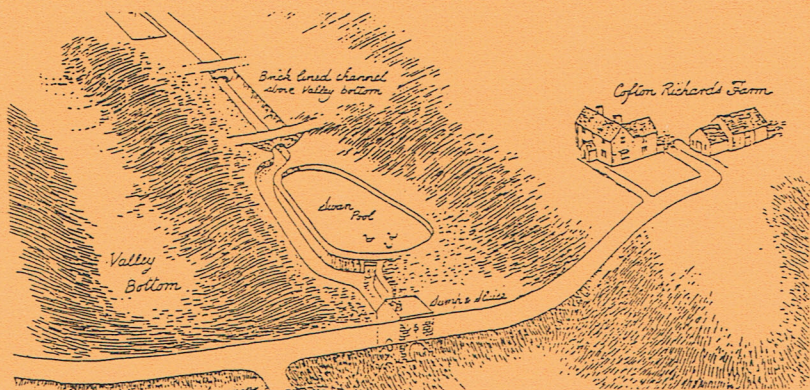


LICKEY HILLS  
LOCAL HISTORY SOCIETY



# The Bittell Waterways System



IAN HAYES





## THE BITTELL WATERWAYS SYSTEM.

Throughout its length the River Arrow has been canalised and diverted, so much so that in places little of its original course remains. Nowhere is this more evident than on the very picturesque short length between Cofton and Lower Bittell, at the foot of the Lickey Hills. Here it has been subjected not only to the attentions of millers, but has also been utilised as a major water source for the Worcester and Birmingham Canal.

The development of the features on this section falls broadly into four stages.

### Stage 1. pre 1791.

One, possibly more, watermills were established at Bittell, and ponds built, or possibly adapted from medieval pools, to maintain a water supply. Two of these, Upper and Lower Arrow pools survive. In addition part of the headrace and tailrace system of Bittell Mill may have been incorporated into later features.

### Stage 2. 1791-1815.

The canal was built, but restrictive clauses in the Act ensured that side streams could not be tapped for water supply, and in addition reservoirs were constructed at Cofton and Lower Bittell, as well as other places along the route, to guarantee a supply of water to mill owners downstream from the canal. This left the canal itself in an impossible position as regards water supply.

Bittell Mill, incidentally, continues to feature on maps of this time.

### Stage 3. 1815-1837.

The canal was chronically short of water, whereas the mills below had a plentiful supply. Accordingly agreement was eventually reached to allow the Canal Company to divert streams into the canal, and to build Upper Bittell Reservoir, completed in 1832, as a canal feeder. Bittell Mill appears to have been demolished at this time. Every effort was made to divert water into the canal, and one very ingenious method is detailed below. Even so there was still sometimes a water shortage. As a final move, therefore, in 1837, the Canal Company established a steam pump to transfer water from Lower Bittell, which was a little below the level of the canal, into Upper Bittell Reservoir, some 50 feet higher.

A branch canal, Jacobs' Arm, or Jacobs' Cut, was built to a point a little below the engine to assist construction of the engine house, and subsequently to convey coal for the engine. In addition wharves were established on either side of the bridge where the Arm passed under Bittell Farm Road to serve the neighbouring community.

