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The Draining of the Marshlands of South Holderness and the Vale of York

by
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The Hull valley, whose drainage history was considered in an earlier booklet in this series, was the largest former marshland tract of the East Riding of Yorkshire, but there were two other low-lying areas of significant extent within the same county. These were first, the south Holderness marshlands, consisting of four small peat-filled valleys together with a zone of salt-marsh along the north shore of the lower Humber, and second, the marshlands of the Vale of York, a section of the great Humberhead marshes that extended across the Humber and Ouse into Lincolnshire and the West Riding. The drainage histories of these two tracts show many interesting differences from that of the Hull valley.

The Marshlands of South Holderness

The history of drainage and reclamation in these marshlands is concerned especially with the alternation of losses and gains of salt-marsh and the effect of this on the drainage of the valleys to the north.

The four streams or fleets that drain south-westwards across south Holderness are most conveniently named after the towns or villages situated near their mouths: Hedon, Keyingham, Winestead and Easington (*Fig. 1*). The valleys of the Hedon, Keyingham and Winestead fleets are a mile or more wide in places, and their floors were originally regularly flooded for part of the year. But in contrast with the Hull valley, where water poured in both from the powerful chalk springs on the west and north and from the rain-fed streams of Holderness, these valleys received only the run-off from the surrounding clay-lands. Flooding was therefore never so severe as in the Hull valley, and although some of the lowest parts were covered with water for several months at a stretch, and supported a vegetation of alder, willow and sedge, other parts were flooded for only a few weeks each year and provided useful summer pasture.

The Easington valley extended farther east than the other three, and the crumbling North Sea cliffs in their westward retreat before the storm waves had cut across the valley. This allowed the North Sea water to flow into the gap on occasions of especially high tide.

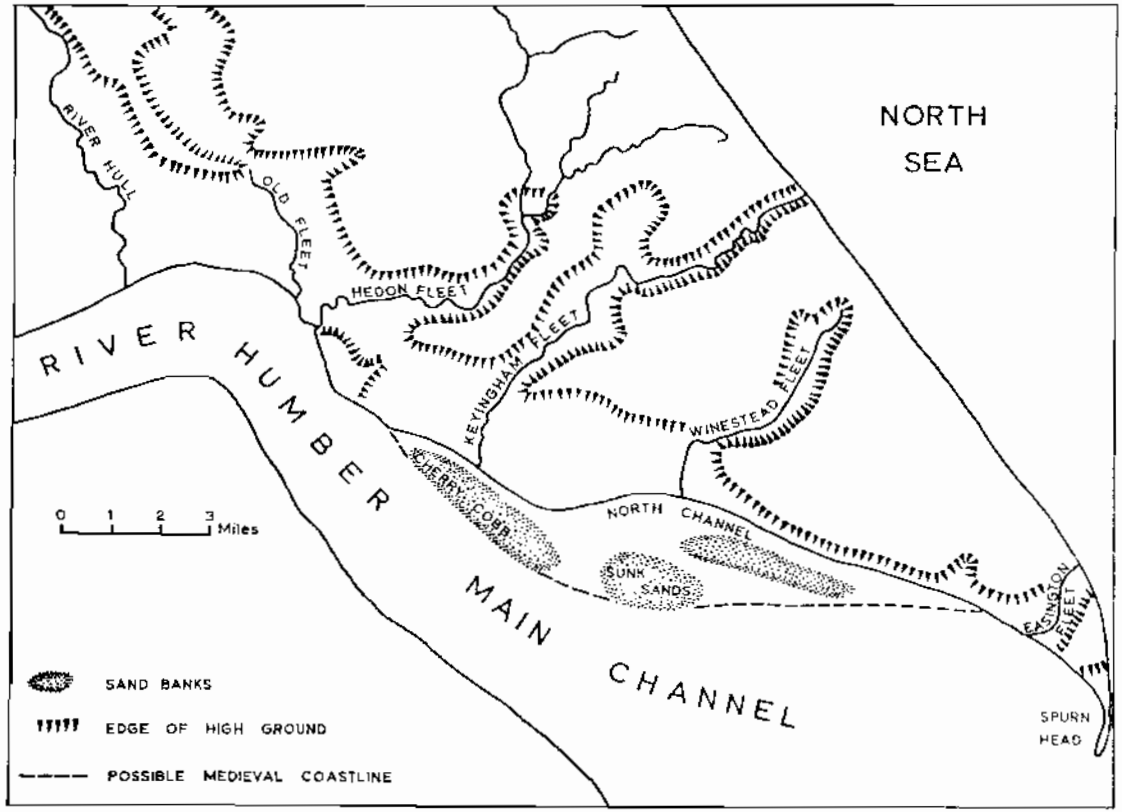

Fig. 1.—The South Holderness marshlands in 1660.

If we assume an average westward retreat of the coast of two yards a year, it appears from the present form of the Easington valley that tidal water must have been able to penetrate from the east at least by the tenth century A.D. From time to time, therefore, this valley experienced salt- or brackish-water floods which killed the grasses and reeds growing on the valley floor.

At one time the braided and meandering streams that collected the water from these valleys may have flowed directly into the Humber, but during the 150 years before the Norman Conquest, if not earlier, a zone of silt grew up between the shore and the main channel of the estuary, across which the streams had to make their way at low tide. The silt was probably able to accumulate at this date because an earlier version of Spurn Head had grown southwards from the tip of Holderness and sheltered this shore from the North Sea waves. Parts of the silt zone were probably covered by the Humber for only a few hours each fortnight and were steadily colonised by salt-marsh plants that themselves trapped more silt from the Humber waters. A continuation of this process eventually brought some areas above the level of all but storm tides, a stage that was probably reached during the tenth century A.D.

The drying-out of the salt-marsh was encouraged during the tenth, eleventh and twelfth centuries by the embankment of some of the highest parts. Some hamlets were established, like those which grew up during the same period in the lower Hull valley. Tharlesthorpe existed early enough to be mentioned in Domesday Book, and it seems likely that Frismersk, Penisthorpe and Orwithfleet came into being about the same time although they are not mentioned in the documents until later. In addition, a number of large farms or granges were established on reclaimed salt-marsh during the eleventh and twelfth centuries, of which some, like Tharlesthorpe and Ottringham granges, were owned by Meaux Abbey, while others, like Little Humber, belonged to the Earl of Albemarle, Lord of Holderness. The banks built by the hamlets and granges eventually linked up to add to the area of south Holderness a strip of land that probably varied from about one to three miles in width. The streams probably remained in the channels they had cut across the silt zone as it was forming, but no doubt had clows or sluices where they passed through the new banks in order to prevent the tidal water flowing up them. A system of field drains carried rain-water from the reclaimed land into the streams or major drains, and by the thirteenth century some of the new land was ploughed and the rest devoted to meadow and pasture.

The picture of early medieval conditions in south Holderness cannot, unfortunately, be more precise, for much of the silt-land was lost again during the thirteenth, fourteenth and fifteenth centuries. With this loss of land went much of the evidence in the form of place-names, boundaries, roads and earthworks that usually provide the framework for the reconstruction of an earlier landscape.

Therefore we do not know the exact position of the medieval banks against the Humber or exactly where the hamlets lay. In Fig. 1, a possible position of the medieval coastline is indicated by the pecked line, which has been drawn to enclose on the landward side the sand-banks shown on a late sixteenth-century chart drawn for Lord Burleigh. That Sunk Sands in particular were once dry land is suggested by the fact that the chart labelled this bank "quicke sand some called Sonke lands".

