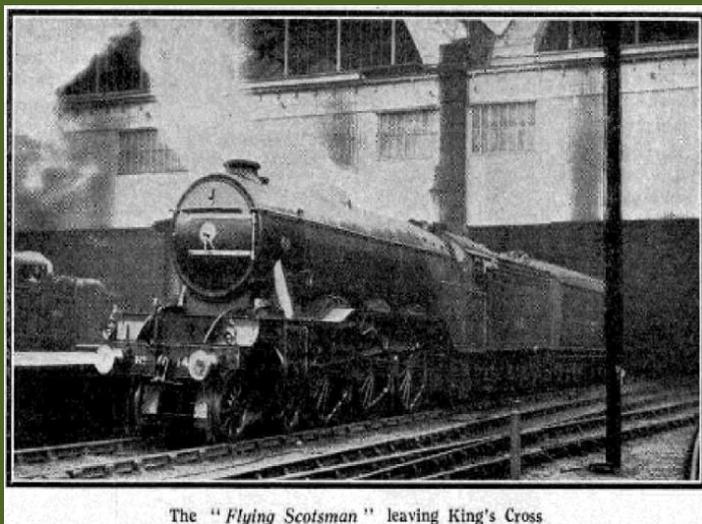


No. 1. THE "FLYING SCOTSMAN," L.N.E.R.

"*Scotsman*" is a title that, at one time or another has been fastened on to many express trains connecting London with the other side of the Border. But there is one train and one train alone that can lay claim to the historic distinction of being the real "*Flying Scotsman*."

This is the famous express that leaves King's Cross Terminus in London on the stroke of ten o'clock every morning. This has done for some 65 years day in and day out – heading for Edinburgh Glasgow, Perth and Aberdeen.

The south bound "*Flying Scotsman*" leaves the Scottish capital at precisely the same hour and rolls under King's Cross roof at 6:15pm., just as its "opposite number" is stopping in the Waverley Station at Edinburgh. Actually the two trains flash past each other, when they are running normally, somewhere near Raskelf, a station 13 miles north of York and almost exactly 200 miles from London.



The "*Flying Scotsman*" leaving King's Cross.

A Wonderful Record

The continuity of the departure time is in itself a record of no mean order, and the only occasions on which it has been broken have occurred at times of railway and coal strikes, and then for very brief periods, hardly worth taking into account. During the summer, and at certain other busy times, the "*Flying Scotsman*" has to be relieved, and a train for Doncaster, Newcastle-on-Tyne and Edinburgh only leaves King's Cross ten minutes earlier. In the opposite

direction a similar arrangement takes place, expresses leaving Edinburgh for London at both 10:00 and 10:15a.m., and dividing up the important intermediate calls between them.

But it is with the real ten o'clock "Scotsman" in each direction that we are concerned. No longer, unfortunately, do they make the fastest runs over the route that they traverse. Both south and north of York the expresses connecting Leeds with London and Edinburgh now show quicker timings, because by an agreement made between the East and West Coast routes after the racing to Aberdeen in 1895, the running times of the "Flying Scotsman" to and from Edinburgh remain unchanged at 8¼ hours for the 393 miles. With the gigantic engines that to-day are entrusted with its haulage, the "Scotsman" could "fly" a great deal faster than it does, if its owners were to agree to the necessary acceleration.

The L.N.E.R. are rather fond of advertising their three "10 o'clock's." One of them leaves Liverpool Street for all the principal towns and coast resorts of the Eastern counties, another sets forth from Marylebone for Nottingham, Sheffield and Bradford; but the chief of them, of course, is the 10 o'clock "Flying Scotsman," which is to be found at the No. 10 platform at King's Cross. It is worth while having a look at the train before we take our places in its luxurious coaches.