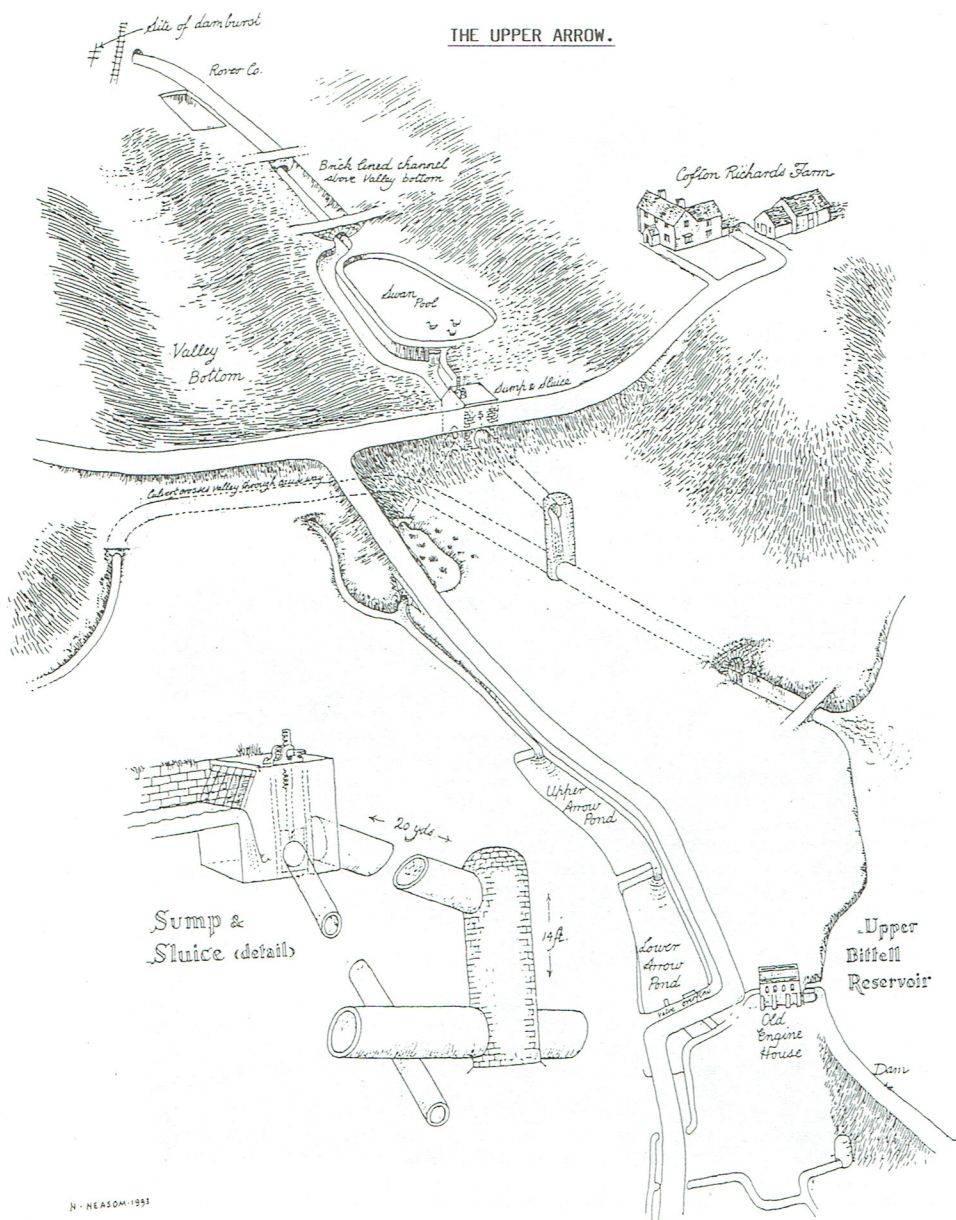
### Stage 4. 1837 to present day.

The levels of both Upper and Lower Bittell Reservoirs were subsequently lowered, although the northern part of Lower Bittell was maintained at its original water level, and now forms a separate pond, known as Mill Shrub, some height above and separated by a weir from the remainder of the reservoir on the other side of Bittell Farm Road.

The pumping engine continued in use, latterly on a very intermittent basis, for about 75 years, but was then maintained in working order for some years before being dismantled in about 1934.

Jacobs' Arm was described as an aqueduct rather than a commercial waterway, as early as 1865. However it was certainly used for occasional traffic well into this century, and was navigable for a flat bottomed boat, used for conveying drinking water from a spring up the valley to Lock Cottage, until after the Second World War.





### The Cofton Hall Leat.

During a torrential storm in 1927, the dam containing a pond below Cofton Reservoir collapsed, and the resulting flood swept down the valley, exposing on the way part of a covered aqueduct built across the valley near Cofton Richards Farm. This, and the subsequent subsidence of underground brickwork in an adjoining field, led to the discovery of a very interesting canal feeder. The channel was fed by the diversion of a watercourse near Cofton Hall, and it then followed an open leat just above the 500 feet contour, before entering the aqueduct across the old valley of the River Arrow. It then tunnelled into a field on the opposite side of the valley, where it was joined, underground, by a culvert carrying the diverted River Arrow. This latter was at a higher level and entered the tunnel through a vertical shaft 14 feet deep. The shaft was exposed, incidentally, when a collapse occurred in 1986 or 1987, nearly accounting for a combine harvester driven by Mr Peter Mitchell. Beyond the shaft the joint flow continued through the tunnel under the hill to an outfall into Upper Bittell Reservoir.

Part of the system is shown on the Alvechurch Tithe Map of 1842, being described as a canal feeder. The indications are, therefore, that it was constructed around 1832, when water supply was at a premium. The sluice at the Cofton Hall end was not maintained after about 1919, and the water from that direction now flows down the Pinton Brook. However, the contour leat below Cofton Hall was shown on Ordnance Survey maps as recently as 1952. The tunnel under the hill currently carries only the flow from the River Arrow.

The whole construction leaves some questions unanswered, particularly why the River Arrow culvert was constructed so high above the other tunnel that it was necessary to join the two by a 14 feet deep connecting well. Perhaps this feature was a later adjustment of two originally separate schemes.

### The River Arrow System today.

Below the Rover factory, the stream follows a contour course, gradually rising above the valley bottom, which appears originally to have been occupied by a pond, or series of ponds. Part of the course, upstream from Swan Pool, is brick lined. The stream by passes Swan Pool, which is fed by ground water, and enters a sump. The direct route out of the sump is into a culvert, 3 feet in diameter, which conveys the Arrow on the level for a few yards, before dropping vertically 14 feet to join the tunnel previously conveying the leat from Cofton Hall, as described above. At the side of the sump, a paddle can be lifted to allow excess water to flow to the original stream bed in the valley below. The side paddle is normally closed, and the water is therefore generally all channelled into Upper Bittell Reservoir.

