The Duke of Portland’s water meadows.

The Flood Dykes

£2.00

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‘The contrast between the wild beauties of nature and the finished works of cultivation and art, thus placed side by side, is very striking and remarkable.

The eye, after wandering through the glades of the forest, and resting on the brown carpeting of fern and heather with which it is clothed, is amazed on coming suddenly in view of the rich green of the meadows, extended for miles before it, laid in gentle slopes and artificial terraces, and preserved in perpetual verdure by supplies of water thrown continually over their surface.

The land immediately occupied by these meadows was in its wild state a line of hill-sides, covered with gorse and heather, - a rabbit-warren, over which a few sheep wandered, and a swampy valley below, thick set with hassocks and rushes, the favourite haunt of wild ducks and snipes; through which the little stream, the Maun, wound its way in its descent from the town of Mansfield.

The whole tract, both upland and lowland was of very little value. The valley was in parts from 9 to 10 feet deep in bog, and almost worthless; the hillsides varied in quality; but £80 a-year would have been a full rent for the 300 acres. Indeed, the whole of Clipstone Park farm, when taken in hand in the year 1816, containing 1487 acres, had been let for the sum of £346.’

from
On the Duke of Portland’s Water-Meadows at Clipstone Park
by John Evelyn Denison
Water meadows are not only historically and archaeologically significant they also introduce important biodiversity, especially in a dry area such as Sherwood Forest. Restoration of biodiversity is increasingly seen as a very important reason for protecting and restoring water meadows.

For over 400 years water meadows, once a common feature of river valleys in southern England, were important intensive agricultural systems. A sustainable form of agriculture, they integrate soil and water management to irrigate grass and trigger growth. The objective was to provide an even flow of water across the field, which would warm the grass sward, protect it from frost and flush the roots with oxygen and nutrients.

The Food Dykes were a ‘catchwork irrigation system’, these were employed from the early seventeenth century on valley sides where streams and spring water could be diverted into ‘flood dykes’ running along the contours. Most such systems were in river valleys in the southwest of England and were small. On the largest branch of the Flood Dyke the dyke ended up over 58 feet above the river.

The Clipstone Park system was important because of its unusually large size (7.5 miles in length and 300 acres), northern latitude and the fact that it was part of an integrated farming system. This used not only dung from the large numbers of sheep and cattle that could be kept because of the abundant pasture, but also sewage from Mansfield, to improve the fertility of the very poor sand-lands so typical of this part of Sherwood Forest. Kings Mill Reservoir (70 acres) was built to provide water in the summer, as well as powering the mills in Mansfield. The system was made possible because Mansfield was built on limestone, which neutralised the natural acidity of the rainwater. The springs on the sand-lands of Sherwood were acidic.
Water from the Maun was diverted into the Flood Dyke by a weir on Bath Lane, another at Cavendish Lodge and a further one at Edwinstowe. Valves could then be opened to allow water to flow into distribution channel along the top of each field. This fed water to ‘carrier’ channels running down the slope. The slopes had been extensively reshaped to provide ‘panes’ which sloped uniformly to allow the water to spread evenly and importantly, keep moving. To flood each pane it was a simple matter of inserting a wooden board into the carrier to divert the water into the pane. Water drained out of the bottom of the pane back into the carrier were it was then diverted into the next pane down, until it finally drained into the Maun. By trial and error it was found that a slope of 1 in 9 was best, less than this and the water tended to stagnate over the roots, more and the water flowed too fast.
The Overflow race from the sluice gate at Cavendish Lodge.

The outfall from the overflow.

The Flood Dyke between Cavendish Lodge and Kings Clipstone followed the bottom of the bank shown in the photo below. One of the first sections to be affected by subsidence, water had to be pumped from the Maun to supply the next section.
The only surviving channel is in the Dog and Duck meadow, Kings Clipstone. The bank of the Flood Dyke can be seen at the top of the slope, with the first of two sets of shuttles. The shuttle has cast iron slots each side to take a board that diverts water into the pane.

A view across the Dog and Duck meadow, the arrows show the boundary between two pains, with the drain running back to the channel.
The construction

The 4th Duke of Portland who was a leading farmer, personally supervised a large proportion of his vast estate. The 1,487-acre farm was only bringing in £346 per year. The Duke wanting to introduce the successful corn-sheep system of farming wished to increase the number of sheep on the estate but a shortage of winter feed proved a problem. The solution was water meadows. After smaller trials at Clumber, Thoresby and Welbeck, he began the conversion of the wastelands at Clipstone into the famous Flood-Dyke system. An account of ‘The water-meadows at Clipstone’ is to be found in the first journal of the Royal Agricultural Society.

Hundreds of unemployed soldiers together with navvies were put to work shortly after the Napoleonic Wars under Mr Tebbett. The irrigated meadows extended from Carr Bank Wood in Mansfield to the boundary between Edwinstowe and Ollerton. Built between 1819 and 1837 the total cost was just under £40,000. It was estimated that the Duke made £3600 a year from the scheme, close to a 10% return. The venture wasn’t without its problems. The boggy mires, some 9 feet deep, proved very expensive to drain and it was necessary to install land drains as much as 12 feet deep in order to intercept the many springs and provide adequate drainage. Many small hillocks also had to be levelled by digging out the subsoil.

The 1839 map of the Kings Clipstone section
Whilst water meadows had been developed since the early 1600s, no full description of the husbandry appeared until George Boswell of Piddletown wrote ‘Treatise on Watering Meadows’ in 1779. The extract below is based on Boswell’s work.

