which it came to replace. In the absence of later Iron Age pottery it is assumed in the present argument that this objection is not valid. Whether this is correct or not however, it will be seen that the affinities of the earthwork itself do lie in the early years of the Iron Age.

The enclosure shows four major characteristics which ally it with other earthworks in Sussex and beyond: its considerable area, its promontory siting, its low revetted rampart and slight surrounding ditch, and the width of the berm between them. In addition to these there is no strong evidence that the greater part of the interior was ever inhabited. In these aspects the site calls to mind Ranscombe Camp in Sussex,[4] Butser Hill in Hampshire[5] and

[1] B. W. Cunliffe, op. cit., p. 119.

[2] A. E. Wilson, ' Report on the excavations at Highdown Hill, Sussex, August 1939 ', in *S.A.C.*, vol. 81 (1940), p. 180.

[3] Anonymous note in *Arch.*, vol. 16 (1812), p. 363.

[4] G. P. Burstow and G. A. Holleyman, ' Excavations at Ranscombe Camp, 1959-60' in *S.A.C.*, vol. 102 (1964), pp. 55-67.

[5] S. Piggott, ' Butser Hill ', in *Antiquity*, vol. 4 (1930), pp. 187-200.

Bindon Hill in Dorset,[1] each of which has been seen as an unfinished hill fort, partly because of the slightness of the surrounding ditch. In the case of Belle Tout, the fact that the first defences were rebuilt argues that the site was not left incomplete. It is interesting that, like Bindon, it overlooks a natural coastal landing place and even loses some of its advantages as a defensive site in attempting to include some of the lower ground towards the shore. Each of these sites may be of an early date and Ranscombe most probably predates the main hill fort series on the South Downs. Butser Hill directly replaces a cross ridge dyke which in itself is not likely to be later than the early part of the Iron Age, while Bindon occupies a chronological position not unlike that of Ranscombe. It is interesting that the slight earthwork at Belle Tout could only have served as an enclosure to contain livestock and could never be properly defended, while the " double bend entrance " at Ranscombe is of a type otherwise peculiar to pastoral boundaries. Similarly Butser Hill is almost certainly a refortified cattle ranch, which in its earlier phase had been composed of a series of cross ridge dykes and spur dykes. There is evidence too that the smaller timber cased forts associated in Sussex with Caburn I pottery are derived directly from Bronze Age stock enclosures. These are however points which I have discussed at length elsewhere.[2]

The four feeble and extensive univallate enclosures so far discussed are attributed to a date early in the Iron Age and seem to align themselves with a wider group of rather similar enclosures in western England recently defined by Dr. G. J. Wainwright.[3] He too has laid stress upon the extensive areas taken in by these sites, their revetted ramparts and the scarcity of domestic debris, and has also concluded that these were stock compounds. These sites, typified by Bathampton Down in Somerset, do not all occupy promontory positions and, if this perfectly arbitrary qualification is dropped, other comparable sites, which have hitherto seemed anomalous and independent, might be loosely grouped together. In Sussex, Beacon Hill, Harting with its foundation deposit of two Late Bronze Age penannular gold rings seems to belong to this period.[4] It is interesting that this site too has been described as unfinished and unoccupied. Certainly it is largely unpublished. A second site still undated is the Devil's Dyke which might itself develop from a

[1] R. E. M. Wheeler, ' An Early Iron Age ' beach-head ' at Lulworth, Dorset ', in *Antiquaries Journal* (hereafter *Ant. J.*), vol. 33 (1953), pp. 1-13.

[2] Richard Bradley, ' Stock raising and the origins of the hill fort on the South Downs ' in *Ant. J.*, vol. 51 (1971).

[3] G. J. Wainwright, ' The excavation of an early Iron Age hill fort on Bathampton Down, Somerset ', in *Trans. Bristol and Gloucestershire Arch. Soc.*, vol. 86 (1967), pp. 42-59.

[4] P. A. M. Keef, ' Two gold penannular gold ornaments from Harting Beacon, Sussex ', in *Antiq. J.*, vol. 33 (1953), pp. 204-6.

promontory enclosure. In Hampshire it is interesting that the earliest earthwork exposed in the cliff section at Hengistbury Head should be a slight ditch similar in dimensions to that at Belle Tout, though it would be quite inadmissible to assume without much firmer evidence that this must be equated with the earliest pottery from the interior of the site. A further extensive site, only recently excavated on any scale, is Balksbury near Andover where it is clear that the first two phases of defences each consisted of a very slight ditch and a dump rampart comparable in dimensions to that at Belle Tout.[1] Only in the more imposing third phase does the excavator accept the existence of possible granaries on the site and, even in spite of extensive and sensitive excavation within the enclosure, no trace of early structures or pits have yet come to light. Though Dr. Wainwright himself has resisted an equation with Bathampton Down, this site again appears to belong to an early phase within the pre Roman Iron Age. A final site of a rather similar date, provisionally assigned by its excavator to the same period as Bindon, is Hog Cliff Hill in Dorset.[2] Here too an extensive but weak enclosure has been examined and, though a limited cluster of huts was investigated, the majority of the area was quite empty. From provisional accounts it seems that few corn storage pits occupied this site and, more important, that the 26-acre enclosure had possessed an internal ditch suitable for containing herds of livestock. This feature occurs again on the early Sussex ' hill fort ' of Wolstonbury, which itself replaces a slight pastoral enclosure.

It appears therefore that Belle Tout may be linked with a relatively homogenous group of large but feeble earthwork enclosures which may be attributed to an early stage within the Southern British Iron Age. Some at least of these occupy promontories and a number give circumstantial evidence for a connection with cattle ranching. In these aspects they are to be distinguished from the main series of Sussex hill forts discussed by Curwen, with their major counterscarp banks and inturned entrances, and his own classification of East and West Sussex hill forts[3] might usefully be reformulated on these lines. The implications which follow from the recognition of this group however must be discussed in a separate, more extended, paper.[4]

ACKNOWLEDGEMENTS

The excavation took place by permission of the National Trust,

[1] G. J. Wainwright, ' The excavation of Balksbury Camp, Andover, Hants. ', in *Proc. Hants. Field Club*, vol. 26 (1969), pp. 21-55.

[2] P. Rahtz, ' Second interim report on excavations at Hog Cliff Hill, Maiden Newton ', in *Proc. Dorset Nat. Hist. and Arch. Soc.*, vol. 82 (1960), p. 83.

[3] E. C. Curwen, *Archaeology of Sussex* (2nd edn,, 1954), p. 237.

[4] Richard Bradley, ' Economic change in the growth of early hill forts '. Paper to conference Southampton University March 1971, publication pending.

Eastbourne Corporation and the then Ministry of Public Building and Works and was financed by grants from the Society of Antiquaries, the Marc Fitch Fund, the South Downs Preservation Trust, the Oxford University Archaeological Society, the Sussex Archaeological Society and by smaller donations from local bodies and individuals. The preparation of the results for publication has been generously aided by Mr. I. D. Margary, F.S.A. Equipment was made available by the Sussex Research Committee, Eastbourne Corporation and Mr. D. Llewellyn, and accommodation by Major C. G. Davies-Gilbert. Little could have been achieved without the kindness of his manager, Mr. G. Worsell, and the support of the people of Eastbourne and East Dean.

On the site special responsibilities were taken by Joyce Biggar, Pamela Clark, Sara Lunt, Philip Kenrick, Roger Miket and Simon and Carolyn Turney. The pottery was drawn by Jane Holdsworth; thanks for other help and advice must go to Miss P. Ireland, Col. C. F. Sharp and Messrs. C. Ainsworth, I. F. Blomfield, G. P. Burstow and E. W. Holden.

TRAFFIC ROUTES IN SUSSEX, 1724

as shown by ' Milestones ' on Richard Budgen's Map

By IVAN D. MARGARY, F.S.A.

Recently my cousin Harry Margary has compiled and published a most useful set of reproductions of the older maps of Sussex[1] which thus become readily available for study at home. Included among them is Richard Budgen's Map, on approximately the 1 inch to 1 mile scale, and the first map of the county to show a detailed network of roads. When these are examined one is at once struck by the elaborate series of routes marked, it seems, by numbered milestones. Mostly, these run from town to town and show no interest in any distant centre outside the county, such as London, though some routes are long, for instance, Tunbridge Wells to Rye. Altogether, 64 routes have been noted, a considerable total in such an area.

One soon realises that these marks bear no relation to the later series of milestones that we are, or have till recently been, acquainted with. Indeed, parts of some routes use lanes or minor roads which now appear a surprising choice. Thus it seems worth putting this aspect of Budgen's map on record as a useful pointer to the routes recommended for use by travellers in 1724, at a time when Sussex roads were considered notoriously bad.

The numbers are accompanied by a small dot placed in the centre of the road-marking, and in a few cases where the number has been omitted the dot can be seen. The origin of these numbers is somewhat mysterious for I do not think they can represent real milestones. In 1724 there were as yet no turnpikes, and thus no authority other than the individual, and notoriously inefficient, parishes to provide such things. Hence it is more likely that the marks are Budgen's own, provided as a guide to travellers along his recommended, or the normally accepted, routes. Indeed, this explanation is perhaps supported by the inclusion of similar marks along the courses of the three navigible rivers, Arun, Adur and Ouse. In 1675 John Ogilby had produced strip-maps of main roads (very like modern A.A. Routes) which show miles like this, and Budgen may have decided to include a similar system but in map form.

A schedule of the routes is included here, and it will suffice to refer briefly to some of their odder features.

[1] ' Two hundred and fifty years of Map-making in the County of Sussex.' edited by Harry Margary and published by him in conjunction with Phillimore & Co., Chichester, (1970).

South Harting—Eastbourne. This is easily the longest, 63 miles, and follows the main ridge of the Downs throughout, including Lewes-Saxon Down-Glynde-Firle, a route obviously intended to keep on the dry Chalk.

Chichester—Chiddingfold. From Midhurst goes by Lickfold and Gospel Green, now lanes or footpaths.

Arundel—Horsham. From Warningcamp goes over the Downs by Lee Farm to Storrington, then by Roundabout, West Chiltington and Coolham.

Lewes—Chichester. Goes by Falmer, Stanmer, Patcham, Dyke and ridgeway to Bramber, then from Steyning over the Downs to Findon, Michelgrove and Arundel, thus using the Chalk as much as possible.

Horsham—Crawley. Goes by St. Leonard's Forest and Buchan Hill.

Horsham—Wych Cross. Goes by Doomsday Green, Handcross, north of Balcombe, then south by West Hill to Ardingly, then north-east to West Hoathly (past the Priest House) and by Plaw Hatch to Wych Cross—a most tortuous and hilly route.

East Grinstead—Horsham. Goes by Felbridge, Crawley Down, Rowfant, Worth and Pease Pottage (**not** the route by Turners Hill to Pease Pottage which was also early).

Ashington—Cuckfield. Goes by Dial Post, West Grinstead, west of Woldringfold, Newells, Lower Beeding, Warninglid and Whitemans Green. (The present A272 road had not then been made).

Lindfield—Bramber. Goes by Wivelsfield, Sayers Common, Woodmancote, Henfield and Woods Mill.

Cuckfield—Bramber. Goes by Burgess Hill, Clayton, Pyecombe, Saddlescombe, Dyke, and ridgeway—making most use of the Chalk.

Brighton—Beeding. Goes by Portslade and over the Downs by Erringham.

Isfield—East Grinstead. Goes by Piltdown and Nutley.

Cross-in-Hand—Alfriston. Goes by Waldron, East Hoathly, Whitesmith Green, Ripe and Selmeston.

Eastbourne—Newhaven. Goes by Friston, Seaford, East Blatchington, Bishopstone and Denton (avoiding the Ouse valley).

Wadhurst—Battle. Goes by Stonegate, Shoyswell, Burwash, east of Brightling, Darvell Hole and Netherfield.

Mayfield—Pevensey. Goes by Heathfield, Rushlake Green, Gardners Street, Windmill Hill and Wartling.

There are, of course, many roads shown on the map but without any ' milestones,' so that the routes included in the schedule, although numerous, are clearly a selection especially useful to travellers. In a few cases where the numbered routes intersect and follow the same course for a mile or two the numbers on one route may be intermitted and then resumed again beyond. Likewise this explains why some routes in the list start with a number other than one, beginning from a fork at some distance from the true terminal.

For convenience the placenames given in this paper are in the modern forms, and are not necessarily the same as those appearing on Budgen's map.

' Milestone ' Routes, 1724

From	To	Via	' Milestones '
South Harting	Eastbourne	Main ridge of South Downs and Lewes—Glynde	1-63
Rogate	Emsworth	South Harting, Compton	1-13
Emsworth	Chichester	Broadbridge, Fishbourne	1-7
Midhurst	Sheet	Rogate	1-8
Midhurst	Liphook	Iping, Milland	1-8
Midhurst	Hazelmere	Fernhurst	1-7
Chichester	Chiddingfold	Midhurst, Lickfold, Gospel Green	1-19
Petworth	Midhurst	Tillington	1-5
Petersfield	Chichester	Harting, North Marden, Mid-Lavant	1-15
Chichester	Barlavington	Halnaker, Upwaltham	1-10
Chichester	Oakwood Hill	Stane Street	1-29
Chichester	West Wittering	Birdham	1-7
Arundel	Petworth	West Burton, Fittleworth	1-7, 10, 11
Petworth	Horsham	Billingshurst, Slinfold	16-30
Fittleworth	Ashington	Pulborough, Roundabout	4-11
Arundel	Horsham	Warningcamp, Storrington, West Chiltington, Coolham	1-21
Lewes	Chichester	Falmer, Dyke, Bramber, Findon, Michelgrove, Arundel, Westhampnett	1-38
Dyke	Shoreham	White Lot (Southwick Hill)	11-14
Horsham	Rusper	Hurts Hill	1-6
Horsham	Crawley	St. Leonard's Forest, Buchan Hill	1-7
Horsham	Wych Cross	Doomsday Green, Handcross, Ardingly, West Hoathly	1-19
East Grinstead	Horsham	Felbridge, Rowfant, Worth, Pease Pottage	1-17
Steyning	Horsham	Ashurst, Nuthurst	1-14
Steyning	Cuckfield	Ashingon, Dial Post, West Grinstead, Warninglid, Whitemans Green	3-24
Lindfield	Bramber	Wivelsfield, Sayers Common, Woodman cote, Henfield, Woods Mill	1-18
Cuckfield	Shoreham	Burgess Hill, Clayton, Dyke	1-14
Brighton	Beeding	Portslade, Erringham	1-8
Brighton	Copthorne	Patcham, Ditchling, Lindfield, Turners Hill	1-6, 9-23
East Grinstead	Ardingly	West Hoathly, Broadhurst	1-8
East Grinstead	Langton Green	Holtye, Ashurst	1-11
Groombridge	Forest Row	Hartfield	5-12
Forest Row	Crowborough	Colemans Hatch, Gills Lap	4-10
Isfield	East Grinstead	Piltdown, Nutley, Forest Row	5-20
Lindfield	Groombridge	Horsted Keynes, Wych Cross, Hartfield	1-16
Tunbridge Wells	Lewes	Eridge, Crowborough, Uckfield	1-21
Darvel Hole	Maresfield	Heathfield, Buxted	5-12, 15-19
Lewes	Cross-in-Hand	Ringmer, Blackboys	1-11
Cross-in-Hand	Alfriston	Waldron, East Hoathly, Ripe, Selmeston	6-20

From	To	Via	'Milestones'
Lewes	Golden Cross	Ringmer, Laughton	1-8
Brighton	Lewes	Falmer	1-7
Lewes	Patcham	Stanmer	1-7
Telscombe	Brighton	Rottingdean	8-13
Newhaven	Lewes	Southease	1-7
Eastbourne	Lewes	Willingdon, Alfriston, Firle	1-16
Eastbourne	Newhaven	Friston, Seaford, Bishopstone, Denton	1-12
Mayfield	Eastbourne	Cross-in-Hand, Horam, Hailsham	1-20
Tunbridge Wells	Rye	Frant, Ticehurst, Newenden, Northiam, Peasmarsh	1-29
Lamberhurst	Tunbridge Wells	Pembury	1-7
Mayfield	Lamberhurst	Wadhurst	1-8
Wadhurst	Battle	Stonegate, Burwash, Darvel Hole, Netherfield	7-20
Battle	Lamberhurst	Salehurst, Flimwell	1-16
Mayfield	Pevensey	Heathfield, Rushlake Green, Gardeners Street, Wartling	1-4, 7-18
Hailsham	Battle	Gardeners Street, Ashburnham	1-13
Battle	Eastbourne	Catsfield, Ninfield, Hooe, Pevensey	1-16
Hailsham	Hastings	Gardeners Street, Ninfield	1-16
Battle	Hastings	Hollington	1-6
Staple Cross	Sandhurst	Bodiam	1-4
Northiam	Sedlescombe	Staple Cross	1-6
Rye	Sedlescombe	Udimore	1-10
Hastings	Sedlescombe	Westfield	1-7
Hastings	Winchelsea	Icklesham	1-7
Lamberhurst	Rye	Flimwell, Newenden, Peasmarsh	1-22
Tenterden	Wittersham	Smallhithe	1-7
Sandhurst	Tenterden	Iden Green, Rolvenden	1-7
		Navigable Rivers	
Littlehampton	Pallingham	River Arun	1-25
New Shoreham	Shermanbury	River Adur	4-14
Newhaven	Isfield	River Ouse	1-19

THE CHANTRY COMMISSION OF 1547 AND SOME UNPUBLISHED CHANTRY RECORDS FOR EAST GRINSTEAD

By M. J. Leppard

Among J. E. Ray's collection of all the Sussex Chantry Records he could trace, published by the Sussex Record Society (vol. 36, 1931), there is no document showing how the Commissioners appointed by the Chantries Act of 1547 (1 Ed. VI c.14) collected their information. However, among the Gage Muniments in the care of the Sussex Archaeological Trust at Barbican House is a complete return for the parish of East Grinstead, dated 19 March 1548 (G 6/63). It is of interest as showing that 19 questions were sent out, the answers to which formed the basis of Certificates 49 and 50 (parts III and IV of Ray's collection). The wording of the questions can easily be inferred from the text of this document, which is printed below in full. It consists of five sheets of paper sewn together to form a scroll six feet long, a little worn at the top, and seems to be a contemporary copy of the original Its connection with the Gages is not clear, but they held land in East Grinstead at least as far back as 1497[1] and some of the chantry properties lay at one time in their manor of Maresfield.

The text of the Particulars for Grants of the East Grinstead chantry properties is also printed here for the first time (P.R.O. E318/1904). The two documents together provide a good deal of new information about the East Grinstead properties, made the more welcome by the unfortunate lacunae in the relevant part of the text of Certificate 49[2]. Some other unpublished material has been used in the Commentary which follows these texts.

In transcribing the documents I have for convenience expanded contractions, substituted Arabic for Roman numerals and consistently used capital letters for proper names. In the certificate I have divided Article 3 into paragraphs and introduced parentheses at one point. I have omitted the headings ' The certifycate to the first Article ', etc., numbering them in bold type instead, and reduced such formulae as ' the 6 daye of marche in the 6th yere of the Reign of our late soveraign lord kyng Henry the VIII ' to ' 6 Marche 6 Henry VIII ', adding the dominical year, new style, in square brackets. The Particulars I have translated into English. Marginal notes in the original are in square brackets, introduced by *mg.*

[1] *Calendar of Inquisitions post Mortem, Henry VII*, vol. 1, no. 1160.
[2] S.R.S., vol. 36, p. 44.

The following abbreviations have been used in the notes:
S.A.C. *Sussex Archaeological Collections.*
S.R.S. Sussex Record Society's Publications.
V.C.H. *Victoria County History of Sussex.*

I am grateful to Mr. P. D. Wood for drawing my attention to the existence of the Particulars in the Public Record Office and for his comments and to Mr. R. P. Blows for historical guidance.

For the East Grinstead chantry records already in print and for the historical situation which produced them the reader is referred to S.R.S., vol. 36 and its editor's Introduction.

THE CERTIFICATE

The certyfycate of Sir William Jonnes Curate of the parishe of Estgrinsted in the Countie of Sussex and of Edward Duffeld and Edward Hasylden Church wardens of the seid parishe and of Thomas Duffild Thomas Saxpes John Cooke and John Crips 4 of the Auncyent substancyalle men of the seid parishe of Est Grinsted onto the bill of Articles sent unto them by the kyngs majesties Commyssoners made 19 Marche 2 Edward VI [1548].

1. Ther ys not nor was within 5 yeres next before 4 November last past within the seid parishe of Estgrinsted any college Chauntry nor freechapell but that the lord Wynsore hathe a Chapell ther within the seid parishe whiche chapell ys called Bramblety [. . .][1] yt a chauntry within this 3 yeres and Sir Edward Stevinson clerke did serve ther by the space of 6 yeres and had payed to hym by the farmor of Brambletye 26*s.* 8*d.* yerely whiche chapell standeth a myle and a half from the seid parishe churche of Est Grynsted.

2. Item no londs tenements nor heredytaments were appointed to the fynding of any prest within the seid parishe of Estgrynsted and wherewith any prest hath byn mayntayned or founde at any time within the seid yeres.

3. No Anuall rents profytts nor emoluments at any tyme within the seid 5 years hath byn employed towards the fynding of any stypendary prest intending by any wrytyng to have contynuaunce for ever but only as hereafter ensueth.

That ys to say Rychard Lewknor about 40 yeres past having feoffies to his use willed by his last will that the revercyonn of all his londs rents and tenements by hym purchased called Boylys Harwards & Brokehurst lying in the parishe of Estgrinsted after the death of his wife shuld holly remayne & stande in the hands & possession of his feoffies thereof and of their heirs and assignes to the use and intent that of the issues and profytts thereof 10 marks shuld be expended by thadvyse of his feoffies their heirs & assignes for the fynding and sustenaunce of one honest prest yerely to sing for his soulle and the soulles named in the seid will in our Lady

[1] Holes in paper, three or four words missing.

Chauncell within the seid churche of Estgrinsted and the resydew thereof to be expended ther in other good deeds for the welth of his soulle and the churche wardens of the same churche for the tyme being to have the over sight thereof that yt be trewly don and executed and that new feoffies shuld be made thereof to other 12 feoffies to the soul use and intents as often as yt shuld fortune that there shuld be no more feoffies lyving but 4 (and yf ther shuld be any default in any of the seid churche wardens in or of the premysses that then the seid issues and profytts to be expended for the fynding of an honest priest yerely to sing in the churche of Horsted Kaynes for ever) whiche prest ys & during the seid 5 yeres hath byn founde with the rents and profytts of the seid londs and tenements and Sir Raffe Monuley clerk ys he that now serveth and by the space of 18 yeres or thereabout now last past hath served according to the seid last will.

THE RENTALL OF THE SEID LONDS RENTS AND TENEMENTS CAULLED BOYLYS HARWARDS & BROKHURST

The seid londs caulled Boylys ys a messuage and an hundred acres of lond medow pasture & wood by estymaconn and ys in the tenure of John Humffry for the yerely rent of £5.11*s.* to hym made by Indenture bering date 6 Marche 6 Henry VIII [1515] by Rychard Elyot juge at the commen lawe and after to have and to hold from the feast of the Annuncyaconn of our blissed Lady St. Mary the virgyn last past for 99 yeres then next following.

The seid londs called Harwards ys 50 acres lond medow & pasture by estymaconn whereof parcell that ys to saye 5 croftes (2 be caulled Chaynyes crofts and the other 3 be caulled Grenings mede) and a litle medow plott sumtyme more adioyning to the greatest croft caulled Grening mede be in the tenure of Edward Goodwyne whiche seid parcels of lond contayne by estymaconn 21 acres for the yerely rent of 16*s.* by lease by indenture to hym made bering date 9 Marche 23 Henry VII [1508] by Thomas Brent & other to have & to hold from the feast of thannuncyaconn of our blissed lady for 51 yeres then next following and an other parcell of the seid londs called Harwards contayning by estymaconn 14 acres ys in the tenure of William Kypping by lease by word for the terme of —— yet enduring for the yerely rent of 14*s.* 9*d.* and the resydew of the seid londs called Harwards contayning by estymaconn 15 acres is in the tenure of John Nortone by lease by word for the terme of —— yeres yet enduring for the yerely rent of 22*s.* 1*d.* whiche seid leases were graunted to the seid William Kypping and John Nortone at the feast of St Mychaell tharchaungell 27 Henry VIII [1535] by Robert Duffeld &. Thomas Saxpes with other.

The londs caulled Brokhurst ys 40 acres of lond & wood by estymaconn and is in the tenure of Thomas Duffeld for the yerely rent of 38*s.* ½*d.* by Indenture to hym made bering date 22 December

22 Henry VIII [1530] by Humfrey Lewkenor & Edward Markwik to have & to hold from thannunciatonn of our lady then next ensuyng for 60 yeres then next following.

	£	s	d
Sum..	£10	2	3½
Whereof payed yerely as followeth:			
To the seid Sir Raffe Monuley for his wage..	6	13	4
For the quit rent for the seid londs caulled Boylys to the manor of Brambletye 18*s.* and 4 barbed arrowes which cost yerely 16*d.*..		19	4
For the shere fyne for the seid londs caulled Boyles			4
For Hundred sylver for the seid londs			4
For quit rents for the seid londs called Harwards to the manor of Brambletye		8	4
For the shere fyne of the seid londs called Harwards			3
For quite rent for the londs called Brokhurst to the manor of Welldenn		6	8
For quit rent for parcell of the seid londs called Brokhurst to the manor of Brambletye		1	2
For the shere fyne of the seid londs called Brokhurst			2½
Sum..	8	9	11½
So rest declare	1	12	4

Also John Haullet A.D.1479 by his last will graunted and confyrmed to the Fraternyte of St. Katheryn of Eastgrinsted as he then named in his seid will thre parcells of lond with their appurtenances in Estgrinsted aforeseid whereof 2 of them be joyntly and one of them was then called Northfeld and the other Barrow and the thirde parcell severed called Highams crofte to Celybrate contynually and for ever for the brothern and sustern of the seid fraternyte as he then named in his seid will But we saye that yt was never known to any that ther was any suche fraternyte of St. Katheryn or any other fraternyte in Estgrinsted aforeseid by any foundaconn but sume tyme the parisheoners had in sume yeres a masse and dyrige for the brothern and sustern of St. Katheryn as they then called yt and gave to power folks certein almesse out of the rents of the seid londs but any congregaconn or gathering together or other act donn concerning any fraternyte or brotherhed hathe not byn donn nor made in the seid parishe of Estgrynsted at any tyme within the seid 5 yeres. But Edmund Alfrye jentleman and Edward Goodwyne and dyverse other sens 20 Henry VIII [1528-9] were and yet be seased of certen londs and tenements to them and to their heiers and of their devoconn have ons in one yere within the seid 5 yeres bestowed 5 marke of the rents and profytts of the seid londs and tenements towards the fynding of a prest in the seid parishe of Estgrinsted to sing masse and help serve in the seid churche.

THE RENTALL OF THE SEID LONDS AND TENEMENTS OF THE SEID JOHN HAWLLAT

The seid londs and tenements of the seid John Hawlats be now in the tenure of Thomas Bamber for the yerely rent of 12*s.* by lease by Indenture to hym made bering date 18 October 29 Henry VIII

[1537] by Edmund Alfrye and other to have and to hold for 13 yeres then next following.

Whereof payed out yerely

To the manor of Waldhyll for a quit rent for parcell of the seid londs	6*d.*
To the manor of Canserne for a quit rent for parcell of the same londs	8
Summa	1 2
So rest declare	10 11

4. No lands tenements heredytaments profytts or other things have byn by any convayaunce appointed to the fynding of a prest for yeres yet having contynuance nor any prest hath byn founded within the seid 5 yeres with any suche londs tenements heredytaments or any other things.

5. No londs tenements nor heredytaments have byn employed holly to the fynding of any Anyversarye obbyte light lamp or other like intents or purposes for ever which hath byn kept within the seid 5 yeres.

6. No parte of any Issues of londs were appointed to the intent aforeseid for ever but only for the fynding of the seid prest as ys aforeseid in the certifycate to the 3rd Article and the greatest sume of money that was employed to the fynding of the seid prest in any one yere within the seid 5 yeres was £6.13.4*d.*

7. No summes of money nor profytts by any maner [of] conveyaunce were appoynted to have contynuance for ever by any corporaconn gild fraternyte company or felloship of mysteris or craftes towards the fynding of any prest Anyversary light lamp or other like thing within the seid parishe of Estgrinsted.

8. No brotherhed gyld nor fraternyte ys nor was within the seid 5 yeres within the seid parishe of Estgrinsted nor no londs nor tenements nor heredytaments are belonging to any suche brotherhed gyld or fraternyte.

9. No Chauntry gyld nor fraternyte hath kept any grammar scole or precher in the seid parishe of Estgrinsted sens the feast of St Mychell last past.

10. No Salary nor Stipend to any Scolemaster or precher hath byn payed sens the seid feast.

11. No College frechapell nor chauntry nor any other annexed to any of them being a parishe churche ys in the seid parishe of Estgrinsted and in the seid parishe of Estgrinsted is about the number of 600 howseling people.

