

THE IRRIGATION OF THE SOMERSET LEVELS

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Abstract

The Somerset Levels and Moors contain a complex system of man made watercourses which has developed over time. The rivers, drains, rhynes and ditches are often seen as just drainage channels but they have many other functions such as providing irrigation water and acting as stock proof barriers (wet fences). Examination of contemporary documents reveals that the importance of these non-drainage functions contributed significantly to the pattern of watercourses that is present today. Whilst the drainage system and penning has been extensively modernised much of the irrigation system has still to be updated.

THE NEED FOR DRAINAGE AND IRRIGATION

Flooding on the Moors is generally the result of high rainfall from the surrounding uplands which in some places are over 300m AOD (above Ordnance Datum). The resulting river flow has to cross a very flat lowland landscape with the added complication of tide-lock. Tide-lock occurs when the high tides of the Bristol Channel prevent the rivers discharging to the sea, and river water including flood water has to be stored in the freshwater system for up to eight hours in the day. The Moors themselves are actually a low rainfall area by South-west standards with a rain total that is more typical of the London area. A consequence of successful drainage means that without sluices all the water would drain away and there would be no wet fencing or cattle watering in summer. If evapotranspiration is high a source of fresh water fed into the moor is also needed. To

achieve this, the rivers are held at a high level in summer, the summer pen, so that water can be fed out sideways to top up the rhynes and ditches (Fig. 1).

THE DEVELOPMENT OF THE LEVELS AND MOORS DRAINAGE AND IRRIGATION

Williams (1970) deals comprehensively with the history of the Somerset drainage system from the Dark Ages to modern times but he only briefly mentions irrigation and the summer pen. As the pen operates typically from 1 April to 1 December, it is a dominant influence on this landscape, winter and floods excepting. In 1750 the coastal Levels and the peat Moors would have appeared distinctly different though today they look, at least superficially, so similar. At that time the landscape of the coastal clay areas was laid out with its network of rhynes much as today though the area was probably more open



Fig. 1 The pumping station at West Moor

with far fewer hedges. Inland the peat Moors were very different; undrained tracts of common land with few if any rhyes or ditches. The impetus to drain came in part from landowners in the coastal clay belt. They had seen their fortunes rise with good husbandry and they saw an opportunity to pursue similar ideas on the inland Moors. The nature of the commons on the Moors meant that there was unlimited grazing at least in stock numbers and it is recorded that in 1775 there were 30,000 cattle on King's Sedgemoor. Quekett (?1880) writing about West Sedgemoor in the early 1800s recalled that 'in the summer months the moor appears covered as with snow. This appearance is caused by the immense flocks of geese which are fed there chiefly for the sake of their feathers and quills. One goosier will own as many as 8,000 geese'. The Enclosure Act system provided a mechanism to bring about the improvements that the agricultural improvers wanted.

The actual Acts of Parliament, which enabled commissioners to enclose, drain and improve the moors, often reveal the areas of concern in their preamble. New channels were cut to drain the land but many of the side channels were dug as enclosure boundaries dividing commons between parishes. In this wetland landscape ditches rather than hedges were a practical and cheaper boundary marker. The Act which enabled the draining and enclosure of Kings Sedgemoor in 1791 allowed the commissioners 'to make or cause to be made ditches of sufficient depth and width to encompass, drain, fence and inclose each and every of the said parishes or hamlets'. Nowadays many people do not realise that many rhyes were dug primarily as boundaries and for this reason some are not in the best place for effective drainage or irrigation. Until the 1930s the various portions of Kings Sedgemoor were still detached portions of the various parishes which once had common in that Moor. Today everything has been simplified but the old boundary rhyes still bear their parish names and blocks of land are still known by names like the Shapwick Allotments showing that they were the portion allotted to that parish and which, for a time, formed part of it.

There is very little in the King's Sedgemoor Act about irrigation by name but there is a clause giving 'power to make or erect engines or sluices'. The Act also involved the diversion of the River Cary into the Moor perhaps to provide one of the first irrigation systems on the peat moors.

The Brue Act of 1801 did have more clear provision to provide for summer water. In this case there was a pressure group for it. Before the passing

of the Act the Brue provided quite effective drainage for the coastal clay levels but not from the peat moors which were in places somewhat lower than the coastal clay. Plans to improve peat land drainage were viewed with suspicion by some coastal farmers. Billingsley (1794) wrote that 'many of the proprietors in Huntspill Marsh will object if their land be made too dry in the summer and their stock destitute of water'. He noted that their objections could be overcome by providing hatches. Sure enough the Brue Act included that 'doors be erected to keep up freshwater in dry seasons'.

THE EXAMPLE OF WEST MOOR

In 1833 one of the last moor enclosure bills was passed for West Moor, East Moor and Middle Moor near Middelney. By this time it would appear that the need for irrigation had been clearly recognised and special provision for this was included. The Act was for the 'better and more effectual draining and improving the said moors and commons hereby intended to be divided or allotted or any part or parts thereof, or for the better and more effectual irrigating and watering or supplying with water any of the allotments ...'. For the latter purpose it would be 'lawful to award order and direct any streams of water, watersprings or watercourses to go or be turned in or diverted through over or across any part of the said moors ... for the watering or supplying with water or drainage of the several allotments ...'.

A close examination of the detail of the West Moor proposals shows a new central channel to the River Isle for drainage. For irrigation the whole moor is surrounded by a catchwater fed with water from the River Isle to the west and the River Parrett to the east (Fig. 2). This is the situation that continues more or less to the present day.

THE PRESENT DAY

Today all the other Moors and much of the Levels work in similar vein with a system of summer feeds from the often embanked rivers. Within the rhye network, some channels are primarily for drainage and some for irrigation. The majority of channels perform both functions as needs demand. Whilst some irrigation systems are reasonably apparent as in West Moor others are more obscure and were perhaps retrofitted as need demanded.

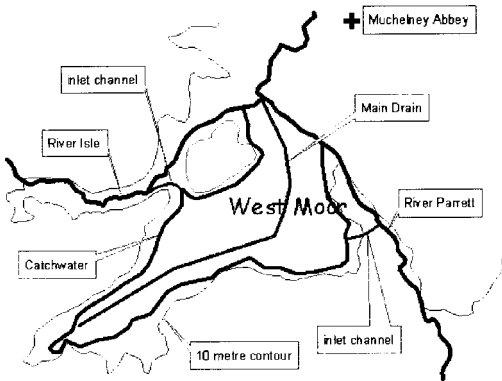


Fig. 2 The main drainage channels on West Moor

Today water level management is more important than ever with the complex problem of delivering the 'right' water level for the favourable status of SSSIs, the need to supply different farming requirements and to protect buried archaeology. There is also an ongoing need generally to conserve soils for the future and prevent peat shrinkage which can complicate both drainage and irrigation. On this latter point it is interesting to note that a survey for the Brue Act of 1801 shows peat lands in part of the Brue valley were actually above the spring high tide level 200 years ago.

The present operation of the summer pen and its associated irrigation system has a history dating back at least 200 years and in some places inlets still have gear dating from the 19th century. These old structures are remarkable survivors with heritage value (Fig. 3). They provide an important link to the past history of the Moors but is the historic irrigation



Fig. 3 Water control structures dated 1861 on the River Isle inlet to West Moor

system capable of delivering the water efficiently for today's needs? Global warming is often cited as a reason to look at more effective flood defence provision. More prolonged droughts could also pose a threat to the Levels and Moors if water resources and the irrigation system are inadequate to sustain this historic landscape. Agricultural livelihoods, hidden archaeology and unique biodiversity would all be at risk.

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