<table>
<thead>
<tr>
<th>Date</th>
<th>Management</th>
<th>Quotation from Boswell.</th>
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<tbody>
<tr>
<td>January</td>
<td>Irrigate and drain</td>
<td>‘When the days grow longer and begin to be warmer it must not be suffered to remain too long; that is after Candlemas (Feb. 24th) a fortnight is full long enough and the next turn (irrigation period) a week.’</td>
</tr>
<tr>
<td>February</td>
<td>Irrigate and drain</td>
<td></td>
</tr>
<tr>
<td>March</td>
<td>Roll</td>
<td>‘Rolling meadows in spring... is an excellent method (it) contributes much to the grasses being cut close to the surface when mown. There will be grass long enough to take ewes and lambs, or fattening sheep to finish them for the butcher they may be permitted to feed (on the water meadows) till the beginning of May. Spring feed should never be done by other than sheep or calves’</td>
</tr>
<tr>
<td>April</td>
<td>Irrigate and drain</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Graze with ewes and lambs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Repair</td>
<td></td>
</tr>
<tr>
<td>May</td>
<td>Irrigate for a few days</td>
<td>‘Alternately watering and draining, lessening the time water remains as the weather grows warmer. In five, six or seven weeks the grass will be fit to be mown for hay and produce from one to two tons or even more an acre.’</td>
</tr>
<tr>
<td>June</td>
<td>Shut up for hay</td>
<td></td>
</tr>
<tr>
<td>July</td>
<td>Hay cut</td>
<td></td>
</tr>
<tr>
<td>August and</td>
<td>Irrigate and drain on a daily</td>
<td></td>
</tr>
<tr>
<td>September</td>
<td>cycle.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Graze with cows.</td>
<td></td>
</tr>
<tr>
<td>October</td>
<td>Irrigate with the heavy rains of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>October.</td>
<td>‘these waters are always very thick and rich being the washings of all the country’</td>
</tr>
<tr>
<td>November</td>
<td>Repair work</td>
<td>‘every 2 or 3 days the workmen go and examine the trenches – water can be kept on the ground a month or six weeks and irrigation is rotated round the meadows.’</td>
</tr>
<tr>
<td>December</td>
<td>Repair work</td>
<td>‘a fortnight or three weeks is long enough for water to remain on the ground’</td>
</tr>
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</table>

An important difference with the Clipstone Park scheme was that grass was cut in rotation during the summer to feed large numbers of cattle kept at New Buildings rather than just producing hay.
The dung produced by these cattle was used to manure the surrounding arable land. The sheep which grazed on the meadows during the day, were folded on the arable land at night where their dung and urine also fertilised the soil. In this way arable crops could be grown on over 1000 acres.

Fire damaged in the late 1950s, the remains of New Buildings were eventually blown up by the army.

During the 1930s mining subsidence altered the levels in the dykes and the panes. Pumps had to be introduced to keep the system functioning but the system was finally closed in the 1960s when further subsidence rendered them unusable. The map above shows the Kings Clipstone part of the system and the surviving sections.
Sanderson Map (1835) – shaded section shows the extent of the Flood Dykes water meadows
A branch of the Flood Dyke crossed the Maun along the side of Gorsethorpe Lane. The ditch can still be seen under the brambles. Stone culverts are still in place at each end. This branch filled the Duck Pool shown below, which acted as a reservoir to supply the branch along the northern bank of the river.
Above
The embankment that carried the Flood Dyke along Gorsethorpe Lane and across the Maun.

Right – the original 1930s pump house opposite Duckpool Wood, three pumps had to be installed on the 2 mile long section of the dyke through Kings Clipstone. Various components were used from the pit and the original pump is still in use.

Below – the bridge that carries Gorsethorpe Lane and the Flood Dyke over the Maun. The box structure in the wall is the draining down sluice from the Duck Pool.
The sections of intact but overgrown dyke behind Main Street, Kings Clipstone,

Vicar Water was joined to the Flood Dyke by a spur controlled by the sluice which can still be seen in the garden of The Kennels.
From about 1830 until 2011 the Dog and Duck meadow in Kings Clipstone had never been ploughed so still retained its panes, channels and shuttles. The Flood Dyke has been filled in but only by pushing back the excavated soil that made up the roadway along side it. The junction of Archway Road and Main Road about 1925. The Flood Dyke can be seen on the extreme right.
The remains of the sluice gate that controlled the Edwinstowe Branch of the Flood Dyke.

At the Mansfield Woodhouse end of the Flood Dyke still exists but the culverts and the Dyke itself have been filled in. The photo taken on the section near New Mill Lane shows the concrete retaining wall constructed to overcome subsidence
The Flood Dyke at the Mansfield end has become a bridleway linking to the Maun Valley Trails. The original clay puddling still exists underground. Above is the Mansfield Woodhouse section and to the right the section after crossing Packman’s Lane.
Eastfield Farm in the 1960s. After mining subsidence an attempt was made to ‘sort out’ the carriers which distributed water to the meadow. Things didn’t go according to plan with the bulldozer getting stuck.
The gamekeepers house on New Mill Lane, a former farm, the keeper kept the tools for this section of the dyke and acted as relief keeper for the sluice that controlled the amount of water in the Dyke.

The 1831 map below shows the Flood Dyke only within the Park. The first and longest section is still unfinished at this stage and the second section extends as far as Gorsethorpe Lane. Interestingly, the Great Pond of Clipstone is shown so if the map is reliable the Dog & Duck meadow must have been constructed after this date. The Sanderson Map in the centre of the booklet was surveyed between 1832 & 1834, the later date being the more likely as the river side of the village had to be demolished and rebuilt further back to allow the Flood Dyke to be constructed. The 1832 directory described the village as being in a sad state, one of the worst in Bassetlaw. By 1842 it was being described as ‘being in danger of becoming one of the neatest’

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Do you have old photos of Flood Dykes or surrounding area, then we would like to hear from you.

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