The period of serious loss of land appears to have started with the storm of 1256. Nearly all Tharlesthorpe fields were washed away in the fourteenth century and about the same time other granges and hamlets disappeared or had to be moved farther inland. The most likely cause of the sudden change from the growth of salt-marsh to its extensive loss was changes in the early Spurn Head. The references to Ravenserodd in the Meaux Chronicle make it clear that this medieval port was originally on the tip of Spurn Head, but by 1275 the site was an island. Spurn Head must therefore have been breached (perhaps during the great storm of 1256) and the North Sea storm-waves were able to penetrate and attack the previously sheltered Humber shore. Ravenserodd was completely washed away by 1367, so that the storm-waves then had even freer access to the reclaimed salt-marsh, and the greatest losses probably occurred around this date.

The records of the Court of Sewers for the East Parts of the East Riding become sufficiently abundant by the early part of the sixteenth century to reveal that by then major losses of land had ceased. The turning-point had probably come some time before this and the improvement was no doubt at least partly due to the activities of the Court. The records of an inquisition held in 1660 reveal that banks between four and six feet high then existed along the Humber shoreline shown in Fig. 1, and these were protected on the seaward side by numerous breakwaters. The map indicates that, if the suggested position of the medieval coastline is approximately correct, about half of the silt zone was lost during the thirteenth, fourteenth and fifteenth centuries. In the seventeenth century, the banks were still liable to occasional damage by the tides, but since the Commissioners made sure that the breaches were rapidly repaired, no further land was lost. The banks curved inland where the four streams and one or two of the major drains entered the Humber, for the clows were usually placed several hundred yards from the estuary in order to escape the direct attack of the waves. The tidal channels below the clows acted as havens for ships trading round the Humber shores. Hedon and Patrington havens were the largest and most important, but the others were visited by small vessels at least occasionally.

The ships that used the havens were able to reach them easily along the North Channel of the Humber, a deep channel that kept close to the Holderness shore from Paull almost as far as Spurn

Head. This channel was separated from the main channel of the Humber by the sand- and mud-banks which were covered with water at high tide, but on which salt-marsh vegetation may have been regaining a hold during the early seventeenth century.

There was little change in the four valleys during the sixteenth and seventeenth centuries, and even the agitation for drainage improvements that was a feature of the nearby Hull valley after 1660 had no parallel here. Flooding was less extensive and of shorter duration than in the Hull valley, with the result that the valley floors were already a relatively reliable source of pasture and hay, while the few meres that still survived were of insufficient extent to warrant great interest in drainage. Only in the Hedon valley was there discontent leading to complaints to the Court of Sewers. The landowners there believed that the vessels that anchored in Hedon haven prevented the water flowing away as rapidly as it ought and thereby produced unnecessary flooding in the valley. In order to meet these complaints, in 1675 the Commissioners ordered the diversion of the waters of the upper part of the Hedon valley by a drain southwards to join the Keyingham fleet. We do not know whether this diversion in fact reduced flooding in the Hedon valley, but it certainly had two undesirable results: Hedon haven lost the scouring effect of the fresh water and began to silt up; while the Keyingham valley was flooded more frequently, for the Hedon water often ponded back the Keyingham water. It may have been to cope with this additional flood-water that a drainage windmill was erected in Halsham carrs; the windmill is shown on a 1730 map of the Keyingham valley but there are no other records to suggest the date of its construction or its efficiency in dealing with the flood-water. The only other drainage windmill in the district was in the silt zone.

The Easington valley received some attention from the Court of Sewers on account of the salt-water incursions that frequently ruined the pasture. A report was made to the Court in 1670 on conditions in the valley, with a recommendation that a bank should be constructed a short way inland from the North Sea coast. There is no indication in the records of the Court that the bank was constructed then, but there are also no further references for some years to salt-water floods.

The problems involved in draining the four valleys were relatively simple compared with those faced in the Hull valley and there seems little doubt that they would have been largely freed from flooding when drainage techniques improved during the eighteenth and nineteenth centuries, had not another factor intervened. This was a change in conditions in the Humber, leading to the renewed growth of the salt-marsh zone between the mouths of the streams and the main channel. The process probably began during the second half of the seventeenth century, for references to the Humber tides attacking and damaging the banks cease after 1690,

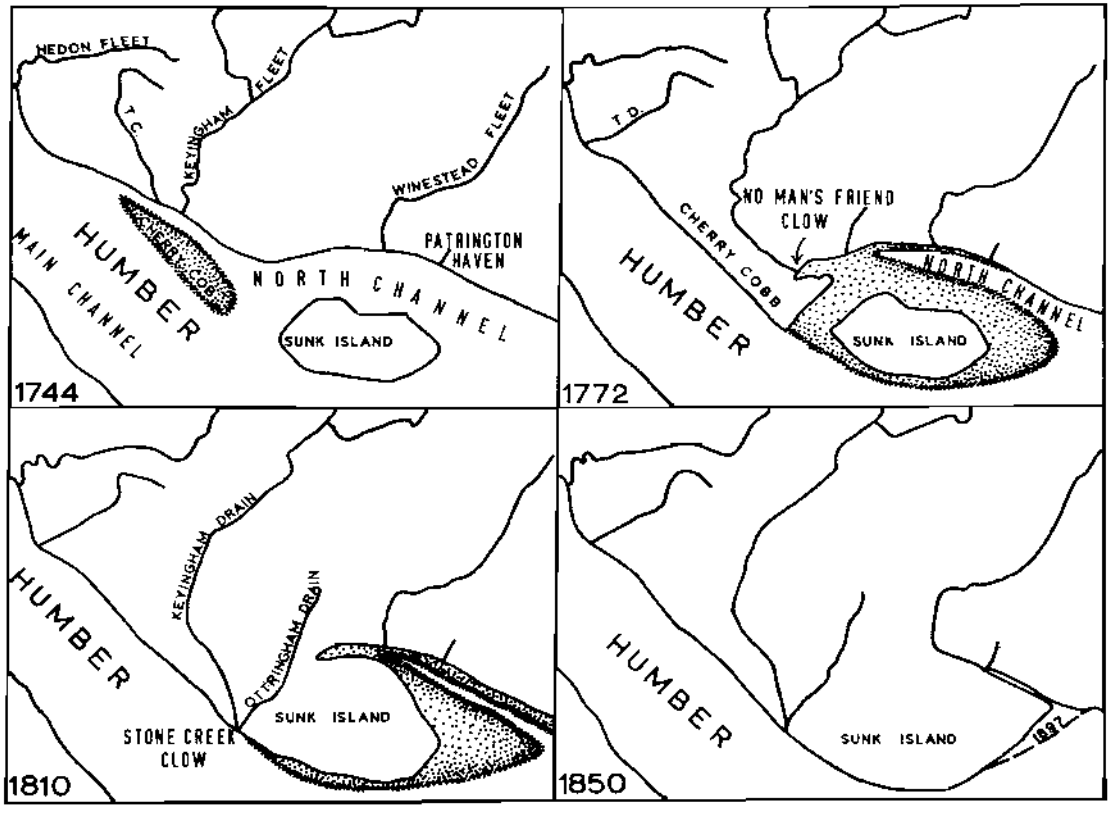

Fig. 2.—Changes in the extent of the silt zone of South Holderness.
T.C.=Thorneycrofts Drain T.D.=Thorngumbald Drain

and instead reports begin of an increase in the height and extent of the sand-banks and of silting in the havens and in the North Channel. It is difficult to be certain of the reason for this change, for estuaries are always liable to shifting currents, but it seems likely that the main cause was an increase in the length of Spurn Head which was once again able to provide more shelter for the north shore of the Humber.