12. The seid Towne of Estgrinsted ys a Borrough Towne and a market Towne and the parishe ys a great cyrcuyt and breadeth and there ys no more stypendary prestes as yt appeareth in the certifycate to the 3rd Article and ther ys of howseling people about the number of 600 as ys aforesaid and no other prest ther ys but Sir William Jonnes Curate ther and the foreseid stipendary prest which

dothe help to serve the Cure at all tymes when nede ys and bicause the seid towne is so great and of such a multytud as is aforeseid therfore ther is necessyte of more prests than the seid too prests.

13. Ther ys no incumbents nor stypendary prests other than ys afore specyfied and the seid Sir Raffe Monule ys of thage of 60 yeres and above and ys suffycyently lerned to do the service and is of good and honest conversation and hathe no yerely lyving in certente nor other wise over and besyde his foreseid wage of £6.13.4*d.* nor ys he not able to serve any cure and the foreseid Sir William Joones ys of thage of 60 yeres or therabout and ys suffycyently learned to serve the cure and he hath no yerely lyving in certente nor other wise but only his wages for serving of the cure.

14. No money nor other profytts hath byn paied any tyme to any power person within the seid 5 yeres out of any of the premisses otherwise than herebefore ys rehersed in the certifycat to the third Article.

15. No londs nor tenements in the seid parishe of Est-grinsted hath byn gevin to any fraternyte brotherhed or gyld for the mayntenance of any jutts peers or Sowks against the Rage of the Sea havin or Creks.

16. No goods catalls plate jewells ornaments nor other moveables were belonging to the seid stypendary prest within the seid parishe of Estgrinsted but the seid curate sayeth that ther was a chalice at Bramblety a yere and a half agone.

17. No dette nor dew by any College within the seid parishe of Estgrinsted for ther was no College ther.

18. The summe of all the seid londs tenements and Rents and the particulers thereof and the yerely chardgs & resoluts thereof and the remaynders thereof do appere in the severall Articles beforeseid but nother the same remaynders nor any of the londs aforeseid shall cume to the kyngs majesties hands as we intend the statut[1] and no coppyholders nor Customarye were gavin to any of thuses or intents aforeseid.

19. No Sale gyfts of goods spoyle nor voluntary wast of any of the premisses have byn made sens 24 November 37 Henry VIII [1545] [. . .][2] yt appereth ther remayneth yerely declare of revenews of the foreseid londs and tenements over and above all the foreseid yerely chardgs and payments 43*s.* 2*d.* whiche seid 43*s.* 2*d.* and more ys & hathe byn yerely expended in and uppon the Reparacons of the parishe Churche of Estgrinsted.

NOTE: There must evidently have been some kind of special inquiry between the sending in of these answers and the production of Certificate 49 (on which the following Particulars are based), for full

[1] The last ten words are underlined and marked in the margin. 'Intend' is used in its sense 'understand.'

[2] Illegible word.

details are given in both of the Fraternity's properties glossed over in article 3 above. No records survive but the vagueness of this return and the rather defiant tone of article 18, marked by our copyist, would seem to call for further investigation.[1] Maybe the Commission which took depositions on Brambletye Chapel at about this time (mentioned at a similar commission in 1567[2] but otherwise unrecorded) also looked into the Fraternity.

THE PARTICULARS

COUNTY OF SUSSEX: SALARY OF A CERTAIN PRIEST WITHIN THE CHANTRY OF ESTGRINSTED

LANDS & possessions pertaining to the said Salary.	Worth in		
RENT or Farm of one messuage and a hundred acres of land, meadow, pasture and wood in the tenure of John Humfrey called Boyles *per Annum*	£5	11	0
[*mg:* In chief for ——. *The rest marked* in free socage.]			
RENT or Farm of one parcel of land called Harwards containing by estimation 21 acres now or late in the tenure of Edward Goodwyn *per Annum* ..		16	5
RENT of one parcel of land called Harwards containing by estimation 14 acres now or late in the tenure or occupation of William Kypping *per Annum* ..		14	9
RENT of the rest of the land called Harwards now or late in the tenure or occupation of John Norton *per Annum*	1	2	1
RENT of certain land called Brokhurst containing 40 acres now or late in the tenure or occupation of Thomas Dulffelde *per Annum*	1	18	0½
[*Total*]	10	2	3½

Reprises:

RENT resolute to the manor of Brambletye for the land called Boyles with 16*d.* for the price of 4 barbed arrows *per Annum*		19	4
RENT resolute to the lord the King for shire fine[3] for Boyles..			4 [4]
RENT resolute to the lord the King for rent going out of the same called ' Hundreth Sylver ' *per Annum*			4 [4]
RENT resolute to the lord Windsor to the manor of Brameltie for the land called Harwards *per Annum*[5]..		8	4

[1] Perhaps that is why this Certificate was ever preserved.
[2] S.R.S., vol. 36, pp. 184f.
[3] Comitat' fine.
[4] These sums crossed out with illegible note.
[5] Illegible note in margin.

RENT resolute to the lord the King for rent called 'Sherffyne'			3 [1]
RENT resolute to the aforesaid manor of Brameltie for the land called Brokehurst *per Annum*		1	2
RENT resolute to the manor of Welde for the same land *per Annum*		6	8
RENT resolute to the lord the King going out of Brokehurst called 'Sherfine' *per Annum*			$2\frac{1}{2}$ [1]
	[*Total*]	1 16	$7\frac{1}{2}$
[*This sum crossed out and replaced by*]		1 15	6 [2]
AND IS WORTH CLEAR BY THE YEAR ..		8 5	8
[*This sum crossed out and replaced by*]		8 6	$9\frac{1}{2}$
	'20 yeres purchas'	166 15	10

Executed by me Anthony Stringar.

COUNTY OF SUSSEX: FRATERNITY OF SAINT KATHERINE IN ESTGRENESTEDE

LANDS & possessions pertaining to the said Fraternity[3]. Worth in			
RENT or Farm of one tenement or inn called 'the sygne of the George' in Grenestede with divers lands pertaining to the same now or late in the tenure or occupation of William Partriche *per Annum* ..	£4	0	0
RENT or Farm of one tenement called Myes there with the lands pertaining to the same *per Annum* ..	3	6	8
RENT or Farm of one tenement and certain lands called Lynes in Grenested and Hertford[4] *per Annum*..	1	11	8
[*mg. against these three items* £8 18 4 'At 20 yers purchas' 178 6 8]			
RENT or Farm of one burgage in Estgrinsted now or late in the tenure or occupation of Edward Duffelde *per Annum*		10	0
RENT or Farm of two cottages below the said burgage[5] now or late in the tenure or occupation of John Langeridge *per Annum*		7	0
RENT or Farm of one messuage & garden outside the borough of Grinsted now or late in the tenure of Thomas Duffelde *per Annum*		2	0

[1] These sums crossed out with illegible note.
[2] i.e. discounting the fines crossed out above.
[3] All marked in margin *In free socage.*
[4] *sic* (*recte* Hartfield).
[5] Infra dict' burgag'. Possibly error for Infra dict' burg': *Within the said Borough.*

RENT or Farm of land called Huckefelde there *per Annum* 2 0

[*mg. against these four items* £1 1 0
'At 10 yeres purchas' 10 10 0]

RENT or Farm of a tenement there called Sandhill 1 0

[*mg.* 'At 20 yeres purchas' £1]

RENT Annually going out of Shepards or Skarletts now or late in the tenure of Thomas Ludede.. .. 3 4

[*mg.* 'At 20 yeres purchas £3 6 8]

RENT or Farm of one garden called Welches in the tenure of John Kypping *per Annum* 8

RENT or Farm of land called Daniels now or late in the tenure of Thomas Sponer *per Annum* 1 0

RENT or Farm of land called Hye Ridds now or late in the tenure of Thomas Bramber *per Annum* .. 12 0

[*mg. against these three items* 13 8
'At 20 yeres purchas' £13 13 4] 10 17 4

RENT resolute to —— Alfreis to the manor of Nelond going out of the garden called Welches in the tenure of John Kypping *per Annum* .. .. .. $3\frac{1}{2}$

[*mg.* 'At 20 yers rated at 5 10]

AND IS WORTH CLEAR BY THE YEAR .. 10 17 $0\frac{1}{2}$

'Memorandum that the Fermours is bound to beare all other chargs than is before reprised.'

T[. . .][1] £206 16 8
[. . . .] 5 10
[. . . .] 206 10 10

Executed by me Anthony Stryngar.

[*What follows is in English*]

14 February 3 Edward VI [1549] for Richard Goderyk Esquyer Attorney of the Court of Augmentations.

The clere yerelie value of the premisses .. £19 3 10

Which rated at the several rates above remembered Amounteth to .. 373 6 8

To be paide all in hand.

The Kinges Majesty to Dischardg the purchaser of all incumbrunes except leases and covenantes in the same and except the renttes before allowed.

The tenure as is above perticlerly expressed.

The purchaser to have thissues from Michellmas last.

[1] This part torn and illegible.

The purchaser to be bounde for the woddes.
The Leade belles and advousions excepted.

By Sakevyle. Wa: Mildmay. Robt Keylwey. per Thomas Wrenne.

NOTE: The sale of these properties on 15 May 1550 to Thomas Reve of London, gent., John Johnson of London, fishmonger, and Henry Herdson of London, skinner, is recorded in the *Patent Rolls: Edward VI*, vol. 3, pp. 374f., 384f. No new information is added to the above except that Boyles is to be held of the king in chief by service of 1/40 of a knight's fee; the rest are to be held of the king as of the Manor of East Greenwiche by fealty only in free socage. They passed straight to Sir Richard Sackville[1] and were all (except Boyles) included among that family's lands surveyed at the end of the century in the *Buckhurst Terrier* (published by the Sussex Record Society: vol. 39, 1933). By then, however, they were not clearly distinguished from properties acquired from other sources, as any attempt to correlate the *Terrier* with these Particulars shows.]

COMMENTARY

1. BRAMBLETYE. This Chapel, dedicated to St Mary,[2] dated back at least to the reign of Edward I (1272-1307)[3], but according to Certificate 50[4] it ' was desolved by the Lorde Wyndsor within this thre or foure yeres who denieth the same to be the kings '. No doubt that was also the sense of the worn part of article 1 in our certificate and Lord Windsor's anticipation of the course of events the cause of the Commission mentioned in the note above. The matter was raised again in 1561-2 when Thomas Cheyne the farmer of Brambletye was called to answer the Attorney General[5] but he adds nothing to what we know from the published records, of which the most detailed are the depositions taken in 1567[6], by which date the Chapel was in ruins. However, a field name Chapel Croft persisted until at least 1865[7], south of the present farm buildings at Brambletye. The chalice mentioned in article 16 was tracked down in an official return four or more years later[8].

1 S.R.S., vol. 39, p. xviii.
2 S.R.S., vol. 19, p. 59 (1523).
3 *S.A.C.*, vol. 9, pp. 371ff.
4 S.R.S., vol. 36, p. 57.
5 P.R.O. Duchy of Lancaster Pleadings, DL1/44 A.8.
6 S.R.S., vol. 36, pp. 183-6.
7 Auction Particulars, Brambletye Estate, 1865.
8 S.R.S., vol. 36, pp. 124f.

2. LEWKNOR'S CHANTRY. Richard Lewknor's will does not survive and the relevant part of the inquest on him[1] ' is so rubbed and faded as to be almost unintelligible; but it appears that the will was found to have been tampered with, or a new one forged '. Some of its terms are mentioned in the will of his wife, Lady Katherine Gray[2], but not those relating to the Chantry. However, the inquest mentions Boylyas, Herwerdes and Brokeherst amongst other properties and their being granted to Thomas Brent, clerk, William Eliot, gent., and others. Thomas Brent, mentioned in the certificate as one of the feoffees in 1506 and 1508, was also one of Lady Katherine Gray's executors and must be Thomas Brent, LL.D., Dean of South Malling 1481-1515[3]. Nothing relevant is known of the other feoffees mentioned.

No name is given to this chantry in the certificates but in 1580 Brokherst is described in a lease as ' sometime parcel of the dissolved Chantry of St Mary in East Grinstead '[4]. An altar of St Mary is mentioned in 1416[5] and Lady Katherine Gray willed to be buried ' afore our Lady in the chauncell of the north yle in the parisshe church ', perhaps where her husband's priest celebrated.

The names of the properties survive to this day (Harwards as Harwoods). The manor of Welldenn or Welde is the same as Waldhyll mentioned in the rental of John Haullet's lands, also known as Wallhill, Weild or Ashurst Wood[6].

The Lewknor chantry at Horsted Keynes was called Brodehurst[7]. The sense of the reference in article 3 must be that it was to be augmented with the East Grinstead bequest if the latter were maladministered.

3. THE FRATERNITY OF ST KATHERINE. John Haullet's will has not survived and he is not otherwise known, though he seems to be a member of a family which give its name to Howletts or Owletts Farm, a mile north of the fields named here, which lie on the north side of the lane from Ashurst Wood to Cansiron, just by Grove Farm. They can be identified from map XXXIX of the *Buckhurst Terrier* (in the text of which they are associated with the Priory, Hurts and Oldlands at Forest Row, an example of the inclusion of non-chantry properties noted in the note to the Particulars above[8]). The incorrect balancing of the rental, like the

[1] 10 June 1506 (*Calendar of Inquisitions post Mortem, Henry VII*, vol. 3, no. 814).
[2] 9 May 1505; extracts in S.R.S., vol. 42, pp. 222-32.
[3] *S.A.C.*, vol. 26, p. 81.
[4] Muniments of the Sussex Archaeological Trust, RF 12/24.
[5] S.R.S., vol. 42, p. 225.
[6] *Feet of Fines* (S.R.S., vol. 19).
[7] See S.R.S., vol. 36, pp. 8, 29, 52f., 155.
[8] However, in 1546 the Churchwardens of East Grinstead payed 7*s.* rent for them to the Manor of Maresfield (Rental in Rev. W. Budgen's notebook F5 at Barbican House, Lewes).

differences between the documents printed here and Certificates 49 and 50, is probably to be attributed only to the vagaries of 16th century arithmetic.

The Fraternity is first mentioned in 1419, when its chaplain appears in the Clerical Subsidy[1], three years after we first hear of an altar of St Catherine in the parish church[2]. As late as 1500 John Brether, a former Vicar of East Grinstead, by his will[3] bequeathed to 22 feoffees (including Sir George Revett (? the Fraternity's chaplain), Richard Lewkenor of Brambletye and Edward Prymer the Vicar) a burgage and portland with their appurtenances which he had had by the gift and feoffment of Thomas Ryngare, the income from which was to be applied to the uses of the Fraternity from year to year. This is obviously the Ryngars of Certificate 49 and the burgage occupied by Edward Duffelde in the Particulars (the two documents evidently take the properties in the same order). Since this would be Sackville property in 1564, when a survey of the borough was made[4], it can be readily identified as the burgage and portland still occupied by Edward Duffelde, the eastern half of the modern no. 68 High Street[5]. The messuage and garden called Attwods may perhaps be the same as the messuage and garden sold by John Atwode to Richard Cole in 1493-4[6]. Otherwise nothing is known of the earlier history of these properties, though most can be identified. Hye Ridds is John Haullet's bequest and the George the present Old Stone House[7]. Mayes, between East Grinstead and West Hoathly, Lines, on the border with Hartfield, and Scarletts, on the border with Cowden, retain their old names.

4. OMISSIONS. None of the 16th century records mentions the chantries provided for by William Helindale in 1326[8], Thomas Leggy in 1357[9] and John Brether in 1500[10], or ' the almes house and londs therfore and for the fynding of thre poore men, specified and conteyned in my last husbandes will ' mentioned by Lady Katherine Gray in her will and on her brass in the parish church.[11] One can

[1] S.R.S., vol. 36, p. 140.

[2] *V.C.H.*, vol. 2, p. 11.

[3] P.C.C. Moone f.2.

[4] Printed and discussed in *S.A.C.*, vol. 106, pp. 49-62.

[5] Not as suggested in *S.A.C.*, vol. 106, p. 62. (An example of the danger of using the *Buckhurst Terrier* as evidence for chantry properties).

[6] *Feet of Fines* (S.R.S., vol. 23, no. 3297).

[7] *S.A.C.*, vol. 106, pp. 61f. For the bounds of the lands which went with it see *S.A.C.*, vol. 24, pp. 223f.

[8] Inquisition *ad quod damnum*, 19 Edward II, no. 116.

[9] S.R.S., vol. 45, p. 432.

[10] A burgage which he had had from William Partrich was to be sold and the money used to support a priest to pray for his soul and those of his neighbours and friends and of all the faithful departed. The Fraternity is not mentioned in this clause.

[11] See *S.A.C.*, vol. 78, pp. 68-70. Cf. W. H. Hills, *History of East Grinstead* (1906), pp. 122-4.

only conclude that these benefactions either soon lapsed or never took effect at all.

5. PARISH AND PEOPLE. The ancient parish of East Grinstead (the present civil parishes of East Grinstead and Forest Row) covered some 24 square miles, so the complaints in Article 12 are understandable. The 600 communicants may be taken as the entire adult population, suggesting a total parish population of 1,000. This agrees well with the figure of about 1,150 for the decade 1571-80 which Mr P. D. Wood tells me he has tentatively calculated from the parish registers.

The lay people mentioned in these documents bear names so common locally in the 16th century that it is hardly possible to identify them confidently. Ralph Monuley and Edward Stevinson I have been unable to trace outside the published chantry material.[1] William Jones had been working in the parish as curate at least since 31 May 1542, from which date he frequently appears as a witness to wills[2]. That he was curate in the modern sense (i.e. assistant) is proved by the fact that William Breten, admitted Vicar in 1529[3], was still Vicar at the visitation in 1551[4]. The reason for his not being mentioned in the Certificate must be the licence granted in 1536 to William Breton, parson of Stower Provoste, Dorset, and Felgham, Sussex, to be non-resident in the said benefices and all others[5], of which he held many[6].

[1] S.R.S., vol. 36, pp. 56, 64, 145.
[2] S.R.S., vol. 42, p. 231.
[3] Register A., Sherborne f.556 (Card Index of Sussex Clergy, Barbican House)
[4] Card Index of Sussex Clergy.
[5] *Calendar of State Papers, Henry VIII*, vol. 10, p. 239 (Card Index of Sussex Clergy).
[6] *Alumni Cantabrigienses.*

SOME NOTES ON THE LONG MAN OF WILMINGTON

By E. W. HOLDEN, F.S.A.

INTRODUCTION. The replacement with concrete blocks in 1969 of the bricks laid to mark the Long Man in 1874 (and later repair bricks) afforded a convenient opportunity for some minor investigations in the soil below the outline of the hill figure. At the request of the Council of the Sussex Archaeological Society and with the permission of the Ministry of Public Building and Works four cuttings were made in selected places. The new blocks having been laid on the western half precluded any digging on that section.

It was thought that if the makers of the Long Man had cut through the surface deposits down to, and perhaps into, the natural solid chalk, some traces of their work might still remain to be seen, provided that the brick outline was superimposed on the original lines. The person principally responsible for the brickwork, the Rev. W. de St. Croix, in 1875[1] quotes Horsfield: 'Various are the opinions respecting the origin of the figure; some have asserted that it was paved, but the most probable conjecture is that it was merely shaped in the turf so as to let the chalk appear through. It is only seen under peculiar circumstances, and to the best advantage when there is a small quantity of snow upon the ground. The indentation is so very slight as not to be visible on the spot, although it may occasionally be seen at a considerable distance of several miles.' Horsfield states also that the figure of a man 'may occasionally be seen by a remarkable difference in the verdure.'[2]

Despite the many words written about the Long Man, the period of his making has not been established beyond all doubt. A useful summary, claimed to be the known facts of the Long Man's history and the numerous theories of origin that had grown up concerning him, was compiled in 1939 by J. B. Sidgwick[3]. These theories suggested dates of construction ranging from prehistoric times to the post-medieval period. Marples, in 1949,[4] favoured the idea that the hill figure had been cut by monks not later than the 14th century. For the most recent survey the reader is referred to a paper by Professor Christopher Hawkes where similarities between

[1] *Sussex Archaeological Collections* (abbreviated hereafter to *S.A.C.*), vol. 26 (1875), pp. 97-112, see p. 107.

[2] Horsfield, *History and Topography of the County of Sussex*, vol. 1 (1835), p. 326.

[3] J. B. Sidgwick, 'The Mystery of the 'Long Man',' in *Sussex County Mag.*, vol. 13 (1939), pp. 408-20.

[4] M. Marples, *White Horses and other Hill Figures* (1949), pp. 180-203.

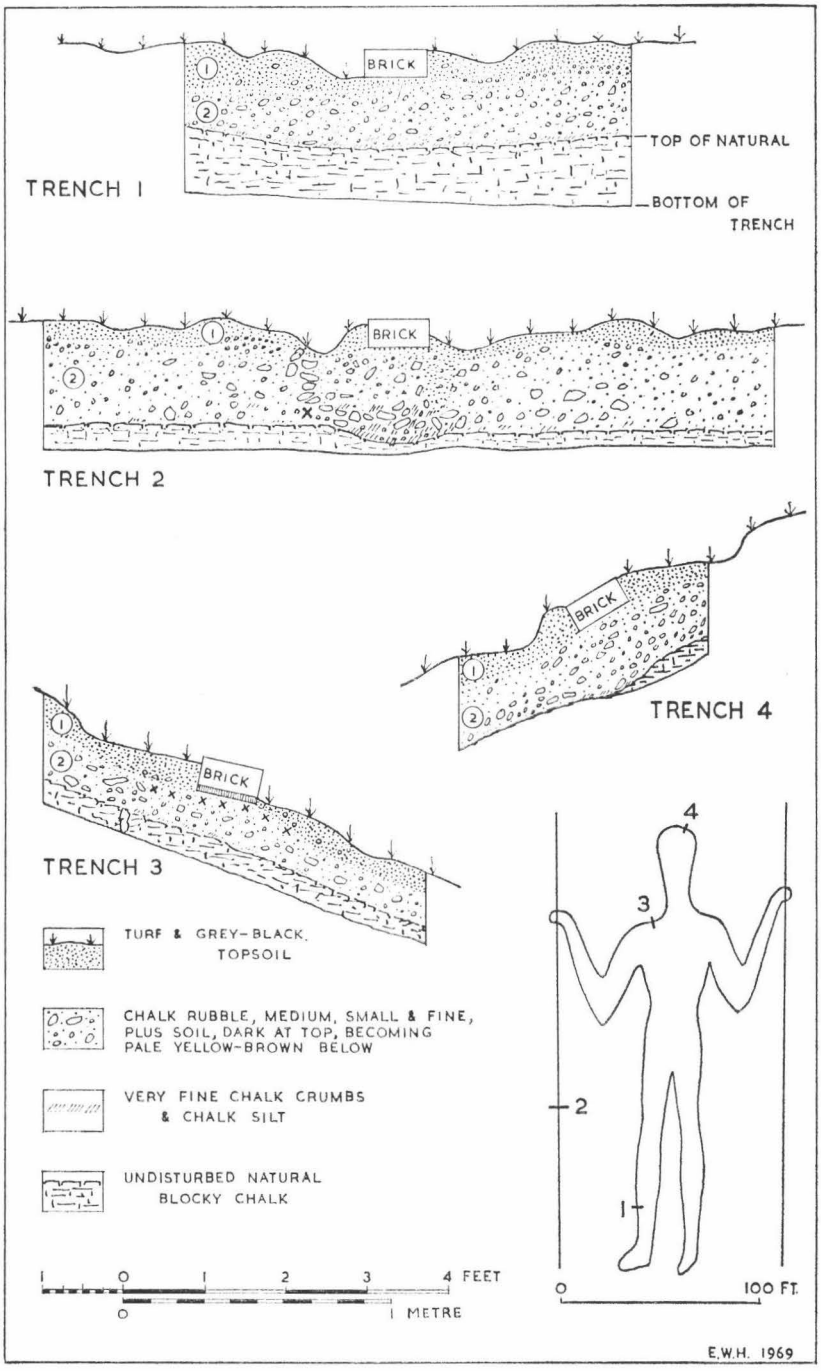

FIG. 1. Excavated sections. Trenches 1 and 2, south side; Trench 3, west side; Trench 4, east side. The plan (bottom right) showing the positions of the trenches, is after a survey by Petrie

the restored Long Man and the representation of a man on the 7th century A.D. Finglesham buckle are discussed[1].

GEOLOGICAL DETAILS. The greater part of the Long Man lies on Upper Chalk and as far as may be judged from the 1in. scale geological map, the lower part of the Man's legs merge into Middle Chalk. The so-called ' natural ' or ' solid ' chalk was encountered between 10ins. and 15ins. below the surface, but it was unlike the ' solid ' usually encountered on archaeological sites on flatter parts of the Downs where it is fairly homogeneous and not unduly broken up. The steep slope of Windover Hill where the Long Man lies (between 28 and 29 degrees), weathering and frost shattering, may have caused the upper part of the ' solid ' to be friable. Weathering here is at an angle to the horizontal bedding planes of the chalk and this may be a contributory factor to the phenomenon. Mr. B. Walker, the contractor, informed the writer that there was little difficulty in driving an iron bar 2½ft. into the subsoil, whereas penetration to such a depth would be difficult, if not impossible, with ordinary hand tools on good solid chalk. Trench 1 was taken down 9ins. into the blocky chalk of the bedrock to ensure that the ' solid ' had in fact been reached.

The soil above the ' solid ' consists of a few inches of turf and dark topsoil (Layer 1), most uneven because of soil-creep and the tread of feet; below this, varying between 6ins. and 12ins. deep, is weathered, dirty chalk rubble of medium size, graduating to fine rubble (Layer 2). The rubble is bound together with chalky earth, brownish in colour at the top of the layer and yellow-brown below, derived from the topsoil, rainwash and the activities of earthworms. Only Trenches 3 and 4 had a few flints mixed with the chalk rubble.

The 1874 bricks, jointed with mortar, had been laid only in the turf and topsoil (Layer 1) without penetrating into Layer 2. When the bricks were lifted no white chalk was visible, only brownish earth and dirty yellow fragments of chalk rubble.

DESCRIPTION OF EXCAVATIONS (FIG. 1). All trenches were dug 1ft. 6in. wide.

TRENCH 1. This trench, 5ft. 6in. long, was cut across the outer line of the right (east) leg, 28ft. up the slope from the heel. Layer 2 showed no signs of disturbance, but the blocky chalk ' solid ' was 2ins. lower below the line of the brickwork than at the extremities of the trench. This slight hollow had a top width of 4ft. 6ins. and a bottom width of 2ft. 6ins. It could be a natural undulation in the surface of the chalk, but occurring as it does, below the leg outline, it may represent the end-product of an ancient cutting into the soil above the ' solid ' (Pl. IA).

[1] C. Hawkes, ' The Long Man of Wilmington: A Clue ', in S. C. Hawkes, H. R. Ellis Davidson and C. Hawkes, ' The Finglesham Man,' in *Antiquity*, vol. 39 (1965), pp. 17-32, see pp. 27-32, Pl. IV.

TRENCH 2. A longer trench was dug in the hope that if traces of an early channel were existing and the brick line was not exactly above the original groove there would be a better chance of finding the latter. This trench was 9ft. long, cut across the right (east) staff, 80ft. up the slope from its base. A depression, 16ins. wide and 2ins. deep in the centre was visible in the blocky chalk on the south (upper) side, while the corresponding face of the trench on the north side showed a narrower and more shallow hollow. In the bottom of the depression was a concentration of very fine yellowish chalk crumbs and silt, with a slight admixture of earth. Above this and passing up through Layer 2 on the east side, in a curve, were lumps of medium-size chalk rubble (Pl. IB). The earth in Layer 2 above the hollow was somewhat lighter in colour than that in the same layer at the ends of the trench. It was noticeable that the turf on each side of the staff is hollowed, which may indicate an earlier gully, accentuated more recently through the tread of feet and the effect of rainwater run-off. The evidence here suggests that a channel had been dug into Layer 2 at some time in the past. One small fragment of fired clay, marked X in the section drawing (FIG. 1, 2) was found 3ins. above the bottom on the east side of the hollow.

TRENCH 3. A trench, 4ft. 9ins. long, crossed the brickwork of the right (east) shoulder some 3ft. to 4ft. from the junction with the neck. The bricks here (repairs) had a thick layer of mortar under them. The constituent materials of Layer 2 were homogeneous throughout, with no signs of disturbance. There were some enigmatic finds in the top 2ins. of Layer 2, below the line of bricks and extending a few inches on either side, but not at the north and south ends of the trench. These are marked X in the section drawing (FIG. 1, 3). The finds are twelve small irregularly-shaped fragments of fired clay, soft and friable. They range from $1\frac{1}{2}$ins. x 1in. down to pea-size, with a maximum thickness of $\frac{3}{4}$in. One piece has a flat surface and the colour runs when the pieces are washed. While the 1874 bricks are yellow in colour, repairs from time to time have been made in red bricks and there were red bricks where the trench was dug. Samples chipped from various red bricks from above this trench and elsewhere (which are well-burnt stocks) do not agree in fabric or colour with the fired clay finds.

TRENCH 4. A 3ft. long trench was dug across the brickwork line at the top of the head some 6ft. east of the western side. Layer 2 contained the usual mixture of chalk rubble and earth, but there was no clear sign of a cut channel. The blocky chalk from the middle to the east face of the trench was somewhat hollowed and silty. This faint hollow could be seen in the eastern section (FIG. 1, 4) but there was no corresponding depression in the west face of the trench. The hollow and the silt may, very doubtfully be considered as representing some traces of an earlier channel, but it

could equally be argued that the chalk at this point is more ' rotten ' than usual.

