
Jill Eddison

The barrier beaches of Rye Bay, on the south-east coast of England, consist of flint shingle. During the past millennium this coastline has undergone rapid changes which radically affected human occupation of the area, most notably the town and port of Old Winchelsea and the port of Rye. Medieval and later documentary evidence is reviewed in the light of geomorphological processes. For the first time, an explanation is given for the rapid rise and equally rapid loss of Old Winchelsea. It is concluded that the town stood on shingle, part of a barrier beach which had enclosed the southern flank of the Romney Marsh lowland for some 4,000 years previously. In the 13th century this barrier broke down, resulting in the loss of Old Winchelsea as well as very extensive flooding of the back-barrier marshland. The cause of this breakdown was failure of longshore supply of shingle, and its timing was determined by a period of exceptional storminess. In a wider context, it is emphasized that until the 13th century shingle had been reaching the 'sink' of Dungeness, travelling along the length of the Sussex coast, for several thousand years.

Introduction

In the 20th century Rye Bay is a minor indentation in the coastline between Fairlight and Dungeness in the extreme south-east of England (Fig. 5.1). It now forms the southern margin of the extensive coastal lowland known generally as Romney Marsh. In the Middle Ages, however, there was an extensive inlet of the sea in this area and tides flowed many miles inland, at least as far up the Rother valley as Newenden. Historical evidence indicates that the inlet opened up in the 13th century as a result of the break down of a shingle barrier which had previously extended from Fairlight across to the Dungeness shingle. Subsequently two barriers re-formed, one on either side of the new bay, and grew progressively across the mouth of the inlet. In 1594 the distance between the two headlands was 2 km, and by 1693 the gap had been reduced to some 375 m. The river Rother has reached the sea by way of this inlet since the 13th century.

All in situ geomorphological evidence of the early shorelines and of the widespread coastal changes is missing, having been lost when shingle, sand and finer sediments were re-worked and re-deposited elsewhere. However, fortunately for the coastal historian, the changes in the coastline had a very significant impact in human terms. In the 13th century the port of Old Winchelsea was lost to the sea, and a new town was established by Edward I on a new, upland, site. A neighbouring settlement at Broomhill was probably also lost at that time. Rye was founded on an upland site and was therefore in some respects more secure, but it suffered acutely as a result of coastal change when its harbour silted up towards the end of the 16th century.

These profound changes are very well recorded because the opening of the inlet coincided fortuitously with the earliest surviving series of historical documents. The critical stages of its closure are not only well documented, but also occurred at the time of the production of the earliest accurate maps. Indeed, the loss of the important harbour of Rye in the last quarter of the 16th century lead to the employment in this area of distinguished early

* Throughout this paper the early town and port are described as Old Winchelsea, to distinguish them from the new town which was established in the late 13th century.
Some of the far-reaching effects that these coastal changes had on areas further inland have already been explored, for instance in Broomhill, the Brede valley, the Rother valleys, and in Walland Marsh. The evolution of the local barriers however, although touched on by Lewis in 1932 and by the present author in 1983, has never been discussed in any detail.

This paper brings the discussion forward, and considers evidence from multi-disciplinary sources for the evolution of the barrier beaches. The aim is to use historical and archaeological evidence in an attempt to throw light on the geomorphological evolution of this coastline, and at the same time to explain as far as possible the documentary record of momentous historical changes in terms of coastal geomorphology. On a wider scale, it is also hoped to make a contribution to the discussion of the origin and evolution of barrier beaches along the south coast between the Isle of Wight and Dungeness in the late Holocene (the last 5000 years). An understanding of the underlying geomorphological processes is essential if historical events are to be explained. The paper therefore begins by considering these.

**Physical Processes**

The Rye Bay area lies at the eastern end of the English Channel. Equinoctial spring tides reach a height of 4.4 m
Catastrophic Changes in Rye Bay

OD, compared to some neaps which reach only 2.0 m OD, or less. The area is also subject to tidal surges, which occur when deep depressions move up the Channel accompanied by gale-force south-west winds. Then, high tides may be up to 0.6 m higher than the predicted level, and on exceptional occasions even higher. On 2nd February 1983, for instance, the high tide was 1.16 m higher than predicted and reached a height of 5.03 m OD.

The barrier beaches consist of flint shingle which was derived from the Upper Chalk well to the west of this area, and the medium to small size of the pebbles, and the fact that they are well rounded, strongly suggest that reworking of this material has been a long-term process which occurred throughout the Ice Age. Present-day processes are the key to explaining how the flint reached this area and to interpreting historic events in the locality. The same processes which can be seen occurring as a result of one high tide are those which in the longer term involve the movement of vast quantities of sediment for great distances along the coast.

Two processes are fundamental, involving longshore and landward movement. Longshore movement, known also as littoral drift, occurs when wave-fronts reach the shore at an oblique angle. As the direction of wave-fronts is controlled largely by the wind, the prevailing south-west winds ensure there is a strong net littoral drift in an easterly or north-easterly direction along the south coast of England. Temporary changes in wind directions may however reverse the direction of drift, and it is noteworthy that considerable westward movement of shingle has taken place along the Broomhill-Camber coastline in the direction of Rye. Over the centuries, the shingle of the secondary barriers on either side of Rye Bay has thus been moved by littoral drift towards the centre of the bay, at the expense of the ‘feeder’ ends of the barriers (Fig. 5.2).

![Fig. 5.2. The surviving shingle in the Rye Bay area.](image)
Shingle is now 'beach-fed', that is, brought in from elsewhere by lorry and dumped in front of the walls to protect them in those impoverished areas. The quantities of shingle delivered under different conditions are instructive. Indeed, they are the only possible source of comparative data. The Pett foreshore received an annual average of 30,416 m³ over the four relatively calm winter seasons from 1986/87 to 1989/90. In contrast, in the winter of 1990/91, which was marked by a succession of great storms coinciding with spring tides from December to March, the figure was 40,431 m³. The Broomhill foreshore received an average of 27,320 m³ over the four seasons from 1986/87 to 1989/90, but 44,075 m³ in the stormy winter of 1990/91.11

Landward movement occurs only on beaches which are narrow enough to permit percolation, and it is on these beaches that breaches may occur. Historic documents contain numerous references to breaches, and it is helpful to consider what this term implied, in the light of recent local observations. Percolation occurs particularly in places where the hinterland is notably low-lying and at times when a great head of water builds up on the seaward side.12 Sea water passes through the permeable beach, the volume varying in proportion to the height of the sea and the strength of the onshore wind. At a high spring tide on a calm day only a few small pebbles are carried through the beach, but when an onshore gale coincides with a spring tide and/or a Channel surge, great fans of shingle are transferred to the landward side. Under those conditions, the top of the barrier may collapse, usually along a short length limited to the immediate proximity of a low-lying feature such as a former creek or artificial watercourse. This produces a breach, often better described as a dip in the crest of the sea-bank rather than a deep trench through it.

In extreme conditions percolation and lowering of the crest may occur along the whole length of a beach. For example in the great storm in March 1991, the culmination of a series of storms all of which coincided with spring tides, the whole length of the three-mile long beach on the Ministry of Defence land south of Lydd was lowered and the coastline (measured at the back of the bank) receded some 26 m inland. Given a longshore supply of shingle, the beach builds up again after storms, and it is very unusual for a breach to become permanent. But the inland movement of the back of the bank is permanent, and breaching is likely to recur at the same weak points.

To sum up, the greatest movement of shingle along the coast and the rolling of barriers in a landward direction occurs under storm conditions.

The Geomorphological Context

The shingle entered this area from the south-west approximately 5,000 BC.13 Wave-action then built this up into a protective barrier in a generally straight line across the embayment in the upland between Fairlight and Hythe, so that from approximately 3,400 BC a stable barrier existed, enclosing the Rye Bay area and indeed the whole of the Romney Marsh lowland behind it.14 The sea returned to the back-barrier marshland in the Rye area between AD 140 and 430.15 Little is known of the source of this inundation, but it is most likely to be derived from inlets which occurred in the barrier at Hythe and Romney. Archaeological and historical evidence shows generally that these were open in Roman and medieval times respectively, although nothing is known in detail of the progress of their opening and closure.16 All that can be said is that each inlet was probably open for a few hundred years and was then closed again by a combination of deposition of silt behind the barrier and the movement of shingle across the opening. Since the Rye Bay inlet is more recent, there is a better opportunity for unravelling its evolution than that of the earlier inlets.