The first obvious result of renewed silting was the growth of Cherry Cobb and Sunk sand-banks. Salt-marsh vegetation flourished and trapped further silt until the highest parts were covered by the Humber only once or twice a month. Thirteen acres in the centre of Sunk Sands were embanked in 1695 to form the nucleus of Sunk Island, while in 1744 a further 20,000 acres were added (*Fig. 2*). At the same time Cherry Cobb Sands grew so much in height and width that the adjacent section of the North Channel was considerably reduced in size, and silt accumulated rapidly in the havens of the Keyingham fleet and Thorneycrofts drain. This obstruction caused worse flooding than usual in the Keyingham and Hedon valleys, leading to complaints to the Commissioners of Sewers in 1728. The Commissioners investigated the matter and decided that the Keyingham clow should be moved nearer the North Channel, so that the section of haven brought inside the clow could be deepened and widened. The new clow was built in 1730 but brought very little relief on account of the increasing shallowness of the North Channel itself.

The following 120 years was a time of great difficulty for the valleys of south Holderness, when flooding was frequently more extensive than it had been even in medieval times. The natural tendency for the salt-marsh to increase in extent along the Humber was encouraged, for the land gained when the marsh was finally embanked was exceptionally fertile. Each new tract of land thus gained, however, added to the problems of the valleys to the north by increasing the obstacles between the streams and the Humber main channel. Phases of deterioration in drainage conditions were followed therefore by desperate attempts to find new and more adequate outfalls. The greatest interest centred on the Keyingham fleet, for this stream was most affected by the silting and its choice of outfall had important effects on conditions in the other valleys.

Cherry Cobb Sands were embanked in 1769-70, leaving the western part of the North Channel as a long narrow haven stretching more than two miles south-eastwards from the Keyingham clow. Thorneycrofts drain had been abandoned in 1766 and its place taken by the new Thorngumbald drain opening into the Humber west of Cherry Cobb Sands, so it was the Keyingham fleet only that was seriously affected by the reclamation. Silt rapidly filled in the channel, extensive flooding occurred in the valley, and it was agreed that the clow would have to be moved again. A private Act of Parliament was obtained in 1772 that removed the Keyingham and

Hedon valleys from the jurisdiction of the Court of Sewers and created the Keyingham Drainage Authority. This new body moved the clow to a site known as No Man's Friend near the eastern end of the reclaimed Cherry Cobb Sands (*Fig. 2*). The section of the old North Channel included within the clow was widened and deepened, and there was a considerable improvement in conditions in the Hedon and Keyingham valleys.

The new clow and drain acted efficiently for a few years, until relentless silting in the Humber brought the next tract of salt-marsh to a state of readiness for reclamation. This tract extended both west of Sunk Island, where it linked the island to Cherry Cobb Sands and so to the mainland, and north of the island, where it was separated from the old siltlands in Ottringham and Winestead by the North Channel. When this tract had been flooded at each high tide, much of the ebb-flow from it had been drawn into the North Channel and had helped to keep that channel free from silt. As the marsh increased in height, however, the ebb-flow was reduced and the North Channel had to depend for its scouring mainly on the waters of the Keyingham fleet. The volume of water carried by the fleet varied considerably, and during dry spells the flow was insufficient to prevent silt lodging in the channel, which became narrower and shallower, and formed a bottleneck between the Keyingham fleet and the main channel of the Humber. Flooding became so frequent and persistent in the Hedon and Keyingham valleys that in 1795 the Commissioners of the Keyingham Drainage asked the engineer, Joseph Hodskinson, for advice. He recommended that either they should cut a new channel across Cherry Cobb Sands to open into the main channel of the Humber, or they should embank all the salt-marsh along the North Channel as far as Patrington haven, where a new clow should be erected. The opinion of a second engineer, William Chapman, was sought in 1797. Chapman favoured Hodskinson's first suggestion, for he considered that a drain extending the length of the North Channel would not have sufficient gradient to enable it to function properly.

The suggested diversion of the Keyingham fleet did not concern the Keyingham level only. The owners of land dependent upon the Ottringham drain and the Winestead fleet, and those with commercial interests in Patrington haven, realised that once the scouring effect of the Keyingham water was lost, there was nothing to prevent the North Channel silting up completely. The other authorities concerned therefore combined in an attempt to persuade the Keyingham Drainage Commissioners to continue to send their water into the North Channel; among the suggestions was one that a "spade machine" should be used to churn up the silt so that the water could carry it away. But the Commissioners realised that the Keyingham and Hedon valleys would never be adequately drained so long as they relied on the North Channel (the condition of which deteriorated even further when the salt-marsh was finally added to

the embanked area of Sunk Island in 1800), and in 1802 they obtained the Act of Parliament that sanctioned a new cut across Cherry Cobb Sands to a new clow at Stone Creek. The opposing interests received grants to compensate for the damage and expense this was likely to cause them.

The Keyingham Drainage Act of 1802 produced, partly directly and partly indirectly, the present pattern of drainage in south Holderness. The direct results were the cutting of the new channel to Stone Creek Clow (*Fig. 2*) and the straightening and widening of the fleet so that it became a mainly artificial channel, henceforth known as the Keyingham drain. At the same time the Hedon fleet was enlarged and its waters returned to Hedon haven. These measures were sufficient to prevent any recurrence of serious flooding in the valleys.

The indirect results of the 1802 Act were associated with the silting which proceeded steadily eastwards along the North Channel during the following half-century. The Ottringham drain was the first to be affected by this, and in 1807 an extension of the drain was cut along the junction of Cherry Cobb Sands and Sunk Island to a new clow at Stone Creek (*Fig. 2*). Silting appears to have troubled the outfall of the Winestead fleet from about 1819, for the channel below the fleet had to be scoured regularly after that date. In the meantime, the salt-marsh of east Sunk Island was increasing in height and extent, and in 1850 part of this was added to the embanked area of the island. This reclamation had an effect on the Winestead fleet very similar to the effect the 1770 reclamation of Cherry Cobb Sands had had on the Keyingham fleet. The fresh water had to pass through a long narrow section of the North Channel which became steadily more choked with silt. The reaction of the Winestead Drainage Commissioners resembled that of the Keyingham Commissioners; they converted a stretch of the channel into the lower part of the drain and placed a new clow just above Patrington haven. The final stage in the process came in 1897 when another small intake was made on the east of Sunk Island and a new clow built which included Patrington haven on the fresh-water side. This was the end of the commercial life of the haven, which had been steadily declining in prosperity throughout the century. If the salt-marsh that extends between Sunk Island and Spurn Head should be reclaimed on some future occasion, further adaptations of the Winestead drainage will become necessary.

The south Holderness valleys therefore obtained reasonably adequate drainage by the early nineteenth century, earlier than the Hull valley carrs, but not so early or so easily as they might have done if the zone of salt-marsh had not developed between them and the Humber. There was, however, no effort to obtain further improvement during the nineteenth century. The valley floors were divided between many farmers, whose upland fields were mainly devoted to crops, and who therefore looked to this land as a source of otherwise