THE FINDS OF FIRED CLAY. Two pieces of fired clay from Trenches 2 and 3 were submitted to Dr. I. W. Cornwall of the Institute of Archaeology, London, who kindly reported on thin sections made from the specimens as follows:

No. 1 (from Trench 2). ' This is a fine-grained brick-red body with an adherent pale cortex. This is, in fact, not part of the body proper but a layer of calcareous mud, containing, in addition, many quartz-grains much coarser than those in the body. The body is a mass of very well sorted fine quartzes, mostly finer than 0.02 mm. (medium silt), with a comparatively small proportion of ferruginous clay matrix, which has been fired relatively high (> 800° C) in fully oxidizing conditions. There is some indication of flow-structures consisting of indistinct streams of somewhat oriented quartz grains, showing that the material was once plastic and subject to deformation while in that condition.

Notable among the quartzes are numerous splinters, thin, acute-angled sharp ' razor-blade ' flakelets. Such are extremely rarely, if ever, seen in natural sedimentary materials and are the product of mechanical crushing or pounding of coarser grains. They almost certainly represent a deliberately comminuted and perhaps sifted (uniformly graded) addition to the clay, as a ' filler.' A few larger, black, opaque bodies represent organic inclusions carbonised by the firing.

It is clearly an artifact—prepared pottery-clay in fact.'

No. 2 (from Trench 3). ' This is a fine-grained porous, pinkish-red fired body. It shows in thin section a generally finer, more clayey paste than No. 1, including a few bigger quartzes of fine-sand grade (> 0.06 mm.) and many inclusions. Some of these are carbonaceous, some streaks of ferruginous, formerly hydrated colloidal clay-material, incompletely mixed with the quartzose fraction, now almost entirely dehydrated by the firing. Most prominent, however, are small rounded masses of up to 1.5 mm. in diameter, of grog, broken pottery, these generally also of a rather less ferruginous fine, silty clay than the ground-mass. A few are more ferruginous, on the contrary. In both cases, their contrasting colours give them clear outlines as individual solid grains in the still-plastic body.

This is also evidently (though for different reasons) an artifact—a grog-filled, slightly under-fired pottery paste.'

A copy of Dr. Cornwall's report was sent and all the specimens were kindly examined by Professor B. W. Cunliffe and several of his colleagues at the University of Southampton. The presence of grog in some pieces caused the writer to ask if the fired clay could possibly be from Beaker period pottery. Prof. Cunliffe wrote:—

> ' We spent some time the other day looking at your samples from the Long Man. The general opinion was that there was nothing Beaker about them. No one had seen or handled anything from Beaker contexts like them. My own feeling is that the fragments are of Roman tile. Grog is sometimes used in Roman tile, the colour and texture are right and one of the pieces has a good surface exactly like the finish of Roman tiles. One cannot be certain but we all felt that it was the most likely explanation.'

The reason for the presence of tiny pieces of burnt clay, possibly derived from Roman tile, from Trench 3, and one piece in Trench 2, cannot satisfactorily be explained. An extract from the *Eastbourne Gazette* of 29th April, 1874, reads: ' In the work which has been

lately carried out, it was necessary to remove the turf in some places and in so doing fragments of Roman brick were discovered, which would clearly point to a much earlier than Norman date.' Why were such fragments not recorded by de St. Croix? Sidgwick notes that Gough in his edition of Camden (1806), says: '. . . . in the different structures of the grass . . . formed by a pavement of bricks under the grass, which gives a difference of colour,'[1] but how much reliance can be placed in Gough it is impossible to say. If the bricks mentioned by the newspaper were in fact of Roman origin, as may be the fragments excavated recently, they are unlikely to have slipped down the hill from above the figure, no Roman remains having been noted by Curwen and others among the prehistoric barrows and flint mines on the hill above, and the ' Giant's Causeway ' track is unmetalled. The hilltop would be a most unlikely site for a Roman building; bricks would have to be brought up from the adjacent scarp-foot zone, where Roman remains, including brick and tile, are not unknown (e.g. Arlington Church). But who would take the trouble to carry bricks up a hill if not for some definite purpose? Were, perhaps, some bricks used as markers for outlining the salient points of the figure before cutting, but would not wooden sticks have been more suitable for that purpose? If the burnt clay fragments are Roman (which is not certain) and are connected in some way with the first cutting of the hill figure, then we have an earliest possible date. The recent excavations, however, were too limited in scope to permit any conclusions to be drawn from the presence of these fragments of fired clay.

Movement of Soil by Natural Forces. The fact that the evidence revealed by the minor excavations for an earlier dug channel is vague rather than conclusive is perhaps not surprising. Soil scientists and allied workers have demonstrated that the upper layers of soil on hillsides are not static. Soil creep is a continuous process whereby gravity, frost-heave, water erosion, earthworm activity and chemical weathering of the subsoil combine to cause the soil to move imperceptibly downhill[2]. That the turf is on the move is evident for terracettes have formed on the slopes to each side of and across the Long Man and even in the nearby old chalkpit. These are the so-called ' sheep-tracks ' mentioned by the Rev. de St. Croix[3] and which he saw as a danger to the preservation of the outline. It is known that such ' tracks ' are not caused by sheep or cattle (although animals may utilise them), but are the results of soil creep. The grass over the Long Man and for some yards east

[1] Sidgwick, op. cit., pp. 408-9.

[2] P. A. Jewell (ed.), *The Experimental Earthwork* (Brit. Assn. Adv. Science 1963), pp. 77-89; R. J. C. Atkinson, ' Worms and Weathering,' in *Antiquity*, vol. 31 (1957), pp. 219-33; C. Darwin, *The Formation of Vegetable Mould through the action of Earthworms* (1881), (1908 reprint), p. 245.

[3] *S.A.C.*, vol. 26, p. 103.

and west of the staves has been trodden by the feet of visitors for many years so that the terracettes have become broken and irregular. In many places they look like steps, hence the lumpy profiles of the surface delineated in the section drawings (FIG. 1). If the thin turf is moving downhill then so is the mixture of comminuted chalk and earth between it and the natural blocky chalk a short distance below, although at a slower rate, the movement diminishing as the depth increases. An accumulation of soil caused by soil-creep may be seen in Pl. II, just above the lower horseman. Natural weathering would cause shallow trenches to become filled or almost filled with material derived from the trench sides, eventually grassing over, provided they were not scoured periodically. As this filling would be the already broken down chalk rubble from Layer 2, plus topsoil from Layer 1, it could be that there would be little difference in composition between the undisturbed soil and the silted channels after a long time of slight movement downhill and mixing by the forces previously described. Yet there ought to have been some variation in soil composition to account for Horsfield's ' remarkable difference in the verdure ', if by this he means a change of colour,[1] either darker or lighter than the surrounding turf which could be caused by more or less humus. There appears to be no difference in the subsoil below the bricks (Layer 2) in any of the trenches, except Trench 2. A slight indentation in the turf remained in the 19th century as recorded by Horsfield and others so if the humus of Layer 1 in the grooves was thinner than elsewhere that could account for the seasonal change of vegetation colour. The feet and bottoms of the staves, being at the lowest points, are likely to have been vague and indistinct, as they would tend to retain more of the material washed down or otherwise descended from higher up the hill and thus to become practically obliterated.

A PREVIOUSLY UNRECORDED PHOTOGRAPH OF THE LONG MAN (Plate II). Four descendants of the Rev. W. de St. Croix were approached to see if they had any early papers referring to the Long Man. By good fortune, our member, Mr. F. W. de St. Croix, M.B.E., a grandson of the restorer, possessed among papers originally belonging to the Rev. W. de St. Croix, an undated photograph of the Long Man, which, from the pristine condition of the figure and piles of turf at the foot of the hill, suggested that it was taken soon after the bricking in 1874. The *Eastbourne Gazette* for 29 Apr. 1874[2] notes that ' it was necessary to remove the turf in some places,' also

[1] Horsfield, loc. cit. The Burrell Coll. drawing (dating *c.* 1779-87) has written on it as part of its description, ' The spot being covered with grass may be plainly discovered in summer by the colour of the grass.' This drawing is reproduced in *Sx. Cty. Mag.*, vol. 13 (1939), p. 657 and again in our FIG. 2, 1.

[2] The *Eastbourne Gazette* files for 1874 (vol. 15) have been searched. Copies of 1873 and earlier do not exist at the newspaper offices nor at Eastbourne Reference Library. Other sources have not been approached.

that G. & R. Lavis, of 71 Terminus Road, Eastbourne, photographers (and advertisers on the front page of the paper), had just issued a series of three photographs of the Giant; the first and second taken from the main road (Mr. F. W. de St. Croix also has one of these, which is of interest but of little value for our purpose as the distant figure is hazy), while the third was exposed at the base of the Downs, the lens covering 400ft. This description agrees with Pl. II and as the photograph bears on the reverse side the stamp of G. & R. Lavis, there seems no reason to doubt that this photograph was taken shortly before 29 Apr. 1874, just after the work was completed. It is a pity, however, that no photograph of the Long Man has been traced which was exposed before the insertion of the bricks.

DISCUSSION OF ILLUSTRATIONS DATING FROM BEFORE 1874 (FIG. 2). There are, however, some early drawings, the first so far discovered being that in the Burrell MSS.[1] in the British Museum (FIG. 2, 1). Apart from the facial features which are likely to be artistic licence, the principal differences between the Burrell drawing and de St. Croix's restoration lie in the rake and scythe at the head of the staves and the posture of the Man's left (west) leg, which foot points west and not east as now.

S.A.C., vol. 4 (1851), p. 63, shows an engraving of the Long Man, which block is repeated in vol. 26 (1875), p. 97, the latter saying: ' Giant as seen in 1850 ' (FIG. 2, 2). This impression does not show the rake or scythe, neither does it depict the feet, the bottoms of the legs appearing to fade away, but the Man's left leg below the knee is more in sympathy with the Burrell sketch, than with the brick restoration. The missing left foot in the 1850 illustration would be more likely to point west (as in Burrell) rather than east (as restored).

In de St. Croix's paper of 1875, *S.A.C.*, vol. 26, there appears on p. 102 an engraving entitled ' Wilmington Giant 1874,' which shows the hill figure as restored, i.e., with both feet pointing east. Below the sketch is a note ' (A similar illustration, from a sketch by Dr. Phené, appeared in the *Graphic*, February 7th, 1874) '.[2] Few

[1] Dr. Curwen and other writers state that the Burrell drawing is the earliest reference to the Long Man, but are we aware that any really extensive search for earlier records has been made?

[2] For details of Phené and his connection with the Long Man, see *S.A.C.*, vol. 26, p. 97 ff. The paper by Phené quoted by de St. Croix is in *Trans. R.I.B.A.*, vol. 23 (1872-3), pp. 181-196, see p. 191 ff. This journal has no illustrations of the Long Man, it appearing that Phené displayed drawings at his lecture given 19 May, 1873. Enquiries at the R.I.B.A. and Society of Antiquaries show that no drawings were deposited by Phené with either institution. In the discussion that followed Phené's lecture (p. 195) he stated, ' I have here, also, some remarkable flints . . . They were obtained from under the turf on the great figure at Wilmington.' Nothing further was said about the flints and they have not been traced. As restoration work had not started, Phené appears to have done a little digging on his own account.

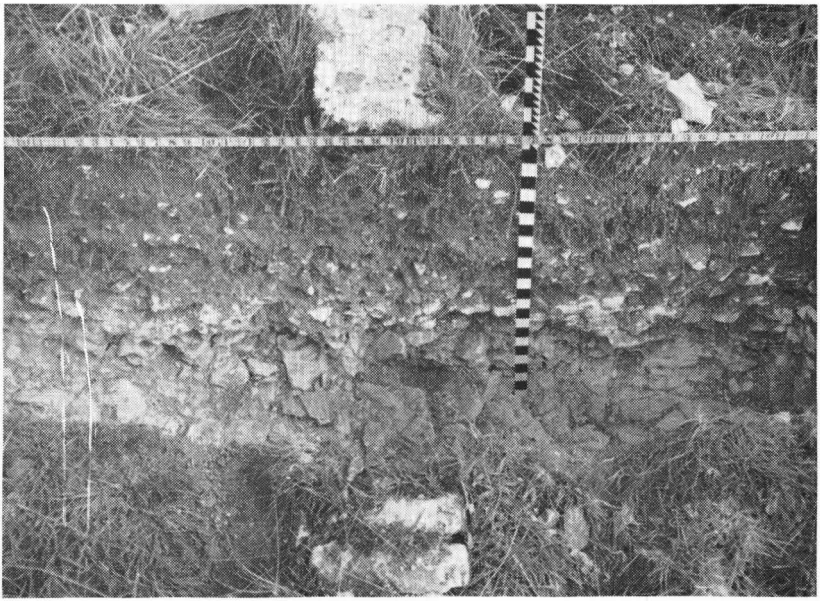

PLATE IA. Trench 1, south side (looking uphill)

PLATE IB. Trench 2, south side (looking uphill)

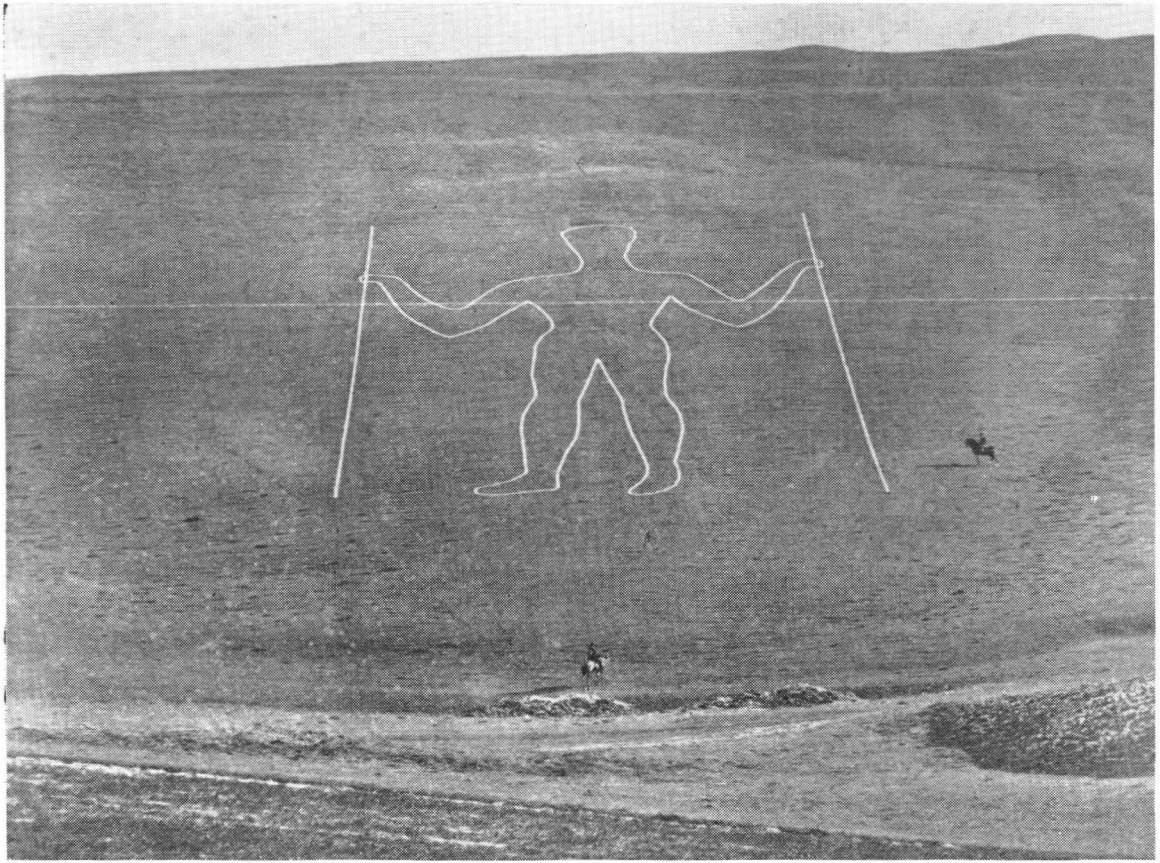

PLATE II. The Long Man of Wilmington, from a photograph taken by G. & R. Lavis soon after the outlining with bricks in 1874 (by permission of Mr. F. W. de St. Croix)

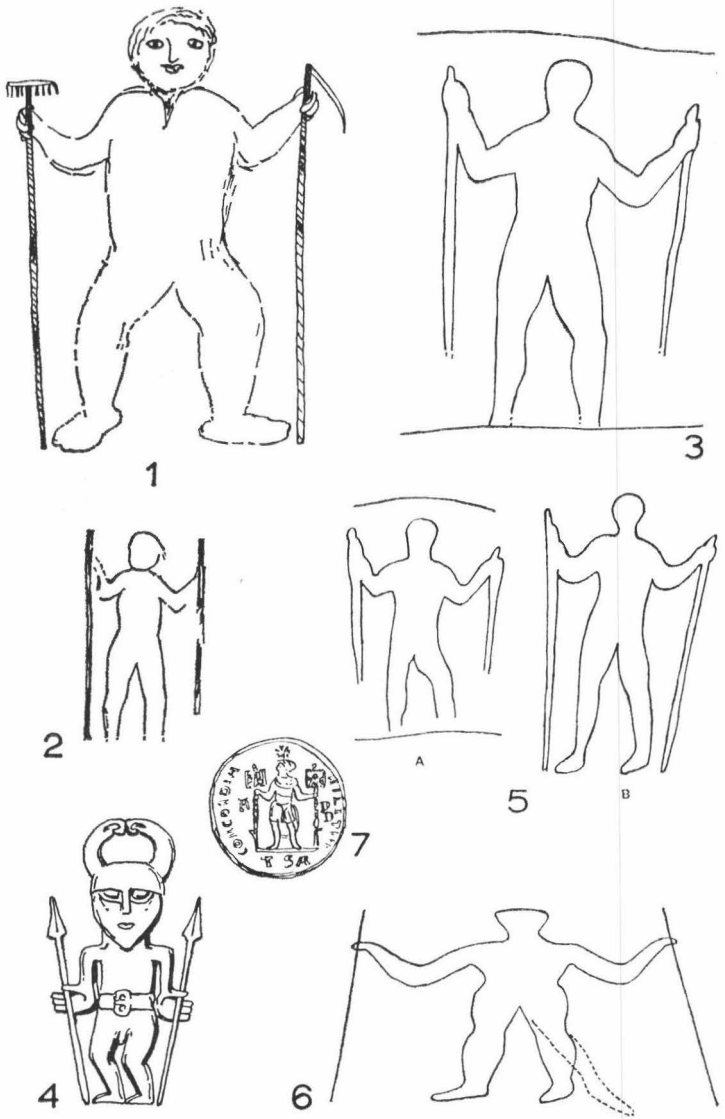

FIG. 2 (not to scale)

1. The Long Man as in the Burrell ms., late 18th century.
2. Ditto in *S.A.C.*, vol. 4, p. 63, as in 1850.
3. Ditto in the *Graphic*, 7 Feb. 1874, from a drawing by Phené.
4. Gilt-bronze buckle, Finglesham, Kent, grave 95, 7th century A.D. Height, 2.84ins. (73mm.) (after S. C. Hawkes, by permission).

5A. The Long Man in Plenderleath's own copy of his 1892 book, as a sketch (not published) (after Marples).

5B. Ditto as in Plenderleath (1892), FIG. 36.

6. Ditto in the 1874 photograph (Pl. II). The dotted lines indicate marks in the photograph suggesting an alternative left leg.
7. Denarius of Vetranius, diam. *c.* 21mm. (after Heron-Allen).

writers on the Long Man, with the exception of Marples, seem to have looked at that issue of the *Graphic*, for de St. Croix's note is far from correct; the picture of the Long Man in the *Graphic* for 7 Feb. 1874 is an engraving of the Long Man *before* restoration, not after the bricking (FIG. 2, 3) and is very different from de St. Croix's illustration in vol. 26, p. 102. There are discrepancies in topographical detail, e.g., the figure is shown extending from the plain almost to the top of the hill, whereas Pl. II shows that it occupies less than half the vertical height. The figure, however, seems to have been drawn with some care. Like the 1850 sketch the rake and scythe are not shown and both feet are missing, likewise the lower parts of both staves. It is clear from this sketch (if it can be relied upon) that the feet should point in opposite directions, following Burrell. The text (on p. 122 of the *Graphic*) accompanying the engraving (p. 125) confirms that Phené provided the sketch for the engraving and mentions ' that this remarkable figure is about to be restored ' thus confirming that the drawing had been made before the restoration. It continued, ' The first sod for the restoration has already been turned by Mr. Phené, but the work has been suspended for a time to allow persons interested to see it in its original condition.' This is confirmed in the *Eastbourne Gazette* for 4 Feb. 1874 where de St. Croix had written to say that ' the delineation of the Long Man is now far advanced; but before the lines are marked out, it is hoped the public will finally inspect the figure and express their opinion thereon.' In the same paper for 18 Feb. 1874, ' The Rev. W. de St. Croix states that the illustration of the Wilmington Giant or Long Man, published in the *Graphic* of Saturday last [actually two Saturdays before] is admirably done and affords a very good view of the hill on which the figure is traced and gives also a tolerably correct representation of the figure itself.'

The words ' tolerably correct representation " suggest that de St. Croix was not entirely happy with Phené's sketch reproduced as an engraving in the *Graphic*, but the same might be said of Phené's remarks regarding the restoration when addressing a Society meeting at Wilmington on 17th Oct. 1874, quoted in *S.A.C.*, vol. 26, p. 101. His remarks about the original design are far from easy to understand: ' . . . his [Phené's] own opinions of the original design were not at first as positive as at present, although he now found they were quite correct; his careful comparison of the figure with that in Dorsetshire [the Cerne Abbas Giant] left no possible question in his mind on that point.' This seems to imply that Phené's first opinions of the original design, i.e., as depicted in the *Graphic*, with the Long Man's left knee facing west and not east as in the restoration, still held; but as he does not condemn de St. Croix's interpretation (except to object to the bricks) it could be that, after inspecting the Cerne Abbas Giant, which has both feet turned to the figure's right in a similar manner to the restored Long Man,

reluctantly he accepted the reversal of the Long Man's left knee and calf muscle. The Rev. de St. Croix was indisposed and therefore absent from the Wilmington meeting, as reported in the *Eastbourne Gazette* for 21 Oct. 1874, where Phené's speech is noted in similar terms, but not the exact words, as in *S.A.C.*, vol. 26, p. 101. Therefore, de St. Croix had the report at second hand which may account for the somewhat peculiar wording.

THE POSITION OF THE FEET. It is of importance to determine, if possible, the correct positions of the feet of the Long Man, as they have an influence on theories as to the figure's origin. One of several factors in favour of comparison with the 7th century A.D. Finglesham buckle (FIG. 2, 4) is that in both instances the feet point to the figure's right. Let us consider the points in favour of the Long Man's feet pointing east as outlined by de St. Croix. Apart from de St. Croix himself there is little support from others. Petrie, in 1918, quotes a Farmer Dumbrell, ' who remembered all about the bricking,' as agreeing with the restoration of the feet.[1] Then there is the negative evidence of no public outcry against a bad restoration. What does seem certain is that in the middle of the 19th century there was some doubt about the feet. The Rev. G. M. Cooper, in 1850, omits them from his illustration (FIG. 2, 2) and following Horsfield, states, ' The outline is so slightly indented in the turf that to a close inspection it is imperceptible; but when viewed from a distance with a strong side-light, i.e., either in the morning or evening, it may be plainly seen; and yet, even then, an unpractised eye will have some difficulty in tracing out the figure, *of which the lower parts are at all times extremely indistinct.* The thawing of a slight snow brings it out into the boldest relief.'[2] The next dated drawing is that of Phené in the *Graphic* for 7 Feb. 1874, already referred to, preceding the brick outline and which has no feet at all, but the knees face east and west (FIG. 2, 3), thus being contrary to de St. Croix's interpretation. Marples shows two sketches of the Long Man:[3] (B) as printed in Plenderleath's book[4] (FIG. 2, 5B), this following Phené's drawing as to the upper two-thirds of the figure, but with the stave bases lengthened and the feet as the 1874 restoration. Marples suggests that Plenderleath added the feet as in sketch (B) to sketch (A) (FIG. 2, 5A) which is a pen-and-ink sketch, existing in ms. form only, in Plenderleath's own copy of his book. Marples considered it possible that (A) was of pre-restoration Long Man, probably copied from the *Graphic*. This would appear to be a correct assumption as Plenderleath's sketch (A) is virtually the same as the *Graphic* drawing by Phené.

[1] Flinders Petrie, ' The Hill Figures of England,' in *Royal Anthrop. Inst. Occ. Paper*, no. 7 (1926), see pp. 7-16, Pls. I and II.
[2] *S.A.C.*, vol. 4 (1851), pp. 63-4.
[3] Marples, op. cit., FIG. 36 and see pp. 186-7.
[4] Rev. W. C. Plenderleath, *The White Horses of the West of England* (1892).

The Rev. T. Bunston's booklet of 1912[1] includes a passage saying that the lower part of the figure was altered, for originally the feet pointed downwards in the line of the form. This hardly equates with the Burrell drawing, where the feet point outward, but is evident disagreement with the restoration. A letter published in 1938[2] records information received from a Mrs. Ann Downs (née Lambe), born 1840, who spent her early days at Wilmington Priory. Mrs. Downs ' always deplored the careless manner in which he [the Long Man] had been restored.' Apart from further information regarding the ' scythe ' (see below) there is the statement: ' The feet of the figure have been altered.' It is hard to judge whether memories of events many years before may be relied upon, so the worth of Mrs. Downs' reminiscences would seem to be of equal value to those of Farmer Dumbrell who held the opposite view. Petrie accepted Dumbrell's evidence, but then he was not aware of Mrs. Downs' contrary opinion.

One more writer with views on the restoration may be quoted, T. C. Woodman, M.A., LL.D., who wrote a pamphlet on the Long Man in 1900.[3] ' . . . The figure seems to be walking in a very uncomfortable position towards the east, all the upper part of the body is front view, but the legs are seen sideways. . . . The fact is this most interesting piece of antiquity has undergone a most deplorable restoration some twenty years ago at the hands of well-meaning persons no doubt . . . . the figure, *as many of us can still remember it*, was formerly only visible at times . . . the feet of the figure have been quite altered, now they are sideways, formerly they were foreshortened, and the form was coming straight forward, . . . ' Woodman suggests the figure is that of the Anglo-Saxon Baldur. Here then, is a cultured author of numerous pamphlets on such widely ranging subjects as church brasses and Liberia, writing from personal experience of having seen the Long Man before restoration and whose views cannot lightly be dismissed.

The 1874 photograph (Pl. II) appears to be the only piece of evidence not seen by post-1875 writers on the Long Man, if the *Graphic* drawing, apparently known to Marples, is excluded. The half-tone reproduction in this volume (Pl. II) is unlikely to be as clear as the original, but if the latter is examined (or rather a modern copy by Reeves, professional photographers, of Lewes, and it is

[1] Rev. T. Bunston, Vicar of Arlington, *The Long Man of Wilmington*, a popular lecture given to the Literary and Social Guild, Hailsham, 27 Feb. 1912, a booklet, reprinted from the *Sx. Cty. Herald.*

[2] Letter from Edward Shoosmith in *Sx. Cty. Mag.*, vol. 12 (1938), p. 281.

[3] T. C. Woodman, *The Long Man of Wilmington* (1900), a pamphlet, said to be reprinted from the *Hove Gazette.* Among a collection of pamphlets by Woodman, Brighton Reference Library, Stock No. 21059. A letter in *Country Life*, 7 Feb., 1903, p. 192, repeats much of what is in the pamphlet, from a book by Woodman, *The South Downs* (1901). Dr. Woodman was a member of the Sussex Archaeological Society from 1881-1912.

well known that modern copies are often sharper and clearer than the original—a copy is filed at Barbican House, Lewes) faint markings in the turf can be interpreted as an alternative outline of the Long Man's left leg, shown as a dotted line in FIG. 2, 6. This is put forward by the writer with some diffidence as the ' slight . . . intaglio and cameo effects ' mentioned by Phené[1] seen now as a possible alternative left leg, may be only rabbit runs or the traces of footpaths formed by the workmen who laid the bricks. Nevertheless, the resemblances to a leg and a foot are there and they should be recorded. Modern aerial photography and a ground examination now reveal no trace of those marks, which, whatever they were, have been worn away by the constant tread of visitors' feet over the surface for nearly 100 years.

Even without the somewhat doubtful evidence of the photograph, the previous summing up of what is known to the writer about the figure's nether limbs demonstrates that only de St. Croix and Dumbrell accepted that both feet faced east, whereas the Burrell drawing, Phené's sketch in the *Graphic*,[2] the engraving of 1850, the remarks of Bunston, Woodman and Mrs. Downs all disagree with the restoration. On balance, therefore, the writer is inclined to accept that the restoration of the left leg and foot was mistaken and that the left foot should point either north-west or west, or that both feet originally pointed downhill as quoted by Sidgwick.