Normal load of 380 Tons

For years the "Scotsman" has been growing steadily in weight, until it has now become a substantial

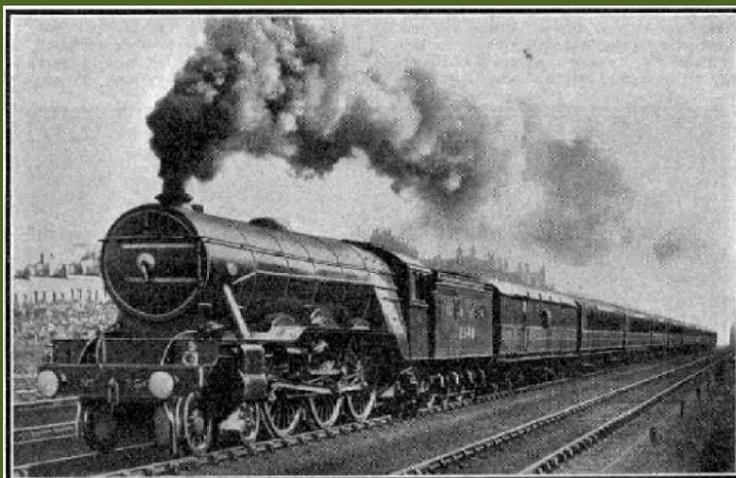
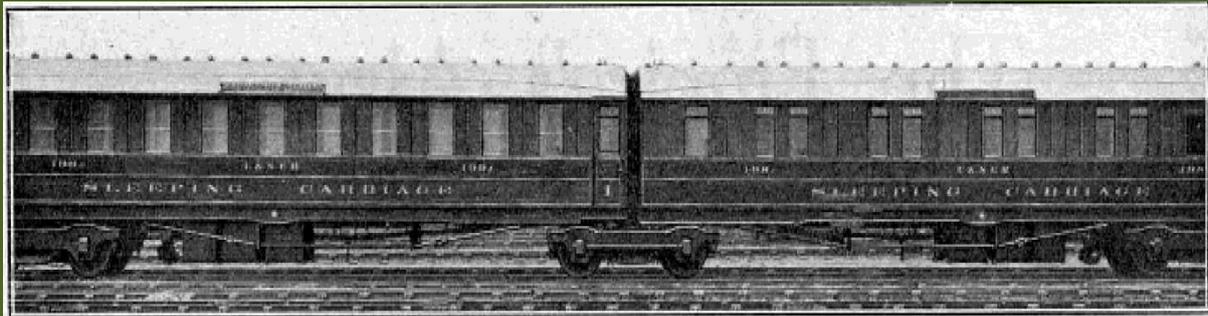


Photo The "Flying Scotsman" passing New Southgate (Engine No. 2548, "Galtee More") [F. E. Mackay]

train. Entirely new rolling stock was brought into use rather over two years ago and each of the 60ft coaches weighs round about 34 or 35 tons. On any ordinary week-day we shall probably find at King's Cross, ready for the start, eight of these vehicles, together with a "triplet" restaurant car set, the order, beginning from the engine, being a third class brake and a first-and-third "composite" for Glasgow, a composite with luggage compartment for Perth, a third-class

coach, open third-class restaurant car, kitchen car, first-class restaurant car and composite for Edinburgh, and composite, third-class and large brake for Aberdeen. The weight of the eleven coaches is roughly 360 tons empty, and with a normal compliment of passengers and luggage some 375 or 380 tons behind the engine tender.

Of all the coaches in the train, the restaurant cars are the most interesting. They are "articulated," which means that although the first-class and third-class cars and kitchen have bodies quite distinct from each other, yet they cannot be separated. Coach articulation consists of carrying the adjacent ends of two coaches on a large steel casting which in its turn, is supported on a single bogie truck. These three cars, therefore, are carried on four bogies between them, instead of the usual six, with the result that there is some saving in weight, as well as very smooth riding.



Showing a middle bogie of Articulated Sleeping Car, King's Cross to Aberdeen



The middle coach of the “triplet” is given up entirely to kitchen and pantry, with accommodation for the restaurant car staff, and the most unusual feature of its equipment is the exclusive use of electricity, generated from the coach axles, for cooking and boiling.

