RAILWAY COKE OVENS

by Tim Smith

In 1826 Parliament required that the steam locomotives of the Liverpool & Manchester Railway should "consume their own smoke". Liverpool newspapers had campaigned for this because of experience with steamships on the river Mersey. The hunting fraternity in Parliament agreed, fearing smoke from locomotives would harm their quarry.

The locomotives of the Stockton & Darlington Railway (1825) burnt coal, and in their primitive boilers with large flues, combustion was complete enough to prevent too much emision of smoke. After the Rainhill Trials of 1829, and the adoption of the fire tube boiler, this could only be achieved by using coke instead of coal as fuel. Other fuels such as anthracite were tried with little success. The London & Greenwich Railway Act actually specified that coke or charcoal should be used. Some railways did use coal. The Bodmin & Wadebridge used Tredegar coal. Whishaw observed that on the Garnkirks & Glasgow Railway "The fuel used consists entirely of coal, which, for the passenger trains is anything but agreeable"! Nevertheless with coke costing some four times more per ton than coal there was every incentive to build a coal-burning locomotive that would not produce clouds of thick black smoke. Some of the more successful attempts were those of Samuel Hall who took out various patents. The locomotive "Bee" was fitted with Hall's system for trials on the Midland Counties Railway in 1841. The aim was to achieve complete combustion of the coal by increasing the air in the firebox. "Bee" was the first locomotive to have a firebox brick arch fitted but the idea was not immediately taken up. During the ensuing years others, including Fairbairn, for the LNWR, Beattie, on the LSWR, McConnell, LNWR, attempted to adapt locomotives for coal burning with only limited success. The idea of using a brick arch was re-introduced by Charles Markham during a series of experiments carried out under Matthew Kirtley's direction for the Midland Railway. Brick arches together with fire door deflector plates proved to be the answer. From 1860 more and more locomotives burnt coal instead of coke. On the North Eastern Railway, for example, only 4% of locomotives burnt coal in 1863. This had risen to 67% by 1871. [1]

The Liverpool & Manchester Railway bought in coke from the Worsley Company. In 1832 consideration was given to building their own coke ovens but the project was dropped. Other northern railway companies bought coke from local suppliers. In London there were no local suppliers so the railway companies had to provide their own coke. The London & Greenwich was an exception as it bought coke from the Deptford Coke Company which was set up specially to supply the railway. [2]

THE COKE OVENS

Coke for London's railways was burnt locally, using coal brought coastwise from Tynesideand then up the river Thames and along the canals to the various coke ovens. This was more economical than bringing coke from Tyneside because a given volume of coke weighs only half as much as the same

volume of coal. Thus a collier could carry twice as much coal as coke.

Below are known details of coke ovens in the London area, plus some in the south-east.

CAMDEN (London & North Western Railway)

The London & Birmingham Railway engaged a Mr Prior to construct and operate coke ovens at Camden. There were 18 in two parallel banks of 9 each with a chimney at the end nearest to the Regent's Canal. At one side there was a coal store and at the other a store for coke. Each oven was elliptical in plan, with diameters of 12 feet and 11 feet. They were 4 feet 9 inches high and had three wrought iron bands each 5 inches wide. A flue ran round the ovens to the chimney. Tanfield Moor and Windsor's Pontop coals, initially brought coastwise to the Regent's Canal Dock at Limehouse, and then by barge up the canal, were mixed in equal proportions. Six cisterns contained the water for cooling the coke on a brick cooling floor. Whishaw noted that coking took 44 hours and 4 hours were needed to charge and draw the ovens. Each oven held 68 cwt of coal. Nine ovens were charged each day so that 23 tons 8 cwt of coke were produced each day from 30 tons 12 cwt of coal. A few years later Sir Francis Head wrote that about 50 hours were needed for coking and the ovens produced about 20 tons per day. At that time the LNWR required 50 tons per day at Camden so 30 tons had to be brought "all the way from Newcastle by rail". In fact coal was brought coastwise to Poplar Dock where it was handled by the Northumberland & Durham Coal Company who ran the coal trains on the North London Railway. They also operated coke ovens at Bow on behalf of the LNWR. Further LNWR supplies were purchased from the Imperial Gas Light & Coke Company. E & A Prior continued to operate the Camden coke ovens until November 1851 when the contract was given to Joseph Pease. Following a report to the LNWR Stores Committee in September 1853 coke making at Camden seems to have ceased. [3]

BOW (LNWR)

Coke ovens at Bow were operated by the Northumberland & Durham Coal Company on behalf of the LNWR. Coal was brought coastwise to the East Quay of Poplar Dock where the Coal Company had hydraulic coal derricks for unloading colliers. Coal Company locomotives were then used to carry the coal to Bow for coking. This arrangement probably began in 1851 when colliers first used Poplar Dock and lasted until at least 1858 when the Northumberland & Durham Coal Company's contract to carry coal on the North London Railway was terminated. The Coal Company were to continue to operate the coke ovens but the coke was to be taken to Camden by the North London Railway for the LNWR. This amounted to some 300 tons per week. In the event the Coal Company still ran the LNWR coke trains. Some coke seems to have been sold to the North London Railway. [4]

PETERBOROUGH (LNWR)