THE RAKE AND SCYTHE. These appear at the tops of the staves in the Burrell drawing (FIG. 2, 1) which Sidgwick reported ratified by Gough in the latter's edition of Camden (1806),[3] though with reservations as to Gough's accuracy and that he may not have been personally acquainted with the figure. Horsfield omits mention of the rake and scythe. Since earlier discussions of the Long Man by various writers refer to possible missing parts above the head and around the two staves, these areas were subjected to a resistivity survey by our member, Mr. K. W. E. Gravett, M.SC., F.S.A., assisted by the writer and Mrs. Holden. Mr. Gravett's report follows:—

' Resistivity measurements were carried out on the Long Man for two days (4-5 Sept. 1969), using a Martin-Clark resistivity meter with an array of four electrodes, arranged in a square of 2.5 feet side and forming a table on which the instrument is mounted. Such a system has been described by A. J. Clark,[4] who explains its operational advantages over the more conventional, Wenner, four-in-line arrangement. In the square array, two adjacent electrodes are used for feeding current into the soil, while the other pair sense the voltage difference. An advantage of the square configuration is that the direction of current may be changed through 90° by simple switching and this is useful in locating anisotropic anomalies (where the soil resistivity depends on the direction

[1] *S.A.C.*, vol. 26, p. 101.
[2] Phené was a Fellow of the Royal Institute of British Architects and, presumably, a capable draughtsman.
[3] Ibid., pp. 408-9.
[4] A. J. Clark, ' A square array for resistivity surveying,' in *Estratto da Prospezioni Archaeologiche* (Fondazione Lerici, 1968), vol. 3, pp. 111-4.

it is measured). The square array has an effective working depth of 3 feet and offers a more accurate spatial location of an anomaly.

A base-line was laid out between the tops of the present staves and resistance readings taken at two-feet intervals along sections of this line and lines parallel to it four feet apart. The full set of readings and locations are filed with the papers on the excavation. The areas investigated are shown in FIG. 3, where the anomalies are plotted. All of these were found to be anisotropic in nature and probably close to the surface. It will be appreciated, however, that such anomalies are not certainly archaeological and should be confirmed by excavation before acceptance.

It was not possible to investigate the region above the west stave due to recent and serious erosion. A much larger and more intensive survey, covering the whole figure, would be useful, but the slope of the ground much slowed the operation of the instrument. Certainly this was the most arduous resistivity survey I have ever conducted on slopes of up to nearly 40 degrees in places.'

PHOTOGRAPHY. In the afternoon of 13 Aug. 1969, Mr. Gravett took a series of photographs of the Long Man on Kodak Ektachrome Infra-red Aero film type 8443 in the hope of distinguishing any areas of grass with lower near-infra-red radiation. None were found on the Long Man, although the less healthy grass on the quarry face showed this effect.

In October, 1970, Miss S. Adams kindly took air photographs of the Long Man, using the same type of infra-red film, generously provided by Mr. K. W. E. Gravett. The grass over and around the figure showed no variations in colour. Thus the experiment was unsuccessful in revealing traces of any earlier ground disturbances which might exist.

RESISTIVITY READINGS. The resistivity readings merely add to the complexity of theorising about the layout of the Long Man. If those readings at the tops of the staves are archaeological (and they may well be due to natural causes) then the staves may have been somewhat longer and the patterns might be said to resemble a rake at the head of the east staff and the curve of a scythe blade on the west side of the other staff. The anomalous readings above the west side of the head, if archaeological, suggest a single plume rather than a horn from a horned helmet as worn by Finglesham man (see FIG. 2, 4), but the plotted curve might equally trace an old rabbit hole, a natural runnel in the chalk, or perhaps a patch of flints. If we refer again to the reminiscences of Mrs. Ann Downs (see note [2] on p. 48) of the pre-1874 Long Man, '. . . there was visible above the head of the Long Man a curved line running at right-angles to the staff which he holds in his left hand. This was supposed to represent a scythe.' Note the words, ' above the head ': so this statement could imply a scythe blade *between* the Man's head and the western staff, of which the resistivity readings might represent the tip of the blade. It would seem more probable that ' above the head ' refers only to a position relative to the height of the Man, as the top of a scythe blade in the Burrell sketch (with a longer stave) would be farther up the hill than the Man's head.

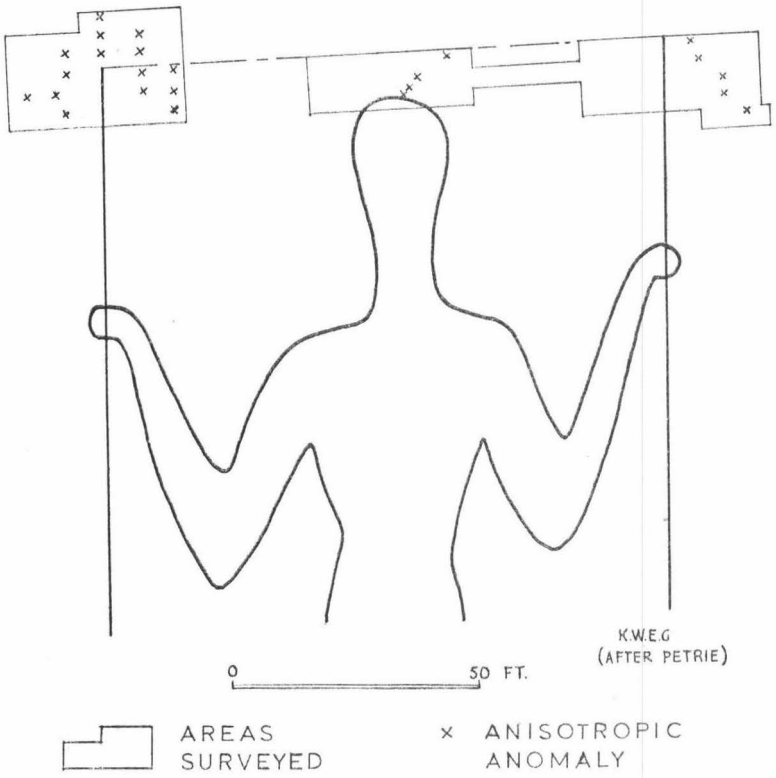

FIG. 3. Plan of resistivity survey.

THE POSSIBLE ROMAN ORIGIN OF THE LONG MAN. The late E. Heron-Allen followed Sidgwick's article in 1939 by proposing, mainly from coin evidence, that the Long Man belonged to the 4th century A.D.[1] and quoted two other notes supporting that theory.[2] Basically, it is that certain Roman coins bear on the reverse a figure of a man holding in each hand a vertical staff with a rectangular device at the head of each, otherwise known as a *Labarum* (FIG. 2, 7), or, in Heron-Allen's words, ' a Christianised form of Roman cavalry standard,' and that these coin designs are so like the Long Man as to be more than a coincidence. The present writer disclaims any extensive knowledge of the Roman period and therefore does not

[1] E. Heron-Allen, ' The ' Long Man ' of Wilmington and its Roman Origin,' in *Sx. Cty. Mag.*, vol. 13 (1939), pp. 655-60.

[2] *Sussex Notes and Queries*, vol. 6 (1937), p. 219 and p. 262.

propose to discuss this theory at length. However, anyone may see similarities and differences between the two figures, e.g., the coin figures are clothed, whereas the Long Man is naked, and the head on a coin is turned to the figure's right, the *labara* have rectangular devices at the top, which are not on the Long Man's staves. The feet, however, bear a greater resemblance to the Burrell sketch than to the 1874 restoration, or to Finglesham Man, being turned outward. Some coins have what appears to be a single star above the head.

If the 1874 restoration of the Long Man's feet is suspect then one factor supporting the resemblance of Anglo-Saxon Finglesham Man to him is doubtful. But, likewise, there is still insufficient evidence, notwithstanding the fragments of possible Roman tile, to claim the Long Man as of Roman origin. Perhaps we should consider the matter as far from resolution as ever before and that the limited excavations coupled with some additional research but echo the words of the late Rev. A. A. Evans, ' The Giant keeps his secret and from his hillside flings out a perpetual challenge.'[1]

THE SUPPOSED LEVELLING OF THE SITE OF THE LONG MAN. The Rev. de St. Croix in *S.A.C.*, vol. 26, p. 99, quotes Mr. Phené: ' The hillside had been most carefully brought to a surface and the material so cut away thrown into the chine on the west . . . ' This assumption of levelling prior to cutting the outline has been restated by several writers including Petrie who says: ' It will be seen that the figure has been placed in the hollow of a natural bay; it is perceptible that the ground was flattened over the area, and heaps of this clearance seem to have been thrown into a gully at the side.'[2] J. B. Sidgwick says: ' Even a casual glance at the site . . . shows that it was prepared and roughly levelled before the Man was cut.'[3] Professor C. Hawkes, probably following Petrie, says that the slope was ' smoothed artificially.'[4] The writer does not agree with these views after an examination of the site.

In the first place, what would be the good of cutting the outline of a figure if all, or the greater part of, the turf had been removed, together with quantities of the subsoil? There would be no turf left in which to make the outline. The mass of soil in the adjacent ' chine ' or coombe-head is considerable—far more than the product of a few molehills. An outline would therefore have to be cut into the bare bedrock and would only show by shadow markings for at most a year or two before being weathered away, which seems completely contrary to hill figures in chalk country, unlike carvings on more solid rock. A background of turf is essential; even the

[1] *Sx. Cty. Mag.*, vol. 13 (1939), p. 574.
[2] Petrie, op. cit., p. 7.
[3] Sidgwick, op. cit., p. 408.
[4] Hawkes, op. cit., p. 28.

White Horses with all-white bodies have turf surrounding their figures. Re-turfing by hand on bare chalk bedrock on such a steep slope seems to be out of the question. (The slope of the Long Man is 28° 10′ according to Petrie, which has been checked using a coarse clinometer as between 28 and 29 degrees).

The area of the Long Man and east and west to the adjacent short downland spurs is not really a hollow as stated by Petrie, for the face of the hillslope is convex, not concave, as may be seen by the contour lines on the O.S. maps. The only hollows are the chines or coombe-heads on either side of the Long Man. In the opinion of the writer the convex surface between the two coombe-heads represents the almost totally eroded remnant of another broad downland spur and that it is erroneous to consider the hill-figure as lying in a hollow, or that the surface has been artifically prepared.

If we now look at the material from the supposed clearance, a large deposit of grass-covered soil lying in the hollow to the west of the figure, it has every appearance of being the result of a landslip. The upper part of the hillside just west of the top of the slump, up to the ancient track known as the ' Giant's Causeway,' has an average angle of 34° for the last 30 yards or so, but if the top 10 yards are examined, the angle is found to be 37° which is close enough to the angle of repose of earth to make a landslip possible.

Petrie noted that the angle between the head of the Long Man and the Giant's Causeway was 33° and the steepest part at the top as 38°. Between the head of the figure and the ancient track above may be seen lateral swellings in the turf which to the writer are products of soil creep or soil-slip from the steep hillside above. In the hollow to the west, where the angles are about the same, the soil creep is likely to have become too great to be retained by the roots of the vegetation and a landslip occurred at some unknown time in the past, but certainly well before 1874. It is also clear from the 1874 photograph (Pl. II) that de St. Croix did no levelling of the hillside.

LONG MAN RESTORATION 1969. Mr. M. J. MacPherson, Assistant Secretary to the Society, kindly contributed the following note: ' The whole outline was replaced because the bricks of which it was formed were either missing due to vandalism or in a poor state: only the left side of the head could have been retained and this would not have matched with the new outline. An old record shows that when the outline was laid in 1874, 7,000 bricks were used.

After approval and advice had been given by the Ministry of Public Building and Works, who made a grant of £250, Mr. Ben Walker, a Wilmington man, of B. V. Walker & Son, Selmeston, was asked to estimate and advise on the work. It was decided to use pre-cast concrete blocks made with white cement and sand and this should obviate the need to whiten the outline every three years. These blocks were made at Uckfield by C. T. Concrete Mouldings

Ltd. The blocks were made the same width and depth as the bricks but are two feet long, this being the maximum possible due to their weight of 72lbs.; 770 were used. To raise the blocks up to the figure a trolley was attached to a specially made rope from Green Bros. of Hailsham, which was winched up and down by two tractors at the bottom. [There being no suitable commercial trolley for the purpose, Messrs. Walker made their own from the chassis and towbar of an old electric milk-float, covered with the framework of an iron bedstead, part of a stable door and boards; the wheels coming from a discarded motor lawnmower. This home-made device worked perfectly. E.W.H.] When the last block was laid a sealed vessel was placed underneath containing records of the work and items of topical interest for future generations.

The total cost of the work amounted to £800; the labour, surveyors' fees and signs amounting to £468 and the blocks £332. The fencing was replaced at the top and bottom at a cost of £67. £203 15s. 0d. was raised by donations and collections on the site, at Wilmington Priory and at Barbican House. The balance of the cost was paid by the Trust.'

LONG MAN RESTORATION, 1874. It is of interest to note that trolleys were used for conveying bricks up the hillside in 1874, the only real difference between then and in 1969 being the source of power utilised. Mr. G. P. Burstow kindly provided details of a conversation he had in 1969 with Mr. William Willis, of College Place, Brighton. Mr. Willis's grandfather, William Page (died 1942), lived in Wilmington as a child and in 1874 with other local children used to climb to the top of the Long Man to help bring up bricks for the workmen outlining the figure. The children used to 'man' a trolley going downhill and by their weight send up another trolley loaded with bricks. It then became necessary for the children to climb the hill again on foot to repeat the operation. (Mr. Page later was a Brighton policeman, retiring in 1913 and then a park-keeper at Preston and Dyke Road Parks, Brighton. Mr. Willis has allowed a copy of a photograph of his grandfather to be sent to the Society).

ACKNOWLEDGEMENTS. The writer is indebted to the following for much assistance either on the site or in other ways, most of which are mentioned in the body of the report: Miss S. Adams and Mrs. H. G. Holden; Messrs. M. Bell and G. P. Burstow, the Trustees of the Chatsworth Settlement (for searching the Duke of Devonshire's diary for 1873, with negative results), Mr. F. W. de St. Croix, Dr. I. Cornwall, Professor B. W. Cunliffe, Mr. K. W. E. Gravett, Professor C. and Mrs. S. Hawkes, Messrs. M. MacPherson, N. E. S. Norris, C. F. Tebbutt and B. Walker.

THE *TURRIS DE PENUESEL:* A REAPPRAISAL AND A THEORY

By D. F. RENN, F.S.A.

At the Society's meeting on November 25th, 1932,[1] Sir Charles Peers gave a talk on Pevensey Castle which was subsequently printed in these *Collections*[2] and forms the basis of the present Official Guide, last revised in 1952. In collating material for a new " popular " guide, I found it necessary to re-examine the early history of the castle. Sir Charles, of course, had no need to go into detail in a general survey, and although much of the documentary evidence had already been published by Mr .L. F. Salzman[3] and some subsequently by the Rev. W. Budgen,[4] the completion of the printing of the Pipe Rolls for the reigns of Henry II, Richard I and John has now put further evidence conveniently at our disposal. The main purpose of this paper is to consider the structure of the " keep " in some detail and to suggest a possible explanation for its unusual design.

THE FIRST MEDIEVAL CASTLE

On his landing in 1066, the Conqueror built " a castle with a very strong rampart " at Pevensey.[5] It is generally accepted that this rampart cut off the S.E. part of the Roman fort—Sir Charles Peers' plan[6] shows a conjectural Norman palisaded bank and ditch S. of the gatehouse. There is a great difference between the irregular plan and profile of the W. ditch and the narrower ruler-straight N. ditch with its embanked berm. Indeed another slighter ditch[7] continues the line of the W. ditch northward toward the Roman turret E. of the breach in the fort wall, and Mr. S. E. Rigold has pointed out to me that only this turret, and those E. of it, show signs of repair. The early medieval enclosure may therefore have been the E. *sector* of the Roman fort rather than its S.E. *segment.*

[1] Reported briefly in *Sussex Archaeological Collections* (hereafter abbreviated to *S.A.C.*), vol. 74, p. xl.

[2] " Pevensey Castle," in ibid., pp. 1-15, hereafter referred to as Peers.

[3] " Documents relating to Pevensey Castle," in *S.A.C.*, vol. 49, pp. 1-30; hereafter referred to as Salzman, and in V.C.H., *Sussex*, vol. 1, pp. 485-501.

[4] " Pevensey Castleguard and Endlewick Rents," in *S.A.C.*, vol. 76, pp. 115-34.

[5] William of Jumièges, *Gesta Normannorum Ducum*, ed. J. Marx (Rouen, 1914), lib. VII, cap. 34.

[6] Peers (opposite p. 4), based on " traces which have been found " (p. 9).

[7] It is marked as Norman on D. H. Montgomerie's plan in E. S. Armitage; *The Early Norman Castles of the British Isles* (London, 1912), fig. 24 opposite p. 178.

PEVENSEY CASTLE 'KEEP' PLAN

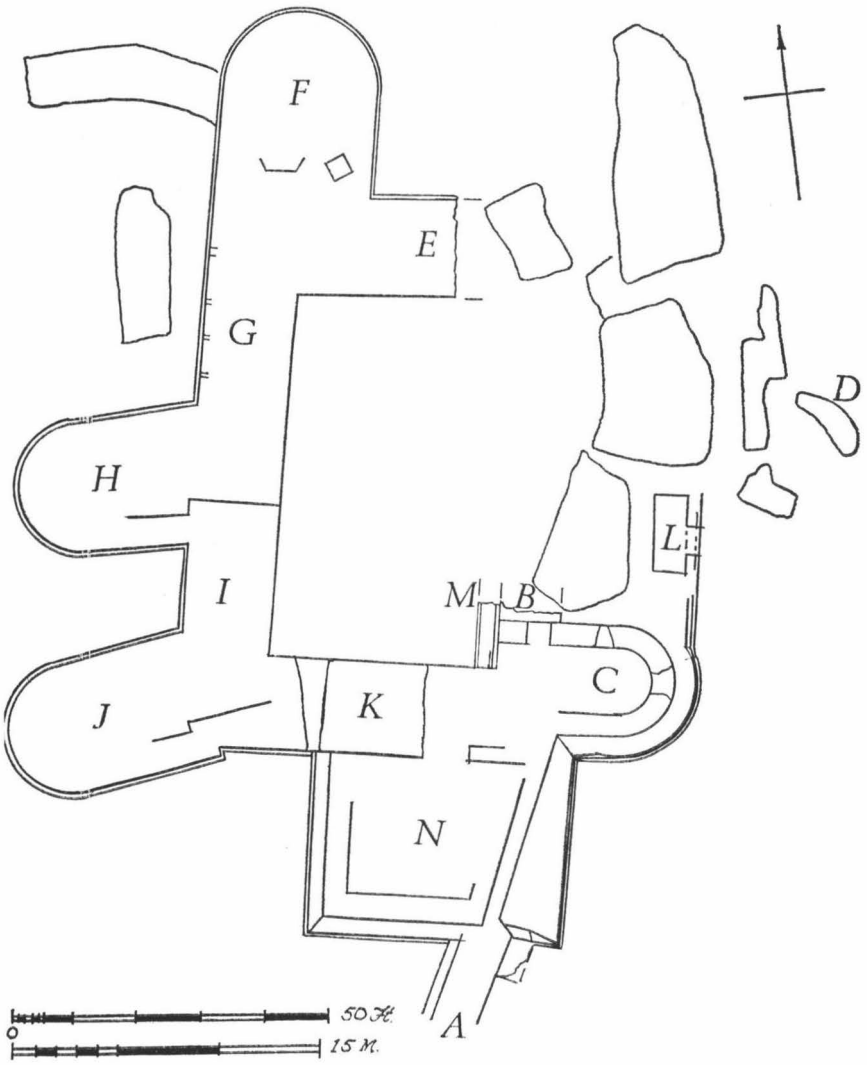

FIG. 1. Plan: for key see pages 57-60

Pevensey's rather remote situation meant that its importance was defensive rather than administrative; we hear more of watchmen and porters than stewards and constables. In 1088 Odo, Bishop of Bayeux, was besieged here,[1] and in 1101 Henry I's army was encamped in and around the castle, awaiting the invasion of Robert, duke of Normandy. The count of Mortain's treachery at this time led to the honour passing to the family of l'Aigle. The castle of l'Aigle has vanished, but it was a place of importance: Henry I came to terms with Anselm there, and the threat to surrender it to the French king in 1118 was sufficient to secure his English inheritance (including Pevensey) to the eldest son of Gilbert de l'Aigle.[2]

In 1129-30, 16*s.* was paid to the *vigilis Turris de Penuesel* out of the farm of the lands.[3] This first mention of the *turris* is usually taken to refer to the largest extant building—the so-called " keep " —but might equally apply to any of the Roman turrets. Indeed, that already referred to E. of the breach has an upper storey with a window loop of early medieval appearance, and commands much of the N. side of the enclosure. However, it overlooks neither the land causeway from the W. nor the harbour to the S.E., which are the likely directions of approach to the castle.[4]

Description of the " Keep "

In the 19th century the site of the " keep " was covered by a mound through which protruded the northern rounded projection (or *insula*)[5] and the fragment of the upper part of the S. wall.[6] The site was partly excavated by Harold Sands in 1908-10, and the plan and section (Figs. 1, 2) are based on the contemporary survey by D. H. Montgomerie,[7] checked wherever possible by independent measurement. Montgomerie's survey is the only record of the traces of an upper floor at J and N, and for some of the fallen walling to the N.E., now confused by fortifications added during the Second World War.

The earliest masonry (A, B) is the Roman fort wall of flint rubble, faced with 4-inch greensand cubes with lacing courses of brick or ironstone slabs. The S.E. *insula* (C) is of similar masonry, except

[1] *Chronicon Florenti Wigorniensis*, ed. B. Thorpe (London, 1848), vol. 2, p. 23.

[2] Ordericus Vitalis, *Historia Ecclesiastica*, ed. A. le Prevost (Paris, 1838-55), vol. 2, pp. 27, 295; vol. 4, pp. 324-5.

[3] *Pipe Roll 31 Henry I*, ed. J. Hunter (Record Commission, 1833), p. 142.

[4] A. J. F. Dulley, " Excavations at Pevensey, Sussex, 1962-66," in *Medieval Archaeology*, vol. 11, p. 210, fig. 55.

[5] The term is used in a Pevensey document of 1370 (Salzman, p. 21), and seems more apt than " bastion," " buttress " or " wing."

[6] *S.A.C.*, vol. 6, plan opposite p. 274.

[7] Sands Collection, Society of Antiquaries of London, including many photographs of the excavations. The day-book of the 1910 excavation is MS. 725 16.

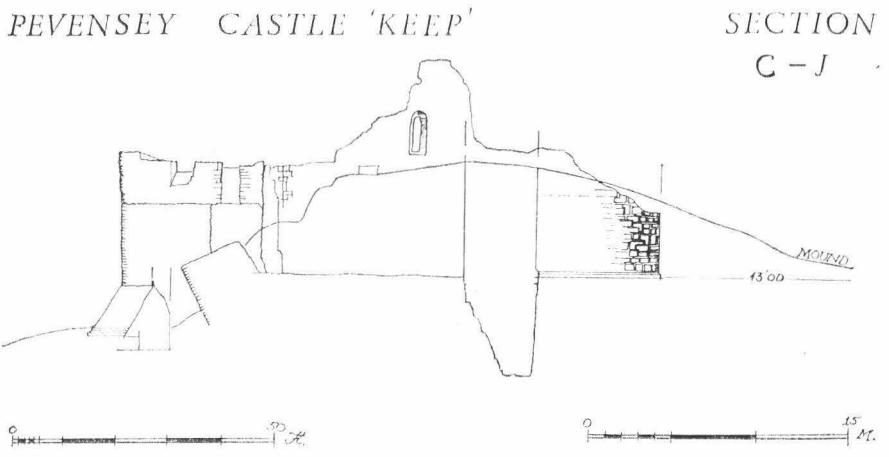

FIG. 2. Section looking south

for the upper storey which will be described later, and much of the fallen masonry to the N.E. has similar characteristics. Peers claimed that there were two other *insulae* on the E. side.[1] A block of masonry with a curved face once existed at D and S. H. Grimm's aquatint (in the Society's headquarters) shows a " ghost " impression of one *insula*, but this evidence is suspect since the aquatint also shows a " ghost " twin-towered barbican in front of the inner gate-house. Peers also stated that the Roman wall here was still standing in the Bucks' engraving of 1737, but in my opinion the engraving is ambiguous on this point. The wall to the N.E. of the *turris* was rebuilt in 1304 but was tottering in 1318, and a great part of the " keep " was falling down in 1405.[2]

The three western *insulae* and the walls linking them to C (E-K) are of consistent ashlar masonry for two courses above the chamfered plinth; grey-brown sandstone blocks up to 12 inches long and 10 inches high with coarse diagonal tooling and fairly wide joints. The masonry of K continues upward for several feet in similar masonry, but elsewhere the courses are deeper—10 to 14 inches—and there is a curious re-entrant angle between the S. faces of J and K. The rounded end of J has coursing breaks of greyish-yellow sandstone slabs, some on the S. side being L-shaped ashlars, perhaps belonging to the repairs of 1366-70;[3] for illustrative purposes these have been drawn (in mirror image) on the " wrong " N. side of J

[1] Peers, p. 13.
[2] Salzman, pp. 16, 18, 23.
[3] Salzman, p. 21.

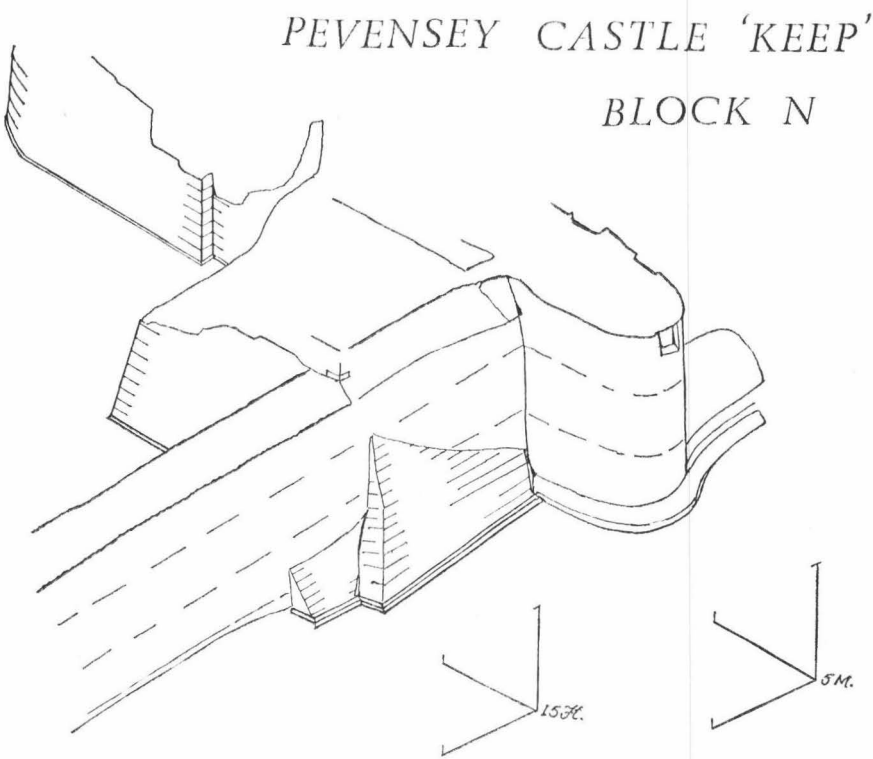

FIG. 3. Isometric view from south-east

in Fig. 2. Similarly the foundation of E (which Sands excavated) has been drawn below I. Each *insula* seems to have been hollow at first-floor level, and F has a metre-square shaft not aligned with the wall face. The two rubble foundations outside F and G may be related to the 4 unplugged beam-holes in G which ascend toward the N., being perhaps the bearers of the covered stair.[1] The same style of masonry can be seen in the vault L, built partly under leaning walling, in which was found part of a 14th century helmet.[2] This was perhaps the place outside the castle cleared of rubbish in 1394, although Peers took it to be the new wall built between " keep " and gateway in 1405.[3]

[1] Salzman, pp. 10, 17, 18, 20.
[2] J. G. Mann, " The visor of a fourteenth-century bascinet found at Pevensey Castle," in *Antiquaries Journal*, vol. 16, pp. 412-9.
[3] Salzman, p. 22; Peers, p. 12.

The flint rubble core of the upper part of K has a little facing remaining, of white oolitic (? Caen) stone cubes with wide joints, near the rubble jambs of a loop. There are some slabs of similar stone at this level at I. The square block to the S. (N) is faced in 10 to 11 inch courses of greyish-white greensand with tight joints. Its chamfered plinth overrides that of K and its walling oversails the foundation courses of A. The wall face on the E. slopes outward and downward before falling vertically to a sloping buttress whose increasing width ends in a part-vertical, part-sloping gable (Fig. 3). The double chamfered plinth courses are carried N. round C with a sloping talus. Peers regarded this external work as of the 15th century, but the diagonally tooled ashlar is very similar in style to the Transitional Norman doorway a few yards to the S. *Insula* C has an upper doorway on the N. side with greensand jambs; the wall to the E. appears to have been repaired and/or heightened and given two sloping chases.