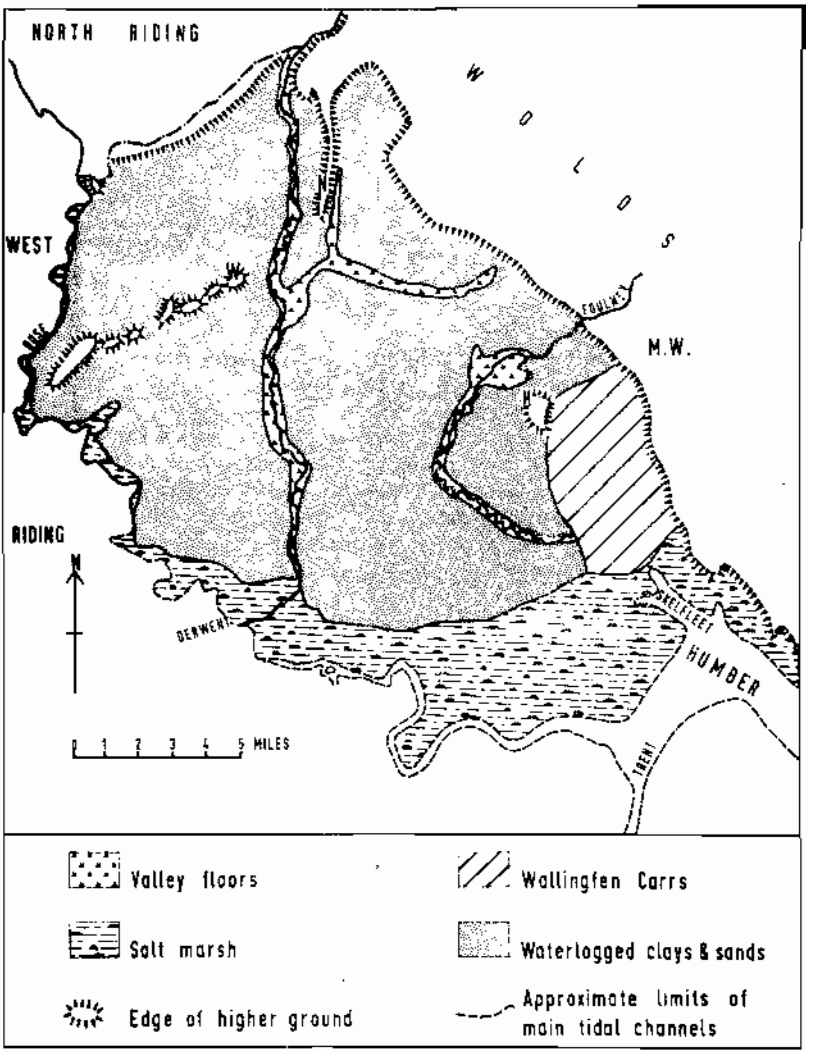

Fig. 3.—The Vale of York in its original state.

M.W. = Market Weighton. N = Newton.
W = Wheldrake. H = Holme-on-Spalding Moor.

scarce summer pasture and hay. There was thus less need for further improvement than in the Hull valley, where the great extent of carrs left room for both crops and pasture. The salt-marsh, that in the process of its addition to the area of south Holderness caused such difficult drainage problems, compensated for this by its fertility. William Cobbett declared in 1830 in his *Rural Rides* that, apart from the Fenland, this was the richest and most fertile stretch of land he had seen in the whole of England. The nineteenth century saw this tract divided by a network of field-drains, provided with tile-drains and converted into crop-land. The recent nature of its reclamation is still reflected in its open, windswept character, with few trees, hedges or buildings to break the continuity of seemingly endless cornfields.

The Marshlands of the Vale of York

Much of that part of East Yorkshire which lies west of the Wolds is low-lying and flat; consequently most parts at one time suffered from poor drainage, although not all could be strictly regarded as marshland. Most of the genuine marshland was in the south within a few miles of the Ouse and Humber (*Fig. 3*). Salt-marsh originally extended from near the junction of the Derwent with the Ouse eastwards to the foot of the Wolds near Brough in a belt up to four miles wide, and this was subject to regular flooding by the tidal waters that penetrated up the Humber and Ouse. To the north of the salt-marsh there were tracts of carr, of which the largest, known as Wallingfen, extended as far north as Holme-on-Spalding Moor and Market Weighton. Streams rising in springs at the foot of the Wolds on the east poured water into Wallingfen carrs, while from the west came the river Foulney carrying not only chalk spring-water from its source but also the water it gathered as it meandered across the Vale in a great curve. Wallingfen thus resembled the carrs of the Hull valley in receiving a large inflow of water all the year round. The exit was to the south by a tidal creek known as Skelfleet, where the slight gradient and tidal water co-operated to pond back the fresh water in the carrs.

Most of the rest of the Vale away from these salt-marsh and carr tracts was drained by the river Derwent. The Derwent rose in the moorlands of North Yorkshire, and after a long and circuitous course entered the Vale of York at Stamford Bridge. Its flat-floored valley across the Vale was several feet below the general level and was very frequently flooded on account of its slight gradient and the large volume of water the river carried from its source. The main tributary of the Derwent within the Vale was the Pocklington beck, fed by chalk springs, and this was often ponded back by the height of the Derwent waters. The rivers Foulney and Derwent, and the

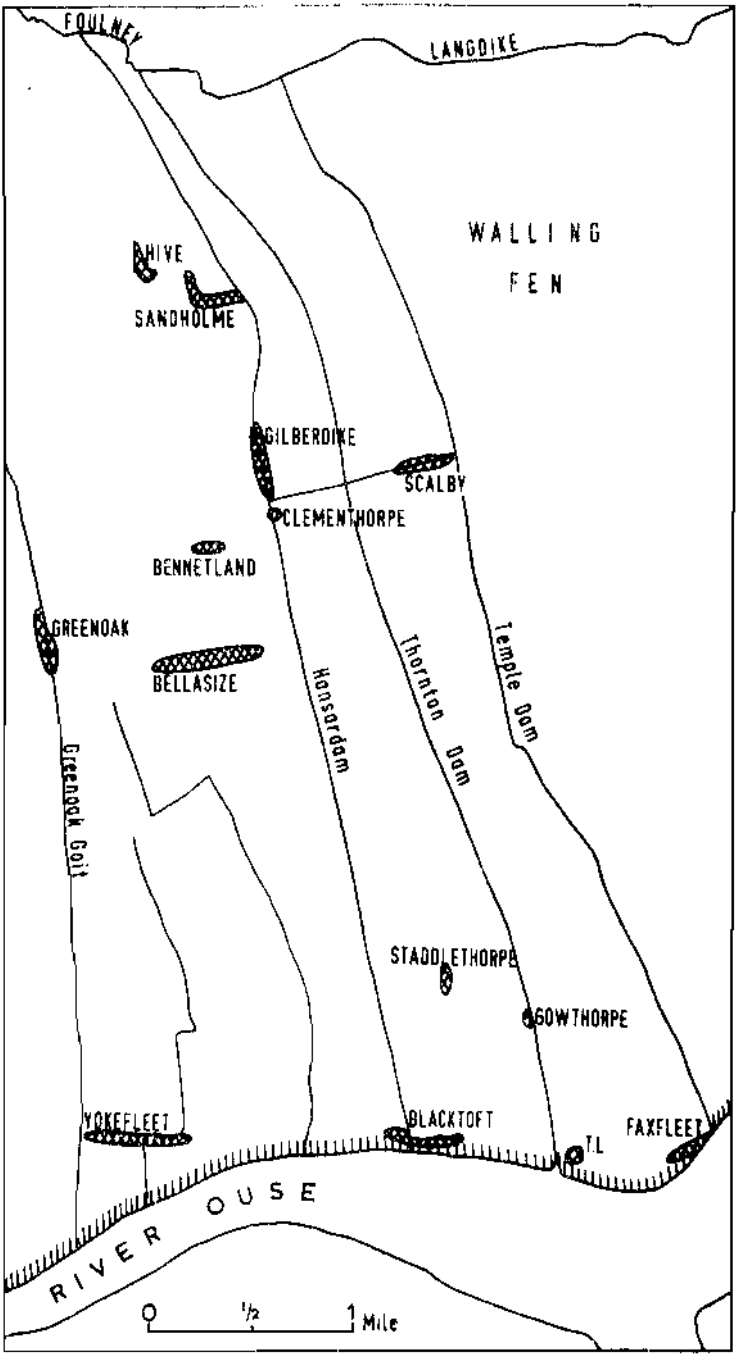

Fig. 4.—A section of east Howdenshire.
Cross-hatched areas are villages and hamlets.
T.L. = Thornton Land.

Pocklington beck, were so overloaded that they could do little to drain the surrounding flat countryside, and water-logging was common on sandy and clay soils alike. When the Vale was in its natural state, only the few low hills such as those of Holme, Newton and Wheldrake can have been completely free from waterlogging.