Fire Danger Eliminated

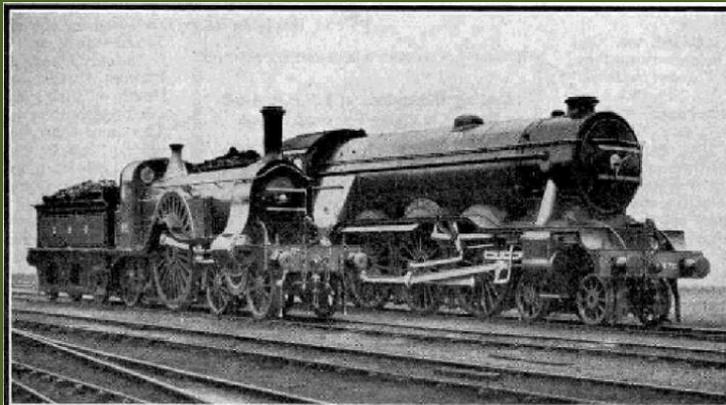
Electric cooking is slow, but it is clean, and the staff who have to work the confined space of the galley appreciate above all that, in comparison with gas it is cool, which is no small consideration, especially in summer. Even more important, perhaps, is the fact that not a single cylinder of gas is carried throughout the whole length of the “*Flying Scotsman*,” so that the danger of fire from burst cylinders, in the unlikely event of a derailment, is eliminated.

The service of meals on a train like this is really hard work. Two five-course lunches have to be served by the time that York is reached at 1:45p.m., including the washing up of all the crockery in between. Another lunch follows, between York and Newcastle, and the remaining couple of hours or so are devoted to the service of hundreds of afternoon teas. The first-class car seats 36 passengers and the third-class car 42, so that the 78 can be served at one time. On any normally busy summer day 150 lunches or more, as well as a large number of teas, will be dispensed to hungry passengers.

It is striking to remember that, when the present century opened, passengers by the “*Flying Scotsman*” who desired lunch had to make the best of 20 minutes specially allowed for this purpose at York, where they had to snatch a hasty meal in the station dining-room, to the peril of their digestions! It was not until August, 1900, that the dining cars were introduced on the morning trains between King’s Cross and Edinburgh, in both directions.

The Locomotive – 1900 and Now

But we must hurry on to the engine. What vast developments have taken place in locomotive power



One of Patrick Stirling's famous Single-Wheelers (No. 1) alongside the L.N.E.R. "Pacific" No. 4470, "Great Northern"

during the quarter-of-a-century that has elapsed since 1900! In that year, even though the first Great Northern "Atlantic"- No. 990 – had been turned out of Doncaster Works a couple of years earlier, the famous Stirling "eight-footers" were still taking a large share in the working of the "Flying Scotsman." They had single driving wheels, 8ft. In diameter, and relied on some 18 tons only out of the total engine weight

for their "adhesion," or grip between the driving-wheels and the rail. The giant "Pacific" that we shall be certain to find at the head of the same train to-day has six coupled wheels, 6ft. 8in. in diameter and no less than 60 tons of the engine weight are available for adhesion.

Instead of two cylinders of 18in. diameter, we find that our modern 4-6-2 has three cylinders of 20in. diameter. The boiler, too, has increased in size more than proportionately, until it has been all that the designer could do to squeeze his immense "Pacific" barrel, tapering out to no less than 6 ft. 5 in. diameter at the firebox end, above his big driving wheels, and all still within the narrow limits of the British construction gauge.

The manner in which all the parts on the L.N.E.R. "Flying Scotsman" locomotives have been stowed into so limited a space has been a marvel of ingenuity and mechanical skill. One wonders if it will ever be possible to build bigger express engines than these, to run over a British railway within a total height of only 13ft. 6in. above rail.

Value of Ample Engine Power

But what is the reason for this vast increase in power, if the booked speed of the "Flying Scotsman" has remained unaltered over so many years? The answer is simply that the rolling stock of to-day weighs more than twice as much, per passenger conveyed, as it did in 1900. Corridors, lavatories, sumptuous dining-cars and kitchens, and the more solid construction of coaches with a view to smoother riding, have all contributed to this result. The "Flying Scotsman" of 1900 was a train of 150 to 200 tons at most, and at the latter figure probably needed a pilot engine. To-day we have seen the normal load is 380 tons, and this is frequently exceeded at busy times.