Historical Evidence from the 11th, 12th and 13th Centuries

Historical records concerned with developments at Old Winchelsea and in neighbouring marshlands point overwhelmingly to the existence of an early medieval barrier and to its progressive break-down in the 13th century. A very strong case can also be made that Old Winchelsea must have stood on this shingle. As at New Romney and Lydd and, much later at Rye Harbour, advantage would have been taken of a relatively high and well-drained site. But when faced with the acid tests of a rapidly changing coastline, whereas the other two early town sites survived although their ports silted up, Old Winchelsea was lost to erosion.

The origin of Old Winchelsea is obscure. Although it has been suggested that a charter of c. 1030 refers to Old Winchelsea, that is suspected of being a forgery and there is no guarantee that the town or port existed at that early date.17 Domesday Book (1086) mentions that besides Hastings the large Saxon manor of Ramesle included a novus burgus, a new borough in which the manor had 64 burgesses.18 Whether this was to be known later as Rye or Old Winchelsea is impossible to tell, though Mawer and Stenton favour Rye.19

It seems that it was only towards the end of the 12th century that Old Winchelsea and Rye rose to prominence, and they then did so remarkably rapidly. Although the Cinque Ports association developed from the 11th century onwards, it was not until well on in the 12th century that Old Winchelsea and Rye joined it, as the 'Two Ancient Towns', which suggests that they were of little importance as ports before that time. Although by 1190 they had become affiliated to the confederation, in 1191 they were still very inferior to their head port, Hastings, in terms of shipping. In marked contrast, however, the Pipe Roll of 1204 shows that by then Old Winchelsea came third in the list of ports between (Great) Yarmouth and Southampton,
the taxation on its merchants being exceeded only at London and Southampton. Old Winchelsea paid £62 compared to the £10 contributed by Rye. In the 1220s both towns flourished as centres of ship-building. In 1235 they possessed a striking display of naval strength: Old Winchelsea had nine ships, the largest of 160 tons, and Rye four, including one of 240 tons and another of 170 tons. From 1237–1243 there were royal dockyards and storehouses in both towns. Everything points to the conclusion that this was the most flourishing period for Old Winchelsea, that Rye was secondary in importance to Old Winchelsea, and that the two ports were very closely related.20

At an earlier date (1086) Domesday Book recorded the exceptional (and no doubt nominal) number of 100 salt-works. These must have been in the marshes near Rye or Old Winchelsea, and this industrial activity implies the use of a substantial area of marsh sheltered from the open sea but with some form of access for salt water, presumably at high tides. But what was that access? Was there already a permanent inlet in the local barrier? Were the salt-works sited near the tidal limits on a broad channel leading inland from Romney towards Rye, which coincided with the Water of Chene, the precursor of the Wainway channel? Or was the salt water admitted in some way through a shingle bank?21

During the period in which Old Winchelsea flourished the neighbouring marshlands were increasingly occupied and reclaimed, and this could only have taken place in the shelter of a barrier beach. Enclosure of large areas of the marshes began during the 12th century and continued until the 1230s. For example, in c. 1197 marshes between Old Winchelsea and Clivesend (Cliffsend was the east end of the salt-works sited near the tidal limits on a broad channel embanked, stretching north towards a great fleet. This fleet is interpreted as a wide channel, which seems to have reached from Rye in the west towards Cheyne in the northeast and may well have been the fore-runner of the Wainway of later centuries.22

The period in which Old Winchelsea flourished thus coincided with one of confident expansion in the surrounding marshes. Reclamation was still proceeding in the marshes east of the Water of Rye in the summer of 1234, when the monks of Robertsbridge were to reclaim so much land as they reasonably could, and further reclamation was envisaged within ten years.31 However, changes were imminent.

A check in development occurred in the later 1230s and early 1240s. As early as 1236 representatives of the Archbishop’s manor of Aldington were sent out for three days to Romney, Old Winchelsea and Applelodge to ‘see to the preservation of the country and the marsh against the inundation of the sea’.32 In 1243 a note of caution was sounded at Broomhill. Rents and services received for land enclosed at Cumerse, in or near Broomhill, were to cease if the marsh was overwhelmed by the sea.33 And after the middle of the century there are no further records of newly enclosed land either at Broomhill or in the Brede valley. Taken in isolation this could simply reflect a lack of surviving documents, but combined with the record of increasing erosion at Old Winchelsea it indicates conclusively that insuperable problems had begun to occur in the marshlands, probably due to a rise in the water table combined with a rapidly increasing threat of marine inundation.

Old Winchelsea, apparently situated on a shingle bank, was extremely sensitive and vulnerable to coastal changes. The first record to indicate problems was a royal edict in 1244 which allowed the burgesses to take levies on every ship entering the port with 80 tuns or over of wine, so that they could make a ‘quay’ for the defence and improvement of the town. In 1249 the barons of Old Winchelsea were given a grant of 130 marks ‘on condition that they are diligent in repairing and preserving the town against the sea’. Rye received a similar grant for 70 marks.23 This was followed by further annual grants.
In October 1250 a great storm coincided with a spring tide (and probably a Channel surge): 'at Old Winchelsea besides salt-cotes and the retreats of fishermen, as well a places of refuge and mills (i.e. facilities out on the marshes which might expect occasional flooding), more than 300 buildings were destroyed in that same district by the violence of the sea'. This was followed in January 1252 by a second great storm, in which 'at the harbour of Old Winchelsea, a very necessary one to England and especially to London, the waves of the sea ... covered places adjacent to its shores and washed away and drowned many men'. Even allowing for the exaggeration for which the chronicler Matthew Paris was renowned, these two great storms must be seen as massive acceleration in the rate of erosion.36

In spite of increasing royal grants and numerous commissions seeking means of preserving the town against the perils of the sea, erosion proceeded relentlessly.37 In c. 1250 and 1260 several descriptions mention streets going down to the 'sea on the south'. In 1262 the imminent peril of the waves and the violence of the sea was said to be constantly threatening the town.38 Not surprisingly, the sea seems to be close at hand.

In 1271 the quay on the south side of the church of St Thomas the Martyr was carried away by floods and tempests of the sea, and a 'great part' of the church fell.39 Erosion of the town continued unceasingly and when, in November 1280, it was already 'for the most part submerged by the sea' the king's steward was sent to obtain land with a view to moving the settlement to a new site safely up on the hill of Iham, its present situation.40

In the meantime, in March 1251, two men were sent by the Crown to 'provide and order how the town of Old Winchelsea can be saved and defended from the sea to the protection and security of the adjacent country, with the counsel and aid of archbishops, ... freemen and others having lands between the towns of Old Winchelsea and Hythe, and to all others having lands in the marshes of Old Winchelsea, Rye, Iham, Icklesham, Fairlight, Udimore and Brede'.41 In other words, not only the immediate surroundings of Old Winchelsea and Rye, but also Pett Level and the Brede valley were threatened with inundation.

