VIII

CAUSEY ARCH—A NOTE

John Mann

CAUSEY ARCH is one of the more striking monuments of the Industrial Revolution in the north-east, and there seems no reason to challenge the claim that it is the oldest surviving railway bridge in the world. The best history of its construction is that given by M. J. T. Lewis.[1] A further note seems appropriate, now that the restoration work so well carried out by Durham County Council has been completed.

The development of the north-eastern coalfield was largely conditioned by the ever-increasing demands of the London market. The most important early workings were in the Manor of Whickham. But sea-going ships could not ascend the Tyne above Newcastle bridge, and so river vessels, or "keels", were developed to take the coal below the bridge for transfer into the coal-ships. As the mines near the river became more difficult to work—they could not penetrate very far because of the lack of equipment to deal with flooding or to provide adequate ventilation—so mines had to be opened up further away from the river. The development of wagonways sprang directly out of the need to convey coal over increasing distances to riverside staithes. The earliest wagonway in County Durham was probably that from Whickham by Lobley Hill to Dunston, in operation before the Civil War. It was rapidly supplemented by others in the same area.[2]

These wagonways were of wood. A description of 1676 survives:[3] "The manner of the carriage is by laying rails of timber from the colliery down to the river, exactly straight and parallel; and bulky carts are made with four rowlers fitting these rails; whereby the carriage is so easy that one horse will draw down four or five chaldrons of coals ..."

By the early eighteenth century, collieries even further south were being opened up, in the Pontop and Tanfield areas. Coal from these collieries went first by a wagonway, the "Main Way", by Burnopfield, Rowlands Gill and Winlaton Mill to Derwenthaugh. But the older line was also extended south from Marley Hill by Causey to Tanfield, to serve the new collieries of the Liddell and Montague families.

These wagonways were still of wood, but involved considerable engineering works, as appears from the account of William Stukeley the antiquary:[4] "We saw Colonel Lyddal's coal-works at Tanfield, where he carries the road over valleys filled with earth, 100 foot high, 300 foot broad at bottom; other valleys as large have a stone bridge laid across; in other places hills are cut through for half a mile together, and in this manner a road is made, and frames of timber laid for five miles to the riverside, where coals are delivered at 52s. per chaldron."

The "stone bridge" referred to here is probably Causey Arch. Immediately on construction it was absorbed into the system of the "Grand Allies", the consortium formed to finance the southward extension of coal-working. John Brand[5] describes the arch: "There still remains a remarkably large arch standing over Causey Burn, near Tanfield, in the county of Durham, which appears to have been finished, after having once fallen in for want of weight, A.D. 1727. It was built by a country mason for a waggon-way to a colliery of the late Lord Ravensworth, which was set on fire, and has been long unwrought. It is said to have cost £1,200. The architect involved himself in many difficulties concerning it, and is reported to have destroyed himself at last from the dread of its falling a second time ... I have copied the subsequent inscription from a sun-dial on this stupendous arch,

Ra. Wood, mason 1727."

As Lewis says of this passage, the myths are beginning to accumulate. If Wood was the "country mason", it is improbable that he committed suicide. (Suicide is commonly attributed, as a kind of sacrifice story, to those connected with the design or construction of bridges, statues and similar structures.) It is also improbable that the original structure was of wood, as claimed in 1812,[6] while Lewis has shown that the true cost was just over £2,250. He lists the names of several of those who were connected with the building, to which one more can now be added (see below).

The sun-dial stood at the west end of the bridge, over the pier on the south side, as appears clearly from a print,[7] dedicated to "Sir John Eden, Bart., M.P. for the County of Durham", and probably dating to about 1780, which also shows four channelled gutter stones projecting from the south side of the structure, on the level of the haulage-way. Of these two on the south side and one on the north survived *in situ*. Since the print shows a horse-drawn chaldron moving off the bridge in each direction, it is probable that it carried two tracks. The print also suggests that the bridge never had any parapet, and that apart from the stonework around the sun-dial, little of the superstructure, or of the original haulage-way, at least on the bridge itself, has gone. It is possible that excavation of the carriage-way off the eastern end of the bridge might reveal traces of the method of laying the track, not least perhaps "sleeper-trenches" in the proper meaning of the word. It might also give us the correct gauge of the track, generally supposed to be 4 feet.

The print of *c.* 1780 also shows that by then there had already been considerable subsidence of the western approach embankment. At some date a buttress 13 feet wide was added on the north face of the western approach, about 33 feet from the western inset of the west abutment. This buttress is of one build with the curtain walling on either side of it, and suggests a massive re-building of the curtain face when the buttress was added. By 1804, as a watercolour of that year shows,[8] the western approach had totally collapsed, but at the same time the watercolour shows a horse and cart, and a man on horse-back, using the bridge, so it may still have been usable, although not for wagon-way traffic. In 1812, the arch was described[9] as "... at present neglected and falling to ruins." It seems unlikely that it was ever restored to wagon-way use, much less that it was ever relaid with iron rails. The isometric drawing of 1834[10] probably represents merely a theoretical restoration.

The development of steam-pumps in the late eighteenth century allowed a great extension of mining into the deep seams east of Newcastle bridge, particularly in the Wallsend area. Since coal could be transferred directly from wagons to ships by means of drops, keels could here be dispensed with. The coalfield above the bridge entered a period of depression, in which the Causey wagon-way was abandoned. When the demand for coal rose again, as it did by leaps and bounds in the nineteenth century, the area was again opened up, but the route of the line in the Causey stretch was altered to the east, to avoid the arch. No doubt it would have been too risky to entrust heavy steam-hauled traffic to the structure. Nevertheless, its survival almost intact belies the supposed lack of confidence of its designer.

Lewis gives the names of those known from historical records to have been connected with the construction. Archaeology can now add a further name. Some years ago my daughter, Dr. Jane Mann, found an inscribed stone low down at the south end of the face of the west abutment. Although the position of the stone makes it very difficult to photograph, nevertheless the accompanying photograph was taken

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Causey Arch, West abutment: stone at foot of face of abutment.

Photo: T. Middlemass

by Mr. T. Middlemass, photographer of the Department of Archaeology, Durham University. It reads simply:

D.HORNE
1727

He was presumably a mason who took part in the building of the arch.

NOTES

[1] *Early Wooden Railways*, London, 1970, esp. pp. 155–8.

[2] C. R. Warn, *Rails between Wear and Tyne*, Newcastle, 1982, 5–8.

[3] Lord Keeper Guilford, quoted by Lewis, 192–193.

[4] *Itinerarium Curiosum* ii, 1776, 69.

[5] *History and Antiquities of Newcastle* ii, 1789, 306.

[6] *The Picture of Newcastle*, 157.

[7] A copy of the print is to be found in the University of Newcastle Library's Collection of Local Illustrations, catalogued under Tanfield, Durham, C 556. It is conveniently reproduced in D. Dougan and F. Graham, *Northumberland and Durham: a Social Miscellany*, Newcastle, 1969, 30.

[8] By J. Atkinson, reproduced by Lewis, plate 43.

[9] *The Picture of Newcastle*, 157.

[10] Lewis, plate 44.