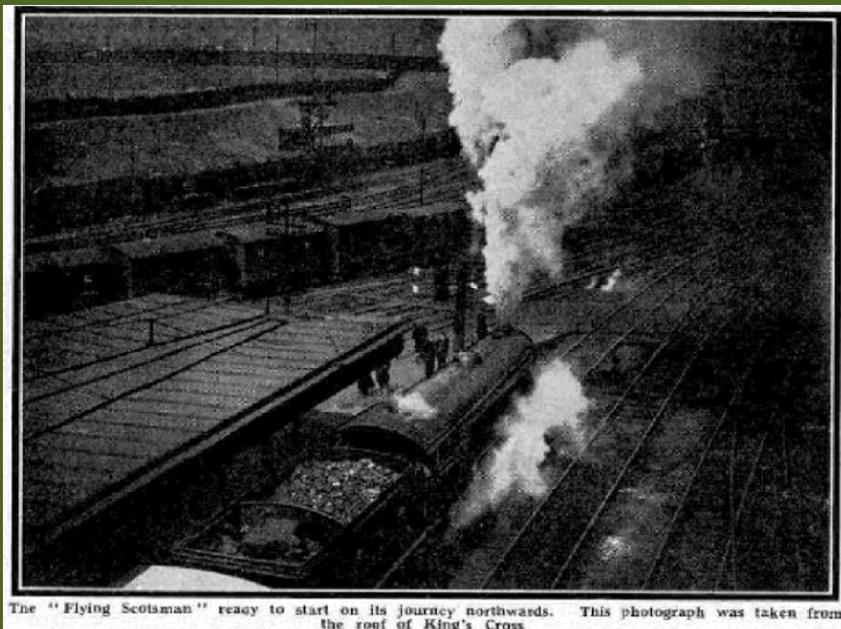
During the reduced train services that resulted from the labour troubles last year, the "Flying Scotsman" was made up at times to some simply prodigious weights, and it is greatly to the credit of these wonderful "Pacific's" that they have kept time with loads of up to 600 tons behind the tender, scorning the assistance of a pilot engine.

Lost time has been regained, too. For example, only a week before writing these lines, I timed No. 4479, "Robert the Devil" – most of the L.N.E.R. "Pacific's" are named after famous racehorses – to

bring down *"Scotsman"* into Grantham three minutes early, after having been stopped at St. Neot's for three minutes and thereby losing quite seven minutes in the running. That is to say, the engine had gained roughly 10 minutes on the schedule from London to Grantham. Ample engine power thus makes for punctual running, as well as for the economy that results from the working unaided of such huge loads.

Commencing the Northwards Journey

And now we will take our places in the train and see what faces the engine on its journey northwards. Simultaneously the platform bell rings and the guard's whistle blows, and just as the first notes of ten o'clock are chiming from the clock-tower – incidentally, King's Cross is the only British terminus to possess its own striking clock – the driver opens his regulator and the *"Flying Scotsman"* moves out on its journey of 393 miles to Edinburgh.



The start is not easy. Up through two tunnels, in which the rails are always greasy with moisture, the line is steeply inclined at 1 in 105, and while the driver has no chance of a "run" at the bank, he has to be careful not to give his steed too much steam, lest the driving wheels should "slip." He breathes more freely when Holloway has been passed, as there is now a level stretch as far as Wood Green.

