David Pannett's History of Bicton part 129

Introducing LiDAR

For many years we have appreciated the value of aerial photography from planes and satellites for the study of earth, moon and other planets. Also, special applications of radar, which can penetrate the atmosphere of Venus or the soil over archaeological remains, have revealed features otherwise invisible. Now, as technology marches on, we have LiDAR, which is a sort of radar using beams of laser light rather than radio waves.

A stream of light pulses scans the ground beneath an aircraft, whose position is fixed by GPS, and the resulting reflections are used by the computer to build up a 'picture' of the surface. Of course, some reflections come from tall vegetation, while others come from the actual ground beneath, but the computer can sort these out. When all such data has been collected, further computer wizardry can display the results as a 'relief model' as if illuminated by NW light, or even play further tricks generating 3-D models on the screen.

Many organisations have been quick to see the value of this new technology for landscape analysis, since it sees through woodland and shows relief at a resolution measured in centimetres rather than metres. The Environment Agency is particularly interested since it must give advice on the suitability, or otherwise, of sites for proposed development. For this reason, the Agency has surveyed the river flood plains in the whole country and made the results freely available via the house prices website (houseprices.io/lab/lidar/map.

Locally, the winding path of the River Severn has caused the straight survey runs to stray over a wider band of country, including most of Bicton. Many of the features around the village here are already well known from conventional aerial photography, so dependent on natural light directions, but LiDAR shows much more, picking out shapes barely recognisable on the ground.

Apart from village buildings, the most striking features are mediaeval plough ridges with their curving shapes, 200yd 'one furlong' lengths and their grouping in 'furlongs' or 'flots'. The later hedges conform to this pattern thanks to the gradual process of enclosing the original 'open fields' some time c.1700. Conversion to pasture helped to preserve them as dairy farming became more important in this area. Being raised up high on these poorly drained clay soils; some have not yet been totally wiped out by modern ploughing. Altogether, the patterns are typical of such fields in the Midlands.

Although much confirms what we already know from aerial photographs, the real surprise is the odd ridge pattern around the Grove, NE across the township boundary. Historically, this was part of Rossall Heath, although the western side around the Grove Farm had been enclosed by the seventeenth century. Were parts already cultivated here in the Middle Ages?

Before the Black Death of the fourteenth century, cultivation had probably spread much further than we once thought. Not only were there many mouths to feed, but yields were low by modern

standards and field management included regular fallows. Flood plains likewise show signs of mediaeval cultivation, mixed up with undulations created by the river deposition, as around parts of the Isle.

One particular detail seen in some places are knobs, rather like bone knuckles, at the ends of each ridge. They arise from the build up of soil falling off the plough and its ox team as they turned around at the end of the ridge. Since water in the furrows needed to drain away through such 'headlands', any obstructing soil would have been dug out and heaped on the adjacent ridges. Headlands were often left as grass anyway to give access and some grazing after harvest and during a fallow year.

Unusually large ridges are still visible from the lane north of the Hall and must not be confused with the chicken sheds shown at the other end of the old village. Such broad ridges may have been kept for special roles such as growing hemp for flax fibres.

The characteristic curve of the ridges is thought to help the mediaeval plough team turn to the left at the headland, since it would normally be led by a right-handed driver walking on that side. Since he would need unploughed land to walk on, the plough mould-board had to be on the right. By tradition, it remained here even when stronger horse teams controlled by reins took over in later centuries and could turn to the right at the headland.

There is plenty to check out on the ground and also we will make more use of LiDAR images for other parts of the parish in future essays. Watch this space...



MEDIEVAL OX PLOUGHING