As in the Hull valley and in south Holderness, it was the salt-marsh that first attracted reclamation. There were already several villages and hamlets in the western half of the tract by 1086, which suggests that banks had been raised along this reach of the Ouse and the land behind had been at least partially reclaimed.

The Conqueror's "Harrying of the North" led to an interval before reclamation became very important in the twelfth century. The Bishop of Durham was Lord of Howdenshire, which included the whole of the salt-marsh tract, and when Hugh de Pudsey held the office during the latter half of the twelfth century he made grants of a number of manors in the eastern part of the tract. Those who received the grants proceeded to embank and drain the land until, by the end of the thirteenth century, the whole tract was reclaimed. Banks must have been constructed as far east as Faxfleet by 1275 and Broomfleet by 1304, for those were the eastern limits specified when Commissioners were appointed to inspect the Ouse banks in those years. East of Broomfleet, Skelfleet was gradually silting up and the banks in this section may date from the fourteenth century.

The newly reclaimed salt-marsh tracts also required banks on the north side in places, in order to hold out the water from the carrs and waterlogged clays. These banks were lower and less important than those against the tidal waters of the Ouse and Humber and they are therefore seldom mentioned in contemporary records. A number of lanes in north Howdenshire may follow these old banks and provide the best clue as to their location. Drains were also necessary within the banks to carry away rain-water into the Ouse. Although there are few records that describe the existence of such drains in medieval times, those that do exist suggest that the drains recorded in the inquisitions of the Court of Sewers in 1664 were, for the most part, first cut in the twelfth and thirteenth centuries. Each village or hamlet cut its own drain, although this sometimes passed through the land of another settlement. The most important drains that arose in this way are shown in Fig. 5.

The reclamation activity in the eastern part of the salt-marsh tract is especially interesting, for it had important repercussions in Wallingfen. The owners of three small manors had each cut a channel from the Foulney through the old salt-marshes to the Ouse by 1200 A.D. (*Fig. 4*). The channels were named after their respective owners, Hansardam after Gilbert Hansard owner of Blacktoft, Thornton Dam after the Canons of Thornton Abbey (in north Lincolnshire) who owned Thornton Land, and Temple Dam after the Knights Templar who owned Faxfleet. The main purpose of these channels may have been to drive water-mills established at

their southern ends, which probably made use of the fall from the channels to the Humber at low tide (perhaps 8 or 9 feet). But the channels also acted as drains for the tract between the Foulney and the Ouse, and hamlets grew up along their banks and along the the banks of tributary drains at right angles to the main drains. The banks were also followed by roads, and the old drainage pattern is therefore still partly preserved in the present pattern of roads and hamlets in the area (*Fig. 4*).

Wallingfen probably dried out so rarely that it frequently resembled a lake before Hansardam, Thornton Dam and Temple Dam were cut. The three new channels must have abstracted a considerable volume of water from the Foulney, especially in summer, with the result that parts of Wallingfen began to dry out for a few weeks each year. This improvement was followed by the cutting through the carrs of a new straight course for the Foulney known as Langdike. The Foulney waters were then able to pass through the carrs more rapidly and without spilling over so frequently, so that summer flooding must have been even further reduced. It was probably during the thirteenth century, too, that a clow was fixed at the mouth of Skelfleet.

There is evidence that by 1300 A.D. the improved conditions in Wallingfen had made it possible to use the carrs for summer pasture and for peat-cutting for fuel. It seems likely that at first many of the villages and hamlets east of the Derwent made use of the carr pastures. The cutting of Langdike, however, had the effect of dividing the fen into two parts, for cattle turned into the northern part could not easily cross to the south, and vice-versa. This division had become official by 1425, for the first written records of the Wallingfen Court date from that year. This Court consisted of forty-eight jurymen, one from each of the villages and hamlets of Howdenshire and from a few villages immediately east of the carrs. It controlled the use made by the farmers of these villages of the section of the carrs south of Langdike, which became known as Wallingfen Common. The carrs north of Langdike had been divided between the adjacent townships of Market Weighton, Holme, South Cliffe and Hotham by 1456.

The rest of the Vale did not benefit much from the reclamation of the salt-marsh and the improvement in Wallingfen. A few streams were deepened and some short drains cut in the zone close to the Derwent where the gradient was adequate, but elsewhere waterlogging was common and crops must often have been lost from this cause. In the Derwent valley, the tract round the junction of the Pocklington beck was so constantly flooded that it formed an important fishery for Fountains Abbey. Flooding was most frequent during the winter half of the year in the rest of the valley, while in summer the valley floor supported rich meadows highly valued by the villagers. Summer floods did occur from time to time, however, to ruin the potential hay crop. It was probably during medieval

times therefore that low banks were constructed along a part of the Derwent to protect the meadows from the lower but most damaging summer floods, while allowing the higher winter floods to pass over them and continue to enrich the meadows. Such banks were certainly in existence by 1662.

The Vale of York resembles the Hull valley and Holderness in experiencing few drainage improvements during the fourteenth and fifteenth centuries. During the sixteenth and much of the seventeenth century the region was under the jurisdiction of the same Court of Sewers as was concerned with the Hull valley, but it seems that this devoted less attention to the Vale than to the Hull valley and Holderness, for pre-1660 records concerning the region are almost non-existent. The new spirit that was evident in the Hull valley after 1660, however, also made itself manifest west of the Wolds. A complete record was made of all the banks and drains in the Vale in 1664 (*Fig. 5*), and this drew attention to two areas that badly needed improvements. The first problem area was near Bielby between the Pocklington beck and the Foulney. The Pocklington beck was used to drive several mills, including one known as Walbut Mill about a mile west of Bielby. The owner of the mill had constructed a dam that ponded back the water in the reach immediately upstream, and because the surrounding land was so little above the level of the stream, the water overflowed southwards in times of flood and found its way into the Foulney. The Court of Sewers insisted on the cutting of an alternative channel round the mill to cope with floodwater, and a bank was constructed along the south side of the beck between the mill and Bielby to block the old overflow route.

Skelfleet provided the second problem. Silt had begun to accumulate about 1650-52 in the great bay of the Humber into which Skelfleet flowed, and this tended to block the outlet of the stream. The mills at Blacktoft, Thornton Land and Faxfleet had been abandoned by this date, and Hansardam, Thornton Dam and Temple Dam were less efficient than when they had first been cut. Thus Skelfleet was the only important outlet for the waters of the Foulney and Wallingfen, and the silting of the Skelfleet outfall had serious repercussions on conditions in the carrs. Therefore in 1668 the Commissioners of Sewers ordered the cutting of a new channel known as New Dike from Langdike to link up with a short drain known as Hodlet that opened into the Humber west of the area of silting (*Fig. 5*). This restored Wallingfen carrs to their original condition.