The interior of the " keep " is faced with mixed rubble, partly coursed, the greensand quoins having parted slightly through the settlement of the walls. The remaining fragment of the early E. wall (B) has been stiffened on the inside with another wall (M) of irregular rubble with offsets 4 and 12 feet up, quoined into K. Peers said that the interior was filled up with clay to first-floor level " from the first " and that the stiffening was inserted later.[1] Sands, however, recorded foot-thick sand layers a yard apart, some with traces of burning, and undisturbed clay 18 feet down.[2] Earth was carried from the town to the *turris* in 1288, but the same record has stones and chalk carried from the " keep " to the hall porch and the gate, so the " keep " may have been merely a convenient staging post from which material could be got into the castle, perhaps lifted by an " engine " of paramilitary purpose. In 1440, mud and earth were carried out of the *dongeon* (i.e. " keep ").[3]

The Date of the " Keep "

Few of the finds made during the clearance of the " keep " have been properly recorded, apart from the visor mentioned above (page 59) and an 11th century spoon found " in the pit under the stairs at the entrance to the keep,"[4] perhaps between *insulae* H and J, where a secondary wall has been removed. Sands illustrates a crossbow " nut " and a bridge-spout from a jug, both from middens

[1] Peers, p. 7.
[2] *Op. cit.* in note 7, p. 57.
[3] Salzman, pp. 9-11, 25-6.
[4] R. S. Simms, "A medieval spoon from Pevensey Castle," in *Antiquaries Journal*, vol. 12, pp. 73-4, dated by D. M. Wilson, *Anglo-Saxon Ornamental Metalwork, 700-1100* (British Museum, 1964), pp. 60-61, plate XXVII.

near wall E,[1] and I noted small fragments of scratched-ware[2] on the surface at the foot of walls E and G. Peers stated that " its remaining masonry suggests a date not later than the beginning of the 12th century ":[3] while this may be true of the upper facing (such as it is), the high quality of the ashlar below and the design of the *insulae* would be very advanced for 1100. The irregular disposition and alignment of these *insulae* suggest that they may be later additions,[4] keyed into the original pilaster buttresses. There are four pieces of evidence to support this:

(a) the re-entrant angle between J and K;
(b) the shaken *internal* quoins, with no external sign of fracture;
(c) the square shaft in F, perhaps the enclosure of a former external latrine shaft rather than a well, and
(d) the roughly squared-off core of the remaining upper parts of the " keep," also shown on two high fragments in the Bucks' engraving.

Peers drew attention to the position of *insula* C in relation to the rest of the " keep." Wall K does not align with C, and the position of the " keep " may have been dictated by the presence of a straight stretch of Roman wall which only needed a skin of masonry (to provide seating for floor-beams) to form one side of a " keep " which incorporated the Roman turret C more or less by chance. Mr. P. E. Curnow tells me that the apse of the White Tower of London has foundations at a higher level than a chord wall. Might that apse be an addition prompted by Pevensey? The Conqueror had given Pevensey to his half-brother by 1082 at the latest,[5] and the White Tower was probably begun in 1078,[6] so that the first medieval stone building at Pevensey could well date from the 1070s. Alciston priory was exempted from castle-work at Pevensey in 1114[7]—which suggests that the work had actually been performed previously—although the priory remained liable for heckage until 1254.[8]

[1] *Op. cit.* in note 7, p. 57.
[2] G. C. Dunning, " Pottery from the Abinger motte," in *Archaeological Journal*, vol. 107, especially pp. 34-7, and John Musty *et al.*, " The medieval pottery kilns at Laverstoke, near Salisbury, Wilts.," in *Archaeologia*, vol. 102, especially pp. 99-107.
[3] Peers, p. 7.
[4] Sands came to this conclusion in 1910: *op. cit.* in note 4. See also Sidney Toy, *The Castles of Great Britain* (London, 1953), plan on p. 18. At Lucheux (Somme), the rectangular donjon was recased and given 8 apsidal buttresses about 1240 (*Bulletin Monumental*, vol. 74, pp. 36-68).
[5] J. F. A. Mason, " The Rapes of Sussex and the Norman Conquest," in *S.A.C.*, vol. 102, p. 86.
[6] John Stow, *A Survay* (sic) *of London* (London, 1598), p. 38.
[7] B. M. Harleian Cartulary 43, C. 12, printed in *Sir Christopher Hatton's Book of Seals*, ed. D. M. Stenton and L. C. Loyd, Northamptonshire Record Society, vol. 15, p. 43.
[8] Salzman, p. 4.

Semicircular buttresses occur in mid-twelfth century keeps in France (Houdan, Provins, Niort), but longer *insulae* of the Pevensey style but forming the flanks of gate-passages are usually dated to the late 12th or early 13th century in Britain (Allington, Longtown, Old Sarum)[1]. Allington (Kent) also has the foundations of a rectangular buttressed building with a hollow apsidal end,[2] but the best parallel to Pevensey of which I am aware is Bungay (Suffolk), where what may have been similar but smaller *insulae* were found between the " keep " and the gatehouse there in very similar positions to H and J at Pevensey.[3] Bungay, like Allington, was under threat of demolition in 1173-4, but was repurchased along with Framlingham in 1189-90 by Roger Bigod; Bungay might have been rebuilt then in the latest fashion just as Framlingham was. The *insulae* would provide extra accommodation on the upper floors, and also projecting bases for engines of war (e.g. mangonels, see page 64) or of peace (e.g. cranes, see page 60). In passive defence, they would deflect missiles, provide a broader foundation raft against mining, and restrict and outflank surface attackers. At Conisbrough (Yorkshire), the round " keep " of the 1180s was protected by six equidistant heavy trapezoidal buttresses, probably for similar reasons.

Block N was dated to the end of the 12th century by Peers, who said that " its position suggests its use as a forebuilding, but this must remain quite uncertain."[4] His caution is justifiable: the sloping faces are unbroken to at least first floor level, so that any approach could have been from the " keep " itself or from the wall-walk of A, failing some very high timber staging. Admittedly the quality of the masonry of N is higher than that of the rest of the " keep," but it is not altogether dissimilar, and the chamfered plinth overriding its neighbour need not differ from it in date by many years. Any missile dropped over the E. face would have pursued a helter-skelter ricocheting trajectory, while the S.W. angle presents a solid battering prow to any attacker within the bailey (Fig. 3). Stone taluses are very uncommon in Britain, although they occur in many Crusader castles, and at Château Gaillard in Normandy, built by King Richard I between 1196-98. The latter has a central round tower with pilaster buttresses tapering both laterally and vertically into a sloping prow, with a great skirting talus on the rest of the base. The chutes on the N. side of *insula* C at Pevensey might have been intended for missiles rather than for latrines; it

[1] But see *Archaeologia Cambrensis*, vol. 110, pp. 98-99, note 70, for a general discussion of round towers.

[2] Sir W. Martin Conway, "Allington Castle," in *Archaeologia Cantiana*, vol. 28, plans between pp. 362-3.

[3] Hugh Braun, " Some notes on Bungay Castle," in *Proceedings of the Suffolk Institute of Archaeology*, vol. 22, figs. IV and V between pp. 112-3.

[4] Peers, p. 9.

may be more than a coincidence that the (Roman) Wardrobe Tower at London was similarly raised and repaired in the 12th century, perhaps during Richard's reign, when a palisade furnished with mangonels was erected.[1]

After Henry II confiscated Pevensey from Stephen's younger son in 1157[2] we have a partial record of royal expenditure on the castle. Sums of 63*s.* 8*d.*, 110*s.* 5*d.* and 90*s.* 8*d.* were spent on "works" (*operatione*) in the years to Michaelmas 1161, 1167 and 1178, respectively. The *gaiola* of Pevensey cost a mark in 1178-79 and repairs to the *domorum turris* 70*s.* in the following year. Repairs to the houses and palisades, respectively, cost 100*s.* in 1182-83 and 118*s.* 4*d.* in 1187-88.[3] These spasmodic expenses contrast with a regular series for much of the reign of Richard I, while other payments for men and supplies are recorded:

Exchequer Year (to Michaelmas)	Entry[4]
1192	*Et in operatione castelli de Peuensel lxvj.s. et viij.d.* (and on works at Pevensey Castle, 66*s.* 8*d.*).
1193	*Et ad reparationem castelli de Peuensel c.s. . . . in operatione turris et fossati et pro ferro et carbone, xxv.li. et xv.s. et iij.d.* (and to repairs to Pevensey Castle, 100*s.* . . . for works on the tower and ditch, and for iron and charcoal, £25 15*s.* 3*d.*).
1194	*Et Joscelino f'Renfr' constabulario de Peuensel xxxj.li. et xv.d. pro superplusagio quod posuit ultra quod recepit in operatione castelli de Peuensel.* (and the constable of Pevensey, £31 1*s.* 3*d.*, for what he had spent more than he had received for the works on Pevensey Castle).
1195	*Et Radulfo de Planez et Helye ingeniatori, xx.m., ad reparationem castelli de Hasting'et de Peuensel.* (and 20 marks to Ralph of Planez and Elias the engineer for the repair of the castles of Hastings and Pevensey).
1196	*In emendatione castellorum de Hasting'et de Peuensel, xx.li., per uisum Elye carpentarii et . . .*

[1] H. M. Colvin *et al.*, *A History of the King's Works* (London 1963-), vol 2, p. 709, citing the Royal Commission on Historical Monuments, *Inventory of East London* (London, 1930), p. 74, where, however, the reign of Henry II is proposed.

[2] J. H. Round, *Studies in Peerage and Family History* (London, 1901), pp. 169-70.

[3] *Pipe Rolls Henry II* (Pipe Roll Society edition), 7, p. 14; 13, p. 202; 24, p. 89; 25, p. 35; 26, p. 29; 29, p. 104; 34, p. 148.

[4] *Pipe Rolls Richard I* (Pipe Roll Society edition), 4, p. 204; 5, pp. 149, 153; 6, p. 229; 7, p. 240; 8, p. 81; 9, p. 219.

(£20 by the view of Elias the carpenter (and others) on mending the castles of Hastings and Pevensey).

1197 *Et in operatione in castello de Peuenesell, xl.s.* (and on works at Pevensey Castle, 40*s*.).

The recorded amounts may only be the sums *over*spent, as the entry for 1193-94 indicates, and other sources of finance may have gone completely unrecorded. The presence of Master Elias, an important figure elsewhere,[1] also suggests a major and sustained building campaign at Pevensey. At Hastings there is an entrance on the E. side flanked by rounded towers, hollow above solid bases, which have some resemblance in both masonry and design to the Pevensey *insulae*. There is no record of expenditure on the fabric of Pevensey in John's reign, although the castle was garrisoned in 1198-99 and in 1215, only to be dismantled in 1215-16. In 1205-06, *breteschiae* were made in the castle and carried to Seaford *en route* for Guernsey.[2]

Could the " keep " at Pevensey have been refurbished as a crude version—whether prototype or copy—of the central tower of Château Gaillard? I have picked over the Department of the Environment stone store in a vain search for further evidence. Unfortunately, no one seems to have recorded the contents of the mound during its removal; was it *all* building debris?

Later documents give us a picture of the " keep " with its covered entrance bridge, iron door, glazed windows and joists and leaded roofs which frequently needed repair.[3] It contained a hall and chapel, the latter possibly in existence by 1122,[4] although Dr. A. J. Taylor has argued the possibility that the chapel outside the keep was even earlier in origin.[5] Peers commented on the number of stone balls found in the castle;[6] most of them were stolen subsequently, but a few are built up into the masonry. Two in the foundations of the chapel are unfinished rough-outs from the quarry. The payments for 10 yards of canvas to cover the " mangonel " and as much as 6*d*. for washing it suggests an " engine " of considerable size.[7] The obvious site for a large piece of artillery would have been on the highest tower, perhaps on the solid prow of the " keep."

[1] J. H. Harvey, *English Medieval Architects* (London, 1954), pp. 91-2.

[2] *Pipe Roll I John* (Pipe Roll Society edition), p. 59; *Rotuli Litterarum Patentium*, pp. 156b, 184; *Annales Monastici* (Rolls Series), vol. 3, p. 46; *Pipe Roll 8 John* (Pipe Roll Society edition), p. 59.

[3] Salzman, pp. 8, 11, 13, 15-18, 21-3, 25.

[4] *Regesta Regum Anglo-Normannorum*, ed. Johnson and Cronne (Oxford, 1956), vol. 2, no. 1360.

[5] *Château Gaillard III; European Castle Studies*, ed. A. J. Taylor (Chichester, 1969), pp. 149-51.

[6] Peers, p. 15.

[7] Salzman, p. 13.

THE COUNTESS OF HUNTINGDON'S CHURCH, NORTH STREET, BRIGHTON

A complete descriptive list of its monuments, with brief notes on the building and its contents, made on 17 October, 1963.

By RONALD F. NEWMAN

Erected in 1871 in Gothic style, the building replaced a chapel founded in 1761 by Selina, Countess of Huntingdon. It consists of a large hall of six bays with galleries on three sides and a shallow sanctuary, lighted by a large five-light window of good tracery, on the other. The two western bays contain an entrance vestibule below the deep gallery with a second gallery above that. Above the entrance doors in the W. wall are a pair of tall three-light windows of poor design and a large *rosace*. The roof has been raised and a clerestory inserted to good effect.

At the N.E. corner of the hall is a vestry with white-painted, panelled (?) walls, one window and a back entrance. Among its furniture are two chairs and a mirror bequeathed by the Countess. On the walls are photographs of former ministers: Joseph Sortain, B.A. (1832-60), John Benjamin Figgis, M.A. (1861-98),[1] E. A. Dowsett (1899-1907), and W. Downham (1908-). There are also three engravings: two of the Countess of Huntingdon—one, bearing a facsimile signature and the date 13 June 178-, by J. Cross after F. Hurlstone (*Catalogue of Engraved British Portraits*, no 1, where it is said to have been published by R. Baynes in 1824), and the other, published by Carrington Bowles after J. Russell (*op. cit.*, no 2), presented to Hartwell O. Grissell by the subject's great-great-great-grandson on 17 April, 1871. The third is a mezzotint by H. Dawe, after a drawing by Mr. Hardy of Joseph Sortain, B.A., published by W. H. Mason, Repository of Arts, 1 Ship St., Brighton (*op. cit.* no 1).

On a window sill in the S. nave wall (that upon which the plaster cast of the bronze medallion from monument 5 (*see below*) is placed) is another engraving of the Countess of Huntingdon. It shows her portrait medallion from the monument which she erected to her husband in Ashby-De-La-Zouche church, Leicestershire. The drawing was made by T. H. Maguire and engraved by M. & N. Hanhart; the original monument was the work of J. M. Rysbrack. This engraving is not included in the *Catalogue of Engraved British Portraits*, II, published by the British Museum in 1910.

SCHEDULE OF MONUMENTS

In NAVE:—On N. wall

(1) Recording the renovation of the chancel and organ in 1950,

[1] *Sic;* see also p. 66.

with a legacy from Mr. Hugh Snelling, 60 years connected with this church.

A very small, rectangular horizontal brass, its surface inscribed in black enamelled characters.

(2) To the memory of those killed " For King and Country/1914-1919 ", and of those who served in the Great War.

Three upright rectangular panels of which the centre bears the names of the dead in black lettering with a gilt inscription above; each panel has bevelled edges and an ogival, trefoil top; the whole set in a rectangular horizontal frame with a moulded and chamfered cornice rising to a triangular top centre above a triangular pedimented panel (over the whole) bearing a further gilded inscription; the entire tablet executed in varnished, light-stained oak.

(3) Charles Heisch, b. 2 August, 1820, d. 2 January, 1892.

Rectangular horizontal brass which has a dull surface with an inlaid, black enamelled inscription, red majuscules and figures, enclosed within a red border-fillet.

(4) Emma Pace, d. 27 January 1919, aged 84, a life-long worshipper here, and to her sister, Harriett Berral Pace, b. July 1827, d. October 1913, " a faithful and zealous labourer for her Saviour".

Rectangular horizontal brass with an inscription in Gothic characters beneath a central Latin cross and enclosed in a simple border fillet, all inlaid in black enamel. *Signed* (in lower left-hand corner): CULN/GAWTHORP & SONS, LONDON/.

(5) John Benjamin Figgis, M.A., T.C.D., b. 6 July 1837, minister here 1861-97, d. 3 September 1916. *Erected* " by friends far & near ".

Upright rectangular tablet of white marble bearing the inscription beneath an oval bronze medallion portrait against a sunken background with a plain border; this bas-relief depicts his head, turned half toward dexter, face in old age, with short, straight hair, parted on left, side whiskers joining a moustache, a clean-shaven chin and incised eyes, wearing an open, fur-collared overcoat, a closed coat, upstanding cassock and a clerical collar; the tablet flanked by pilasters of polished, rose-pink alabaster supporting a moulded entablature with a broken, segmental pediment whose scrolled volutes are joined by a swag of bay with leaves forming pendants at either side of the pilasters; the whole on a rectangular horizontal base with a projecting ledge and a chamfered soffit on chamfered, bay-leaf carved, rectangular horizontal corbels. *Signed and dated* (on truncated neck of the bronze): Herbert Hampton Sc/1918/.

A framed plaster cast (the original model?) of this relief is preserved in the church. It bears a small brass tablet, incised: REV. J. B. FIGGIS, *M.A.*/BRIGHTON/.

(6) Esther Ann Stepney, Sunday School teacher here, d. 7 May 1914, aged 62.

Inscribed, rectangular horizontal tablet of white marble with a stilted, segmental top centre, and with its lower angles splayed outward to form lateral, rectangular projections; the lower centre has been removed in order to leave the extremities as laterally breaking, rectangular horizontal corbels to whose lateral projections the lower angles of the tablet are outwardly splayed; on a rectangular horizontal, dark grey background. *Signed* (in lower right-hand corner of the background, in incised and gilded lettering): PHILLIPS.

(7) The Rt Hon. Lady Frances Hastings, 3rd daughter of Theophilus, 7th Earl of Huntingdon and Frances, his 2nd wife (daughter of Francis Fowler Levison[1], of Harnage Grange, Shrops., adopted heir to his uncle, Sir Richard Levison of Titelham, Staffs., maternal granddaughter of Peter, Baron Kinderton, of Cheshire,) b. 9(?) January 1695, d. 25 January 1760, aged 56 years, 15 days.

A lozenge-shaped brass with foliated edges. Removed here from Spa Fields Chapel, London.

(8) Selina, Countess of Huntingdon [1707-1791]. Recording the dedication of the circular window in the front of this church to her memory on 20 March 1871, by the congregation of Spa Fields Chapel, London.

Rectangular horizontal brass with a black enamelled inscription within a double border-fillet which encloses a trailing floral ornament.

(9) Joseph Sortain, A.B., b. 20 July 1809, 28 years [(1832-60) minister] here, d. 16 July 1860, after a prolonged illness. *Erected* by his congregation.

Inscribed rectangular horizontal tablet of white marble flanked by pilasters on large, rectangular horizontal bases with moulded and splayed edges and chamfered, fluted soffits—each with a plain, rectangular horizontal apron; the pilasters have foliage-carved chamfered capitals supporting a plain, broken frieze, a chamfered cornice, heavily moulded with echinous and leaf-ornament, and a low, stilted, triangular pediment which has stilted, triangular *accroteria*; the whole set against a rectangular horizontal background of grey marble with a triangular top. *Signed* (in lower left-hand corner of the background, in incised and gilded lettering): BENNETT/.

In SANCTUARY:—On N. side (*on E. wall of the alcove*).

(10) Miss Durrant, 31 years teacher in, and later superintendent, of the Sunday School here, d. 22 December 1844, aged 51. *Erected* by Joseph Sortain, A.B., minister, and members of the congregation.

Small, rectangular horizontal tablet of marble bearing the

inscription; having a narrow horizontal channel between the top and its stilted, triangular pediment; against a rectangular horizontal grey background with a triangular top.

The last service was held in the chapel on Sunday, 25 September, 1966 (*Brighton & Hove Gazette and Southern Weekly News*, 30 September, 1966). The building and its site were afterwards sold to a " development " company and the proceeds applied to the use of other chapels in the Connection. On 20 November, 1969 demolition of the tower was begun following a complaint to the town authorities, based on the opinion of an independent surveyor, that it was a danger to public safety. This opinion, however, was not shared by the Borough Surveyor (*Brighton Herald*, no. 8524 21 November, 1969). The body of the chapel still remains, pending a decision as to the future use of the site.

I am much obliged to Miss E. Greenhill, of Brighton Reference Library, to Messrs. Elleray and Prescott, of Worthing and Littlehampton Public Libraries respectively, and F. T. Newman, for their kindness in providing details concerning the history of the building.

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[1] *Sic.* G.E. C[ockeyne]'s *Complete Peerage*, vol. 6 (1926), p. 660, gives Francis Leveson Fowler.

AGRICULTURE AND THE EFFECTS OF FLOODS AND WEATHER AT BARNHORNE, SUSSEX, DURING THE LATE MIDDLE AGES

By P. F. BRANDON

The muniments of Battle Abbey, so aptly described by Lower as " a perfect treasury of local topographical literature "[1], include a great number of charters, account rolls and other documents relating to the manor of Barnhorne, a " home farm " of the Abbey lying in the parishes of Bexhill and Hooe in Sussex. The few sources for the period before 1350 are more than amply compensated by the richness of the material covering the late fourteenth and fifteenth centuries[2]. Sequences of accounts long enough to establish the rotation of crops and other agricultural matters have not commonly survived and information concerning farming in the late middle ages, a period when most large estates were leased, is particularly deficient. For these reasons the exceptionally well documented agriculture at Barnhorne is of considerable interest. Covering the period from 1332 to 1495 are 101 account rolls, including 74 relating to the fifteenth century. Outstandingly informative of these is the almost complete series of rolls covering the years 1382-1388 and 1397-1420 which contain particulars on the dorse of the actual fields sown. These, and the other documents, have been examined for evidence of the interaction between the agricultural activities on the demesne and changes in the relationship between land and sea and in weather conditions.

Barnhorne, as the second element of its place-name signifies[3], is sited on a horn-like protusion of upland which projected into the

[1] M. A. Lower, *A compendious history of Sussex* (1870) vol. 1, p.34.

[2] All but eight of the ministers' accounts of Barnhorne manor are deposited in the Henry E. Huntington Library, San Marino, California. A check list of the Battle Abbey accounts in this institution was made by E. Swift, " Obedientiary and other accounts of Battle Abbey in the Huntington Library," in the *Bulletin of the Institute of Historical Research*, 12(1934) pp. 83-101. The remaining accounts, long separated from the main collection, are now in the East Sussex Record Office (E.S.R.O.) ADD.MSS. pp. 4928-4935. The main collection of charters and deeds (listed by Thorpe) is also in the Huntington Library; a smaller collection forms part of the Fuller Papers deposited in the University of London Library. I am greatly indebted to Mr. W. E. Fagg, Reader in Palaeography, University of Durham, for making available to me photostats of the accounts in the Huntington Library and to Mr. C. Holland, Archivist, East Sussex County Council, and his staff for generously providing facilities for their study.

[3] A. Mawer and E. M. Stenton, *The Place Names of Sussex* (1929-30), English Place Name Society, vol. 7, part 2, p. 490.

shallow waters and marshes of the wide bay which formerly existed at Pevensey. This peninsula of firm ground is severed from similar land in Hooe to the north by the wide alluviated valley which contains the large marshy hollow called Barnhorne Pond, inadequately drained by the East Stream. Since the floor of this valley is not above four metres above present Ordnance Datum it was probably a tidal creek as late as the Roman period. On the southern margin of the " horn " is an old shoreline, well marked by cliffing at the edge of Dennetts Marsh, from which the sea had probably retreated by the early Saxon period allowing the accretion of the salt-marsh which figures so much in the early manorial history.

The Battle Abbey estate at Barnhorne[1], which was held in severalty, stretched for more than a mile in each direction from the *curia* located at the present Barnhorne Manor Farm (G.R. 699078). An earlier site of the manor house and farm buildings lay further to the east at the site named Old Town field. The move to a new site, which had taken place before 1305 when *Oldeton* is first mentioned[2] probably followed the successful reclamation and cultivation of such important marshes as Stottismarsh and Lose marsh (Fig. 1) which would have been inconveniently reached from the original settlement. In 1433 only one cottage (and that un-let) existed at Old Town[3] compared with a cluster of tenants' dwellings at the new site.

The very varied soil and drainage conditions which obtained on this estate are clearly distinguished in an extent of 1305.[4] Meadow was valued at 18d. an acre. Accounted the best arable land was the reclaimed salt-marsh (*terra maritima*) rated at 12d. an acre. The best of the upland fields (*terra susana et campestres*) was valued at 6d. an acre and the remainder at only 3d. The brookland (*terra brocal*), land liable to be seasonally inundated but generally capable of spring sowings or fit for mowing, was valued at 4d. an acre but " potentially worth 10d. an acre if competently drained." Additionally, there was a little heathland and wood[5]. The Abbey's tenants had rights of common pasture in *Codyngdune* (Cooden

[1] The nucleus of the estate can be identified with the three hides granted by Offa to Bishop Oswald in Barnhorne in the eighth century. (Anglo-Saxon Charter BCS 208, printed by E. Barker, " Sussex Anglo-Saxon Charters," in *Sussex Archaeological Collections* (S.A.C.), vol. 86 (1947), pp. 92, 94). The estate, like all ecclesiastical estates, was augmented by gifts and corrodies (Fuller Papers, University of London) and a further 90 acres of the demesne was held of the Bishop of Chichester (P.R.O. E. 315/57).

[2] P.R.O. E.315/57.

[3] P.R.O. E.315/56. Mr. A. J. F. Dulley tells me, in a private communication, that the grass-covered remains of buildings have been observed at Old Town. Sandhurst Road was the main road to Battle from the old site (E.S.R.O. Dunn MS 507).

[4] P.R.O. E.315/57.

[5] The heath was probably at *Pigglinde Dune* (Pickhill). Huntington Library, Barnhorne Charter IIII (C.1210-28).

Down) and on an adjoining common called the Slyder[1]. A territorial reconstruction of the demesne lands has been made with the aid of references to the bounds of the medieval fields in the account rolls and in the 1433 rental. The approximate site of other fields has been ascertained by means of field-names preserved on manuscript estate plans[2]. The likely location of the fields is indicated on Fig. 1.

Arable husbandry at Barnhorne

The cultivation of this land will now be considered. The soils of the Sussex High Weald, in which region Barnhorne lies, have never been valued very highly and except on specially treated fields cultivated ground quickly becomes foul and exhausted and requires periods of rest. The upland soils at Barnhorne are derived from the clays and sands of the Hastings Beds and tend to form heavy land since the sandier formations are exceedingly fine-grained and thus behave from a farming point of view more like a clay. They are naturally deficient in plant nutrients and in the past, even more than now, their cultivation was extremely dependent on weather conditions at the times of ploughing and sowing[3]. From the sixteenth and seventeenth centuries, when the character of the regional farming can be discerned in outline by means of inventories of personal estate and contemporary descriptions of agricultural writers, convertible husbandry has been practised[4], the length of a ley in a particular field being determined by such physical factors as the nature of the soil and drainage and by other considerations such as the amount of field dressing applied. At certain times, notably under the stress of war, the amount and frequency of tillage has increased with detrimental results[5]. and Wealden farmers in East Sussex are still advised that " many years of continuous arable cropping bring about a serious deterioration in soil structure and a marked lessening of response to fertiliser. Frequent spells of long ley are the only answer."[6]

That this system of farming is not likely to have been an innovation of the sixteenth and seventeenth centuries is suggested by the

[1] Huntington Library, Barnhorne Charter C.135r.m. 48; P.R.O. E.315/56.

[2] E.S.R.O. Battle Abbey estates manuscripts; Barnhorne estate maps, 1724, 1788, 1811 (uncalendared).

[3] W. Topley, *The Geology of the Weald* (1875), p. 249; A. D. Hall and E. J. Russell, *A report on the agriculture and soils of Kent, Surrey and Sussex* (1911), pp. 131, 135-137; S. W. Wooldridge and F. Goldring, *The Weald* (1953), pp. 114, 116.

[4] Gervase Markham, *The enrichment of the Weald of Kent* (1636 edition). (Markham's work was also intended to relate to the Weald of Sussex). He noted that the soil of the Weald was generally " a fleet and shallow mould . . . (which) will faint and give over after a crop or two; for which reason also it cannot yield any sweet or deep grass " (p.6).

[5] W. Marshall, *Rural economy of the Southern Counties* (1792), vol. 2, p.102. The Rev. Arthur Young, *A general view of the agriculture of Sussex* (1808 edtion), p. 461.

[6] W. J. Dalton, in *Agriculture*, vol. 60 (1954), p. 493.

TABLE 1 CROPPING AT BARHORNE 138

	1382	83	84	85	86	87	88	1397	98	99	1400	01	02
Wellonde	15 W 17 B	39 B	24 B 3 P	14 W 15 B	16 W 11 B	W B	W			W	Be P O	W	Be C
Punden		30 W		14 W	6 O 6 B 5 Be		W	W		O	W	Be P O	W
Furneys	14 O	25 W	12 Be				Be					W	
Berkham			30 W 10 Be	40 O	37 O			W		Be		W Be	Be C
Pleyme	10 O	15 W	6 Be 8 O										
Oldtown	20 O		30 O										
Fletmarsh	54 W	80 O	60 O										2 P
Stottismarsh											Be O	W O	Be 140 C
Losemarsh	3 P		30 O	22 Be 6 P	25 O					W			
Caldecot	O		6 R	6 R	8 O		B						
Pavylond			14 W	} 38 O	} 33 W	O				O			
Pavymarsh			30 W			20 Be W O	B			Be P			
Mellefeld	} 25 O				} 7 R								
Rede					20 O								
Pondelond	12 O †						2 R		NO INFORMATION				
Hofeld											O		
Whitdenne				50 O		O							
New Marling													
Densex Marsh	5 W			5 W	5 Be						W	Be	W
Pondfeld Marsh								11 Be					
Robtes Marsh							Be						
Bylhamsgotiemarsh													
Squyersmarsh													
Hoo Brooks	} 30 0									W O		O	
Bremsley													
In Divers Fields		27 O					122 O	108 O					
In Marshes													
Saltlonde*	2 Be												
Marchaleslond*	30 Be	27 Be											Be

* In Pevensey parish
† Including Caldecot

W—Wheat; B—Barley; O—
L—Wet.