The sea made increasing inroads up marshland channels, reaching a considerable distance inland. By 1258 salt water had penetrated north at least as far as Appledore.42 And in the south the sea had created a channel which was of considerable width, for when the barons of Old Winchelsea, Rye and Hastings were summoned to attend the king at Lydd in 1261, they had to cross 'the arm of the sea'.43

On 4th February 1288 the sea penetrated further still. It 'flooded so greatly that ... all the walls were broken down and all the lands covered from the great wall of Appledore ... south and west as far as Old Winchelsea'.44 This great wall can still be traced in the massive embankment which crosses the centre of Walland Marsh, now some 7 km inland.45 In that year the walls were also broken down and serious flooding occurred in the Brede valley.46 And in the aftermath, serious flooding occurred far up the Rother valley, presumably due to an advance of tidal water causing a back-up of river water, and in the Brede valley, where walls were broken down.47 This was only the last of the three great sea floods recorded elsewhere within 14 months in 1287/88, but its catastrophic results indicate that it was the culmination of a series of great storms, very probably combined with Channel surges.48

No documentary records of Broomhill in the late 13th century have been found, but Camden wrote (three hundred years later) that in the reign of Edward I (1272–1307) 'the sea raging with the violence of winds overflowed this tract ... having quite drowned Broomhill ...'. The inhabitants, he said, had retreated to Lydd.49 Excavation in the 1980s showed that the present site of Broomhill church dates from 1300, which seems to confirm that the site which Camden reported abandoned was lost permanently to the sea.50

Figure 5.2 shows the present-day distribution of shingle in the Rye Bay area. It is possible that three relatively small areas may represent the substance of the broken-down barrier beach as it was redistributed in the aftermath of the 13th century storms. First, the innermost group of ridges south of Camber Castle, which are orientated westward and were derived from a source in the east, may be the reworked distal end of the western portion of the old barrier. Secondly, the ridges of a mass near Moneypenny, East Guldeforde show that this was derived from the south or south-west and as the accumulation includes large-size cobbles, it can only have been emplaced when that area was exposed to the waves of the open sea. A minor accumulation to the north-west consists of much smaller pebbles, and was probably re-worked material from the Moneypenny mass. Thirdly, at Broomhill a remarkable high-level narrow ridge of fine-grained shingle extends 2.5 km in a north-easterly direction from the present coastline, passing under Broomhill Farm and Beach Banks Cottage.51 This ridge can only have been emplaced when this area was exposed to the open sea. It probably marks the widest eastern extent of the Winchelsea-Rye inlet in c. 1300. Alternatively but less likely, it may reflect a wide breach in the southern barrier – possibly the interestingly named feature Le Trenche.52

Evolution of the Barrier Beach on the East Side of Rye Bay Since 1300

Medieval Broomhill

Archaeological and documentary evidence shows that it was possible to occupy at least part of Broomhill during the 14th and 15th centuries. The now-ruined Broomhill church may have been built in c. 1300. This was remarkable, since that was a time when most of the southern half of Walland Marsh was apparently salt marsh, and can
only have been possible because Broomhill was protected on the south side by a substantial mass of shingle.

Notwithstanding this, some land certainly was lost at Broomhill around 1300. Whereas in the 13th century Broomhill et terra nova had paid a total rent of £3 15s. 9d. to Battle Abbey, in the early 14th century the beadle noted that it had 'sunk beneath the sea'. In 1309 the abbot and convent of Robertsbridge were granted a licence for the acquisition in mortmain of lands and rents elsewhere to the yearly value of £100 in consideration of the great loss they had sustained as a result of the sea having inundated their marshes of Old Winchelsea, Rye and Broomhill.

A concentration of commissions of Walliis et Fossatis between 1354 and 1408 (only one medieval commission was recorded there outside that period) shows that, not surprisingly, much effort was spent on sea defence of this area at that time. While these commissions mention various walls, none of which has been located, it seems that one particular wall was of special importance. An inquiry set up to survey the walls and sewers of Broomhill Marsh in 1365 was told that all the tenants who had land in the said marsh were bound to repair the ancient wall, without outside help, adding a warning that if the wall was not repaired all the lands from that wall to Lydd and further (how far they knew not) might be 'drowned'. The report of the jury responding to a further inquiry set up in October 1374 gives a clear indication that the threat of flooding was coming from the west and north, that is from the area which was later known as the Wainway Channel, rather than from the south. It was said that 'all the marsh of Broomhill from a place called Le Trenche on the south-west is surrounded by the sea on the west, north, and north-west as far as a place Lordseshede at Okholte on the north-north-east ... the wall beginning at Le Trenche and extending as far as Lordseshede from time out of mind'. It seems significant that this very specific report which covered an extensive area makes no mention of sea defences being necessary on the south side. In other words, a substantial shingle mass was probably still in place there. In view of more recent coastal recession, however, that mass would have lain very considerably further south than the present-day coastline. By late 16th century the shingle had been re-distributed, and a considerable width of land had been lost during that century. Indeed, none of the medieval coastal features survived long enough to be mapped by the early cartographers.

**The Barrier and Reclamation since the 16th Century**

By 1594 the shingle barrier extended 4.5 km north-westwards from the high-level surface shingle at Wayestend, and culminated in the Camber Head, some 2.2 km east-south-east of Rye (Fig. 5.3). A sequence of two earlier
headlands, which were separated by low areas each occupied by a short tidal creek, bear witness to the westward growth of the barrier prior to this date. To the north lay a vast area of salt marsh, in which the major channel was the Wainway. Broomhill church had been inundated sometime after c. 1500 and that area had reverted to salt marsh. The Jury's Gutt Sewer entered the eastern end of the salt marsh through Kent Wall. The fresh water entered a salt marsh creek to flow several kilometres north-westward before reaching the open sea near Rye, though the cartographical evidence on this point is conflicting. One map of 1589 names Kent Wall as 'Sea Wall' and shows the 'gutt' (freshwater outfall) set in that, while other maps of much the same date show that there was already a wooden outfall set in the shingle barrier. This is discussed below. In 1593 this whole area was graphically described as 'a great quantity of fresh and salt marsh, stonebeach and kiddle grounds' (Fig. 5.4).6

In mid-16th century the barrier beach was low and narrow. In c. 1567 the seafarers of Rye complained that their sea craft were no longer safe in the channels and creeks behind it from 'the rage or surge of the sea' because the beach was 'gone and worn away'. They explained that the 'force and rage of the sea hath more power to fall in here than ever heretofore', that the beach had recently 'decayed' and was 'likely shortly more to decay because the shore weareth A lack of shingle is clearly indicated.

Because it was narrow the barrier was being rolled inland and cut progressively across marsh creeks, which were low-lying areas where sea water was most likely to percolate through the barrier and cause breaches. One deep breach had occurred some time before 1593, and had cut off the then headland, which subsequently became known as Old Camber Head. This lost headland is illustrated, remarkably in shadowy, apparently submarine, form on Symondson's 1594 map and, less accurately, on another map (Fig. 5.5a).63 Symondson's precise mapping of this suggests that this breach may have occurred very recently. On the other hand, three Dutchmen reported in 1576 that they saw 'no likelihood (of restoring the harbour of the Camber) ... because the sea has carried away the head thereof', which implies that the headland may have been lost nearly 20 years earlier.64

Other breaches occurred further east, and as far as can be ascertained these occurred repeatedly at the two places where the coast intersected the Jury's Gutt Sewer. Maps by Prowez in c. 1572 and Symondson in 1596 both showed an Old Breach and, further east, a New Breach, although the proportions of the Prowez map are imprecise and it is impossible to confirm that the two maps refer to the same breaches without additional data.65

In mid-16th century too, some fresh water from the Jury's Gutt Sewer was released to the sea at the New Breach on an opportunistic basis. Following a 'great tide at Allhallows' in the winter of 1570, men were paid for...
Catastrophic Changes in Rye Bay

Fig. 5.5. The east side of Rye Bay in the late 16th century (parts of).

a) Old Camber Head, b) Richard Smith's Innings of c. 1585. ASCO CTM 417/a.
from the 16th century, was carried out in c. 1585 by Jill Eddison
Customer Richard Smith of London who walled in an purpose here is to outline the progress and problems of the only recorded attempts to place reliance on it failed barrier was thus unreliable and uncontrollable. Indeed, because the water flowed back into the sea by way of a artificially managed.

naturally evolving barrier into one which was increasingly occasion, so we are told, 1,162 sheep were is demonstrated by later records, the problem was presum-
ably compounded by the fact that more water came in by percolation, particularly at the breaches, than could be evacuated at low tide.

From the standpoint of sea defence at this time the barrier was thus unreliable and uncontrollable. Indeed, the only recorded attempts to place reliance on it failed dismally. In c. 1564 Armigal Wade of Hampstead tried to harness the sea water entering one breach and divert it northwards in order to scour out and maintain the Wainway waterway, which had formerly been a haven for Rye shipping. In this he was ‘utterly frustrated’ because the water flowed back into the sea by way of a new breach some three-quarters of a mile (1.2 km) from the first. It seems most likely that these two breaches were in the same positions as those shown by Symondson in 1596, since they were approximately the same distance apart, and the back-barrier channel referred to was certainly the Jury’s Gutt Sewer, as shown by Symondson in 1594. Local drainage experts, including the jurats of Romney Marsh, were consulted. They said that it would be useless to try to stop up the new breach because the sea would simply break in again at ‘some other place’. They confirmed the description of the sea-farers of Rye, saying that the beach there was so low ‘by a great length’ that the sea often overflowed it, and it was ‘so thin and slender’ that, with a channel on one side and the sea on the other, it was not able to withstand the force of the sea.