The drainage administration of the Vale of York was separated from that of the Hull valley after 1676, and the tract came instead under the control of the Court of Sewers for the West Parts of the East Riding. The records suggest that this Court was less active than its counterpart in the east, and it devoted its efforts chiefly to the maintenance of the existing drains and banks. So far as is known,

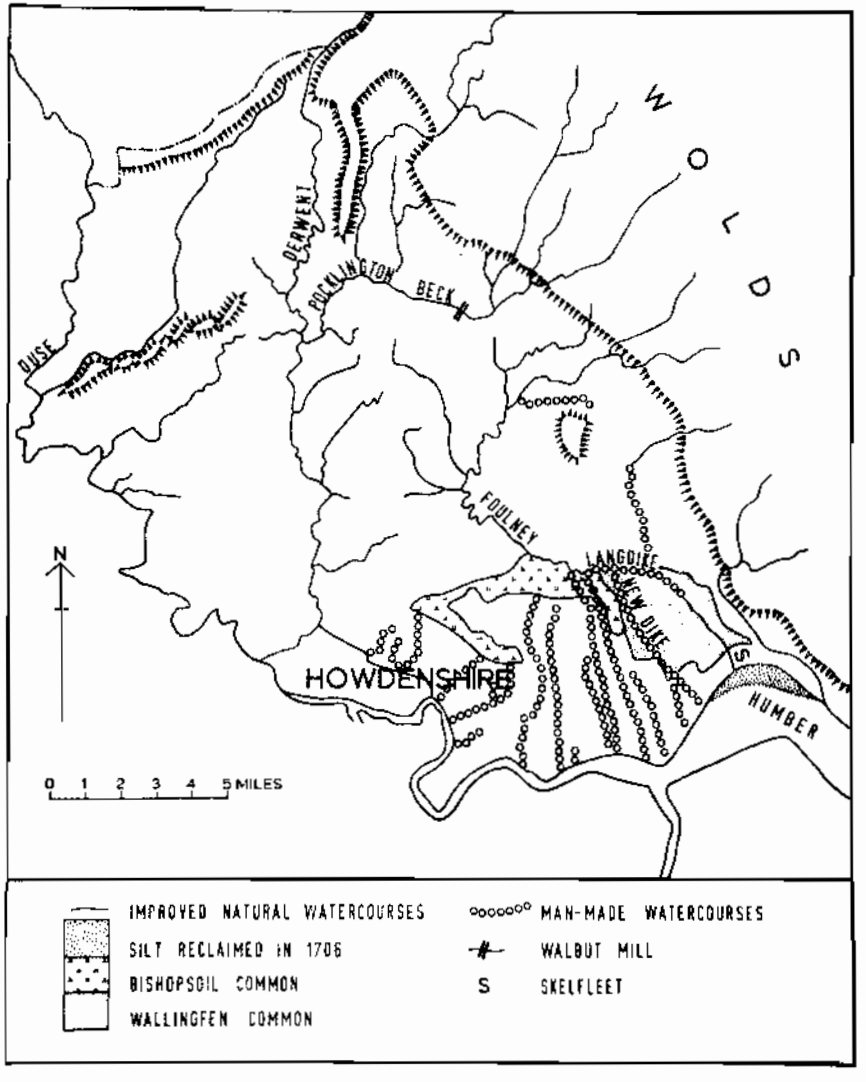

Fig. 5.—The Vale of York during the late seventeenth century. The drains shown were all described in an inquisition of 1664.

there were no complaints or private attempts to improve drainage prior to 1760 as occurred in the Hull valley. One reason for this lay in the rather different organisation of the Vale marshlands. Common rights in Wallingfen were held by too many villages and hamlets to make agreement about improvement easy, while the Bishops of Durham, Lords of Howdenshire, probably had little interest in promoting changes in this remote possession. On the other hand much land elsewhere in the Vale was being inclosed by private agreement, and in such tracts local improvements may well have been made without consulting the Court of Sewers or leaving any record.

There are a few descriptions of the sixteenth, seventeenth and early eighteenth centuries which enable us to picture the Vale in its relatively undrained state. Leland described such parts of Howdenshire as he saw about 1540 as hedged and given over to pasture, although we know that some crops were also grown. The predominance of pasture was probably associated with the heavy soils and the tendency towards waterlogging, for according to Defoe (1724) there was still occasional flooding. The importance of grassland led to an economy with a marked emphasis on livestock. Some of the cattle and sheep may have grazed in the enclosed fields in summer, but for the most part these were reserved for hay, and alternative summer pasture was sought in adjacent unimproved land.

The first and relatively small source of additional pasture was the salt-marsh that had colonised the silt accumulating round the mouth of Skelfleet. A section was leased from the crown for grazing in 1690 and embanked early in the eighteenth century. But further silt gathered outside the new banks and provided pasture suitable for sheep except during spring tides.

Summer pasture for cattle was available for all the villages and hamlets of Howdenshire in the common of Bishopsoil, which extended north of the main settled and improved area. (*Fig. 5*) The common had some poor clay soils with some peaty tracts, and was probably left unimproved more on account of the poverty of the soil than because of flooding. Bishopsoil depended for its drainage, however, on channels southward to the Ouse which also carried away water from the improved land. These were able to remove the water from the common in summer, but in order that the drains should not be overworked and spill over to flood the improved land in winter, the outlets from Bishopsoil were then blocked up, and the common was inevitably waterlogged or flooded for several months each year.

The third source of summer pasture available to most Howdenshire farms was Wallingfen common. The carrs north of Langdike similarly provided summer pasture for the villages of Holme-on-Spalding Moor, Cliffe, Hotham, etc. Wallingfen common included some meres, of which the two largest were Oxmardike Marr and Yapley Marr, while the rest of the common consisted of carrs flooded for between three and ten months each year. The Wallingfen Court

controlled the use to which this land was put, and some of its regulations have been preserved. The number of animals that persons with common rights could put out to pasture each summer was strictly limited. In 1591 the Court set the limit at the number for which the farm could provide sufficient winter feed, no doubt in order to prevent cattle from elsewhere being brought in. The additional rule was made in 1636 that no one could have more than 160 sheep on the common at one time, or their equivalent in cattle and horses, at the rate of one cow=five sheep, and one horse=seven sheep. Since between 850 and 900 persons held common rights, it is obvious that they cannot all have turned this maximum number of animals on to the common, or there would have been as many as 70,000 sheep and 13,000 cattle! (About five times the present carrying capacity of the best English pastures). It is clear, nevertheless, that these carrs must have played a very big part in the local economy, and they were particularly highly valued by the cottagers and small farmers.

The carrs also provided the commoners with several other necessities. The grass and sedges of the wetter parts, where the cattle could not go, were cut and carted away for winter fodder. The gorse and small bushes that grew in the drier parts provided a certain amount of firewood, while each commoner could cut turves for burning provided that he took no more than the surface spit. Some fishing was allowed in the meres and some wild fowl were snared. These rights, too, were particularly valued by the cottagers.

The rest of the Vale continued to be troubled by waterlogging and relied for the most part on shallow and ineffective drains. The sudden floods that were so characteristic a feature of the Derwent attracted the attention of both Leland and Defoe. Leland described how, at Wressle, "This Ryver at greate Raynes ragith and overflowith much of the Ground there aboute beyng low Medowes", while Defoe said much the same nearly two centuries later: "The Derwent is a River very full of Water, and overflows its Banks and all the Neighbouring Meadows, always after rain."

Interest in the possibility of improving the agriculture of the Vale began in earnest about the middle of the eighteenth century. There were three main objectives. First, an improvement in drainage conditions was necessary throughout the Vale. Second, it was felt that the common waste lands should be enclosed and apportioned, so that more up-to-date farming techniques could be used to increase their productivity. Third, improved communications to the markets were needed; there was little advantage in growing more and better crops if they could not find a market. Canals were particularly in vogue at this time and the would-be improvers had in mind a canal or canals to link the margins of the Vale to the Ouse, and so to the West Riding markets. The drainage improvements that took place after 1760 were very closely linked with the other two objectives.

The first person to take a serious interest in the improvement of drainage conditions in the Vale was Mr. Leuyns Boldero, who

purchased the South Cave estate in 1748 and with it an interest in Wallingfen. Wallingfen was not an easy area to drain, however, even with the improved techniques available, partly on account of its lowness (all was at least 5 feet and parts as much as 10 feet below high spring tide level in the Humber), and partly on account of the large number of commoners. The carrs would probably have had to wait for some years before improvement took place if drainage had been the only consideration. However, it was suggested that the navigation canal wanted by Pocklington and Market Weighton should be cut southwards through Wallingfen to the Humber, and the idea arose of making this a dual function canal, for drainage as well as for navigation. This idea gave birth to the Market Weighton Navigation and Drainage Act of 1772.

