

It was widely acknowledged that the Great Western's 'northern line' to Birmingham and Merseyside was, from the 1860s, a neglected part of the company's system. However, substantial improvements began in 1889 and continued during the following decade. The railway historian T R Perkins remarked in 1902 that, while 'until a comparatively recent date none but the older classes of locomotives were ever seen on the northern section of the GW system', this policy had been decisively abandoned. Speeds were increased, the first set of vestibuled corridor coaches in Britain began to run on 7 March 1892 between Paddington and Birkenhead. From 1895 GWR trains began to carry through-coaches from London to Aberystwyth and Barmouth. In 1902 through coaches began to be worked from Birkenhead to Bournemouth, through Oxford, Reading West and Basingstoke, and to destinations on the Kent Coast, worked forward from Reading by the South East & Chatham Railway.

Services on the Great Western's new line proved popular. Four down expresses reached Birmingham in two hours from Paddington, and before the end of 1910 the company had to add extra vehicles to the trains to accommodate growing demand. Most of the expresses travelled beyond Birmingham to Shrewsbury, Chester and Birkenhead, and in 1923 the 10.20 departure from Paddington stopped only at Birmingham between London and Chester. Through coaches were carried, usually on two services a day before the Second World War, to Aberystwyth, Barmouth and Pwllheli. From 1927 the name 'Cambrian Coast Express' was given to a complete train that ran to the Welsh resorts on Fridays and Saturdays during the summer months. The Great Western made much in the 1930s of connections made by its trains on Merseyside with ferry boats to the Isle of Man, while the 16.05 from Paddington was called the 'Belfast Boat Express'. From the beginning of the summer service in 1924 the departure times of most trains on the northern line were standardized at ten minutes past the hour from Paddington and at the hour from Birmingham.

From the beginning the GWR used some of its most powerful locomotives to haul trains using the Bicester cut-off, including 'Saint' class 4-6-0s from 1910, and 'Stars' and 'Castles' from the early 1920s. 'King' class 4-6-0s worked the most important trains from the time of their introduction in 1927 until they were replaced by diesels in 1962. Some of the British Railways standard 'Britannia' class pacifics were used on the 09.10 from Paddington in 1951-52. The same train was hauled by LMSR pacific locomotives, on trial in the spring of 1955, and as temporary replacements for the 'Kings' which were out of traffic in the early months of 1956.