At much the same time Wade also made the first attempt to reclaim salt marshes behind the barrier, and this was only a short-term success. He enclosed 891 acres in Broomhill, a very large area whose exact limits are not known because it was soon lost and reverted to tidal marsh. In October 1570 a spring tide overtopped his walls removing at least 300 rods (150 m), badly damaging another 300 or 400 hundred rods, and breaking down and floating off a large part of the principal sluice. On that occasion, so we are told, 1,162 sheep were drowned.

Towards the end of the century, however, conditions which made these salt marshes in the back-barrier area suitable for reclamation seem to have improved. The purpose here is to outline the progress and problems of this reclamation, which changed the condition of a naturally evolving barrier into one which was increasingly artificially managed.

The first enduring enclosure, and the only one to survive from the 16th century, was carried out in c. 1585 by Customer Richard Smith of London who walled in an area of 662 acres in Broomhill between the Wainway and the Jury’s Gutt sewer. Although this is shown on a contemporary map (Fig. 5.5b), unfortunately no details of the activities of enclosure nor of its first 50 years survive. But its success prompts the question, why was it possible to maintain it after 1585 when a similar, albeit larger, innings which must have included the same area had been lost in 1570? The answer may lie partly in the fact that Smith’s innings was smaller than Wade’s by some 230 acres. More importantly, perhaps, the walls were prudently laid well back from the barrier, so that the creek bearing the outflow of the Jury’s Gutt Sewer was still able to flow westward between that and the innings. Finally, it seems likely that the mid-16th century was a period of particular storminess, and that the weather may have become calmer towards the end of the century, which would have implied less frequent over-washing, percolation and breaching of the barrier.

The tract adjacent to Smith’s innings was particularly difficult to reclaim since it contained the Jury’s Gutt Sewer and the New Breach, and it remained salt marsh defended by the barrier alone for another 50 years. In 1627 a great sea flood not only overflowed Broomhill but broke over the Kent Wall into Walland Marsh. Following this a new wall was built, probably inset behind the shingle, and the Commission of Sewers for Walland Marsh was extended to include this land as well as Smith’s successful innings. Thus from 1632 these lands had the benefit of corporate sea defence, and the historian has the benefit of a continuous record of coastal management. The following account deals first with this length of the coast, followed by that further west, in the area now known as Camber.

By 1632 Jury’s Gutt was set in the shingle barrier itself. It consisted of a wooden structure built in a number of sections (lengths) which gave the operators the flexibility which was essential in an extremely mobile situation, and the record of its maintenance also provides much information about movements of the beach. In June 1637, for example, six lengths needed to be laid on the landward end of the gutt, to keep the shingle out of the watercourse ‘which by the overflowing of the sea was very subject to be forced into the same’. At high tide sea water was issuing through the shingle bank at a place near the gutt ‘where formerly hath been a brack which sewed the level’. In December 1641, during an extraordinarily stormy winter when fresh and salt water flooding and violent winds occurred, the sea bank was ‘very low and thin, so that at Streame (Spring) Tides, and many times in the neaps when the wind bloweth much in the south or west, (the sea) putteth in more water on the salts nigh the gutt than the said gutt can run out between tide and tide, so that the weather may have become calmer towards the end of the century, which would have implied less frequent over-washing, percolation and breaching of the barrier.

The tract adjacent to Smith’s innings was particularly difficult to reclaim since it contained the Jury’s Gutt Sewer and the New Breach, and it remained salt marsh defended by the barrier alone for another 50 years. In 1627 a great sea flood not only overflowed Broomhill but broke over the Kent Wall into Walland Marsh. Following this a new wall was built, probably inset behind the shingle, and the Commission of Sewers for Walland Marsh was extended to include this land as well as Smith’s successful innings. Thus from 1632 these lands had the benefit of corporate sea defence, and the historian has the benefit of a continuous record of coastal management. The following account deals first with this length of the coast, followed by that further west, in the area now known as Camber.

By 1632 Jury’s Gutt was set in the shingle barrier itself. It consisted of a wooden structure built in a number of sections (lengths) which gave the operators the flexibility which was essential in an extremely mobile situation, and the record of its maintenance also provides much information about movements of the beach. In June 1637, for example, six lengths needed to be laid on the landward end of the gutt, to keep the shingle out of the watercourse ‘which by the overflowing of the sea was very subject to be forced into the same’. At high tide sea water was issuing through the shingle bank at a place near the gutt ‘where formerly hath been a brack which sewed the level’. In December 1641, during an extraordinarily stormy winter when fresh and salt water flooding and violent winds occurred, the sea bank was ‘very low and thin, so that at Streame (Spring) Tides, and many times in the neaps when the wind bloweth much in the south or west, (the sea) putteth in more water on the salts nigh the gutt than the said gutt can run out between tide and tide, so that the level receiveth no benefit by the said gutt many times by the space of nine or ten days together when there is most need thereof, although it be opened every tide in the same time’. In November 1648 ‘the tempestuous weather and rage of the sea this winter hath broken and carried away many timbers of the gutt, and the sea hath forced the sea full (bank) very nigh the mouth of the gutt, so that there (is) more need of laying the gutt to landward’. It was emphasised then that if the gutt happened to be blocked...
Catastrophic Changes in Rye Bay

by shingle when the salt marshes behind it were flooded, the gutt was likely to break up. These three records illustrate the continuing problems in mid-17th century: loss of the seaward end of the gutt; encroachment of shingle into the watercourse behind the beach; and percolation by sea water and the difficulty of returning it, together with excess land water, to the sea between high tides. From time to time the gutt was supported by side walls. At this date the gutt was only kept operating with great difficulty, by using adaptable technology which could keep pace with the continuing northward movement of the barrier.

This length of the coastline gradually became reinforced by a wall which no doubt initially grew up piecemeal as short inset walls behind weak points in the barrier, and there are no records of further extraordinary problems until the winter of 1747-48. This, however, heralded a short period of intense storms which often coincided with spring tides. Storms were recorded in the winter of 1747-48, with the wind in the west; in September 1749, with a very high tide; in December 1750, when a great storm coincided with the full moon; in March 1751, about the time of the equinoctial tide; and at the beginning of January 1754, when extraordinarily high tides were accompanied by winds. In spite of emergency work which involved importing vast quantities of wood and underwood from the upland in Sussex and clay dug from the marshes, in May 1754 the wall was reported as ruinous, and in the early 1760s a new wall was built behind the old one, extending between the gutt and the high-level shingle beyond Wayesend. In 1767 this was reported to be in very good repair, and it remains the basis of the present-day wall.

Further west, the headland advanced a further 1.25 km towards Rye during the 17th century, and by 1693 a considerable quantity of shingle had been deposited in the area now known as Northpoint Beach. This transfer of shingle towards Rye inevitably resulted in a lack of it along the rest of the barrier. West of Smith’s innings an area of approximately 200 acres was inned in 1646 but this was lost in 1656, but was recovered again the following year. In c. 1662 it was lost in a violent inundation which ‘carried away a great part of the outland and destroyed several acres by covering it with beach and pebbles’. It was enclosed again in the early 1680s, when the sea was excluded by an inset wall. But in December 1734 another breach occurred and quickly widened to 350 yards (320 m). All this time maintenance of these sea defences had been in the hands of private individuals and, as was later alleged, some of the defects may have resulted from their incompetence or negligence. Following the breach of 1734, the land in this area was taken into Guldeford Level and this last breach was finally closed off by those commissioners by December 1735. A sketch map which probably dates from a case in the High Court in 1740 shows a new wall extending along the length of this frontage and, as far as can be ascertained without accurate contemporary maps, this line was held thereafter.