A side rivulet feeds the Upper and Lower Arrow ponds, and overflows into a further sump known as the "Eel Trap", below the lower pond. Here it is joined by any water overflowing from Upper Bittell Reservoir. There is also a valve which allows Lower Arrow pond to be drained.

Once again the stream follows a contour course, which may possibly have been adapted from the headrace of Bittell Mill. The stream passes under the track, now some feet above the old river bed, and at a point 200 yards below Lower Arrow pond encounters a side sluice. The paddle of the sluice was renewed early in 1993, and when it is closed, all water continues to Mill Shrub and Lower Bittell Reservoir, becoming, in effect, the River Arrow. If the paddle is raised, however, all water, except at time of flood, is diverted along an artificial channel transversely across the valley bottom to join the regulated flow from Upper Bittell dam. This rather insignificant channel appears, in part, on a map dated prior to the construction of the canal, and may possibly follow a section of the Bittell Mill tailrace.





Lower Arrow Pond



Below Upper Bittell dam, water from the two sources enters a contour leat which follows a course parallel to Jacobs' Arm, entering the canal adjacent to Jacobs' Arm junction. There was originally no connection with Jacobs' Arm, and the leat, in fact, is shown on a plan of 1815 as part of one of the schemes to divert additional water into the canal. Currently there is a break in the bank of the leat which allows water to flow into Jacobs' Arm, and so into the canal, the leat below this point being abandoned.

A similar leat, incidentally, originally channelled the brook flowing from Lickey Woods on to a course around the southern perimeter of Lower Bittell Reservoir to the canal. This leat has also now been abandoned.

The net result of these works was that, when the system was fully functional, provision could be made to divert not only the headwaters of the Arrow, but all the tributary streams in its upper valley, into the canal if the necessity arose.

Mr Norman Neasom kindly drew an artists' impression of the upper section of this network, which helps to explain the layout. I would also like to thank Mr Heynes of Cofton Richards, Mr Norman Solloway, formerly of Bittell, Mrs Margaret Mabey, Mr Don Powell, and Revd Alan White, for helping to solve at least part of the riddle of this complicated waterway system.

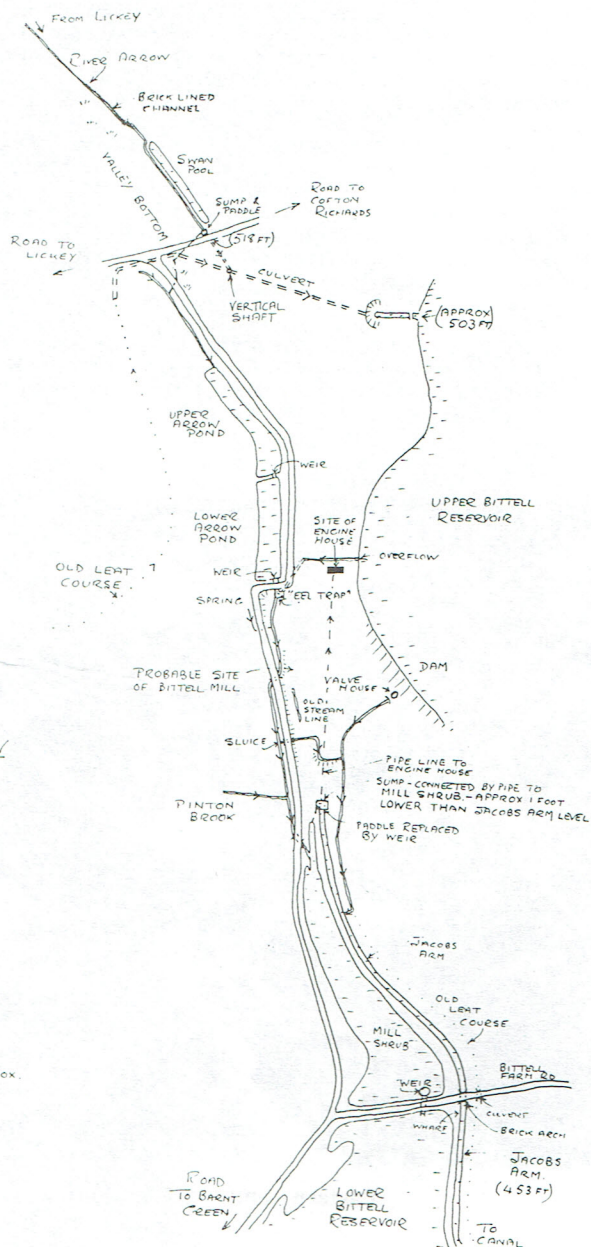
Ian Hayes.



Eastern end of the Long Culvert

SKETCH MAP OF RIVER ARROW  
AT UPPER BITTELL

IAN HAYES. 1993.







Bittell Engine House.



The Deflected Arrow