The new canal was cut between 1772 and 1782. Its outlet into the Humber was west of Hodlet, on account of the continuance of silting, which by 1772 threatened to block Hodlet as it had blocked Skelfleet a century earlier. A lock was placed close to the Humber, and from there the canal passed northwards through the carrs, with the help of three more locks, to a point about two miles from Market Weighton (*Fig. 6*). The additional two miles of canal and four locks that had been planned to carry the waterway as far as Market Weighton were never constructed owing to the cost involved. A series of minor channels in the carrs carried the Foulney and the streams from the east into the canal. The height to which the water could be held for navigation was fixed at 3 feet below the surface of the land. The cost of the canal, locks and other channels was carefully apportioned between the drainage and navigation interests; the drainage income came from a tax on the low ground, the navigation income from private investments.

The capacity of the new canal was considerably greater than that of New Dike and Hodlet and the flood waters were therefore carried off more rapidly, giving rise to a considerable improvement in the carrs. The improvement was not so great as had been expected, however. The greatest changes took place in the northern carrs, which were slightly higher than Wallingfen common and where, therefore, the new drains had fairly adequate gradients. The surface peat was often burnt and oats then grown for several years in succession. In the southern part of the carrs, however, there was less improvement, for the drains had smaller gradients, and little attention was paid to the regulation limiting the height to which water could be held for navigation. The lowest tracts, such as the old Oxmardike Mere, suffered frequent flooding and waterlogging and large areas were too wet to be ploughed.

The improvement brought to the carrs by drainage encouraged the breakdown of the old communal uses. The first section to be removed and divided into two farms was in Wallingfen common, where the Market Weighton Drainage Commissioners enclosed 490 acres on either side of the canal in lieu of drainage taxes. These 490

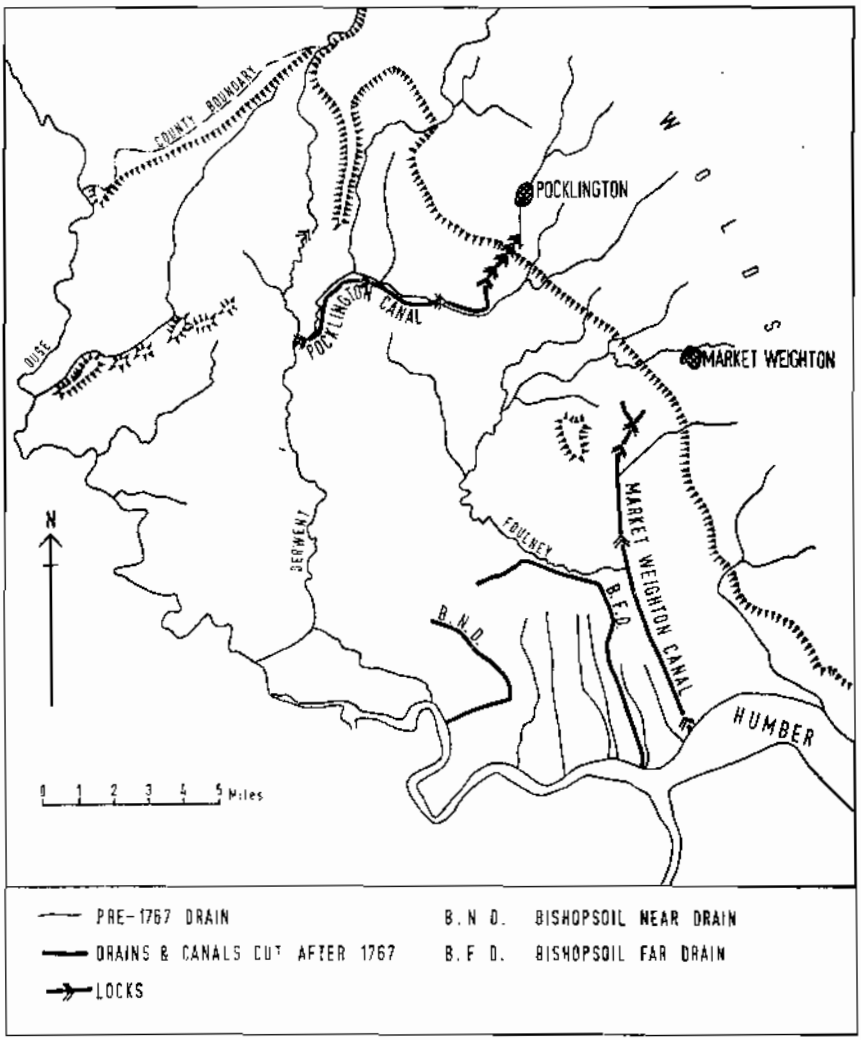

Fig. 6.—The Vale of York: new drainage and navigation channels cut after 1760.

acres have an interesting subsequent history, remaining exempt from drainage taxes until 1938. The rest of Wallingfen was divided between the villages and hamlets with common rights following the Wallingfen Inclosure Act in 1777, and this gave rise to an extremely complicated pattern of township boundaries. The commons north of Wallingfen were mostly inclosed by 1780.

It was easier to improve the drainage of Bishopsoil than that of Wallingfen, because a smaller amount of water was involved, and there was a more adequate gradient to the Ouse. The Bishopsoil Inclosure and Drainage Act, passed in 1767, sanctioned the construction of two more drains to the Humber (*Fig. 6*). These not only allowed Bishopsoil free drainage throughout the year, but also relieved the other Howdenshire drains. Many of the latter were deepened and widened by the Court of Sewers during the subsequent years, especially around the turn of the century, so that flooding became rare and waterlogging more restricted in extent. The fertility of the silt soils began to be more fully appreciated, and crops such as wheat, oats, beans, potatoes and flax were grown where drainage was good.

The Market Weighton canal provided an outlet for the produce of the area tributary to Market Weighton but did little to help the tract farther north round Pocklington. Another canal was therefore planned to serve Pocklington, and the necessary Act of Parliament was obtained in 1814. The canal followed the Pocklington beck valley to the Derwent, but remained quite separate from the drainage channels (*Fig. 6*). Navigation interests were paramount in the Derwent valley, but there were no locks below Elvington and navigation does not appear to have had any adverse effect on the valley meadows. These meadows were still flooded in winter, but were highly valued by the local farmers, for it was difficult to produce good hay on the higher ground. There was therefore no agitation for any change in conditions along the river.

The late eighteenth century improvements in Wallingfen and Howdenshire do not appear to have had much effect on the rest of the Vale. Isaac Leatham was still able to say in 1794: "There is no want of water in this division, in many places it lies too near the surface". Some improvements were obtained by deep ploughing and by deepening field ditches, but so many tracts depended ultimately on the Derwent or Foulney that such piecemeal efforts could produce only limited results. So long as the water-level was kept high for navigation purposes in the Market Weighton canal, the level of the Foulney remained high and it was impossible to lower the water-table in the tracts through which it flowed.

The nineteenth century was for the most part a period of inactivity. The need for further improvement of drainage was felt just as acutely as in the Hull valley, where there was steady progress, but the problems that had to be faced were greater in the Vale, especially in Wallingfen. Navigation on the Market Weighton canal

was thriving by the mid-nineteenth century, making drainage very much the junior partner. In addition to carrying agricultural produce from Market Weighton and lime and coal to the town, the canal also transported a large volume of bricks and tiles (over two million in 1840) produced by several brickworks that had been established along its banks. Nearly half the navigation income of the canal came from tolls on the bricks and tiles. The prosperity of the navigation made it particularly tempting to hold the water-level above the agreed limit (especially when the lock-keepers had interests in the brickworks!) The landowners in Wallingfen naturally felt that they were obtaining little benefit from their drainage taxes. Edward Page, the surveyor of the Beverley and Barmston Drainage in the Hull valley, reported in 1831 that he could distinguish three grades of land in the old Wallingfen carrs: "some of which are constantly flooded, others are so in particularly wet seasons, and others although never flooded are so much saturated with water as to render them unproductive". Complaints by the landowners brought little relief, and it became clear that only the separation of drainage and navigation could bring the desired improvement. The idea of re-opening New Dike and Hodlet was mooted in 1831 and again in 1876, but no change was made. The Trustees of the Market Weighton Navigation and Drainage considered that they could not use the money arising out of the normal drainage tax to open a new drain, which would therefore have to be financed quite separately. The landowners felt that the land could not bear two sets of drainage taxes, so the carrs had to remain in a very poorly-drained state compared with the originally similar northern part of the Hull valley.