-1388 and 1397-1420

	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
			Be	W		W O			W	O	W Be O	W Be	Be		W	O	
		Be O	W			O					O	W	O	W	O	W	O
						W		W						O	W	O	
						W		W O	O	W Be O	O						
	Be	W				W		O	Be	O	W				O	O	
		O												O	O	O	
	Be O	W	O	W						O	W O	Be O	44 W	Be	W	10 Be O	
		Be	Be	Be 20													
			W			O			W	O		W		W	O	W	
			W	O		O				W		O	O	WBe	W	O	O
			} O	O	NO INFORMATION		NO INFORMATION										} O
	W	WO	L	L		L		L	L	L	L	L	L	L	L	L	L
	W					O		Be			W			W			
						12 Be		Be									
									Be								
	O	O	O	O													
																	50 W Be
								WO	WO		Be		Be	O	O		

s; R—Rye; Be—Beans; P—Peas and Vetch.
Figures refer to acreage sown.

growing evidence of medieval practice in the Sussex Weald which is essentially similar in its basic principles to later husbandry. At Alciston the intermittently cultivated fields on the Upper Greensand and Gault formations and their very flexible rotations have already been discussed by the present author[1]. At Chalvington, on the Lower Greensand and Weald Clay formations, convertible husbandry is documented from 1295 and prevailed throughout the fourteenth and fifteenth centuries[2]. Information as to farming practice in the High Weald in the late Middle Ages is scanty and obscure[3] and the Barnhorne evidence is the most illuminating.

The details of farming provided by the account rolls of Barnhorne manor are not so meticulously detailed as in the Westerham series[4]; nor are field names recorded over so long a period as in those accounts. Nevertheless, during the period between 1382-1388 and 1397-1420 when the sequence of accounts extant is almost complete, the sowing of twenty-six fields are carefully recorded on the grange exits and these particulars afford valuable information as to rotations. In the use of these sources by the present writer the omission of a reference to a field in a particular account, either as a sown field in the grange exit or as a letting on the obverse of the roll, is taken as an indication that the field was in a state of bare fallow or remaining in ley.

In the rotations of crops disclosed by the account rolls, the basic principle of modern ley farming—the movement of the plough round the farm—is clearly apparent (Table 1). A field was sown for several years " until it ran out " and the land was allowed to tumble down to grass so as to recover and be capable of again bearing corn whilst a similar breach was made into the pasture elsewhere. Some details of the cropping deserve special comment. The three-course system of husbandry so wide-spread in medieval England, and practised on the main arable fields at Westerham, was not a feature of the husbandry at Barnhorne during the period under review. There was, however, a fundamental distinction made between land

[1] P. F. Brandon, " Arable farming in a Sussex scarp-foot parish during the late middle ages," in *S.A.C.* 100 (1961), pp.67-69. See also P. F. Brandon, *The Commonlands and Wastes of Sussex*, unpublished Ph.D. thesis, University of London, 1963, pp. 253-4.

[2] E.S.R.O. CH.247. See also P. F. Brandon, thesis cited, pp. 250-254.

[3] A similar form of convertible husbandry to that under discussion, with frequent recuperative breaks, seems to have been practised at Ticehurst in the fifteenth century. A lease dated 10th October, 1483 (the eve of Old Michaelmas) includes restrictive husbandry covenants of a remarkably modern style designed to prevent a tenant " skinning " the land. These included provision against the sowing of oats on any field more than two years successively and, in the last two years of the seven-year lease, the ploughing of meadows was prohibited, wheat was not to be sown and a specified maximum acreage of oats was prescribed. One field was to be enriched with marl. E.S.R.O. Dunn MS 246.

[4] T. A. M. Bishop, " The rotation of crops at Westerham, 1297-1350 ", in *Economic History Review*, 2nd ser. vol. 9 (1938), pp. 38-44.

near the *curia* and the barns which was in receipt of the main manure dressings and under frequent tillage and the other fields, which in varying degrees, were irregularly cropped. The first group of fields, which Bishop styled *infields*, is represented at Barnhorne by the Wellonde and Punden fields cropped 22 and 19 years respectively out of the 28 years covered by the detailed accounts. The cropping arrangements of Wellonde were obviously extremely flexible, a large part, for example, must have been under three successive barley crops between 1382-1386. On Punden the custom was to rest the land for wheat throughout the period by means of the wheat-fallow-wheat or wheat-oats-wheat rotation so much despised in the Weald by eighteenth century writers[1], the sowing of oats to alternate with wheat in the decade 1410-20, instead of fallowing as in the 1380's, being probably a response to rainier summers and the sharply deterioriating condition of the marsh[2]. The remaining fields fell into two groups. One set of fields comprised the upland and marsh-land valued as high quality arable land in 1305. These fields were typically cropped for three to five years in succession and left to recuperate for a similar period. A further group of fields formed only occasional tillage ground, being under pasture for more than eight years in ten and usually ploughed for an oat crop only when it was necessary to restore the sward. On remoter fields, such as Whitdenne and Gotham, this happened only once or twice in a generation. Farming on such land thus took the form of " temporary cultivation snatched at intervals from the waste and pasture " and is strikingly similar to that of wet and hilly districts such as Pembrokeshire, Cornwall and Devon in the sixteenth and seventeenth centuries.

Although the husbandry at Barnhorne is distinguished by a marked empiricism it was far from being haphazard or devoid of a coherent practical basis. On the contrary, the standard farming techniques of the Barnhorne bailiffs in the late middle ages anticipate by more than two centuries the accepted farming principles of Wealden farmers in the seventeenth century. Such practices as the sowing of oats or beans on freshly broken ground; the sowing of oats, beans or peas as a preparation for wheat; the sowing of beans after wheat and a final crop of oats, in Fitzherbert's phrase, " a great breeder of grass," all extolled as sound husbandry by sixteenth century and later writers were normal practices at Barnhorne in the late middle ages. Furthermore, some of the crop rotations were identical to those adopted in the Weald in the seventeenth century. Thus land then brought under cultivation on the cold clays near Ashford in Kent was sown with oats (or beans) and the rotation followed the course of fallow, wheat, oats (or beans), fallow and wheat after which crop the land was exhausted and it was laid down

[1] The Rev. Arthur Young, op. cit., p. 70.
[2] This aspect is considered further below.

for ten or twelve years before being converted again to tillage[1]. Gervase Markham, the best known of the seventeenth century writers on the Weald, advocated rotations for different soils. That recommended for a " reasonable good sandy mould " was: oats, wheat, beans, wheat (or fallow if the preceding summer was dry) followed by a rest of five to six years; alternatively freshly broken ground could be marled for wheat and then followed by pulses and wheat to be rested as before. Another of Markham's suggested rotations, that suitable for poorer land, was: wheat, fallow, wheat followed by a rest of five or six years[2]. Similar rotations can be identified on Berkham, Caldecote, Fletmarsh, Furneys and Wellonde between 1382 and 1420 and it thus seems likely that Markham was consolidating the accumulated experience of generations of Wealden farmers rather than publicising any major innovations or experiments in techniques.

A trend in arable farming at Barnhorne was the elimination of several crops in the late fourteenth and fifteenth centuries which had been normally sowed at an earlier period[3]. The solitary account roll which gives full particulars of sowings before the Black Death enumerates no less than eight different crops. Wheat and oats occupied 60 per cent of the sown acreage, the acreage under wheat being slightly the larger; pulses and legumes (beans, peas and vetch) covered 21 per cent of the sown land; and, in addition, there were small crops of barley and rye and a considerable acreage of dredge corn. It was also normal to make a small sowing of winter oats (*avena hyemal*),[4] as distinct from the main spring oat sowing, in the mid-fourteenth century.

This polyculture was severely curtailed on the demesne during the late fourteenth and early fifteenth century. The dredge corn and rye, about two-thirds of the pulses and one-third of the oats were being consumed as livery in the second half of the fourteenth century by the Barnhorne servants working the demesne. Further sowings of winter and spring oats and pulses were necessary to fulfil obligations to corrodians. These renders of produce in kind were steadily reduced in favour of increased money payments and the reduction in the farm servants in consequence of the increasing pastoral bias also

[1] R. Lennard, ' English agriculture under Charles II: the evidence of the Royal Society's " enquiries " ,' in *Economic History Review*, vol. 4, (1932), p. 44.

[2] Gervase Markham, op. cit., pp. 9, 19.

[3] This reduction in the variety of crops sown in the fifteenth century has also been noted by F. M. Page on the estates of Crowland Abbey. F. M. Page, *The estates of Crowland Abbey* (1934), p. 118.

[4] In thirteenth century charters reference is made to the rendering of winter sown oats to corrodians from the feast of John the Baptist 24th June. (Fuller MSS. 19). This suggests that the harvest was considerably earlier than at present for which the more sustained warmth of the thirteenth century may be partly responsible. H. H. Lamb, " Britain's changing climate," in *Geographical Journal*, vol. 133 (1967), p. 453.

contributed to the reduction of crops used for livery. This gradual abandonment of livery renders can be charted from the account rolls: period dredge corn was not sown after 1346; winter oats not after 1354; vetch was not regularly sown after 1369 when the crop was lost to floods; the last extant record of rye is in 1388; peas were a very exceptional and minor crop after 1402. The beans livery, mainly responsible for a considerable acreage of very precarious marshland arable with fluctuating and often derisory yields, was abolished altogether in 1444. The fate of the legume sowings at Barnhorne is especially significant. These declined in the fifteenth century to become merely minor sowings and disappeared altogether in the last thirty years of the Abbey's direct management of the estate thus suggesting that the legumes were not valued primarily for their nitrefying properties. Indeed, although small sowings of legumes were made in the main arable fields, and formed part of a rotation, the bulk of such crops were taken off the marshes until the deteriorating nature of the arable there made this an impossibility. The very substantial savings in labour resulting from this policy of curtailing liveries can be instanced from the situation in 1368/69, a typical year, when it can be calculated that about one quarter of the arable acreage at Barnhorne was used for liveries to the eleven servants in receipt of them. Even in 1400-01, by which time the arable was being reduced, nine farm staff were being supplied with weekly liveries of oats and beans which required a sowing of about 50 acres of land (21 per cent of the total sown acreage).

Several methods of artificially increasing fertility were practised at Barnhorne but none of them were in frequent and regular use in the late fourteenth and the fifteenth centuries. This lack of improvements, which is fully consistent with similar neglect in the Weald at this period,[1] contrasts strongly with the generous and hence expensive applications of marl and lime on Sussex estates in the thirteenth and early fourteenth centuries, when the pressure on land was so much greater[2]. Marling, which is only occasionally mentioned in the account rolls after the Black Death was of very local provenance and this suggests that the Wadhurst Clay, a local subsoil which contains a high proportion of calcium carbonate, was applied to some of the lighter lands. Reference is also occasionally made to the use of chalk or lime (*calciata*) but it is clear that most of the upland was not in receipt of any dressing for several decades at a time, a policy which was not unprecedented in Kent in the seventeen century[3]. The form of soil improvement of most interest, because of its regional distinctiveness, was that of laying oozy ditch sludge on pasture to be freshly broken for tillage. This practice,

[1] J. Norden, *The surveyor's dialogue* (1607), p. 226; G. Markham, op cit. (1625 edition), p. 4.
[2] E.S.R.O. CH. 248 and 250 (Chalvington manor, 1337/8 and 1346/7).
[3] R. Lennard, op. cit., p. 35.

known as sleeching in East Sussex, was a common seventeenth century custom in the Pevensey Levels and similar marshlands[1] by which time the custom was of ancient origin since " slychyng " is recorded at Barnhorne from 1401.

The ravages of the sea

The great value of Barnhorne to the Abbey lay not only in its proximity to Battle but also in the possibilities it afforded for the reclamation of the sea marshes in the fast silting bay of Pevensey. Abbot Ralph (1107-1124) was quick off the mark as a reclaimer and improved a parcel of marsh " at much labour and expense with houses, cultivation and a mill "[2] but the subsequent stages of reclamation are almost unrecorded but evidently still incomplete in the mid-thirteenth century as is indicated by the grant to the Abbey of a wall and ditch " together with whatever can be acquired from the sea adjacent "[3]. By this time, however, the sea-marshes of the estate had largely been reclaimed[4] but salt-works still survived to the early thirteenth century at the head of the Waterlot Stream (*Fletum de Hooe*). The grant to the Abbey of " land called Denne and two salt-works in the marsh " (ante 1212) can probably be identified with *Denysmarsh* (Dennetts marsh) at *Tonlegh* (Stone) Bridge near low mounds in a field called Salts in the Hooe Tithe Apportionment which are thus likely to be the remains of the salt-works[5].

The ten charters extant which relate to the drainage of these newly reclaimed lands between c.1210 and 1310 testify to the acute difficulty the Abbey encountered in maintaining adequate water control in the face of the rising sea level and increased storminess in the thirteenth century. Two tidal channels existed into which water from inland parts could be discharged. One was Pevensey Haven into which debouched most of the natural drainage of the Pevensey Levels[6]. The other was the *Meneflete*, a shallow, tortuous creek, at the head of which was the minor port of Northey[7], a limb of Hastings. The present East Stream is probably the precursor of this medieval channel.

The earliest charter relating to drainage extant (c.1210-1224) provided for the drainage of the Abbey's lands by a waterlode sixteen

[1] E. Kerridge, *The agricultural revolution* (1967), p. 134. E.S.R.O. Dunn MSS. 960. (Etchingham).

[2] M. A. Lower (ed.), *Chronicon de Bello* (1851), p. 116-122.

[3] Huntington Library, Barnhorne charter 1147.

[4] This can be inferred from the early thirteenth century drainage agreements discussed below.

[5] Huntington Library, Barnhorne charter 1503. The grantor, Stephen de Esburneham, died c.1212. (*Victoria County History, Sussex*, vol. 9, p. 127). A. J. F. Dulley has drawn attention to the mounds. See ' The level and port of Pevensey in the Middle Ages,' in *S.A.C.* vol. 104 (1966), pp. 28-9 and map.

[6] L. F. Salzman, ' The inning of the Pevensey Levels,' in *S.A.C.* vol. 53 (1910), p. 37.

[7] Huntington Library, Barnhorne charter 873.

feet wide through the marshes of the manor of Hooe, then administered by the Priory of Ogbourne, a chief cell of the Abbey of Bec, " as far as the sea"[1]. Since the lands of the manor of Hooe lay to the north and west of Barnhorne and Northey the waterlode concerned must be the stream now called the Waterlot which was then probably taking the main drainage from Barnhorne Pond and flowing out at Pevensey. The remaining drainage charters deal with the evacuation of water by means of *Meneflete* and by drains in Cooden to the east of it. The earliest agreements (c. 1235-c. 1248) provided for the drainage of the sea marshes by means to two exits: one by " the old drain of *Codynge*,"[2] probably to be identified with the Crooked Ditch which was to be widened and scoured and to debouch into the sea at a new outfall; the other was by means of a new sluice and drain near Chapel Bridge at Northey into *Meneflete*.[3]

These drainage arrangements seem to have worked satisfactorily until the great storms in the latter part of the thirteenth century. Thereafter new developments are discernible, the most notable being that the Pevensey outfall lost its former importance as an outlet for the Abbey's lands. This can be inferred from agreements of 1305 and 1310 which permitted the Abbey to " drain all their sea-marshes and brooklands " to the *Meneflete* which was to be newly scoured.[4] This preference for a more direct and a more easterly route to the sea is fully in keeping with the silting which is known to have arisen at the Pevensey outfall[5] a circumstance which can probably be explained by the inning of the tidal lands and the general eastward movement of shingle along the Channel coast. These physical problems seem to have been exacerbated by the building of a new dam and sluice at Pevensey which the Abbot of Battle maintained would cause frequent inundations of fresh water on neighbouring lands[6]. Although a Commission was appointed to make an investigation of these new works, with powers to remove them, this does not appear to have been done[7], and the Abbot's negotiations which led to the use of the *Meneflete* as the main drain for the Barnhorne estate were probably his response to what he considered to be ill conceived attempts to improve the Pevensey outfall. That the *Meneflete* entrance was similarly choked by the early fourteenth century is suggested by the provision in 1305 for a new sluice and

[1] Huntington Library, Barnhorne charter 1130.
[2] Huntington Library, Barnhorne charter 720.
[3] Huntington Library, Barnhorne charter 873.
[4] Huntington Library, Barnhorne charters 695 (dated 1305) and 710 (dated 1310).
[5] Pevensey Haven was suffering from silting as early as 1207. A. J. F. Dulley, op. cit., p. 40.
[6] Calendar of Patent Rolls, Edward I, 1281-1292, p. 404.
[7] A. J. F. Dulley, op. cit., p. 32.

drain to take water through the marshes of *Estwrenham* to a more direct outfall[1].

It is now well known that the Saxo-Norman marine regression which had encouraged the colonisation and cultivation of marshes in the North Sea Basin and the English Channel was followed by a fall in the relative level of land to sea which led to a submergence, particularly marked in the fourteenth and early fifteenth centuries when it was associated with increased storm-tide frequency[2]. This necessitated the embanking of rivers, the heightening of sea walls and the cutting of new dykes, tasks which proved beyond the capacity of a medieval society devastated by recurrent pestilences and famines and in consequence many settlements and much marshland was abandoned to the sea and valuable turbaries such as those of the Norfolk Broads were flooded. Along the coast of Sussex early "forerunner" floods such as the "great flood" at Appledram in 1274-5[3] were manifestations of a rapid submergence leading to the great storm of 1287 which destroyed Old Winchelsea, was responsible for severe flooding in the Pevensey Levels and along the coast of Kent[4], and required special measures to protect winter corn at Bosham[5]. Thereafter the coast was never free of flooding for long but at the turn of the fourteenth century there seems to have been an interlude free of severe inundations which permitted the restoration of marshland. This interlude was rudely ended by the severe flooding still recent along the whole length of Sussex and Kent in 1331-2[6] and the coasts of eastern England and the lower reaches of rivers emptying into the Wash and Humber were overwhelmed at the same time. This great flood ushered in recurrent inundations during the 1330's and 1340's and for Sussex the damage resulting at this period is clearly recorded in the Nonae Rolls of 1341[7].

The Battle Abbey marshes and brooklands at Barnhorne and Hooe seem to have survived these early fourteenth century calamities remarkably well. The earliest ministers' accounts extant give evidence of minor damage resulting from the "great gale" of 1333-1334 and the floods of 1345-6 but the general well-being of the

[1] Huntington Library, Barnhorne charters 710, 695. *Estwrenham* lay west of the present course of the East Stream.

[2] G. Green, 'East Anglian coastline levels since Roman times,' in *Antiquity*, vol. 35, pp. 21-8. J. M. Lambert, *et. al. The making of the Broads*, Royal Geographical Society research series, vol. 3 (1960), pp. 99-102, 139-144.

[3] P.R.O. SC 6/1019/22.

[4] L. F. Salzman, op. cit., p. 45. P.R.O. Calendar of Patent Rolls, 1281-1292, pp. 320, 390.

[5] The item "... pro sulcris aquarum mundand ad salvandum semen yemale ...." is of regular occurrence from 1287. (P.R.O. SC. 6/1020/16-23).

[6] Cal. Pat. R. Edward III (1330-1334), pp. 71, 198, 202, 253, 288-9.

[7] A. R. H. Baker, 'Some evidence of a reduction in the acreage of cultivated lands in Sussex during the early fourteenth century,' in *S.A.C.* vol. 104 (1966), p. 4. It is uncertain to what extent the flooding resulted in a *permanent* loss of agricultural land.

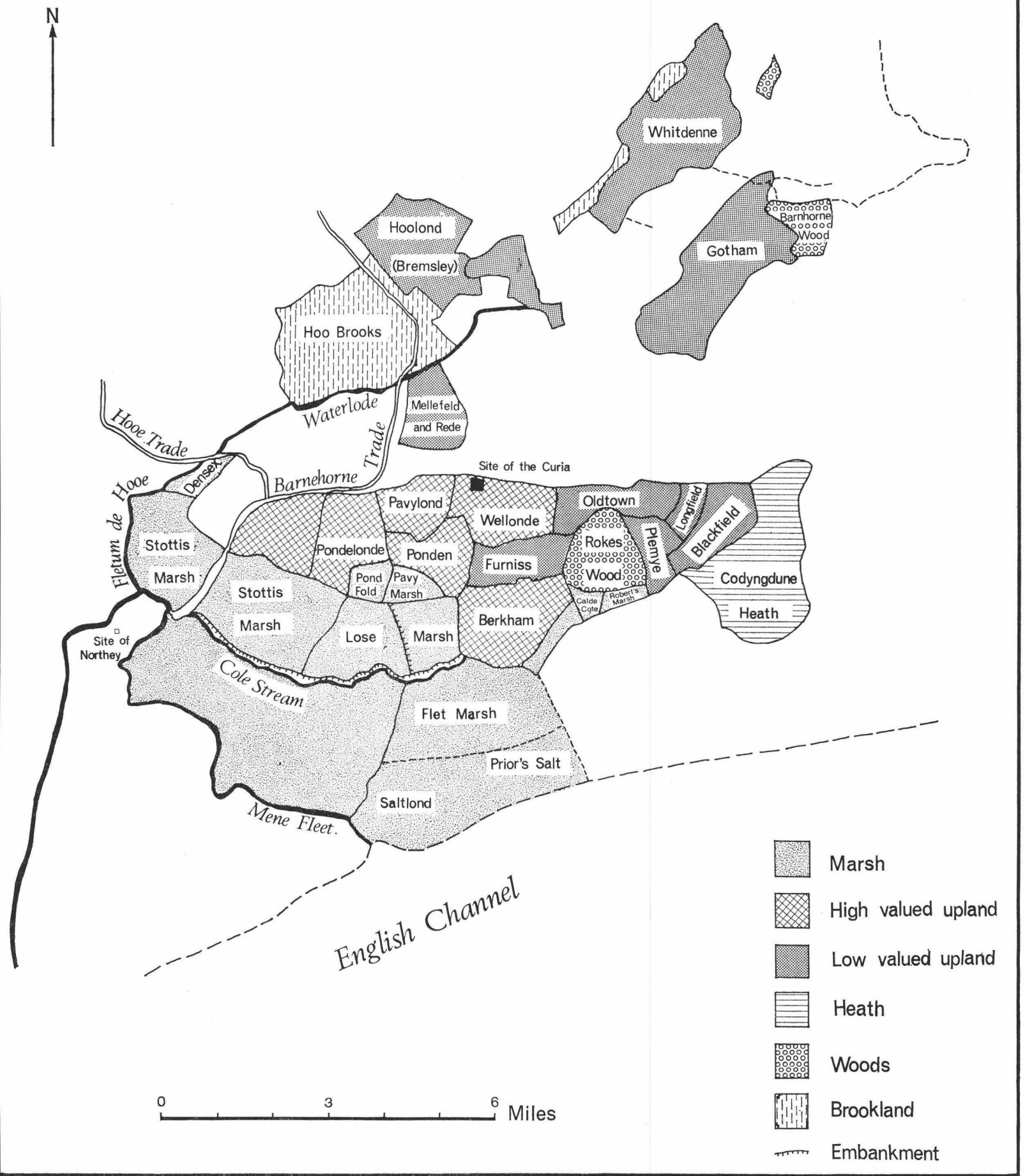

Fig. 1. The location of the fields of Barnhorne

marshes in the early fourteenth century is confirmed by such circumstantial evidence as the high value placed on marshland arable in the 1305 extent, the remarkably high arable acreage recorded in the account rolls for both Barnhorne and *Marechalls* (in the extreme north east of Pevensey parish up against the Mark Dyke) in 1332-3 and the immunity from flooded land in Bexhill in 1341. It thus seems likely that the Abbey's bailiffs still strongly held the initiative in matters of sea defence.

From 1345 the account rolls of the manor of Barnhorne exist in sufficient quantity to be important evidence of floods. The limitations of account rolls as evidence of weather have been discussed by Titow[1] and references to floods in these documents are subject to similar limitations. Floods went unmentioned unless they provided an adequate explanation for certain items of expenditure or income or for low yields of seed. Thus summer floods destroying crops or preventing agistment and letting are mentioned whereas it is likely that many minor winter floods escaped recording because little land was then being used for crops or pasture, Another difficulty concerns the expenditure on drainage and defences. This is a crude guide to the severity of a recent flood but the expenditure recorded on the account rolls is unlikely to represent the full expense to the Abbey since work carried out by the *famuli* as part of their duties was expressly excluded[2]. Some of the references to floods in the accounts are also often insufficiently precise to permit the identification of the actual season or sometimes even the year of inundation.

The evidence of the account rolls of Barnhorne will now be examined, bearing in mind the limitations discussed. From the mid-fourteenth century records of sea floods repeatedly occur in the rolls and damage reached severe proportions.[3] Nineteen account rolls are extant for the period 1352-1388. Three of these account rolls record summer floods which destroyed spring sown crops: in 1356-57 when new defences were built for " the protection of the corn, yet the sea overflowed it"; in 1371 when a crop of vetch

[1] J. Titow, ' Evidence of weather in the account rolls of the Bishopric of Winchester, 1209-1350 ' in *Economic History Review*, 2nd series, vol. 12 (1959-60), pp. 360-1.

[2] Barnhorne account roll for 1385/6.

[3] Several other parts of the Sussex coast were similarly damaged. At Apuldram, for example, ' a great tempest ' on Ash Wednesday 1348 caused flooding and the same storm presumably caused the floods reported in the Ouse valley at Itford in the same year. (P.R.O. SC. 6/1016/9 and E.S.R.O. G. 44/3). Further floods at Itford are mentioned in 1351 (E.S.R.O. G. 44/5). At Dengemarsh in Kent severe flooding is reported in 1363 and 1368. (P.R.O. SC. 6/889/18, 20). Marine inundations in the mid-fourteenth century were also reported at Birling, Bourne (Eastbourne), Bulsham (in Yapton), Herstmonceux, Pulborough, Rustington, Sidlesham, Udimore and West Dean. (P.R.O. C 135/97/2; 56/37; 151/4; 32/28; 210/11; 137/6; E.S.R.O. M. 673; B.M. Add MSS. 6165, f. 216).

was "inundated during growth by an immense sea"; and in 1386 when the bean crop was submerged. This persistent sea attack galvanised the Barnhorne bailiffs into great activity. New drainage works were needed in 1353 and 1354 " on account of the floods "; a new wall was provided in 1374 and repairs to a wall in 1375-6 while the height of one of the main sea embankments was raised in 1385-6. Meanwhile the security of the brookland was given attention. Its drainage appears to have temporarily lapsed (a recurrent feature of the land to this day) but major works to the main drain in the 1380's controlled the water level sufficiently to again permit regular cropping. This activity temporarily repelled the sea at Barnhorne and helped to stave off the severe disasters which were to reach their climax in the 1420's. Yet the drainage of the Battle Abbey lands was but a part of the Hooe Level and some of the credit for the improved water control belongs to the commissioners for the Level who carried out major works at the Pevensey Haven outlet in 1396 and 1402[1].

These improvements between 1380 and 1402 permitted substantial acreages of the sea marshes and brookland to be regularly under the plough. The bulk of the spring sown crops, notably beans and oats, were produced on this land and about one-third of the wheat. During the seven year period from 1382 (a stormy era) about forty per cent. of the arable was in the sea marshes and the proportion rose to as high as sixty per cent. between 1396 and 1404 and was still averaging 55 per cent. during the period 1406-16, by which time the drainage was sharply deteriorating. In all over 2,200 acres of crops were taken off the marshes and brooks during the 21 year period covered by the ministers' accounts recording field names.

The abandonment of the marshes.

The strengthened sea defences were to bring merely a short respite and in the face of worsening attacks of the sea in the first quarter of the fifteenth century a gradual abandonment of the marshes was necessitated. Evidence of the increasing severity and frequency of flooding is to be obtained from almost every account roll. The great floods which covered large expanses of the Hooe Level in 1401 and 1402[2] evidently still left the Battle Abbey marshes largely unscathed, as they had been in the 1340's, because large sowings of spring crops continued to be made on the marsh fields. The onset of serious trouble began in 1407, when a wheat field was inundated and in the winter of 1408-9 major floods put the entire marsh out of action for the season and during the following summer gales and inclement

[1] L. F. Salzman, op. cit., pp. 46-50.

