

The Ground Beneath

Road building, housing development, climate change, water management and flooding seem to be regular issues appearing in the press these days. It is not always realised that ground investigations for the former can also throw light on the latter....

The A5 by-pass, for instance, had to cross the Severn at Montford Bridge and during construction revealed more evidence of the history of this area.

As in most of Bicton, here the solid sandstone remains hidden but, nevertheless, was important to the bridge engineers seeking a firm foundation for their piles. Unfortunately, at this very point, the sandstone has been cut by a deep channel carved by melt-water flowing under a thick ice cover. As the ice became thinner when conditions warmed, this old channel filled with soft sand. As a result bridge piles on the Bicton side had to be much longer, and it was still not clear if they actually reached solid rock!

As the ice front moved further back from Shrewsbury, it lingered here for some time, building up a 'moraine' which we know as Grange Bank. With further retreat, melt-water formed a lake between the ice and this moraine in which fine clay sediment accumulated. Since water flow and sediment load alternated with the seasons this formed thin layers called 'varves', which could record the life of that lake rather like tree rings.

As the River Severn began developing its valley downstream the lake drained away, but was replaced by an extension of the outwash plain or 'sandur' spreading out from Shrawardine and Ensdon, where a new moraine was being built up.

Further down-cutting by the river and the retreat of the ice front even further west into Wales saw the evolution of the winding course of the river we see today. At first the river created a large channel with its high rate of seasonal flow from melting ice and snow and cool wet climate generally. Its meander pattern thus consisted of wide loops with cliffs being eroded on the outside of the bends while gravel has built up on the inside.

With the arrival of true 'interglacial' conditions which we enjoy today, the river began to shrink, leaving those old gravel banks as a terrace while filling at least two thirds of its channel with clay and silt, helped by a thick growth of vegetation which trapped it.

From time to time, the river reoccupies this floodplain, adding more silt, but the houses of Montford Bridge stay dry on the adjacent terrace. The flooding 'problems' which worry our MP are not caused by the natural behaviour of the rivers, more the man-made problem of building on their floodplains!

To sum up, one can appreciate how our landscape illustrates the story of climate change. Reflect on this as you drive down Grange Bank, noting its shapes in the view beyond (while of course keeping your eyes on the road!).

By contrast, the deeper ground investigations around Shelton originally had more to do with hydrology than road-building, but should the North West Relief Road ever come to pass (any money left?), it will encounter the same features found here.

As at Montford Bridge, the river has cut a winding valley into soft glacial deposits, including a larger sand-filled channel cut into the underlying sandstone so that this site poses the same challenges to bridge builders as those at Montford Bridge!

The channel enters the area from the direction of Ellesmere, passes under Walford, the Isle, Rossall and then swings around to pass under Shrewsbury, heading to the Ironbridge Gorge. In north Germany similar features are appreciated as aquifers, while here it is proving useful too.

When the waterworks was originally constructed here in 1935, its supply was drawn directly from the river. The availability of clean water above the town, right next to a high point from which it could be distributed made it an ideal location. Direct supply from the river did still, however, face the inherent problems of muddy water and debris at time of floods as well as water life, all of which had to be filtered.

Fortunately, the local geology offered a solution. Two wells were sunk into the underlying sandstone, producing much cleaner water. Then, as pumping draws down its level, it more easily filters in from the river via that sand-filled channel. The ease by which water seeps through to the wells was highlighted when a drum of cleaning fluid was spilt at nearby Shelton Hospital! Thus the water authorities express concern about too much development and road building near their site.

Above the aquifers, the section reveals the thick 'blanket' of mixed glacial deposits which cover much of Bicton parish. It varies both vertically and laterally and can support its own 'perched' water table independent of the porous sandstones beneath. Developers must be aware of this, but no doubt they will blunder on to fulfil targets by packing in the houses.