To sum up, this barrier consisted of the re-worked ‘tail’ of the early medieval barrier, together perhaps with a small quantity of shingle eroded from the seaward end of the Midrips. After the 13th century no significant new supply of shingle was added to it, and as the existing shingle was carried either towards Rye by westward drift or towards Dunegeness by eastward drift, the length in front of Broomhill and the east end of Camber suffered impoverishment. By 16th century the barrier was already thin and rolling northward, and the only successful inning of salt marsh behind stopped well short of the barrier. Before 1760 management of the Jury’s Gutt outfall was essentially flexible. Not until mid-18th century was the coastline stabilized with long-lasting walls, which were then protected by a certain amount of natural shingle. But by the mid-1950s this had gone and it was necessary to start importing shingle by lorry. Thus in the space of 400 years the coastline passed from a naturally evolving barrier, through one where the sea was still the controlling force and human activities were dominated by coastal change, to a policy of management using a static sea wall, and finally to that of the present day, when man has been forced to adopt the soft-engineering policy of beach-feeding.

In view of the complete loss and re-structuring of the substance of the early medieval barrier, it is extremely difficult to accept the statement of Homan, followed by Gardiner, that the hermitage (light) at the entrance to the port of Old Winchelsea was the same one as that which was lost with the Old Camber Head in the second half of the 16th century. Every port entrance can be expected to have had lights for navigation after dark, and in situations undergoing revolutionary changes as radical and rapid as those in this area, the lights must have been moved many times, sometimes even annually.

Development of the Barrier Beach on the West Side of Rye Bay

From 1594 at the latest, the date of the earliest cartographical evidence, a substantial shingle bank stood in front of Pett Level, in the lee of the Fairlight hills. In 1873 this was on average 120 m wide, and stood well out in front of the cliffs. Further north-east, and significantly beyond the immediate shelter of the hills, a sequence of shingle ridges fan out from a point now offshore, south-west of Holford’s Farm (TQ 915163) (Fig. 5.6). The innermost, earliest, ridges which run westward towards the Brede valley may represent the re-worked remains of part of the medieval barrier emplaced soon after it broke down. These are overlain by the first of three later groups, separated from each other by tracts of low-lying finer-grained sediment. The first of these groups is dated by Symondson’s map of 1594. The earliest phase of Camber Castle dates from
1512–14, but had been preceded by an earlier building on or near the same site. In 1487 Sir Richard Guldeford was given permission to build a tower within two years 'with stone, lime and sand ... and to crenelate such walls and towers' in the marsh of his manor of Iham 'near the port called Le Camber in Sussex'. Construction had started by March 1492, at the latest, when Henry Guldeford received permission to set up and maintain one or two lights 'near Camber Castle'. Considering its purpose, this building must have stood on or near the shingle headland overlooking the entrance to Rye harbour.

No documentary evidence of the emplacement or erosion of the first two groups of ridges survives, but the feeder end of each in turn became attenuated or worn...
right away, as the shingle was re-worked and moved north-eastwards towards the end of the barrier, and each in turn had to be supported or replaced by earth walls. This sequence occurred a third time, and that episode is well recorded, notably on maps. John Smeaton, called in as consultant on the ill-fated attempt to construct a new harbour for Rye, noted in 1763 that shingle was building up rapidly at the mouth of Rye Harbour. He said that the Outer West Point had been formed in the previous ten years, and a body of shingle marked 'A' was driving down from the west (Fig. 5.7).82 Smeaton's map also shows that in 1763 the passage of shingle was so far unaffected by two pier heads of Portland Stone which had been built in 1730–31. However, in 1762 the sea was admitted to the artificial embanked channel between the two piers (as far as point C on Smeaton's map), and this set up an interaction between the influx of tidal water and the shingle moving along the coast.83 The shingle arriving from the south-west diverted the mouth of the harbour, while the tidal flow ensured that the new shingle built out into a new ridge outside the diverted channel. The result was the diverted channel some 300 m wide, which became known as The Nook (or Greedy Gut), while the inner beach became Nook Beach. By 1807 the new spit was 2 km long, and although by then the new harbour had failed and the inland length may have silted up, the tides continued to flow in and out of the new channel (Fig. 5.8).84

Fig. 5.7. 'The Bay and the Old and New Harbours of Rye' 1763, John Smeaton (part of). Print reproduced by courtesy of Rye Museum Association.
The new outer spit thus had the effect of providing a sheltered site on the earlier beach, beside a sheltered inlet, which may be highly significant for the interpretation of the evolution of the Old Winchelsea barrier. This situation was to continue until the outer spit was breached – and in this instance it continued for over a hundred years because there was still a plentiful supply of sediment passing along the shore, as witnessed by the quantity which has accumulated outside the Nook. Some of this may have been derived from the Hastings direction, arriving along the coast under the Fairlight hills, but much of it must have been derived from the mass which had previously lain in the lee of Cliff End and was being progressively removed. This bank, some 120 m wide in 1873, became progressively narrow until by 1930 there was little left of it. In the winter of 1931 the old Ship Inn, which had stood securely at the back of this bank of shingle, fell into the sea and the sea also broke into the west end of the Nook, flooding the entire length of that low tract and leaving a dramatic scour hole which survives today (Fig. 5.9). The supply of shingle was exhausted, and the quantity of shingle moving on, north-eastwards, exceeded that (if any) coming in from the south-west. An artificial bank was built to close the breach, but without that Nook Beach would once again have been exposed to the forces of the open sea. In any case, this continued to be a weak point: in 1940 severe
percolation and overtopping resulted in similar flooding there, and this was repeated in 1991.

In summary, the accumulation on the west side of Rye Bay represents all the shingle left of the south-west end of the early medieval barrier, together with any which has arrived from the south-west since then. It provides a record of coastal progradation spanning more than 500 years. The deposits are, however, very shallow (1–2 m deep), and attenuated. The grouping of the ridges suggested that emplacement occurred episodically, and it seems that the development of the most recent phase of shingle emplacement was the repetition of a cycle which had happened on at least two previous occasions.\(^8\)

**Discussion**

Documentary evidence shows beyond any reasonable doubt that a barrier existed across the Rye Bay area in the early medieval period. Enclosure of marshland at Broomhill began in the 12th century at latest, and proceeded on a larger scale in the first three decades of the 13th century. This would only have been possible given the shelter of an extensive shingle barrier, and indeed specific references in two charters makes it clear that shingle was a recognized component of the local topography. Equally it is inconceivable that Old Winchelsea would have grown up on marshland which by definition was below the level of the higher tides: the town must have stood on the relatively high and dry foundation of a shingle bank.

This discussion concentrates first on the critical evolution of the barrier in the 13th century, as seen through the historic records of Old Winchelsea and the neighbouring marshes. Secondly, the conclusion that the shingle barrier across Rye Bay was a long-term feature which did not break down until the 13th century is considered in the light of recent geomorphological investigations of the development of the marshes behind the barrier during the past two and a half millennia. Lastly, the implications for the study of the evolution of shingle barriers on the south-east coast of England during the late Holocene (5,000 years) are discussed.

**Old Winchelsea**

As we have already seen, we have to account for three phases illustrated by the history of the town. First, a period when Old Winchelsea was of little or no importance. Secondly, there was a period of probably less than 50 years when Old Winchelsea flourished as the most important port on the south-east coast. Thirdly, came the progressive loss of the town site to the sea, a phase which had begun by 1244 and which was more or less complete within 40 years.

Some form of natural protection, such as a shingle barrier or a tidal inlet, was essential if any port was to flourish on this part of the coast. The high-energy, abrasive environment of an exposed shingle beach was no place for unloading cargo or for ship-building. Therefore, the principal cause of the rapid rise of Old Winchelsea on
a) Early 11th century. Barrier still complete but narrowing, with percolation causing it to roll and bow landward. No Old Winchelsea.

b) c. 1086. Temporary breaches, allowing collection of sea water for salt extraction.

c) c. 1180. Permanent breach develops, giving rise to outer spit.

Fig. 5.10. A hypothetical sequence to illustrate the breakdown of the early medieval barrier beach, and the rise and loss of Old Winchelsea.
d) 1250. Outer spit truncated, leaving Old Winchelsea exposed to south-west winds.

e) 1287–88. Final breakdown of the barrier, creating Rye Bay.

