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‘Blow, blow thou watery wells’ (with apologies to W. Shakespeare!)

By Charles Hiscock

On a cold winter’s day on the coast of Lincolnshire when a north east wind blows off the grey North Sea, the correct title of William Shakespeare’s poem from ‘As You Like It’ is very applicable. However, with apologies to Shakespeare, the first line of the poem came to mind on another visit to the Tetney Blow Wells and immediately became ‘corrupted’ to give the title of this article.

The village of Tetney is situated 6 miles south of Grimsby and 3 miles inland from the sea wall from Immingham south to the Wash that protects this low-lying stretch of coast. In an otherwise almost flat expanse (in spite of the caravan site nearby being called ‘Windy Ridge’) the superficial tidal flat deposits of clays and silts are intensively farmed as in fig. 1 which shows two clumps of trees and the distant Lincolnshire Wolds.



Fig. 1 Trees at Tetney Blow Wells and distant Wolds

The area of tall trees, mainly aspen and willow with a few oak and birch, surround a number of pools and marshy ground within which are the Tetney Blow Wells, major artesian springs with an interesting and surprising geological explanation. In an area of about half a square mile there are four large pools, each surrounded by marshy ground and reed beds filled with pale blue

slightly cloudy water. Between 1948 and 1961 the wells were cultivated as watercress beds but there is little of this left except for watercress growing in the pools, waterways and some concrete. At one point in each pool a sluice siphons the water off into the Anglian Water Companies water supply, each sluice being clearly marked with a sign saying ‘Deep Cold Water. No swimming. Hazards include Entrapment. Drowning. Shock. Weil’s Disease’! (fig. 2).



Fig. 2 Safety sign by Well 3

The water flow from each pool is significant as judged by the current that noisily flows under the metal grids over each sluice and even after the very dry summer of 2018 the flow did not seem to have diminished compared with previous visits (fig. 3). These springs are not the only supplies of water to well up through the Pleistocene clays but they certainly are one of the most significant, so much so that the area was one of the first to be designated an SSSI by the Lincolnshire Wildlife Trust soon after its foundation. The Blow Wells are an important nature habitat particularly for birds migrating across the North Sea. During a visit in October 2018 numerous large flocks of the ‘winter thrush’, the Fieldfare, were seen around the trees feeding on the abundant hawthorn berries. In the warm autumn sunshine, numerous dragonflies and damselflies were skimming over the reed beds. In an earlier springtime visit the trees were alive with Chiffchaff, Willow Warbler, Blackcap and resident species such as Chaffinch, Goldfinch, and Greater Spotted Woodpecker while ducks and grebes were seen on the water. In the extensive reed beds Sedge Warbler and Reed Bunting are regularly seen. The meadow areas support profuse cowslips in spring and are cut later for hay to preserve the flowers.



Fig. 3 Blow well 4

The Lincolnshire Wolds lie in a north west/south east outcrop across Lincolnshire and extend in both directions across the Wash into North West Norfolk and across the Humber River, at Barton-upon-Humber, into Yorkshire where they become the Yorkshire Wolds (fig. 4).



Fig. 4 North East Lincolnshire

In the region of Tetney the Wolds ridge is about 13 miles to the west. It rises to about 165 metres, 550 feet, with the north easterly dip slope deeply incised with numerous ridges and valleys, mostly dry, some with streams but only 4 significant rivers; the Waithe Beck, River Lud, Laceby Beck and East Halton Beck. They are composed of a series of Cretaceous chalk formations which dip in an easterly direction from the top of the Wolds to beneath the Pleistocene tidal clays and silts of the coastal belt and the North Sea. Fig. 5 is a schematic cross-section of the geology in a SW to NE direction from Hemingby in the west to Saltfleet in the east. The western scarp which can be seen east of the A46 between Middle Rasen and Caistor (fig 6, taken at Claxby) is composed of a thick sequence of Jurassic Kimmeridge Clay which also dips in the same easterly direction under the chalk formations (fig. 5) and forms the water seal at the base of the chalk formations. The sequence of formations that form the Lincolnshire aquifers are –

<u>Upper Cretaceous</u>	Flamborough Chalk Formation Burnham Chalk Formation Welton Chalk Formation Ferriby Chalk Formation
<u>Lower Cretaceous</u>	Hunstanton Formation Carstone Formation Tealby Member of the Tealby Formation Spilsby Sandstone Formation

Fig. 5 NE Lincolnshire chalk formations, (Whitehead & Lawrence 2006)

At Tetney, the chalk underlying the Pleistocene sediments is the Burnham Chalk Formation (84 – 94 mya) which has undergone much deformation. Cracks and joints have opened in the chalk thereby increasing its permeability and the upwards flow of groundwater.

The wells are tapped for the local water supply but not all of the water is used for this purpose. Some, and water from the marshy areas around the wells, drains into rhynes (water-filled deep ditches as on the Somerset Levels) that empty into the Waithe Beck. This flows along the north west side of the Blow Wells area and then eastwards to join the Louth Canal to empty into the North Sea at Tetney Lock.



Fig. 6 Wolds, west scarp, Claxby, Kimmeridge Clay

As already stated, most of the valleys in the Wolds are dry as they do not contact the water table except in severe or prolonged wet weather when ephemeral springs occur. However, in the areas where the ground surface is permeable, groundwater rises through to the surface, in many cases as significant springs given the local name 'blow wells'. The ones at Tetney are the biggest. The water which rises in the wells is derived from rainfall on the Wolds and can take years to decades to permeate through to the blow wells. The amount of water permeating is also affected by the thickness of glacial till draped over the chalk on the top of the Wolds which ranges from nil to a few metres in depth. Indeed, as one travels from Market Rasen through Tealby to Binbrook on the B1203, particularly in spring before the crops have grown and autumn after the fields have been ploughed, the chalk can be seen exposed in the valley sides. Near Binbrook in the central part of the Wolds, the Hunstanton Formation, previously called the Red Chalk (as exposed in the magnificent outcrop at Hunstanton in north west Norfolk) can be seen in the valley sides with white chalk above.

In an otherwise dead flat terrain, the Tetney Blow Wells provide an area of trees, marshes and reed beds with a rich flora and fauna. At the same time, large quantities of water are taken off for the water supply but, for the local population, it is a pleasant place for walking, exercising the dogs and enjoying the wildlife.

Reference: Whitehead, E J. and Lawrence, A R. 2006. The Chalk aquifer system of Lincolnshire. *British Geological Survey Research Report, RR/06/03*.

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