Six or seven minutes after starting, the engine is roaring through Finsbury Park, proudly conscious of having disdained the assistance in rear that is given to the trains out of various London terminals. From Wood Green the line rises further for eight miles, threading five more tunnels on the way, to the crest of "Northern Heights" at Potter's Bar. This gradient is not so steep as the one previously mentioned, but even at 1 in 200 throughout its length, for all that it can be a gruelling obstacle to surmount with a heavy load. A gentle down-grade now follows, until the River Lea is crossed just beyond Hatfield, the speed increasing here to 67 or 68 miles an hour, from the 40 or so at which we topped Potter's Bar summit. It has taken 25 minutes to cover the first 17¾ miles to Hatfield, owing to the up gradient, but our average speed over the next 58½ miles to Peterborough is likely to be around the mile-a-minute rate.

The First Track Troughs

The actual summit point out of London is at Woolmer Green, near Knebworth, to which next we rise. Immediately afterwards we run over the first set of track troughs, from which our thirsty steed takes

the long drink to which by this time he is justly entitled. Now comes the most glorious racing stretch of the whole down journey. At its steepest it is only 1 in 200, but we shall dash through Hitchin at something not far short of 75 miles an hour and shall quite probably cross the 80 line when we reach the foot of the steepest part of the bank at Three Counties. On the down "*Flying Scotsman*" I once noted a time of 21 2/3 minutes for the 27 miles from Hitchin to Huntingdon, involving an average speed for this distance of very nearly 75 miles an hour.

Cylinders (3) Diameter	20 in.
Stroke	26 in.
Driving Wheels, Diameter	6 ft. 8 in.
Heating Surface, Fire Tubes	1,880 sq. ft.
Flue	835 "
Firebox	215 "
Superheater (32 elements)	525 "
Total	3,455 "
Firegrate Area	414 "
Working Steam Pressure	180 lb. per sq. in.
Tractive Effort (at 85% wkg. pressure)	29,835 lb.
Water Capacity of Tender	5,000 gallons
Coal	8 tons
Adhesion Weight	60 "
Weight of Engine (in working order)	92 1/2 "
Total Weight of Engine and Tender (full)	148 1/2 "
Length of Engine and Tender (over buffers)	70 ft. 5 in.

The only adverse gradient worth mention between Hitchin and Peterborough is a length of three miles at 1 in 200 from

Huntingdon up to a signal box at Leys. This may bring our speed down to 50 miles an hour or slightly less, and we shall then doubtless reach 70 again on a swift dash down to Holme.

Brakes grind on hard as we approach Peterborough, for the station is on a sharp curve, which demands a reduction of speed to 15 miles an hour. We have now covered 76½ miles of the journey in a time probably not exceeding 85 minutes.

First Stop Grantham

Gathering speed again against the level Fen country, the engine takes another long drink from track-troughs at Werrington Junction, three miles north of Peterborough. From here the line begins to rise, very gradually at first, but steepening beyond Essendine to 1 in 200 from Little Bytham to Corby, and in 1 in 178 from there to Stoke Summit, exactly 100 miles from London and the highest point we have yet attained.

Speed drops little by little up this ascent, and at the top we may have fallen to 40 miles an hour or even a trifle less. A swift downhill run over the last 5 ½ miles to Grantham fills up the remaining few minutes of the two hours, and at almost exactly noon we make our first halt. The actual allowance for the 105½ miles is 122 minutes, but more often than not the "*Flying Scotsman*" stops at Grantham a shade before 12 o'clock.

At some seasons of the year the engine is changed here, but not always. The great fire-boxes of the "*Pacific's*" enable so clean a fire to be maintained that it is possible to run the one engine through from King's Cross to York, and this is frequently done. But in any case we shall see a fresh driver and fireman take the place of those who have brought us down from London.

There is not much of note about the next section of the run, over the 82¾ miles from Grantham to York. The timing of 98 minutes is comparatively easy, seeing that the line is for the most part level. From Grantham the valley of the Trent, at Newark, it is chiefly downhill, and 17 minutes probably suffice for this 14½ miles from the start. Then follow rising grades to Markham, with a drop to Retford, where we swing on the level across the old Great Central line from Sheffield to Grimsby.

From Retford there is no grade worth mentioning the whole way to York. Track-troughs are provided just beyond Newark, and also at Scrooby, between Retford and Bawtry.