**Key to Frames a–e**

- Percolation
- Longshore drift

f) Subsequent evolution of Rye Bay.

**Key to Frame f**

- c. 1400
- 1594 (Symondson)
- Present day
that particular site is most likely to be a significant change in coastal configuration. But it should also be noted that the period c. 1180–1250 may well constitute the era of most remarkable urban plantation and growth in England before the 19th century. We are no doubt witnessing an interaction between geographical, social and economic factors.

It might be argued simply that the geographical reason for the rise of Old Winchelsea was a major breach which gave access to a safe haven in marshland channels behind the barrier. This, it could be concluded, signalled the beginning of the process of barrier breakdown which was clearly complete by the end of the 13th century. But this theory is rejected on grounds of timing. The period in which the town flourished seems to have coincided with that of maximum development of the marshes behind the barrier. Extensive reclamation was taking place there in the first three and a half decades of the century, exactly the period in which Old Winchelsea was at its zenith. A major breach would certainly have lead to widespread flooding of the marshes, but this apparently did not occur until the storm(s) of 1250, by which time Old Winchelsea was already in trouble. Only after that date did tidal water make rapid advances up the marshland channels.

A second possibility is that the Water of Chene, the precursor of the Wainway, was a broad tidal channel which extended from an inlet through the barrier at Romney south-westwards as far as Rye and Old Winchelsea. The 100 salt works at Rameleslie might well have been near its tidal limits. There is, however, no other evidence to support this suggestion. It does not account for the rapid rise and demise of Old Winchelsea, nor its supremacy over Rye, nor indeed for the location of the town on an apparently exposed shingle beach. Nor, importantly, is there any known political association of Old Winchelsea and Rye with Romney. They were not, for instance, limbs of that Cinque Port, but rather were attached to Hastings. On the other hand, this study has of necessity been confined to the barrier beaches, and there is certainly room for further debate about the role and history of the Wainway channel.

It seems therefore that we have to look for a more localized explanation of the extremely rapid developments at Old Winchelsea. The following hypothetical reconstruction is put forward on the basis of comparison with the most recent episode in the evolution of the west side of Rye Bay, a similarly drift-aligned barrier.

It is suggested that the reduction in longshore sediment supply, which must have been the factor ultimately responsible for barrier breakdown, was already having some effect in the 11th century (Fig. 5.10a). Thinning of the barrier would have led to increasing percolation and eventually to temporary breaches, particularly where the barrier was narrowest and marshland channels lay close behind. Initially these would have been intermittent breaches, subsequently repaired by a further longshore supply of shingle. The weakest point would have been towards the south-west end of the barrier, but some distance out from the shelter of the Fairlight hills. This temporary and limited influx of sea water at spring tides would have created ideal conditions for the nominal 100 salt-works mentioned in Domesday Book and, though this is pure speculation, the local inhabitants might have been able to open the breaches artificially on occasions (Fig. 5.10b).

In mid- to late 12th century shingle supply diminished further and one breach would have become a more permanent, although small, feature. Although sea water would have flowed in at high tides, the ebb would have quickly reversed the flow, so that any flooding of the marshland would have been very limited and could probably have been contained by embankments. While this had no great effects in the marshland, even minor tidal movements in and out would have been sufficient to cause an interaction with any further longshore supply of shingle, as happened in front of Nook Beach in mid-18th century (and apparently on at least two previous occasions in the locality in the last 500 years), diverting the tidal channel along the coast. This provided a potential site for Old Winchelsea on the inner shoreline, with not only protection from the waves of the open sea but also with a tidal haven behind an outer spit and access into marsh channels leading to Rye and the Wealden hinterland. This explains why the maritime fortunes of Rye in this period became to a very great extent dependant on those of Old Winchelsea (Fig. 5.10c).

The stability of this situation depended on a longshore supply of shingle sufficient to maintain the protective shingle spit and, implicitly, continuing calm weather. The latter, however, changed significantly and by 1244 increasing storminess was threatening the fragile protective spit. The 1250 storms broke through not only the outer spit but also into the marshland behind the barrier, as reported by Matthew Paris and seen in the records of 1251 (Fig. 5.10d).

The remaining substance of the outer spit would have quickly moved on, so that the south side of the town would have become exposed to the open sea. Significantly, the records of c. 1250 and 1260 mention streets in the town going down to the sea on the south, and in 1271 it was the south side of the church of St. Thomas which was suffering erosion. The breach beside the town would have been widened progressively as tidal water surged in and out, and with the sea on the south and west and the tides covering an increasingly large area of marshland to the north, it is not surprising that by 1280 Old Winchelsea was 'for the most part submerged by the sea'.

Thus the first phase, when Old Winchelsea was of little significance, is explained by the existence of a continuous though narrow barrier through which intermittent percolation occurred. The second phase, leading up to the acme of the port’s prosperity, occurred after a breach became permanent and the influx of tidal water caused the development of an outer, protective, shingle spit. The third phase began when storms broke through that spit, removing
the protective barrier, leaving the town vulnerably exposed on the south and surrounded by the sea on the west and ultimately on the north.

The great storms of 1287/88 (Fig. 5.10e) carried the sea half way across Walland Marsh but, contrary to local tradition, most of Old Winchelsea had been lost well before this date. Equally, although the earlier history of the Rother is regrettably enigmatic, it is inconceivable that the waters of the Rother and other smaller rivers did not find their way to the sea in the south in the aftermath of the 1250 storms at the latest, rather than as late as 1287/88.

Camden may well be right that a settlement at Broomhill was lost at about this time. There is a lack of contemporary records, but as the present site of Broomhill church was only occupied in c. 1300, there is a strong suggestion that it was a replacement for that mentioned in documents of the early 13th century and probably lost in the upheavals of 1287/88.

Evidence from the back-barrier marshland

It has recently been demonstrated that, following a period of some 3,000 years during which the Rye area was generally a fresh-water marsh or swamp, marine conditions returned to the local back-barrier area sometime between AD 140 and AD 430. These radio-carbon dates might suggest that the local, southern barrier was breached at that time. However, as a result of this documentary study it now seems clear that this inundation cannot be attributed to a break-down of the barrier across Rye Bay at that early date, and indeed Long has concluded on geomorphological grounds that its source was an inlet to the north-east of Romney Marsh proper.

On the other hand, it has been demonstrated that, after a period of fresh-water conditions dating from c. 2000 years ago, marine conditions returned to Wickmaryholm Pit in the Dungeness shingle mass between c. A.D. 950 and 1250. This is interpreted as the result of erosion of the south coast of the foreland, which may well correlated with the period of storms which caused the breakdown of the Rye Bay barrier.

The Rye Bay Barrier in the Context of the Evolution of barrier Beaches of Sussex

The Rye Bay area constitutes a small length of the much larger coastal unit (or master cell) which extends eastwards from Selsey Bill to Dungeness. With a strong eastward drift in operation, Dungeness was an extending area of deposition, a 'sink', the only point along that considerable length of coastline where there has been a long-term accumulation of shingle, continuing for several thousand years. This deposition lasted until the late 13th century, since which time no fresh supply has reached the ness: all subsequent changes in the shape of the ness have been due to re-working.

The existence of a long-term barrier across Rye Bay implies that it must to been a structure of considerable width, comparable perhaps to Orford Ness. Secondly, for the barrier to have survived there must have been a continuing supply of longshore shingle, sufficient to replace that which was simultaneously moving on towards Dungeness. The fact that the supply was probably episodic, in response to alternating periods of storminess and calm, reinforces the need for a wide structure.

The source of this longshore supply was the coastline of Sussex. As sea-level rose quickly, up to 4,000 years ago, the waves brought up shingle from what is now the floor of the Channel and built up a barrier, which was more or less continuous along this coast. Shingle was moving perpetually eastwards along the outer edge of the barrier. In the neighbourhood of Rye, the existence of a 5,000-year old peat bed within 55 m of the foot of the Fairlight cliffs shows that the cliffs near Cliff End have only recently been exposed to the sea. Erosion, currently estimated at around 1 m per year, only began within the last 100 years.

