

# Restoration of The Locomotive Duchess of Sutherland

Presented By Mr Brell Ewart

On December 15th 2005

Mr Brell Stewart presented his lecture to an exceedingly well attended joint meeting of the MAE and the IMechE during which he gave the history of the engine and his connection with it, as well as the work of the Princess Royal Class Locomotive Trust. He included details of the royal train coaches and videos of runs. The details given are best presented by the following extract from the Trust's web site .



**6233 Duchess of Sutherland  
LMS Princess Coronation Class 4-6-2 Pacific**

'There are not enough superlatives in the English language to describe a Princess Coronation locomotive in full cry. We shall never see their like again!'

**O.S. Nock**



## Working Life

When first taking his role as the new Chief Mechanical Engineer of the London, Midland & Scottish Railway Company, one of William Stanier's urgent tasks when he took office in January, 1932 was to design an express locomotive capable of working the fastest express passenger trains over the, in parts, heavily graded West Coast Route between London Euston and Glasgow. The 'Princess Royal' class of thirteen Pacific type 4-6-2 locomotives was the result, the first being No. 6200 "The Princess Royal," which emerged from the Crewe shops in 1933. The class is represented in the Princess Royal Class Locomotive Trust's collection in the West Shed by No. 46203 Princess Margaret Rose.

The remaining nine locomotives were all named after royalty or Duchesses, and all were streamlined for the sake of “press publicity and public appeal” to try to draw custom from the rival L.N.E.R. with its alternative East Coast route to Scotland. However, Stanier himself disliked the practice of concealing the impressive lines of such a beautiful locomotive underneath a streamlined casing, and resolved to build five “proper ones” as he called them, although the basic design remained the same. Thus ‘Duchess of Sutherland’ and her four sisters, all named after Scottish titles with the permission of His Majesty King George VI, were built at Crewe, emerging during July and August 1938. 6233 is the only member of the group to have survived.

Railway historian and artist Hamilton Ellis described them as having “the coincidence of aesthetic and functional beauty.” A little later a member of this batch of locomotives, No. 6234 ‘Duchess of Abercorn’ achieved an equivalent indicated horsepower output of 3350 whilst on test in February 1939, the highest figure ever recorded by a British steam locomotive.

During her busy working life for the L.M.S. 6233, like her sisters, hauled all of the fastest trains, including ‘The Royal Scot’ and the ‘The Mid-Day Scot’ between London and Glasgow, and other prestige named trains to Liverpool, Manchester and Birmingham, ‘Duchess of Sutherland’ being initially allocated to the motive power depot at Camden in London. During the Second World War she was pressed into use on the very heavily loaded troop trains in addition to her express passenger role, and in 1944 ‘Duchess of Sutherland’ moved to Crewe North shed.

Originally built with a single chimney, a double chimney was fitted in 1941, and she was one of the first to be fitted smoke deflectors in LMS livery in 1946.



She first appeared in LMS Crimson Lake (non-standard with cabside gold block numerals), changing to Lined Black in 1947, Caledonian Blue in May 1950 and BR Brunswick Green in November 1952.

During October and November 1945, 6233 DUCHESS OF SUTHERLAND took part in four special test runs with a dynamometer car to compare performance of the double chimney arrangement against rebuilt Royal Scot class locomotives and one of the two specially rebuilt Jubilee class locomotives no. 5736 Phoenix.

By the time they were taken over by British Railways in 1948 the class numbered 38 in all, the penultimate one being fittingly named ‘Sir William A. Stanier, F.R.S.’ after their designer, he being the only locomotive engineer ever to be accorded that prestigious title. 6233 moved to Carlisle Upperby in 1958 and later was also allocated to Crewe North shed, and then finally to Liverpool Edge Hill shed in September 1960. She continued to give excellent service over the next 15 years until eventually, like the rest of the class which were being displaced by first diesel and then electric locomotives of the new generation in the early 1960’s, she was put into store available for work if required. All but three ran of the class more than one million miles over their working life, but ‘Duchess of Sutherland’ herself notched up over 1,650,000 miles by to the time of her eventual withdrawal on 8th February, 1964, the second highest figure achieved by a member of the class.