In 1848 E & A Prior operated fifty coke ovens at Peterborough for the LNWR and continued to do so until January 1855 when the contract was offered to Joseph Pease. In May of that year the Stores Committee decided to let the ovens as the LNWR no longer had need of them. [5]

WEST DRAYTON & BRISTOL (Great Western Railway)

The GWR's first coke ovens were about a mile east of West Drayton, on the strip of land between the railway and the canal, just west of Stockley Road. They were said to be very similar to those of the north of England and Scotland but without a "lofty chimney". Opened circa 1839-40, the fourteen coke ovens produced 440 cwt of coke per day, using coal brought up the Grand Junction Canal from Brentford. A daily coke train ran from West Drayton to Paddington. Once the line reached Bristol forty coke ovens were built there, by Messrs Bevan & Co, superseding those at West Drayton. In 1850 the West Drayton coke ovens were said to be "useless and delapidated" and were abolished. [6]

NINE ELMS (London & South Western Railway)

The coke ovens erected by Mr Prior for the London & South Western Railway were at Nine Elms, within the area of the company's goods and locomotive depots. There were sixteen in all, arranged in a T with ten across the top. A shed of cast iron columns and corrugated roof covered the cooling floor which was paved with bricks. The ovens were built of stock brick with fire-brick linings. The flues of fire-brick and Stourbridge clay ran over the ovens to a chimney. Each oven was charged with about 4 tons of Tanfield Moor

coal, eight ovens being drawn daily. Coking took 48 hours. Five tanks held water for cooling the coke. The coke was taken away in sacks in specially built wagons. [7]

NEW CROSS (London, Brighton & South Coast Railway)

The London, Brighton & South Coast Railway built two banks of coke ovens at Cold Blow Lane, New Cross. Plans for the proposed coke ovens at New Cross were discussed by the LBSCR Board in October 1848. Coal was to be brought from Deptford Wharf along the Thames Wharf Branch. From 1849 the ovens were operated on behalf of the LBSCR by William Cory & Son who had previously been supplying coke in sacks to Cold Blow Lane. Their 1849 tender letter read: "We are willing to undertake supply for the next 12 months of as much coke of the very best quality as can be made in your ovens at New Cross, to be burnt from New Tanfield Coals and to be delivered into your trucks at 21/- per ton. The coals for the use of the ovens to be delivered at the Company's Wharf at Deptford and to be conveyed to the ovens free of wharfage, haulage and railway dues. The ovens to be kept in repair by us but we are not to be responsible for any deficit in construction which may appear during the first six months of our contract. No charge to be made for rent of ovens or for tools which are to be repaired in the Company's workshops without expense to us."The tender was accepted on 27 April 1849. The arrangement continued until at least 1862.[8]

LOWESTOFT (Great Eastern Railway)

The Eastern Counties Railway had coke ovens at Lowestoft, the coke being transported thence to Thames Wharf, at the end of Bow Creek, by sea. The coke ovens were on the north side of Lake Lothing where there was a quay to which coal could be brought. In 1854 thirty two new coke ovens were built. At that time coal was being supplied by the Northumberland & Durham Coal Co. The greatest number of ovens at Lowestoft was 83. All were disused by 1866.[9]

SOURCES

1. R. A. Mott, ed, *The History of Coke Making*, 1936; PRO RAIL1007/524 *LMS Secretary's Office Papers*; E. L. Ahrons, *The British Steam Railway Locomotive, 1825-1925*, 1927 (1966 reprint) p131ff; R. H. G. Thomas, *London's First Railway. The London & Greenwich*, 1986; Robert E Carlson, *The Liverpool & Manchester Railway Project, 1821-1831*, 1969.

2. R. H. G. Thomas, *The Liverpool & Manchester Railway*, 1980; R. H. G. Thomas, *London's First Railway. The London & Greenwich*, 1986

3 Francis Whishaw, *Railways of Great Britain and Ireland*, 1842 (1969 reprint); F. B. Head, *Stokers and Pokers*, 1849 (1968 reprint); Minute Books of the LNWR Stores Committee, PRO RAIL410/350; RAIL 410/351 and RAIL 410/352.

4 Minute Books of the LNWR Stores Committee, PRO RAIL410/350; RAIL 410/351 and RAIL 410/352. Minute Books of the North London Railway, PRO RAIL529/15

5 F. B. Head, *Stokers and Pokers*, 1849 (1968 reprint); Minute Books of the LNWR Stores Committee, PRO RAIL410/350; RAIL 410/351 and RAIL 410

6 E. T. MacDermot & C. R. Clinker, *History of the Great Western Railway*, Volume 1 1833-1863, 1964 edition, pages 29, 71; Francis Whishaw, *Railways of Great Britain and Ireland*, 1842 (1969 reprint).

7 Francis Whishaw, *Railways of Great Britain and Ireland*, 1842 (1969 reprint)

8 LBSCR Board Minutes. 1848/9 PRO RAIL 414/66; Letter from William Cory & Son to the LBSCR, 21st April 1849, PRO RAIL 414/27

9 J. Swieszkowski, *A Short History of Lowestoft Harbour* in *British Railway Journal, Special Great Eastern Railway Edition*, c. 1990

The author would be pleased to hear from anyone who knows of any other railway owned coke oven