[2] L. F. Salzman, op cit., P. 48 and Sussex Record Society, pp. 37, 182. Severe floods obliged the Priory of Hastings to vacate its site at Hastings in 1407 for one at Warbleton in the High Weald. (Cal. Pat. R. 8 Hen. IV, membrane 17). I am indebted to Mr. J. Manwaring-Baines for this reference.

weather added to the difficulties.[1] The Barnhorne bailiffs again responded to this calamity with vigour; extra workmen were hired to scour the sluices and water channels, to repair the walls and to replace gates and a bridge washed away by the floods with new ones strengthened with iron. This permitted sowings, but on a substantially reduced scale, in the following year, 1409-10. In the following years drainage expenses rose steeply and it is clear that cropping the marshland had become extremely hazardous. The final *coup de grace* came with the devastating floods of the 1420's which effectively terminated the old farming economy altogether. The outstanding disaster was the flood of 1421-2[2] which proved to be the greatest ever experienced. The bailiffs had to obtain special funds (*forinsec*) from the Abbey for repairs to walls, buildings and roads, for ditching and draining, and for heavy purchases of livestock which began the transition of farming at Barnhorne from an essentially arable economy to something approaching a cattle ranch. This disaster was followed by successive floods which must have made the 1420's the most trying decade in the manor's history. Summer floods in 1422, destroyed oats: summer flooding in 1423, for which there is not extant account, is also likely because crops were lost that year at Appledram; and in 1429 the pea crop was lost to floods. Meanwhile the marked deterioration in drainage is also indicated by the letting of parcels of meadow in the former arable marshes, by the frequent mention of drowned land (*terra aquatica*), the marked rise in agistment receipts and the presence of rushes (*sperta*) in marshland fields formerly under the plough.

Yet another sign of badly drained land was the re-orientation of farming towards cattle rearing. The run-down of cereal farming and the trend towards pastoral activities which is observable on many manors during the later middle ages was very pronounced at Barnhorne. Certain features of the trend are identical to those at Alciston, another manor of Battle Abbey which was also under direct management at the time, notably the timing of the onset of

[1] This corroborates the severe flooding in September, 1408 reported by monastic compilers; the summer of 1409 is also described as having been wet generally, no authority being cited. C. E. Britton, *A meteorological chronology to A.D. 1450* (1937), p. 155.

[2] This great flood is well known for the damage it caused in the Netherlands. The only notice of its unusual severity in England appears to be in *Nature*, vol. 126 (1930), p. 792. It was presumably responsible for the destruction of 'the greater part' of Rottingdean and New Shoreham reported in 1421/2 (*Rotuli Parliamentorum* . . . vol. 4, p. 160) and for the appointment of Commissions of Sewers to restore the banks and drainage of most of the Sussex coast in the spring of 1422 (P.R.O. C. 66/404, m. 13d.). At Eastbourne arable was reported inundated in 1430 (E.S.R.O. CP 151) and in the same year tenements at Bexhill in the lord's hands and 'devasted by the sea' were formerly rented for 32/4½d. (Lambeth Palace Cr. 248). The decasus for Pagham manor in 1426 remits rents for tenements destroyed by the sea amounting to 50/0d. per annum at Wittering, 30/0d. at Charlton and 20/0d. at Bognor (Lambeth Palace CR. 881).

the arable decline in the decade 1400-09, the gradual but continuous running down of arable and the slight but short-lived recovery in 1460-9[1]. Thus it would seem that economic conditions and manorial policy are reflected in both trends. Yet the abrupt drop in arable at Barnhorne in the first decade of the fifteenth century is largely attributable to the low sowings of 1408-9 and 1409-10 and is almost certainly the consequence of the sea flooding already discussed and the much more spectacular decline in cultivation at Barnhorne as compared with that at Alciston draws attention to the retreat of the plough from the marshland generally. Also implicit in the very low sowings at the end of the fifteenth century is the virtual abandonment of many of the upland fields as well. We can doubtless envisage a retreat of arable farming to the two main arable fields nearest the barns which had been quasi-permanently arable in the 1380's, whilst the remainder of the estate of some 800 acres lapsed into ever deteriorating pasture, heath and scrub disturbed by only an occasional breach.

The impossibility of working land which always lay comparatively wet and the growing coarseness of the pastures resulting from the deteriorating drainage and infrequency of ploughing out must be important factors which explain the emphasis on cattle to provide meat for the Abbey, a trend which represented a complete break with tradition[2]. During the 1360's and 70's, when sowings were relatively high, the stock of cattle, other than working oxen, was small and the pastoral activities, which were subordinate to arable farming, centred largely on the sheep flock which although of modest proportions compared with that maintained at Alciston, comprised up to 500-600 adult sheep. The running down of this flock and its minor importance after 1420 coincided with the strengthening of the cattle stocks and a notable stocking-up between 1421-5[3]. This inaugurated the era of cattle farming on the Hooe Level which has continued to this day.

The clearest sign of the dwindling arable in the marshes during the first half of the fifteenth century is, however, to be found in the entries in the accounts relating to ploughing. Two types of plough were in regular use at Barnhorne, in the later middle ages; one for the upland (*caruca terra susanna*) and one for the marsh (*caruca maritima*). The upland plough had a pair of wheels and its own special sharebeam and ground-wrest. The general use of the term "*reste*" in the accounts probably indicates that this plough was essentially similar to the Kentish turn-wrest plough described by Walter Blith in 1653[4]. The marsh-plough, which was a swing, or

[1] P. F. Brandon, *S.A.C.* vol. 100 (1961), pp. 67-72.
[2] Sheep murrain, of little consequence during 1382-1388 was severe between 1400-1430.
[3] Sheep continued to be agisted on the marshes in summer.
[4] W. Blith, *The English improver improved* (1653).

foot plough, was presumably of much lighter construction than the "upland" plough, thus making it much more manageable on heavier and wet land. In the mid-fourteenth century as many as five upland and five marsh ploughs were being regularly maintained on the estate. Gradually the entries relating to the purchase and repair of marsh ploughs became less frequent and finally, in 1458/9 the last recorded purchase or a marsh plough is made, nearly forty years before the estate was leased out in its entirety.

The Barnhorne accounts not only relate to lands in the Hooe Level but also contain a limited information concerning another Battle Abbey marshland, that of *Marchaleslond* or *Mareschall*, located in the extreme north east of Pevensey parish up against the Mark Dyke. The relationship of this property to Barnhorne itself is obscure. It probably functioned at times as an "outfarm" of an upland estate but just before the Black Death it was accounting direct to Battle as a separate estate with some 60-70 sown acres whilst exchanging seed with Barnhorne and producing corn for the Barnhorne servants' liveries. After 1345 *Marchaleslond* slips silently out of notice and it can probably be safely inferred that it was in a badly drained state. An occasional sowing of spring crops there is accounted for in the Barnhorne account rolls (notably in the 1380's) but thereafter long intervals elapse between recorded sowings and the land was probably overwhelmed by the great floods of 1402.

The steadily deteriorating drainage of the Hooe Level went largely unchecked until 1455. The ministers' accounts of Barnhorne, so full of references to drainage activity in earlier decades, have very little to report after the 1420's. All the evidence points to the marshland and brooks being little more than summer pasture at that time. In 1455 a major attempt to improve the drainage of the Hooe Level was made with the diversion of the main drainage from Pevensey Haven, which was choked, to a new sluice at Northey[1]. The immediate effect on husbandry at Barnhorne appears to have been slight although some improvement in drainage had evidently occurred because occasional small sowings were made at Northey and at *Marchaleslond*. By the late 1460's when flooding is again reported in the Pevensey Levels, this arable farming had ceased, and renewed flooding in the 1480's makes it clear that no effective remedy had been discovered.

Floods, Weather and Harvests

It is now proposed to examine the effects of floods and weather at Barnhorne on the quality of the harvests. To this end yields of grain have been calculated from the particulars recorded on the grange exits for 80 years spanning the period 1369-1494[2]. The figures relate to gross yield *per seed*. Until 1399 wheat was measured

[1] L. F. Salzman, op. cit., pp. 50-62.

[2] The reference to years are those in which the harvest was taken. The accounts relate to a year commencing at Michaelmas.

at Barnhorne by heaped measure (*quolibet bussello cumulato*), an *incrementum* being added at the rate of 2 bus. 2 pecks a quarter, reduced to two bushels from 1369. After 1399 wheat was measured *rasa mensura* (i.e. lightly filled to the brim) with every eighth bushel heaped (4 heaps = 1 rased bushel), thus increasing the volume by $\frac{1}{32}$. This was the system practised at Cuxham from 1353[1]. Oats were measured throughout by heaped measure with the increment of one quarter the volume. The *superonus*, an additional charge added by the auditors to make the yield up to a certain ratio, first appears in 1406-7 and was normal thereafter, the amount usually being small. It is assumed that the tithe was taken straight from the fields after harvest and that the yield ratios should therefore be increased by one ninth. This does not apply to grain harvested from the marshes from 1408 for which the tithe was commuted to a money payment, received by the Almoner.

The average yield ratio for wheat harvested at Barnhorne during the period 1369-1494 is 3.33; for barley 3.36 and for oats 3.51. For the purpose of comparison the average wheat yield on the manors of the bishopric of Winchester between 1209-1350 was 3.83[2] and at Appledram (for which the yields have been calculated by the present author from 51 accounts extending over a similar period to the Barnhorne records), the yield of wheat was 3.95; that of barley 3.24; and of oats 3.45. Soil differences are probably sufficient to explain the lower quality of the Barnhorne harvests compared with those of Appledram; the deep loams of the latter being much superior for wheat growing than the less inherently fertile land at Barnhorne which, by the possession of so much marsh and brookland (*brocale* or *mor*) with a high water table was particularly well suited to oats. A direct comparison of the barley yields at the two Battle Abbey manors is not possible since at Barnhorne it was never more than a minor crop and could well have been given special attention.

The harvests, following the classification adopted by Titow and van Bath[3], are distinguished by quality as follows: " good " harvests are those which deviated from the average gross yield over the period of thirty years in which they lie commencing in 1369 by between +15 and +29% " very good " by between +30 and +49%; and " excellent " by more than +50%. " Poor " harvests deviate from the average by between —15 and —29%; " very poor " by between —30 and —49%; and " dearths " by more than —50%. On this basis there were 10 " poor " wheat harvests during the period reviewed, 8 " very poor " and 4 " dearths " out of 74 recorded harvests (29.9%) for which particulars of yield can be

[1] P. D. A. Harvey, *A medieval Oxfordshire village* (1965), p. 54.
[2] J. Titow, op. cit., p. 361.
[3] J. Titow, op cit., p. 363; B. H. Slicher van Bath, *Acta Historiae Neerlandica*, vol. 2 (1967), p. 71.

ascertained. For barley there were seven " poor " harvests, 11 " very poor " and 2 " dearths " out of 59 recorded harvests (33.9% of the whole). For oats the harvests divide as follows: 15 " poor " 7 " very poor " and 2 " dearths " out of 79 recorded harvests (30.4%). Thus about one in three cereal harvests were poor or worse. Conversely, only 20 wheat harvests (27%) were " good " or better; 40.7% of the barley harvests were in this category and 35.4% of the oat harvests. The proportion of bad harvests appears to have been substantially worse than in the mid-sixteenth century when it was popular belief that a bad harvest came once every seven years[1], and it rather exceeds that calculated by B. H. Slicher van Bath from the very limited information published as to medieval yields in Europe[2].

This general classification of the Barnhorne harvests, conceals, however, a marked difference between the harvest quality in the earlier part of the period under review compared with the latter. Confining attention to the periods 1382-1388 and 1400-1440 there are wheat yields available for 32 of the 48 seasons. Of these harvests three were " poor," seven were " very poor " and three " dearths "occurred during these periods, the tally of harvests " good " or better being only six. The trend in oat harvests was even more adverse, there being 18 " poor " or worse harvests and only 4 " good " or better harvests out of 36 recorded yields. For barley there were 8 " poor " or worse harvests and 6 " good " or better harvests out of 18 recorded yields. The high proportion of bad seasons implies that farming at Barnhorne during these periods was exceptionally difficult and unrewarding, of particular interest being years when bad harvests occurred in cycles of successive years. Notable runs of bad seasons were: 1386-1388; 1400-1404; and 1412-1416. W. G. Hoskins has noted a similar tendency for bad seasons to occur in runs of successive years during the period 1480-1619 and he is probably correct in suggesting that since a large proportion of the gross yield has to be kept for the next season's seed " a bad harvest almost automatically ensured another bad harvest from a sheer deficiency of seed "[3]. Another factor in perpetuating harvests below normal would be the poor quality of corn used for seed in the season following a bad harvest. Nevertheless, the possibility that adverse weather and floods may have been factors underlying the series of recurrent cycles of bad harvests needs examination and it is first desirable to consider the weather conditions which most commonly produce harvests considerably below average.

[1] W. G. Hoskins, ' Harvest fluctuations and English Economic History, 1480-1619,' in *Agricultural History Review*, vol. 12 (1964), p. 30.

[2] B. H. Slicher van Bath, op. cit., p. 71; *idem*, *Yield-ratios*, 810-1820. A. A. G. Bijdragen 10, Wageningen, 1963).

[3] W. G. Hoskins, op. cit., pp. 32-3.

TABLE 2 POOR HARVESTS AT BARNHORNE: 1369-1493

Year	*Crop*	*Deviation Index*	*Wheat Price in year following harvest (are-100)*	*Weather references* (a) *Barnhorne*	(b) *other Sussex Manors*	(c) *other Manors*
1369	Wheat	—54.7	154 M		Inclement summer (Bosham). Winter barley sowings reduced by rain in autumn 1368 (Dengemarsh). Summer floods destroy crops at Beddingham.	Worst harvest since 1316. Severe floods and pestilence. (*Schove*, 234).
1378	Oats	—27.8		Low wheat sowing suggests a wet autumn.	Severe storms cause flooding (Dengemarsh).	Floods at Christmas (147).
1382	Barley	—39.7			Floods at sowing time reduce wheat crop (Funtington) and floods destroy crops at Beddingham.	Inundation of Fens. (*Creighton*, 218)
1384	Wheat Barley Oats	—47.2 —53.9 —29.5	92		A dry winter and summer (Bosham).	Dry summer (149).
1386	Barley Oats	—51.2 —41.6		Crops submerged; sea defences raised.	Excessive rain at sowing destroys winter wheat (Wiston). Tempestuous weather at Beddingham destroys vetch. Winter floods at Bosham.	
1378	Barley Oats	—52.7 —37.6	M			
1388	Barley Oats	—51.2 —26.3		Heavy drainage expenses; new sluices.	Severe autumn floods (West Dean) and winter and summer flooding at Beddingham.	Wet harvests. (*Thorold Rogers*, 608)
1389-1399	No information					
1400	Wheat Oats	—55.6 —47.3	M 123	Low wheat sowing suggests a wet autumn.		Inundations in Humber, 153; wet hay harvest. (*Rogers*, 608)
1401	No Barley sown. Wheat	—46.5	123 M	Floods in winter (hallmoot roll).	Mildew reduces wheat (Wiston). Great floods in Hooe Level (S.R.S. Vol. 37, p. 179).	
1402	Wheat Oats	—39.4 —33.9	92 M		Great floods in Hooe Level continue (S.R.S. Vol. 37, p.182).	

1403	Wheat	—39.9	82	Winter floods (hallmoot roll).		
1409	Oats	Very poor yield	M		Gales and floods destroyed oats at Appledram.	
1412	Wheat Oats	—49.2 —41.9	92			
1413	Wheat Oats	—40.5 —31.6	92		Wet spring at Chalvington (seed failed).	Wet winter and spring (156) wet spring and summer at Broomham (Wiltshire).
1414	Wheat Oats	—33.4 —26.2	92			
1415	Oats	—26.3			Torrents of rain in spring (Alciston).	
1416	Wheat	—27.6	164 M			Heavy rain in spring (156).
1421	Wheat Oats	—77.1 —43.3	None sold M			
1422	Wheat Oats	—54.1 —53.2	123 M	Devastating floods destroy oats.		
1425	Barley Oats	—29.2 —58.8			Floods destroy crops at Appledram and Alciston.	
1429	Barley	—38.3		Summer floods destroy crops.	Very wet autumn (Alciston)	Wet Autumn (158)
1442	Wheat Barley	—40.5 —40.5	82			
1443	Barley	—39.6		Summer floods.		
1454	Barley	—34.1				
1465	Barley Oats	—48.5 —74.9			Floods in Pevensey Levels (*Salzman*, S.A.C. 53, p. 53).	

The year in each case is the harvest year commencing at the previous Michaelmas. Only the worst harvests are mentioned in this table. The Deviation Index expresses the deviation as a percentage of the average yield of the grain harvests for the period 1369-1494. M=years in which sheep murrain was particularly severe.

Page references, except when otherwise stated, are to C. E. Britton, *A Meteorological Chronology to A.D. 1450* (1937). Weather references relating to Sussex manors are from ministers' account rolls in the custody of the Public Record Office, Sussex Archaeological Trust and the West Sussex Record Office. Other references used in this table are: D. J. Schove, *Climatic Fluctuations in Europe in the late Historical Period*,' unpublished M.Sc. thesis, University of London (1953), p. 234; C. C. Creighton, *A History of Epidemics in Britain* (1965 edition), p. 218; Thorold Rogers, *A History of Agriculture and Prices*, vol. ii, p. 608.

Medieval farming was much more dependent on favourable weather than the highly technical husbandry of the present day and none more so than that on the heavy lands such as the Barnhorne upland or the precariously drained and extremely exposed marshes. The most bountiful wheat harvests on such land to-day are preceded by above average temperatures in winter, a low winter and spring rainfall and slightly less than average summer rain. In a wet winter nitrates are washed out of the soil and the plant's root system is restricted by deficient aeration; sowings were reduced in such weather in the past and after exceptionally inclement weather the land would be " porridge " and crops a total loss. A wet season is also the most common cause of a reduction in the yield of barley and oats tend to develop straw rather than grain in excessive rain and growth is retarded on land which has not consolidated after flooding. Livestock in medieval times were also much influenced by weather, summers which were wet and warm constituting the greatest hazard to sheep and other cattle grazing low-lying grounds by providing the necessary pre-conditions for rot which carried off great numbers[1].

To evaluate the influence of weather and floods on the quality of the Barnhorne harvests evidence has been gathered from account rolls and other sources. References to weather in the ministers' accounts and hall moot rolls for Barnhorne manor are listed in Table 2. These are much less frequent than in the thirteenth and early fourteenth century rolls of the bishopric of Winchester and when possible have been supplemented by weather references in account rolls of other Sussex manors. These local references to weather, in the main, substantiate the accounts of weather in monastic compilations and therefore it has been considered justifiable to include some such references where gaps in local information exist.

The correlation between the bad harvests at Barnhorne and periods of excessive rain, wind and floods, is very close. The 1369 harvest, nationally a disaster, was also one of the worst at Barnhorne which also suffered from the flooding which was widespread in England generally[2]. The period 1386-1388 was a notable stormy

[1] J. A. S. Watson and J. A. More, *Agriculture: the science and practice of farming* (eleventh edition, 1962), pp. 206, 222, 234; A. D. Hall, *The book of the Rothamsted experiments* (1917), pp. 61-2; E. J. Jones, *Seasons and prices: the role of the weather in English agricultural history* (1964), pp. 55-6, 81.

[2] D. J. Schove, op. cit., p. 234. Bad wheat harvests in the year are also recorded for the polder district near Bruges in the accounts of St. John's Hospital for May 1369-May, 1370. (J. A. Mertens and A. E. Verhulst, ' Yield-ratios in Flanders in the fourteenth century,' in *Economic History Review*, 2nd series, vol. 19 (1966), pp. 178-9). It is noteworthy that these authors' published yield-ratios, although very restricted, yield two other examples of bad harvests which were below normal on both sides of the Channel: 1385 and 1386 (poor at both Barnhorne and Apuldram). At the English manors flooding is the most likely cause. At Alciston, an inland Sussex manor, yields remained high throughout the 1380's, thus synchronising with the national trend in this decade observed by Schove, op. cit., p. 234).

era in winter and also suffering from summer floods. The years 1400-1404, 1413, 1415 and 1422-1428 were also notable for inclement weather and floods[1].

Added light is thrown on these bad harvests by the grain prices recorded on the Barnhorne rolls in the year following the poor season. The bulk of the wheat harvest was consumed by the monks but it can be reasonably assumed that the prices recorded for grain deliveries to the monastic granary were realistically related to local prices since they fluctuate with the same abruptness and amplitude as prices for commercial transactions. Using this line of evidence, 10 of the 17 bad harvests at Barnhorne for which data is available are associated with prices in the following year above the average for the period 1368-1590 (84 recorded entries) and this suggests that for those years the Sussex harvest was also generally below normal. (Table 2). Two other harvests at Barnhorne were so deplorable that no wheat delivery was made to Battle (1386 and 1421); that these were also years of bad harvests at coastal manors generally is indicated by the low yields recorded in these years at Appledram. Thus 12 of the 17 bad harvests being considered are likely to have been bad in Sussex as a whole. In some years, however, the quality of the Barnhorne harvests was considerably inferior to that of the county generally. This seems to be true of the years 1384, 1402-1404, and the three successive years 1412-1414 for which years the wheat prices recorded on the Barnhorne rolls are below, or only slightly above average. No explanation is offered in the Barnhorne accounts for the bad harvests of the early 1400's but this period, as previously discussed, was one of severe marine inundations and it is thus likely that crop losses from this cause at Barnhorne were severe. Three other years when Sussex harvests generally would seem to have been better than at Barnhorne, those for 1412-1414, are years of excessive rain (Table 2) in which circumstances the harvests would be expected to have been especially disastrous at Barnhorne considering that the heavy upland soils and low lying land would naturally suffer more.

At this point it is necessary to consider the crop yields in the latter part of the period falling under review, that is from 1440-1490. The decennial average yield ratios (Table 3) for wheat and oats show that a regression in wheat yields during the early fifteenth century and the very modest oat yields of the same period were followed by a substantial improvement in wheat yields and by a marked rise in the yield of oats. The retrenchment in arable farming and the retreat from the more marginal lands which began in the 1410s would be expected by itself to have had a beneficial effect on yields. This was probably the main factor in the improvement of the wheat yields at

[1] D. J. Schove, op. cit., B. H. Slicher van Bath, *Acta Historiae Neerlandica*, vol. 2 (1967), p. 62.

TABLE 3
Decennial yield averages

	WHEAT			OATS		
	No. of harvests recorded	Average yield ratio	sowing rate (bushels per acre)	No. of harvests recorded	Average yield ratio	Sowing rate (bushels per acre)
1370-9	3	4.90	3.0	4	3.55	6.00
1380-9	5	2.83	3.0	7	2.65	6.00
1390-9		—			—	
1400-9	8	2.56	3.0	8	3.04	4.5
1410-19	7	2.51	3.1	8	2.71	5.00
1420-9	8	3.11	3.0	8	2.90	5.25
1430-9	5	3.43	3.0	5	3.70	5.00
1440-9	8	3.26	3.0	8	4.48	5.00
1450-9	8	3.53	3.0	8	3.86	4.00
1460-9	9	3.33	3.0	9	2.97	4.00
1470-9	5	3.35	3.0	5	4.95	4.00
1480-9	5	4.32	3.0	5	3.81	5.00
1490-9	3	4.16	3.00	3	4.32	5.00

Barnhorne. Oats continued to be much more influenced by weather conditions because although a higher proportion of oats was sown on the upland fields than formerly, and this would form part of the ordinary sequence of rotation of crops, harvests were still being snatched from the marshland. The temporary declines in oat yields during the decades 1460-1469 and 1480-1489 coincides with stormy phases at Barnhorne with accompanying floods and conversely the 1440s and 1450s seem to have been on the whole much more favourable for farming. The decade 1440-9 had oat harvests which included 1 " good ", 4 " very good " and 2 " excellent " and the 1450s ran it very close with 1 " good," 2 " very good " and 1 " excellent " harvests. Such a sequence of harvests of above average quality betoken a marked amelioration in weather and there is supporting evidence of this in the low grain prices prevailing in Sussex and similar high yields recorded at Appledram during the same decades.

Conclusions

It is now possible to attempt some conclusions as to the agriculture at Barnhorne and the role of the weather. Arable farming at Barnhorne was only moderately fruitful even by medieval standards. Its convertible husbandry in the late middle ages was of a primitive kind but it anticipated later practice which is followed to this day. The marshland suffered severely from the marine transgression of the later middle ages and the frequency of floods, gales and excessive rain appears to have been abnormally high at several periods in the late fourteenth and early fifteenth century with disastrous effects on crop production and livestock, particularly sheep. The extreme difficulty under which the arable/sheep husbandry was conducted must have been a potent factor in the decision to lease out parts of

the demesne and concentrate on cattle rearing. As a coastal manor with much low-lying land Barnhorne bore the brunt of adverse weather conditions but inland areas are also likely to have suffered. The meteorological factor needs further investigation on a broader basis before its relative importance can be more adequately assessed. For this reason it is desirable to widen the inquiry by utilising the late medieval account rolls of other Sussex manors, notably Alciston, Appledram, Bosham, Chalvington, Lullington and Wiston and the present author hopes to have the findings published shortly[1].

Acknowledgement

The author wishes gratefully to acknowledge the receipt of a grant from the Central Research Fund of the University of London towards the cost of his research.

[1] P. F. Brandon, 'Late medieval weather in Sussex and its agricultural significance,' *Trans. Inst. Brit. Geogr.* (forthcoming).

THE ORIGIN OF NEWHAVEN AND THE DRAINAGE OF THE LEWES AND LAUGHTON LEVELS

P. F. BRANDON

Many local studies of physiographical changes in shorelines will inevitably need revision in the light of research on the processes of coastal evolution and of information sifted from the torrent of muniments which is annually cascading into the care of County Archivists. Amongst such matters which can now suitably be re-discussed are the evolution of the entrance of the Sussex Ouse and the origin of Newhaven, subjects of a well documented study by Morris[1] which has become generally accepted.[2] Several of Morris' conclusions can now be shown to be irreconcilable with new evidence which has become available since his paper was written and the present author has made fresh interpretations on the basis of the more adequate material at his disposal.

The sequence of the physical changes at the Ouse outlet up to the beginning of the sixteenth century has been established in outline and it needs only brief mention here. In Roman times the Ouse probably debouched at or near its present outlet and below the massive earthworks of Romano-British and earlier date on Castle Hill (Fig. 1). When sea level became fairly stable and the medieval inning of the marshes had become so appreciable as to restrict the tidal scour, longshore drifting gained an ascendancy and in consequence the mouth of the Ouse was deflected as far east as it could be to Seaford Head.[3] Seaford was the medieval gateway to the Ouse valley but it suffered increasingly from silting and in the sixteenth century a new outlet called the ' new haven ' was made through the shingle bar and west of the old mouth and a settlement grew up near it which was called Newhaven. Morris' paper is at its most speculative concerning the diversion and history of the Ouse outlet in the sixteenth and seventeenth centuries and it is this aspect with which this paper will be primarily concerned.

According to Morris, ' . . . it seems that shortly before 1565 the shingle beach was destroyed during a storm, between the Tide Mills and the Buckle Inn, and that the new outlet was immediately termed ' Newhaven '. When the more direct outlet was made early in the

[1] F. G. Morris, ' Newhaven and Seaford: a study in the diversion of a river mouth,' *Geography*, vol. 16 (1931), pp. 28-33.

[2] J. A. Steers, *The coastline of England and Wales* (1964), pp. 624-644; S. W. Wooldridge and F. Goldring, *The Weald* (1953), pp. 101-2.

[3] F. G. Morris, op. cit., p. 29.

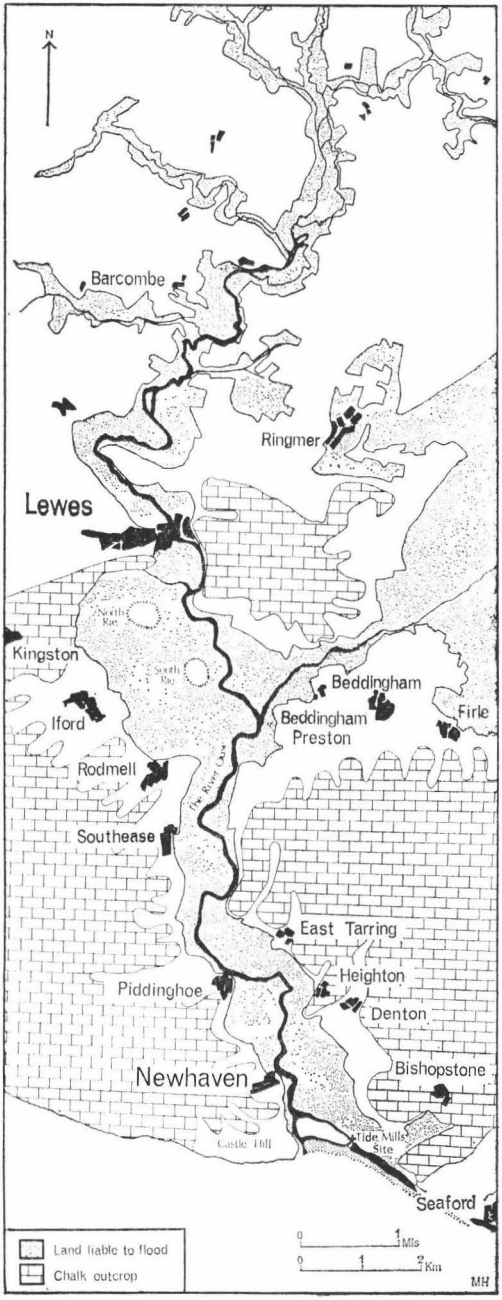

FIG. 1. The Ouse and Laughton Levels.

seventeenth century, the name Newhaven was transferred and gradually superseded the name of Meeching.'[1]

Four aspects of this critical period in the history of Newhaven deserve fresh consideration: the agency responsible for the initial diversion of the outlet; the date of its formation; and the site of the breach. The question as to whether there was a later and more direct outlet also needs examination.