She was one of the lesser know Princess Coronation class locomotives being photographed professionally very infrequently.

## **Restoration**

Unlike the majority of other members of her class that were cut up as scrap, DUCHESS OF SUTHERLAND was acquired by Butlins Holiday Camps and, after being repainted in LMS livery, she was moved to their camp at Heads of Ayr, in Scotland. There she remained on static display until 1971 when following a change in Butlins' policy, the several locomotives that they owned and were on display at various holiday camps throughout the United Kingdom, were moved to museums where they could be cared for and housed in accommodation befitting their importance. No 6233 was moved to Bressingham Steam Museum where she was used on the one third of a mile line at Bressingham for footplate rides during the next three years, until being taken out of service due to firebox problems.

6233 remained on display at the museum until 1996 when she was acquired by The Princess Royal Class Locomotive Trust.

Over the subsequent years 1998-2001 the locomotive has been restored to full working order with the aid of a Heritage Lottery Grant totaling £352,508. She was steamed in 2001 after a 900 day restoration project in which over 25,000 man hours were worked on her, 15,000 of these by volunteers.

## **Preservation**

The locomotive has been restored in LMS Crimson Lake livery with gold leaf lining, letters and numerals, and is seen now as she was in 1946 -fitted with a double chimney and smoke deflectors. Over 63 years after she was first put into traffic by the L.M.S., and 37 years standing idle, she has already hauled special passenger trains over some of her former territories and beyond, during which she has put in splendid performances. She has now at last truly become a real icon in the world of railway preservation after hauling the Royal Train as part of Her Majesty The Queen's Golden Jubilee celebrations in Wales.

This project is a magnificent achievement by a dedicated team of which the Princess Royal Class Locomotive Trust continue to be justifiably proud.

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## **Locomotive Details**

Name : DUCHESS OF SUTHERLAND

Number : 6233 (In British Railways days 46233)

Class of Locomotive : Princess Coronation Class

Type : 4 Cylinder Pacific

Valve gear : Walschaerts

Tractive Effort : 40,000 lbs (at 85%) boiler pressure

Braking system : Air brakes (was vacuum but this was changed at the recent overhaul)Built : 1938 at Crewe Works

Locomotive Weight : 161 tons 12 cwts

Length : 73 ft 10 inches

Height : 13ft 1 inch

Coal Capacity in the tender : 10 tons

Water Capacity : 5000 gallons in the tender and 2100 in the boiler

Boiler pressure : 250 lbs per sq. inch

The locomotive burns up to 1 ton of coal every 40 miles of running, evaporates about 45 gallons of water per mile. As much as two tons of coal will be burning at once when the locomotive is working hard on a heavy train.

The locomotive's maximum speed is 75 m.p.h. today although in service days this was as high as 100 miles per hour.



6233 Duchess of Sutherland hauled 'The Royal Train' on June 11th 2002 during Her Majesty Queen Elizabeth II's Golden Jubilee Year, seen here leaving Llandudno Junction on the final leg of the journey to Crewe, having brought the train from Hollyhead. Photo: Martin Welch



6233 Duchess of Sutherland powers through Greskine on her ascent of Beattock Bank on 13th July 2002. Photo: Maurice Burns



On Saturday 17th May 2003 Duchess of Sutherland hauled a special train in memory of Eric Treacy M.B.E., who is remembered as one of the most prolific railway photographers. The photograph shows 6233 at Appleby prior to the journey over the Settle to Carlisle railway. Photo: Gareth Griffiths



6233 Duchess of Sutherland at Hellifield carrying the Prince of Wales coat of arms headboard awaits departure with the Royal Train on 22nd March 2005. Photo: David Wilcock