The Great Curved Roof of York Station

Doncaster, where our engine was built, is 50½ minutes from Grantham, and is probably passed in 55 minutes or so. At Selby there is a sharp curve and a swing-bridge over the River Aire, which together conspire to bring our speed down to 30 miles an hour. So the run goes on to the great station at York, with its beautifully proportioned curved roof, where many important connections are made. Here we arrive at 1.45p.m., and draw up at the exceptionally long No. 5 down platform.

Engines are now changed. Our "Pacific" might rest content, one would imagine, with having brought the "*Flying Scotsman*" over 188¾ miles from London to York, but there are not a few rostered turns in which engines of this type make the double journey of 376½ miles in the single day! Another "Pacific" locomotive will be certain to take us forward, and may not improbably run us through over 204¾ miles from York to Edinburgh, with a change of crew at Newcastle.

The first 44 miles out of York are over the famous straight and level course across the Great Plain of York. Here is witnessed nightly the fastest booked run on the L.N.E.R. system – the evening Glasgow – Leeds "diner," booked to cover the 44 miles start-to-stop in no more than 43 minutes. But we shall take from 48 to 50 minutes to get through Darlington, and the next 36¼ miles, with sharply-graded ups-and-downs and various reductions of speed through the colliery districts – where the workings have in place undermined the line – as well as over Durham Viaduct, prevent any high speed from there on to Newcastle. Crossing the magnificent King Edward Bridge across the deep valley of the Tyne, we draw up in Central Station at 3.32p.m., having covered the 80¼ miles from York in 99 minutes.

Nearing the Coast

During the run northward through Northumberland we are gradually nearing the coast, and at Alnmouth Junction, 34¾ miles north of Newcastle, we are within a mile or so of the sea. After that the coast is no great distance away for the rest of the journey to Edinburgh.

For the first nine miles, to Cramlington, the line is mostly ascending, and at Killingworth we pass the site of George Stephenson's first labours as an engineer. Then downhill to Morpeth, where there is a severe slowing through the curved station; over an undulating course to Alnmouth; up Longhoughton bank 3¾ miles at 1 in 170, and over another splendid racing ground of 20 miles, until finally we rise up to Tweedmouth and cross the famous Royal Border Bridge over the Tweed into Berwick. We have covered 67 miles from Newcastle to Berwick in 78 minutes.

There is a stiff ascent out of Berwick for 4½ miles at 1 in 190 to Burnmouth, and after a brief respite



The up "Flying Scotsman" leaving Waverley, Edinburgh

there comes another long 1 in 200 climb to Grant's House, 16 miles out of Berwick, which is the highest point of the "Flying Scotsman's" journey, 371 feet above sea level.

This is immediately followed by the steepest gradient of the whole journey, the line dropping sharply down Cockburn path Bank for four miles at 1 in 96 – the terror of heavy up trains. Then onward over gentle undulations by Dunbar and Dram until the

rugged mass of Arthur's Seat bears into view. Rattling over the junctions at Portobello, we "rush" the last mile at 1 in 78 up through the tunnel, and a few moments later are at rest alongside the long down platform at Edinburgh Waverley, on the stroke of 6.15p. m. Or, as is very likely to be the case, a minute or two earlier.

Here the career of the "Flying Scotsman" comes to an end. The "Pacific" that has brought us from York or Newcastle is uncoupled and quietly rolls away to the engine sheds at Haymarket. A Great Central "Director" 4-4-0 engine – of which many are now in use on the L.N.E. Scottish lines – backs down on to the Glasgow coaches and takes then off to the 6.28p.m. for Aberdeen, in charge of a North British "Atlantic."

Thus the various parts of the "Flying Scotsman" say "au revoir" to each other. It is only a brief separation, however, for ere ten o'clock strikes the next morning they will have returned to Edinburgh and have been reunited for the journey of the up "Flying Scotsman" to King's Cross.

Supplied freely with the December edition of the Darstaed/Vintage Trains e-newsletter, all of which can be viewed on the NEWS page of www.darstaed.com or future editions obtained from upton@darstaed.com

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