Morris' belief that some natural phenomenon was responsible for the initial change in the outlet was based on the traditional version of the event communicated to Elliot, an eighteenth century antiquary, and handed down by Horsfield in 1835.[2] Morris appears to have overlooked that another early writer, Lower, was at variance with Horsfield on this point and wrote:-

'. . . in the sixteenth century, by the application of art, the Ouse was made to debouch at or near its ancient point . . .'[3]

Fresh evidence, not accessible to Morris, makes it clear that Lower was correct and that the ' new haven ' was an artificial cut made through the encumbering shingle to mitigate the flooding in the Lewes and Laughton Levels and to facilitate navigation by providing a deeper, more direct, and safer outlet. The drainage aspect, which was the inevitable corollary to a deeper channel, has not previously been discussed; indeed the improvements of the late eighteenth and early nineteenth centuries have been hitherto considered the earliest.[4]

The condition of the Lewes and Laughton Levels to 1537

The gradient of the Sussex Ouse is so excessively slight that much of Lewes is actually below the level of high tides[5] and the Ouse valley was thus particularly vulnerable to flooding. At Domesday, the whole width of the valley floor probably formed a tidal inlet along the edges of which were poised settlements at the very margin of the waters engaged in salt-making and fishing in addition to agriculture.[6] By the early fourteenth century, highly-prized meadow had been inned and embanked[7] but its value was increasingly reduced by the recurrent inundations during the later middle ages resulting from the fall in the relative level of land to sea and the increased storm-tide frequency. Despite the raising (*exaltand*) of the banks,[8] winter flooding was common in the fourteenth century

[1] *Idem*, op. cit., p. 31.
[2] T. W. Horsfield, *The history, antiquities and topography of the County of Sussex*, vol. 1 (1835), pp. 276-7.
[3] M. A. Lower, *A compendious history of Sussex*, vol. 2 (1870), p. 58.
[4] A. D. Hall and E. J. Russell, *A report on the agriculture and soils of Kent, Surrey and Sussex* (1911), p. 57.
[5] J. A. Steers, op. cit., p. 311.
[6] *Victoria County History, Sussex*, vol. 1 (1905), p. 463.
[7] East Sussex Record Office (subsequently abbreviated to E.S.R.O.) Glynde MS. 996 (1307-1308 A.D.).
[8] E.S.R.O., Glynde MS. 996.

and frequently the flood waters remained throughout the summer on the lower meadows and, occasionally submerged crops on the bordering flanks.[1] In the spring of 1422 a Commission of Sewers was appointed to restore the banks and drainage between Fletching and Seaford which suggests that, as elsewhere along the Sussex coast, the valley was devastated by the great flood of the autumn of 1421 which also created havoc in the Netherlands.[2] Less is known of its condition later in the fifteenth century because few estates were being directly farmed by the manorial lords but that a deterioration had taken place is indicated by the changing condition of the Archbishop of Canterbury's land at Southerham, where some four hundred acres of meadow were converted into a permanent fishery (*piscatura*) known as the *Brodewater* which supplied bream and other fish to grace his lordship's table.[3]

More complete information is forthcoming for the early sixteenth century, by which time it is clear that the drainage of the Levels had virtually collapsed. The low-lying estates of Lewes Priory in Southover, Kingston and Iford were at the Dissolution ' almost the whole year under water ' and valued at less than two pence an acre.[4] This was evidently the usual condition of the whole Levels for in 1537 it was reported that ' all the level upwards (of Seaford) lay in a marsh all the summer long '[5] and this is confirmed by other accounts of ' great rewyn ' and that ' when abundance of water cometh by rain or other floods of the sea it is yearly drowned and overflowed with water.'[6] The extent of the land liable to this annual inundation in the early sixteenth century was more than 6,000 acres[7] from which we can infer that the whole valley from

[1] For example, one of the tenements of Beddingham manor was reported submerged in 1333 and meadow at *Wydehamme* in Beddingham and at Itford was noted as flooded in the summers of 1342, 1348 and 1351 (E.S.R.O., Glynde MSS. 973, 997 and Sussex Archaeological Trust, subsequently abbreviated to S.A.T., Barbican House, Lewes, G. 44/3, 44/6). The Beddingham meadows were again inundated in summer for five years in the 1360s and for three years in the 1380s but appear to have been relatively dry in the 1370s. Cropland was flooded in 1368 and 1384 (E.S.R.O., Glynde MSS. 998-1002). The meadow at Hamsey was said to have been inundated ' many times ' in 1405 and to be ' merely marsh not capable of being mown,' which represents a marked deterioration in the condition of this land since 1294 (Public Record Office, subsequently P.R.O., C 137/48/8 and C 133/71/19).

[2] P.R.O., C.66/404, m. 13d. The consequences of this and other late medieval floods affecting the Sussex coast are discussed by the present writer in a paper entitled ' Agriculture and the effects of floods and weather at Barnhorne, Sussex, during the late middle ages,' published in this volume of the *Sussex Archaeological Collections* (S.A.C.) pp. 69-93.

[3] S.A.T., G8/25-41 (1424-1448 A.D.) and Lambeth Palace muniments 1302-1304 (1456-1462 A.D.).

[4] P.R.O., *Valor Ecclesiasticus*, vol. 1 (1810), p. 329.

[5] E.S.R.O., Glynde MS. 84.

[6] S.A.T., G8/50. Evidence in connection with a Bill of Complaint heard in Chancery.

[7] E.S.R.O., Glynde MS. 84.

Seaford to Sheffield Bridge in the north and to Laughton along the Glynde Reach flowing in from the east was generally a lake for most of the year and useful only for fowling and fishing. Even the Ries, large islands of Gault Clay rising above the flood level, were almost valueless because of their inaccessibility and merely supported the rabbit-warrens of Lewes Priory[1] (Fig. 1).

This deplorable condition of the Ouse Levels was not acceptable at a time of growing economic activity and rising population. Concurrently, the navigation on the Ouse and the accessibility of Seaford to sea-going vessels had worsened. As Morris has stated, there was probably a shingle bar right across the river mouth at Seaford exposed at low water and affording only shallow depths at high tide and thus gravely impeding the evacuation of fresh water from inland. The most satisfactory solution for both the needs of navigation and drainage would have been an artificial cut through the shingle bar to which a straightened and deepened channel could be directed.

The artificial cut and creation of the ' new haven '

This was, in fact, the means adopted. Such a shortening of the course had long been anticipated, reference being made, for example, to the possibility of a ' new haven ' in 1528,[2] but its construction was deferred for nearly another decade. The Prior of Lewes and the nobility and gentry with responsibilities along the main sewers then consulted Dutch engineers as well as the successful reclaimer of St. Katherines's marsh near the Tower of London.[3] In 1537 a water scot was levied on all lands liable to flood and an endorsement on the account book (in the same hand as prepared the account) explains that ' this book was made . . . for cutting the haven right to the sea now called new haven: before it [the river Ouse] went out at Seaford by the old haven . . .'[4] Confirmation that this project was completed is provided by other sixteenth century documents. About 1550 it was reported of the *Brodewater* that ' before the haven was made the said Brodewater for the most part was overflown all the year'[5] and at a further inquiry into land-ownership in 1587 it is again confirmed that marshes called the Oldhaven at Seaford had been ' the only haven for barks and other vessels before the new haven was cut out . . .'[6]

[1] P.R.O., *Valor Ecclesiasticus*, vol. 1 (1810), p. 329.

[2] W. D. Peckham (ed.), *The Acts of the Dean and Chapter of the Cathedral Church of Chichester*, 1472-1544, Sussex Record Society, (subsequently abbreviated to S.R.S.) vol. 52 (1952), p. 84.

[3] Sir H. Ellis, ' Commissions of sewers for the Lewes Levels,' *S.A.C.*, vol. 10 (1858), p. 98.

[4] E.S.R.O., Glynde MS. 84.

[5] S.A.T., G8/50, evidence of William A. More; P.R.O., C.1/1336/1. The information derives from a Bill of Complaint, undated, but addressed to Richard, Lord Rich, who held office as Chancellor between 1547 and 1551. The decree in Chancery relating to this law suit is dated 1553 (P.R.O., C.78/7/56.)

[6] P.R.O., E.134, 29/30 E/12, Mich. 3. Evidence of Nicholas Eston and others.

There can therefore, be no doubt that the initial diversion of the Ouse outlet from Seaford in the sixteenth century was not due to a violent storm but to a carefully conceived plan to improve both the drainage and the navigation of the Ouse. It is not possible to date this event precisely but circumstantial evidence helps to narrow the uncertainty considerably. Morris departed from Horsfield, who thought it possible that the notorious storm of 1579 might have been responsible for the breach, and put it at ' shortly before 1565 ' in which year the name ' Newhaven ' is mentioned in the earliest extant list of ports and havens. Its earlier origin, however, is proved by the presence of a Constable, a Crown servant, at Newhaven in 1557,[1] presumably holding the post which had been transferred from Seaford. By this time the haven must have been well established because, as already mentioned, it was certainly in existence about 1550 and according to Stowe, the Elizabethan antiquary, ' the harbour of a place called Newhaven in Sussex ' was the landing-place of a French army in 1545.[2] Two other documents suggest that the foundation of the ' new haven ' was even earlier. In 1539 commissioners appointed to survey the coast of Sussex regarded Seaford with its haven " a duckpool " as being no longer worthy of any particular defence[3] and in 1540 salt and freshwater sluices which had been maliciously damaged were replaced along the Ouse.[4] Both these facts can best be understood by the acceptance of 1539 as the most likely date for the origin of the ' newhaven ' and the associated drainage works. The improvement of the Ouse is thus likely to be one of the earliest canalisations in England, preceding similar proposals for the Arun, the head of Chichester Haven[5] and the better known (and more ambitious scheme) for the Exe, by a generation and more.

The resulting drainage improvements

Before examining the site of the ' new haven ' a consideration of its effectiveness as a drainage outlet is appropriate. The objectives of the Commissioners of Sewers in this regard appear to have been, as in the case of the early Fenland schemes, the creation of rich summer pastures and the provision of these can be regarded as part of the trend towards greater specialisation in cattle-keeping for which Sussex was becoming renowned. The evidence as to the

[1] J. Roche Dasent (ed.), *Acts of the Privy Council of England* new series, vol. 6 (1556-1558), (1893), pp. 274-5.

[2] John Stow(e), *The Annales of England*, (1600) p. 992.

[3] F. G. Morris, *Physical controls in the historical geography of the Sussex ports*, unpublished M.A. thesis, University of London (1931) pp. 66-67.

[4] Sir H. Nicholas (ed.), *Proceedings and ordinances of the Privy Council of England*, vol. 7 (1837), p. 66.

[5] The Rev. M. A. Tierney, *History of Arundel*, vol. 2 (1834), p. 721; G. Slade Butler, ' Sussexiana Topographica,' *S.A.C.*, vol. 18 (1866), p. 87.

efficacy of the new sewers is less ample than one would wish but there does seem to have been a considerable improvement in the condition of the alluvial lands. The most specific record of change relates to the *Brodewater*, a four hundred acres tract of water and marsh in Beddingham which had earlier been a lake used for fishing and fowling. As a result of the new direct cut and the scouring of the water-courses by the Commissioners parts of this tract had become dry and grass-grown and the value of the whole greatly enhanced by about 1550.[1] This improvement was maintained and in 1616, for example, part of the Brodewater was still good pasture.[2] Elsewhere, other improvements can be detected; Lord Bergavenny had newly reclaimed (*nuper recuperat*) marsh at Rodmell in 1587 and at about the same time meadow in the Town Brooks at Lewes was lettable for 13s. 4d. an acre.[3]

By this time most of the valley floor had become meadowland not depastured by distant graziers as was the Pevensey Levels but partitioned amongst the neighbouring villages and largely held as commonland. The pastures were stinted generously enough to allow each holder of a yardland (about 12-16 customary acres) between 4-12 beasts and followers. Parts were allocated for mowing by an intricate arrangement and divided into shares known as lots, doles, hides or clouts, and meadow at Southease was made available to downland farmers at Telscombe as well as those at South Heighton. Generally speaking, grazing was prohibited after the hay harvest until the end of August when it was available until the end of November.[4] The availability of these rich summer pastures permitted a beautifully balanced economy which would have comprised store cattle on meadows nearest the river, dairy cattle near the barns; corn on the Coombe deposits plastering the valley flanks and sheep walks on the higher Downs. The Iford farmer John Aridge with his eight oxen for a plough team, 21 cattle and 200 sheep was probably representative of the yeoman farmers of the district in the early seventeenth century.[5]

The drainage improvements, however, appear to have been short-lived. The frequency of summer flooding increased during the seventeenth century and the deterioration was so marked that the condition of the alluvial lands must have resembled that of the fifteenth century. Camden observed that the Ouse ' maketh a large mere ' and ' often times it overfloweth the low lands about it to no

[1] S.A.T., G8/50. Evidence of William A. More and others.
[2] S.A.T., G8/16.
[3] E.S.R.O., Bergavenny Accounts, 1587-1594, f.34 and 1594-1600, f.38. (The style ' Bergavenny ' was in use until 1720 when the present form of ' Abergavenny ' was adopted). S.A.T., Woolgar MS. i, f.277.
[4] S.A.T., Aber. I, fs. 74, 88, passim; S.A.T., Acc. 891, fs. 12-13; W. Figg, ' Tenantry customs in Sussex—the Drinker acres,' *S.A.C.* vol. 4 (1851), p. 307; W. H. Godfrey (ed.), *The book of John Rowe*, S.R.S., vol. 34 (1928), p. 69.
[5] J. Cooper, ' The hundred of Swanborough,' *S.A.C.*, vol. 29 (1879), p. 132.

small detriment '[1] This is corroborated by other evidence. The villagers at Iford, for example, were once again raising and strengthening the river banks each September early in the seventeenth century and at Firle the tenants scoured the sewers in a vain attempt to keep the meadows dry.[2] In 1648 the Ouse outlet was reported ' no ways fit to sewe the level or four navigation '[3] and in 1664 the Levels were again said to be ' hurtfully surrounded ' by water and urgently in need of drying.[4] Despite this nothing, in fact, was effectively done to ameliorate the condition of the Levels for more than a century. Throughout the eighteenth century the Ouse valley was regularly inundated in winter and was often still flooded throughout the summer. In 1716 grazing land near Lewes was said to be scarce,[5] presumably because of the inadequate drainage, and as late as 1767 the dryness of the low-lying land in summer depended on a period of north-eastly winds when the waters would be driven off the meadows.[6]

The site of the outfall

This deterioration in the condition of the Levels was due to problems at the outfall. Morris, following Horsfield, who again drew upon tradition, concluded that the site of the breach through the shingle was at some point east of the present mouth of the river and between the Tide Mills site and the Buckle inn.[7] To strengthen his argument Morris adduced cartographic evidence which, he suggested, confirmed the location at the point mentioned. As the site of a possible *natural* breach resulting from floods or storms Morris' suggested site was a very plausible one but considered, as it now must be, in the light of an artificial cut, it becomes inherently improbable, seeing that it was at the weakest and most unstable point of the shingle spit and lay insufficiently westwards of the Seaford exit to permit a direct cut to supersede the marked rectangular eastward course of the Ouse below Meeching. Furthermore, if Morris' location of the ' new haven ' is correct then it is necessary to assume that the direct exit at or near the present, and so marked on a detailed map of 1620,[8] was constructed subsequently to the more easterly site favoured by Morris. Neither Morris, nor the present writer, has found evidence in support of such a sequence of events.

The two maps cited by Morris in support of his contention that the sixteenth century ' new haven ' was not at the site of the present

[1] W. Camden, *Britannia* (1610 edition), p. 315.
[2] S.A.T., Aber. I, fs. 19, 32, 154, 194 and *passim;* S.A.T., Acc. 891, f. 90.
[3] F. G. Morris, op. cit. (note 1), p. 31.
[4] S.A.T., WG. 880.
[5] S.A.T., DN. 184.
[6] E.S.R.O., Glynde MS. 2772, letter dated 15th April.
[7] Morris, op. cit., p. 31.
[8] The original of this map (which was not traceable when Morris wrote his paper) is in the custody of Messrs. Lewis, Holman and Lawrence, Solicitors, 86 High Street, Lewes. A copy is held by the E.S.R.O. (PD. 137).

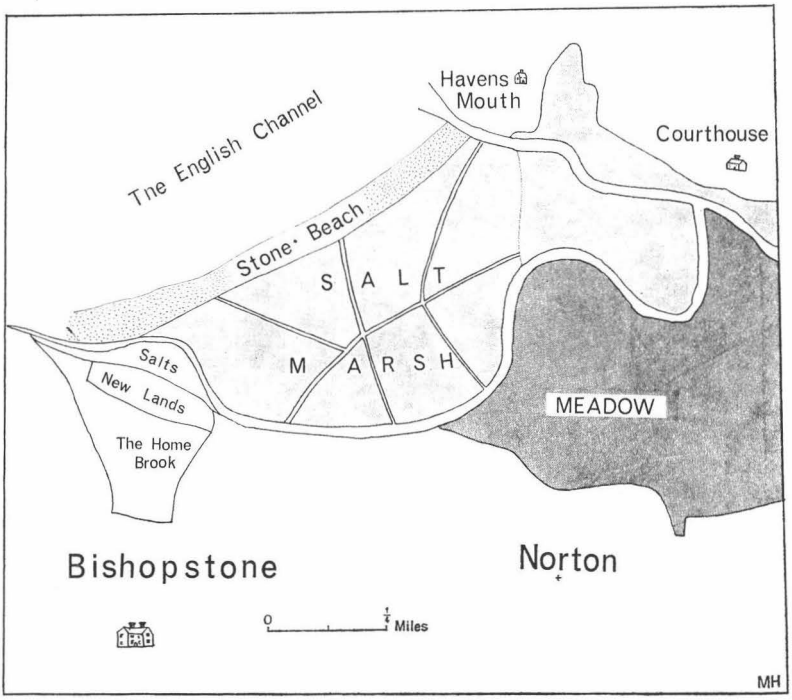

FIG. 2. The Ouse outlet in 1620 (based on Randoll's map)

exit of the Ouse were Saxton's map of the county of Sussex (1579) and the Palmer-Covert map of 1587 which is the earliest detailed survey of the Sussex coast to survive.[1] Morris' conclusion that this cartographic evidence ' plainly suggests that the outlet was near the present Tide Mills ' is very surprising. Saxton's county map is on too small a scale to permit any positive deductions concerning purely local configuration; moreover, as has been observed, Saxton's delineation of river courses and other natural features is generally diagrammatic and often misleading.[2] This map does not allow us, in Steer's phrase, ' to connect with reasonable certainty historical evidence and physical form '[3] and it should be eliminated from the discussion.

The Palmer-Covert map is in a different category (Fig. 2). This was compiled, under the direction of persons intimately familiar

[1] M. A. Lower (ed.), *A survey of the coast of Sussex* (1870).
[2] E. Heawood, ' Some early county maps,' *Geographical Journal*, vol. 68 (1926), p. 329.
[3] J. A. Steers, ' The coast and the geographer,' *Advancement of Science*, vol. 11 (1954), p. 171.

with the coastline and rivers of Sussex,[1] with the express intention of distinguishing features which were defendable or in need of defence. We should expect, therefore, that harbours and possible landing places would be carefully delineated and this is, indeed, the case. The scale of the map, nominally 1.25 inches to a mile, but, in fact, variable, is sufficiently large to depict natural features and although wrongly orientated it is a carefully executed work according to the cartographic standards possible at the time. The accompanying report helps to clarify any ambiguities arising from deficiencies in the mapping.

When the map and the report are examined in conjunction the evidence is overwhelmingly in support of an Ouse exit in 1587 at or very near the present one at Newhaven. The report states that ' between Brighthelmpstone [Brighton] and Newhaven the coast is all high cliffes . . .' whereas immediately to the east of ' new haven ' landfalls were easy and to be expected.[2] Such a description of the coastline is perfectly correct if the then ' new haven ' lay at its present site but manifestly inaccurate if, as Morris affirmed, the site of the ' new haven ' then lay a mile or more along the shingle bar encumbering the Ouse. The map and report helps us in another particular. The outlet of the Ouse is shown flowing past steeply rising ground on the right bank and commanded by a defensive point on a cliff top (marked as site F on the original map) which must have lain on Castle Hill (which has been fortified for centuries) and this was the interpretation made from the map by Lower, who edited it in the first instance.[3] Thus far from supporting an Ouse entrance a mile or more eastwards of the present one the map and report can be regarded as establishing that the outlet then in use was almost identical to that of the present.

There is also further evidence, unused by Morris, which indicates that a breach between the Tide Mills and the Buckle inn could not have been the Ouse outlet in the later sixteenth century. Witnesses submitting evidence in the law suit of 1587, mentioned earlier, refer to marshes called ' oldhaven . . . the only haven before the new haven was cut out . . .' and salt marsh which lay between this ' old haven ' and the walls of a parcel of land called Newlands.[4] These lands are clearly to be identified on the map of the Lewes Levels drawn in 1620 (Fig. 2) and which can probably be attributed to the cartographer George Randoll.[5] This map, drawn to a scale of eight inches to a mile, is the earliest large-scale map of the Ouse outlet.

[1] Palmer was a member of the West Sussex gentry and Covert had a seat at Slaugham on a headwater of the Ouse. W. Camden, op. cit., 313.
[2] M. A. Lower, op. cit., fs. 4-5.
[3] M. A. Lower, op. cit., p. 4.
[4] P.R.O., E.134 29/30 Eliz., Mich. 3. Evidence of Nicholas Eston and others.
[5] E.S.R.O., PD. 137. The map is similar in style to Randoll's map of Lewes dated 1620 (E.S.R.O., PM. 19).

It shows the Ouse exit at or very near the present one and the eastward arm of the Ouse, the old course, completely blocked by shingle. There is no sign of a breach through the shingle bar nor of the course of the Ouse which is shown on the Admiralty map of 1698[1] (Fig. 3) as flowing immediately behind and parellel to the shingle before breaking through to the open sea at the Tide Mills site. From the information on the map it is clear that the ' Old-haven ' and lands subject to the law suit of 1587 were sited on the eastern arm of the river and close to the site of the present Buckle inn. From the testimony of witnesses it can be ascertained that ' newlands ' was reclaimed when the ' new haven ' was cut out and was first cropped about forty years before 1587. During the reclamation numerous old anchors were discovered and it seems that rapid silting had subsequently taken place. Such a process would hardly have ensued had this course of the Ouse been the main outlet as Morris has asserted. We are thus obliged to look for ' newhaven ' at the exit of another branch of the Ouse and the evidence suggests, if it cannot be said to prove beyond all doubt, that this was along, or close to, the present course of the river.

The likely sequence of events at the Ouse outfall was thus probably as follows. About 1539 the Ouse was straightened and directed to a point at or very near the present outlet thus creating a ' new haven ' whose name eventually superseded that of Meeching. In 1566 it was reported that there was no harbour in the Hundred of Flex-borough (which extended to the left bank of the Ouse and included Seaford) but ' only a stone beach '[2] and thus it seems that Seaford had by then already decayed. Further confirmation of the decline of the ' old haven ' is provided by the evidence of 1587. By 1620 the eastern arm of the Ouse then a minor water-course, did not reach the open sea but appears to have flowed into a lagoon (traces of which are still observable on Yeakell and Gardner's map 1783, and even later) and presumably seeped through the encumbering shingle near the Buckle inn. The new exit failed to function satisfactorily doubtless owing to the considerable eastward longshore drift of beach material. It is shown as being slightly deflected on the 1587 map and Morris found that it was blocked on several occasions in the seventeenth century. This repeated blocking of the outfall must be the primary reason for the deterioration of the drainage of the Lewes and Laughton Levels to which reference has already been made. It also forced the Ouse to flow eastwards again, parallel to the shingle spit, and at some time between 1676 and 1698 it broke through to the open sea at the Tide Mills site.[3]

[1] B.M., K. MAR 111, 67.

[2] Morris, thesis cited, 68.

[3] Christopher Gunnon's chart, dated 1676, shows the mouth of the Ouse at approximately its position in 1620 (Bodleian, Rawlinson Ms. 1A 185). The opening at the Tide Mills site is first shown on an Admiralty chart of 1698 (British Museum, K. Mar. 111, 67).

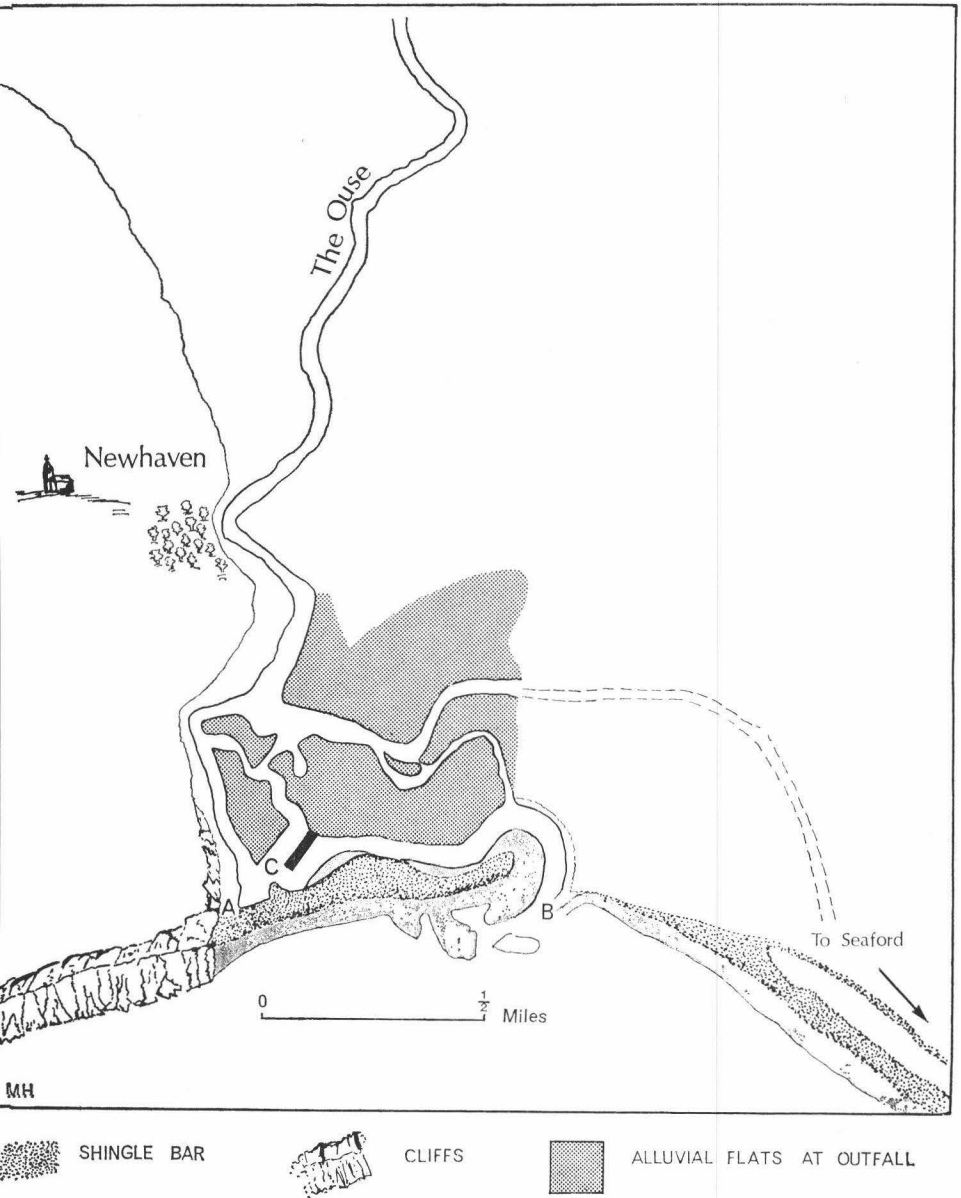

FIG. 3. The Ouse outlet in 1698 (based on an Admiralty chart). The site marked A was described as the ' ancient outlet ' and that marked B was the ' haven's mouth ' in 1698. Site C marks old wharfing ineffectually built to keep the outlet on its older course.

Thus the traditional version of the initial breach, though wrong in precedence, has some substance in fact and the storm to which Horsfield referred is likely to have been a seventeenth century one and should be regarded as one of those many other events which are wrongly attributed to the days of Elizabeth.

From 1731 the western exit was again in use but as late as 1766 a bar of shingle had again formed across the mouth[1] and was impeding shipping and the evacuation of fresh water from inland. These were matters not rectified until after 1791 when, on the basis of Smeaton's and other proposals, the Ouse was straightened at several points furnished with several important new feeder sewers and provided with a western breakwater at its outlet to arrest the longshore drifting of beach material.[2] Resulting from this engineering were the rich meadows fit for grazing for most of the year which drew forth favourable comment from William Cobbett.[3] Thus after centuries of persistent but fruitless endeavour Man could at last claim to have harnessed the Ouse.

[1] Morris, op. cit. (note 1), p. 33; E.S.R.O., Glynde MSS. 2772, letter dated 3rd December, 1767.

[2] B.M., Add. MS. 9841; S.A.T., LM. 156, 160, 161; A. Young, *Annals of Agriculture*, vol. 22 (1793), pp. 223-4.

[3] William Cobbett, *Rural rides* (Everyman edition), vol. 1, p. 73.

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