Indeed, in c. 1807 an 800-m length of the Royal Military Canal was dug in front of those cliffs and there was still marshland between it and the barrier.

Ordnance Survey maps dating from 1873 show a large accumulation of shingle resting in a temporary reservoir in the lee of the Fairlight cliffs, a situation comparable to that of the Cromes in the lee of Beachy Head. A succession of later Ordnance Survey maps illustrate increasing reduction of this shingle, accompanied by landward movement of the high water mark and progressive erosion of the cliffs, which began in the west.

This strongly supports the contention of Nicholls that the shingle which eventually reached the Dungeness 'sink' had come from a source along the length of the Sussex coastline and that this has been a continuous process over several thousand years. There is no local evidence to support the suggestion of Jennings and Smyth that shingle was being thrown up from off-shore sources into a series of 'cells separated by the Sussex rivers'. If that had been the case, there would be a series of permanent 'sinks' similar to Dungeness.

Conclusion: Reconstruction of Changes in Coastline and Marshland

In the last thousand years the Rye area has experienced changes as great as any other part of the coastline of England. This is the first attempt to collate and explain a rapid and dramatic sequence of events. It appears that developments in an early medieval shingle barrier provided an ideal site for a town and port, Old Winchelsea. This was, however, very short-lived, and catastrophic for the town. The barrier broke down, leading not only to the loss of the town but also causing very extensive sea-floods, inundations and back-up of land water. A wide inlet of the sea resulted. Natural reconstruction of two secondary barriers later provided an extensive haven for shipping.
but also promoted silting in the back-barrier areas which encouraged widespread reclamation of land which had previously been lost. Continued silting and reclamation eventually dealt a critical blow to the sheltered haven and to the harbour of Rye.  

This study has shown that, in the absence of geomorphological evidence, historical documents can be used to reconstruct geomorphological changes on a ‘lost’ coastline. Reconstruction of the dramatic developments which took place prior to 1594 has been based entirely on selective use of historical documents, very few of which were in fact written to describe the changes, but rather the human reaction to them. Historical documents relating to Old Winchelsea and the neighbouring marshlands have been collated and a model has been produced to account for the breakdown of the barrier and the rise and demise of Old Winchelsea, events which were very closely related. In dealing with the later centuries, an ample supply of historical documents, many of them concerned with coastal change, has been used to amplify and explain geomorphological change shown also on a limited number of maps, which are good but few and far between.

It is important to stress, however, that this has only been possible on a basis of an understanding of the geomorphological processes involved. Indeed it is essential that these processes be taken into account in any study of the marshland, an element which was lacking in the otherwise admirable work of Smith and the later study by Carlin.

Human occupation of marshland may be dominated by economic, social or demographic influences and trends, but the ultimate overall threat is the continuous change which affects any lowland coastline. Occupation and use of land therefore depends critically on ability to keep out the sea and maintain a system of land drainage. For centuries the livelihoods of the farmers of the Romney Marsh lowland and of the men of the ports (two groups whose interests by no means coincided) have been dominated by processes of geomorphological change.

For much of historic time such changes were irresistible. Great efforts and considerable investment were made to defend Old Winchelsea in both national and local interest, but apparently to very little, if any, effect. The citizens of the doomed town stayed there as long as possible, displaying remarkable optimism in the face of adversity. They were perhaps hoping for a return to the calmer weather which had characterised the beginning of their century, but that was a vain hope. Similarly, when the port of Rye was silting up a great clamour arose from the citizens, grandiose schemes were suggested, but very little was done, simply because there was no possible action which could have prevented the silting at that stage in the cycle of erosion and deposition. On that occasion little or no national support was forthcoming. The sea was retreating from this port, as it had done previously from New Romney, Hythe, and New Winchelsea in turn.

The history of Rye Bay provides an example of gradual evolution of a coastline over four centuries, from being totally dominated by natural change to being entirely managed by man. But geomorphological processes never stop, and change continues. The concrete-faced sea walls will need perpetual beach-feeding with shingle, which itself is in increasingly short supply from land-based sources. To the east, towards Dungeness, the line of the coast is retreating uncontrollably.

Looking to the future, there is an urgent need for a study of the evolution of other inlets in the Romney Marsh barrier, and the channels leading to them. Although these had profound influences on human activities, many developments occurred at such early dates that such work will have to be based largely on sedimentary, archaeological or landscape studies. In a wider context, there is a case for investigating cartographical and historical evidence for the retreat of the Sussex cliffs, combined with assessment of any organic deposits on the shores in front of them, in order to throw more light on the existence of Sussex shingle barriers. Thirdly, more locally, a selective search of documents and examination of landscape features may well throw light on the problems which beset the harbour of New Winchelsea remarkably soon after the establishment of the town on that site late in the 13th century, a subject which is beyond the scope of this paper.

Acknowledgements

The author is very grateful to Dr Joan Thirsk, who encouraged and initially directed her towards some of the 16th- and 17th-century documents. She is also most grateful to Dr Mark Gardiner and Dr Antony Long for comments on early drafts of this paper, and for their help with references. Dr Mark Gardiner generously supplied numerous references to pre-1250 Old Winchelsea, and Mrs Gill Draper provided other medieval references, particularly from the Report of the Historic Manuscripts Commission, 77. Professor Julian Orford and Dr Simon Jennings made available copies of recent geomorphological papers. Norah Carlin gave permission for reference to be made to her unpublished thesis. David Oliver of the Environmental Agency kindly provided information from tidal records and on beach-feeding.

She also owes a great deal to Clifford Bloomfield of Rye, for sharing his profound knowledge of the movements and history of the local beaches and of the historic maps of these marshes. He has also drawn Figure 5.10.

The photograph of the map ASCO CTM 417a/1 is reproduced with the permission of the Warden and Fellows of All Souls College, Oxford (Figs 5.4a and 5.4b), and the print of Smeaton's map (Fig. 5.7) is reproduced by courtesy of the Rye Museum Association. Ian Agnew of the Drawing Office at the Department of Geography, University of Cambridge made fair copies of Figures 5.1, 5.2, 5.4 and 5.6, and Mike Scutt kindly produced the photographs which appear as Figures 5.3, 5.5 and 5.9.
Notes

Abbreviations used:
ASCO All Souls College, Oxford
BL British Library
CKS Centre for Kentish Studies
ESRO East Sussex Record Office
HEH Henry E. Huntington Library, San Marino, California
LBA Lydd Archives, kept in the Guildhall, Lydd
PRO Public Record Office

2. ESRO ACC 6364 (Symondson 1594); ESRO RYE 132/16 (Greenville Collins 1693).
4. Although the local inhabitants complained vigorously that reclamation of marshes had restricted tidal flow which caused silting in the harbour, and left a wealth of documentation concerning their complaints, Mayhew (Tudor Rye) attributes the rapid decline in the second half of the 16th century to external economic factors quite as much as local geographical changes.

Rother Float, Rye.

Valleys'; Eddison and Draper, 'A landscape of medieval reclamation, Walland Marsh'.

Public Record Office

Constitutional History, 113.

This is directly opposite to the situation on beaches on the coasts of California, Oregon and Lake Michigan, where breaches occur as a result of an increase hydraulic pressure on the landward side of barriers, Carter, 'Barrier breaching', 29.

4.1, 4.2; Eddison, 'The evolution of barrier beaches', 48–52.

Jennings and Smyth, 'Holocene evolution of the gravel coastline'; Nicholls, 'Holocene evolution'.

Information from David Oliver, Environment Agency, Scots Float, Rye.

Eddison, 'The evolution of barrier beaches', 41.

Eddison, 'The evolution of barrier beaches'; Cunliffe, 'Romney Marsh in the Roman period'; Brooks, 'Romney Marsh in the early Middle Ages'.


Domesday Book i, 17a.

Mawer and Stenton, Place-Names of Sussex 2, vi–vii.

Victoria County History of Sussex 2, 130,137; Murray, Constitutional History, 1, 13; Stenton, 'The great roll of the Pipe', 218.

Green, Soils of Romney Marsh, main map; Gardiner 'Settlement and society', 113.


Hist. Man. Com. 77, i, 68. The land of de Crevequer has not been located, but that family held the manor of Leith, in Iden.