The navigation prosperity did not last for long. Railways began to take the place of canals, and the opening of the York to Market Weighton line in 1847 and the Market Weighton to Beverley line in 1865 led to a decline in traffic on the Market Weighton canal. This decline was accompanied by a decrease in the amount spent on the upkeep of the waterway and locks, which after some years made the canal difficult to navigate. At the same time the brick and tile works declined in number and importance. The decline and deterioration in the condition of the canal had become so marked by 1900 that the Trustees decided to seek an Act of Parliament allowing them to close the canal to navigation and devote it entirely to drainage. One of the remaining brick and tile firms objected to this, however, and agreed to make up the income from tolls to £200 a year if the Trustees would keep open the lower part of the canal. Thus, although drainage became the paramount interest after 1900, it was still not entirely free from the restrictions imposed by navigation. Few improvements were made during the early years of the present century, partly because of the depressed condition of agriculture. Rather more was done, particularly in the way of careful upkeep and attention, after the creation of the Market Weighton Drainage

Board in the 1930s. But the lack of improvement during the nineteenth century and the particular problems of Wallingfen make it still the least well-drained old marshland tract of East Yorkshire.

Conditions in the Derwent valley deteriorated during the second half of the nineteenth century. The opening of a railway from York to Malton in 1845 soon led to the decline of navigation on the Derwent. The river was no longer kept clear of weeds and other obstructions by the navigation interests and, since the Court of Sewers for the West Parts of the East Riding had faded out in 1843, there was no authority responsible for seeing that the river performed its drainage functions efficiently. Sandbanks grew and weeds flourished and made flooding along the valley more frequent and prolonged than it had been at any time since the twelfth or thirteenth centuries. Nothing was done to improve matters until the 1930s, when the Lower Derwent Internal Drainage Board was created. The bed of the Derwent was cleaned out, and similar improvements were made about the same time to the Pocklington beck and some smaller drains. Further improvements to the Derwent have been made during the past few years by the Yorkshire Ouse River Board, including the construction of new flood banks along the river near its junction with the Ouse. The result of this activity has been to reduce but not entirely eliminate flooding and waterlogging of the valley floor.

The high levels of the river Derwent and the Market Weighton canal during the nineteenth and early twentieth centuries meant that the interior of the Vale continued to suffer from stagnant drains and waterlogging. The improvements of the two main drainage channels after 1930 at last made it worth while to deepen and improve the drains. In addition, the extremely meandering course of the Foulney in its great bend has been straightened by the Market Weighton Drainage Board. Nevertheless, many parts of this tract still suffer from waterlogging, especially round Foggathorpe and Latham where the soil is an extremely sticky clay.

Only Howdenshire can have presented a cheerful picture of prosperity and freedom from major drainage problems during the nineteenth century. The prosperity in fact increased during that century, for some of the lowest and least valuable parts were improved by warping. Warping was a process extensively practised across the Ouse in the West Riding, and it appears to have been first tried in Howdenshire about 1820. Warping drains were opened from the Ouse to lead to low-lying tracts up to three miles behind the banks, and the silt-laden water of the river at high tide was encouraged to flow up these channels and into an embanked section of the lower ground. The water dropped its load of silt there and gradually drained away. The process was repeated twice a day for about two years, by which time several feet of fertile silt had accumulated, and within a few years this would carry excellent crops. Although most of Howdenshire came under no drainage authority, there was not

the same neglect and deterioration of drains as farther north, for they were short and the landowners could make the necessary improvements themselves. Howdenshire is now a relatively well-drained tract, with waterlogging restricted to a few of the lowest parts.

Whereas the drainage history of the Hull valley and the south Holderness marshlands was virtually complete by the late nineteenth century, many parts of the Vale of York did not achieve this state until the present century, and some parts have still not obtained complete freedom from flooding. The difference in this respect between the Vale and the other two areas may be attributed to three main factors. First, the problems involved in controlling the Derwent are so great that it is even now essential to retain at least part of the valley floor in the Vale as wash-land where winter flood-waters can spread; it is fortunate that the flooding is not entirely disadvantageous, and the well-watered valley meadows are still valued by local farmers. Second, the error in Wallingfen of adopting a combined drainage and navigation system in 1772 prevented the type of nineteenth century improvements that were a feature of the Hull valley; this had repercussions on the extensive area of low flat land that depends on the Foulney for drainage. Third, and perhaps most important, is the fact that, whereas the Hull valley was a physical unit in which the drainage authorities were to some extent inter-dependent, and south Holderness was united by the similarity of the valleys and their problems, the Vale of York marshlands were diverse in character and depended on a number of separate outfalls. The problems of the tract were therefore never seen as a whole, and energies were dissipated through grappling concurrently with a number of local problems. The lack of unity not only delayed the achievement of adequate drainage but also makes the drainage history of the area a much more disjointed story than that of the other two tracts.

SOURCES

South Holderness

J. R. Boyle in "The Lost Towns of the Humber" 1889, and T. Sheppard in "The Lost Towns of the Yorkshire Coast" 1912, drew together many of the medieval references to this tract. Little has been published on the post-1500 history of the area, but documentary sources are relatively numerous. For the period 1600-1770 the records of the Court of Sewers for the East Parts of the East Riding of Yorkshire (in the East Riding Record Office at Beverley) are most useful. Many reports and plans relating to the Keyingham Level between about 1770 and 1805 are available in the Hull City Reference Library.

Since this account was written, a paper by G. de Boer, "Spurn Head: its History and Evolution" has appeared in the transactions of the Institute of British Geographers, No. 34, June 1964. It shows that Spurn Head has a 250-year cycle of growth and decay, and in the light of this the pre-1660 pattern of silting and flooding along the north shore of the Humber may have been more complex than suggested here.

The Vale of York

There are two articles by Col. P. Saltmarshe in the Transactions of the East Riding Antiquarian Society, Vol. XXIII, 1920, relating to medieval Howdenshire, but no comparable account exists for the rest of the tract. The period 1660-1676 is well-documented, for details of the area are included among the records of the Court of Sewers for the East Parts of the East Riding, while the long inquisition of 1664 and letters relating to drainage of about the same period occur among family documents in the East Riding Record Office. Information about the period 1676-1767 is rather scarce: the records of the Court of Sewers for the West Parts of the East Riding are held by the Clerk to the Court, but these consist of little more than lists of pains. There is a transcript of the Ancient Orders and Rules relating to Wallingfen Court in the Hull City Reference Library. Records become much more abundant again from 1767 onwards, and are held chiefly by the Market Weighton and Bishopsoil Drainage Boards. They include minute books, surveyors' reports and plans, accounts and letters. (Market Weighton Drainage Board records are now housed in the East Riding Record Office).

There are also references to one or both of these tracts in the publications of various topographers and agricultural writers, of which perhaps the most interesting are in Leland's Itinerary, Defoe's "Tour through Great Britain", Vol. III, the reports to the Board of Agriculture by I. Leatham in 1794 and H. E. Strickland in 1812, and G. Legard's prize essay on "Farming in the East Riding of Yorkshire" in the Journal of the Royal Agricultural Society, Vol. IX, Part I, 1848.