20. Victoria County History of Sussex 2, 130,137; Murray, Constitutional History, 1, 13; Stenton, 'The great roll of the Pipe', 218.


17. Domesday Book i, 17a.


12. This is directly opposite to the situation on beaches on the coasts of California, Oregon and Lake Michigan, where breaches occur as a result of an increase hydraulic pressure on the landward side of barriers, Carter, 'Barrier breaching', 29.

11. Information from David Oliver.


9. Information from David Oliver.

8. Jennings and Smyth, 'Holocene evolution of the gravel coastline'; Nicholls, 'Holocene evolution'.


6. Gardiner, 'Medieval settlement and society at Brookhill', 112–5; 'Medieval farming and flooding in the Brede valley', 130–1; Edelison, 'Developments in the lower Rother valleys'; Eddison and Draper, 'A landscape of medieval reclamation, Walland Marsh'.

5. Gardiner, 'Medieval settlement and society at Brookhill', 112–5; 'Medieval farming and flooding in the Brede valley', 130–1; Edelison, 'Developments in the lower Rother valleys'; Eddison and Draper, 'A landscape of medieval reclamation, Walland Marsh'.

4. Although the local inhabitants complained vigorously that reclamation of marshes had restricted tidal flow which caused silting in the harbour, and left a wealth of documentation concerning their complaints, Mayhew (Tudor Rye) attributes the rapid decline in the second half of the 16th century to external economic factors quite as much as local geographical changes.

3. Bendall, 'Enquire 'When the same plate was made', 35, 37.

2. ESRO ACC 6364 (Symondson 1594); ESRO RYE 132/16 (Greenville Collins 1693).

in 16th century varied greatly, which is hardly surprising on a featureless shingle coastline, see the depositions of Thomas Harman and Clement Stupney of Lydd, Thomas Newman of Brookland, and John Wells, jurat of Lydd.

60. ESRO ACC 6364 (Symondson 1594).
61. Green, Soils of Romney Marsh main shows the three headlands: although partially obscured by blown sand and more recently removed by quarrying, these were visible in the landscape north and north-west of Rye Golf Club until 1990. For the marshland channels compare ASCO KeS/13 (Thomas Clerke) with ESRO ACC 6364 (Symondson 1594). For Broomhill church, see Gardiner, 'Settlement and society', 125; ASCO CTM 226/64 shows the pen in Kent Wall. Kiddle nets were strung out between a line of tall poles, fixed well down into the sand and running some distance out to sea.

62. ESRO RYE 99/5 (nd, c. 1567–71). It is interesting that the seafarers of Rye used the term surge.

63. ESRO ACC 6364 (Symondson 1594); ASCO CTM 417a/1 'Manor of Iham' (Anon).
64. ESRO RYE/47/15/2.
65. PRO MPF 212 (Prowezc. c. 1572); CKS 16/10 (Symondson 1596).
68. ESRO ACC 6364 (Symondson 1594); CKS 16/10 (Symondson 1596).
69. ESRO RYE 98/1.
70. LBA LY/ZS/22.
71. Knelle, A Declaration of such Fluddes.
72. ASCO CTM 417a/1. This was a private innings, not yet included in the Walland Marsh drainage commission.
73. CKS S/WD SO/1, f. 13v. BL Add. Ch. 6343 assisted identification of the general location of this wall.
74. CKS S/WD SO/1, ff. 17v, 25v, 45v.
75. CKS S/WD SO/6; CKS S/WD SO/5a; CKS S/WD SM1: none of these volumes is paginated; CKS U2145 P1.
76. ESRO RYE 132/16 (Greenvile Collins, 1693).
77. BL Add MS. 42653; ESRO DAP temporary boxes 25, 26, uncatalogued.
78. ESRO DAP temporary box 26/5.
80. Ordnance Survey 25-inch, 1873, 59, sheets 2, 3, 6, 9, 10.
81. ESRO ACC 6364 (Symondson 1594); Streeten, 'Interim report'; Cal. Pat. Rolls 1485–94, 151; ESRO RYE 9977; Colvin History of the Kings Works, 415–16. Note: this date for the castle is considerably earlier than that given in Steers, Coastline of England and Wales, 319.
82. Printed map 1763, 'The Bay and Old and New Harbours of Rye' (John Smeaton).
83. ESRO KRA 1/1/1.
84. PRO MPD 96 (1807).
85. Only minimal quantities of shingle have left this side of the Rother this century, crossing the mouth of the river during storms.
87. Murray, Constitutional History, 1.
88. c. 1811–1522 cal. yrs BP, Waller et al. 'Patterns and processes, Walland Marsh'.
89. Long et al., 'The Holocene depositional history'; Spencer et al., 'Holocene barrier estuary evolution'.
90. Between c. 1029 and 728 cal. yrs BP, Long and Hughes, 'Mid- and late-Holocene evolution of the Dungeness foreland'.
91. Nicholls, 'Holocene evolution of the gravel coastline', 301.
93. Ordnance Survey 6-inch, 1873, 1878, 1909, 1929: sheets 2, 3, 6, 9, 10.
94. Nicholls, 'Holocene evolution of the gravel coastline'.
95. Jennings and Smyth, 'Holocene evolution of the gravel coastline'.
96. Hipkin, 'Impact of marshland drainage on Rye Harbour'.
97. Smith, Canterbury Cathedral Priory; Carlin, 'Christ Church, Canterbury, and its lands'.
98. Hipkin, 'Impact of marshland drainage on Rye Harbour'.
99. Smith, 'Manor of Iham' (Anon).
100. Eddison, 'The evolution of barrier beaches', 41.
101. ESRO ACC 6364 (Symondson 1594); Streeten, 'Interim report'; Cal. Pat. Rolls 1485–94, 151; ESRO RYE 9977; Colvin History of the Kings Works, 415–16. Note: this date for the castle is considerably earlier than that given in Steers, Coastline of England and Wales, 319.
102. Printed map 1763, 'The Bay and Old and New Harbours of Rye' (John Smeaton).
103. ESRO KRA 1/1/1.
104. PRO MPD 96 (1807).
105. Only minimal quantities of shingle have left this side of the Rother this century, crossing the mouth of the river during storms.
107. Murray, Constitutional History, 1.
108. c. 1811–1522 cal. yrs BP, Waller et al. 'Patterns and processes, Walland Marsh'.
109. Long et al., 'The Holocene depositional history'; Spencer et al., 'Holocene barrier estuary evolution'.
110. Between c. 1029 and 728 cal. yrs BP, Long and Hughes, 'Mid- and late-Holocene evolution of the Dungeness foreland'.
111. Nicholls, 'Holocene evolution of the gravel coastline', 301.
113. Ordnance Survey 6-inch, 1873, 1878, 1909, 1929: sheets 2, 3, 6, 9, 10.
114. Nicholls, 'Holocene evolution of the gravel coastline'.
115. Jennings and Smyth, 'Holocene evolution of the gravel coastline'.
116. Hipkin, 'Impact of marshland drainage on Rye Harbour'.
117. Smith, Canterbury Cathedral Priory; Carlin, 'Christ Church, Canterbury, and its lands'.
118. Hipkin, 'Impact of marshland drainage on Rye Harbour'.

References

Published Works:
Ancient Deeds
Calendar of Charter Rolls
Calendar of Close Rolls
Calendar of Patent Rolls
Victoria County History of the County of Sussex


Bendall, S. 1995. 'Enquire 'When the same platte was made and by whome and to what Intent': sixteenth-century maps of Romney Marsh', Imago Mundi 47, 34–48.


Cunliffe, B.W. 1988. 'Romney Marsh in the Roman period', in J. Eddison and C. Green, (eds), Romney Marsh: Evolution,
Occipation, Reclamation (Oxford University Committee for Archaeology 24), 90–104.


Gervase of Canterbury. Opera ii (Rolls Series 73).


Knelle, T. 1570–71. A Declaration of such Fluddes as hath been in England, 1570. Bodleian Library, Short Title Catalogue 15032.


Matthew Paris, Chronica Majora v (Rolls Series 87).


Stenton D.M. (ed.) 1940. The Great Roll of the Pipe, the Sixth Year of the Reign of King John, Michaelmas 1204, Pipe Roll Society 56.
